

WATER POLLUTION CONTROL PROGRAM IN THE SOUTHWEST

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I am delighted to be here with you to participate in what promises to be an important annual conference. The quest for improved water quality is now recognized as one of the most urgent challenges of our time.

Water is probably the most essential single requirement for life besides oxygen. Few fully realize how priceless water is and the critical role it plays in the development of a nation's economy. In the Southwest, in particular, the growth--and in certain cases the economic survival--of some areas will be determined largely by the quantity of clean water available to the people who wish to live in those areas.

The President has expressed his concern in these words: "In order to maintain a high quality for our environment and conserve natural resources, the Federal government must provide strong leadership to coordinate an integrated program which will include all levels of government, private industry and individuals throughout the country." The President's determination to provide this strong leadership is evidenced by his appointment of Mr. Russell E. Train as chairman of the newly created Council on Environmental Quality.

Ample supplies of good quality water are essential for people, agriculture, and industry. Modern technology has developed an insatiable demand for fresh water, but it has failed to find an effective means for providing sufficient quantities of quality water at low cost.

The Water Resources Council estimates that America's use of water will increase from the present 360 billion gallons per day to some 800 billion gallons per day in the year 2000 and to more than 1,300 billion gallons per day in the year 2020.

The gravity of the water resources problem varies substantially from region to region and in the Southwest, particularly, could become critical and threaten economic stagnation. Habitual indifference to water pollution is giving way to public concern.

Adverse Effects of Pollution

Water pollution adversely affects our use of water. It increases the cost of making water usable for domestic, agricultural, and industrial purposes. Pollution restricts certain water related activities such as water contact recreation, natural beauty, and fish and wild life propagation. It creates public health hazards by providing an environment for disease-producing organisms. It produces toxic substances, some with

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long-term effects of sublethal concentrations.

I have been asked to discuss the water pollution control program in the Southwest. This is an excellent conference for such a discussion and I would hope that we share the same goal: to enhance the quality of our water resources through effective environmental management.

To achieve our goal we must first recognize and identify the sources of pollution. Abuse of land and water have generated pollutants that have created harmful effects and turned appealing areas into ghettos of ugliness and decay. A "municipal-industrial-agricultural" complex confronts this region with different kinds of pollution.

Domestic or Municipal Wastes

Domestic or municipal wastes contain decomposing organic materials that reduce the oxygen content of water and cause serious impact on aquatic life. Infectious agents spread water-borne diseases. Rapidly growing suburbs frequently place an excessive burden on waste treatment facilities and thus hasten the degradation of the receiving stream. Improper operation and maintenance of existing facilities can also be sources of pollution.

Industrial Wastes

Industrial wastes are a major contributor to the deterioration of the quality of our water resources. Research has shown, however, that all wastes in some point in history and in some ecosystem have a use. Time, needs, and technology then can determine the scope of the industrial waste problem. Last year's paper mill wastes might be tomorrow's binder for road materials. Industrial wastes, like municipal wastes, can contain decomposing organic materials that remove oxygen from the receiving waters.

Industrial wastes may contain solids that discolor and create turbidity or oils and heavy metals that are toxic to aquatic life. Hot wastes may increase environmental temperatures higher than aquatic life can tolerate. They can impart tastes and odors in water supplies or can stimulate growth of algae just as in the case of municipal wastes. Chemical residues, petrochemicals, salts, acids, silts, sludges, and radioactive substances are characteristic industrial wastes.

Agricultural Wastes

Agricultural wastes are by no means exempt from the war on pollution. These wastes have organic substances that decompose and remove oxygen from the receiving water. These wastes include animal wastes (feed lots), irrigation return flows, fertilizer, pesticides and herbicides, and wastes from canneries and dairies related to agricultural production.

Literally tons of chemical fertilizers are now applied and further use is projected. The principal nutrients supplied are potassium, nitrogen, and

phosphorus. An overabundance of these nutrients, particularly nitrogen, in surface waters can contribute to excessive growth of algae and other aquatic plants which adversely affect water quality for fish, municipal water supply, and recreational purposes. Nitrogen in its nitrate form can enter groundwater and surface water. Phosphorus and potassium are transported on eroded soil particles and are deposited with sediments in streams and reservoirs.

All streams contain dissolved inorganic salts and minerals to some degree. When water is diverted for irrigation, the dissolved salts are concentrated by evapotranspiration and either accumulate in the soil or re-enter the stream in concentrated form in the return flow. This will increase the salt concentration in the stream with each use of its water for irrigation. In the arid regions of our nation, such as the Southwest and New Mexico, this problem is most important.

