THE U.S. GEOLOGICAL SURVEY FEDERAL-STATE COOPERATIVE WATER-RESOURCES PROGRAM FISCAL YEAR 1990

by B.K. Gilbert and W.B. Mann IV

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The U.S. Geological Survey Federal-State Cooperative Water-Resources Program, Fiscal Year 1990

by Bruce K. Gilbert and William B. Mann IV

ABSTRACT

The Federal-State Cooperative Program is a major U.S. Geological Survey (USGS) activity for the collection, analysis, and reporting of information on the quantity, quality, and use of the Nation's water resources. The fundamental characteristic of the program is that most of the work is undertaken by the USGS through partnership agreements (50:50 matching of funds) with State, regional, and local agencies. The main objectives of the program are to: (1) collect, on a systematic basis, data needed for the continuing determination and evaluation of the quantity, quality, and use of the Nation's water resources, and (2) analyze the data and conduct interpretive water-resources investigations and research for the purpose of appraising the availability and the physical, chemical, and biological characteristics of surface and ground water. During fiscal year 1990, Cooperative Program activities were underway in offices in every State, Puerto Rico, and several territories in concert with more than 1,000 cooperating agencies. In fiscal year 1990, Federal funding of $59 million was matched by cooperating agencies, who also provided approximately $11 million unmatched for a total program of about $129 million. This amounted to more than 40 percent of the total funds for the Geological Survey's water-resources activities.

This report presents examples of current (1990) investigations, as well as updated information on hydrologic data-collection and investigative activities related to Indian water rights.

INTRODUCTION

Federal, State, regional, and local agencies share keen interests in appraising the Nation's water resources and in seeking solutions to water-related problems. Because of varying missions and areas of responsibility, agencies at times have diverse perceptions of need, priorities, and approaches. One of the principal strengths of the U.S. Geological Survey's (USGS) Federal-State Cooperative Program is that this diversity can be accommodated through joint planning and funding (50:50 matching) of hydrologic data collection, investigations, and research.

The Cooperative Program, a partnership between the Geological Survey and State and local agencies, provides a balanced approach to water-resources investigations. It is a major part of the Geological Survey's coordinated program of water-resources investigations and research. The principal program objectives are to: (1) collect, on a systematic basis, data needed for the continuing determination and evaluation of the quantity, quality, and use of water resources in the United States, and (2) analyze the data and conduct interpretive water-resources investigations and research for the purpose of appraising the availability and the physical, chemical, and biological characteristics of surface and ground water. The resulting information forms the foundation for many of the Nation's water-resources management and planning activities. In addition, the information may function as an early warning of emerging water problems.

The Cooperative Program has contributed directly to water-resources knowledge for more than 90 years by fostering a working partnership between the Federal and State governments in the advancement of earth science, and by compiling a major part of the Nation's hydrologic information. From its earliest days, the program has been directly responsible for the development of streamgaging procedures, surface-water and ground-water flow concepts, and water-quality analytical techniques and investigations.

The first Geological Survey cooperative water-resource investigation was with the State of Kansas in 1895. In 1905, Congress appropriated funds specifically for cooperative studies, marking the official beginning of the program. In 1928, Congress gave formal recognition to the Federal-State partnership and limited the Federal financial contribution for cooperative water-resources studies to no more than 50 percent of the funds for each investigation.

During fiscal year (FY) 1990, hydrologic data collection, interpretive investigations, and research were conducted under the provisions of the Cooperative Program by Geological Survey personnel in offices in every State, Puerto Rico, and several territories in concert with more than 1,000 cooperating agencies (see appendix A). The locations of principal USGS Water Resources Division offices are shown in figure 1. State, county, and municipal agencies participate in the program, as do interstate compact organizations, conservation districts, sanitary districts, drainage districts, flood-control districts, and other similar organizations. In FY 1990, Federal funding of $59 million was matched by the cooperating agencies; cooperators also furnished approximately $11 million unmatched, for a total of about $129 million. This was more than 40 percent of the total funds for the Geological Survey's program of water-resources activities (figure 2).

The fundamental characteristic of Federal-State Cooperative Program is that local and State agencies provide at least one-half the funds, but the Geological Survey does most of the work. At times, the cooperator's contribution to the program may

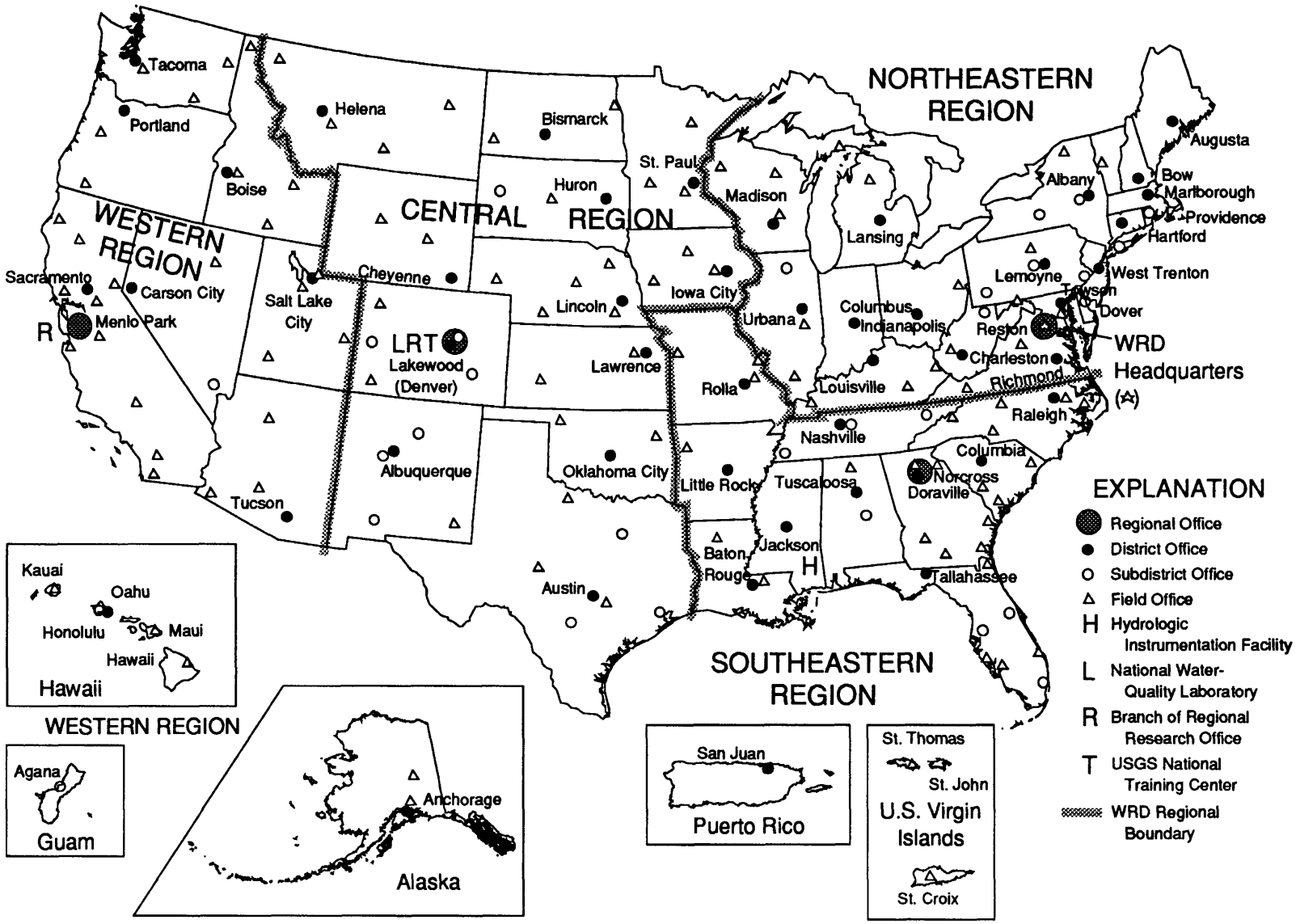

Figure 1.--U.S. Geological Survey Water Resources Division regional boundaries and location of principal offices.

