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

A-96-01
II-A-519

OFFICE OF
AIR, NOISE AND RADIATION

MEMORANDUM

Date : April 21, 1982

Subject: Review of GAO Report "Cleaning Up the Environment"

From : John M. Ropes, Director
Office of Noise Abatement and Control (ANR-471)

To : Kathleen M. Bennett, Assistant Administrator
for Air Noise and Radiation (ANR-443)

I have reviewed the draft U.S. General Accounting Office report to Congress, "Cleaning Up the Environment: Progress Achieved but Major Unresolved Issues Remain," and have the following specific comments concerning the portions of the report dealing with the noise program.

Page iii - line 11 of paragraph entitled "Noise Abatement" where the statement is made concerning the termination of many State programs if there is no Federal assistance, I would include a statement that EPA feels that the national impact of the phase-out of the Federal noise program will have a slight to minimal effect. Historically State and local governments were in the noise control business long before a Federal presence. Also, during the past year EPA has been concentrating on strengthening the State programs so they can better assist local governments that have complex noise problems. During fiscal year 1982, we are providing grant funds to 22 State noise programs. In addition we have developed a cooperative technical assistance plan for 15 States that will provide customized on-site technical assistance to State programs during the remainder of this year.

We also will provide training to over 500 State and local noise control officials this year and transfer approximately 1.5 million dollars worth of noise measuring equipment to State governments (for community equipment loan programs). Because of all this assistance by the Federal government to State and local governments, we feel comfortable that the States, where noise is an environmental problem, can assume full responsibility for its abatement.

Page 29, line 15, concerning EPA's interaction with FAA on aircraft noise, EPA feels that the state of the art in dealing with airport noise problems is well defined and well established. There are a finite number of remedies in dealing with the problems, i.e.; changing flight approach patterns, using alternative runways, scheduling, curfews, etc. The FAA for a number of years has funded Airport Noise Control and Land Use Compatibility (ANCLUC) studies to identify solutions to particular airport noise problems. I assume they will continue to do so. In addition there are many excellent airport noise

consulting firms available to airport operators in need of advice on abating noise. EPA's role has been somewhat duplicative of these activities and discontinuing them will have minimal impact on aviation noise nationally.

Page 29, line 20, concerning the number of existing State programs that will remain after Federal support is dropped, EPA now estimates that 16 of the existing State programs will remain and we are still hopeful that all 22 programs we are assisting will survive in some fashion.

Page 30, line 6, concerning the statement by the City of Cleveland regarding the lack of Federal funds for noise enforcement, I think it would be helpful to point out that the Ohio Department of Health in Columbus, was awarded grants by EPA in the FY 1979-81 time period in the amount of 132.7K. Additionally, 21 items of equipment purchased through this grant program (or loaned by EPA) are retained by the State noise program for loan to any State or local noise abatement program. Through concerted technical assistance a number of major cities in Ohio have initiated active noise control programs including Columbus and Dayton. The Cleveland example is not typical of noise control activities in the State of Ohio.

Page 30, line 21, concerning the statement that the City of Dallas "does not have noise measuring instruments to determine compliance with the [noise] ordinance." I would again point out that the University of Texas at Dallas received grants totaling 117.2K with 11.5K of that amount earmarked for the purchase of equipment for loan to State and local governments. Further, equipment is now available for loan to the city should they request it.

Page 34, paragraph 2, line 18, "Without Federal assistance..." reemphasize that EPA has been concentrating on strengthening the State programs so they can better assist local governments that have complex noise problems and that we are providing grant funds to 22 State noise programs and that we have developed a cooperative technical assistance plan for 15 States that will provide customized on-site technical assistance to State programs during the remainder of this year. Also that we will have provided training to over 500 State and local noise control officials by the end of this fiscal year and transferred approximately 1.5 million dollars worth of noise measuring equipment to State governments for their use in abatement activities and that we feel confident that the States can assume full responsibility for environmental noise problems.

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

APR 13 1982

OFFICE OF
POLICY AND RESOURCE MANAGEMENT

MEMORANDUM

SUBJECT: "Cleaning Up The Environment: Progress Achieved But Major Unresolved Issues Remain," Volume I, II

FROM: Lewis S. W. Crampton, Director
Office of Management Systems and Evaluation (PM-222)

TO: Eric A. Eidsness, Jr.
Assistant Administrator for Water (WH-556)

[redacted]

Rita Lavelle, Assistant Administrator for Solid Waste and Emergency Response (WH-562A)

GAO's two volume draft report on the subject listed above and transmittal letter have been sent to EPA for review and comment. Advance copies of the report have been made available to your office.

As the report is subject to further revision, it should be appropriately safeguarded to prevent premature or unauthorized disclosure of its content.

So that GAO may consider EPA's comments in the final report, GAO requests our written response by May 12, 1982. I would appreciate your comments by April 29, 1982, so an Agency response may be prepared.

If you have any questions, please contact James Teare at 755-1180.

Attachment

cc: Anne M. Gorsuch
Attention: Paul Milbauer A-100
John Hernandez
Attention: Helen Cameron A-101
Leland Modesitt, Jr. A-102
Jack Woolley A-103
Paul C. Cahill A-104
Matthew Novick A-109
Ron Brand PM-222
Morgan Kinghorn PM-225
Robert Perry EN-329
Courtney Riordan RD-672
John Todhunter TS-788
Regional Administrators Regions II, V & VI

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

COMMUNITY AND ECONOMIC
DEVELOPMENT DIVISION

APR 1 [illegible]

The Honorable Anne M. Gorsuch
Administrator, Environmental
Protection Agency

Dear Ms. Gorsuch:

Enclosed for your review and comment is a copy of our proposed report to the Congress entitled, "Cleaning Up The Environment: Progress Achieved But Major Unresolved Issues Remain." Additional copies are also being provided to Mr. James Teare, your GAO liaison officer.

The draft report is being made available at this time solely for review and comment by your Agency concerning the matters discussed in the report. Use of the report is restricted and it should be safeguarded from publication or other improper disclosure. The draft and all copies thereof remain the property of, and must be returned on demand to, the General Accounting Office.

Your written comments should be provided to us within 30 days from the date of this letter. As you know, Public Law 96-226 generally limits the period of time for comment to 30 days. If you cannot meet this 30-day deadline, please contact Mr. Sam Madonia, Planning Director, on 275-5165 immediately.

Sincerely yours,

for Henry Eschwege
Director

Enclosure

C
(5) DRAFT

DRAFT OF A
PROPOSED REPORT

CLEANING UP THE ENVIRONMENT: PROGRESS ACHIEVED BUT MAJOR UNRESOLVED ISSUES REMAIN

VOLUME I

NOTICE--THIS DRAFT RESTRICTED TO OFFICIAL USE

This document is a *draft* of a proposed report of the General Accounting Office. It was prepared by GAO's staff as a basis for obtaining advance review and comment by those having responsibilities concerning the subjects discussed in the draft. It has *not* been fully reviewed within GAO and is, therefore, subject to revision.

Recipients of this draft must not show or release its contents for purposes other than official review and comment under any circumstances. At all times it must be safeguarded to prevent publication or other improper disclosure of the information contained therein. This draft and all copies thereof *remain the property of*, and must be returned on demand to, the General Accounting Office.

PREPARED
BY THE STAFF
OF THE
U.S. GENERAL ACCOUNTING OFFICE

GAO Form 213 (1/77)
Replaces GAO Forms 221, 222, and 223

DRAFT

DRAFT

CLEANING UP THE ENVIRONMENT:
PROGRESS ACHIEVED BUT MAJOR
UNRESOLVED ISSUES REMAIN

During the 1970s, the Federal government instituted ambitious programs to clean up our air, water, and land resources, and reduce noise pollution. Government and industry have expended billions of dollars on pollution control and it is estimated that $735 billion will be spent during 1979-88.

There has been progress toward meeting key environmental goals. For example, the air is significantly cleaner and more wastewater now receives the required level of treatment. Deadlines for full compliance, however, have been extended significantly. Further, emerging environmental issues and unresolved problems--such as the control of acid precipitation and nonpoint (diffused) sources of water pollution, and how to cope with reduced Federal funding--will make attaining environmental standards more difficult.

This report provides a national perspective on progress made in complying with key environmental goals, an analysis of unresolved environmental issues which may impede further progress, and detailed case studies of the environmental programs in three major cities: Cleveland, Dallas, and New York.

COMPTROLLER GENERAL'S REPORT TO THE CONGRESS

CLEANING UP THE ENVIRONMENT: PROGRESS ACHIEVED BUT MAJOR UNRESOLVED ISSUES REMAIN

DRAFT

D I G E S T

Concerned over the erosion of environmental quality, the Nation committed itself in the 1970s to a series of ambitious programs to restore and maintain our air, water, and land resources, and reduce noise pollution.

Billions of dollars have been spent by Federal, State, and local government and by industry to achieve environmental quality goals and it is estimated that $735 billion will be spent on pollution abatement between 1979 and 1988.

What have we accomplished? Overall, there has been progress toward meeting established goals. The air is significantly cleaner, more wastewater now receives the required level of treatment, and most drinking water meets national standards. The job, however, is still far from complete. Original deadlines for meeting most key goals have been extended significantly and as yet unresolved issues--like how to control acid precipitation and nonpoint sources of water pollution and how to cope with reduced Federal funding--will make meeting those goals more difficult. Further, the costs and benefits of environmental protection programs are not easily determined further complicating the debate over the need for stringent Federal pollution control mandates.

GAO made this review to highlight the status of progress toward meeting key environmental goals, how specific cities coped with these mandates, and some major unresolved issues facing the Nation in the 1980s and beyond. This broad perspective can assist the Congress--in a period when environmental programs are undergoing careful scrutiny--in better understanding where we stand with respect to cleaning up the environment and in making decisions on future courses of action.

PROGRESS MADE TOWARD MEETING GOALS

Air quality

The level of improvement for the most widespread air pollutants has been significant. Between 1973 and 1978, for example, nationwide average annual

concentrations of carbon monoxide decreased by 33 percent. Substantial portions of the Nation, however, have still not attained air quality standards for one or more of the seven monitored pollutants. Full compliance, originally expected by 1975, has been extended to 1982. Numerous cities with serious ozone and carbon monoxide problems have requested extensions until 1987. (See pp. 11 to 16.)

Water quality

A major part of meeting our clean water goals involved the control of municipal and industrial sources of pollution. More municipal and industrial wastewater receives the required level of treatment now than when national standards were mandated in 1972. EPA reported that, by the end of 1979, 93 percent of major nonmunicipal sources were in compliance with their permit requirements or on a schedule to meet them. On the other hand, only 37 percent of major municipal treatment facilities were in compliance with the July 1, 1977, deadline requiring secondary treatment. This deadline was extended to 1981 and then to 1988. Reduced Federal funding for these projects, as well as the reduction in the Federal share from 75 to 55 percent beginning October 1, 1984, may necessitate further extensions of the deadline. (See pp. 16 to 19.)

Drinking water quality

The great majority of water supply systems in the Nation meet national drinking water standards. Still, over 146,000 violations for either failing to test or for not meeting the standards were recorded in fiscal year 1980. The deadline for granting exemptions to noncomplying systems has been extended to 1986. In addition to violating standards, many communities face monumental problems financing the capital costs of water supply development, treatment, and distribution. (See pp. 19 to 21.)

Solid waste disposal

The Resource Conservation and Recovery Act called for a nationwide inventory of solid waste disposal sites and the closing or upgrading of facilities that did not meet environmental standards. The inventory was published by EPA in May 1981. However, it was incomplete and was not the management tool intended to apprise the Congress and the

public of the magnitude of solid waste disposal problems throughout the Nation. Further, little progress has been made toward upgrading open dumps and EPA estimated that 14,000 of 20,000 municipal waste sites did not meet standards. (See pp. 23 to 25.)

DRAFT

Ocean dumping

The ocean dumping of industrial wastes decreased by 42 percent between 1973 and 1980. In 1980, no dumping of industrial wastes occurred in the Pacific Ocean or the Gulf of Mexico. Little progress was made toward phasing out the dumping of sewage sludge and dredged material. The volume of sewage sludge dumped increased by 49 percent during this period and, in 1979, more than 67 million tons of dredged material were disposed of in ocean waters. Enforcement of the December 31, 1981, statutory prohibition against the dumping of harmful sewage sludge was delayed pending the completion of court-ordered studies by EPA. (See pp. 25 to 28).

Noise abatement

Federal noise control legislation was enacted to reduce environmental noise to levels most desirable to achieve health and welfare protection. There have been some indications of progress in reducing non-workplace noise levels, for example, Federal noise regulations have been promulgated for railroads and motor carriers. EPA intends, however, to completely phase out its noise control program in 1982. Without Federal assistance, it is anticipated that many State programs will also be terminated. Compliance deadlines for meeting aircraft noise standards established in 1976 were extended in 1980 to 1986. (See pp. 28 to 31.)

MAJOR UNRESOLVED ISSUES REMAIN

A number of issues will have to be resolved if key environmental goals are to be met nationwide, and if progress achieved is to be sustained over the long term. These issues are not an exhaustive list of environmental problems demanding resolution but do represent a cross-section of significant issues that must be addressed if the impact of the Nation's investment in environmental protection is to be maximized.

Acid precipitation

Acid precipitation and the long-range transport of air pollutants pose serious air quality control problems. Acid precipitation has been alleged to damage crops, forests, lakes and fish population, and human health. More research is needed, however, to accurately define its causes and impacts, and the measures needed to control it.

DRAFT

The practice of dispersing pollutants through tall smoke stacks to avoid ground level concentrations has resulted in the transport of pollutants many hundreds of miles. Air pollution in one region, therefore, may be affected by emissions from sources well beyond the reach of the region's control authorities. (See pp. 34 to 38.)

Nonpoint sources of water pollution

Little progress has been made toward controlling nonpoint (diffused) pollution, although it can account for half the total pollution reaching many rivers and lakes. Agricultural activities and urban storm water runoff are the major sources of nonpoint pollution. Control programs are in their early stages and failure to implement them would jeopardize the attainment of the Nation's water quality goals.

Combined sewer overflows also severely degrade water quality and no area of the country escapes the problem. Combined sewer systems serve more than 42 million people in an area totaling 1.7 million acres. Projects to correct combined sewer overflows have had a low priority at the Federal level and estimates of the cost to correct this problem are $37 billion. This cost could be reduced through the use of non-structural alternatives. (See pp. 38 to 43.)

Ground water contamination

The contamination of ground water--which provides 25 percent of the fresh water used for all purposes and 50 percent of all drinking water--is a growing problem. EPA has identified the disposal of industrial wastes and solid waste disposal sites as the most important contamination sources. Once contaminated, ground water can remain so for hundreds or thousands of years, and alternate water supplies may not be readily available. EPA proposed a national ground water strategy in late 1980 but to date none has been promulgated. A new agency

policy is expected in late 1982. (See pp. 43 to 45.)

DRAFT

Use of the ocean for waste disposal

The National Advisory Committee on Oceans and Atmosphere recommended in 1981 that the ocean not be eliminated entirely as a waste disposal option. Up to now, Federal policy has been to minimize or discontinue ocean disposal wherever possible. Decisions will now have to be made as to whether and to what extent the ocean should be available to coastal communities for waste disposal. (See pp. 45 to 46.)

Sustaining compliance with environmental requirements

Regardless of whether compliance with environmental requirements occurs slowly or quickly, it is important that initial compliance be sustained over the long term. This would assure that what is restored remains restored and the impacts from the investment in pollution control are maximized. Unfortunately, past studies have shown a high incidence of noncompliance with established pollution limits at municipal and industrial facilities built to provide cleaner air and water. A strong Federal and State monitoring and enforcement program is necessary. (See pp. 48 to 51.)

Flexibility needed in making pollution control decisions

The environmental laws of the 1970s reflected a single-purpose approach to pollution control that did not always allow for flexibility in decisionmaking. As a result, pollution control laws not only increased the volume of sewage sludge and other residues that must be disposed of but, also, prohibited or severely restricted available disposal options. Because of these restrictions, government and industry may not be free to choose the most environmentally safe waste disposal option dictated by site specific conditions. (See pp. 46 to 48.)

