BY THE COMPTROLLER GENERAL

Report To The Congress

OF THE UNITED STATES

EPA Should Help Small Communities Cope With Federal Pollution Control Requirements

Small communities--under 10,000 population--are generally subject to the same environmental quality regulations as larger ones. Complying with these regulations exacts a much higher economic and social price from small communities, however, because the cost of constructing environmental control projects must be shared by fewer taxpayers, sometimes placing severe burdens on low-income residents. Also, small communities lack technical expertise needed to plan complex environmental projects.

The Environmental Protection Agency should minimize small communities' problems by

--more carefully reviewing new sewer system justifications,

--providing additional technical assistance to small communities, and

--experimenting with comprehensive approaches to pollution control.

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

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To the President of the Senate and the
Speaker of the House of Representatives

This report highlights problems small communities are having with Federal pollution control requirements and recommends actions the Environmental Protection Agency can take to help small communities cope with these requirements. This report points out that legislative changes may be needed to allow the Environmental Protection Agency to experiment with new environmental approaches for small communities.

We are sending copies of the report to appropriate House and Senate committees; Representatives and Senators from States mentioned in this report; the Director, Office of Management and Budget; the Chairman of the Council on Environmental Quality; and the Administrator, Environmental Protection Agency. We will also make copies available to interested organizations as appropriate and to others upon request.

Comptroller General
of the United States

COMPTROLLER GENERAL's
REPORT TO THE CONGRESS

EPA SHOULD HELP SMALL COMMUNITIES COPE WITH FEDERAL POLLUTION CONTROL REQUIREMENTS

D I G E S T

Communities with populations under 10,000 find it much harder than larger communities to comply with Federal environmental regulations. The sometimes harsh economic and social consequences of meeting Federal standards for sewage and solid waste disposal, drinking water, and air quality hit small communities especially hard because of higher per capita costs and a lack of technical expertise. GAO believes the Environmental Protection Agency (EPA) must make a special effort to help these communities.

For its review of the social and economic impact of Federal pollution control laws and regulations on cities, towns, and townships with populations under 10,000, GAO selected nine small communities in New England and the Pacific Northwest for in-depth analysis of the problems federally funded sewage systems cause. GAO also obtained information on 20 other communities affected by two or more Federal pollution control requirements to determine what problems are caused by multiple pollution control requirements. (See pp. 1, 4, and 5.)

SEWAGE TREATMENT SYSTEMS

Each of the nine communities GAO visited were building or had built sewage treatment systems, with costs ranging from about $1.7 million to $11 million. GAO noted the following problems:

--Inadequate justification for building new sewer systems. (See pp. 6 to 10.)

--Social and economic hardships, ranging from conflicts between residents to the loss of homes for some low-income residents. (See pp. 10 to 14.)

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--Considerable frustration by nontechnical local officials who are responsible for multimillion dollar construction projects. (See pp. 18 to 20.)

--Overbuilt sewage treatment systems. (See pp. 22 to 23.)

Many of these problems could be minimized if EPA were to review sewer system plans more carefully and require better justifications for the systems, including an analysis of possible social and economic impacts. In addition, small communities should receive technical help from independent technical specialists and/or EPA field engineers. (See pp. 17 and 27.)

FEDERAL DRINKING WATER, AIR, AND SOLID WASTE DISPOSAL REQUIREMENTS

Federal pollution control laws passed in 1974, 1976, and 1977 and EPA implementing regulations will greatly increase the social and economic impacts on small communities. Large numbers of small communities will have to upgrade drinking water systems and change open dumping practices. Hundreds of small communities will be affected by two or three sets of environmental regulations, including sewer requirements. The increased costs of complying with multiple requirements will compound the social and economic problems the communities face in meeting Federal pollution control requirements. (See pp. 3, 4, and 29 to 31.)

GAO believes EPA needs to experiment with comprehensive approaches to pollution control for small communities, such as:

--Federal block grants that could be used for the most pressing environmental problems in a small community.

--A special technical assistance coordinator to help a community determine the most cost effective way of meeting environmental requirements.

--Phased implementation of Federal requirements when concurrent implementation would be too costly.

--Suspension or waiver of individual requirements when the costs are high and the potential environmental benefits are minimal or the project may be environmentally harmful. (See p. 32.)

Changes will need to be made in several pollution control laws to permit this experimentation.

RECOMMENDATIONS

The Administrator of EPA should require EPA regional administrators to see that the States carefully review the facilities' plans for all pending and future grants for small community treatment systems, to make sure that the social and economic impacts of new treatment systems are clearly identified and the size and type of the new systems fully justified. (See p. 17.)

The Administrator should develop methods of providing additional technical assistance to help small communities with new sewage treatment systems, especially during the planning process. Two possible approaches are using EPA field engineers and approving grants for independent technical specialists. (See p. 27.)

Also, the Administrator should develop proposals to experiment with comprehensive pollution control approaches specifically tailored to address the environmental and social needs of small communities. EPA should present these proposals to the Congress with recommendations for implementing them, including any needed legislative changes to allow for effective, comprehensive experimentation. (See p. 33.)

AGENCY COMMENTS

GAO sent a draft of this report to the Environmental Protection Agency on February 27, 1980, requesting comments within

30 days. On March 25, 1980, the Agency requested and received a 10-day extension. No response, however, was received as of May 8, 1980, when this report was finalized.

Contents

ABBREVIATIONS

EIS	environmental impact statement
EPA	Environmental Protection Agency
GAO	General Accounting Office
gpd	gallons-per-day

CHAPTER 1

INTRODUCTION

Billions of dollars are needed by small communities for constructing new sewer systems. In addition to needing funds to comply with sewage treatment requirements, small communities will need large amounts of money to comply with new drinking water and solid waste disposal requirements.

POLLUTION CONTROL LEGISLATION AFFECTING SMALL COMMUNITIES

Federal laws and regulations have established environmental programs regulating sewage and solid waste disposal, drinking water, and air pollution. The Environmental Protection Agency (EPA) administers these laws and regulations. Some of the most visible impacts of these regulations are seen in the smallest communities, those with populations under 10,000. The special social and economic problems that smaller communities have with federally funded sewage systems have been cited in EPA studies, on national television, and in the press.

In the 29 small communities included in our review, the main pollution control activity was the building of sewage treatment plants and interceptor lines. In addition, these small communities are starting to be affected by new drinking water and solid waste disposal requirements.

Sewage treatment

The Federal Water Pollution Control Act, as amended (33 U.S.C. 1251, et seq.), requires communities to provide secondary treatment 1/ for their sewage wastes. To help large and small municipalities construct needed sewage treatment facilities, the Congress gave EPA the contract authority to obligate $18 billion for municipalities during fiscal years 1973-77. The Clean Water Act of 1977 (Public Law 95-217) authorized additional billions of dollars through 1982 for waste treatment construction. From these funds, EPA makes grants of from 75 to 85 percent of eligible costs to design and build water pollution control facilities.

1/Sewage treatment which uses biological processes to accelerate the decomposition of sewage and thereby reduce carbonaceous oxygen demanding wastes by 80 to 90 percent.

Facilities authorized to receive Federal assistance include treatment plants, interceptor and outfall sewer systems, pumping stations, power equipment, collector sewer systems, combined storm and sanitary sewers, and recycled water supply facilities.

EPA's regulations provide for Federal participation in a treatment facility's costs through three separate Federal matching grant awards:

--Step 1 grant - preparing facility (preliminary) plans.

--Step 2 grant - preparing design plans and specifications.

--Step 3 grant - constructing the treatment facility.

It typically takes several years for a new sewage treatment system to go through all three planning and construction phases.

Communities which receive Federal construction grants for sewage systems are responsible for planning, designing, constructing, operating, and maintaining these systems. Grantees usually hire engineering firms (consulting engineers) before applying for a grant. Administrative functions connected with the grant application and award are transferred to the consulting engineer. In addition, the consulting engineer usually prepares the preliminary plan, design, and specifications; handles the construction bid/award process; monitors construction; and takes care of the progress payment details under the grant. Applications for construction grants are approved first by a State's water pollution control agency and then by the cognizant EPA regional office before a grant is awarded.

A 1976 EPA report on the sewage construction needs of our Nation's communities stated that a total of $21 billion is needed for new sewer construction in the United States. The $10 billion needed for small community plants is almost as great as the $11 billion that needs to be spent on large community plants. These small communities have greater difficulties with sewer construction because of a lack of technical expertise and higher per capita costs. As a result, the costs and cost effectiveness of the small community projects are critical.

Douglas Costle, EPA Administrator, stated that:

"New facility planning grants are being cleared at a rate of more than 2,000 per year, most going to smaller towns.

"For the first time we are setting needs for small communities as high as for large cities. The numbers of small town projects have always outweighed the large city projects but, previously, the dollar investments have not approached the big cities, except on a per capita basis."

A 1976 EPA study of 258 facility plans for pending projects from 49 States disclosed that communities with fewer than 10,000 people generally experience the greatest social and economic problems with water pollution systems. As of March 1979, EPA estimated that 66 percent of EPA-funded wastewater treatment projects are for towns having less than 10,000 persons. A total of $3.6 billion, or 18 percent of the total funds, has gone to these communities.

Solid waste disposal

Solid waste disposal for small communities is affected by two Federal laws--the Clean Air Act amendments of 1977 (42 U.S.C. 7401, et seq.) and the Resource Conservation and Recovery Act of 1976 (42 U.S.C. 6901, et seq.).

State laws and regulations implementing the Clean Air Act amendments of 1977 generally prohibit burning solid waste in open dumps. 1/ When EPA approves and publishes individual State air regulations in the Federal Register, they become Federal regulations, thereby giving EPA enforcement authority. In addition, the Resource Conservation and Recovery Act prohibits open dumping.

Many of the communities we visited have open dumps and are aware that changes will have to be made in their solid waste disposal practices. This was the major impact of the solid waste disposal and air pollution regulations on these communities.

1/A land disposal site at which solid wastes are disposed of in a manner that does not protect the environment, are susceptible to open burning, and are exposed to the elements and scavengers.

Drinking water

The Safe Drinking Water Act, as amended (42 U.S.C. 300f, et seq.), is the basis for comprehensively regulating drinking water. This act directs EPA to prescribe national drinking water standards to protect public health, protect underground sources of drinking water, and establish a system for emergency allocation of chemicals necessary to purify water. This act also mandates a study of rural drinking water supplies to determine their quantity, quality, and availability.

States have primary enforcement responsibility for regulating their public water, provided they adopt (1) standards as stringent as national standards, (2) adequate enforcement procedures, and (3) a plan for providing emergency water supplies. States are eligible for an EPA grant of up to 75 percent of the annual costs for supervising public water systems.

The communities we visited were just beginning to be affected by new Federal drinking water regulations.

SCOPE OF REVIEW

We selected nine small communities in New England and the Pacific Northwest to do an in-depth analysis of the social and economic problems caused by federally funded sewage systems. We also obtained information on an additional 20 communities affected by two or more Federal pollution control requirements to determine if social and economic problems are caused by multiple pollution control requirements.

The nine communities we reviewed in-depth were in various stages of planning and constructing sewage treatment plants. In selecting these communities, we asked Federal, State, and local officials to suggest small communities which might be having problems with sewage project impacts. We visited the communities and interviewed community officials and residents, toured areas affected by new pollution projects, and reviewed community and sewer district records. We used examples from these communities throughout our report and included a detailed description of the communities and their pollution control activities in appendixes I and II. The communities we visited are listed below.

Maine:
- Greenville
- Mexico

Massachusetts:
- Cohasset
- Tisbury

New Hampshire:
Warner Village Fire District

Oregon:
Charleston
Netarts-Oceanside
Pacific City

Washington:
Eastsound

We obtained information from 20 additional communities in New England and the Pacific Northwest to determine the effect that multiple pollution control requirements may have on small communities. We selected some communities which were listed on two or more EPA regional lists of communities which were violating Federal air, drinking water, sewage, and solid waste laws and regulations. We also selected some communities which were suggested by State pollution control officials.

We also visited EPA headquarters, two of its regional offices, and six State water pollution control agencies and reviewed project files and interviewed officials about their current assistance to small cities, towns, and townships, to determine if small communities might be helped by improved Federal assistance.

Dr. David Bella, Associate Professor of Civil Engineering at Oregon State University, assisted us in our review. Since 1967 he has been on the faculty of the Department of Civil Engineering and is a member of the Graduate Faculty of Ecology. His teaching and research interests include sanitary engineering; lake, river, and estuarine analysis; pollution ecology; and environmental planning. Dr. Bella is a registered professional engineer in Oregon, has designed and supervised the construction of water and wastewater treatment projects, and is a member of several professional societies and organizations.

GAO sent a draft of this report to the Environmental Protection Agency on February 27, 1980, requesting comments within 30 days. On March 25, 1980, the Agency requested and received a 10-day extension. No response, however was received as of May 8, 1980, when this report was finalized.