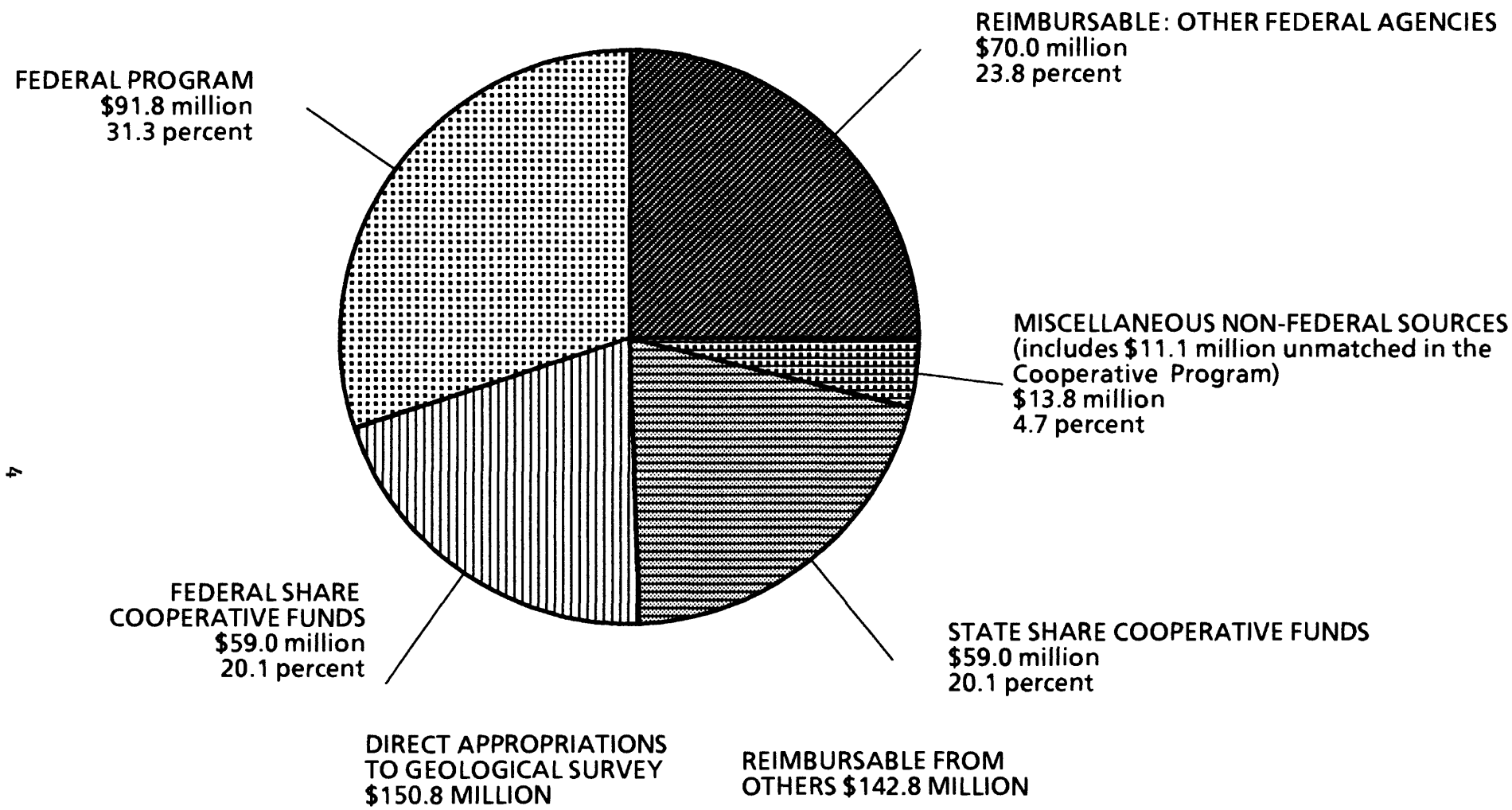

Figure 2 - Actual obligations of the U.S. Geological Survey
Water Resources Division, fiscal year 1990

be partly in the form of support known as direct expenditures, rather than funds. This refers to mutually agreed upon work for which dollar-value credit is given by the Geological Survey for services rendered by the cooperator in support of program objectives.

FUNCTIONS OF THE COOPERATIVE PROGRAM

In fulfilling its water-resources mission, the Geological Survey performs four principal functions:

- Collects data needed for the continuing determination and evaluation of the quantity, quality, and use of the Nation's water resources.
- Conducts analytical and interpretive appraisals to describe the occurrence, availability, and physical, chemical, and biological characteristics of surface and ground water.
- Conducts research in hydraulics, hydrology, and related scientific and engineering fields.
- Disseminates water data and the results of investigations and research.

The collection of surface-water and ground-water data on a systematic basis under the provisions of the Federal-State Cooperative Program is a major part of the Geological Survey's coordinated water-resources activities. The resulting information provides a continuing record of the quantity and quality of the Nation's water resources. In FY 1990, the Federal-State Cooperative Program funded totally the operation of almost 3,900 continuous streamflow stations and funded, in combination with other sources, another 950 continuous streamflow stations. These stations constitute more than 60 percent of the continuous streamflow stations operated by the Geological Survey. The program provided funds for the collection of ground-water levels at approximately 30,000 wells. The FY 1990 program also provided for collection of water-quality data at a total of about 2,200 surface-water stations and a total of about 6,400 ground-water stations. These data are necessary to determine the suitability of water for various uses, to identify trends, and to evaluate the effects of stresses on the Nation's surface- and ground-water resources.

During FY 1990, the Geological Survey also conducted about 530 interpretive and research investigations as part of the Cooperative Program. Interpretive investigations encompass areas that range in size from a square mile or less to multistate regions. In these investigations Geological Survey scientists bring together information to define, characterize, and evaluate the areal extent, quality, and availability of the water resource. Since the early 1970's, these investigations have emphasized water-quality issues, such as aquifer contamination, acid rain, river-quality assessments, storm runoff, and the effects of coal mining and agricultural activities on the hydrologic system.

All data and results of analytical studies are made available to cooperating agencies and the public through various published reports (more than 1,500 in FY 1990), and through computerized information programs such as the National Water Information System and the National Water Data Exchange (NAWDEX) Program. Abstracts of completed reports are made available through the Geological Survey Water Resources Scientific Information Center (WRSIC). Hydrologic data can be accessed by computer terminals at offices in every State.

In many places, the Cooperative Program provides the only source of support for water-data collection and investigations required to assess, on a continuing basis, the status of the Nation's water resources. Information developed in the Cooperative Program has relevance to potential and emerging long-term problems,

such as water supply, waste disposal, energy development, and environmental management and protection. Because common analytical methods and techniques are used, the information also is relevant to problems having interstate, regional, national, or international significance. The information furnishes the basis required to carry out interstate and international compacts, Federal law and court decrees, congressionally mandated studies, regional and national water-resources assessments, and planning activities. The Cooperative Program also expedites the preparation of applications for mining permits and mine plans by the coal industry by providing needed hydrologic data, and aids State authorities in reviewing the applications and plans. In addition, the Cooperative Program provides support for most of the streamgaging stations used by the National Weather Service for river forecasts and warnings. Within the Cooperative Program, typically about half of the funds support the collection of hydrologic data; the remaining half support the conduct of hydrologic studies and investigations.

PROGRAM PRIORITIES

Program priorities are based on national needs that have been identified by the President and Administration advisors, by the Congress, by the Department of the Interior, by other Federal agencies, and from information the Geological Survey has received from cooperating agencies and other interested parties. Issues that are identified through the National Water Summary (U.S. Geological Survey 1984, 1985, 1986, 1988, and 1990) also are taken into consideration. As a result, the priorities are developed in response to mutual Federal, regional, State, and local requirements.

Thus, the Geological Survey and its cooperating agencies work together in a continuing process that leads to adjustments in the program each year. The number of requests for scientific and technical assistance continues to grow from State agencies responsible for ground-water protection and for controlling and mitigating contamination. The State offerings, which typically exceed Federal matching funds by $10 million or more each year, reflect the increasing emphasis on water-quality issues, as well as on other concerns regarding the availability and distribution of the resource. The water-quality issues include aquifer contamination, effects of acid rain, river-quality assessment, effects of storm runoff, and the effects of agricultural chemicals and practices on ground and surface water.

The strong linkage between the Cooperative Program, the Federal Program, and the Other Federal Agency Program is clearly reflected in the issues identified for FY 1991. The National Water-Quality Assessment (NAWQA) Program, for example, will continue to build on water-quality information developed over many decades within the Cooperative Program. In turn, cooperative interests already are developing because of the new information emerging in the pilot NAWQA Program studies. Data collection supported by the Federal Program and by other Federal agencies provides additional information. Ground-water contamination studies funded by military and civilian Federal agencies are providing valuable hydrologic information and research in basic physical processes. The USGS National Research Program helps develop and refine hydrologic principles and methods for use in the Federal-State Cooperative Program. These are but a few examples of the noteworthy interdependence that exists among programs.

The USGS has made a strong commitment to actively support the U.S. Department of Agriculture's work under the President's Water Quality Initiative, which has a heavy emphasis on nonpoint source contamination of ground and surface water by agricultural chemicals. Therefore, one of the principal overall priorities of the Cooperative Program will be to assist cooperating agencies in obtaining information that bears on this critical issue. Improved regional and local knowledge about the quality of ground and surface water in agricultural areas will assist in developing cause-and-effect relationships as well as in in structuring remedial plans.