AGENCY COMMENTS AND OUR EVALUATION

Contents

DRAFT

VOLUME 1

ABBREVIATIONS

AQCR	Air Quality Control Region
CEQ	Council on Environmental Quality
CSO	combined sewer overflows
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
GAO	General Accounting Office
MCL	maximum contamination level
MGD	million gallons per day
NAAQS	national ambient air quality standard
NACOA	National Advisory Committee on Oceans and Atmosphere
NCAQ	National Commission on Air Quality
NPDES	National Pollutant Discharge Elimination System
RCRA	Resource Conservation and Recovery Act
SIP	State Implementation Plan

GLOSSARY

DRAFT

Aquifer	An underground bed or stratum of earth, gravel, or porous stone that contains water.
Combined sewers	A sewer system composed of sewers which receive both municipal sewage and stormwater runoff from roofs, streets, ground, etc.
Decibel	A unit of sound measurement.
Dredging	Removal of earth from the bottom of water bodies.
Effluent	The wastewater discharged by an industry or municipality.
Effluent limitations	Restrictions established by a State or EPA on quantities, rates, and concentrations of chemical, physical, biological, and other constituents discharged from point sources.
Estuaries	Areas where fresh water meets salt water and provide shelter and feed marine life, birds, and wildlife.
Ground water	The supply of fresh water under the Earth's surface in an aquifer or soil that forms the natural reservoir for public use.
Industrial waste	A broad category of wastes from manufacturing operations or processes. These wastes include acids, chemicals, poisons and insecticides, heavy metals, and other toxic and nontoxic substances.
Mobile source	A moving producer of air pollution, mainly forms of transportation.
Nonpoint sources	Diffuse and nonspecific sources of pollution that are difficult to pinpoint and measure. Common examples include runoff from agriculture and forest lands, mining and construction, and storm runoff from urban areas.

Ocean dumping	The transportation and discharge of waste materials into the ocean.
Open dump	A site used to dispose of solid wastes without environmental controls.
Point sources	Discernible, confined and discrete conveyances of pollution such as from a pipe, ditch, vessel or rolling stock.
Primary waste treatment	Treatment usually involving screening and sedimentation for removal of the larger solids in wastewater. This process removes about 60 percent of suspended solids.
Sanitary landfill	Environmentally sound solid waste disposal. Waste is spread in thin layers, compacted by heavy machinery, and covered with soil daily.
Secondary waste treatment	Treatment using biological processes to accelerate the decomposition of sewage. The process removes about 85 percent of suspended solids.
Sludge	The solid matter removed from wastewater through treatment. Sludge handling involves the processes that remove solids and make them ready for disposal.
Stationary source	A pollution location that is fixed rather than moving.

CHAPTER 1

DRAFT

INTRODUCTION

The 1970s have been referred to as the first environmental decade. During that period, increased concern over existing and emerging environmental problems led Congress to enact comprehensive legislation with ambitious goals to clean up our air, water, and land resources, and to reduce noise pollution nationwide. The Environmental Protection Agency (EPA), created in December 1970, was designated the lead Federal agency for pollution control. EPA establishes and enforces environmental standards, conducts environmental research, and provides technical, financial, and managerial assistance to State, regional, and municipal pollution control agencies.

WHAT PROBLEMS PROMPTED THE MAJOR ENVIRONMENTAL LEGISLATION OF THE 1970s?

Man's skill and ingenuity in manipulating the environment have produced tremendous benefits to human life but in the process too little thought was given to the second or third-order consequences of our actions. We failed to anticipate the fact that environmental modifications can have global impact on human health and welfare in direct and indirect ways and on the generations to follow. With the advent of the 1970s, environmental pollution had reached significant proportions and continued economic growth was likely to compound the problem unless steps were taken to control and reduce pollution. The balance of this section describes the status of air, water, land, and noise pollution in the early 1970s.

Air Pollution

Air pollution was a problem in all large cities and in many small towns, and each year over 200 million tons of manmade waste products were being released into the air. It was estimated that 51 percent of these pollutants came from transportation (mobile) sources, 16 percent from fuel combustion in stationary sources, 15 percent from industrial processes, 4 percent from solid waste disposal practices, and 14 percent from miscellaneous sources. Air pollution has both health and environmental implications. It causes severe illness, especially among infants, the elderly, and people with heart and lung problems. For example, studies have shown a direct relationship between prolonged exposure to air pollution and emphysema, bronchitis, asthma, and lung cancer. It also affects the environment and studies suggest a decline in certain crop yields as well as significant damage to freshwater lakes, timber forests, and buildings resulting from air pollution.

Water pollution

DRAFT

Many of our rivers, lakes, streams, and estuaries were grossly polluted. The list of "most polluted" rivers spanned the continent and certain pollutants had disturbed the ecological balance of our lakes and accelerated the otherwise slow, natural aging process. Contamination of our coastal waters was preventing the harvesting of fish and shellfish in many areas and dredging and filling operations were threatening waters that nurture aquatic life. Water pollution came from millions of sources of various types. For example, more than 1,100 communities were discharging their sewage into waterways without any treatment whatever. An equal number employed only primary treatment, removing 30 to 40 percent of some pollutants. About 240,000 waterusing industrial plants were generating the largest volume of wastewater and the most toxic of pollutants. Other sources of water pollution included animal wastes from feedlots, fertilizer and pesticide runoff from fields and forests, acid and sediment drainage from mining operations, and urban runoff.

Drinking water problems

The results of a 1969-70 community water supply study conducted by the Department of Health, Education, and Welfare, indicated that about 5.4 percent of all Americans, or eight million people, were served impure drinking water from an estimated 5,000 of the Nation's community water systems. In addition, another 30 million persons were obtaining water from individual sources like wells and springs, many of which were unprotected against dangerous impurities. In the decade 1961-70, there were 130 known or reported outbreaks of disease or poisoning caused by contaminated drinking water. Twenty persons died and an estimated 46,000 became ill, many seriously. Some EPA water supply experts believe perhaps 10 times as many such outbreaks occurred, but went unreported. In addition, new families of pollutants were degrading drinking water. There were thousands of toxic chemical compounds in industrial use and many new chemicals were being developed each year. Most conventional treatment processes were not as effective in the removal of increasing amounts and varieties of chemical contaminants, trace metals, and radioactive materials.

Solid waste disposal problems

At the outset of the 1970s, 4.3 billion tons of solid waste were being produced in the United States each year: 360 million tons were household, municipal, and industrial wastes; 2.3 billion tons were agricultural wastes; and 1.7 billion tons were mineral wastes. Most disposal methods in use were polluting either the land, air, or water. For example, three-fourths of the solid waste dumps contributed to air pollution and one-half were so situated that their drainage aggravated pollution of rivers and streams. Ground water contamination was also a problem. A national survey had revealed that less than 6 percent of 12,000 land

disposal sites met the minimum Federal standards for sanitary landfills and all over the country, cities, unable to find convenient space for land disposal, were seeking new sites—even distant sites—to which they could haul municipal wastes.

Marine pollution

DRAFT

The Council on Environmental Quality (CEQ) reported in 1970 that marine pollution had seriously damaged the environment and endangered human life in some areas. Pollution had closed at least one-fifth of the Nation's commercial shellfish beds; beaches and bays had been closed to swimming and other recreational use; severely degraded areas had been created in the marine environment; there had been heavy kills of fish and other organisms and identifiable portions of the marine ecosystem had been profoundly changed. The study concluded that the capacity of the sea to assimilate wastes and render them harmless, and the ocean's ability to regenerate natural resources, was not unlimited.

Noise pollution

At the outset of the 1970s, we were also beginning to realize that man should not tolerate indefinitely the increasing noise that characterized a modern industrialized nation. Noise had increased dramatically in volume over the prior 30 years and was rising in urban areas at a rate estimated at one decibel per annum. The effects of community noise on hearing were not yet known but 20 percent of the Nation's population—in addition to those exposed to excessive occupational noise—were suffering measurable hearing impairment by their fifties, whereas people in non-industrial societies experienced no such loss. In addition, hearing loss was not the only potential health problem associated with noise. Evidence was also growing that intense noise may affect other psychologic and physiologic functions of a man.

WHAT KEY PROGRAMS WERE MANDATED TO CLEAN UP THE ENVIRONMENT?

To address the problems discussed previously, Federal legislation was enacted to restore and maintain the environment. The following sections discuss selected environmental legislation enacted during the 1970s, the key goals they established, and the programs they mandated to meet those goals. The status of compliance with these programs is discussed in Chapter 2.

Clean Air Act

The Clean Air Act of 1970 is the primary legislation dealing with the Nation's air pollution problems. It empowered the EPA to establish and enforce national ambient air quality standards (NAAQS). The Nation was divided into 247 air quality control regions with each State responsible for attaining the NAAQS for the control regions located within the State. The

law required each State to submit to EPA a State Implementation Plan specifying how the standards would be achieved and maintained. Once approved by EPA, the plan was federally enforceable. EPA was responsible for setting emission standards for new pollution sources and for mobile sources, such as automobiles and trucks.

EPA established two sets of ambient air quality standards for air pollutants--primary standards and secondary standards. Primary standards were designed to protect human health, while secondary or welfare standards were to clean the air of visible pollutants and prevent corrosion, crop damage and other effects of polluted air. EPA has established standards for seven pollutants--sulfur oxides, total suspended particulates, carbon monoxide, photochemical oxidants, hydrocarbons, nitrogen oxides, and lead--and was authorized to establish standards for additional pollutants when necessary.

DRAFT

The act originally intended that NAAQS would be achieved nationwide by 1975 but this was not done. In August 1977, Congress amended the act and required each State to (1) identify which of the air quality regions had not attained the primary standards as of August 7, 1977; and (2) submit a revised plan by January 1, 1979, which provided for attainment of primary standards as expeditiously as practicable but no later than the end of 1982. For States with particularly difficult ozone or carbon monoxide problems the deadline was extended to 1987. States needing until 1987 to meet the carbon monoxide and ozone standards were required to implement motor vehicle inspection and maintenance programs as a means of controlling emissions of these auto-related pollutants.

CEQ estimated that $25.4 billion was expended on air pollution abatement in 1979.

Clean Water Act

The Federal Water Pollution Control Act, as amended, directs the Nation's water cleanup program. The act sets two specific national goals. One goal, commonly referred to as the "swimmable-fishable" goal, is to restore polluted waters, wherever attainable, to a quality that allows for the protection and propagation of fish, shellfish, and wildlife, and for recreation use by July 1983. The other goal is to eliminate all discharges of pollutants into the Nation's waters by 1985. To achieve these goals, two basic control strategies are employed: required point source controls for municipal and industrial dischargers and largely voluntary controls for nonpoint sources of water pollution.

The 1972 amendments to the act established the National Pollutant Discharge Elimination System (NPDES) to regulate and control municipal and industrial point sources. The act required that, as a minimum, secondary treatment was to be used by all publicly owned wastewater treatment plants by July 1, 1977. The

secondary treatment deadline was subsequently extended to July 1, 1983, where, through no fault of the municipality, construction could not be completed in time or where Federal funds had not been made available. In 1981 the deadline was further extended to 1988.

The 1972 amendments required industrial dischargers to apply, by July 1, 1977, the best practicable control technology currently available. The 1977 amendments gave EPA the authority to extend the July 1, 1977 deadline until April 1, 1979 for noncomplying dischargers that acted in good faith and that made a commitment to secure the resources necessary to meet the treatment requirements.

Generally, an NPDES permit specifies (1) discharge limitations for specific pollutants or substances, (2) schedules setting forth the type of actions required and timeframes necessary to comply with the discharge limitations, (3) requirements for self-monitoring, and (4) periodic reporting of plant compliance with discharge limitations. It is illegal for point source dischargers to discharge pollutants into the Nation's navigable waters without an NPDES permit.

The act created the wastewater treatment construction grants program and authorized Federal financial assistance of 75 percent of the cost for designing and constructing municipal treatment plants. More than $52 billion in Federal funding has been authorized for the program since 1972. The act also required and funded comprehensive river basin and regional water quality planning for controlling both point and nonpoint sources of pollution--a provision which set in motion major planning initiatives in all States.

CEQ estimated that $20.4 billion was expended on water pollution abatement in 1979.

Safe Drinking Water Act

In December 1974, the Congress passed the Safe Drinking Water Act to ensure that public water supply systems throughout the Nation met minimum national health standards. It was the first national commitment to safeguard public drinking water supplies. To achieve its goals, the act provided for

--primary and secondary national drinking water standards, which set limits on some of the substances found in drinking water;

--minimum monitoring frequencies for public drinking water systems;

--public notification for noncompliance with the drinking water regulations; and

--a program to protect groundwater.

EPA classified public water systems as either community or noncommunity. The former serves year-round residents; the latter serves all others—that is, transient populations in such places as motels, restaurants, and campgrounds. The national regulations for all public water systems became effective June 24, 1977. The monitoring requirements for community systems became effective the same date; however, the monitoring requirements for noncommunity systems became effective on June 24, 1979.

The Congress recognized that some water systems, especially smaller ones, could not comply immediately with the national standards, therefore, the act authorized variances and exemptions in select cases where no unreasonable health risks existed. Initially, a system receiving an exemption had to be in compliance by January 1981, or, by January 1, 1983, if the system planned to join a regional water system. In December 1980, the act was amended extending compliance dates for systems with exemptions to January 1, 1984, and January 1, 1986, respectively.

The intent of the Congress was that the States adopt and enforce drinking water regulations which apply to the estimated 250,000 public water systems throughout the Nation. The act thus provided for States to assume primary enforcement responsibility or "primacy," for monitoring the public water systems within their boundaries. It also provided for grants to States which apply for and receive EPA permission to operate their own drinking water programs.

Pollution abatement expenditures relative to drinking water in 1979 were estimated at $700 million by CEQ.

Resource Conservation and Recovery Act

In 1976, the Resource Conservation and Recovery Act (RCRA) authorized EPA to assist States to develop and implement solid waste management plans. States were not required to participate, however, and one State—New Mexico—elected not to participate.

RCRA required EPA to

—issue criteria for classifying all land disposal facilities as either environmentally acceptable or unacceptable;

—publish a list of open dumps;

—promulgate guidelines for State solid waste management plan development and implementation and make grants for those activities; and

—approve State plans if they, among other things, (1) prohibit the establishment of new open dumps, (2) require waste to be utilized for resource recovery or disposed of in sanitary landfills

(or other environmentally sound manner), and
(3) provide for the closing or upgrading of all existing open dumps.

DRAFT

Open dumping was prohibited except as covered by an acceptable schedule for compliance under an EPA-approved State plan. Such a schedule must include an enforceable sequence of actions leading to full compliance within five years from the date of publication of the criteria, which was September 13, 1979.

Pollution abatement expenditures relative to solid waste in 1979 were estimated at $7.2 billion by CEQ.

Marine Protection, Research and Sanctuaries Act of 1972

The purpose of this act was to regulate the dumping of all types of materials into ocean waters over which the United States has jurisdiction or over which it may exercise control, in order to prevent or strictly limit the dumping of any material which would adversely affect human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities.

To accomplish these goals, the act banned dumping of high-level radioactive wastes and chemical, biological, and radiological warfare agents. No other materials could be dumped without a permit from EPA or the Corps of Engineers. EPA issues permits covering the dumping of municipal and industrial wastes and the Corps of Engineers issues permits covering dredged material, subject to EPA's review and approval. The Administrator of EPA was authorized to designate areas where ocean dumping may be permitted and any critical areas where dumping may be prohibited.

The act also provided that the dumping of material that unreasonably degraded or endangered human health or the marine environment be phased out as soon as suitable alternative disposal methods could be identified and implemented. EPA initially set 1981 as the date by which the ocean dumping of municipal and industrial wastes would be phased out. In 1977, Congress amended the act to require that the ocean dumping of harmful sewage sludge be discontinued by December 31, 1981. A similar ban applicable to harmful industrial wastes was enacted in 1980.

Noise Control Act of 1972

Federal noise legislation first appeared in 1968 when Congress directed the Federal Aviation Administration (FAA) to establish rules and regulations to control aircraft noise. The Clean Air Amendments of 1970 called for the establishment of an Office of Noise Abatement and Control in EPA.

The Noise Control Act of 1972 represented the first major Federal attempt to eliminate excess noise at the design stage of

a wide variety of new consumer products. The Administrator of EPA was called upon to develop and publish information about permissible levels of noise, and then to set noise standards for products identified as major sources of noise. Aircraft noise control remained under the administration of the FAA but EPA was required to make a comprehensive study of aircraft noise and cumulative noise exposure around airports and to submit to FAA proposed regulations to control aircraft noise and sonic booms. EPA completed its study in 1973.

Noise pollution abatement expenditures in 1979 were estimated at $100 million by CEQ.