CHAPTER 2

NEED FOR MORE CAREFUL REVIEW OF SEWER PROJECT JUSTIFICATIONS

Most of the small communities we reviewed cited failing septic systems and resulting threats to health and the environment as justification for new sewage treatment plants and interceptor lines. The facility plans supporting new construction did not adequately document the problems, however, or justify the new sewage treatment systems. Unfortunately, the projects were causing social and economic hardships on some community groups primarily because of the costs involved. Better State and EPA review of project justifications and social impacts could identify questionable projects early enough to cancel unnecessary projects or develop better alternatives.

INADEQUATE PROJECT JUSTIFICATION

Careful early planning is critical in developing environmentally sound, cost-effective, and socially beneficial new sewage treatment systems. The facilities plans we reviewed did not justify project funding, although they referred to failing septic systems and threats to public health. Unanswered questions remained about needing sewage treatment plants and interceptor lines.

Communities initially prepare facility plans, then develop detailed designs and specifications, and finally construct the treatment systems. Facility planning is a crucial part of this process. During this planning, the municipality--usually through a contract with its consulting engineer--is supposed to identify the water pollution problems, analyze alternative solutions, and select the most cost-effective, environmentally sound alternative within EPA and State guidelines and regulations.

EPA regulations require that these facility plans demonstrate the need for the proposed facility. In addition, by systematically evaluating feasible alternatives, the plans must demonstrate that the system represents the most cost-effective means of meeting established effluent and water quality goals and of recognizing environmental and social considerations.

The project justifications contained in the facility plans we reviewed typically did not demonstrate the need for the sewage treatment system. Several examples of these questionable justifications are cited below.

Charleston, Oregon

The plans for a $2.5 million sewage interceptor system for Charleston, Oregon, included questionable support for the system. The system has been planned and constructed using Federal matching grants. The community planned the new sewage interceptor system to eliminate using failing septic tanks in the area and reduce potential health hazards to the community. According to the June 1975 project justification narrative statement submitted with the district's application for construction grant funding:

> "Population concentrations and soil conditions have combined to make this area [the Barview area of Charleston] extremely unsanitary and health conditions are the worst in Coos County. Hepatitis is prevalent in many children in the area, and an adequate sanitary facility must be made available to protect the health and welfare of area residents."
>
> * * * * *
>
> "The present hazards to public health make the project especially necessary and urgent."

The Coos County health officer cited a question about the health justification for the project in a letter to the president of the Charleston Sanitary District. In the letter the health officer stated that he had been asked for information concerning hepatitis cases and rates in the Barview area during 1976-77 because this area had been considered to have a high incidence of hepatitis. He said that this information later had been used to deny septic systems to property owners. The letter said that only one case of hepatitis had been reported in 1976 and that none had been reported during 1977 or 1978. The health officer closed the letter by stating, "I trust that this information may refute the assumption that the Barview area is at risk regarding hepatitis cases."

The Charleston interceptor line may actually damage the environment. The drainage caused by increased development related to this sewer project will likely damage the South Slough, an area designated in 1974 as the first National Estuarine Research Sanctuary in the Nation. This estuary is one of only a few designated estuarine sanctuaries established to preserve such areas in their natural state for long-term scientific and educational uses. The nonpoint

source 1/ runoff from increased development related to the sewer project could damage the South Slough. This area was not considered in the project environmental impact appraisal because, although it is contiguous to the boundaries of the sanitary district, it is not within the district.

Tisbury, Massachusetts

A new $2.2 million secondary treatment system and collection system for Tisbury, appears to be an example of a proposed sewer project being much too large, if in fact one is needed at all, to correct a small number of failing septic systems. The system is being planned for with a Federal step 1 matching grant. The town has some failing septic systems and a problem with the disposal of septic tank sludge. To correct these problems, consulting engineers recommended a secondary treatment and collection system, but town officials do not believe a large new sewer system has been justified. EPA required an environmental impact statement on the project, but many local officials contend that a waste disposal problem was not documented and data presented on harbor and ground water contamination was inconclusive.

To obtain the needed data to determine whether a new sewage plant is needed, the Board of Health, the Planning Board, and the Martha's Vineyard Commission initiated a survey of septic systems. They surveyed 161 septic systems and found that only 27 had problems; that is, had to be pumped more than once a year. Of the 27, only 6, primarily in the business district, could not be rehabilitated. Officials doubt that a $2.2 million construction project should be undertaken to correct a few problem septic systems. They also feel that the social implications of a new sewage system have not been sufficiently analyzed.

Eastsound, Washington

Information in the facility plan for a new $1.7 million sewage treatment plant and collection system for Eastsound did not adequately support the State's funding of this project. State and county officials did not use objective testing, such as dye and bacteriological tests, to support

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1/A source of pollution that is difficult to pinpoint and measure. Common examples include runoff from agriculture and forest lands, runoff from mining and construction, and storm runoff from urban areas.

the need for the project. This new sewage treatment system is being planned and built with Federal matching grants.

The need for a sewer system in part of the sanitary district to correct failing septic systems appears to be questionable, according to the San Juan County sanitarian with whom we toured the Eastsound Sewer District. The sanitarian said that the soil north of High School Road appeared to be supporting the septic systems. He pointed out only two failing septic systems north of High School Road. He believed one of these could be corrected by installing a new drainfield and one could not be corrected because of the small lot size. The sanitarian showed us some vacant land in low areas north of High School Road that he believed would not support onsite disposal and would need sewers before homes could be constructed.

EPA region X officials said that they did not verify the alleged problems used to justify funding for a new sewer system for Eastsound. They explained that the region is responsible for reviewing the State's overall project funding system, but is not responsible for reviewing the ranking of individual projects. They explained that parts of the State system for ranking new projects are subjective.

Our consultant reviewed the facility plan and stated that the assessment of actual health and ecological problems relevant to the project appears to be quite limited. He told us that the "ecological" study done on the Eastsound system appeared to have little relevance to the actual decisions which had been made. For example, the studies included a seven-page species list but did not relate this to the sewer system or its impact. Several potentially low-cost project alternatives were not considered, in part, because the facility plan was developed long before an adequate inventory of individual disposal systems was conducted. Consequently, a number of alternatives, including combinations of community sewers and individual disposal systems, were not considered.

As a result of interest expressed by Senators Warren G. Magnuson and Henry M. Jackson, residents of Eastsound, and our discussions with project officials, EPA regional officials contracted for another engineering review of the Eastsound sewer project. This review did not include an analysis of all possible low-cost system alternatives or consideration of the long-range environmental or social impacts of the system on the community. Subsequent to this review, EPA approved Federal funding for the new sewage treatment system.

EPA study confirms the lack of project justification

A May 1979 EPA survey of three midwestern facility plans found a similar lack of careful problem identification. For example, all the reviewed plans included insufficient data on soil and stream characteristics and did not identify problem areas. Septic system failure rates and the causes of these failures were not documented. The EPA study team conducting the survey stated that this information is essential to developing cost-effective alternatives.

To correct the problems noted in these plans, the EPA study team recommended, among other things, that the plans include an analysis of the existing problems through sanitary surveys to (1) document the location of failures and the useful life of existing systems and (2) provide realistic and usable soils and water use data for each community. The study team estimated that it would cost less than $5,000 a town to obtain the necessary information and develop realistic project alternatives. The team stated that, "The potential savings to the towns could be 30 percent to 70 percent when compared to the present plans."

THE HIGH COST OF SEWER PROJECTS CAUSES SOCIAL AND ECONOMIC PROBLEMS

While the main objective of waste treatment projects is to control and abate water pollution, the high cost of the sewer projects we reviewed caused social and economic problems in the communities ranging from general conflicts between residents to decreased community livability and severe hardships on low-income residents. In some instances the increased sewer costs had forced people out of their homes and into low-income housing.

Community conflict

Community officials and residents in several small communities told us that the high cost of new sewer systems had caused much conflict and concern. For example, a former Pacific City Sewer Board president told us that considerable community disagreement over the high cost of the proposed sewer system was starting to polarize the community. Residents in Eastsound and Tisbury protested the building of sewage treatment systems primarily because of the costs, and this caused some community disagreement and strife. Many Greenville, Maine, residents are not paying their sewer bills to protest the cost of their new treatment systems.

In a May 1979 memorandum to all EPA Regional Administrators, the Deputy Assistant Administrator for Water Program Operations described the community conflict caused by some small community sewer systems:

> "Extremely high cost projects [1/] have culminated in political upheaval, refusal to connect into or to pay after connecting into central sewers, violence at public meetings, requests for injunctions, and filing suits against several parties, including EPA. In most cases, all of the feasible alternatives were not considered in the cost effectiveness analysis and some systems were overdesigned by using inflated population projections and excessive water usage data."

An excerpt from a paper an Office of Water Program Operations official presented at an EPA national conference on small community sewer systems also describes community conflicts caused by the high costs of new sewer systems.

> "What are their [community] reactions to these high sewer charges? In Community "B" over half the potential users have refused to connect in to the sewer. Many of those who have connected in refuse to pay the charges. Court action is being sought by several who want to keep their septic tanks. At the public meetings in both communities and over the telephone I've heard words like "bloodshed", "march on Washington", "fraud", "deceit", and other harsh terms. In other words--civil disobedience. Both sewer authorities have filed suits--community "A" against both the engineers and the contractors, and community "B" against the contractor. Publicity for a growing number of similar cases is being witnessed on national and local TV, in newspapers and magazines in States across the length and breadth of the country. These are States like Maine, California, Ohio, New York, Wisconsin, etc."

Decreased community livability

Several communities had problems because new sewer systems were causing changes in community lifestyles.

1/In communities under 10,000.

These changes occurred in some cases because of the high sewer charges and in others because of unplanned for growth and changes in the character of the community.

In the Warner Village Fire District, in Warner Village, New Hampshire, the sewer charges ballooned after the new sewage treatment plant was built using Federal matching grants. For example, user charges for one family of three had increased from zero for the old untreated city sewer outlets to $370 a year with the new system, even though the family cut its water use by 50 percent. Residents have also begun using the local laundromat rather than their own washing machines, no longer washing cars, and no longer watering lawns and gardens.

According to town and fire district officials, the high cost of using the sewer system was a major reason many residents had moved out of the district, particularly the elderly. The high sewer charges resulted in the sale of 70 to 80 of about 190 houses in the district. Mexico, Maine, residents have also had real estate problems. Residents have had trouble selling their homes because newcomers settle in surrounding communities, partially as a result of the high sewer charges.

We noted several communities in the Pacific Northwest which were concerned about the potential growth associated with sewer development. Although community growth may, in time, spread high sewer system costs over a larger number of people, it can cause dramatic changes in a community. If this growth is not properly planned and controlled, it can cause problems through excessive community sprawl. This sprawl, accentuated by the sewers, is only the first step toward expensive secondary impacts, including excessive costs for new roads, police and fire protection, and schools.

For example, in Netarts and Oceanside, Oregon, the sewer lines covered large areas of undeveloped land which may lead to rapid growth and considerable sprawl and expensive secondary costs. Now that the system has been completed, the growth in the district has increased considerably.

In addition to community sprawl, growth can change the character of a community. For example, some residents of Eastsound, Washington, were extremely concerned that new sewers would mean a change in the community. They expected that the sewers would allow for much denser development and would stimulate apartment and condominium construction, with a change in the predominant residents from low-income, elderly, year-round residents to high-income, young, summer residents.

In Charleston, Oregon, growth associated with the new sewage interceptor line will probably change the character of the community. Many low-income residents will probably be displaced and the fishing village character of the community will likely be lost. These changes were not considered during the development of the new sewage interceptor line.

Negative impacts on low-income groups

A paper an Office of Water Program Operations official presented at the EPA 1977 National Conference on Less Costly Wastewater Treatment Systems for Small Communities mentioned the financial problems that individual low-income, elderly persons have in paying sewer system charges.

> "What do these examples mean in human terms?"
>
> "We have found that small towns have many older people often living alone. For both communities "A" and "B", approximately one-fourth the population is over 60 years of age mostly living on small social security payments.
>
> "One example is that of the 80-year old aunt of one of the selectmen of the Board of Selectmen of Community "B" who had to pay over one-fourth her total $4,000 life savings for connection costs and is faced with a $200 per year sewage charge from her small social security income.
>
> "These people are proud to be self-sufficient and many would literally starve before they would go on welfare. In low-income community "B", only 3 people are on welfare."

We also noted several hardships being experienced by local residents, mostly low-income, elderly residents, who had difficulty paying for the sewer systems. We did not survey all local residents or develop a "cross section" of the average residents that had been affected by the system. However, we did interview several residents who were having difficulty paying their sewer bills. Some residents had not paid their sewer bills because they said they needed the money for food and living expenses. Many had been ordered into court because of these unpaid bills. One resident, concerned about losing her home, had delayed recommended medical treatment so that the sewer bill could be paid.

Several people had sold their homes and moved into low-income housing because they could not afford to pay both their regular expenses and the increased sewer charges. One individual living in an area where low-cost public housing was not available complained that:

> "The ability to pay for a sewer now establishes the character of our community. It determines who will live here and who will have to leave."

Several sewer systems that we reviewed had resulted in high user costs. According to the criteria that EPA uses to evaluate the financial impact proposed sewage treatment systems have on communities, a project is high cost if the annual costs exceed 2 percent of income when a family's income is between $6,000 and $10,000 or 2.5 percent when the income is over $10,000. Sewer user charges and debt retirement costs to the homeowners for over half the projects we reviewed exceeded EPA's criteria.