The USGS has long assisted in appraising the water resources of Indian lands as part of the Cooperative Program, as described in the next section of this report. The protection and management of the Indian tribes' natural resources are essential elements of the Secretary of the Interior's trust responsibility to the tribes. Priorities in the Cooperative Program will continue to reflect the emphasis on hydrologic data collection and investigations in this regard.

The following issues have been identified as highest priority in developing the FY 1991 Cooperative Program:

GROUND-WATER QUALITY--Widespread concern continues over the quality of the Nation's ground-water. These interests are creating new opportunities in work that will contribute directly to both management of available supplies and remediation of existing contamination. Studies and data are needed to define present water quality as a baseline for evaluating changes. Specific area studies need to address flow dynamics, solute-transport and geochemical processes that influence ultimate water quality. Processes of special interest include natural as well as human activities that may alter, add, or remove contaminants. Information also is needed on the effects of waste disposal, contamination by nonpoint sources, and salt-water encroachment. The effect of agricultural chemicals on ground-water quality is a growing public concern. More than ever before, State and local governments are seeking assistance to address this critical issue.

WATER SUPPLY AND DEMAND--The continued growth of population centers is accompanied by increasing withdrawal, use and diversion of water. In turn, this places stress on the quantity and quality of existing supplies. Better water-use information is required to quantify these stresses. The Cooperative Program will continue emphasis on better definition of aquifers that are important sources of local or regional water supplies. It is clear that flow-system definition and simulation is essential for aquifer management.

STREAM QUALITY--Appraisals and data for assessments of the water quality of the Nation's streams continue to be important growth components of the Cooperative Program. Studies are needed in areas where contamination has been documented and where contamination may be a problem in the future. Information is being sought on stream quality and sediment chemistry as related to land use and land-use changes, stream biota, ground-water contribution of contaminants, and overland runoff. Runoff of agricultural chemicals and transport of contaminants from urban areas are now issues of national concern. Cooperative investigations supporting and complementing the NAWQA Program are expected to receive priority consideration in program formulation.

WETLANDS, LAKES, AND ESTUARIES--These valuable ecosystems deserve special consideration because of their importance as habitats for fish and wildlife, sources of water supply, and as recreational resources. Investigations are needed to help managers better understand these valuable resources, which are particularly sensitive to human encroachment. Increasingly these areas serve as sinks for waste products. More emphasis will be placed on physical, chemical, and biological processes, particularly on waste-assimilation studies.

HYDROLOGIC HAZARDS--Economic losses from floods, droughts, rising lake levels, mudflows, debris flows, sedimentation, and other hydrologic hazards amount to billions of dollars annually. Studies are needed to continue to define the magnitude and probability of occurrence of hazardous hydrologic events and to provide a better understanding of the processes that cause them.

HYDROLOGY OF GLOBAL CLIMATE CHANGE --As floods and droughts continue to occur around the country, interests are emerging in long-term climate change as a means of evaluating past or future extreme events. Specific issues include variations in ocean and lake levels, and long-term climate change. In addition to the damage associated with rising or falling lake levels, other concerns include extreme

fluctuations in water availability and water-quality changes resulting from intrusion of salt water or other highly mineralized water. Studies and data intended to increase man's understanding of the long-term effects of climate change on the Nation's water resources are highly encouraged for future work in the Cooperative Program.

HYDROLOGIC DATA COLLECTION--The hydrologic data program of the U.S. Geological Survey continues to be the foundation for ongoing and future interpretive studies. Resolution of conflicts about reserved water rights, particularly Indian water rights, often requires large amounts of data. The NAWQA Program will rely heavily on past, present, and future data collected as part of the hydrologic data-collection program to assess the quality of the Nation's water resources. Therefore, the enhancement of hydrologic data-collection activities continues to have high priority in the Cooperative Program.

EXAMPLES OF CURRENT INVESTIGATIONS

Several examples of recent cooperative investigations follow:

- Alabama: Assessment of Hydrological Problems Associated with Aquaculture in West-Central Alabama

  Commercial aquaculture ponds used for the cultivation and breeding of catfish as a source of food presently cover approximately 15,000 acres in west-central Alabama and represent one of the fastest growing industries in the southeastern United States. Potential problems associated with aquaculture operations include ground-water level declines in areas where wells are used to maintain pond water levels and adverse effects on the water-quality of surface-water bodies receiving pond effluent and ground-water reservoirs receiving pond seepage. The objective of an investigation being conducted by the USGS, in cooperation with the Alabama Department of Economic and Community Affairs, is to assess the effects of commercial aquaculture activities by performing an inventory of ponds with respect to size, location, and water-source, estimating total ground-water use associated with aquaculture, monitoring water-quality changes during fish production, and assessing the quality of ground and surface water near aquaculture ponds. Observed ground-water levels and water-quality changes will be compared for different pond types, water sources, and management practices.

- California: Determination of Ground-Water Flow, Quality and Nitrate Distributions in the Hemet Ground-Water Subbasin, Riverside County

  Nitrate concentrations in ground water from many basins in southern California approach or exceed the drinking water standard of 45 mg/L. High nitrate concentrations are believed to be due mainly to land and water-use practices, related to the operation of dairies, citrus farming, irrigation with reclaimed water, and outflow from septic systems. In order to manage the ground-water resources, and to identify future mitigating measures, the chemical, biological, and hydraulic processes that affect nitrogen speciation and concentration need to be determined for a variety of representative land-use and hydrological conditions. The USGS, in cooperation with the Eastern Municipal Water District, is conducting detailed studies to determine these processes at seven sites that have hydrologic and land-use conditions representative of southern California basins. Data will be collected on physical and hydrogeological characteristics, common chemical constituents, selected radioisotopes and stable isotopes, and bacteria.

- California: Process Governing the Distribution and Mobility of Selenium and Arsenic in Shallow Ground Water, Tulare Basin

  Large parts of the Tulare Basin in the southern San Joaquin Valley are affected adversely by shallow ground water, leading to the need for artificial subsurface drainage for continued agricultural production. Disposal of agricultural drain water in evaporation ponds and potential downward migration of shallow ground water to regional aquifers used as a source for drinking water pose threats to migratory waterfowl and human health because of the high concentrations of selenium and arsenic in the drain water. The objectives of an investigation by the USGS, conducted in cooperation with the California Department of Water Resources, include

determining the distributions of selenium, arsenic, and other elements in ground water and sediments in selected areas of the Tulare basin and identifying the geochemical, biological, and hydrologic processes controlling the solubility and mobility and selenium and arsenic in these areas.

- Florida: Evaluation of the Effects of Non-Point Source Pollution from Swine and Poultry Operations on Ground- and Surface-Water Quality in North Florida

  Nitrate in wastes from livestock operations in north Florida may contaminate the Suwannee River, which the State government is attempting to preserve in its natural condition, and the Floridan aquifer, which is the principal source of public water supply for the area. The USGS, in cooperation with the Florida Department of Environmental Regulation, is conducting a study to determine the extent of ground- and surface-water contamination in the vicinity of swine and poultry operations and to relate the degree of contamination to local hydrogeology and the use of various waste management practices.

- Florida: Near-Surface Water Balance for a Site in Central Florida: A Case Study and Modeling Investigation

  Near-surface processes such as rainfall interception, evapotranspiration, and the storage, infiltration, and transport of water in soils are among the most poorly understood elements of the hydrologic cycle. The objectives of an investigation being conducted by the USGS, in cooperation with the Southwest Florida Water Management District, are to examine seasonal variations in the water balance of the unsaturated-zone at a site covered by common types of native vegetation in central Florida and to develop a physically-based model for the simulation of near-surface hydrologic processes. The results of the investigation will contribute to a better understanding of important near-surface hydrologic processes and result in an improved capability to predict the possible effects of potential climate change on important aspects of the hydrologic regime.

- Idaho: Eutrophication and Trace-Element Contamination of Coeur d'Alene Lake

  Substantial shoreline development and intensive recreational use of Coeur d'Alene Lake have created considerable concern over the effects of eutrophication on this already mesotrophic lake. Coeur d'Alene Lake also has been receiving runoff from mine tailings and ore-processing activities for more than 100 years. A limnological investigation being conducted by the USGS, in cooperation with the Idaho Department of Health and Welfare, Division of Environment, is designed to employ a nutrient load/lake response model for the lake. This model would quantify the nutrient loads required to limit development of anaerobic conditions in the hypolimnion, and determine the potential environmental availability of sediment associated trace-elements.