OJBECTIVE, SCOPE, AND METHODOLOGY

The objective of this review was to develop information on

—the problems that prompted the enactment of major environmental legislation in the 1970s and the goals and programs mandated by that legislation;

—the status of progress toward meeting key environmental goals aimed at cleaning up the air, water, and land, and reducing noise pollution;

—how the cities of Cleveland, Dallas, and New York have coped with mandated environmental programs; and

—some major unresolved environmental issues facing the Nation in the 1980s and beyond.

This report provides an overview of key environmental goals in terms of (1) what we planned to accomplish and by when, (2) what we have accomplished to date, and (3) what issues have to be resolved before we can complete the job and sustain the cleanup over the long term. This broad perspective can assist the Congress in better understanding where the Nation stands with respect to environmental protection—on a national basis and for specific cities—and in making decisions on future courses of action.

The national perspective on compliance with environmental mandates was based on information obtained for selected key goals for each of six environmental laws enacted or substantially strengthened during the 1970s, as follows:

Act	Key Goal
Federal Water Pollution Control Act Amendments of 1972	Control of municipal and industrial point sources of water pollution

Clean Air Act Amendments of 1970	Attainment of national ambient air quality standards
Safe Drinking Water Act of 1974	Achievement of national primary drinking water standards
Marine Protection, Research, and Sanctuaries Act of 1972	Phaseout of the ocean dumping of harmful wastes
Resource Conservation and Recovery Act of 1976	Closing of "open dumps" or upgrading them to sanitary landfills
Noise Control Act of 1972	Reduction of aircraft and other non-workplace noise

DRAFT

The case studies on Cleveland, Dallas, and New York address the progress toward achieving the goals indicated above and, also, identify obstacles to compliance and dilemmas faced by these cities in attempting to meet those goals. The chapter on unresolved environmental issues discusses factors that could preclude initial or sustained achievement of the selected environmental goals and environmental tradeoffs with other national priorities that may have to be made in the process.

Information for the report chapter covering the national perspective on progress toward meeting key environmental goals, and the report chapter on selected unresolved environmental issues, was developed from reports and studies prepared by the Environmental Protection Agency, Council on Environmental Quality, National Commission on Air Quality, Congressional Research Service, Advisory Committee on Oceans and Atmosphere, and other environmental organizations and public interest groups. We also discussed these areas with appropriate officials at EPA headquarters. Our case studies also provided specific examples of progress or lack of progress in achieving selected environmental goals.

The information used to develop the case studies on Cleveland, Dallas, and New York was obtained from appropriate local, regional, and State agencies, as well as from EPA regional offices in Dallas, Detroit, and New York City. A list of these agencies appears at the end of each respective case study.

This report is intentionally focused on a broad perspective of progress achieved in implementing environmental legislation enacted during the 1970s. We did not attempt to evaluate the effectiveness of the individual environmental programs discussed in the report, although those programs have been the subject of numerous prior reports by us. Where appropriate we drew on those prior assessments in compiling this report. A list of the broad range of our reports concerning environmental programs issued during the period 1978-81 appears in appendix IV.

The specific goals and programs discussed in this report were selected for review because they are key components of major environmental legislation and provide good indicators of what overall progress has been made toward cleaning up the environment. The cities of Cleveland, Dallas, and New York were selected for case study presentations to demonstrate how cities coped with an array of environmental requirements and, also, to provide specific examples of trends demonstrated in the national perspectives. The three cities were selected at random and not because they were representative of all urban areas in the Nation. The selection did, however, represent a mix of major metropolitan areas: a large (New York) and smaller (Cleveland) urban area, and a city (Dallas) with a newer infrastructure compared to the other two cities.

DRAFT

The unresolved environmental issues discussed in Chapter 3 by no means represent an exhaustive list of such factors. The issues presented are of concern, however, because they could impact on the Nation's ability to fully meet established environmental goals.

Our review was performed in accordance with the General Accounting Office "Standards for Audits of Governmental Organizations, Programs, Activities, and Functions."

CHAPTER 2

PROGRESS HAS BEEN MADE TOWARD ACHIEVING THE NATION'S ENVIRONMENTAL GOALS

DRAFT

The enactment of major environmental legislation in the 1970s represented a necessary first step toward restoring and protecting the environment: recognition of the seriousness of the problem. The development of control strategies to achieve the goals of those acts was a necessary second step. Since then, progress has been made toward implementing control strategies to clean up the air, water, and land, and reduce noise pollution, but the extent of progress has varied on a program by program basis. Air quality, for example, is considerably improved but, as of February 1980, less than one-half of municipal wastewater was receiving the required level of treatment. Further, while most of the Nation's drinking water meets national standards, the program to upgrade solid waste dumps to meet sanitary landfill criteria is far from complete.

This chapter discusses the status of efforts nationwide to achieve selected key environmental goals, including efforts to

—meet ambient air quality standards,

—provide required levels of treatment to municipal and industrial wastewater,

—meet national drinking water standards,

—upgrade solid waste dumps to meet sanitary landfill criteria,

—phase out harmful ocean dumping, and

—reduce noise levels from aircraft and other sources.

This chapter also discusses some of the cost and benefit estimates related to pollution control but recognizes the continuing debate as to whether those benefits are less than or exceed the related costs.

THE AIR IS CLEANER NOW THAN IT WAS IN 1970

The national ambient air quality standards (NAAQS) function as the framework for all other requirements of the Clean Air Act. The National Commission on Air Quality (NCAQ) reported in March 1981 that since the passage of the Clean Air Act of 1970 the absolute level of improvement for the most widespread air pollutants has been significant. However, substantial portions of the United States are still classified as nonattainment for one or more of the NAAQS. Adding to the problem, the submission and approval of

State Implementation Plans (SIPs) to meet NAAQS is significantly behind schedule and the validity of some air quality monitoring data is questionable.

DRAFT

The act established NAAQS to define "threshold ambient pollutant levels" above which adverse effects to public health or welfare would occur. Primary standards are set at levels necessary to protect the public health, allowing for an adequate margin of safety. Secondary standards specify a level of air quality necessary to protect the public welfare from any known or anticipated adverse effects. In practice, however, most primary and secondary standards are identical. Primary standards are set to protect the most sensitive part of the population, such as infants, the elderly, and persons with heart and respiratory problems.

Some indication of improvements in air quality can be derived from studies made by the Council on Environmental Quality (CEQ) and EPA. CEQ reported in 1980 that between 1974 and 1978, in the 33 largest metropolitan areas, there was an 18 percent reduction in the number of days during which the NAAQS were violated and thus classified as "unhealthful." There was a 35 percent reduction in the number of "very unhealthful" days and a 55 percent reduction in the number of "hazardous" days. The Nation as a whole showed similar improvement. For example, between 1973 and 1978 nationwide average annual concentrations of carbon monoxide decreased by 33 percent, sulfur dioxide by 20 percent, and suspended particulates by 7 percent.

EPA also reported progress in reducing levels of emissions of specific criteria pollutants. For example:

--Particulate emissions decreased 50 percent between 1970 and 1978.

--Sulfur dioxide emissions decreased 7 percent between 1970 and 1979.

--Carbon monoxide emissions showed a 7 percent decrease between 1972 and 1978.

While monitoring data indicate that the national average annual concentrations of particulates, sulfur dioxide, and carbon monoxide dropped between 1973 and 1978, ozone levels remained constant and nitrogen oxide levels increased. Ozone and carbon monoxide continue to be the pollutants most often in the unhealthy range. While air pollution levels are improving in cities like New York and Los Angeles, CEQ reported that these cities still experienced 174 and 206 days, respectively, of below standard air quality in 1978. In some cases trends have even reversed. For example, Kansas City had 56 healthy days in 1978, 10 times the number in 1974, and Houston had 94 such days, almost three times the number in 1974.

NCAQ reported in March 1981 that while there will be substantial progress in meeting air quality standards by 1982, with further improvements by 1987, at least eight metropolitan areas will not meet the standards for one or more pollutants by 1987. Some national perspective on nonattainment of NAAQS follows:

DRAFT

--Particulates. Portions of 211 counties are violating the primary particulate air quality standard. Portions of 27 major areas will not be in compliance with the standard by 1982.

--Sulfur dioxide. Although portions of 98 counties do not meet the primary sulfur dioxide air quality standard, very few areas are likely to violate the standard after 1982.

--Ozone. Portions of 506 counties are not now complying with the ozone standard and many had 1979 air quality levels more than 50 percent higher than the standard. Only 32 counties are likely not to be meeting the standard by 1987.

--Carbon monoxide. Portions of 145 counties do not meet the carbon monoxide standard, including 39 with carbon monoxide levels that are 100 percent above the standard. With the implementation of inspection and maintenance programs, most areas except Denver and Los Angeles are likely to meet or almost meet the standard by 1987.

--Nitrogen oxides. Only seven counties now violate the nitrogen dioxide standard.

A more negative projection was made in a Brookings Institution study issued in 1981. The study commented that the major reductions in pollution experienced from 1945 through the mid-1970s came primarily from switching from coal to natural gas rather than controls resulting from the Clean Air Act. Also contributing to improvements in air quality was that an increasing proportion of the coal mined in the 1970s had a low sulfur content. The study concluded that the increase in oil prices since 1974 has led to a resurgence in the demand for coal and wood, threatening to increase air pollution, especially since dramatic increases in coal use are projected for the 1980s. Proposed relaxation of auto emission standards, if adopted, would also make meeting ambient air quality standards more difficult.

Each of the three cities we reviewed has made great strides in cleaning up their air but problems remain. Cleveland is in a nonattainment status for four of six monitored pollutants: total suspended particulates, carbon monoxide, sulfur dioxide, and ozone. Cleveland officials estimated that particulates blown into the area from sources outside the city contribute 50 to 60 percent of the annual allowable standard and, in addition, uncontrolled

sources such as unpaved parking lots, open fields, and streets needing cleaning contribute additional particulates to the air. Because of these factors, they do not anticipate that attainment status will be reached during the decade. To reduce emissions of hydrocarbons (which lead to formation of ozone), Cleveland required in July 1981 that gasoline service stations install vapor recovery systems. These systems capture hydrocarbon vapors which are emitted when gasoline is transferred from tank trucks to underground storage tanks.

DRAFT

Dallas meets the standards for all criteria pollutants except total suspended particulates and ozone. State officials will soon ask EPA to redesignate as attainment, however, the three areas currently designated as nonattainment for particulates. Dallas officials believe the city will meet the ozone standard by December 31, 1982, but the State believes the present standard may never be met because of natural contributors to the ozone that cannot be controlled.

New York City currently does not meet air quality standards for carbon monoxide and ozone. As a condition of having its compliance dates for these pollutants extended to 1987, New York City agreed to institute mobile source control strategies, such as reducing legal on-street parking and implementing an inspection and maintenance program, in addition to the passive strategy of vehicle turnover, which has accounted for most carbon monoxide reductions to date. The further reduction in levels of these pollutants has posed problems. For example, New York's attempt to limit single rider cars to a few routes during morning rush hours met a court challenge and may never be implemented. With respect to ozone, State officials contend that the air blowing into New York City from neighboring States already exceeds the national standard. It is doubtful whether carbon monoxide or ozone standards will be met in New York City by 1987.

Another factor present in New York that jeopardizes air pollution reductions already achieved relates to the inventory of stationary sources of air pollution. Without an accurate inventory, implementation of strategies to control emissions and ultimately attain air quality standards becomes extremely difficult. According to a November 1981 draft EPA report, there are thousands of air pollution sources in the city which have never been identified on any source inventory and which are operating without permits and have never been inspected. A study by New York City personnel in a heavily industrialized area confirmed the inadequacy of their inventory: 37 percent of the sources they found were not in their inventory. Another EPA report produced early in 1981 quoted even more disturbing statistics. That report estimated there could be up to 62,000 stationary sources of air pollution in the city but only 25,430 have permits.

State implementation plans
have been significantly delayed

DRAFT

The SIP is the State's basic strategy for meeting the December 1982 deadline for bringing the Nation into compliance with NAAQS. These plans, as a result of the 1977 amendments to the act, were to be revised by January 1979 if air quality standards had not been met. The process, however, is greatly behind schedule.

By the January 1979 deadline, only five complete plan revisons and two partial revisions had been submitted to EPA. Not until one year later were all 51 revisions submitted, and 11 of those were just partial revisions. Twenty-nine States included in their submissions requests to have the deadlines for meeting either the ozone standard or the carbon monoxide standard, or both, extended from 1982 to 1987 for all or portions of the States. One or both extensions were requested for 47 of the 102 metroplitan areas with population exceeding 200,000.

By the July 1979 statutory deadline, EPA had taken final action only on Wyoming's plan revison. By January 1981, EPA had taken final action on 44 revisions, including 21 complete revisions. Of the 21, EPA approved 5, conditionally approved 15, and disapproved 1. The NCAQ reported in March 1981 that EPA approved virtually all States' projections that they would meet the air quality standards even though Federal, State, and local officials acknowledged that the projections often were based on imprecise emission inventories and inadequate projection techniques, and that they often were overly optimistic.

Some air quality monitoring
data is of questionable validity

Reliable and comparable air quality data is critical to regulation and enforcement efforts and to determining attainment with NAAQS. However, in a May 31, 1979, report entitled "Air Quality: Do We Really Know What It Is?", we noted that although improving, the reliability of some current air quality data was questionable. For example, of 234 monitoring stations we reviewed, we found siting and other problems with 81 percent. EPA has promulgated regulations to improve data collection and standardization, but implementation of such a system will probably not be achieved until the mid-1980s.

CEQ commented on the monitoring problem in their December 1980 report. The report stated that there is no uniform procedure for siting air quality monitors in metropolitan regions. In some areas monitors are sited very near major sources of air pollution so that authorities can assess the efficiency of their control programs. In other areas, monitors are sited in very clean areas in order to detect background levels of pollution or to protect against degradation of these areas. The siting of monitors may have the

spurious effect of making air quality in some areas appear better than in others when in fact air quality in the two areas could be quite similar.

DRAFT

Cleveland and New York are experiencing various types of air quality monitoring problems. Because carbon monoxide is a highly localized pollutant, the one monitor used in Cleveland until April 1981 may not have provided a true picture of air quality violations. One additional monitor has been obtained but local officials felt one more is needed. The Commissioner of the Division of Air Pollution Control said efforts to place a monitor at a downtown site that conforms to Federal guidelines had been unsuccessful. A downtown site is needed to obtain a reading in a high density area with a canyon effect from the buildings, but the high cost of the monitor and rental space has prevented siting in this location.

With respect to carbon monoxide levels in New York City, the extent of nonattainment is not known, since it is possible that the city's canyons and traffic patterns are creating "hot spots" where carbon monoxide concentrations exceed those in areas where traffic monitors are currently located. At the time of our review, the State was conducting a "hot spot" study in New York City to resolve this issue.

MORE MUNICIPAL AND INDUSTRIAL WASTEWATER NOW RECEIVES THE REQUIRED LEVEL OF TREATMENT

The Council on Environmental Quality reported in December 1980 that, while there had been substantial improvement in water quality in some locations, the quality of surface waters nationally had not changed much in the last 5 years. Still, the fact that the Nation's surface waters nationally had not deteriorated despite a growing population and an increased gross national product was an accomplishment for control efforts. More municipal and industrial wastewater now receives the required level of treatment, however, the study pointed out that efforts to control toxic pollutants and nonpoint sources of water pollution was just beginning.

With respect to point sources, every public or private facility that discharges waste directly into waters of the United States must have a permit under the Clean Water Act. These National Pollutant Discharge Elimination System (NPDES) permits state discharge limitations for specific pollutants, establish schedules for upgrading controls to meet such limits, and require monitoring and periodic reports on compliance. As of February 12, 1980, about 59,000 NPDES permits had been issued: 15,295 to municipal (mostly sewage treatment) dischargers, and 43,512 to non-municipal (mostly industrial) dischargers. EPA considered 3,688 municipal and 3,662 non-municipal permit holders major dischargers. The majors were responsible for well over 50 percent, by volume, of all discharges.

Originally all municipal sewage treatment plants were to achieve secondary treatment by July 1, 1977. Subsequently, extensions were granted to 1983 and, then, to 1988. To help municipalities meet this goal, the Congress has authorized $52 billion since 1972.

DRAFT

From 1972 through 1979, EPA funded about 18,200 planning, design, or construction "projects," of which 6,800 have been completed. Most completions are completed designs. By December 1979, construction had begun on 5,623 projects, of which only 1,552 were in operation. In February 1980, EPA estimated that 37 percent of major municipal treatment facilities were in compliance with the original July 1, 1977 statutory deadline. Industrial dischargers were required to install the "best practical control technology" by July 1, 1977. The EPA administrator said that by the end of 1979 93 percent of major non-municipal discharges were in compliance with their permit requirements or on a schedule to meet them.

