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WATER QUALITY MANAGEMENT
AND OCEAN ADVANCEMENT



FEDERAL WATER QUALITY ADMINISTRATION
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ALASKA WATER LABORATORY
College, Alaska

WATER QUALITY MANAGEMENT AND OCEAN ADVANCEMENT

by

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A Working Paper presents results of investigations
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WATER QUALITY MANAGEMENT AND OCEAN ADVANCEMENT

Gentlemen, I appreciate the opportunity to meet with you here today to explain and discuss the interest the Federal Water Quality Administration has in the coastal waters of Alaska and throughout the United States, and to share with you some of the current activities that we are carrying out in the various programs under our direction.

The Federal Water Pollution Control Administration became an agency on December 21, 1965, when the President signed the Water Quality Act of 1965. It created this new agency within the Department of Health, Education and Welfare. In February 1966, the President directed that the FWPCA be transferred from the Department of Health, Education and Welfare to the Department of the Interior. This reorganization took place on May 10, 1966. The agency has grown and prospered within the Department of the Interior in the past 4 years and has received additional authority and responsibilities by several amendments to the original Water Quality Act of 1965. The latest of these important pieces of legislation was just signed by the President early this month and is entitled the "Water Quality Improvement Act of 1970." Among other things, this act did change our name from the Federal Water Pollution Control Administration to the Federal Water Quality Administration. And, I expect, as much as anything else, this change indicates our broadening of interest from pollution control to all of the aspects of water quality management. This phrase, Water Quality Management, is perhaps the key to multiple use development and conservation of Alaska's coastal resources.

I would like to just briefly outline the various programs that the Federal Water Quality Administration carries out and then we can talk more specifically about those aspects that deal with the problems and challenges at hand here in Alaska.

First of all, I think the keystone of the massive clean water program is the provision of the Water Quality Act of 1965, which calls for all states to establish water quality standards for their interstate and coastal waters. This provision required states to make some crucial decisions involving the uses of their water resources, the quality of water to support these uses, and specific plans to achieve such levels of quality. Alaska's standards were approved by the Secretary of the Interior in February 1968.

A second major area of responsibility is the water quality monitoring and enforcement program of the agency which goes hand in hand with the Water Quality Standards themselves. Today, the Federal Water Quality Administration, through authorization by the Secretary of the Interior, can initiate an enforcement action when: (1) the water quality standards adopted for interstate and coastal waters are violated; (2) the health and welfare of persons in a state, other than the one in which the pollution originated, are endangered; (3) pollution causes damage to the health and welfare of persons within the state in which it originates and the Governor of that state requests such action; (4) the pollution has damaged shellfish so that substantial economic injury has resulted from the inability to market shellfish products in interstate commerce, and; (5) where international pollution is involved.

Another area of major responsibility is the building of waste treatment plants. Since most of Alaska's population is in the coastal areas, this is a particularly important program. A community can get financial help in the construction of municipal waste treatment works with a Federal grant of at least 30 percent of construction costs and, under certain conditions, the Federal share may be as much as 55 percent. The Federal Construction Grants Program is not intended to be a substitute for State

and local activity. Rather, the purpose of this assistance is to encourage and support such activity. The financial incentives and the benefits are sizeable. After many years of subauthorization appropriations by Congress in this area of Construction Grants, it now appears that we will have rather sizeable portions of money for this purpose. In fact, this year, some 800 million dollars will be spent in the Construction Grants Program.

Another area of responsibility is technical assistance to local communities, states and other Federal agencies. We found that many states have municipal and industrial waste problems of an unusual nature. For help in solving them, they frequently turn to the Federal Water Quality Administration. Technical assistance covers a wide range of activities from short-term consultation on specific problems, to assistance in conducting comprehensive investigations and surveys. Technical experts from FWQA's Regional offices and field laboratories and research facilities throughout the country play dual roles as troubleshooters in dealing with particular problems and as consultants on short-range control measures.