Sediment, from the standpoint of quantity, is the greatest contributor to pollution resulting from land erosion. Sediment pollution is expressed in the impairment of water quality and the damage caused during deposition. Harmful effects are many -- some chemical, some physical, and some biological. Sediment is not only related to erosion from agricultural lands, but is also produced as we construct our highways, buildings and from urbanization.

Pesticides and herbicides in the environment become pollutants when they, their metabolites, or degradation products remain after the desired purpose has been achieved or if these agents reach other parts of the environment other than the intended targets. Pollution from pesticides depends upon their persistence and final disposition. Persistent pesticides that accumulate in a part of our environment, such as in soil, in air, in water, or in animal tissue, are of particular concern. Some lower forms in the aquatic food chain accumulate pesticides and are in turn consumed by fish, which then retain the pesticides in their flesh. When the fish are eaten, the concentration cycle is continued. Man consumes both birds and fish and thus consumes substances in quantities which are dangerous to his health.

Knowledge of the extent and significance of pesticides in the ecosystem is fragmentary, and intensive cooperative studies will be required in order that we may be able to plan more effectively the measures needed for alleviating problems of this nature.

Pollution Control Program - Public Law 660

All states have water quality programs designed to enhance the quality of water resources. Through careful planning and conservation of our water resources -- we will be able to meet our water needs. The Federal Water Pollution Control Act sets up a program to accomplish this end, and Congress has made available the tools necessary to effectively manage and protect our water resources.

From the beginning, the emphasis of the Federal Program has been action to control pollution at the local level -- that is through the States and communities. The Act clearly establishes the primary responsibility for water quality control as belonging to the States. The Federal role is one of leadership and assistance and is carried out through the Federal Water Pollution Control Administration in a wide range of water quality improvement activities administered through nine regions. We are in the South Central Region. (The attachment shows the regions of the Federal Water Pollution Control Administration and locations of the regional offices.)

The Water Quality Act of 1965 provided for establishment, by the States, of Standards of Quality covering all interstate and coastal waters.

In setting the Standards, the States determined the uses to be made of specific waters, the measurable parameters affecting the quality, and the levels necessary to make desired uses possible. In addition, the States were required to submit plans for implementing the quality levels within a specific period of time.

Once approved by the Secretary of the Interior, the Standards become both State and Federal Standards, creating a State-Federal partnership for clean water.

The importance of these Standards is that they draw lines that let everyone know what is meant by clean water. Plans of implementation tell each user what must be done to maintain or attain the desired level of quality.

The Standards are the blueprint of water quality. The other portions of the Federal Program are designed to support and sustain that water quality.

The Water Quality Act of 1965 asserts broad jurisdiction for the application of Federal regulatory authority in water pollution control. Section 10 of the Act authorizes enforcement measures to abate pollution of interstate or navigable waters which endangers the health or welfare of persons in the receiving State. The jurisdiction over interstate or navigable waters is derived from the commerce clause of the U. S. Constitution, which authorizes Congress to regulate interstate and foreign commerce.

The assertion of Federal enforcement jurisdiction is qualified initially to stipulate that State and interstate action to abate pollution shall be encouraged and is not as a rule displaced by Federal action. The conditions under which Federal enforcement authority is invoked and the procedures under which it is applied thereafter conform to this stipulation of primary responsibility. Such enforcement actions can be initiated upon State request or under Federal authority, governed by the nature and effect of the pollution.

Research, development, and demonstration programs are aimed at finding better methods to reduce municipal, agricultural, and industrial wastes,

wastewater renovation, and newly emerging problems of thermal pollution as well as the development of scientific information to permit better definition of water quality requirements for all uses. Grants are awarded to assist in supporting basic and applied research aimed at the discovery and development of new information and technology in the chemical, physical, biological and engineering fields.

Technical support is available to other Federal agencies, States, local communities, industries, and others in the solution of specific water pollution control problems. The Technical Services Program is the fact-finding resource of FWPCA in this region and is located at the Robert S. Kerr Water Research Center, Ada, Oklahoma.

Grants are provided for the improvement of State and interstate agency water pollution control programs, including the training of public agency personnel.

Planning grants are made to planning agencies for the development of comprehensive basin plans for water quality management, and participation in water resources planning activities of Federal and non-Federal agencies.