Based on the above, it is apparent that progress has been made toward installing the required control technology at municipal and industrial point sources of water pollution. The job is far from complete, however, and progress varies considerably from city to city. We found during our review, for example, that through the use of $385 million in Federal funds, three sewage treatment plants serving the Cleveland area are being expanded and upgraded. Local officials anticipated that required treatment levels will be met by 1983. In Dallas, one treatment plant meets required standards but the other plant usually does not, because of design deficiencies and a shortage of trained and qualified personnel. The city plans to make all necessary improvements by 1987.

Required treatment levels will not be met as quickly, however, in New York which has 12 operating sewage treatment plants and two more under construction. Nine of the operating plants are designed and constructed to provide secondary treatment and two of the plants are being upgraded to do so. In February 1981, City officials estimated that both plants would be upgraded by late 1985, but City officials now believe Federal budget cuts may delay completion beyond 1985. A waiver of the year-round secondary treatment requirement for the twelfth operating plant is being sought by the city.

The areas to be served by the two plants under construction--North River and Red Hook--have combined estimated populations of 775,000 persons. Currently no sewage treatment is provided to those areas and, as a result, 305 million gallons per day (MGD) of raw sewage is discharged to area waters. This represents 13 percent of average dry weather flow in the city's sewer system. Both plants have been in the planning stages since the 1930s and are still far from complete. The North River plant will cost more than $1 billion and was originally scheduled to be completed in 1976. In 1979, New York City, the State of New York, and the U.S. Government entered into an amended consent order which set 1987 as

the deadline for completing both the North River and Red Hook plants. As a result of cuts made in Clean Water Act funding, the city and State are planning to ask EPA to renegotiate the completion dates in the consent order. City officials said there was no way they can meet the 1987 deadline with available funding and are drawing up plans for slowing down all of their sewage treatment projects.

DRAFT

Reduced Federal funds available for sewage treatment construction grants

The Clean Water Act was amended in December 1981 and changes made could have a significant impact on meeting the goals of the act. Funding for sewage treatment grants was authorized at an annual level of $2.4 billion for fiscal years 1982-85, down from $3.4 billion in fiscal year 1981. As of February 1982, no funds had been appropriated for fiscal year 1982. The amendments also made other major changes to the program effective October 1, 1984, including the following:

--The Federal share of eligible project costs was reduced from 75 to 55 percent.

--Federal grant assistance will be limited to projects for secondary or more stringent treatment, interceptor sewers, and appurtenances. Federal grants for infiltration/inflow correction, major sewer system rehabilitation, collector sewers, and correction of combined sewer overflows was eliminated.

--Grant assistance for the construction of reserve capacity to meet future needs was also eliminated. The size and capacity of the treatment works eligible for a grant would be based on existing needs of the community.

The 1980 Needs Survey prepared by EPA estimated the total costs of municipal treatment to meet the goals of the act through the year 2000 to be $120 billion (1980 dollars), including $33.5 billion to achieve required treatment levels. Given the significant reduction in funding for fiscal years 1982-85, and the reduced portions of projects eligible for Federal funding, it is possible that the 1988 deadline for implementing at least secondary treatment of municipal wastewater will have to be further extended.

Even municipalities that have plants that have been designed and constructed to provide the required level of wastewater treatment may face future problems. In our December 1981 report--User Charge Revenues for Wastewater Treatment Plants-Insufficient to Cover Operation and Maintenance--we pointed out that only 3 of 36 municipalities reviewed were setting aside funds to replace treatment plants when they reached the extent of their economical/technological life. Many municipalities indicated that they would return to the Federal government for replacement funding.

MOST DRINKING WATER COMPLIES
WITH NATIONAL STANDARDS

DRAFT

The purpose of the Safe Drinking Water Act is to safeguard public drinking water supplies and to protect public health. The act mandates the promulgation of minimum national drinking water standards and compliance monitoring requirements for every public water supply in the country serving 15 or more connections or 25 or more people. The great majority of these systems are in compliance with the national primary drinking water standards although numerous violations of both standards and monitoring requirements continue to occur. Overall progress toward cleaner drinking water since the act was passed, however, is difficult to determine. Data inconsistencies and monitoring problems have contributed to this situation. In addition to shortfalls in meeting drinking water standards, some communities face problems funding the capital costs of water supply, treatment, and distribution facilities.

The Safe Drinking Water Act of 1974 represented the first national commitment to safeguard public drinking water supplies. Prior to this time, Federal authority to regulate drinking water quality was restricted to water provided on interstate carriers and to foreign and domestically bottled water sold interstate. The act authorized the establishment of a joint Federal-State program for insuring compliance with EPA's national drinking water regulations, however, the intent of the Congress was that the States adopt and enforce these regulations. The act thus provides for States to assume primary enforcement responsibility--or "primacy"--for monitoring the public water systems within their boundaries.

The National Interim Primary Drinking Water Standards went into effect in June 1977 and set maximum allowable contamination levels (MCLs) for more than 20 chemicals. Monitoring requirements for community systems became effective in June 1977 and for non-community systems in June 1979.

EPA received the first monitoring data--related only to microbiological contaminants--in 1978. They showed that some 10 to 20 percent of the community water supplies in the Nation, serving about 3 percent of the population, failed to comply with standards. About two-thirds of the violations occur in systems serving fewer than 500 persons, systems which often fail to provide an adequate amount of skilled labor for operations.

EPA statistics for fiscal year 1980 show that over 146,000 violations for either failing to test or for not meeting the drinking water quality standards were recorded against 28,000 of the 65,000 community water systems in this country. Our March 1982 report--States' Compliance Lacking In Meeting Safe Drinking Water Regulations--examined 140 community water systems and supported the national statistics. In fiscal year 1980, the report pointed out that 90 of the 140 community systems and 48 of the 70

noncommunity systems included in our sample failed to comply with the Federal testing requirements for one or more of the contaminant groups. Noncompliance ranged from missing a single monthly coliform bacteria sample to not testing an entire system for any contaminants during the 12-month period.

DRAFT

Substantial capital funds needed for water supply treatment and distribution

Complying with national drinking water regulations will require significant capital outlays. In addition, many areas need expensive improvements to their water supply and distribution systems.

EPA reported that the estimated capital cost of complying with the interim primary drinking water standards was $1.26 billion over the 1980-83 period. Of this amount, about $220 million probably could not be financed by the affected water systems. The shortfall involves 3,290 water systems, over 92 percent of which are very small and the vast majority are privately owned. These systems account for $129 million, or almost 60 percent of the total shortfall.

We noted during our review that larger communities, like Cleveland and New York, also face significant capital costs for water treatment facilities. A 1979 Urban Institute study concluded that one of Cleveland's four water purification plants was in "very poor and hazardous condition and is in urgent need of replacement." Built in 1915 on unstable subsoil, the settling over the years has severely stressed its structural components, causing mechanical failures, leaks, and a partial roof collapse. In 1977, the city estimated a new plant would cost $141 million. The current estimate for a new plant built in the 1983-85 period is $264 million.

In New York City, water supplies from the oldest of the three systems need to be further treated to offset deteriorating water quality. This system provides 10 percent of the city's needs and, at present, receives only limited treatment. In June 1979, consulting firms engaged by the city estimated that, depending on the type of treatment selected, total capital costs to treat the supplies from this one system would range from $90 to $148 million. Annual costs, including debt service and operation and maintenance, would range from $11.8 to $17.0 million. The annual costs are probably understated, however, since debt service assumed an annual interest rate of 6.5 percent.

Water supply and distribution systems also pose financial problems for cities. In June 1980 the President's Intergovernmental Water Policy Task Force reported that over the next 20 years two out of ten urban water systems might experience water supply capital investment shortfalls. The most probable total urban shortfall is between $10 to $13 billion. Of this, about one-half is attributed to distribution system needs and one-third to new

source development needs. The report also noted that municipally-owned water systems are four times as likely as privately-owned systems to experience shortfalls.

DRAFT

During our review, we found that major distribution system improvements are needed in Cleveland and New York. Parts of Cleveland's system are over 100 years old. Many of the distribution pipelines are metal and contain heavy deposits which impair the system's ability to transport water; in some areas, for example, pipe capacity is reduced to less than one-third of its original level and is a major cause of low water pressure. The system also has a leakage rate of 15 percent. In addition, a city water official believes that nearly 2,000 miles of water mains need to be cleaned. None were cleaned from 1973 to 1976 and only 25 miles were cleaned during the 1977-80 period.

Low water rates have precluded making major renovations to the system. In 1981 Cleveland proposed an 11-year capital improvements program costing $908 million but current revenues are insufficient to pay for such a program. The success of the program is now dependent upon the city's ability to increase system revenues and to sell its obligations in the bond market. In August 1981, the city's bonds were given a minimal investment grade rating.

New York City's problem is somewhat different. At present, its water supply system delivers 1.5 billion gallons of water daily from as far as 125 miles away. New York's distribution system is unique in its dependence on deep-rock tunnels. Two tunnels are currently in operation. One, almost 18 miles long, was put in service in 1917 and the second tunnel, about 20 miles long, was put in service in 1936.

Both have shown signs of deterioration but the insides of the tunnels have never been inspected. Engineers are hesitant to close the giant valves which control the flow of water because the valves are so old that once closed they may never reopen. City officials believe a third tunnel is needed to assure a reliable water supply. Construction was begun but had to be shut down because of funding shortages. The total cost for completing the tunnel was estimated by New York City's comptroller at $3.5 billion (1981 dollars). This compares to the City's original estimate of $713 million made in 1966. The State comptroller believes outside aid is necessary to complete the tunnel but attempts to obtain Federal assistance have been unsuccessful.

Some States have not assumed primacy for drinking water program

Congress encouraged the States to accept primary enforcement responsibility (primacy) for implementing the law within their borders but some States have not assumed primacy. Primacy is attained by developing a program that: (1) includes drinking

water standards at least as strict as the national primary standards; (2) has adequate procedures for enforcing the standards, including such monitoring and inspection activities as EPA may require; (3) meets recordkeeping and reporting requirements; (4) issues variances and exemptions responsibly; and (5) has a plan for providing emergency water supplies.

To assist in developing and implementing their drinking water programs, the act authorizes EPA to award annual public water system supervision grants to supplement existing State funds. These grants, which are based on population, land area and number of public water systems, may cover up to 75 percent of a State's total program cost. To qualify for initial grants, States basically have to indicate an intent to assume primacy within one year of receiving the grants. Subsequent grants were awarded to States that had assumed or were making a diligent effort to assume primacy.

As of July 31, 1981, 48 States had established drinking water programs and were granted primacy by EPA. The remaining nine nonprimacy States--District of Columbia, Indiana, Iowa, Oregon, Pennsylvania, South Dakota, Wyoming, American Samoa, and the Northern Marianna Islands--have either declined or were not granted primacy by EPA. Iowa, granted primacy by EPA in September 1977, returned the program to EPA effective July 1, 1981, because of insufficient State funding to properly operate the program. EPA has assumed responsibility for operating a drinking water program and enforcing the regulations in these nonprimacy States.

The adequacy of EPA resources to carry out safe drinking water programs in nonprimacy States is a problem. In April 1981 we reported that a comparison of resources available for program implementation and operation in primacy States versus nonprimacy States revealed a significant disparity. Primacy States during fiscal year 1980 averaged about $633,000 spent on drinking water programs while EPA averaged $225,000 spent in nonprimacy States. We concluded that this resource disparity raises questions about equity and whether people living in nonprimacy States are as well protected as those living in primacy States.

STEPS HAVE BEEN TAKEN TO ENSURE SAFE DISPOSAL OF SOLID WASTE

The Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, authorized EPA to assist States to develop and implement solid waste management plans to ensure that solid waste is disposed of in an environmentally safe manner. The act also called for conducting a nationwide inventory of open dumps, and either closing them or upgrading them to meet EPA criteria. No State plans had been approved or disapproved by EPA as of June 1981 and the open-dump inventory published by EPA in May 1981 was incomplete and was not the management tool intended to apprise the Congress and the public

of the overall magnitude of solid waste disposal problems throughout the Nation. Further, little progress has been made toward upgrading open dumps to meet sanitary landfill criteria.

One of the major threats unsound disposal practices pose is the threat to the Nation's water supply. In June 1978 we reported that past practices of disposing of waste on land had contaminated some groundwater resources to the point of threatening public health. The report also found that the extent of damage done to this important resource had not been determined.

The Resource Conservation and Recovery Act of 1976 (RCRA) requires EPA to

--promulgate guidelines for State solid waste management plan development and implementation;

--approve State plans if the plans, among other things, (1) prohibit the establishment of new open dumps, (2) require waste to be utilized for resource recovery or disposed of in sanitary landfills or other environmentally sound manner, and (3) provide for the closing or upgrading of all existing open dumps.

--promulgate criteria for what constitutes a sanitary landfill, and publish an inventory of all open dumps; and

--make grants to qualifying States for plan development and implementation.

EPA was required by RCRA to develop the guidelines for States to use in developing solid waste management plans not later than 18 months after the enactment of the act. However, because of staffing constraints, multiple drafts, and time consuming analyses of public comments, EPA did not promulgate the guidelines until July 31, 1979--over 15 months late.

A March 1981 EPA survey showed that no State plans had been approved or disapproved by EPA, although 27 States had adopted and submitted State plans for EPA approval, and 17 had submitted draft or partial draft plans. Twelve had not submitted plans. As of July 1981, EPA projected that only half of the States will complete this process by the end of 1981--over 5 years after RCRA's passage. In addition to EPA's tardiness in promulgating guidelines, some States have had problems in meeting the requirements for the plan, some due to legal restrictions in State laws.

EPA published the criteria for classifying solid waste disposal facilities on September 13, 1979--almost 2 years after the date required by RCRA. An open-dump inventory was to be published within 1 year. The open-dump inventory, conducted by the States, was published by EPA on May 29, 1981, 8 months late. We reported in July 1981--Solid Waste Disposal Practices: Open Dumps Not Identified, States Face Funding Problems--that many

facilities may not have been inventoried. For example, the list contained only 1,209 open dumps, with 41 in Louisiana. Louisiana estimated that there were 1,750 open dumps in the State, but only wanted the ones listed that it could readily enforce upgrading or closing schedules against. In addition, we found that many facilities failed to meet the established criteria and should have been classified as open dumps. For example, of 94 facilities visited 29 had been classified as sanitary landfills even though they did not meet the applicable criteria.

DRAFT

The effective date for participating States to prohibit new open dumps is the date of approval of the State plan but only one State plan had been approved by July 1981. Upgrading existing open dumps to sanitary landfills is required within 5 years from the date of publication of sanitary landfill criteria, which was done in September 1979. No information is readily available on the progress of the States to date although EPA estimated that 14,000 of 20,000 municipal waste sites did not meet standards.

Over $47 million was awarded to States from October 1977 to March 1981 to develop solid waste management plans and conduct an open-dump inventory. Funding for State grants was authorized through fiscal year 1982 but EPA requested no funds for fiscal year 1982 in this area. The States believe that if additional Federal funding is not provided, their solid waste efforts, including implementing the State solid waste management plans and continuing the open-dump inventory, will be significantly curtailed.

The solid waste situations differ in Cleveland, New York and Dallas. In the Cleveland-Cuyahoga County area, the problem is diminishing capacity at nearby landfills. Most communities dispose of their solid waste at three landfills in the county and two landfills outside the county and the amount of waste disposed at sites outside the county increased from 11 percent in 1979 to 39 percent in 1981. Two of the three landfills in the county will reach their capacity by 1983; the other has capacity for about 10 more years. The potential for new landfill development within the county is limited and transportation costs are making disposal outside the county less attractive.

To handle this growing problem, Cuyahoga County has undertaken a federally-funded study to plan a resource recovery facility to convert waste into energy. The proposed 1,400 ton-per-day facility would reduce the amount of solid waste landfilled by 50-60 percent and could be operational by 1987. High interest rates in the tax-exempt market and lack of investor confidence, however, would make project financing difficult. Investors may also be skeptical because of failures of resource recovery projects at other locations. Construction costs were estimated at $100 million in September 1981.