- Iowa: The Occurence and Flux of Inert Pesticide Ingredients in Shallow Ground Water

  A three-year cooperative project has been initiated by the USGS, in cooperation with the University of Iowa Hygenics Laboratory, to study the occurence and flux of inert (inactive) pesticide ingredients in shallow ground water. Inert pesticide ingredients are used as fillers, carriers, or as

components to enhance or activate the active ingredients of the product. Volatile organic compounds, many of which are listed as priority pollutants by the U.S. Environmental Protection Agency, are the most common classes of chemicals used as inert ingredients. The movement and effects of these inert ingredients on the hydrologic environment is not now known.

- Kansas: Soil and Cropping Management Effects on Atrazine Movement
  Contamination of surface water by atrazine and other herbicides may pose a serious problem for public water supplies. Experiments conducted at the Kansas River Valley Experimental Field near Topeka, Kansas, as part of a USGS-Kansas State University cooperative study, reveal that some simple farming techniques can greatly reduce herbicide loss from fields. A farming technique that results in considerable reduction in herbicide concentrations in runoff from cultivated fields is the incorporation of the herbicide into the soil. Experimental plots in which the herbicides were incorporated into the soil during application had initial runoff concentrations 10 to 100 times less than initial concentrations in runoff from plots in which the herbicides were applied to the soil surface. Other experiments showed that encapsulated herbicides help reduce herbicide loss, especially when incorporated. These findings are significant in light of a commonly encouraged farming practice of spraying herbicides on the surface of minimum-tilled fields. The additional crop residue on the surface reduces soil erosion, but the surface application of the herbicides clearly contributes a large amount of herbicide to surface water.

- Louisiana: Assessment of Potential Trace-Metal Problems in Coastal Louisiana Streams
  Because of a strong association with sediments, the distribution, transport, and availability of many trace metals must be evaluated in bed sediments as well as in the water column. Research involving the application of regression modeling techniques in other parts of the country indicates that the potential for low-level trace-metal contamination in some bottom sediments can be identified using key geochemical factors, but additional research is needed for areas of organic-rich sediments. The USGS, in cooperation with the Louisiana Department of Transportation and Development, is conducting a study to determine trace-metal concentrations in bottom materials from several organic-rich coastal Louisiana streams, to construct regression models capable of predicting baseline trace-metal concentrations, and to evaluate the usefulness of these and other models in predicting trace-metal concentrations. The study will result in a better understanding of the role of organic-rich sediments in trace-metal transport for areas such as coastal marshes and freshwater wetlands and provide a useful tool for evaluating water-quality in larger, regional-scale basin assessment studies.

- Minnesota: Minnesota River Assessment Project
  The USGS, in cooperation with the Minnesota Pollution Control Agency and the Legislative Commission on Minnesota Resources, is investigating non-point source contamination problems in agricultural areas in the Minnesota River basin. The principal objective is to study transport of suspended-sediment, nutrients, and oxygen-demanding substances at 22 locations within the 17,000 square-mile basin. The information gathered during the four-year investigation will quantify and characterize non-point source loading along the river mainstem and from all major tributaries. Soil and

water conservation districts, and county water planners are using the findings of the study to identify problem areas and to target best management practices to improve water quality in the Minnesota River.

- Nebraska: Evaluation of Ground-Water Quality in the Nemaha and North Platte Natural Resource Districts

  The USGS, in cooperation with the 23 Natural Resources Districts (NRD's) and the Nebraska Natural Resources Commission, has initiated an investigation to address the current ground-water quality concerns of the State of Nebraska. The objectives are to assess agricultural contamination as well as natural chemical and radiochemical characteristics of aquifer systems within the various NRD's. The study for the Nemaha NRD was completed in FY 1990 and the study for the North Platte NRD was begun in 1991. The interest statewide in this program is high because uniformity will be maintained in geological descriptions and in techniques of data collection and interpretation.

- New York: Processes Affecting Water Quality Changes in the Catskill Mountains of Southeastern New York

  During periods of heavy rain or snowmelt, many streams that feed the reservoirs used to provide New York City's water supply become increasingly acidic with elevated concentrations of metals, particularly aluminum. The USGS, in cooperation with the New York City Department of Environmental Protection (DEP), has begun a 4-year project to identify the relations between watershed processes and increases in acidity,nitrate, and aluminum concentrations in the streams and their effect on the water quality in the reservoirs. Results of the study will help scientists better understand how acidic precipitation and watershed processes influence water chemistry in large watersheds and will enable DEP to develop appropriate management techniques for improving the quality of the city's water supply.

- Ohio: Predicting Excessive Bacterial Concentrations in Ohio Streams

  After periods of heavy rains, Ohio public health officials often restrict recreational use of public waterways because of possible contamination by fecal material and associated pathogens from combined sewer overflows. Currently, the tests that indicate high levels of fecal contamination require more than a day to analyze, during which time stream conditions can change significantly. In cooperation with the Northeast Ohio Regional Sewer District and the City of Akron, the USGS is developing a statistical method of estimating the levels of fecal contamination in streams that will enable regulatory agencies to quickly restrict or permit water-contact recreation following high-flow events.

- Oregon: Nutrient-Metabolism Relations in a Periphyton-Dominated Stream Community

  Courts in Oregon have mandated that Total Maximum Daily Loads (TMDL) be promulgated statewide for all water-quality limited streams. Oregon is the first State where the TMDL requirement of the Clean Water Act is being enforced. The South Umpqua River experiences excessive growths of periphytic algae during summer base flows as a result of nutrients, primarily from point sources. The algae growths produce pH and dissolved oxygen values that violate Oregon State standards. The USGS, in cooperation with Douglas County, is developing a water-quality model of the main stem river,

which will be calibrated using synoptic-survey and fixed-station data. The calibrated model will be used to estimate the reduction in nutrient concentrations necessary to stop the pH and dissolved oxygen standard violations.

- Pennsylvania: Movement of Pesticides in the Unsaturated Zone
  Agricultural pesticides are contaminating ground water in many parts of the country. A thorough understanding of how pesticides move from the land surface to aquifers is needed before appropriate remedial action plans can be developed. Unfortunately, the processes that control the movement of pesticides differ in various geological settings. The USGS, in cooperation with the Pennsylvania Department of Environmental Resources, is investigating how pesticides move through the unsaturated parts of limestone aquifers to the water table. The study will enable agricultural planners to establish procedures for minimizing the effects of pesticides on ground water in the fertile limestone areas of the eastern United States.

- West Virginia: Using Wetlands to Treat Sewage in West Virginia
  In many parts of the country, water-resource planners and regulators are proposing to use wetlands for treatment of municipal wastewater. To be successful as a treatment medium, the wetlands, whether natural or artificial, must be able to assimilate large amounts of ammonia and nitrate through a biological process called denitrification, without damaging the wetland. The USGS, in cooperation with the West Virginia Divisions of Natural Resources and Tourism and Parks, and Marshall University, is working to evaluate the environmental conditions needed to promote high rates of denitrification and to maintain a viable wetlands ecosystem. Results of the project will enable scientists to better understand the biological processes involved in the breakdown of organic material in sewage and will allow regulatory agencies to develop policies that permit effective assimilation of waste without adverse environmental consequences.

ACTIVITIES RELATED TO INDIAN WATER RIGHTS

For many years, the USGS has collected hydrologic data and performed water-resources investigations in the interest of Indian tribes. Most of this work has been conducted at the request of the Bureau of Indian Affairs (BIA) on a reimbursable basis or as requested by individual Indian tribes as part of the Federal-State Cooperative Program (Gilbert and Buchanan, 1986). The USGS also has a large and growing body of information that relates to water resources on and near Indian lands. Support is provided by various elements of the USGS Federal Program, Cooperative Program, and Other Federal Agency Program.

Indian tribes have a continuing need for hydrologic information to be used in water-rights negotiation and litigation, as well as for water conservation, development, and management purposes. In this regard, USGS and BIA have had an interagency agreement since 1982 that describes the types of assistance the USGS may provide, and terms under which the resulting information might be held as privileged and confidential. The principal caveat is that although all data collected by the USGS will be made available to prospective users, analyses and interpretive reports will be provided to BIA for a maximum of 90 days prior to seeking approval for publication from the USGS Director. Some reports that will be used in litigation, as mutually determined prior to preparation, will not be released by USGS until they have been released to the presiding Court. Various stipulations of the interagency agreement have been extended on occasion to work carried out by USGS directly with Indian tribes as part of the Cooperative Program.

The USGS maintains the position that all hydrologic data it collects -- and, after compliance with the terms of the interagency agreement, all interpretive reports it prepares -- are properly part of the public domain. At times, this leads some tribes to seek other sources of assistance so that the tribe can hold the resulting information confidential as it sees fit.