The costs to the communities will probably have the greatest impact on low-income groups, such as the elderly. In discussions at one community Senior Services Center, the center director told us that the sewer project would adversely affect 18 to 20 senior citizen families; that represents 10 to 11 percent of the district's anticipated 188 sewer connections. She said that some older people probably will sell their homes or property because they do not want to leave it to heirs with a lien on it.

NEED FOR IMPROVED STATE AND EPA REVIEWS OF PROJECT JUSTIFICATIONS AND ENVIRONMENTAL IMPACTS

Facilities planning is a critical part of the construction process because the planning decisions direct the spending of billions of dollars of EPA grant funds. However, the States and EPA are not carefully reviewing the plans for small communities. EPA and State officials cited a number of reasons for only providing limited technical reviews, including a shortage of personnel to review all the plans and their belief that the grantee municipalities are responsible for determining the type of sewer system improvements needed and justifying the proposed projects. This problem is accentuated by the pressure to rapidly spend construction moneys. An adequate State and EPA review, however, could identify problems early enough to correct them and prevent hardships now being placed on many community residents.

Inadequate State and EPA review of facility plans

State and EPA officials agreed that problems with new projects should be noted during facility planning so that the project can be dropped or changed prior to a large expenditure of funds. Once treatment system plans have been completed and construction has started, it is extremely difficult to either make changes in or stop the project. The officials explained that they only provide a limited technical review of the facility plans for each new construction grant, however, especially those for small communities. State environmental officials in Oregon and Washington stated that they generally accepted the justifications cited on sewer funding requests because they believe it is the grantee's responsibility to consider alternatives and adequately justify proposed projects.

Although EPA regional administrators can require grantees to correct deficiencies in individual facility plans, EPA region X officials stated that they do not review the justification for individual projects; they only review the State's overall priority funding system. In this regard, EPA's September 1978 construction grant regulations state that:

> "* * * the management role of the agency [in reviewing the State's priority lists] has already been reduced to the minimum necessary to insure equitable implementation of the Clean Water Act and related regulations."

EPA has previously recognized the need to more carefully review small community facility plans. In December 1976, the EPA Administrator sent a memorandum to all regional administrators regarding the high costs of treatment systems for small communities. He cited the following deficiencies which had been noted in an EPA study of small community systems:

> "The facility plans, with some recent exceptions, generally did not analyze the alternative of non-sewered systems for small communities even where potentially cost-effective."

The Administrator directed the regions to ensure that facility plans contained a complete and careful cost-effective analysis of alternatives for new treatment systems.

Funding pressures

One reason for the limited State and EPA review of project plans may be the pressure to rapidly spend Federal construction funds. Congressional hearings have noted the strong pressure to quickly fund EPA sewer projects and to spend the large backlog of Federal funds.

A Washington State Department of Ecology official stated that early in the construction grant program the State was forced to search for new projects to fund because the money had to be spent or it would revert to the U.S. Treasury. He explained that the State is now requiring more project justification evidence because the demand now exceeds the available money supply.

During our review we noted considerable pressure to keep the money flowing. Our consultant interviewed several State and EPA regional environmental officials and determined that this somewhat intangible pressure was a partial cause of many of the small community problems associated with new sewer systems. (His summary on this problem is included in app. III.)

CONCLUSIONS

Careful initial facilities planning is critical in developing environmentally sound, cost-effective, and socially beneficial new sewage treatment systems. It is critical because the planning decisions control the spending of billions of dollars of EPA grant funds.

Most of the facility plans we reviewed did not adequately justify Federal funding of new sewage treatment systems, nor had EPA and State officials adequately reviewed the plans. EPA regional officials only review the State funding systems, and the States generally rely on the grantee's project justifications. This problem has been a continuing one and has been accentuated by an emphasis on rapidly spending large amounts of construction funds.

Considerable money might be saved and adverse social impacts lessened if EPA and States were to more carefully review facility plans and require better project justifications, including an analysis of the possible social and economic impacts of the new treatment systems. The costs for such a review may be minimal compared to the potential benefits. In a May 1979 study of facility plans for three Mid-west communities, an EPA study team estimated

that, for less than $5,000 each, a study could save from 30 to 70 percent of the project cost for some towns.

RECOMMENDATIONS

We recommend that the Administrator, EPA, require the EPA regional administrators to see that the States carefully review the facility plans for all pending and future grants for small community treatment systems, to make sure that the social and economic impacts of new treatment systems are clearly identified and that the size and type of the new systems fully justified.

CHAPTER 3

MANY SMALL COMMUNITIES NEED ADDITIONAL TECHNICAL ASSISTANCE WITH NEW SEWER SYSTEMS

The estimated costs for new sewer systems in the communities we visited ranged from $1.7 to $11 million. Considerable engineering know-how is needed to plan, design, and build even the smallest of these systems, because many technical decisions and judgments must be made in all phases of planning and construction. In the small communities we visited, the sewer district officials were primarily local residents having little or no sewer system expertise. Many of these officials were highly frustrated by the lack of State and EPA help with their construction efforts. Unfortunately, State and EPA officials typically do not have the time to help small communities.

Although small communities rely on consulting engineers to design and build appropriate treatment systems, they often end up with costly, overbuilt systems. A possible solution to the problem is the provision of additional technical assistance by either independent consultants or EPA field engineers.

LACK OF ENGINEERING EXPERTISE ON LOCAL SEWER BOARDS

In several small communities, local officials responsible for reviewing, evaluating, and approving the new sewer system proposals submitted by their consulting engineers did not have technical backgrounds and had a high personnel turnover rate before sewer projects were completed. For example, several members of the Pacific City, Oregon, sewer board, including the head of the sewer board, resigned or were replaced during sewer system development. In addition, the sewer district manager complained about the lack of State and EPA technical assistance. He complained that EPA and the State had insisted a sewer project be undertaken but offered no guidance or assistance on how to do it. This sense of frustration was heightened when the agencies did not provide requested assistance when problems arose during the project. For example, neither regional EPA nor Oregon Department of Environmental Quality officials attended an arbitration hearing concerning an interpretation of the consulting engineer's contract, even though they had been repeatedly asked to. The hearing resulted in a $100,367 arbitration award against the community.

The chairman of the sewer board administering the $5.7 million Netarts-Oceanside, Oregon, sewage treatment and ocean outfall project commented that neither he nor any other members of the board have the technical background for administering the project. Unfortunately, the district officials have had many technical problems with the sewage treatment system, including heavy ground water infiltration, odors, and excessive sludge. The sanitary district chairman complained that the sewer board members were just local businessmen trying to help with the new sewer system, but they did not get needed technical assistance from EPA and the State.

The Netarts-Oceanside treatment plant has been plagued by excessive ground water infiltration. The sanitary district chairman told us that during the winter some 25 to 50 percent of the daily flow was apparently due to infiltration. At other times, a major odor problem occurred because the low wastewater flows allowed the sewage to putrefy before it reached the plant. Because concrete pipe had been used, these conditions could increase the rate of sewer pipe corrosion.

Because the plant was not operating properly, about 5,000 to 6,000 pounds of sludge had accumulated within 3 weeks of plant opening. Since district officials thought it would be at least a year before that amount of sludge accumulated, they did not buy a sludge truck and have been forced to haul the sludge in the district firetruck.

In Greenville, Maine, sewer officials were an oil dealer, a grocery store proprietor, a woodsman, and a farmer/contractor. In Mexico, Maine, the sewer commissioners were a heating contractor, a foreman in a papermill, and an official in the State taxation division. Hence, they relied almost exclusively on their consulting engineers to determine the type of treatment needed, areas to be sewered, size and location of plant, etc. The problems these towns have had with their treatment systems are cited in appendix II.

EPA is aware of the lack of technical know-how at the community level. In our report to the Congress on developing new technology, 1/ we reported that:

1/"Reuse of Municipal Wastewater and Development of New Technology--Emphasis and Direction Needed," (CED-78-177, Nov. 13, 1978).

"An EPA official, in a draft memorandum to the EPA Administrator, pointed out that decision-makers for most communities are laymen who rely on consultants or State agencies for technical assistance. They generally lack sufficient knowledge to know if consultants' comparisons of alternatives are adequate, and as a result they can and have been led to more costly in-plant treatment alternatives."

A lack of EPA and State technical assistance

EPA and State officials generally do not have time to provide needed technical assistance to individual communities. The large number of projects processed limit the amount of technical assistance EPA and State officials can provide to community officials. Some additional State assistance may be provided to small communities under increased EPA delegation of construction grant program authority to the States. However, in a current review of State environmental programs we noted State staffing problems which will probably limit this additional help.

Regional water program officials told us that the large number of assigned projects generally does not allow for close working relationships between EPA project engineers and community officials. According to an EPA region I official, because of their heavy workload project engineers rarely provide technical assistance to local officials and residents.

An official in EPA's region X Water Programs Division also stated that the ratio of projects for each engineer assigned projects in the region is much too high to permit individual help. The following chart shows the average number of projects assigned per EPA engineer by State for both these regions:

EPA region	State	Active projects	Number of EPA engineers assigned projects	Average projects per engineer
I	Connecticut/ Rhode Island	171	8	21.4
	Maine, New Hampshire, and Vermont	260	9	28.9
	Massachusetts	224	9	24.9
X	Alaska	43	1	43.0
	Idaho	88	3	29.3
	Oregon	156	4	39.0
	Washington	287	6	47.8
	Total	1,229	40	30.7

Even at the State level, technical assistance to small communities is generally limited because of insufficient resources. For example, the supervisory sanitary engineer in the Massachusetts Division of Water Pollution Control stated that the State provided some technical assistance to small communities through the communities' consulting engineers, but staff shortages have limited the amount of time they can devote to any one project.

According to the Chief of the Maine Bureau of Water Pollution Control, State engineers have visited communities infrequently because of their heavy workload. Normally, they work only with the communities' consulting engineers because of the difficulties they have had working with local officials and residents on technical aspects of projects. Oregon and Washington Water Quality officials also stated that they have only been able to provide limited technical assistance to small communities.

The 1977 amendments to the Federal Water Pollution Control Act were intended to decrease EPA's role and increase State involvement in the construction grant program. The act gives the States special funding and the right to accept authority and responsibility for managing the program. Using this new authority, Maine and Washington plan

to increase their staffs and plan to provide more technical assistance to small communities. In contrast, Massachusetts and Oregon will not be providing additional help to these communities. Unfortunately, most States are already having staffing problems with their environmental programs and may have difficulty providing this additional help. Our current review of State difficulties in administering Federal environmental programs concluded that:

> "Because of comparatively low State salaries, States cannot successfully compete in the market place for professional staff. As a result the continuity and effectiveness of State programs is hurt by high staff turnover, vacancies unfilled for lengthy periods and lost time while training new staff. Staffing problems are further aggravated by EPA administrative requirements which divert limited staff away from program implementation and by the unknowns of Federal funding support. States not only do not know what their Federal grants will be when preparing their budgets, but the grants are often received late. As a result both planning and program implementation are impeded."

OVERBUILT AND OVERDESIGNED SMALL COMMUNITY TREATMENT SYSTEMS

Officials in the communities we visited agreed that they have the basic responsibility for designing and building new systems. They explained that, although they rely on consulting engineers, they often end up with overbuilt or overdesigned systems because they do not know enough to question or disapprove the consulting engineers' recommendations. Several current and former sewer commissioners told us about their overbuilt wastewater treatment systems. For example, the Warner Village Fire District in Warner Village, New Hampshire, has a 170,000-gallons-per-day (gpd) secondary treatment plant which operates at about one-fourth its design capacity. According to local officials, the plant is much too large for the fire district population.

Greenville, Maine, overbuilt two sewage treatment plants. Federal matching grants were used to construct both facilities. The town first built a 250,000-gpd advanced wastewater treatment system to replace 244 failing subsurface systems and pipes discharging sewage directly to the lake. The average daily flow of this system was less than 25 percent of its design capacity. In addition to being too large, this highly sophisticated plant was plagued

by serious design and operational problems and had to be closed. The town replaced the plant with a 170,000-gpd secondary treatment plant that is operating at just in excess of one one-third its design capacity. Again, the system is overbuilt.

Other planned sewage treatment systems appear overdesigned. For example, Tisbury, Massachusetts, officials are skeptical about a recommended $2.2 million secondary treatment plant and collection system for their town. This appears to be an example of an overdesigned sewer project. According to a local survey of 161 septic systems initiated by the Board of Health, the Planning Board, and the Martha's Vineyard Commission, only 27 had problems. Of the 27, only 6 cannot be rehabilitated. The sewage problems with these six systems could be corrected through low-cost alternative solutions.

The tendency to overbuild and overdesign sewage treatment systems has been noted in our report on community-managed septic systems. 1/ We reported that millions of dollars may have been needlessly spent because communities have converted septic systems to sewers and central treatment systems without adequately considering potentially more cost-effective alternatives. Alternatives such as repairing or replacing systems or a combination of septic systems and limited sewering are rarely recommended by consulting engineers or selected by communities.