Diminishing capacity at its landfills, as well as the high cost of upgrading them, are problems in New York. All four of

New York City's solid waste landfills are considered open dumps and do not meet EPA or State criteria for sanitary landfills. Only the largest of the four--Fresh Kills--is expected to have some unused capacity after the year 2000. Fresh Kills covers 3,000 acres, receives 10,000 tons of solid waste each day (out of a citywide total of some 24,000 tons), and is the world's largest garbage dump. New York City officials estimate it would cost as much as $208 million to upgrade its open dumps by 1985. No upgrading has begun to date. Like Cleveland, New York plans ultimately to dispose of its solid waste in resource recovery facilities. Bids have been received on one 1,000 ton-per-day facility, which would cost in excess of $200 million to construct. Six or seven additional plants are planned to be built over the next two decades.

DRAFT

Dallas, on the other hand, has no major solid waste problems. The State of Texas has classified Dallas' three solid waste disposal sites as sanitary landfills that comply with State and Federal standards. Two sites have native impermeable clay linings and the third site has been lined with an impermeable clay substance. Periodic tests are performed at each site to determine the clay's thickness, the cohesiveness of soil, and the permeability characteristics. Neither the State nor the city has detected any leakage or seepage at any of the sites. Further, Dallas projects it will have unused landfill capacity beyond the year 2000.

THERE HAS BEEN A SIGNIFICANT REDUCTION IN OCEAN DUMPING OF INDUSTRIAL WASTES

The Marine Protection, Research, and Sanctuaries Act of 1972 strictly limits ocean dumping of any material that would adversely affect human health, welfare, or amenities; the marine environment or ecological systems; or economic potential. Ocean dumping of some waste materials is prohibited and ocean dumping of other materials requires a permit from EPA or the Corps of Engineers, in the case of dredged material. Ocean dumping of waste materials regulated by EPA decreased from 11.2 million tons in 1973 to 10.3 million tons in 1980. This reflected a significant decrease in the ocean dumping of industrial wastes, however, the dumping of sewage sludge increased during the same period. In 1979, 67.4 million tons of dredged material were ocean dumped.

EPA may issue special permits not exceeding three years to dump materials that meet EPA criteria, i.e., will not unreasonably degrade or endanger human health or the marine environment. Interim permits not exceeding one year may be issued by EPA for the ocean dumping of harmful materials but EPA has required those municipal and industrial permittees to investigate alternatives and have an implementation schedule providing for the phaseout of ocean dumping or compliance with the criteria on or before December 31, 1981. A 1977 amendment to the act required that the ocean dumping of harmful sewage sludge cease as soon as possible and in any event no later than December 31, 1981. A

1980 amendment imposed the same phaseout deadline on ocean dumping of harmful industrial wastes.

DRAFT

EPA has been successful in phasing out the ocean dumping of industrial wastes. For example, the volume of industrial wastes dumped decreased from 5.1 million tons in 1973 to 2.9 million tons in 1980, about 40 percent less than in 1973. The situation with respect to sludge dumping, however, is different. Only one major dumper of sewage sludge--Philadelphia--has been phased out by EPA and the volume of sewage sludge dumped in 1980--7.3 million tons--exceeded by 49 percent the 1973 volume. The increased volume has come about as cities provide more of their sewage with the required levels of treatment.

At the present time, sludge dumping is confined to one site in the Atlantic ocean, 12 miles off the coast of New Jersey and Long Island. The site has been in use since 1924. Nine major municipalities and sewage authorities in New York and New Jersey accounted for about 97 percent of all sludge dumped there, based on 1978 volume. To assist in phasing out sludge dumping, EPA has conducted research and demonstrations of land-based municipal sludge treatment, disposal, and utilization alternatives and provided millions of dollars to existing sludge dumpers to assist in developing specific sludge management plans. Federal funds are also available under the Clean Water Act to design and construct facilities needed to implement these plans.

To comply with the December 31, 1981, deadline and to allow sufficient time to develop and implement long-term solutions to sludge management problems, dumpers in the New York City/Northern New Jersey area considered the adoption of interim disposal measures, including

--landfilling of dewatered sludge,

--composting of dewatered sludge, followed by land application of the compost as a soil conditioner or solid waste landfill cover, or

--storage of dewatered, dried sludge.

For long-term solutions, all nine major sludge dumpers in the densely populated New York City/Northern New Jersey area are also considering various combustion processes.

Enforcement of the December 31, 1981, deadline has been held up pending the completion by EPA of court-ordered studies on the relative impacts of sludge dumping. Any relaxation of EPA criteria could provoke requests to ocean dump sludge from other communities in the 25 coastal States. The District of Columbia, for example, is currently seeking a permit to dump 740 tons of sludge a day in the Atlantic Ocean. In addition, Boston, Philadelphia, and Baltimore plus several smaller communities on the east coast are in the planning process to apply for ocean dumping permits.

Ocean dumping of dredged material

During 1979, about 67 million tons of dredged material were discharged into open ocean waters: 64 percent in the Gulf of Mexico, 22 percent in the Atlantic, and 14 percent in the Pacific. This represented a 38 percent increase over 1978. The volume of dredged material dumped in the ocean is several times greater than the total of other waste materials. Dredged material frequently contains heavy metals, persistent organic chemicals, and other toxic chemicals, and this can make disposal difficult. Research by the Corps of Engineers and others into alternative disposal methods is continuing but ocean disposal will continue to be used for the great bulk of dredged material for the forseeable future.

The Council on Environmental Quality reported in 1980 that recent events suggest that a significant portion of dredged material is contaminated with toxic chemicals and used New York Harbor as an example. So that the Port of New York could remain open, 8.4 million cubic yards of silt were dredged in 1979 and dumped 6 miles off of Sandy Hook. In autumn of that year, EPA observed high levels of PCBs in test samples from the harbor and approval of 15 permits was delayed pending further study. EPA subsequently decided that the concentration of PCBs was low enough for dumping to proceed, provided the contaminated dredged material was covered with clean material after it was dumped. PCB contamination in New York Harbor has raised questions about ocean disposal of dredged material in general but, had the Corps denied a permit to dump this material, the harbor would have been closed to ocean-going ships by summer 1980.

Dredged material research program

In the early 1970s, the concern over the environmental impacts of dredging and the disposal of dredged materials reached the stage where Federal legislation was necessary. In 1973 the Corps undertook a comprehensive dredged material research program which, completed in 1978, cost $32.5 million. Long-term monitoring and verification studies, as well as regulatory research, have continued since then.

The research program covered ocean disposal as well as alternatives to ocean disposal. Four major field studies of the effects of dredged material disposal at openwater sites were completed but the Corps concluded that an additional 3-year effort was needed to make better assessments of longer term effects. Alternative methods research covered confined dredged material disposal, wildlife habitat development, stripmine reclamation, and other forms of land disposal.

Prior to the ocean disposal of dredged material, a number of other disposal alternatives are considered but the Corps believes that, in many instances, there is no economically feasible or environmentally acceptable alternative to ocean disposal. More

than 100 ocean disposal sites for dredged material have been granted interim designation by EPA and efforts are underway to conduct the necessary environmental studies for permanent designation of these sites.

DRAFT

NOISE CONTROL: LESS FEDERAL INVOLVEMENT AND EXTENDED COMPLIANCE DEADLINES

The Noise Control Act of 1972--administered by EPA--and the Aircraft Noise Abatement Act of 1968--administered by the Federal Aviation Administration (FAA)--were geared toward reducing environmental noise to levels which would be most desirable to achieve health and welfare protection. There have been some indications of progress in reducing noise levels, however, EPA has announced that it intends to completly phase out its noise control program by the end of fiscal year 1982. Compliance deadlines for meeting aircraft noise standards were extended by Congress in 1980.

EPA noise control program

The Noise Control Act as amended by the Quiet Communities Act assigned EPA the primary Federal responsibility for promoting an environment for all Americans free from noise that jeopardizes their health or welfare. EPA's stated goal was to reduce non-occupational noise to an average day-night level of 75 decibels as soon as possible and to 55 decibels over the longer term. Attainment of the former level would essentially eliminate the risk of hearing loss due to environmental noise and reduce extreme annoyance and activity interference while the latter level is considered most desirable to achieve health and welfare protection.

To reduce noise levels, EPA was authorized to

--identify products which are major sources of noise and to establish and enforce noise emission standards,

--propose aircraft noise control regulations to the FAA,

--establish noise emission standards for railroads and interstate motor carriers,

--assist State and local governments financially and technically to establish noise control programs, and

--conduct research into the psychological and physiological effects of noise on the public.

There are no readily available statistics which form the basis for clearly determining the progress or trends in reducing noise levels to which the public is exposed. Unlike the air and water quality programs, there is no ambient monitoring data on noise emissions. Further, noise tends to be highly localized and is often of very short duration. There are various indications of progress or lack of progress, however, including the following:

--EPA's "Pilot National Environmental Profile 1977" reported that 53 percent of the population of States and 69 percent of the population of cities live under noise control laws.

DRAFT

--EPA has issued noise standards for several products such as air compressors. A major problem has been in quantifying health effects and justifying added costs.

--Regulations which have been promulgated covering railroads and motor carriers will probably be retained, with enforcement assigned to the Department of Transportation.

--EPA was not successful in getting FAA to adopt aircraft noise standards it proposed and will no longer recommend such standards.

EPA intends to completely phase out its noise control program by the end of fiscal year 1982. Federal funding of State programs has been eliminated, however, and we were informed in August 1981 by the Acting Deputy Assistant Administrator for Noise Abatement and Control that only 15 of 25 existing State programs will remain after Federal support is dropped.

FAA aircraft noise abatement program

The Aircraft Noise Abatement Act of 1968 gave the FAA the authority to regulate aircraft noise. Regulations were promulgated setting limits on noise levels for aircraft entering the civil fleet after 1969. Maximum allowable levels were specified for approach noise, takeoff noise, and for sideline noise. The maximum noise level specified for each of these points is 108 decibels for the heaviest aircraft. Aircraft certified after November 1975, or issued amended type certificates after May 1, 1976, have to meet even more rigorous requirements.

In December 1976, the Fleet Noise Rule went into effect. This rule requires that all civil jet aircraft currently in the fleet that do not meet FAA standards either be brought into compliance through retrofitting or reengining, or be retired from the fleet by January 1, 1985. For 2- and 3- engine aircraft, full compliance was expected by January 1, 1983, for 4-engine aircrafts, full compliance by January 1, 1985. The Aviation Safety and Noise Abatement Act of 1979, eased the Fleet Noise Rule. Existing deadlines were postponed to 1985 for 3- engine aircraft and 1986 for 2- engine aircraft, if binding contracts are entered into for quiet replacements. Also, 2- engine aircraft were exempted until 1985 for those seating more than 100 passengers and 1988 for those seating 100 passengers or less. No relief from compliance dates was provided for 4- engine aircraft.

Noise problems vary in Cleveland, Dallas, and New York

DRAFT

The subject of noise abatement was receiving varying emphasis in each of the three cities included in our review. In Cleveland, a noise abatement ordinance was drafted in 1978 to protect the public from excessive noise. The ordinance was not enacted because Federal funds were not available for enforcement and the city does not plan to fund the program with local revenues. Cleveland officials did believe that noise levels had been lessened at Hopkins International Airport as a result of improved noise reduction technology and modified takeoff and landing procedures.

Dallas, which recently had a citywide environmental noise assessment conducted, believes its major sources of noise are aircraft and motor vehicles. Noise levels of 70 decibels have been found in some areas near one of the city's two airports and during peak traffic hours along a major expressway. A separate study of noise in the vicinity of the airport--Love Field--was made and given to a task force reviewing potential noise abatement procedures, including a 10:00 p.m. to 6:00 a.m. curfew on arrivals and departures. Dallas has studied several proposals to alleviate traffic congestion along the North Central Expressway corridor and has found advantages and disadvantages to each proposal. Dallas also has a noise ordinance for new construction but does not have noise measuring instruments to determine compliance with the ordinance.

According to some environmentalists, New York City's noise code of 1972 is the most advanced in the Nation, however, enforcement of the code has been spotty. Because of personnel cutbacks resulting from the city's financial problems, the number of inspectors was greatly reduced and, as a result, the number of summonses issued for noise violations declined from 3,604 in 1973 to 162 in 1977 and to 83 in 1981.

A major source of noise in New York City is the subway system. It affects the riders as well as those who live along the subway's elevated portions. An April 1981 study issued by the Natural Resources Defense Council characterized the New York City subway system as twice as loud as systems of comparable age in Berlin, Paris, and London. The study pointed out that these high noise levels pose a hazard to public health and are a factor in declining ridership. The study concluded that the New York City Transit Authority's noise abatement program has had some success but more needs to be done, including the development of noise objectives and standards for the system. Quieting a system that includes about 6,500 subway cars and 750 miles of track, 70 of which is elevated, would be a multi-billion dollar effort. For example, 30 miles of rail have been replaced at a cost of about $1 million per mile.

THE COSTS AND BENEFITS OF ENVIRONMENTAL PROGRAMS ARE DIFFICULT TO DETERMINE

DRAFT

The debate on the relative benefits and costs of environmental programs remains unresolved. Some individuals contend that environmental regulations are too stringent, their costs are too high and they impede the growth of productivity and fuel inflation. Others contend that benefits far exceed the costs.

The lack of agreement concerning a number of factors contributes to the inability of making conclusive determinations with respect to the costs and benefits of environmental programs. This lack of agreement involves

—definition of what constitutes costs and benefits of environmental programs;

—measuring changes brought about by environmental programs;

—quantifying in dollar terms the benefits of environmental programs; and

—isolating the impact of environmental programs relative to the impact of other factors.

Also contributing to this lack of agreement on the net costs of environmental programs are data deficiencies, subjective determinations, and questionable assumptions involving specific studies. For example, in evaluating a study of the impact of pollution abatement costs on the productivity growth rate, CEQ questioned the study's underlying assumptions. One assumption was that all of the funds used for pollution control would have been spent on conventional production if not used for pollution control purposes.

Another factor that complicates the benefit/cost discussion is that, for the most part, the benefits of regulation do not accrue to the same parties that bear the costs of regulation. Pollution control equipment required to meet Federal standards may raise costs to a firm, but benefits will accrue to communities whose water and air purification capital and operating costs are lowered, to those whose medical costs are reduced, to owners of real estate whose property values rise as a result of cleaner air and water, and to firms, workers, and others, who gain from sales of pollution control equipment.

The balance of this section discusses the results of several cost and benefit studies sponsored by CEQ.

Costs of environmental programs

CEQ estimated that the 1979 "incremental" annual costs of environmental programs--those costs resulting from Federal

legislation--reached the $36.9 billion level and represented about 1.5 percent of gross national product. Incremental expenditures for air pollution control were $22.3 billion and for water pollution control they were $12.7 billion. Total costs of environmental programs--incremental costs plus expenditures that would be made in the absence of Federal legislation--were estimated at $55.9 billion, or about 2.1 percent of gross national product in 1979. Estimated incremental and total pollution abatement costs for the period 1979-88 are $519 and $735 billion, respectively.

DRAFT

CEQ-EPA estimates are based primarily on the cost of installing, maintaining, and operating an "end of the pipe" device that has no function other than abatement of pollution. They do not, for example, include pollution abatement costs that are integrated in the production process, which may improve production efficiency as well as reduce pollution. Further, these estimates relate primarily to Federal legislation and to State and local regulations enacted to comply with the Federal laws. They do not include costs of meeting State and local standards when they are more stringent than the Federal standards.

Appendix I summarizes CEQ estimated cumulative total pollution abatement expenditures for 1979-88.

Benefits of environmental programs

The benefits of pollution control are more difficult to measure because they are commonly less tangible than the costs of environmental programs. In addition, benefits are frequently spread among a larger population and the direct benefit to each individual may be relatively small. The aggregate benefit, however, may be substantial. The major challenge in benefit analysis, however, is to find the appropriate method of placing monetary values on such elements as economic stability; confidence in business; maintenance of rural areas, small towns, and urban residential areas; clean air and water; good health and reduction of pain and suffering; and a human life. Prior estimates of damage due to environmental factors have been wide ranging. For example, estimates of costs of illness due to photochemcial oxidants have ranged from $1 to $50 per hour, to $32 per day. A National Academy of Science study in 1974 used a value of $200,000 for each death attributable to air pollution but used a lower value of $30,000 in 1975.