Basin-wide planning and action is an important aspect of any water quality program. To encourage basin-wide action by state, interstate, and local agencies, the Federal Water Quality Administration has launched a comprehensive planning grants program for river basins which often include the estuaries. Comprehensive programming makes it possible to develop basin-wide programs, to provide technical guidance to basin planning agencies, to relate state-local planning efforts to Federal planning. This approach spurs creation of mutually supporting plans and links the actions of Federal, interstate, state, municipal agencies, and industry. It provides a blueprint for building water quality management in each river basin system and it serves as a springboard for enlightened actions by citizen groups.

From the very start of the National Water Quality Program, Congress has made it quite clear that the responsibilities for preventing and controlling water pollution rests mainly with the States and, although the Federal government has been given a greater role, it is still up to the States to bear the major share of the responsibility. To handle their job adequately, the states need money and manpower. Federal program grants are available to states and interstate agencies to help them bear the cost of needed preventive and control measures. These grants are intended as realistic incentives for the states to spend more money to expand and improve their water quality control programs.

The problems of water pollution are so complex, so varied, and so numerous, that existing weapons are not adequate to deal with all of them. This is particularly true here in Alaska, where the environmental conditions are sufficiently unique and different that we are often left without even the most meager tools and knowledge to understand and manage our water resources. Problems have multiplied faster than solutions in this age of skyrocketing technology. For example, approximately every 20 minutes, a new chemical is added to the market which will eventually find its way into our water supplies. This poses a serious threat to the full success of any effort to enhance our water quality and protect it for a variety of multiple uses.

The FWQA's research activities are carried on in two ways--directly through work in its own laboratories, such as the Alaska Water Laboratory at College, and indirectly through sizeable grants and contracts for research in colleges, universities and other public and private institutions and agencies.

Specific research projects are being pursued by industrial firms under contract with the Federal government. Research is such a broad activity and is of such importance to us here in Alaska, that I will, in a few moments,

outline those areas of research that most closely pertains to the problems of water quality management and resource development in our coastal and estuarine waters.

The Federal responsibility for pollution control does not begin or end with requiring others to act. Government installations scattered throughout Alaska and located in almost every city, also have a responsibility in controlling pollution themselves. Recognizing this, the President issued an Executive Order, dated July 2, 1966, to insure that the Federal government provide leadership in preventing and abating water pollution in the United States by controlling the pollution from all of its installations and activities. In addition to this earlier order, a new Executive Order issued February 5, 1970, strengthens this responsibility. This order has a far reaching impact since it involves a diversity of installations such as military bases, hospitals, national parks, forests, Federal dams, and post offices. The Federal Water Quality Administration, through a program of review, approval, and technical assistance, cooperates with all other Federal agencies in developing water pollution control plans for Federal installations.

Oil pollution is the most current and one of the most vital areas of concern and discussion in Alaska today. The responsibility for administering the Oil Pollution Act of 1924 was transferred from the Secretary of the Army to the Secretary of the Interior by the Clean Water Restoration Act of 1966. It is now administered by the Federal Water Quality Administration.

The whole question of preventing and controlling damage caused by oil pollution has been, very recently and dramatically, raised by such oil spills as Santa Barbara, the run-away well offshore of Louisiana, and of course, our two recent Kodiak spills and the current ecological disaster that is under investigation off the Alaska peninsula. These disasters have highlighted

our technical inability to cope with such problems and indicate the ineffectiveness of the Oil Pollution Act of 1924. Since the Act applies only to discharges which are grossly negligent, or which result from willful spilling, leaking, pumping, pouring, or emitting of oil. The Act also does not apply to spills from fixed installations such as pipelines, oil deposits, refineries, or manufacturing plants using large quantities of oil.

I'm happy to say that Congress has recognized this deficiency and has included a strong section in the new Water Quality Act of 1970 which will greatly increase our enforcement and control measures for handling oil pollution.