Selected USGS hydrologic data-collection and investigative activities conducted on or near Indian reservations during fiscal years 1985-90 are listed in table 1. The amount and types of funding for these activities are listed by fiscal year for this period in table 2. The following are brief descriptions of some of these projects that were in process during FY 1990 as part of the Cooperative Program.

- Arizona: Monitoring Hydrologic Effects of Ground-Water Withdrawals and Strip Mining at Black Mesa

  Strip mining of the coal at Black Mesa has caused concern by several environmental groups and Federal agencies about the effects of this strip mining and associated ground-water withdrawals on water levels in the Navajo aquifer. The objectives of this investigation, being conducted by the USGS in cooperation with the Arizona Department of Water Resources, are to determine the magnitude of any water-level changes in the aquifer near Black Mesa, and to differentiate changes caused by strip-mining operations from those caused by pumpage for public supply at nearby communities.

- California: Ground-Water Hydraulics in Wolf Valley, Riverside County

  Population and water use are continuing to increase in the upper Santa Margarita River basin. Water districts in the area rely increasingly on ground-water resources to meet demand. In Wolf Valley there is concern that additional pumping will effect the ground-water resources beneath the Pechanga Indian Reservation. The USGS, in cooperation with the

Reservation, is collecting hydrologic data and conducting aquifer tests in order to define the ground-water system of Wolf Valley and to determine the effects of ground-water pumping on water levels and storage.

- Idaho: Implementation of a Ground-Water Quality Monitoring Network
  At present, wide gaps exist in Idaho's ground-water quality data base. The USGS, in cooperation with the State Department of Water Resources, is designing and implementing a monitoring network to detect changes and degradation of water quality that may result from natural and man-induced causes. As part of this effort, many samples have been collected from wells on the Fort Hall Indian Reservation.

- Minnesota: Ground-Water Resources of the Leech Lake Indian Reservation
  The USGS, in cooperation with the Leech Lake Indian Reservation, is conducting an evaluation of the ground-water resources on the reservation. Included in this investigation will be an assessment of the availability of water from confined and unconfined aquifers, definition of the baseline quality of ground water, and an analysis of water quality as it relates to principal land use.

- Montana: Hydrology and Water Quality of Sandstone and Limestone Aquifers, Fort Belknap Indian Reservation
  In cooperation with the Fort Belknap Indian Community, the USGS is conducting a study to determine the quantity and quality of water in sandstone and limestone aquifers on the Fort Belknap Indian Reservation.Little is known at present about these potential sources of water.

- New Mexico: Test Drilling and Hydrologic Investigations on the Pueblo of Zuni
  Ground-water use in the Pueblo of Zuni is increasing beyond the capacity of present Tribal well fields. Water use in adjacent areas is also increasing and might affect the availability of water on Zuni lands. Additional information is needed to understand the potential effects of increased withdrawals on the ground-water resources of the area. In cooperation with the Pueblo of Zuni, the USGS is conducting an investigation to determine aquifer properties and ground-water quality on Tribal lands and to evaluate the quantity and quality of outflow in the Zuni River.

- North Dakota: Hydrology of the Fort Berthold Indian Reservation
  The USGS, in cooperation with the Three Affiliated Tribes Natural Resources Department, is developing information on the occurrence and quality of ground and surface water, water use, and geohydrologic features of the Fort Berthold Indian Reservation. Water of acceptable quality for domestic use is in high demand.

- South Dakota: Water Resources of the Lake Traverse Reservation in North and South Dakota
  The USGS, in cooperation with the Sisseton-Wahpeton Sioux Tribes, is conducting a study to evaluate the water resources of the Lake Traverse Reservation. Information is needed to facilitate efficient use of these resources by agriculture, rural water systems, and municipalities. The identification of additional water supplies of good quality is critical to the continuation of new housing development now underway on the reservation.

- Washington: Quality of Ground Water in the Toppenish Basin, Yakima Indian Reservation
  Some water supplies on the Yakima Indian Reservation may contain contaminants derived from agriculture, domestic wastes, food processing, and a few light industries within the basin. In cooperation with the Yakima Tribal Council, the USGS has underway a study to define ground-water quality, identify existing and potential water-quality problems, and describe hydrologic conditions. The resulting information will assist in decisions with respect to development and management of water resources on the reservation.

- Wisconsin: Water Resources of Indian Reservations in Wisconsin
  This project has provided a means for the assessment of water resources for various Indian tribes. At present, the USGS, in cooperation with the Lac du Flambeau Indians, is conducting an evaluation of the hydrology and water quality on tribal lands.

- Wyoming: Hydrologic Appraisal of the Wind River Indian Reservation
  In cooperation with the Shoshone Tribe, the USGS is appraising the quantity, quality, and availability of water resources on the Wind River Reservation. This comprehensive study will provide information for management decisions by the Tribe.

Table 1 - Selected U.S. Geological Survey hydrologic data-collection and investigative activities on or near Indian reservations, fiscal years 1985-90

Project Number	Activity	Fiscal years of operation
Arizona		
AZ028, AZ080	Monitoring Hydrologic Effects of Ground-Water Withdrawals and Strip Mining at Black Mesa	1971 -
AZ060	Ground-Water Supply for Ak-Chin Indian Reservation: Evaluation of the Effects of Ground-Water Pumpage -- Vekol Valley	1980 - 89
AZ072	Hydrologic Investigation of the Gila River Indian Reservation	1982 - 90
AZ089	Hydrologic Investigation of the Salt River Indian Reservation	1985 - 88
AZ104	Occurrence and Movement of Radionuclides and Other Trace Elements in the Puerco and Lower Little Colorado River Basins, Arizona and New Mexico	1987 - 93
AZ112	Appraisal of Water Resources on the San Carlos and Fort Apache Indian Reservations; Apache, Gila Graham, Navajo, and Pinal Counties	1988 - 90
California		
CA289, CA487	Water Resources of Indian Reservations in California	1982 -
CA435	Water-Quality Appraisal of the Cortina Indian Reservation	1986 - 89
CA474	Ground-Water Hydraulics in Wolf Valley, Riverside County	1989 - 91
Colorado		
CO236	Irrigation Drainage Reconnaissance of the Pine River Area, Southern Ute Indian Reservation	1989 - 90
Idaho		
ID142	Ground-Water Contamination in the Michaud Flats, Fort Hall Indian Reservation	1981 - 89
ID155	Water Resources of the Upper Bannock Creek Area, Fort Hall Indian Reservation, Power County	1987 - 90

Table 1 (continued)

Project Number	Activity	Fiscal years of operation
ID169	Implementation of a Ground-Water Quality Monitoring Network in Idaho	1987 -
ID170	Hydrology of the Clearwater and Salmon River Basins in Support of Federal and Tribal Claims for Reserved Instream Water Rights	1989 - 91
Kansas		
KS165, KS167	Water-Resource Interests of the Kickapoo, Potawatomi, Iowa, and Sac & Fox Indian Tribes in Kansas	1988 -
Minnesota		
MN-097	Hydrology of the Fond du Lac Indian Reservation	1983 - 88
MN099	Hydrology of the White Earth Indian Reservation	1984 - 90
MN103	Hydrology of the Red Lake Indian Reservation	1985 - 89
MN108	Water-Supply Characteristics of the Clearwater River near the Red Lake Indian Reservation	1986 - 89
MN109	Ground-Water Resources of the Leech Lake Indian Reservation	1987 - 91
MN118	Ground-Water Resources of the Mille Lacs Indian Reservation	1988 - 90
Montana		
MT007	Water Use Studies	1979 -
MT086	Ground-Water Availability of the Ancestral Missouri River Valley in Northeastern Montana	1982 - 86
MT097	Ground-Water Resources of the Flathead Indian Reservation	1983 - 88
MT108	Quantification of Canal Seepage on the Flathead Indian Reservation	1986 - 89
MT112	Hydrology and Water Quality of Sandstone and Limestone Aquifers, Fort Belknap Indian Reservation	1986 - 90
MT113	Hydrology of the Flathead Indian Reservation	1986 - 88

Table 1 (continued)