PROVIDING TECHNICAL HELP TO SMALL COMMUNITIES

EPA officials have recognized that small communities are having financial and social problems with high-cost, overbuilt sewer systems and have tried to rectify this situation. The help has been limited, however, and we believe more needs to be done. We explored various ways of helping small communities with sewer projects. Community officials who had experienced problems with sewer systems and our consultant also provided some insights.

EPA small community efforts

EPA has held many national and regional meetings focusing on sewer systems and potential low-cost ways of correcting

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1/"Community-Managed Septic Systems--A Viable Alternative to Sewage Treatment Plants," (CED-78-168, Nov. 3, 1978).

the sewage problems in small communities. EPA held a 1977 National Conference on Less Costly Wastewater Treatment Systems for Small Communities. In addition, EPA has held several regional training sessions on lower cost ways of solving the sewer system problems of small communities. Many State and local officials and private consulting engineers have attended these meetings.

EPA has prepared several pamphlets on low-cost sewer systems for smaller communities and is doing continuing research to identify new ways of helping these communities with sewer systems.

Although EPA has made these efforts, we believe that more could be done to help small communities. Many of the communities we visited had questionable system justifications, overbuilt treatment systems, and community conflicts.

Independent technical specialists

Local officials in five communities told us that many of the financial and social problems small communities experience with sewer construction projects might be eliminated or minimized if small communities were permitted to use grant funds to hire an impartial technical specialist to evaluate major recommendations or proposals that the communities' consulting engineers have made. A Massachusetts official stated that local officials in six communities informed him of the need for a specialist to evaluate their consulting engineer's work because the local officials lacked adequate technical expertise and needed an independent technical review of their projects. The chief of the Maine Bureau of Water Pollution Control stated that the proposal had merit.

We noted that two communities used independent consultants to provide a second opinion--Cohasset, Massachusetts, and Pacific City, Oregon.

Federal matching grant funds were used to plan an overall treatment system for Cohasset, and the community's consulting engineer proposed an $11 million sewer project. Because community residents disliked aspects of the location, size, and cost of the proposed new system, they hired a private engineering consulting firm to review the proposal. This firm reported that (1) the facility plan did not substantiate the need for the recommended sewage treatment plant, (2) the plan did not adequately address low-cost or non-sewer alternatives, and (3) the siting decision was quite subjective. Based on information the consultant provided, the community voted down funding for this questionable

sewage treatment system, potentially saving millions of dollars through the use of more appropriate, less costly alternatives.

In Pacific City a $5.1 million sewage treatment plant and collector system is being built using Federal matching grant funds. Considerable community opposition to the project has developed because of the type and cost of the system. Consequently, sewer board officials hired a consulting engineering firm to independently review the project plans and identify possible lower cost alternatives. The firm identified a lower cost alternative for part of the system that will save the community about $940,000. The estimated savings in current construction costs is about $153,000 and about $787,000 will be saved in the operations, maintenance, and replacement costs over a 20-year period.

In addition to reviewing the consulting engineers' work, the independent technical specialist could provide continuity between the communities and EPA and State officials and the consulting engineers. According to water pollution control officials in Maine, Massachusetts, and New Hampshire, there are frequent turnovers of appointed or elected local officials, such as sewer commissioners and selectmen, etc., during the lengthy administrative processes associated with the construction grant program. The independent specialist could provide this needed project continuity.

For larger projects, EPA is already using independent technical specialists to review detailed sewer project plans and specifications which are prepared after the facility plans are approved. The Army Corps of Engineers construction specialists review plans and specifications for EPA before projects are allowed to be constructed. EPA also uses an independent technical review concept in the value engineering process. The value engineering process uses trained, interdisciplinary teams of architects and engineers to identify high-cost parts of engineering projects and modify or eliminate them. In a prior report we recommended using independent engineering consultants to do value engineering studies of proposed sewer projects, 1/ and this process is done on projects over $10 million.

EPA field engineers

Another possible alternative to using private engineering consultants would be to use EPA field engineers who would

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1/"Potential of Value Analysis for Reducing Waste Treatment Plant Costs." (RED-75-367, May 8, 1975.

work with a group of small communities in a particular geographic area. These engineers would review the facility plans and specifications for new sewer systems at the community level. They would be better able to match the planned projects to the needs and resources of small communities and could recommend when to consider more appropriate alternative approaches. By experiencing successes and failures of projects in the field over the years, they would obtain a practical knowledge concerning the short- and longrange project impacts (including some which are secondary and cumulative) on the communities and ways to improve the projects' environmental, social, and economic effectiveness.

After reading our case studies (see app. II) and based on his engineering expertise, our consultant stated that:

> "I still believe that more project engineers are needed in the field. They should be responsible for and identify with a few projects and, where possible, they should stay with a project from start to end. Currently, there appears to be too much 'dispersal' (fragmentation) of responsibility and no technical person identifies with single projects. Under the present 'dispersal' of responsibility, it's too easy for everyone to assume that a problem is someone else's responsibility."

CONCLUSIONS

Considerable engineering know-how is needed to plan, design, and build even the smallest of the sewage treatment projects we reviewed. In spite of this need for technical expertise, our review of sewage treatment projects in nine communities indicates that small community officials have little engineering knowledge and as a result have trouble managing the development of sewer systems. They rely on consulting engineers to select treatment alternatives and to design and construct the new treatment systems, but they often end up with overdesigned and overbuilt systems. Two regions and six States indicated that because of the number of projects in process and the time required on each, EPA and the States have not provided this needed technical assistance to the small communities.

EPA has held national meetings and prepared pamphlets on low-cost systems to provide assistance to small communities, but more needs to be done. Independent technical specialists and/or EPA field engineers could provide this help.

RECOMMENDATIONS

We recommend that the Administrator, EPA, develop methods of providing additional technical assistance to help small communities with new sewage treatment systems, especially during the planning process. Two possible approaches are using EPA field engineers and approving grants for independent technical specialists.

CHAPTER 4

EPA SHOULD EXPERIMENT WITH COMPREHENSIVE POLLUTION CONTROL APPROACHES FOR SMALL COMMUNITIES

EPA's approach to the environmental problems of small communities is piecemeal. EPA is taking some actions to help small communities with sewage problems, but it is not anticipating the socioeconomic problems that will likely occur due to multiple pollution control requirements.

New Federal drinking water, air, and solid waste disposal requirements will greatly increase the impacts of Federal pollution control requirements on small communities. EPA could help small communities avoid negative impacts by experimenting with comprehensive strategies which are compatible with the environmental needs and social and economic resources of these communities.

EPA's EFFORTS SHOULD BE COMPREHENSIVE

EPA was established to, among other things, coordinate Federal environmental efforts. It is responsible for coordinating the attack on the environmental problems of air and water pollution, solid waste management, pesticides, radiation, and noise. In his reorganization message establishing the Agency, the President expressed a need to bring together piecemeal environmental efforts and treat the environment as a whole:

> "The Government's environmentally-related activities have grown up piecemeal over the years. The time has come to organize them rationally and systematically * * *."
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> * * * * *
>
> "Despite its complexity, for pollution control purposes the environment must be perceived as a single, integrated system * * *."

EPA has done several things to emphasize low-cost ways of correcting small communities' sewer problems, but it has not helped small communities avoid the potential negative impacts of multiple pollution control requirements. EPA's Office of Air, Land, and Water Use, under its Deputy Assistant Administrator for Air, Land, and Water Use, is responsible for developing comprehensive pollution control methods and programs but has not studied the problems of small communities.

EPA officials told us that, although this office had examined comprehensive pollution control impacts on various industries, it had not examined the effects of multimedia pollution control approaches on the problems of small communities. They stated that no group in EPA was researching the socioeconomic impacts of these requirements on small communities or experimenting with alternative, low-cost ways of complying with them. An EPA official stated that since small communities are starting to be affected by multiple requirements, EPA should start researching this problem.

NEW FEDERAL DRINKING WATER REQUIREMENTS AFFECT SMALL COMMUNITIES

Many small communities will have to upgrade their drinking water systems to comply with Federal requirements. In region X, 371 small communities will have to upgrade their drinking water systems. Of these small communities, 29 are located in Alaska, 113 in Idaho, 83 in Oregon, and 146 in Washington.

According to Maine, Massachusetts, and New Hampshire officials responsible for protecting drinking water supplies, several small communities in region I need to upgrade or otherwise improve the quality of their drinking water to comply with Federal drinking water regulations. In Maine, 43 communities have, or will have, to cover open reservoirs or construct rechlorination facilities. In addition, because of high levels of organics in water supplies, 20 other small communities may have to construct or upgrade drinking water treatment plants within the next 5 to 10 years.

Several small Massachusetts communities will have to upgrade the quality of their drinking water to comply with drinking water regulations. According to a State official responsible for protecting drinking water supplies, 21 such communities that obtain drinking water from surface supplies need to construct a water purifying plant. An additional 13 that rely on ground water supplies have to construct similar plants.

In New Hampshire, the Water Supply and Pollution Control Commission directed preliminary engineering studies of all surface drinking water supplies that communities merely chlorinate before use. The purpose of the studies is to determine the magnitude, type, and cost of additional treatment necessary to insure safety and protect public health. A State official responsible for protecting drinking water supplies estimated most of the 43 communities studied will need to construct a treatment plant or convert to a ground water

source. In addition, he stated that 12 of the communities may have to cover open reservoirs or construct new storage tanks, because bacteriological counts exceed EPA requirements.

The cost to small communities to comply with drinking water regulations will vary depending on the nature and magnitude of their problems. Officials in Maine, Massachusetts, and New Hampshire believe, however, that many communities will be severely affected economically, particularly those that need to construct water purifying plants.

NEW FEDERAL AIR AND SOLID WASTE DISPOSAL REQUIREMENTS AFFECT SMALL COMMUNITIES

New Federal air and solid waste regulations will require costly changes in the ways small communities dispose of solid wastes. Because of the new solid waste disposal requirements, the small communities in Alaska, Idaho, Oregon, and Washington will have to make several changes in solid waste disposal practices, including relocating disposal sites which are polluting water; developing alternatives to open burning; purchasing mechanical equipment to cover the sites with dirt; upgrading many dumps to sanitary landfills; and consolidating local sites into regional sites.

Many small communities in Maine, Massachusetts, and New Hampshire have been affected by Federal air and solid waste disposal regulations or will be. A total of 121 Maine and 65 Massachusetts small communities were violating solid waste and/or air pollution regulations which affect their solid waste disposal practices. In New Hampshire, 102 small communities operating landfills, open burning and brush dumps, transfer stations, or resource recovery stations were not complying with State regulations.

In disposing of solid wastes, the most significant impact on small communities is the cost of converting open dumps to sanitary landfills. Stringent operating regulations create the need for additional resources, including increased transportation costs. Further, when implemented, EPA-proposed monitoring requirements for landfill leachate 1/ could require each small community to purchase special equipment costing about $20,000. Proposed Federal regulations will require landfills to adequately protect surface and groundwater supplies. Because sanitary landfill sites must

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1/Liquid that has percolated through solid wastes and has extracted dissolved or suspended materials from it.

be selected with care, small communities may find it difficult to locate land that meets this criterion. As a result, some communities have had to select solid waste alternatives that result in higher costs than establishing and operating a sanitary landfill. The community assumes all costs of establishing and operating a landfill and other methods of disposing of solid wastes.

MULTIPLE IMPACTS OF FEDERAL ENVIRONMENTAL REGULATIONS ON SMALL COMMUNITIES

A single project for wastewater treatment, drinking water treatment, or solid waste disposal can have a significant impact on a small community. Rather than being affected by only one set of regulations, however, hundreds of small communities in region I and region X will be affected by two and even three sets of pollution control regulations. These combined requirements will have a severe economic impact on many communities.

Number of Communities Affected by Two or More Sets of Environmental Regulations

	Two sets	Three sets
Region I:		
Maine	48	16
Massachusetts	23	8
New Hampshire	33	6
Region X:		
Alaska	27	7
Idaho	104	61
Oregon	135	45
Washington	146	54
Total	516	197

COMPREHENSIVE ENVIRONMENTAL RESEARCH IS NEEDED

We noted EPA's efforts to decrease the costs of sewage treatment for small communities on page 23. These efforts are worthwhile but need to be expanded to consider the total environment. Many communities are being affected by multiple

pollution control requirements, and many anticipate problems in complying with these combined requirements. For example, the Florence, Oregon, city manager stated that the city will have difficulty paying for both needed drinking water improvements and a sewer system expansion. Okanogan, Washington, officials said the city is upgrading its sewage treatment plant and making improvements in its solid waste disposal system. With the increased costs associated with these improvements, they are unable to hire a consultant to determine the specific improvements the community must make to meet the Federal drinking water requirements. Washburn, Maine, has paid for costly drinking water improvements and expects increased costs for improving its solid waste disposal. Town officials have have told EPA regional officials that they will not also pay for a proposed costly sewer system.

We believe EPA should experiment with a variety of comprehensive pollution control strategies to identify approaches which are compatible with the needs and resources of small communities. Based on discussions with Federal, State, and local pollution control officials, we have identified several alternative approaches for small communities which should be experimented with:

--Federal block grants that could be used for the most urgent environmental problems.

--A special technical assistance coordinator, who would help a community determine the most cost-effective way of meeting various environmental requirements.