A report prepared for CEQ and issued in December 1979 presented a synthesis of recent estimates of benefits of air and water pollution control. It also presented "best judgment" estimates of benefits based on available studies. The report concluded that the national benefits realized from reductions in air pollution since 1970 lie in the range from roughly $5 billion to $51 billion per year. The most reasonable estimate of the annual benefits of air quality improvement being enjoyed in 1978 was $21.4 billion. The lower and upper bounds of water pollution

control benefits were $6.5 billion to almost $25 billion per year. The study concluded that the most reasonable point estimate of the benefits to be enjoyed by 1985 was $12.3 billion, over half of which was attributable to improved waterbased recreation.

DRAFT

The report also pointed out that, in spite of recent advances, the estimation of certain kinds of environmental benefits is still in need of much additional refinement and the development and acquisition of data in a number of important areas will be one key to this refinement.

Appendixes II and III summarize the air and water pollution control benefits data from the study.

CONCLUSIONS

In the 1970s a series of ambitious programs to restore and maintain our air, water, and land resources, and reduce noise pollution was implemented. Since then, billions of dollars have been expended by government and industry and it is estimated that $735 billion will be expended on pollution abatement between 1979 and 1988.

What has been accomplished? On a nationwide basis, there has been progress toward meeting key environmental goals, but the job is far from complete and original deadlines have had to be extended significantly. For example, the 1975 milestone for meeting national air quality standards was extended to 1987, and the requirement to provide municipal wastewater with secondary treatment was extended from 1977 to 1988.

The absolute level of improvement for the most widespread air pollutants has been significant since the passage of the Clean Air Act. However, substantial portions of the Nation still do not meet air quality standards for one or more of the seven criteria pollutants. Projected increases in coal use during the 1980s and proposals to relax auto emissions, if adopted, would put additional pressure on air quality.

More municipal and industrial wastewater receives the required level of treatment now than when national standards were mandated in 1972. By the end of 1979, 93 percent of major industrial dischargers were in compliance with their permit requirements or on a schedule to meet them. On the other hand, only 37 percent of major municipal treatment facilities were in compliance with mandated treatment requirements as of February 1980. The great majority of water supply systems meet national drinking water standards. Nevertheless, 146,000 violations of the standards and monitoring requirements--most involving systems serving fewer than 500 persons--were reported in fiscal year 1980. Many rural and urban communities also face problems financing needed improvements to their water supply system.

To ensure environmentally safe disposal of solid wastes, the Resource Conservation and Recovery Act of 1976 called for the preparation of State solid waste management plans, a nationwide inventory of disposal sites, and the closing or upgrading of "open dumps." As of June 1981, no State plans had been approved by EPA. In addition, the nationwide inventory published in May 1981 was considered incomplete and inadequate and little progress has been made toward upgrading open dumps to environmentally sound facilities. The ocean dumping of industrial wastes decreased by 41 percent between 1973 and 1980 but the volume of municipal sewage sludge dumped increased by 49 percent during the same period. In addition, the ocean dumping of dredged material continues at high levels. Enforcement of the December 31, 1981, statutory prohibition against the dumping of harmful sewage sludge, however, was delayed pending the completion of additional studies by EPA.

There have been some indications of progress in reducing non-workplace noise levels, however, EPA plans to completely phase out its noise control program by the end of fiscal year 1982. Without Federal assistance, many State programs may also have to be terminated.

DRAFT

CHAPTER 3

MAJOR UNRESOLVED ISSUES MAY PREVENT ACHIEVEMENT OF ENVIRONMENTAL GOALS

DRAFT

There has been progress toward meeting the Nation's key environmental protection goals but, as discussed in Chapter 2, the job is still far from complete. In addition several major issues and problems continue to plague pollution control efforts and, if left unresolved, could delay indefinitely the full attainment of environmental goals and needed improvements in our air, water, and land resources. This chapter examines some of those unresolved issues and problems, including:

--The causes and impacts of acid precipitation and control measures needed.

--The significance of nonpoint sources of water pollution and how they can be alleviated.

--The enormous cost to correct the combined sewer overflow problem.

--The increasing seriousness of the ground water contamination problem.

--The continuing controversy over the use of the ocean as a waste disposal medium.

--Pollution control creates additional waste residue but restricts disposal options.

--Continuing effort needed to sustain compliance with pollution control requirements over the long term.

ACID PRECIPITATION POSES SERIOUS AIR QUALITY PROBLEMS

Acid precipitation is produced from sulfur dioxide and nitrogen oxides emitted by fossil-fueled power-plants, vehicles, and other man-made or natural sources. A distinctive feature of acid rain is the long-range transport of those pollutants during which they are chemically transformed in the atmosphere and return to earth as acid compounds. Acid precipitation has been alleged to damage crops, forests, soil fertility, lakes and fish populations, and man-made materials, as well as human health. Still, controversy exists as to its exact causes and impacts, and what control measures are needed.

The National Academy of Sciences reported that as of 1979 acid rain caused $5 billion in damages annually. CEQ has identified acid rain as one of the two most serious global environmental problems associated with the combustion of fossil fuels.

Increased use of coal to produce energy could make the problem worse. Extensive research into the acid rain problem is underway.

DRAFT

Under the Clean Air Act, ambient concentrations of the criteria pollutants within an air quality control region (AQCR) are to be brought within the national standards through controls imposed on the sources of those pollutants within that AQCR. If a particular region has a problem with sulfur dioxide, for example, the problem is to be addressed in the State Implementation Plan (SIP) by control measures imposed on those sources. This statutory arrangement creates two problems.

First, sulfur dioxide and nitrogen oxide are not always reflected in ambient concentrations. For example, if those pollutants are emitted from tall smoke stacks, these gases often rise high into the atmosphere, combine with water vapor, and are transformed into sulfuric acid or nitric acid. The acid may then fall to earth as precipitation, or as dry sulfate and nitrate particles. Because they are no longer in their gaseous forms, they do not show up on monitors of ambient air quality. As a result, control strategies based on ambient concentrations may miss pollutants that only briefly pass through ambient air on their way to earth.

Secondly, the long-range transport of air pollutants also presents control problems. Thus air pollution in one region may be related not only to emissions in that region but also to emissions from sources well beyond the reach of the region's control authorities. The practice of achieving pollutant dispersal through tall stacks to avoid ground level concentrations has resulted in the transport of pollutants from some AQCRs to others. The taller the stack, the higher the gases rise into the atmosphere. The resulting dispersion reduces ambient or ground-level concentrations of the pollutants and protects against some of the adverse health and welfare effects. Sooner or later, however, the problems may appear elsewhere. Some electric utility stacks are taller than 1,000 feet, the tallest nearly a quartermile high.

Impacts of acid precipitation

Those who claim acid precipitation is a demonstrated environmental problem for the United States assert that significant damage already has occurred, and that firm evidence shows that far more damage will occur unless regulatory action is taken. Among the alleged effects of acid percipitation are:

--acidification of lakes, streams, and groundwaters resulting in damage to fish and other aquatic life;

--reduced forest productivity and damage to crops;

--deterioration of man-made materials such as buildings, statuary, finishes and metal structures; and

--indirect effects on human health arising from contamination of drinking water fish.

DRAFT

In a September 11, 1981, report--The Debate Over Acid Precipitation: Opposing Views, Status of Research--we noted that damage to aquatic ecosystems is the area of highest consensus. Environmental groups and others calling for immediate regulation cite a formidable body of scientific literature which documents the problem. Spokesmen for the utility and coal industries acknowledge that acidic conditions have damaged aquatic ecosystems in some areas, although acid precipitation may be only one of several causes. We also found general agreement in the scientific community that lakes and streams in the Northeast U.S. and Southeast Canada are becoming increasingly acidic, and that this acidification is already causing damage to some aquatic ecosystems. There is also substantial consensus that acid precipitation is the primary cause of this condition.

Acid precipitation's impacts on terrestrial ecosystems, man-made materials and human health are less understood. Although these subjects have been and are presently being researched, the results are preliminary and not easily quantified. Advocates of regulation have made claims about acid precipitation's effects on forests, crops, and soils. Opponents of regulation have stated that the available evidence is too limited to make a determination and much more work remains to be done before we have concrete evidence of the effect of acid rain on plant life. EPA contends that although these impacts are possible, further research is needed to prove that they are happening.

Detailed assessments of the effects of acid rain on man-made materials such as buildings and statues, separated from the effects of other pollutants, appear to be just getting underway. With respect to human health, there were few claims of direct effects in the literature survey we performed, and they tended to be attributed to other pollutants rather than to acid deposition itself. Two indirect hazards are often discussed, both involving the metals which can be dissolved by water of greater than usual acidity. These are contamination of edible fish with mercury, and contamination of drinking water by heavy metals such as lead leached from water storage and distribution systems.

Causes of acid precipitation

Advocates of further regulation claim that convincing evidence shows that man-made sources, particularly older coal-fired powerplants in the Midwest, cause acid precipitation in the Northeast and Canada. Opponents of regulation contend that there is insufficient proof that this is the cause. Key issues involved in the debate include the following:

--General agreement exists that much of the northeastern U.S. and southeastern Canada are receiving acid deposition at rates many times in excess of that expected from a "pure" atmosphere. Most of this acid is sulfuric acid. In areas of the West experiencing acid precipitation, the majority of the acidity is nitric acid.

--Participants disagree on whether the acidity of precipitation has been increasing.

--Most advocates agree that long-range transport and chemical transformations of sulfur dioxide and nitrogen oxides occur in the atmosphere. They disagree, however, whether knowledge is sufficient to link emissions from the Midwest to acid deposition in the Northeast U.S. and Southeast Canada.

--There is agreement that sulfur compounds in the atmosphere of the Northeast U.S. and Southeast Canada come predominantly from man-made sources.

--Wide disagreement exists over the extent to which local versus distant sources are responsible for acid precipitation. Scientific work suggests that both coal-fired powerplants and local combustion of residual and home heating oil and fuel for motor vehicles contribute, but has not firmly established the shares from each.

Measures to control acid precipitation

The Clean Air Act Amendments of 1977 require that EPA approve a SIP only if it prohibits stationary sources within the State from emitting any air pollutant in amounts which will prevent attainment or maintenance by any other State of an ambient air quality standard. EPA has also taken action to regulate allowable heights for smoke stacks. Many States still believe, however, that they are adversely affected by the interstate transport of pollutants.

The debate on whether additional regulatory measures are needed to control acid precipitation has centered around two questions: (1) Is current regulation of emissions under the Clean Air Act adequate, given our current state of knowledge about acid rain? and (2) How effective would additional regulatory measures be in alleviating acid precipitation, and what would their economic, environmental and other impacts be?

Proposed strategies to deal with acid precipitation vary widely in their economic, energy, and environmental impacts. Relatively inexpensive strategies, such as coal washing, have limited environmental benefits. Comprehensive strategies, such

as installing scrubbers to remove pollutants from smoke stacks at existing power plants, can significantly reduce sulfur dioxide emissions but are more costly. Furthermore, the extent of their environmental benefits is disputed.

EPA, DOE, and other organizations are studying the impacts of intermediate strategies designed to abate acid precipitation. Most focus on reducing sulfur dioxide emissions from electric utilities, with particular emphasis on coal-burning power plants. The coal and utility industries, and even DOE, however, cite studies suggesting that targeting coal-fired power plants in the Midwest may not be effective in reducing acid precipitation in the Northeast, and that more attention needs to be paid to effects of nitrogen oxide.

A U.S. decision on whether and how to implement control strategies could also have international implications. Canadian officials consider transboundary air pollution, which they assert causes acid precipitation in eastern Canada, to be a serious bilateral issue with the United States.

NONPOINT SOURCES OF WATER POLLUTION ARE SIGNIFICANT BUT HAVE NOT BEEN CONTROLLED

Nonpoint pollution refers to pollutants which enter the water in a diffused and diluted form rather than from a specific discharge point. Agricultural activities and urban storm water runoff are the major sources of nonpoint pollution. Although estimates vary widely, the general consensus is that nonpoint pollution is a significant problem and, unless it is solved, many rivers and lakes will not be able to meet our Nation's water quality goals. The Council on Environmental Quality reported in December 1980 that, in contrast to the important progress made in controlling municipal and industrial point source discharges, progress with nonpoint sources has been negligible.

In addition to agriculture and urban storm water runoff, sources of nonpoint pollution include mining drainage, livestock and forestry operations, construction sites, and septic systems. In volume, the major nonpoint pollutant is sediment from soil erosion of agricultural land, which transports pollutants like pesticides and excess nutrients into the waterways. Runoff from lands used to support livestock contributes large quantities of nitrogen and phosphorous. Urban runoff contains almost all types of pollutants, including toxic materials, oil and grease, and animal litterings.

A 1977 EPA report to the Congress indicated that of 246 river basins in the United States, 68 percent had nonpoint pollution from agriculture, 52 percent from urban runoff, 30 percent from mining, and 15 percent from forest activities. Nonpoint pollution can also be a significant part of total pollution in a waterway. For example, the North Central Texas Council

of Governments estimated that the percentage of pollution in the Trinity River and its tributaries from nonpoint sources rose from 43 percent in 1975-76 to 53 percent in 1979-80. The increase was attributed to improvements made in treating point sources. Pollution from nonpoint sources can also be highly concentrated. A study of Washington, D.C. found that in water from city streets the concentration of suspended solids was 104 times higher than effluent from a secondary treatment plant. The lead concentration was 1,015 times higher. In New York City urban runoff was found to account for 49 percent of copper loadings, 36 percent of chromium and nickel, 69 percent of zinc, and 44 percent of the cadmium loadings in the harbor area.

DRAFT

One Federal program which directly addresses nonpoint source pollution is the water quality management program of the Clean Water Act. The program calls for designation of planning agencies to develop plans through an examination of waste management alternatives for continuing management of point and nonpoint source wastes on an areawide basis. The act also requires that, following approval of such a plan by the State and EPA, designated management agencies are to implement the plan. Federal funds under this program were provided for the planning process but not for implementation of control strategies.

The program was not successful in controlling nonpoint pollution. We testified at Congressional hearings in July 1979 that the section 208 program suffered from inadequate data on the nature of nonpoint pollution, discontinuity in funding levels, late issuance of rules and guidance by EPA, and numerous conflicts between Federal, State and local governments. Other testimony at the hearings suggested that nonpoint source pollution will, in large part, prevent attaining the "fishable-swimmable" goal of the Clean Water Act in many areas of the country.

Present EPA programs to control nonpoint pollution

EPA is currently supporting a series of demonstration projects to identify and develop control strategies for agricultural and urban problems which EPA officials assert are the greatest contributors of nonpoint pollutants nationally. The demonstration projects are designed to assess nonpoint pollution problems, their impact on water quality, and the cost-effectiveness of possible control measures.

EPA and the Department of Agriculture are supporting a Model Implementation Program to study agricultural nonpoint pollution and accelerate the installation of conservation practices to reduce agriculture and silvicultural runoff. The Clean Water Act of 1977 established a program for implementation of nonpoint pollution control measures in agricultural areas. Under the program called the Rural Clean Water Program, participants would enter into contracts for implementation of measures consistent with an approved areawide plan. This program has not been funded.

Urban nonpoint control strategies are being developed under the National Urban Runoff Program. Under this program a series of prototype projects for data collection is administered by EPA and the U.S. Geological Survey. This effort is designed to secure information on possible solutions to urban runoff problems, including impacts on water quality and future use, as well as the cost effectiveness of controls. Projects under this program will culminate in 1983 with a report to the Congress. Federal funds are not available to implement programs to control urban runoff. Rough estimates on the cost of such programs nationwide range from $70 to $500 billion.

COMBINED SEWER OVERFLOW PROBLEMS
MAY BE TOO COSTLY TO CORRECT

Combined sewer overflows severely degrade the Nation's water quality and, in addition, combined sewer systems in many communities are a major cause of flooding, including sewage backups into basements. Billions of dollars are needed to fund the pollution control portion of projects to correct combined sewer overflows. These projects have a low priority at the Federal level and must compete with higher priority projects at the local level, also. As a result, a significant source of water pollution may go uncorrected indefinitely.

"Combined sewers" is a term given to a sewage system that carries both sanitary sewage and storm water through the same pipe to a treatment facility. Such systems are usually found in older communities, whereas newer communities generally have separate sewer systems. In a separate system, one pipe carries sanitary sewage to the treatment facility and another pipe carries storm water directly to the area waterways, bypassing the treatment facility.

During dry weather a combined system can handle the communities' sanitary sewage flow. When it rains, combined systems mix rainwater with the raw sewage already flowing in the pipes. The result is a mixture that includes human wastes, disease-causing organisms, toxic chemicals, heavy metals, oil, grease, and other contaminants. Depending upon the system's dry weather flow, its capacity, and the volume of rainfall, it can quickly become overloaded. Once a system overloads, the water can overflow directly into rivers and streams or backup into homes, streets, and low-lying land. In contrast, overflows from separate storm water systems do not involve surface discharges of raw sewage although separate storm water systems also convey significant amounts of pollutants.