Project Number	Activity	Fiscal years of operation
MT123	Reconnaissance of Ground-Water Resources of the Fort Peck Indian Reservation	1989 - 90
MT124	Delineation of the 100-Year Flood Plain along Major Streams on the Fort Peck Indian Reservation	1989 - 92
MT125	Ground-Water Hydrology of Alluvial Deposits on the Fort Belknap Indian Reservation	1989 - 90
MT129	Hydrology of the Blackfeet Indian Reservation	1990 - 93
MT126 MT130	Water Resources of the Upper Pryor Creek Basin, Crow Indian Reservation	1990 - 91
MT131	Hydrology and Water Quality of Sandstone and Limestone Aquifers, Fort Belknap Indian Reservation	1990 - 91
North Dakota		
ND136	Ground-Water Flow in the Warwick Aquifer	1985 - 86
ND144	Ground-Water Geographic Information System for the Fort Berthold Indian Reservation	1988 - 89
ND153	Hydrology of the Fort Berthold Indian Reservation	1990 - 93
Nebraska		
NE057	Water Resources Evaluation of the Omaha and Winnebago Indian Reservation in Thurson, Burt, Cuming, and Dixon Counties, and of the Santee Indian Reservation in Knox County	1988 -
New Mexico		
NM225	Water Resources of the Zuni Reservation	1978 - 89
NM231	Hydrologic Effects of Geothermal River Development in the Jemez Mountains	1981 - 85
NM238	Effects of Mineral Development on Ground-Water Supplies, San Juan Basin	1982 -
NM245	Water Resources of the Alamo Band, Navajo Indian Reservation	1983 - 86
NM246	Hydrology of the San Andres - Glorieta Aquifer System, Pueblos of Acoma and Laguna	1983 - 89

Table 1 (continued)

Project Number	Activity	Fiscal years of operation
NM247	Water Resources on the Reservations of the Jemez, Santa Ana, and Zia Pueblos	1983 - 87
NM261	Test Drilling and Hydrologic Investigations on the Pueblo of Zuni	1987 - 89
NM345	Exploration of the San Andres - Glorieta Aquifer in the Vicinity of the Acoma and Laguna Pueblos	1983 - 90
Oklahoma		
OK097	Hydrologic Study of Tribal Reserve Lands of the Sac & Fox Nation of Oklahoma, Lincoln County	1990 - 92
Oregon		
OR132	Feasibility Study to Determine the Ground-Water Contribution from the Warm Springs Reservation to the Deschutes River	1985 - 89
OR140	Water-Resources Evaluation for the Umatilla Indian Reservation	1986 - 89
South Dakota		
SD082	An Appraisal of the Water Resources of the Sisseton Indian Reservation	1986 - 88
SD083	Availability of Water for Irrigation on the Pine Ridge Indian Reservation near Pine Ridge	1986 - 89
SD088	Water Resources of the Lake Traverse Reservation in North and South Dakota	1988 - 91
Utah		
UT156	Water in Bedrock in Eastern San Juan County, with Special Emphasis on the Navajo Sandstone and Related Aquifers	1981 - 86
UT178	Hydrology of the Paiute Indian Reservation	1986 - 89
Washington		
WA244	Quantitative Evaluation of the Water Resources of the Tulalip Indian Reservation and Surrounding Areas, Snohomish County	1980 - 89
WA277	Yakima River Basin Water Enhancement	1982 - 86

Table 1 (continued)

Project Number	Activity	Fiscal years of operation
WA279	Water Resources of the Lower Puyallup River basin	1982 - 87
WA286	Stillaguamish River Basin Instream Flow and Water Quality	1983 - 86
WA296	An Investigation of Hydrologic Conditions at the Midnite Mine and Vicinity, Stevens County	1983 - 89
WA301	Puyallup River Flood Capacity Study	1984 - 90
WA335	Quality of Ground Water in the Toppemish Basin, Yakima Indian Reservation	1989 - 92
PN355	Ground-Water Resources of Selected Areas on the Spokane and Kalispel Indian Reservations	1990 - 91
PN358	Updated Hydrology of the Swinomish Indian Reservation	1990 - 91
Wisconsin		
WI123	Water Resources of Indian Reservations in Wisconsin	1982 - 93
Wyoming		
WY001	Surface-Water Data Collection	1985 - 90
WY007	Water Use Studies	1984 - 91
WY114	Quality of Surface Water and Ground Water in the Owl Creek Basin, Wind River Indian Reservation	1988 - 90
WY115	Hydrologic Appraisal of the Wind River Indian Reservation	1988 - 91
WY121	Seepage and Sedimentation in Selected Irrigation Canals in the Wind River Indian Reservation	1990 - 92

Table 2 - Amount and types of funding for U.S. Geological Survey hydrologic data-collection and investigative activities on or near Indian reservations, fiscal years 1985 - 90

Funding (dollars, in thousands)

Fiscal Year	USGS Federal Program	Federal-State Cooperative Program	Other Federal Agency Program	Total
1985	$ 0	$ 1,210	$ 220	$ 1,430
1986	620	1,360	640	2,620
1987	180	1,450	370	2,000
1988	600	1,560	830	2,990
1989	0	1,900	1,040	2,940
1990	0	1,820	1,160	2,980

SUMMARY

The U.S. Geological Survey's Federal-State Cooperative Program (50:50 matching of funds) has responded to national needs for hydrologic information since 1895. During FY 1990, water-resources data collection, investigations, and research were conducted in cooperation with more than 1,000 local, State, and regional agencies in every State, Puerto Rico, and several territories. Total funding in the Cooperative Program in FY 1990 amounted to about $129 million and accounted for more than 40 percent of the total obligations for the Geological Survey's Water Resources Division. The Cooperative Program provides much of the information required by those responsible for water-resources planning and management, water-supply development, and environmental improvement through hydrologic data collection, investigations, and research. The program is a unique activity in that, although the cooperating agencies provide more than half the funds, the Geological Survey accomplishes most of the work. The program also is the source of much of today's knowledge concerning techniques for collection and analysis of the quantity, quality, use, and movement of surface and ground water.

Because the availability of water of suitable quality is a fundamental limiting factor to population growth, a comprehensive and forward-looking program of data-collection and investigations is needed to provide the information necessary for the wise development and use of the Nation's water resources. The job is too large to be supported at either Federal or State level alone. The jointly planned and funded Cooperative Program provides convincing assurance that the work is designed to meet both national and local needs.

REFERENCES CITED

Gilbert, B.K. and Buchanan, T.J., 1986, Hydrologic activities of the U.S. Geological Survey related to Indian water rights: U.S. Geological Survey Open-File Report 86-52, 44 p.

U.S. Geological Survey, 1984, National water summary 1983--Hydrologic events and issues: U.S. Geological Survey Water-Supply Paper 2250, 243 p.

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U.S. Geological Survey, 1986, National water summary 1985--Hydrologic events and surface-water resources: U.S. Geological Survey Water-Supply Paper 2300, 506 p.

U.S. Geological Survey, 1988, National water summary 1986--Hydrologic events and ground-water quality: U.S. Geological Survey Water-Supply Paper 2325, 560 p.

U.S. Geological Survey, 1990, National water summary 1987--Hydrologic events and water supply and use: U.S. Geological Survey Water-Supply Paper 2350, 553 p.

Appendix A -- Cooperators By State, Fiscal Year 1990

Alabama:
- Alabama Department of--
  - Economic and Community Affairs
  - Environmental Management
  - Highways
- Anniston, City of
- Birmingham, Water Works Board
- Butler County Water Authority
- Coffee County Commission
- Cumberland Mountain Water & Fire Protection Authority, Scottsboro
- Dauphin Island Water Authority
- Geological Survey of Alabama
- Greenville Water Works and Sewer Board
- Huntsville, City of, Public Works
- Jefferson County Commission
- Mobile, City of
- Montgomery, City of, Water Works and Sanitary Sewer Board
- Sumter County
- Tuscaloosa, City of
- University of Alabama, Tuscaloosa

Alaska:
- Alaska Department of--
  - Natural Resources, Division of--
    - Geological and Geophysical Surveys
    - Technical Services
  - Transportation and Public Facilities
- Alaska Power Authority
- Alaska Industrial Development and Export Authority
- Anchorage, Municipality of
- Fairbanks North Star Borough
- Juneau, City and Borough of
- Kenai Peninsula Borough
- Matanuska - Susitna Borough
- Sitka, City and Borough of

Arizona:
- Arizona Department of--
  - Environmental Quality
  - Water Resources
- Colorado Department of Highways
- Gila Valley Irrigation District
- Gila Water Commissioner, Office of
- Maricopa County--
  - Flood Control District
  - Municipal Water Conservation District No. 1
- Metropolitan Water District of Southern California
- Pima County Board of Supervisors
- Safford, City of, Water, Gas & Sewer Department

Arizona--continued
- Salt River Valley Water Users Association
- Scottsdale, City of, Water Resources Department
- Show Low Irrigation Company
- Tucson, City of

Arkansas:
- Arkansas Department of--
  - Health
  - Highway and Transportation
  - Parks and Tourism
  - Pollution Control and Ecology
- Arkansas Game and Fish Commission, Fisheries Division
- Arkansas Geological Commission
- Arkansas-Oklahoma Arkansas River Compact Commission
- Arkansas Soil and Water Conservation Commission
- Beebe, City of
- Independence County
- Little Rock Municipal Water Works
- N. Little Rock Electric Department
- University of Arkansas at Fayetteville
- University of Arkansas at Little Rock