Alaska's huge coastline and corresponding estuarine areas are one of the most important resources we have. Estuaries must rank with forests and rivers as vital natural resources. Neither of the latter two can match the fertility and versatility of the estuary. A wide variety of fish and shellfish spend all or part of their lives in estuarine waters. For a large group of marine life, they serve as nurseries, as spawning grounds and feeding grounds, and as passageways between river spawning areas and the pastures of open ocean waters. It is estimated that three-quarters of the commercial seafoods--fish, clams, oysters, shrimp, crabs, and lobsters--are nurtured in the estuaries. Estuaries also provide shelter and food life for birds and other wildlife. The estuarine zones act as buffers against the ravages of violent storms. They provide the harbors and transportation routes for commerce, and some of the best sites for industrial plants. Too, estuarine waters offer a wide array of recreational opportunities for fishermen, swimmers, boaters, water skiers, birdwatchers, and hunters. It is thus clear that estuaries are rich, distinctive, aquatic centers which man can little afford to use carelessly and destructively.

Perhaps the most significant of the Federal actions taken to insure proper utilization of estuaries is the Comprehensive Study authorized by Congress in the Clean Water Restoration Act of 1966. This legislation has specifically directed the Department of the Interior to study estuarine pollution and to prepare a report to Congress which will document and analyze various aspects of estuarine pollution, make recommendations for a comprehensive national program for the preservation, study, use and development of estuaries, and recommend the respective roles of Federal, State, and local governments and public and private interests.

Conducted by the Federal Water Quality Administration, the study involves the gathering and review of data information relating to a number of areas among which are: social, economic, and ecological trends; the effects of pollution, including sedimentation, on many beneficial uses of the estuaries; and the effects of demographic trends, industrial development, and other activities on the quality of estuarine waters.

Hearings were held in Juneau and Anchorage in June of 1968, to secure the information necessary to complete the national study. The study was submitted to Congress in November 1969, and a copy was sent to the State of Alaska. The recommendations were, in general, that there is a national interest in the estuarine and coastal areas of this country; that the multiple use concept should prevail; and that some system should be devised and set up by the states to plan and zone for the wise management of the estuaries. This study has served as the basis for two bills now pending in Congress that would allow for Federal support and financing of state plans that would create coastal management authorities to carry out the findings of this act.

Another important piece of legislation passed in August 1968, which was known as the National Estuary Protection Act. This legislation calls

for the Department of the Interior to study and inventory the nation's estuaries with a view to determining whether it would be feasible and desirable to develop and administer a nation-wide system of estuarine areas, protected and supported through Government management. The study was carried out by the Bureau of Sport Fisheries within the Department of the Interior, and was closely coordinated with the National Estuarine Pollution Study by the Federal Water Quality Administration. The study is complete and the copies will soon be available.

Now let me turn back to the question of research. The Federal Water Quality Administration does carry out a comprehensive research program based upon in-house research through one of its eight research laboratories throughout the country and a number of associated field sites. Secondly, contract projects, primarily with industry, and third, grant projects with universities, industries, states, and municipalities. The funding level for all FWQA research will be about \$45 million in FY 1971.

Our in-house program is predicated on the assignment of specific areas of technical responsibility to each of our laboratories. For example, the National Coastal Pollution Research Program is headquartered at the Pacific Northwest Water Laboratory in Corvallis, Oregon, and is concerned with defining the fate of pollutants in coastal waters, estuaries, the Continental Shelf, and deep ocean areas, and to improve programs for pollution control in these waters. Research projects include the study of the transport and diffusion of various wastes and the physical, chemical, and biological interactions of pollutants in the marine environment. Research results will be used in improved discharge or disposal designs, locations, and operating practices at existing or planned sources to coastal waters. Lessening the pollutorial impacts of coastal engineering projects such as marinas, breakwater construction, and dredging activities is also

a program objective. The program includes the development of scientific equipment and analytical methods for pollution studies to provide a more precise marine water quality standards.

National marine water quality criteria and standards are being continually developed and reviewed by our laboratory in West Kingston, Rhode Island. This is a big research effort which is geared to developing suitable water quality requirements for industrial and recreational use as well as requirements for important marine organisms. These requirements include such parameters as dissolved oxygen, temperature, and salinity for marine organisms and toxicity levels of a variety of substances and compounds. The third major area of research within the organization, which has direct application to Alaskan coastal waters, is industrial pollution control technology. Techniques and processes must be developed and demonstrated to achieve effective and economical control of pollution from such industries as petroleum, chemical products, pulp and paper and industrial wastes from seafood processing. These are all important industries in the economic and social fabric of Alaska.