Water quality monitoring and pollution surveillance is achieved in cooperation with the Geological Survey. An adequate surveillance system is essential to determine compliance with established water quality standards.

Training grants and other activities are available to increase the numbers of trained personnel in the state water pollution control program, both professional and sub-professional, including treatment facility operators.

A cooperative program is provided to assist other Federal agencies in preventing pollution from their activities in response to Executive Order 11507 dated January 4, 1970, which directs the Federal Government to take a leadership role in water pollution control. This order stresses compliance with the approved water quality standards.

Financial assistance is provided to municipalities and State agencies for the construction of wastewater treatment facilities from 30 to 55 percent of the eligible project cost under certain conditions of the law. This is the largest grant program in FWPCA.

Where all projects receive 30 percent of State funds, the Federal grant can be 40 percent. In cases where the project discharges into waters where the State has established enforceable water quality standards, the Federal grant can be 50 percent, providing the State funds to all such projects is 25 percent. Under certain conditions of area wide or metropolitan planning, the Federal grant may be increased an additional 10 percent.



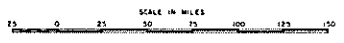
- LEGEND**
- South Central Region
 - ▬ Reservoir completed or under construction
 - ▬ Reservoir authorized
 - - - Aqueduct or Canal
 - ▲ Water Pollution Surveillance Station

NOTE:
 The Construction Grants Region comprises Arkansas, Louisiana, New Mexico, Oklahoma and Texas.

SOUTH CENTRAL REGION

CONSTRUCTION GRANTS PROGRAM

UNITED STATES DEPARTMENT OF THE INTERIOR
 FEDERAL WATER POLLUTION CONTROL ADMINISTRATION



Each State is entitled to its authorized share of the funds appropriated for construction grants each fiscal year. Each municipality -- from the major metropolis to the smallest town or district -- may establish its eligibility for and receive grants assistance.

You might be interested in the effect of the program in New Mexico since the beginning (1956) through the end of February 1970. Out of a total of 119 projects, 62 treatment facilities were built or expanded by 75 projects for the following costs and grants.

<u>Total Cost</u>	<u>Eligible Cost for Grant Participation</u>	<u>Grant Amount</u>
\$41,913,411.00	\$41,155,443.00	\$12,856,632.00

Note: Seven of the above projects were supplemented with funds from the Economic Development Administration in the amount of \$752,720.00.

The first fiscal year appropriation was \$50 million for the entire country as contrasted to the current fiscal year appropriation of \$800 million. Over \$154 million in Federal funds have assisted in building treatment facilities. These funds have helped build 1390 projects costing over \$510 million in this region alone. The huge sums are necessary to catch up with the backlog, to expand and modernize existing facilities, to replace obsolete facilities, and to keep up with the population growth.

During fiscal year 1970, \$79,148,700 will be available for construction grants in the South Central Region. Of this amount, \$4,958,900 will be available for projects in New Mexico. This is a significant increase over the figure for fiscal year 1969, which was \$1,872,900.

A Major Problem

From the beginning, the emphasis of the Federal program has been on action to control pollution at the local level-- that is through the States and communities.

Many local governments and the general public are not aware of the importance of efficient operation and proper maintenance of wastewater treatment facilities. As yet, it has not been accepted as a necessary operational function and, therefore, is not supported with adequate budgets and trained manpower. Salaries of waste treatment facility operators are lower than comparable water treatment plant employees, with little or no incentive for career development.

Three States in our region (Arkansas, Louisiana and New Mexico) do not have mandatory certification or licensing for operators. The other two States (Texas and Oklahoma) have mandatory certification but need to be improved and reinforced.

Adequately trained local manpower resources must go hand in hand with construction of treatment facilities.

Progress in the implementation of water quality standards is directly keyed to the assurance of achieving the highest possible level of treatment efficiency.

Design criteria, basic treatment works design, and plant operation and maintenance are the essential fundamental elements through which adequate treatment of wastes are achieved to provide the effluents to maintain water quality standards.

The construction grants program has brought to many communities, for the first time, the responsibility of operating and maintaining a wastewater treatment facility, a responsibility which does belong to the municipality or owner of the facility. Experience has demonstrated the need for improved operation and maintenance.

In March 1969, the FWPCA published the "Report on Operation and Maintenance of Municipal Waste Treatment Plants." This report summarized and analyzed the findings of 1,500 inspections conducted during the period July 1, 1962, through December 31, 1964.