--Phased implementation of Federal requirements when concurrent implementation would be too costly.

--Suspension or waiver of individual requirements when the costs are high and the potential environmental benefits are minimal or the project may be environmentally harmful.

We recognize that changes will need to be made in several pollution control laws to specifically permit this experimentation.

CONCLUSIONS

Federal pollution control requirements for drinking water, air, and solid waste disposal will greatly increase the impact of Federal pollution control programs on small communities. EPA has taken steps to help small communities identify low-cost alternative ways of handling sewage treatment, but it has

not made a similar effort on the combined impacts of multiple pollution control requirements. EPA should experiment with comprehensive pollution control approaches for small communities. In this effort EPA will have to work with the Congress to obtain needed legislative changes to allow for this experimentation.

RECOMMENDATIONS

We recommend that the Administrator, EPA, develop proposals to experiment with comprehensive pollution control approaches specifically tailored to address the environmental and social needs of small communities. EPA should present these proposals to the Congress with recommendations for implementing them, including any needed legislative changes to allow for effective, comprehensive experimentation.

SMALL COMMUNITY STATISTICAL SUMMARY

Location	Population	Estimated total sewer project cost	Average cost per connection	Median family income	Annual sewer costs per family		Annual sewer costs as a percent of median family income	EPA high-cost criteria percentage (note a)
					Before new system	After new system		
Maine:								
Greenville	1,900	$ 5,100,000	$8,388	$ 8,000	$125	$188	c/2.4	2.0
Mexico	3,940	b/1,962,000	2,308	7,500	16-25	136	1.8	2.0
Massachusetts:								
Cohasset	7,800	11,000,000	5,789	14,958	125	275	1.8	2.5
Tisbury	2,700	2,197,000	5,938	6,761	70	170-220	c/2.5-3.3	2.0
New Hampshire:								
Warner Village Fire District	750	1,660,000	8,877	12,000	(d)	367	c/3.1	2.5
Oregon:								
Charleston	3,296	2,472,000	8,989	9,235	70	109	1.2	2.0
Netarts-Oceanside	1,560	5,680,000	8,476	8,014	70	147	1.8	2.0
Pacific City	1,500	5,129,000	8,549	8,014	70	198	c/2.5	2.0
Washington:								
Eastsound	385	1,663,000	8,847	8,420	30	231	c/2.7	2.0

a/Projects are identified as high cost when the annual sewer costs as a percent of median family income exceed the EPA high-cost criteria percentages.

b/This is Mexico's share of the project cost. The total estimated cost of the Rumford/Mexico Waste Water Treatment System is $7,660,000.

c/These projects are considered high-cost projects.

d/Prior to the new system there was no charge for the system. Warner Village residents used a series of drainage outlets and discharged raw sewage into the Warner River.

APPENDIX I

SMALL COMMUNITY CASE STUDIES

GREENVILLE, MAINE

Greenville is located in a hilly to mountainous region of central Maine about 75 miles northwest of Bangor, at the southern tip of Moosehead Lake. The estimated population of about 1,900 people, has been stable, with growth being 1 percent over the last 6 years. About 25 percent of the residents are over 60 years of age.

Greenville is primarily a residential community. The largest employer in the area (not in Greenville) employs about 65 people at an average wage of about $3.25 per hour. Approximately 66 percent of the population have incomes of $6,000 or less.

DESCRIPTION OF THE SEWER SYSTEM

Initially, a 250,000-gallon-per-day advanced waste treatment 1/ facility was constructed and put into operation on September 1, 1975, along with a sewer collection system to carry wastes from the homes to the treatment facility. The total cost of the project was $4 million. The facility, however, was so beseiged with design and operational problems that it was eventually closed. A replacement plant, a 170,000-gpd land application system, cost about $5.1 million. The plant began operation on December 19, 1978. Federal matching grants were used to construct both facilities.

Asserted reasons for new sewer system construction

The treatment plants were built to correct failing septic systems and resulting discharges into Moosehead Lake.

OUR ANALYSIS OF PROJECT IMPACTS

The treatment systems built for Greenville have been too large, complex, and costly for the community and have caused

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1/Sewage treatment processes which remove additional pollutants from wastewater beyond those eliminated by primary and secondary treatment. The most common processes include (1) nitrification (removal of nitrogenous biochemical oxygen demand), (2) denitrification (removal of nitrogen), and (3) phosphorus removal.

considerable community dissension and personal hardship and may only provide limited environmental benefits.

The first project was too large and complex for the commmunity. A 250,000-gpd advanced waste treatment facility was built to replace 244 failing subsurface systems and pipes discharging sewage directly into the lake. This highly sophisticated advanced plant was soon plagued by a number of serious design and operating problems and had to be closed. Even when it did operate, the average daily flow was between 50,000 and 60,000 gpd, less than one-fourth the design capacity.

The first plant was replaced by a new 170,000-gpd secondary treatment facility, which discharges onto the land rather than into the lake. The new facility cost $5.1 million. Because many residents have not connected to the system, it operates at only about one-third its design capacity. Even with this new system, the costs are so high that many people will not connect, many will not pay, and many have been summoned to court; consequently, the sanitary district is insolvent. Operation and maintenance costs are nearly four times more ($22,090 vs. $82,600) than originally estimated. As a result, many residents are unable or unwilling to pay user costs. As of December 31, 1978, cumulative uncollected charges totaled $66,000. According to a sewer official, 35 percent of the residents have not paid their bills.

In an attempt to collect unpaid user charges, the Moosehead Sanitary District trustees are taking residents with delinquent accounts to court. As of February 1, 1978, 136 residents have been summoned to small-claims court. Of these, 37 paid before appearing in court. The remaining were all judged legally responsible for this charge and were put on a payment schedule. Several residents previously appearing in court still have not paid and will be summoned again,

The Moosehead Sanitary District has also attempted to collect unpaid charges by placing liens on 8 to 10 properties for unpaid betterment charges (one-time charges assessed at $1 per foot of front footage). It has placed no liens on homes for unpaid user charges; however, it has placed liens on five or six major business properties for unpaid user charges. The large amount of uncollected user charges has resulted in the Moosehead Sanitary District being insolvent. In this regard, it has not paid the interest on a $527,000 loan from the Farmers Home Administration. Sanitary district

officials want relief from the loan, because they feel Farmers Home should be able to perceive the district's financial strain and excuse the debt. According to a Farmers Home official, however, such action requires legislative approval.

Local officials are angered and frustrated with environmental regulations that have disrupted the quality of life and created severe financial hardships on many residents. During talks with several residents now or formerly in arrears in paying user charges, many expressed frustrations about their inability to make payments. The following summarizes some of their comments:

--One resident now living in low-income housing said that she "saved for months and months to pay the $300 sewer bill and when I paid, I cried." She added, "The sewer project is the most hated thing in Greenville." She sold her home because she could not pay for her regular expenses plus the increased sewer expenses.

--A mother of three whose home is not yet connected to sewers and has not paid any user charges said, "We've been to court twice and we're still not going to pay. My husband makes just enough money to pay for necessities. It would be just too hard a strain on us to pay."

--An elderly resident living alone on a monthly $213 social security check said, "I just can't afford to pay to the sewers. I'm supposed to be in court next week. I've had to let some bills ride for a couple of months to buy food."

--A husband and wife had not made any sewer payments for 1 year. The wife said, "We just have enough money for necessities and could not pay for the sewer system. Sewers are the worst thing that ever happened to Greenville. I've heard people say they would go to jail before paying for sewers." Because of the sewer expenses they sold their home and moved into low-income housing.

--An elderly resident who owes $279 on her user charge said, "I have no money to pay sewers. I have just enough to live on."

Other pollution control requirements

In addition to mandated sewage treatment, Greenville may be required to close its open burning dump because of failure to comply with air and solid waste pollution control regulations. Open burning is prohibited by Maine's air pollution control regulations, which implement the Clean Air Act. In addition, the town is violating State solid waste regulations by operating the dump less then 300 feet from a body of water. According to local officials, regulations requiring Greenville to close its open burning dump and establish a sanitary landfill do not consider that region's harsh weather or lack of suitable land. Even if a site is located, the capital and annual costs associated with a landfill will be prohibitive.

In 1975 the town manager prepared cost estimates for several alternative methods of disposing of solid waste. For example, the capital costs for a landfill were $70,000, with annual operating costs of $25,000. Currently, the annual operating cost for the dump is $2,500.

Greenville residents whose homes are connected to the municipal drinking water system are also affected by environmental laws and/or regulations. According to an official of the company that owns and operates the water supply, the open reservoir has to be chlorinated several times a year to comply with State drinking water regulations. The current minimum drinking water annual charge is higher than the average for other Maine communities.

MEXICO, MAINE

Mexico, is a small, rural residential community located about 60 miles northwest of the State capital. In recent years the town has experienced a significant population decline. Between 1960 and 1977 the population dropped from 5,043 to 3,940 (22 percent). The 1974 per capita income in Mexico was $3,309, compared to $3,694 for the State and $4,572 nationwide.

Few commercial or industrial businesses are located in Mexico and prospects for establishing a reliable industrial base are poor. With little or no industrial or commercial base, the town relies almost exclusively on property owners for its tax base. Mexico's real estate taxes rank 3rd highest in the eight communities of Oxford County and 11th statewide.

DESCRIPTION OF THE SEWER SYSTEM

In 1976 the town completed construction of interceptor and collection systems and a regional 2.6 million-gpd secondary waste water treatment plant to be shared with Rumford, a neighboring community. The total estimated cost of the sewage treatment system was about $7.7 million. Mexico's share of project costs was about $1,962,000. The initial hookup charges were $250 per connection. A sewage interceptor line was extended in 1979. This new line cost $433,000 and serves about 40 homes. Federal matching grants were used to fund both the initial treatment system and the interceptor extension.

Asserted reasons for new sewer system construction

As a result of the State's notifying Mexico in 1974 that dumping untreated sewage into the Androscoggin River violated Federal and State pollution control laws and regulations, the town built sewage interceptors and a regional sewage treatment plant. In addition, as a result of malfunctioning septic systems and contaminated wells, the town extended an interceptor line in 1978.

OUR ANALYSIS OF PROJECT IMPACTS

The sewer system is underutilized and residents are having difficulty paying the user fees.

Underutilization of the secondary treatment plant may have a direct effect on the high user charges in the area. Although the plant is designed to process 2.6 million gallons of effluent a day, it operates at only about 50 percent of its design capacity.

The most significant negative impact caused by the sewer project is high annual user charges. These charges increased from $16 in 1976 to $136 in 1978. The charges were first set far too low to recover costs and the sewer commissioners were reluctant to increase them. According to a commission member, the marked increase in user charges was necessary because the 1976 rate was insufficient to cover operation and maintenance costs. In this regard, an EPA 1976 project document showed Mexico Sewer District's share of projected 1978 operation and maintenance costs to be $19,000. A commission member stated, however, that actual costs will be about $46,000.

Many residents are having difficulty paying what they perceive as high user fees. As of December 1977, approximately 115, or 14 percent, of the owners of single, multifamily, and commercial buildings owed the sewer district about $48,000 for nonpayment of annual user charges. Amounts delinquent ranged from $81 to $3,850. According to a commission member, 73 homeowners, or 63 percent of the nonpayers, simply cannot afford to pay the charges. Of those 73, about 10 (14 percent) are senior citizens living on fixed incomes. As of March 30, 1978, unpaid user charges increased to $51,967. To reduce the accounts receivable, the sewer district recorded liens against the property of 46 users. According to a commissioner, 8 of the 46 have paid their delinquent user charges. One had to use his entire savings of $400; two received loans from the Veterans Administration and the Farmer's Home Administration; and five delinquent balances were paid by the banks holding the mortgage on the property. Most of the 38 remaining users have made partial payments, but a few will not be able to pay. The commission plans to initiate foreclosure proceedings against these properties. One commissioner stated these families will be placed on public welfare. According to a commissioner, many proud residents pay annual user charges even though they cannot afford to pay. To accomplish this they reduced food and clothing purchases.

User charges and real estate taxes have caused several elderly residents to move from their homes into federally subsidized housing. A welfare social worker stated an estimated 10 elderly citizens moved into subsidized housing

because of these reasons. In addition, a local real estate agent stated high user charges is one of several reasons that many homes have not been sold. Conversely, many prospective residents will not purchase a home in Mexico because of existing high user charges and real estate taxes.

Other pollution control requirements

In addition to high sewer user charges, Mexico residents may have to pay more money for solid waste disposal changes required by the Clean Air Act and State solid waste regulations. The town, with Rumford, Maine, jointly operates an incinerator to dispose of solid wastes. Open burning is now prohibited by the act and Maine's air pollution regulations. In addition, Mexico's landfill site violates State solid waste regulations by being located within 300 feet of a major body of water. In 1978, the frustrated RumfordMexico Solid Waste Board voted reluctantly to sign an EPA delayed compliance order. As a result, the towns are examining several solid waste alternatives. Preliminary estimates show capital costs ranging from $300,000 to $2 million and annual operation and maintenance costs, excluding disposal fees, of up to $97,000. All costs associated with the disposal of solid wastes are borne only by the communities. In 1978, Mexico's share of operation and maintenance costs was $9,400.