California:
- Alameda County --
  - Flood Control and Water Conservation District, (Hayward)
  - Water District
- Antelope Valley - East Kern Water Agency
- California Department of --
  - Boating and Waterways
  - Health Services
  - Parks and Recreation
  - Transportation
  - Water Resources --
    - Central District (Sacramento)
    - Northern District (Red Bluff)
    - San Joaquin District (Fresno)
- California Regional Water Quality Control Board - Colorado Region
- California Regional Water Quality Control Board- Lahontan Region
- California Water Resources Control Board
- Carpinteria County Water District
- Casitas Municipal Water District
- Coachella Valley Water District
- Contra Costa County --
  - Flood Control and Water Conservation District
    - Department of Health Services

California--Continued
- Crestline - Lake Arrowhead Water Agency
- Desert Water Agency
- East Bay Municipal Utility District
- East Valley Water District
- Eastern Municipal Water District
- Fox Canyon Groundwater Management Agency
- Georgetown Divide Public Utility District
- Goleta Water District
- Humboldt Bay Municipal Water District
- Imperial County Department of Public Works
- Imperial Irrigation District
- Indian Wells Valley Water District
- Inyo County Water Department
- Kings River Conservation District
- Los Angeles County Dept. of --
  - Public Works
- Madera Irrigation District
- Marin County Department of Public Works
- Marin Municipal Water District
- Mendocino County Water Agency
- Merced, City of
- Merced Irrigation District
- Mojave Water Agency
- Mono County
- Montecito Water District
- Monterey County Flood Control and Water Conservation District
- Monterey Peninsula Water Municipal District
- Oakdale - South San Joaquin Irrigation District
- Orange County--
  - Environmental Management Agency
  - Water District
- Oroville - Wyandotte Irrigation District
- Palo Alto, City of
- Panoche Water and Drainage District
- Pechanga Indian Reservation
- Poway, City of
- Rancho California Water District
- Riverside County Flood Control and Water Conservation District
- Sacramento Municipal Utility District
- Sacramento Regional County Sanitation District,
  - Department of Public Works
- San Benito County Water District
- San Bernardino Environmental Public Works Flood Control District
- San Bernardino Valley Municipal Water District
- San Diego City Water Utility
- San Diego County, Department of--
  - Public Works
- San Francisco, City and County of,
  - Bureau of Light, Heat, and Power
- San Francisco State University Foundation

California--Continued
- San Francisco Water Department
- San Luis Obispo County, County Engineering Dept.
- San Mateo County--
  - Department of Public Works
- Santa Barbara, City of, Department of Public Works
- Santa Barbara County--
  - Flood Control and Water Conservation District
  - Water Agency
- Santa Clara Valley Water District
- Santa Cruz, City of,
- Santa Cruz County Flood Control and Water Conservation Department
- Santa Maria Valley Water Conservation District
- Santa Ynez River Water Conservation District
- Scotts Valley Water District
- Siskiyou County Flood Control and Water Conservation District
- Sonoma County--
  - Planning Department
  - Water Agency
- Tahoe Regional Planning Agency
- Terra Bella Irrigation District
- Tulare County Flood Control District
- Turlock Irrigation District
- United Water Conservation District
- Ventura County Public Works Agency
- Water Resources Control Board
- Western Municipal Water District
- Woodbridge Irrigation District
- Yolo County Flood Control and Water Conservation District
- Yuba County Water Agency

Colorado:
- Arkansas River Compact Administration
- Arvada, City of
- Aspen, City of
- Aurora, City of
- Bent County
- Boulder, City of
- Boulder County Department of Public Works
- Breckenridge, Town of
- Centennial Water and Sanitation
- Cherokee Water and Sanitation District
- Colorado Department of --
  - Health
  - Higheays, Divisionof Highways
  - Natural Resources, Divisionof Wildlife
- Colorado Division of --
  - Mined Land Reclamation
  - Water Resources, Office of the State Engineer
- Colorado Oil and Gas Commission, Department of Natural Resources

Colorado--Continued
- Colorado River Water Conservation District
- Colorado Springs, City of--
  - Department of Public Utilities
  - Office of the City Manager
- Colorado Water Conservation Board
- Delta County Board of County Commissioners
- Denver City and County of, Board of Water Commissioners
- Denver Regional Council of Governments
- Dolores Water Conservancy District
- Eagle County Board of Commissioners
- East Grand County Water Quality Board
- Englewood, City of, Wastewater Treatment Plant
- Evergreen Metropolitan District
- Freemont Sanitation District
- Fort Collins, City of
- Fountain Valley Authority
- Garfield County
- Glendale, City of
- Glenwood Springs, City of
- Golden, City of
- Jefferson, County Board of County Commissioners
- Lakewood, City of
- Longmont, City of
- Loveland, City of
- Lower Fountain Water-Quality Management Assoc.
- Metropolitan Denver Sewage Disposal District No. 1
- Moffat County
- Northern Colorado Water Conservancy District
- Northglenn, City of
- Pueblo, City of, Board of Water Works
- Pueblo County Commissioners
- Pueblo County Dept. of Public Safety and Operations
- Pueblo West Metropolitan District
- Rio Blanco County
- Rio Grande Water Conservation District
- Southern Ute Indians
- Southeastern Colorado Water Conservancy District
- Southwestern Colorado Water Conservancy District
- St. Charles Mesa Water Association
- Steamboat Springs, City of
- Thornton, City of
- Trinchera Conservancy District
- Uncompahgre Valley Water Users Association
- Upper Arkansas Area Council of Governments
- Upper Arkansas River Water Conservancy District
- Upper Eagle Valley Water and Sanitation District
- Upper Yampa Water Conservancy District
- Urban Drainage and Flood Control District
- Vail Valley Conservation Water Authority

Colorado--Continued
- Westminster, City of
- Yellow Jacket Water Conservancy District

Connecticut:
- Connecticut Department of Environmental Protection
- Fairfield, Town of, Conservation Commission
- New Britain, City of, Board of Water Commissioners
- Norwich Sewer Authority
- South Central Connecticut Regional Water Authority
- Torrington, City of

Delaware:
- Department of Natural Resources and Environmental Control
- Geological Survey

District of Columbia:
- Department of Public Works
- Metropolitan Washington Council of Governments

Florida:
- Boca Raton, City of
- Bradenton, City of
- Broward County--
  - Environmental Quality Control Board
  - Water Resources Management Division
- Cape Coral, City of
- Cocoa, City of
- Datona Beach, City of
- Florida Department of--
  - Environmental Regulation, Bureau of Laboratories and Special Programs
  - Natural Resources --
    - Division of Marine Resources
  - Transportation
- Florida Institute of Phosphate Research
- Florida Keys Aqueduct Authority
- Fort Lauderdale, City of
- Game and Freshwater Fish Commission
- Hallendale, City of
- Highland Beach, Town of
- Hillsborough County
- Hollywood, City of
- Jacksonville, City of--
  - Department of Health and Environmental Services
  - Department of Planning
- Jacksonville Beach, City of
- Jacksonville Electric Authority
- Lake County Board of County Commissioners, Tavares
- Lake County Water Authority
- Lake Mary, City of

Florida--Continued
- Lee County Board of County Commissioners
- Madison, City of
- Manatee County, --
  - Board of County Commissioners
  - Port Authority
  - Public Health Unit
- Marion County Board of Commissioners
- Metropolitan Dade County, Department of Environmental Resources Management
- Miami-Dade Water and Sewer Authority
- Northwest Florida Water Management District
- Ocala, City of
- Palm Beach County Board of County Commissioners
- Perry, City of
- Pinellas County
- Polk County Board of County Commissioners
- Pompano Beach, City of,
- Port Orange, City of
- Reedy Creek Improvement District
- Sarasota, City of
- Sarasota County
- South Florida Water Management District
- South Indian River Water Control District
- Southwest Florida Regional Planning Council
- Southwest Florida Water Management District
- St. Johns County
- St. Johns River Water Management District
- St. Petersburg, City of
- Stuart, City of
- Suwannee River Water Management District (Live Oak)
- Tallahassee, City of --
  - Electric Department
  - Department of Public Works
- Tampa, City of
- Tampa Port Authority
- Walton County
- West Coast Regional Water Supply Authority
- Winter Park, City of

Georgia:
- Albany, City of
- Albany Water, Gas, and Light Commission
- Bibb County Board of County Commissioners
- Blairsville, City of
- Brunswick, City of
- California Air Resources Board
- Chatham County - Savannah Metropolitan Planning Commission
- Chestatee - Chattahoochee Resource Conservation and Development
- Clayton County Water Authority
- Covington, City of