Principal problems reported of the facilities inspected were: (1) operational, mechanical, and structural difficulties at about 40 percent of plants inspected, (2) odor complaints at about 19 percent, and (3) facilities being bypassed by untreated sewage at about 38 percent.

Approximately 970 facilities were inspected and more than 30 percent failed to maintain operating and/or laboratory records; and less than 10 percent of the approximately 530 stabilization ponds inspected maintained records.

Five chronic problems that create operation and maintenance difficulties are: (1) insufficient or unqualified operators, (2) inadequate control over industrial wastes, (3) design and equipment deficiencies, (4) inadequate laboratory control, and (5) inadequate records.

Some municipalities do not recognize either the importance of waste treatment or the complexity of operation. Three fundamentals required for sound and acceptable operating techniques for any treatment facility are: (1) personnel, (2) laboratory control, and (3) records.

Waste treatment facilities are expensive and complex and must be properly designed, constructed, operated and maintained by qualified personnel to provide satisfactory effluents to sustain water quality standards and to protect the public health, as well as the investment of local, State, and Federal funds -- all of which are public.

The President's message to Congress on the environment made three salient points directly affecting operation and maintenance. These are: (1) that it should be required that treatment plants be built to prescribed design, operation and maintenance standards, and be operated only by certified operators, (2) that municipalities impose users fees on industrial users sufficient to meet costs of treating industrial wastes, and (3) that Federal-State water quality standards should be extended to include precise effluent standards for all industrial and municipal sources.

To assist communities with new or existing treatment facilities towards a better understanding and discharge of their responsibilities, a minimum framework of control procedures has been developed through an operation and maintenance manual. The use of this manual is now a requirement to qualify for a Federal grant to construct a wastewater treatment facility.

Assistant Secretary of the Interior for Water Quality Research, Carl L. Klein, recognized the key to effective environmental management when he said, "A good principle in water quality management is that cleanup begins at home --- at the source, not in the waterway...whether home is the farm, the factory, the village, or the giant city. We've got to get at the problem where it starts and festers."

The Student Council on Pollution and Environment

The Secretary of the Interior, Walter J. Hickel, has said, "We want to tap the enthusiasm, vigor, and fresh ideas of our country's high school and college youth in this battle to protect and preserve our precious and irreplaceable water resources. The action we take today, or fail to take today, will determine the kind of world the younger generation will have to face just a few years from now. It is these young people who will have to live with the decisions we make, so they should have a chance to help make them."

To help the high school and college students in the country to organize and direct their efforts toward cleaning up the water, the FWPCA established the Student Council on Pollution and Environment (SCOPE).

SCOPE will provide the framework around which all the country's youth can direct their energies and ideas toward restoring our streams, lakes and estauries.

Mr. Ted Asbury, a senior civil engineering student here at New Mexico State University in Las Cruces, is the South Central Region's delegate to the National SCOPE. The first National SCOPE meeting was held on February 20, 1970. I want to say it is a real pleasure to work with Ted.

Conclusion

Responsibility for water pollution control belongs primarily to the States. Responsibility for proper and efficient operation and maintenance of the

waste treatment facility rests with the owner or municipality. The Federal role is one of leadership and assistance.

Acknowledging the necessity for Federal leadership, the Secretary of the Interior had these words to say before the Senate Subcommittee on Air and Water Pollution, "We must establish proper guidelines so that each entity will know its responsibilities. Industry must know what is expected of it, as must the municipalities, the States and the regional and interstate groups. We must develop the technical capability that is needed. We must have training programs. There is much that needs to be done."

You and I, in the final analysis, are the major polluters simply by enjoying the wonderful quantity and variety of production pouring from our mills, farms, and factories while at the same time refusing to heed the insistent call for effective environmental management. You, groups like you, and the youth of this nation, hold the key to whether we grow and prosper or whether we just grow, like a cancer, and destroy the beauty of nature, life, and the possibility of life itself.

As for us in FWPCA, Commissioner Dominick's remarks before the Federal Water Quality Association set our course with these words, "We certainly do not claim to have immediate answers for all the problems that confront FWPCA, but I want to assure you as earnestly as I can that we will not be faulted by lassitude for a lack of desire, energy or action."

Your presence this morning expresses your interest and desire to do the best possible job. I will close with this challenge: "Water tests our sense of responsibility first to God -- then to man. It asks for care, requires our self-discipline, and responds to management."