COHASSET, MASSACHUSETTS

Cohasset is located along the eastern Massachusetts coastline, about 15 miles south of Boston. The population is estimated at 7,800 with very little seasonal change. Its median family income of $14,958 is higher than the State median family income of $11,449. Many of Cohasset's residents are professionals who commute to jobs outside of town, particularly to Boston. No large industries are located in Cohasset, but several small businesses are in the center of the town, known as Cohasset Village, and along an outlying main road.

DESCRIPTION OF THE SEWER SYSTEM

The town is considering replacement of an existing treatment plant which was built in 1969. Consulting engineers have completed a facilities plan which recommends that the town construct a new 1 million-gpd secondary treatment plant and collection system. Cost estimates range from $11 million to replace sewers in the worst area to $33 million to replace sewers in the entire town. A step 1 Federal matching grant was used to plan for the proposed new system.

Asserted reasons for new sewer system construction

Cohasset faces two sewage problems. The present treatment plant is polluting Cohasset Harbor, and leachate from failing septic systems is contaminating the reservoir.

The 1969 treatment plant was built to allow expansion of the high school and to connect about 25 homes. In 1972 the town approved expanding the sewer system to the village and harbor area. Currently 175 homes and some businesses, including 3 restaurants and a hotel, are connected to the sewer system. When school is in session, the facility's design capacity of 72,000 gpd is exceeded and effluent limitations cannot be attained. Monthly flows for the first half of 1977 averaged 85,000 gpd. The State has notified the sewer commission that discharge permit criteria have not been met, but took no action against the town because it is developing a facilities plan.

Three areas of Cohasset have experienced septic system problems. One is a heavily settled area where many of the disposal systems are about 20 years old. During our visit, one woman was rehabilitating her system for the third time at a cost of about $8,000. She stated that many of her

neighbors' systems have also failed due to poor soil conditions.

Two schools are located in another area that is experiencing septic system failures. The third area is a business district along a major route in the less settled area of town. One business along this route is pumping its system weekly. In addition, a cleaning establishment had to stop all laundering because its onsite disposal system repeatedly failed. This resulted in a $250,000 per year business loss.

OUR ANALYSIS OF PROJECT IMPACTS

According to the residents, the major problems with the proposed Cohasset treatment plant include the location, size, and the cost of the plant. To alleviate these problems, the town hired an independent consulting engineer who has recommended less costly treatment alternatives.

The most controversial issue regarding the proposed project is the location of the treatment plant. The town's consulting engineer explained that the location decision for the treatment plant was subjective. In this regard, a report prepared by a private consulting engineer who was hired by a citizens group to evaluate the facility plan also verified the subjectiveness of the location decision.

Another issue of considerable concern is the proposed size of the new treatment plant. The existing plant has a design capacity of 72,000 gpd. Under the proposed sewer extension project, the consulting engineers recommended a 1-million-gpd plant, which they feel is appropriate to accommodate possible future sewering over a 20-year period. Another consulting engineer hired by town residents to review the recommended plan stated that the facilities plan did not substantiate the need for such a plant and noted the plan does not adequately address alternatives to the proposed size of the plant. He recommended that a lower rate of sewering and a smaller initial treatment plant be considered further and that cost data be provided for new plants intermediate in capacity between that corresponding to the "No Action Alternative" and the 1-million-gpd proposed plant.

Several community members questioned the cost of the system. Over 400 residents signed a petition protesting the high cost of the project. In spite of this resistance, the sewer commission chairman believed that the residents would vote for the lowest cost alternative. This would allow sewering only part of the area with the highest

concentrations of reported failing septic systems. The average estimated annual cost per household would be:

Betterment assessment	$ 80
Interest and taxes	95
User charge	100
Total	$275

In addition, homeowners would face an average per-house connection cost of $1,300.

As of September 1979, the town residents had voted down the planned project primarily because of the facility plan inadequacies pointed out by their consulting engineer. EPA region I officials are finishing their review of the facility plan and stated that unless the town provided funds for the project, it would not be built. The town will now have to consider more appropriate, less costly alternatives which could save the community several million dollars.

Other pollution control requirements

State drinking water records disclosed that Cohasset completed a new $1.25 million drinking water purification plant in 1978. Local officials told us that the town is currently operating a sanitary landfill that periodically violates State regulations. Some days the soil is frozen and cannot be used for cover, and they have received citations for paper blowing off the site. Within 3 years the State will probably require Cohasset to transport solid waste to a regional incinerator. Increased costs for this change have not been estimated.

TISBURY, MASSACHUSETTS

Tisbury is one of six towns on Martha's Vineyard, an island off the southeastern Massachusetts coast. Tisbury's population varies with the seasons. The year-round population is about 2,700. Summer residents add another estimated 1,800, and daily and weekly visitors add approximately 2,100 more. About 19 percent of Tisbury's population is 65 or older. The population's median age is increasing due to the increase in off-island people retiring there. The 1974 estimated per capita income was $4,334. Tisbury's economy depends almost exclusively on tourism and second homes.

DESCRIPTION OF THE SEWER SYSTEM

The supplement to the draft environmental impact statement (EIS) recommended construction of a secondary treatment and septic tank sludge composting facility and a wastewater collection system in Tisbury. The system is being planned for using step 1 Federal matching grant funds. The estimated cost of a treatment system is $2,197,000. The individual hookup charge is $300 and the total annual charges range from $169 to $220, depending on how much of the collection system is funded through taxes.

Asserted reasons for new sewer system construction

Tisbury has 27 failing septic systems out of a total of 161 systems, and it also has problems with septic tank sludge disposal. The failing systems are located primarily in the central business district and two low-lying streets. Local officials cited the following reasons for such failures:

--Drainage areas limited due to small lots.

--Overuse during seasonal population increases.

--High tide flooding in low-lying streets.

During a lot-by-lot survey, areas were observed where sewage had surfaced and lay on the ground, creating an odor as well as a health hazard. EPA has not yet ordered Tisbury to correct the septic system problem. The Board of Health, however, stated that until a sewage system is constructed, failing septic systems must be corrected. The Board may close down businesses that do not take corrective action.

OUR ANALYSIS OF PROJECT IMPACTS

We believe the problems this community is having with its new sewer system are analogous with many of the comunities we visited. A new sewage treatment plant is recommended to replace failing septic systems, but adequate consideration has not been given to other alternatives and less costly approaches seem viable. Town officials were dissatisfied with the help they received from EPA and the consulting engineer and believe that more consideration should be given to the long-range social impacts of a new system.

Town officials believe that a new sewer system has not been justified. A 1973 engineering study of Tisbury's sewer needs recommended a system that would provide service to a large portion of the town. EPA required an EIS of the project, but many local officials contend that a waste disposal problem was not documented and that the data presented on harbor and ground water contamination was inconclusive.

Local officials also commented that the draft EIS did not address appropriate smalltown alternatives to a large sewer collection system. EPA directives require consideration of nonsewer alternatives, such as small treatment systems for individual homes or small clusters of homes. Yet one town official maintained that discussions at public hearings centered around a sewer system; other alternatives were not discussed.

To obtain the needed data to determine whether a new sewage plant is needed, the Board of Health, the Planning Board, and the Martha's Vineyard Commission initiated a survey of 161 septic systems. Using the State definition of a septic tank problem, a system that requires pumping more than once a year, they found that only 27 needed corrective action. Further, they determined 4 systems could be corrected with septic system improvements and 17 with mounded septic systems costing $3,000 to $20,000 each. Six systems could not be rehabilitated. Therefore, it appears that a $2.2 million construction project is being planned to correct six or seven nonrehabilitable septic systems. Many residents believe that a limited collection system and small package treatment plants could effectively meet local needs.

Local officials said they were dissatisfied with the draft EIS process and the assistance they received from EPA and the consulting engineers. EPA did not publish a local notice of the EIS draft hearing, and the public was not aware that it was being held. Certain local organizations and individuals repeatedly requested information, but the

information not available until the draft EIS hearings were held. Officials and residents had no opportunity to review the draft EIS before the hearings.

Officials also feel that the possible social implications of a new sewage collection system have not been sufficiently analyzed. Recognizing that any such system will have a significant and unpredictable induced growth impact, they feel that the type, magnitude, and location of growth should have been further explored.

Several residents with whom we talked felt that the cost of a new sewer system would create an additional financial burden for some residents. Martha's Vineyard has the lowest median income in the State, and Tisbury houses many low-income families. The town has a large number of retirees living on fixed incomes. One person felt that sewers would encourage the construction of hotels along the waterfront.

Other pollution control requirements

Although there are no drinking water problems, some changes will be made in Tisbury's solid waste disposal practices. A town official explained that although Tisbury's drinking water complies with Federal and State drinking water standards, the city plans to develop a consolidated site for its solid wastes to insure that drinking water systems will not be contaminated in the future. This new site will have to fully comply with Federal and State solid waste disposal regulations. Since the town has concentrated on deciding whether to build a new sewage treatment system, it has not yet estimated the cost for a new, consolidated solid waste disposal site.

WARNER VILLAGE FIRE DISTRICT,

WARNER VILLAGE, NEW HAMPSHIRE

The residential community of Warner Village (1977 population 1,900), is located about 20 miles west of Concord, the State capital. In 1976 the estimated median family income was about $12,000. Approximately 228, or 12 percent, of the residents are 65 years and older. The only industrial or manufacturing activity consists of two small companies that employ about 55 and 40 people, respectively. Located within the town is the Warner Village Fire District, an autonomous entity comprising about 750 residents.

DESCRIPTION OF THE SEWER SYSTEM

To comply with EPA and State water pollution control regulations, district residents approved construction of a 170,000-gpd secondary treatment plant and added new sewers to connect 187 homes in the Warner Village Fire District at a cost of about $1.7 million. The plant was planned and built using Federal matching grants funds. The treatment plant became operational in November 1976.

Asserted reasons for new sewer system construction

In the late 1800s the Warner Village Fire District constructed a publicly owned sanitary sewer system to serve the compact fire district area. Raw sewage was carried by a series of seven separate drainage area outlets and discharged directly into the Warner River. In 1967 a consulting engineering firm proposed new sewer collection and interceptor systems and a new treatment facility. Construction did not begin until 1975 after the New Hampshire Water Supply and Pollution Control Commission ordered the district to stop polluting the river.

OUR ANALYSIS OF PROJECT IMPACTS

The sewage treatment system is much too large, and the residents are experiencing severe financial and personal hardships as a result.

According to local officials, the 170,000-gpd secondary treatment plant is much too large for just the fire district. Current daily flows are about one-fourth of design capacity. In part, the current flows are attributable to

severe curtailment of water usage resulting from high sewer and water charges.

The consulting engineer agreed that the plant is too big because anticipated growth did not occur. The basic design population figure of 1,500 as used by the consulting engineers is the primary reason for plant overdesign. They stated that based on what they know now, the plant is overdesigned and the capacity too large for the district's needs. One of the problems they cited was that they expected the population of Warner to increase as it was doing in southern New Hampshire, but this did not happen. Concerning possible growth, a town official informed us that because of a lack of available land for growth, only five new homes have been built in the district in the last 18 years.

The most significant adverse impact created by the sewer project is high annual user charges. The sewer bills increased significantly after the new sewage treatment plant was built. Prior to this new system, the residents used a series of drainage outlets and discharged raw sewage directly into the Warner River. With the new system, user charges for a family of three increased from zero for the old untreated city sewer outlets to about $370 per year with the new system, even though the family cut its water usage by 50 percent. Another family of four pays $481 and a retired couple pays $456. As a result of these high sewer and water charges, many residents, particularly the elderly, have difficulty paying such charges. Local officials reported that some residents have reduced heating fuel and food purchases to pay user charges.

High sewer/water charges have impacted on the life styles of many residents. Subsequent to receiving initial quarterly sewer/water charges, district residents curtailed water usage by as much as 50 percent to reduce the high user costs. Some have discontinued using personal washing machines and are using the local laundromat, and some are not washing cars, watering lawns, or maintaining gardens.

According to town and fire district officials, the high cost associated with using and paying for the sewer system is a major contributing factor for residents moving out of the district. Many people, particularly the elderly, have been forced to move. The high sewer costs have resulted in the sale of 70 to 80 of about 190 homes in the district, some as many as four times. A local realtor estimated such homes sell for $10,000 less than comparable homes in a neighboring community.

OTHER POLLUTION CONTROL REQUIREMENTS

Warner Village may also be affected by the Safe Drinking Water Act of 1974. A Warner Village official stated the district has been ordered by the State Water Supply and Pollution Control Commission to determine the quality of all sources of drinking water. He stated that preliminary studies indicate that the cost to upgrade water treatment to meet the requirements of the Drinking Water Act would be as high as $1 million. A town official stated it is virtually impossible for the town to finance a project of this size.

CHARLESTON, OREGON

The Charleston Sanitary District is located about 250 miles southwest of Portland, Oregon, and lies along the Pacific Ocean adjacent to Coos Bay on the north and Cape Aragon on the south. The population is 3,296. Commercial enterprises are centered around ocean resources, tourism, and education.