The magnitude of the combined sewer problem has been clearly documented in several major cities. For example, in Chicago, overflows from hundreds of combined sewer outlets account for approximately 45 percent of the pollution in area rivers and streams and also contribute to pollution in Lake Michigan. In San Francisco,

every time it rains, the volume of combined rain runoff and sanitary sewage exceeds treatment plant capacity and the excess flows untreated into San Francisco Bay and the Pacific Ocean. Each year San Francisco suffers 80 such overflows and must close beaches an average of 125 days per year.

No area of the country escapes the combined sewer problem. According to EPA, more than 1,100 combined or partially combined sewer systems serve more than 42 million people in an area totalling 2.7 million acres. Combined sewer systems are found in 10 of 10 of the Nation's largest cities and in hundreds of smaller communities. They are most prevalent in the densely populated and highly industrialized areas of the Northeast and Midwest. EPA estimated in 1980 that it would cost $37 billion to correct the combined sewer overflow problem nationwide. The estimate included funds needed to construct facilities to prevent and/or control periodic bypassing of untreated wastes from combined sewers to achieve water quality objectives.

CSO abatement has been given a low priority when compared to the construction of treatment plants. Based on the significant funding still needed for treatment plants, and the reduced Federal funds available for the entire EPA waste water treatment plant construction grants program, it appears that CSOs will continue to receive low priority. Our December 1979 report--Large Construction Projects To Correct Combined Sewer Overflows Are Too Costly--concluded that the one essential reason for the slow progress in correcting CSOs was "not enough Federal money." It recommended the implementation of less costly solutions to the CSO problem than the structural-intensive solutions generally accepted as necessary.

While no such technique alone provides the same degree of improvement offered by structural changes, a number of techniques together could minimize overflows and reduce the size of the construction project if one is eventually needed. Alternative techniques include

--measures to reduce the flow of rain or pollutants into the system, such as storing water on roof tops or in parking lots or keeping streets clean;

--devices to increase the flow of sewage through the system, such as sewer inlet restrictors and remotely controlled regulators; and

--devices to regulate and treat sewage at overflow points.

Combined sewers a major problem in Cleveland and New York

During our review we found that Cleveland and New York City have combined sewers while Dallas has separate sanitary and

storm sewers. The storm water in Dallas is discharged untreated into the Trinity River. While the separate storm sewers prevent the discharge of raw sewage during a rainfall, the storm water may still contain significant quantities of various pollutants.

In the Cleveland area, the combined sewer system has more than 300 overflow points, 100 of which discharge directly into the environment and pollute the receiving waters. Even during moderate rain storms, the rate of flow in the system is 40 to 50 times greater than in dry weather and is much more than the system can handle. For example, in the area served by one of the sewer district's three treatment plants, the estimated overflow would exceed 2,000 MGD. The sewer district has been exploring projects to maximize in-sewer and off-line storage of the overflow but believe significant progress toward controlling combined sewer overflows will not be made until the late 1980s - year 2000 timeframe. The estimated cost is from $187 to $251 million and a sewer district official said a program of this magnitude would not be undertaken without Federal aid.

The vast majority of New York City's sewers are combined and, as a result, area waterways may never achieve their full potential. New York's waste treatment plants can accommodate twice the average dry weather sewage flow but peak flows are much as 50 times the normal flow. As a result, when it rains, millions of gallons of untreated sewage are discharged to area waterways, bacteria levels rise precipitiously, and beaches have to be closed.

New York City's planners believe that, except for coliforms and aesthetics, the effect of overflows upon harbor waters appears minimal, although to meet State and city standards for bathing in many areas floatable materials must be eliminated and coliform bacteria reduced. The Interstate Sanitation Commission of New York, New Jersey, and Connecticut and the city's Department of Health have stronger views. The Commission believes that the monies being expended currently on treatment plant upgrading and expansion in large part will be wasted if means of mitigating the effects of combined sewers are not found. The Department of Health has severe doubts concerning the projection by planners of open beaches in the vicinity of combined sewer overflows and statements that chlorination alone will make some other areas suitable for bathing.

It does not appear likely that the combined sewer problem in New York will be eliminated soon. Both the Commission and city officials said it would cost billions of dollars to correct the problem; even suggested studies of the problem could cost $100 million. At the same time, the city still needs about $1.75 billion more to provide secondary treatment to all its dry weather waste water flow. Federal budget cuts could slow down that process significantly.

GROUND WATER CONTAMINATION IS AN EMERGING PROBLEM OF MAJOR PROPORTION

DRAFT

Ground water is a vast natural resource. It supplies 25 percent of the fresh water used for all purposes in the country and 50 percent of all residents rely on it as their primary source of drinking water. Recent information reveals that in many locations ground water is contaminated by toxic organic and inorganic chemicals, many of which are known or suspected carcinogens. Once contaminated, ground water can remain so for hundreds or thousands of years. EPA has recognized the importance of protecting ground water and proposed a national ground water strategy in late 1980. No formal strategy had been promulgated, however, as of February 1982.

Ground water collects in formation beneath the surface of the ground called aquifers (underground reservoirs) and flows, unlike rivers and streams, from a few feet a day to a few feet a decade. Depending on the soil composition of the area, ground water may be found from a few feet below the surface to several hundred or even 1,000 feet below. In some parts of the country, ground water is being withdrawn faster than the aquifer is replenished, a fact which makes preserving the quality of remaining supplies even more important.

Contamination of ground water from human activities may come from surface impoundments, landfills, agriculture, leaks and spills, land disposal of waste waters, septic tanks, mining petroleum and natural gas production, underground injection wells, and other sources. In 1977, EPA identified the disposal of industrial wastes and solid waste disposal sites as the most important source of ground water contamination. For example, survey data compiled by EPA in 1980 on some 26,000 industrial impoundments revealed that:

--35 percent, or about 9,100, of the total impoundments were unlined, which potentially allow contaminants to infiltrate unimpeded into the subsurface;

--30 percent, or 7,800 of those unlined impoundments are located directly on top of ground water sources with no barrier reported between the wastes and the ground water; and

--about 2,600 of the total impoundments are unlined, directly on top of ground water, and within one mile of a water supply well.

In the Northeast, Southeast, and Northwest--areas with substantial manufacturing activity and high population densities--industrial wastes and domestic sewage disposal have the largest impacts on ground water. In areas where mining and petroleum production are concentrated, these activities cause the most commonly reported contamination problems.

Because of a lack of data, it is difficult to generalize about ground water quality nationwide. However, reported incidents of contamination suggest how serious and widespread the problem is. For example, in 25 States many private and public water supply wells have been capped as a result of contamination. In 1978, more than 300 contamination incidents were reported. In addition:

--Over 300 wells in California have been contaminated by toxic waste.

DRAFT

--On Long Island, N.Y., where 100 percent of the population is dependent on ground water, 36 public water supplies and dozens of private wells have been closed because of contamination. The water supplies for nearly two million residents have been affected.

--In early 1982, it was reported that a contamination plume was only 900 feet from the well field supplying Atlantic City, N.J.

An EPA official, testifying at Congressional hearings in July 1980, stated that as the weeks and months and years go on, we are going to learn of thousands of other incidents of ground water contamination. The same official described the Federal government's failure to address this problem adequately as the most grievous error in judgment we as a Nation have ever made.

EPA ground water strategy

EPA proposed a national ground water protection strategy in late 1980 and held workshops and hearings on it in January 1981. The proposal emphasizes prevention of future contamination. It did not propose new legislation but instead recommended coordination, follow-through, and implementation of existing Federal programs. The proposed strategy called for the following actions by 1985: initiate ground water protection strategies in all States; implement existing Federal regulatory programs; evaluate ground water quality, correct the most hazardous conditions, and manage areas of ground water contamination; and provide a process for States, local governments, and the public to set priorities among competing activities that may use or contaminate ground water. Final EPA policy on ground water is expected by late 1982.

THE USE OF THE OCEAN AS A WASTE DISPOSAL MEDIUM IS STILL BEING DEBATED

Legislation passed in the early 1970s sought to halt the indiscriminate use of the oceans for waste disposal and to effectively preclude the consideration of the oceans as a waste disposal option. In a January 1981 report, the National Advisory Committee on Oceans and Atmosphere (NACOA) reported that the Nation must manage wastes, not media, and since each region of this country has its own unique set of oceanographic, hydrologic, geological, and atmospheric properties, then the "right" waste

disposal method for one location is not necessarily right for another. The committee concluded that ocean disposal must remain a viable option in searching for the safest waste disposal method.

Special urgency was attached to the need to control disposal of wastes in the ocean by a report issued by CEQ in 1970, which illustrated the rapid rise in recent decades of the quantity and variety of material that was being disposed of in the ocean. Much of the testimony leading to the passage of present legislation controlling ocean-waste management emphasized the fragility of the environment and highlighted our lack of knowledge of the effects of ocean-waste disposal on the environment and human health. The NACOA report stated that our scientific knowledge in these areas will probably always be incomplete, but our understanding is better now than it was a decade ago.

Unregulated ocean-waste disposal has in the past, and probably would in the future, lead to adverse impacts on human health and the environment. As currently practiced, however, NACOA reported that ocean-waste disposal results in little or no human health risks from disease transmission, and the principal concern is with the possible effects of synthetic organics, such as PCBs, which NACOA acknowledged as an area of genuine concern. The ecological effects of ocean-waste disposal are probably not as well understood as are the human health effects, one reason being the difficulty inherent in measuring sublethal effects in natural ecosystems.

NACOA recommended that the Federal government establish as a priority goal the reuse and recycling of wastes but acknowledged that we will continue to be faced with a disposal problem for the following reasons, among others:

—Dredged materials must be disposed of somewhere unless the Nation is prepared to cause significant economic dislocation in its shipping and transportation industries.

—Sewage sludge and municipal wastes will continue to be produced no matter how successful we are in recycling or advancing the state of the art in waste treatment.

—Industrial wastes cannot always be totally recycled.

The NACOA report stated that the oceans must remain a viable disposal option for some of these materials. Since research indicates that some of the earlier concerns were overstated, we should consider the oceans as a waste disposal medium for certain wastes under certain circumstances, considering each waste management problem on its own merits. In the end, after a thorough comparative study, the ocean may in fact be the most attractive disposal medium. To maintain the oceans as a viable waste disposal option, NACOA recommended a number of actions, including:

--The EPA policy that no ocean dumping permit will be issued when any land-based alternative exists should be reversed.

--Ocean disposal of sewage sludge and industrial wastes should continue where no unreasonable degradation of the marine environment is indicated.

This change in philosophy was apparent in 1981, when New York City and six New Jersey sewerage authorities filed suit against EPA to allow them to continue ocean dumping beyond the December 31, 1981, deadline, claiming the ocean dumping regulations were too stringent. Subsequently, a ruling was handed down in the U.S. District Court for the Southern District of New York requiring that, before banning the ocean dumping of sewage sludge, EPA had to initiate a scientific study to determine if landbased disposal would ultimately be a safer and more economically feasible alternative. EPA did not appeal the court's decision and is currently performing additional studies of the question.

EFFECTIVE MONITORING AND ENFORCEMENT ARE NEEDED TO SUSTAIN POLLUTION CONTROL PROGRESS

Progress has been made toward constructing the facilities and installing the equipment needed to comply with environmental regulations. However, effective operation and maintenance of those facilities and equipment are needed to sustain that compliance over the long term. Unfortunately, past studies have shown a high incidence of noncompliance with established pollution limits on the part of both municipal and industrial sources. The following examples highlight the extent of noncompliance found in several programs, which indicate the need for a continued strong monitoring and enforcement effort.

Municipal waste water treatment plants

EPA's annual inspection surveys for 1976 and 1977 found that only 50-55 percent of the plants examined were operating at or near design specification for removal of biochemical oxygen demand. The general level of wastewater treatment plant performance, according to the study, was substantially unchanged from previous years; less than one-half the plants perform satisfactorily.

In a November 1980 report--Costly Wastewater Treatment Plants Fail To Perform as Expected--GAO reported on municipal treatment plant performance and reached a similar conclusion. A random sample of 242 major plants in ten States revealed that 37 percent of the plants were in violation of their National Pollutant Discharge Elimination System Permit; 31 percent were in serious violation. We classified a plant as being in "serious violation" of its permit when the plant was found to be in noncompliance for 4 consecutive months and exceeded the permit discharge limits by more than 50 percent. EPA had not defined "serious violation" but agency officials said that our definition was conservative.

Why are the plants not working as intended? We found that usually not just one but a combination of problems limit a plant's ability to treat raw waste. These problems include design and equipment deficiencies, infiltration/inflow and industrial waste overloads, and operation and maintenance deficiencies. More importantly, virtually no one will accept accountability or responsibility for the failure of treatment plants to meet permit conditions.

DRAFT

Industrial wastewater treatment facilities

Industrial waste treatment facilities also experience a significant rate of noncompliance with their permit conditions. In a October 1978 report--More Effective Action by the Environmental Protection Agency Needs to Enforce Industrial Compliance with Water Pollution Control Discharge Permits-we reported that 55 percent of 165 major industrial wastewater dischargers in New York and New Jersey studied over a 15-month period committed serious violations of their permit provisions. As a result, higher than allowable levels of pollutants--including high concentrations of toxic substances--were discharged into area waterways. In addition, 23 percent of the industrial permittees studied failed to submit one or more discharge monitoring reports during the study period and, of that group, 65 percent failed to do so for five or more months.

The New Jersey Public Interest Research Group issued a report on this area in 1981. The study covered the period from January 1975 to January 1980 and 158 of 475 major industrial dischargers in EPA region 2 (New York, New Jersey, Puerto Rico, and the Virgin Islands). In examining the discharge monitoring reports submitted during this period by the 158 dischargers, the group found 4,327 violations of effluent limitations, 2,114 being "major" violations as defined by EPA criteria. The study also disclosed that EPA's overall enforcement response rate was only 13 percent, including 153 warning letters or telephone calls (first level of responses), 21 Administrative Orders, and 5 referrals to the Department of Justice. The group concluded that if their sample results were extrapolated nationwide there would be over 100,000 violations in all ten EPA regions for major industrial dischargers alone.

Stationary sources of air pollution

As with municipal and industrial sources of water pollution, noncompliance with emission standards by stationary sources of air pollution is also a problem. In a January 1979 report--Improvements Needed in Controlling Major Air Pollution Sources--we reported on EPA's compliance monitoring inspection program, which was developed to verify State compliance determination efforts. Under this program regional offices were to inspect 10 percent of the major sources the States reported in compliance. During 1977, EPA inspected 1,313 major sources for compliance monitoring. Of 921 inspections of sources supposedly in compliance, 200, or 22 percent, were found in violation. The range of sources found out of compliance in the various regions was 12 to 52 percent.

In EPA region 2, for example, it was the agency's policy to reinspect violating sources within 4 months. The region inspected 233 major sources in fiscal year 1977 and found 79, or 34 percent, in violation. At the time of our review, only 22 of the 79 violators had been reinspected by EPA. Fifteen sources, or 68 percent, were still in violation.

Treatment plant efficiency varied in Cleveland, Dallas, and New York

Of the three cities reviewed, New York was experiencing the greatest shortfall in treatment plant efficiency. City officials stated that at least 4 of their 12 plants do not regularly meet the standards for removal of certain pollutants. During at least one-third of 1980, 4 of 12 plants violated the limits set in its discharge permit; one plant exceeded the limits in 8 months, another in 12 months. EPA, in a February 1981 status report, showed 5 of the city's plants out of compliance with their permits and 3 more of the 12 plants in compliance only marginally.

One means of ensuring permit compliance in New York is through the State's program of sharing in local sewage treatment costs provided certain standards are met. Permit requirements are a major component of the standards. Only one New York City plant, as of April 1979, had qualified for State aid in every year since the program began in 1965.

According to State environmental officials in Ohio, the three treatment plants serving the Cleveland area have been in substantial compliance with interim standards during plant upgrading since July 1980. Prior to that, problems had been experienced. For example, the State has filed a $100 million action for permit violations at one plant during a 20-month period ending in July 1980. About 50 percent of the time during that period, the plant failed to remove sufficient solids from the discharges.