The Alaska Water Laboratory has the research mission to develop waste treatment and pollution evaluation techniques which apply to cold climate water pollution control. I will outline some of the studies and investigations that have been conducted here in Alaska that are relative to the coast and estuarine areas. First of all, we have conducted studies on the effects of pulp mill effluent wastes on the waters of Ward Cove and Silver Bay. This study is now complete and reports are in final preparation. In general, we have found a rather serious degradation of water quality due to the inadequately treated wastes that come from these two industrial operations in Southeast Alaska. If these estuarine areas are to serve other important uses, water quality will have to be improved.

Preliminary studies have also been made on another important industrial waste here in Alaska--the seafood processing waste. Alaska ranks as one of the leaders in the United States on the tonnage of seafood landed and processed. A large percentage of the shellfish processing is done in one location, Kodiak. The discharge of raw wastes into Kodiak Harbor has resulted in degradation of the water quality and impeded the various other important and economic uses of that body of water. The Federal Water Quality Administration has, in March of this year, awarded a demonstration grant to the City of Kodiak for "Pollutional Abatement and By-Product Recovery in Shellfish Processing." This project will, hopefully, provide the technology to efficiently use the huge quantities of valuable seafood that are presently being wasted and, in the process, protect our valuable estuaries.

One of the vast areas where good information is minimal is that area of the coastal environment which surrounds us here in the Arctic. The Institute of Marine Science has requested and has just received a grant offer from the Federal Water Quality Administration to carry out a baseline study of the Alaskan arctic estuarine environment. This is an important first step in understanding the economic and ecological importance of this great area of arctic coastline. A study that is currently underway by the Alaska Water Laboratory ties in very closely with the Institute of Marine Science grant project. This in-house effort is the study of the Sagavanirktok River Basin. The study was initiated for the purpose of investigating the basic physical, chemical and biological nature of this river system. To more fully understand how the river system functions, we have just conducted a winter field trip to the basin to sample and analyze those water quality parameters that are important for the protection and proper utilization of the Sagavanirktok River.

Perhaps no area of water quality management and control is of more importance to us now than the area of oil pollution. Surely, as we look ahead in the future of Alaska and in the development of our coastal resources, we must foresee and forestall the great danger of pollution from oil and other hazardous materials. The Federal Water Quality Administration has maintained, for three years now, an office dealing with oil pollution control and technical assistance to the State and industry in the Cook Inlet area. Since the great discoveries of oil on the North Slope, and the proposition of an 800-mile pipeline to bring this oil out to an ice-free port in Central Alaska, this operation has to be expanded if we are to protect, conserve, and fully utilize the estuarine and coastal resources that we have here in Alaska. The national responsibility for oil pollution control technology rests with our Edison Water Quality Laboratory in New Jersey. This laboratory is moving ahead in research on a wide front of oil pollution control techniques. I brought with me a few of their recent publications, as you see; "Chemical Treatment of Oil Slicks," "Biological Effects of Oil Pollution," "Oil Sampling Techniques," "Restoration of Oil Contaminated Beaches," and "The Santa Barbara Oil Pollution Incident." The technology that is being investigated and developed through the efforts of the Laboratory and with grants and contracts needs to be applied to our specific problems here in Alaska. Some of what is being developed will not apply; therefore, it is so important that we here in Alaska seek out, with our own resources and our own devices, an understanding of the problems that confront us and workable solutions to solve these problems. Otherwise, the specter of ecological disaster will always hang over our head. We must, through all our efforts, create a policy to protect, improve and manage our estuaries and coastal areas through research, planning, legislation, and operational programs.

Today we must act with what we know, even while we learn more effective water quality management. This requires a cooperative effort between Federal, State and local governments, private and public bodies, professions of every kind, and the public.

I commend you for your efforts and extend our resources and our cooperation in the development and protection and conservation of our estuaries and coastal areas of Alaska.

Thank you very much.