DESCRIPTION OF THE SEWER SYSTEM

The community built a sewage interceptor system for the Charleston area to provide sewage interceptor lines and six pump stations to collect the area's sewage and deliver it to the Coos Bay regional secondary treatment plant. The system was planned and built using Federal matching grant funds. The Coos Bay Sanitary District is responsible for operating and maintaining the collector line. The Charleston Sanitary District pays a fee based upon the amount and type of sewage that Charleston generates.

According to Oregon Department of Environmental Quality officials, the total construction cost of the interceptor system was $2,471,914. As of December 1978, there were 274 connections to the sewer system. According to the district's engineer, this represents 600 to 650 persons, about one-fifth the originally planned number to be served by the system.

The sewer district has applied to Farmers Home for an additional $6,276,000 grant to clean up another section of Charleston, the Barview area. Although health problems in that area were cited as the primary justification for the original project, Barview was not included in the first project. The State did not follow up to make sure the original problems were included in the project scope.

Asserted reasons for new sewer system construction

The project was intended to eliminate failing septic tanks within the district and alleviate potential health hazards to the community. According to the June 1975 project justification statement submitted with the district's application for construction grant funding:

> "Population concentrations and soil conditions have combined to make this area [the Barview area of Charleston] extremely unsanitary and

> health conditions are the worst in Coos County. Hepatitis is prevalent in many childen in the area, and an adequate sanitary facility must be made available to protect the health and welfare of area residents."
>
> * * * * *
>
> "The present hazards to public health make the project especially necessary and urgent."

EPA's November 1975 Negative Declaration pointed out that the project would provide a "* * * long-term benefit by eliminating the use of failing subsurface disposal systems, thus eliminating a health problem in the area."

OUR ANALYSIS OF PROJECT IMPACTS

Rather than an environmental benefit, we believe the Charleston sewer project could be a detriment to the environment. The project may not have been justified by a valid health problem and may result in environmental damage to an important estuary. In addition, the project will probably change the character of the community.

A significant question about the health justification for the project is noted in a February 23, 1979, letter from the Coos County health officer to the president of the Charleston Sanitary District. In the letter the health officer stated that he had been asked for information concerning hepatitis cases and rates in the Barview area during 1976-77 because

> "It seems that this area has been considered to have a high incident of hepatitis and this information has been used to deny property owners' septic systems."

The letter detailed the one case of hepatitis which had been reported in 1976; none were reported during 1977 or 1978. The health officer closed the letter by stating "I trust that this information may refute the assumption that the Barview area is at risk regarding hepatitis cases."

In fact, the interceptor could damage an important environmental research area. The interceptor is going to a new development of homes, a trailer park, and businesses.

The nonpoint source runoff from increased development in this area related to the sewer project could damage the South Slough, an area designated in 1974 as the first National Estuarine Research Sanctuary in the Nation. Although the project does not fall within the actual boundaries of the sanctuary, it is contiguous to it. The slough is one of the few relatively undeveloped estuarine ecosystems in the country, and as such it has high research value.

Even though the South Slough was designated as a National Estuarine Research Sanctuary in 1974, this information was not considered when the environmental impact appraisal was prepared during 1975. An Oregon State Department of Environmental Quality official told us the slough's status was not considered because it lay outside the boundaries of the sanitary district. Unfortunately, much of what happens on the land ultimately effects the slough because a large portion of the runoff ends up in the water at the mouth of the slough. The environment must be considered as a whole and water quality cannot be separated from land-use management actions without potentially adverse results. Therefore, the action of the funding agencies to disregard considering the slough "because it lay outside the boundaries of the district" was shortsighted since the project could have an irreversible impact on the slough environment.

The project is overbuilt, and the high project cost will affect many low-income people. The project is serving only about one-fifth the originally planned number of people. During project planning, the State regulatory agency had mandated that the fish processing plants must connect to the sewer system. This was to eliminate the discharge of processing wastes into the water at the mouth of the slough. The State regulatory agency reversed its position concerning the fish processors, however, and they did not have to connect to the system. Without this additional flow and related cost sharing, the costs have to be paid by fewer users, many of whom are low income. The district's president commented that perhaps 40 percent of the district residents required financial assistance to pay the initial $350 sewer assessment.

Some community growth will likely occur because of the new sewer interceptor line, and this will probably change the character of the community. Many low-income residents will probably be displaced, and the fishing village character of the community will likely be lost. These changes were not considered during the development of the new sewage interceptor line.

Other pollution control requirements

Community officials explained that the open dump the town used does not meet Federal and State solid waste disposal requirements and will be closed. The town plans to spend an estimated $1 million to build an incinerator for all solid waste. These officials also told us that although they will have to increase the capacity of the area's drinking water system, improvements will not have to be made in the existing system to comply with new Federal drinking water requirements.

NETARTS-OCEANSIDE, OREGON

The Netarts-Oceanside Sanitary District was formed in January 1967 to plan and construct sewage collection and treatment facilities. The district is approximately 3 miles long, extending southerly from the community of Oceanside on the Pacific Ocean to the community of Netarts on Netarts Bay, and encompasses an area of about 790 acres. Although some tourism exists, the two communities are primarily retirement communities. About 50 percent of the people are retired and on fixed incomes.

DESCRIPTION OF THE SEWER SYSTEM

The project involved constructing a secondary sewage treatment plant and ocean outfall south of Oceanside. A sewage collection system was constructed to serve the entire sanitary district, including Oceanside, Netarts, and the area of Happy Camp, which are the only populated areas in the district. The project included constructing pump stations to move the wastes from the Netarts-Happy Camp area to the treatment plant near Oceanside. The total estimated project cost is about $5,680,000. Federal matching grants were used to plan and construct this treatment system.

The system is designed to allow considerable growth. It was designed to serve 2,800 persons, or about 1,100 housing units, in 1997. The present population of the district is estimated at 1,560, about half the design population.

Asserted reasons for new sewer system construction

Prior to initiating this project, the district had no sewer system. All domestic waste (the district has no industrial waste) was discharged to individual septic tanks and drainfields. The Tillamook County sanitarian estimated that 90 percent of the systems failed during the winter of 1971-72 due to heavy rainfall. However, in 1972-73 when rainfall was lighter, very few systems failed.

In Oceanside, many homes are built on a hillside overlooking the Pacific Ocean. The September 1975 environmental impact statement specified that, following a heavy rain, sewage used to surface and run down the hill, crossing downhill residential property, and eventually reaching the ocean beaches. According to EPA, the situation at Netarts was similar. The State and EPA believed sewage treatment was needed to meet projected population growth, avoid potential health problems, and maintain the water quality of the bay.

OUR ANALYSIS OF PROJECT IMPACTS

Although some improvement in sewage treatment was probably needed in Oceanside, we noted: (1) limited justification for including Netarts in the project, (2) a large amount of land that has sewers, but is undeveloped, that will encourage growth, (3) many technical problems with the system, and (4) negative impacts on the low-income elderly.

Sewage treatment improvements were probably needed in Oceanside. During our tour of the sewer district, we saw the rather small, closely built houses on a steep hill in Oceanside. District officials and the county sanitarian told us that sewage used to run down the hill, across the beach, and into the ocean. The assistant county sanitarian told us the problem occurred because the homes were built too closely together on small lots, and the land slopes rather steeply to the ocean beaches. That combination results in malfunctioning or failing on-lot systems during periods of high rainfall.

Although some sewage improvements had to be made in Netarts, there is no assurance that the septic systems could not have been improved as a lower cost way of correcting problems, particularly in the lower density area of the community. The county sanitarian's testimony concerning Netarts Bay indicates that septic tank and drainfield improvements were considered only a temporary solution.

During our tour of the new sewer system, we noted large, undeveloped areas that are now served by the sewer. In fact, the project was expected to increase development in the area. The growth in the district has been significant since the sewer project began. About 15 to 20 homes have been built in the district since the treatment plant opened and an estimated 50 more will be built. The project was expected to increase development in the area, thereby helping to pay for the system.

The district officials were having many technical problems with the sewage treatment system, including heavy ground water infiltration, odors, and excessive sludge. The sanitary district chairman complained that the sewer board members were just local businessmen trying to help with the new sewer system, but they did not get any needed technical assistance from EPA and the State.

Infiltration has plagued the treatment plant during parts of the year since it was put in service. The sanitary district chairman told us that during the winter some 25 to 50 percent of the daily flow is apparently due to infiltration. At other times odor is a major problem because of low wastewater flows which allow the sewage to putrefy before it reaches the plant. Because concrete pipe has been used, these septic conditions could help corrode the sewer pipe.

Since the plant was not operating properly, approximately 5,000 to 6,000 pounds of sludge was accumulated within 3 weeks of plant opening. Since district officials thought it would be at least a year before that amount of sludge accumulated, they did not buy a sludge truck and have been forced to haul the sludge in the district fire truck. The sanitary chairman told us that they do not have any one location to haul the sludge to. Various locations will take some now and then.

The sanitary district chairman told us that the project was doubly frustrating because all of the district board members were businessmen first and project overseers second. Since board members had only limited time for sewer matters, it was impossible to spend sufficient time monitoring the development of a complex sewer system. Consequently, he told us that they relied on EPA and the Oregon Department of Environmental Quality to review and approve the consulting engineer's work because the board members were not technically qualified to oversee the engineering aspects of the project.

Now that the sewer system has been built, the district residents will not approve increases in user fees needed to operate the system properly. The sanitary district chairman told us that when the residents learned how much the monthly fee would be, they were extremely angry. The estimated district budget had to be trimmed from $226,041 to about $129,000. He explained that it will leave the district approximately $80,000 short of what is needed to properly operate the sewer system.

Some senior citizen residents initially expressed opposition to the sewer project because of the difficulty they would have in paying their share of the cost while living on fixed incomes. While visiting the district, we talked with one resident whose initial sewer hookup charges were nearly $1,300. This individual was 59 years old, semidisabled, earned just over $2,000 per year, and was expected to pay nearly $260 per year to defray sewer and

drinking water system operating costs. She stated, "I think having a clean environment is important, and I'm all for that, but I don't think I should have to lose my home to achieve that goal."

Other pollution control requirements

Netarts and Oceanside officials told us that the present open burning dump used by the two communities is leaching into the ground water. The county is studying the situation and is planning to convert the dump to a sanitary landfill. The cost to upgrade the site has not been determined.

These officials stated that Netarts will need to spend about $325,000 to comply with State and Federal drinking water requirements. No improvements are needed in Oceanside.

PACIFIC CITY, OREGON

Pacific City is an unincorporated community in Tillamook County located along the Oregon coast approximately 70 miles southwest of Portland, Oregon. Pacific City lies along both sides of the Nestucca River, with the smaller unincorporated community of Woods just to the North. A large dory fleet, which catches salmon during the summer, along with limited canning activity, is the major economic source in the community. In addition, the community depends on tourism during the summer.

DESCRIPTION OF THE SEWER SYSTEM

The community has built an advanced wastewater treatment plant and collector system at a cost of about $5,129,000 Federal matching grants have been used to plan and build this treatment system.

Asserted reasons for new sewer system construction

The following excerpts from the May 1976 facility plan provide the justification used for obtaining EPA construction grant funds:

> "Although records on subsurface sewage systems were not maintained prior to 1972, it is known that both septic tank failures and malfunctions have been frequent in the past.
>
> "The principal distinction between failures and malfunctions is that failures can occur at any time of the year while malfunctions occur mainly during the winter months when the water table is high. * * * The rate of yearly malfunctions is a function of the amount and rate of rainfall but ranges from 75 to 90 percent at Pacific City. A similar malfunction rate is found around Woods. The county sanitarian also estimates that there have been over 250 failures in the past at Pacific City-Woods."

Based on the above information the consulting engineer concluded:

"The incidence of reported septic tank malfunctions is high, due to high groundwater conditions associated with rainfall, flooding and high tides. The increasing growth in the area makes the development of a health hazard inevitable. A potential health hazard does, therefore, exist. This risk to health can be abolished only by implementing wastewater collection and treatment facilities." (Underscoring supplied.)

OUR ANALYSIS OF PROJECT IMPACTS

Although the community apparently has problems with existing septic systems during annual flooding, the septic system failure rates cited in the project justification are merely subjective estimates. In fact, the community may be including a large amount of land in the system to allow for growth and spread the sewer costs over a greater number of users even though many of them are not having any sewer problems. In addition, the sewer district officials complained that they received little technical help from EPA and the State and felt that the community suffered as a result.

The information about septic system failures is strictly a subjective estimate by the sanitarian. He could not show us any documentation to substantiate this information. The sanitarian's letter (November 1975) actually stated that malfunctions in the Pacific City area during the rainy season may be from 75 to 90 percent, depending on the amount and rate of rainfall.

EPA suggested that adequate sewer system justification for a new sewer system be provided in the facility plan. A February 1975 EPA letter to the consulting engineer specified that, "* * * the facilities plans should provide documentation of failing systems and health hazards, when they exist * * *." The August 1976 environmental impact appraisal, as well as the September 1976 negative declaration, specified that the purpose of the project was to prevent a potential health hazard from occurring by eliminating the use of inadequate subsurface waste disposal methods.