In Dallas, the newer and smaller waste water treatment plant is meeting the State's effluent limitations but the larger and older plant is not. In addition, heavy rain and system breakdowns at the older plant have caused discharges of raw sewage. For example, from May 15, 1980, to June 8, 1981, there were six instances of raw sewage discharge lasting from 1 to 10 days. City officials attribute the problem to design deficiencies and operating problems. They said necessary improvements to the plant should be made by about 1987. Consultants have recommended that the city provide plant operating personnel with additional training and higher salaries.

POLLUTION CONTROL CREATES ADDITIONAL POLLUTION

The environmental laws of the 1970s reflected a single-purpose approach to pollution control where compliance with one law or regulation poses the potential for conflict with other laws.

Pollution control laws have not only increased the volume of wastes that must be disposed of but, in addition, have prohibited or severely restricted available disposal options. This approach has caused communities and industry to select or consider disposal methods that may not be the most environmentally safe.

The requirement of the Federal Water Pollution Control Act Amendments of 1972 that publicly-owned treatment works provide secondary treatment has and will continue to increase the amount of sewage sludge that has to be disposed of. EPA reported in 1980 that these plants were producing 6 million dry metric tons annually and this volume was projected to increase to about 10 million dry metric tons by 1990. Due to the increased volumes and the planned elimination of ocean dumping, some communities have adopted or considered environmentally questionable methods of sludge disposal.

For example, in a January 1977 report entitled Problems and Progress in Regulating Ocean Dumping of Sewage Sludge and Industrial Wastes, we noted that sewage sludge products having high levels of cadmium were being sold or given away to the public for uncontrolled use. We characterized the practice as representing a potential health hazard, while acknowledging the difficulties communities were experiencing in disposing of the increased volume of sludge. In planning for the cessation of ocean dumping, various alternatives were considered by communities in the New York City-Northern N.J. area. Nassau County, N.Y., for example, proposed composting as an interim alternative. When the proposal was made, however, the county health department registered serious reservations because of the potential for ground water pollution. Nassau County's population depends entirely on ground water as a potable water source and the county has been designated a sole source aquifer zone, a process that mandates additional protection for its underground water supplies.

EPA's policy with respect to the ocean dumping of industrial wastes has called for phasing out industrial dumping as soon as suitable landbased alternatives could be found. This EPA policy applied to all industrial wastes, even those which, according to EPA criteria, did not unreasonably endanger the marine environment. The phaseout of ocean dumping of industrial wastes has also resulted in the adoption of environmentally questionable alternative disposal methods.

For example, our prior report on ocean dumping noted that many former industrial waste dumpers had adopted landfilling. In fact, of 45 companies which previously ocean dumped their wastes surveyed by EPA, 29 were found to be landfilling the wastes. Of these, 11 companies were using the same landfill. The EPA survey indicated that this landfill site was of questionable adequacy for acceptance of large volumes of industrial liquids. For example, it was located on the west bank of the Raritan River, and the entire area was nearly at sea level, with ground water generally little more than a few feet from the surface. During periods of high rainfall, parts of the landfill are submerged and seepage from the landfill

was a recurring problem. The survey concluded that it was also possible that harmful materials were moving directly into the river by means of the ground water and created the likelihood that material diverted initially from the ocean was being carried back into it by the river. Subsequently, the landfill was ordered to stop accepting liquid chemical and hazardous wastes.

Other communities--in view of disappearing or more restricted disposal options, or in an attempt to recover resources from the processes--plan to burn their solid waste and/or sewage sludge. At the same time, numerous power plants are planning to convert from burning oil to burning coal, in order to reduce dependence on foreign petroleum. Whereas any one such facility in an area may not pose a significant air pollution problem, a number of such facilities concentrated in one area could present significant health risks.

For example, in 1981, the State of New Jersey's environmental conservation commissioner asked EPA to assess the health effects of trace toxic metals emitted from 32 facilities planned for the New York City-Northeast N.J. area. These facilities included 3 sewage sludge incinerators, 14 solid waste incinerators, 9 oil to coal power plant conversions, and 1 coal and refuse power plant. Many of these facilities would have multiple units and stacks.

The evaluation performed by EPA involved ten substances: cadmium, arsenic, mercury, chromium, particulates, zinc, selenium, nickel, copper, and lead. EPA's Carcinogen Assessment Group reported that

> --in Jersey City, where the maximum concentration from trace metal emissions exists, the added risk from emissions from the planned facilities is about ten times higher than the background risk, a level which cannot be ignored.
>
> --the lifetime risk to individuals living in the study area due to emissions of chromium is almost ten times higher than each of the other metals, and the total risk from chromium, cadmium, arsenic, and nickel is not considered negligible.

EPA's Environmental Criteria and Assessment Office also evaluated the potential health effects of emissions of trace metals from the planned facilities. The report concluded that some of the trace metals evaluated posed carcinogenic and/or non-carcinogenic health problems to residents of the study area. The report also pointed out that in analyzing the impacts of these emissions on humans, indirect exposure--for example, from ingestion--could also pose a health threat along with direct exposure, from inhalation.

CONCLUSIONS

DRAFT

Several major issues, if left unresolved, could delay or prevent the achievement of the Nation's key environmental goals.

Acid precipitation and the long-range transport of air pollutants pose serious problems. Acid precipitation has been alleged to damage crops, forests, soil fertility, lakes and fish population, manmade materials, as well as human health. More research is needed, however, to accurately define the causes and impacts of acid precipitation and the measures needed to control it.

Nonpoint sources of water pollution--including runoff from agricultural and urban areas--and combined sewer overflows contribute significant levels of pollutants to waterways nationwide. Little progress, however, has been made toward controlling these sources of pollution. To do so would be an expensive undertaking since estimates of the cost to correct just the combined sewer problem are more than $37 billion. Ground water contamination is also a growing problem. This fragile resource provides 25 percent of the fresh water used for all purposes and 50 percent of all drinking water. Once contaminated, however, ground water can remain so for hundreds or thousands of years. EPA proposed a national ground water strategy in 1980 but none has yet been promulgated.

Regardless of whether compliance with environmental mandates occurs slowly or quickly, it is imperative that initial compliance be sustained over the long term. Unfortunately, past studies have shown a high incidence of noncompliance with pollution control requirements at municipal and industrial facilities built to provide cleaner air and water.

The environmental laws of the 1970s reflected a single-purpose approach to pollution control that limited flexibility in decision-making. Pollution control laws not only increased the volume of wastes--like sewage sludge--requiring disposal but also prohibited or severely restricted available disposal options. Because of these restrictions, government and industry may not be free to choose the most environmentally safe waste disposal option. To provide increased flexibility, serious consideration is being given to continuing the use of the ocean as a waste disposal option.

We believe the time has come to recognize the tradeoffs that must be made among the various environmental programs and the net environmental effect of pollution control actions. The strict requirements of single-purpose environmental protection legislation do not provide industry and government administrators the flexibility to choose pollution control alternatives that are the most environmentally sound.

APPENDIX I

DRAFT

Estimated Total Pollution Abatement Expenditures 1979-1988
(In billions of 1979 dollars)

	Operation and maintenance	Capital costs 1/	Total annual costs 2/
Air Pollution			
Public	22.5	5.3	27.8
Private			
Mobile	32.1	83.7	115.8
Industrial	32.5	41.5	74.0
Utilities	71.1	50.1	121.2
Subtotal	158.2	180.6	338.8
Water Pollution			
Public	45.4	99.7	145.1
Private			
Industrial	52.4	41.1	93.5
Utilities	3.6	7.8	11.4
Subtotal	101.4	148.6	250.0
Solid Wastes			
Public	21.8	5.3	27.1
Private	61.3	12.5	73.8
Subtotal	83.1	17.8	100.9
Toxic Substances	3.6	4.6	8.2
Drinking Water	5.3	5.2	10.5
Noise	2.6	4.3	6.9
Pesticides	1.6	.1	1.7
Land Reclamation	4.5	13.5	18.0
Total	360.3	374.7	735.0

1/Interest and depreciation.

2/Operation and maintenance plus capital costs.

Source: Council on Environmental Quality

APPENDIX II

DRAFT

Air Pollution Control Benefits Being Enjoyed in 1978
(in Billions of 1978 Dollars)

Category	Realized benefits: Range	Realized benefits: Most reasonable point estimate
1. Health		
A. Stationary Source	$2.8 -- 27.8	$13.9
Mortality		
Morbidity	.29 - 11.5	2.9
Total	$3.1 -- 39.3	$16.8
B. Mobile Source	0 -- .4	.2
Total Health	3.1 -- 39.7	$17.0
2. Soiling and Cleaning	.5 -- 5.0	$ 2.0
3. Vegetation		
A. Stationary Source	0	$ 0
B. Mobile Source	.2 -- 2.4	$ .7
Total Vegetation	.2 -- 2.4	$ .7
4. Materials		
A. Stationary Source	$ .4 -- 1.1	$ .7
B. Mobile Source	.1 -- .3	.2
Total	$ .5 -- 1.4	$ .9
5. Property Values		
A. Stationary Source	$ .9 -- 6.9	$ 2.3
B. Mobile	$ .2 -- 2.0	$ .4
Total	$1.1 -- 8.9	$ 2.7
GRAND TOTAL 1/	$4.6 -- 51.2	$21.4

1/Because of overlap, only 30% of property value benefits are added to other categories.

Source: Council on Environmental Quality

APPENDIX III

DRAFT

Benefits in 1985 from Removal of Conventional Water Pollutants
(in billions of 1978 dollars)

	Range	Most likely point estimate
Recreation	$4.1 -- $14.1	$ 6.7
Non-User Benefits:		
aesthetics, ecology, property values	1.0 -- 5.0	2.0
Diversion Uses		
Drinking Water - Health	0.0 -- 2.0	1.0
Municipal Treatment	0.6 -- 1.2	0.9
Households	0.1 -- 0.5	0.3
Industrial Supplies	0.4 -- 0.8	0.6
Commercial Fisheries	0.4 -- 1.2	0.8
Total	$6.6 -- $24.3	$12.3

Source: Council on Environmental Quality

APPENDIX IV

DRAFT

GAO REPORTS ON SELECTED EPA PROGRAMS 1978-1981

WATER POLLUTION

"Environmental Protection Agency's Construction Grant Program--Stronger Financial Controls Needed," (CED-78-24, April 3, 1978)

"Agency's Implementation Of The Industrial Cost Recovery Provisions Of Public Law 92-500," (CED-78-102, April 11, 1978)

"Secondary Treatment Of Municipal Wastewater In The St. Louis Area--Minimal Impact Expected," (CED-78-76, May 12, 1978)

"Questions Continue As To Prices In Contracting For Architectual-Engineering Services Under The EPA Construction Grants Program," (CED-78-94, June 6, 1978)

"Sewage Sludge--How Do We Cope With It?," (CED-78-152, September 25, 1978)

"More Effective Action By The Environmental Protection Agency Needed To Enforce Industrial Compliance With Water Pollution Control Discharge Permits," (CED-78-182, October 17, 1978)

"Community-Managed Septic Systems--A Viable Alternative To Sewage Treatment Plants," (CED-78-168, November 3, 1978)

"Water Quality Management Planning Is Not Comprehensive And May Not Be Effective For Many Years," (CED-78-167, December 11, 1978)

"Analysis Of Future Coast Guard's Resource Needs For Responding To Oil Spills," (CED-79-32, January 12, 1979)

"Review of the Cost To Homeowner To Construct and Operate Waste Treatment Facilities," (CED-79-35, February 13, 1979)

"Eastsound, Washington Sewage Treatment Project," (CED-79-80, April 30, 1979)

"Combined Sewer Flooding And Pollution--A National Problem. The Search For Solution In Chicago," (CED-79-77, May 15, 1979)

"Some Communities May Not Be Able To Meet The December 31, 1981, Ocean Dumping Phaseout Deadline For Municipal Sewage Sludge," (CED-79-119, August 29, 1979)

"Large Construction Projects To Correct Combined Sewer Overflows Are Too Costly," (CED-80-40, December 28, 1979)

"Many Water Quality Standard Violations May Not Be Significant Enough To Justify Costly Preventive Actions," (CED-80-86, July 2, 1980)

"Information On Questions About The Brush Creek (PA) Sewage Project," (CED-80-112, August 8, 1980)

"Costly Wastewater Treatment Plants Fail To Perform As Expected," (CED-81-9, November 14, 1980)

"Chicago's Tunnel And Reservoir Plan--Costs Continue To Rise And Completion Of Phase I Is Unlikely," (CED-81-51, January 21, 1981)

"EPA Actions Against The Hopewell, Virginia, Wastewater Treatment Facility," (CED-81-47, March 3, 1981)

"Better Monitoring Techniques Are Needed To Assess The Quality Of Rivers And Streams," (CED-81-30, April 30, 1981)

"Billions Could Be Saved Through Waivers For Coastal Wastewater Treatment Plants," (CED-81-68, May 22, 1981)

"Wyoming Wastewater Treatment Facility Proves Unsuccessful," (CED-81-94, June 15, 1981)

"User Charge Revenues For Wastewater Treatment Plants--Insufficient To Cover Operation And Maintenance," (CED-82-1, December 2, 1981)

"Use of Federal Grant Funds For A Sewage Treatment Project In Portage County, Ohio," (CED-82-19, December 16, 1981)

AIR POLLUTION

"Improvements Needed In Controlling Major Air Pollution Sources," (CED-78-165, January 2, 1979)

"Better Enforcement Of Car Emission Standards--A Way To Improve Air Quality," (CED-78-180, January 23, 1979)

"Review Of EPA's Unleaded Fuels And Tampering Program," (CED-79-47, March 1, 1979)

"Air Quality: Do We Really Know What It Is?," (CED-79-84, May 31, 1979)

"Policy Conflict--Energy, Environmental, And Materials: Automotive Fuel-Economy Standards' Implications For Materials," (EMD-80-22, February 5, 1980)

"Indoor Air Pollution: An Emerging Health Problem," (CED-80-111, September 24, 1980)

"Clean Air Act: Summary Of GAO Reports (October 1977 Through January 1981) And Ongoing Reviews," (CED-81-84, April 1, 1981)

"Consumers Need More Reliable Automobile Fuel Economy Data," (CED-81-133, July 28, 1981)

"The Debate Over Acid Precipitation: --Opposing Views --Status Of Research," (EMD-81-131, September 11, 1981)

SOLID WASTE

"Waste Disposal Practices--A Threat To Health And The Nation's Water Supply," (CED-78-120, June 16, 1978)

"Conversion Of Urban Waste To Energy: Developing And Introducing Alternate Fuels From Municipal Solid Waste," (EMD-79-7, February 28, 1979)

"Solid Waste Disposal Practices: --Open Dumps Not Identified --States Face Funding Problems," (CED-81-131, July 23, 1981)

DRINKING WATER

"Serious Resource Problems In The Environmental Protection Agency's Safe Drinking Water Program," (CED-79-19, August 8, 1979)

"EPA Need To Improve The Navajo Indian Safe Drinking Water Program," (CED-80-124, September 10, 1980)

"Adequacy Of EPA Resources and Authority To Carry Out Drinking Water Program Activities," (CED-81-58, April 23, 1981)

NOISE POLLUTION

"Concorde Rulemaking Proposal And Related Documents," (CED-79-52, January 31, 1979)

MULTI-PROGRAM

"Congressional Guidance Needed On The Environmental Protection Agency's Responsibilities For Preparing Environmental Impact Statements," (CED-78-104, September 13, 1978)

DRAFT

"An Executive Summary: Sixteen Air And Water Pollution Issues Facing The Nation," (CED-78-148, October 11, 1978)

"Environmental Problems At Overseas Military Activities," (CED-78-175, October 16, 1978)

"Environmental Protection Issues Facing The Nation," (CED-79-63, March 15, 1979)

"Codisposal Of Garbage And Sewage Sludge--A Promising Solution To Two Problems," (CED-79-59, May 31, 1979)

"EPA Should Help Small Communities Cope With Federal Pollution Control Requirements," (CED-80-92, May 30, 1980)

"Federal-State Environmental Programs--The State Perspective," (CED-80-106 and CED-80-106A, August 22, 1980)

"Environmental Protection Issues In The 1980s," (CED-81-38, December 30, 1980)

"Millions Of Dollars Could Be Saved By Implementing GAO Recommendations On Environmental Protection Agency Programs," (CED-81-92, May 5, 1981)

"Coal And Nuclear Wastes--Both Potential Contributors To Environmental And Health Problems," (EMD-81-132, September 21, 1981)

APPENDIX V

DRAFT

Contents

VOLUME II