The system is actually designed to include some large areas which are not having sewer problems. Although the failing/malfunctioning systems are located in the low-lying areas of the district, at least half of the collector lines

were installed in areas which, according to the county sanitarian, had no problems with malfunctioning systems. EPA and State officials commented the "nonproblem" areas were included for two reasons: (1) to help pay for the needed portion of the system by spreading the cost over a larger number of persons and (2) it would not be realistic to have on-lot systems operating in a district with a centralized sewer system. The former sewer district manager stated that:

> "There is no justification for the sewers in many of the areas that are served now in Pacific City. Only about one-third of the homes being served actually needed a sewer. Yet we are spread over the entire area as a means of trying to spread out the cost among everybody here. * * * Problems were not identified on a systematic basis (on a house-to-house basis). The plant is three times larger than necessary to take care of those problems we believe exist because of failing septic systems and high water table."

The system is designed to allow for considerable growth. The present population of the district was estimated to be 1,500 permanent residents. The plant is designed, however, to serve 3,000 persons in 1997. Less than 300 connections have been made to the sewage system because a portion of the system has not been completed. According to a former district official, this represents roughly 750 persons, or about 25 percent of the plant's design capacity. Concerning growth, sewer district officials stated that the sewer system will allow development to occur and pointed out that:

> "The sewer system is only the tip of the iceberg for our small unincorporated area. We are going to have to fund roads and sidewalks, storm sewers, additional police and fire protection, all because of the sewer."

The sewer district board members were frustrated because EPA and State project engineers did not give them guidance on how to manage the project. They told us that all guidance received was "after the fact," which caused delays because the district invariably had to resubmit paperwork to correct minor errors. They believed 90 percent of that could have been avoided if EPA and/or State representatives had taken an active role in the project management. Sanitary district officials told us that:

> "We are not sophisticated enough either to speak the language that the engineers and the Federal

> government or the State government are speaking, nor could we do an analysis of what our consultant did. We simply had to accept, on blind faith, everything that was going on. No one represented the community How could citizens walk into a public meeting without any knowledge of sewer, sewer construction, secondary impacts, etc., and make any meaningful input? It is not possible and it did not happen."

Several members of the Pacific City sewer board resigned or were replaced, including the head of the sewer board, during system development.

The former sewer district manager complained about the lack of data and EPA technical assistance:

> "The EPA insisted that we needed a waste treatment project, but offered no guidance or assistance as to the procedures to follow. * * * If the government insists small towns put in plants, then knowledgeable persons should be available to point out possible pitfalls to local officials."

This sense of frustration was heightened when the agencies would not provide requested assistance when problems occurred during construction of the project. For example, neither EPA nor Oregon Department of Environmental Quality officials attended an arbitration hearing concerning an interpretation of the construction contract even though they had been repeatedly asked to. The hearing resulted in a $100,367 judgment against the community.

Sewer board officials told us that community disagreements over the type and cost of the proposed sewer system were starting to polarize the community. Consequently, they hired a consulting engineering firm to independently review the plans and consider lower cost alternatives. The firm identified a lower cost alternative for part of the system that will save the community about $940,000. The estimated savings in current construction costs are about $153,000; about $787,000 will be saved in operation, maintenance, and replacement costs over a 20-year period.

Other pollution control requirements

Drinking water and solid waste officials told us that the present open burning dump used by Pacific City is believed to be leaching into the ground water and polluting

nearby clam beds, and the waste is spilling over the property line onto neighboring private property. The dump does not meet State or Federal requirements and will be closed. A sanitary landfill will be developed and disposal costs for area solid waste is expected to climb substantially because of longer hauling distances and higher maintenance costs for the landfill. Cost estimates for the new landfill had not been determined.

The president of the Pacific City Water Board estimated that $550,000 is needed to implement the changes necessary to comply with State and Federal drinking water requirements.

EASTSOUND, WASHINGTON 1/

Eastsound is a small, unincorporated community located on Orcas Island in the San Juan Island cluster. The San Juan Islands are located in Puget Sound at the northwest section of the State. The islands are rural in character, with settlements of shops and restaurants forming commercial centers such as Eastsound. The San Juan Islands are used primarily for recreation. Orcas Island has a high seasonal population of tourists and summer residents.

DESCRIPTION OF THE SEWER SYSTEM

Orcas Island residents generally use individual septic systems for sewage disposal. The planned Eastsound sewer system consists of pressure-sewer collectors and interceptors, a secondary treatment plant, and a marine outfall for the treated effluent. The total estimated cost of the project, which is being planned and built using Federal matching grant funds, is about $1.7 million. It will serve an estimated 385 people.

Asserted reasons for new sewer system construction

The present sewer system consists of septic tanks and drainfields and a few raw sewage outfalls from the commercial areas into the bay. The project is intended to enhance the lifestyle of residents by eliminating improperly treated sewage discharges into the receiving waters of the San Juan Islands and eliminating the scattered failing septic systems located throughout the district.

OUR ANALYSIS OF PROJECT IMPACTS

We noted several problems with the planned Eastsound project. The justification for the sewer system was not supported by objective data and, partially as a result, the facilities plan did not consider all cost-effective alternatives. In addition, the project will financially hurt low-income elderly in the community, and the environmental analysis of project impacts was superficial.

1/Much of this information was contained in our letters to Senators Henry M. Jackson and Warren G. Magnuson, in response to requests for information on the Eastsound sewer project, CED-79-80 and CED-79-81, both dated April 30, 1979.

State, Federal, and local officials could not provide objective evidence to support the State's rating of the Eastsound project. Responsible State officials told us that they did not use objective testing, such as dye and bacteriological testing, that some EPA, State, and county officials say are necessary to support the need for the project.

State officials and the consulting engineer told us they relied on letters expressing concern over sewage disposal problems in Eastsound from the county health officer and the county sanitarian to support a need for the Eastsound sewer project. The county health officer and the county sanitarian also told us they did not conduct any objective tests to verify sewage disposal problems, and our examination of their records disclosed no testing documentation.

EPA region X construction grant officials said that they did not verify the alleged problems leading to Eastsound's rating. They explained that the region is responsible for reviewing the State's overall rating system but is not responsible for reviewing individual projects on the priority list. They explained that parts of the State priority system are subjective.

The need for a sewer system north of High School Road appears to be questionable, according to the San Juan County sanitarian with whom we toured the Eastsound Sewer District. The sanitarian said that the soil north of High School Road appeared to be supporting the septic systems. He pointed out only two failing septic systems north of High School Road. He believed one of these could be corrected by installing a new drainfield and one could not be corrected because of the small lot size. The sanitarian showed us some vacant land in low areas north of High School Road that he believed would not support onsite disposal and would need sewers before homes could be constructed.

Our consultant reviewed the facilities plan and stated that it appeared that several potentially favorable alternatives were not considered. This resulted in part because the facility plan was developed long before an adequate inventory of individual disposal systems was conducted. Consequently, a number of alternatives, including combinations of community sewers and individual disposal systems, were not considered.

Our consultant told us that the "ecological" study on the Eastsound system appeared to be mere "filler," having little relevance to the actual decisions that had been made. For example, the study included a seven-page list of the species of plants and animals off the north shore of Eastsound but did not relate this to the sewer system or its impact.

In addition, our consultant said assessment of actual health or ecological problems relevant to the project appears to be quite limited. Apparently other purposes have guided the direction of the project. Land development and economic growth appear to be significant motivators. For example, in the Environmental Impact Assessment chapter of the facilities plan, in comparing "no action" with the proposed alternatives, the largest "environmental benefits" occur for "property values" and "jobs." Even the increased use of the airport due to increased population is recorded as a substantial environmental benefit from the project, exceeding such benefits as "surface water quality," "ground water quality," "public health," or a reduction in "waterborne diseases."

Some Eastsound residents were extremely concerned that new sewers would mean a great change in the community. They expect that the sewers will allow for much denser development and will stimulate apartment and condominium building with a change in the predominant residents from low-income, elderly, year-round residents to high-income, young, summer residents.

The costs of the project will be a financial hardship for some community residents. We found that user charges and debt retirement costs to the homeowners affected by this project will average at least $231 a year, or 2.74 percent of the $8,420 median income in San Juan County. These costs are excessive, according to EPA-proposed guidelines which indicate that user charges and debt retirement should normally fall within the $120-$200 range.

The cost to the community will probably have the greatest impact on low-income groups, such as the elderly. In discussions at the Senior Services Center in Eastsound, the center director related that 18 to 20 senior citizen families, or 10 to 11 percent of the district's anticipated 188 sewer connections, would be adversely affected financially by the project. She said some elderly residents probably will sell their homes or property because they do not want to leave it to heirs with a lien on it.

We discussed the effect of the sewer with two homeowners. Both are in their 70s and receive social security. Current average cost to maintain their septic system is a maximum of about $30 a year. The annual cost for operations and maintenance and debt retirement for these homeowners once the new system is installed will be $480 and $382. Both homeowners expressed concern over the difficulty they will have paying these costs. The total assessments for these homeowners is $4,368.95 and $3,198.38, respectively.

In contrast, a sewer district official estimated that the current cost of installing a new septic tank and drainfield ranges from $1,200 to $1,700.

As a result of interest expressed by two U.S. Senators, residents of Eastsound, and our talks with project officials, EPA regional officials contracted for a second engineering review of the Eastsound sewer project. This review concluded that the planned sewage treatment system should be built. Unfortunately, this review did not answer several questions about the project. Our consultant said that the independent review did not include a new analysis of all possible low-cost system alternatives, consider the long-range environmental or social impacts of the system on the community, or consider primary treatment with an ocean outfall.

Other pollution control requirements

The San Juan County sanitarian told us the present open burning dump used by Eastsound is leaching into the ground water and is unsatisfactory. To meet State and Federal requirements, an estimated $500,000 will have to be spent to upgrade the site to a landfill status, purchase equipment, and hire a consultant to prepare an operation and maintenance plan.

An Eastsound Water District board member stated that the water system has been tested and meets State and Federal drinking water requirements.

KEEPING THE MONEY FLOWING

It appears that many of the problems that we have observed in the small communities result from the institutional pressures to keep the Federal construction grant money flowing. These pressures appear to have a strong influence on the program. The following reasons are an explanation of an underlying system problem noted by our consultant. We believe it helps explain a partial reason for many of the problems we noted.

1. EPA representatives that we talked to indicate or flatly state that "keeping the money flowing" is a primary motivation of the system. As a general rule "efficiency" means keeping the money flowing.

2. EPA and State institutional organizations and policies appear to be largely directed toward this goal. In comparison, other goals such as providing technical services appear to receive far less support.

3. Institutional incentives motivate EPA to keep the money flowing. As an example, an editorial in the "Journal of the Water Pollution Control Association" (February 1979) stated that the Office of Management and Budget is:

   "* * * said to be recommending cutting back the EPA construction grants division staff by some 200 positions. The justification of OMB for the cutbacks is that appropriated funds not actually disbursed for completed projects have been accumulating from previous years."

4. Technical work at the field level by EPA personnel is very limited and appears to have a lower institutional priority than administrative demands. Local residents appear frustrated by the lack of EPA and State technical assistance and the pressing demands of contract administration.

5. There are few incentives for the States or private consultants to take steps or make recommendations which would "slow down the money flow." The incentives appear to strongly favor attitudes and behaviors which tend to keep the money flowing.

6. Assessments, facility plans, and studies appear to be largely procedural and are often inadequate. apparently

sufficient broad ranges of options are not considered. There is no time and there are few incentives to examine less "standard" possibilities. In some cases, difficult environmental problems appear to be ignored (e.g., secondary impacts on the South Slough in Charleston, Oregon).

7. When local residents try to slow down a project for a more complete study, they meet very strong resistance (e.g., Eastsound, Washington). The reasons for this resistance do not appear to involve environmental protection. The reasons appear to be more "we must keep the project moving or we will lose the Federal and State funding."

8. The problem of inappropriate technology arises largely because of the following:

   a. The time to conduct preproject studies is insufficient and would slow down the process.

   b. It is much easier to follow more standard plans, regulations, specifications, etc.

   c. There are few incentives to scale down projects or examine a broader range of options (e.g., not having secondary treatment for Eastsound or considering the potential use of waterless or low-flush toilets).

   These causes indicate that the goal to keep the money flowing without delay is strong.

9. Alternate goals such as protecting the environment do not adequately explain the institutional system behavior. The goal to keep the money flowing explains much of the system behavior (e.g., the lack of field personnel and the paucity of information on secondary and cummulative impacts).

10. The pressures to keep the money flowing even at the expense of not adequately assessing environmental and social impact is recognized outside of EPA. As an example, the president of the Water Pollution Control Federation stated concerning EPA:

    "The track record of obligation of funds is under close and searching scrutiny, but the track record of the response of the waters is not."

EPA has tried to help small communities with sewage treatment requirements in a number of ways, including many national and regional training seminars and meetings and preparing and distributing pamphlets on low-cost sewer systems. However, the pressure to keep the money flowing is still a dominant influence and problems have resulted from it. Indeed, it appears that, in these small communities, more technical assistance at the local level, more appropriate (less sophisticated) technological solutions and more time to assess alternatives (and their cumulative and secondary impacts) would be a wiser course with respect to protecting the environment. Such a course would also likely save money.

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