Georgia--Continued
- Georgia Department of--
  - Natural Resources--
    - Environmental Protection Division--
      - Water Protection Branch
    - Geological Survey
  - Transportation
- Georgia Mountain Regional Development Center
- Georgia State University, Dept. of Geology
- Gwinnett County
- Helena, City of
- Macon-Bibb County Water and Sewage Authority
- Moultrie, City of
- Springfield, City of
- Thomaston, City of
- Thomasville, City of
- Valdosta, City of

Hawaii:
- County of Hawaii, Department of Water Supply
- Hawaii Department of--
  - Agriculture Resource Management Division
  - Land and Natural Resources--
    - Division of Water and Land Development
  - Transportation
- Honolulu Board of Water Supply
- Honolulu, City and County of, --
  - Department of Public Works
- Hawaii County
- Kauai, County of, Department of Water Supply
- Maui, County of, Department of Water Supply

Idaho
- College of Southern Idaho
- Idaho Department of--
  - Health and Welfare
  - Water Resources
- Nampa, City of
- Nez Perce Tribe
- Shoshone- Bannock Tribes
- Shoshone County
- SW Irrigation District
- Teton County
- Water District No. 1--Idaho Falls
- Water District No. 32D (Dubois)

Illinois:
- Bloomington and Normal Sanitary District
- Cook County Forest Preserve District
- Decatur, City of
- De Kalb, City of, Public Works Dept.
- Du Page County, --
  - Department of Environmental Concerns
  - Forest Preserve, Planning and Development Section

Illinois--Continued
- Illinois Department of Transportation, Division of Water Resources
- Illinois Environmental Protection Agency
- Illinois State Water Survey, -- Department of Energy and Natural Resources Special Studies
- Lake County, Stormwater Management Planning Committee
- Metropolitan Water Reclamation District of Greater Chicago
- Springfield, City of

Indiana:
- Carmel, Town of
- Elkhart Water Works
- Indiana Department of-- Environmental Management; Highways; Natural Resources, Division of Water
- Indianapolis Department of Public Works

Iowa:
- Carroll County Health Department
- Cedar Rapids, City of
- Des Moines, City of, Water Works
- Douglas County Health Department
- Fort Dodge, City of
- Gutherie County Health Department
- Iowa Department of-- Natural Resources, Geological Survey Bureau; Transportation, Highway Division
- Iowa State University
- University of Iowa-- Institute of Hydraulic Research; University Hygenic Laboratory; University Physical Plant
- Waterloo, City of

Kansas:
- Arkansas River Compact Administration
- Geary County
- Harvey County
- Hays, City of
- Kansas Department of-- Transportation
- Kansas Geological Survey
- Kansas State Board of Agriculture, Division of Water Resources
- Kansas State University Department of Agronomy
- Kansas University Center for Research, Inc.

Kansas--Continued
- Kansas Water Office
- Olathe, City of
- Reno County
- Sumner County
- Western Kansas GWMD#1
- Wichita, City of

Kentucky:
- Campbellsville Municipal Water and Sewer System
- Elizabethtown, City of
- Fulton, City of
- Jefferson County Dept. of Public Works and Transportation
- Kentucky Department of-- Natural Resources and Environmental Protection Cabinet
- Kentucky State University
- Lewisburg, City of
- Louisville Metropolitan Sewer District
- Ohio River Valley Water Sanitation Commission
- University of Kentucky, Geological Survey
- University of Louisville

Louisiana:
- Alexandria, City of
- Capital-Area Groundwater Conservation Commission
- Department of Health and Hospitals, New Orleans
- East Baton Rouge Parish
- Jefferson Parish Department of Public Utilities
- Louisiana Department of-- Environmental Quality; Transportation and Development-- Office of Public Works; Wildlife and Fisheries
- Sabine River Compact Administration
- St. John the Baptist Parish
- St. John the Baptist Water Works
- West Monroe, City of

Maine:
- Androscoggin Valley Council of Governments
- Cobbossee Watershed District
- Greater Portland Council of Governments
- Kennebec Regional Planning Commission
- Maine Department of-- Conservation, Geological Survey
- Maine Low Level Radioactive Waste Authority
- North Maine Regional Planning Commission
- Penobscot Valley Council of Governments
- University of Maine

Maryland:
- Anne Arundel County Planning and Zoning Office
- Baltimore County--
  - Department of Permits and Licenses
  - Department of Public Works
  - Office of Planning and Zoning
- Calvert County Courthouse, Planning and Zoning
- Caroline County Courthouse
- Carroll County Commission
- Howard County Department of Public Works
- Maryland Department of Environment
- Maryland Geological Survey
- Maryland State Highway Administration
- Maryland Water Resources Administration
- Montgomery County--
  - Department of Environmental Protection, Division of Environmental Planning and Monitoring
  - Storm Water Management
- Poolesville, Town of
- St. Marys County Commissioner
- Upper Potomac River Commission, Waste Treatment Facilities
- Washington Suburban Sanitary Commission

Massachusetts:
- Cape Cod Commission
- Massachusetts Department of--
  - Environmental Management, Division of Water Resources
  - Environmental Pollution --
    - Division of Water Pollution Control
    - Division of Water Supply
  - Fisheries, Wildlife and Environmental Law Enforcement, Division of Fisheries and Wildlife
  - Public Works
- Metro District Commission --
  - Parks Engineering and Construction Division
  - Watershed Management Division
- New England Interstate Water Pollution Control Commission

Michigan:
- Ann Arbor, City of
- Ann Arbor, City of, Wastewater Treatment Plant
- Battle Creek, City of, Public Utilities Department
- Cadillac, City of, Wastewater Treatment Plant
- Clare, City of
- Coldwater, City of, Board of Public Utilities
- Elsie, Village of, Dept. of Public Works
- Flint, City of, Department of Public Works and Utilities
- Genesee County Drain Commission, Division of Water and Waste Services
- Huron-Clinton Metropolitan Authority

Michigan--continued
- Huron County
- Imlay, City of
- Kalamazoo, City of, Department of Public Utilities
- Lansing, City of, Board of Water and Light, Water and Stream Division
- Macomb County
- Mason, City of
- Michigan Department of--
  - Natural Resources
  - Transportation
- Monroe County Health Department, Environmental Health Division
- Negavnee, City of, Water and Wastewater Treatment Plant
- Norway, City of
- Oakland County Drain Commission
- Otsego County Road Commission
- Portage, City of
- Portland, City of
- Wayne County Environmental Health Division
- Ypsilanti, City of

Minnesota:
- Beltrami County Soil and Water Conservation District
- Elm Creek Conservation Commission
- Fond du Lac Reservation Business Commission
- Hennepin County Conservation District
- Leech Lake Reservation Business Commission, Div. of Resources Management
- Lower Red River Watershed Management District
- Metropolitan Waste Control Commission
- Mille Lacs Reservation Business Commission
- Minneapolis Water Works
- Minnesota Department of--
  - Natural Resources, Division of Waters
  - Transportation
- Minnesota Pollution Control Agency
- Red Lake Reservation Business Committee
- Rochester Public Utilities
- St. Paul Water Utility
- University of Minnesota, Dept. of Soil Science
- Vadnais Lake Area Watershed Management Organization
- White Earth Reservation Business Commission

Mississippi:
- Harrison County--
  - Development Commission
- Jackson, City of
- Jackson County--
  - Port Authority
- Mississippi Department of--

MIssissippi--Continued
- Environmental Quality
  - Office of Geology
  - Office of Land and Water Resources
  - Office of Pollution Control
- Highways

Pat Harrison Waterway District
Pearl River Basin Development District
Pearl River Valley Water Supply District

Missouri:
Branson, City of
Cape Girardeau, City of
City Utilities, Springfield
Illinois Environmental Protection Agency
Mid-America Regional Council
Missouri Department of--
- Conservation
- Health
- Natural Resources--
  - Division of Environmental Quality
  - Division of Geology and Land Survey
  - Land Reclamation Commission

Missouri Highway and Transportation Commission
Rolla, City of
St. Francis County Environmental Corporation
St. Louis, City of, Metropolitan Sewer District
Sullivan, City of
Watershed Commission of the Ozarks

Montana:
Blackfeet Nation
Fort Belknap Indian Community
Fort Peck Tribes
Helena, City of
Lewis and Clark City/County Health Department
Montana Bureau of Mines and Geology
Montana Department of--
- Fish, Wildlife, and Parks
- Health and Environmental Sciences
- Highways
- Natural Resources and Conservation
- State Lands

Montana State University, Dept. of Earth Sciences
Salish and Kootenai Tribes of Flathead Reservation
Wyoming State Engineer

Nebraska:
Central Platte Natural Resources District
Kansas-Nebraska Big Blue River Compact Administration
Lincoln, City of
Little Blue Natural Resources District
Lower Loup Natural Resources District

Nebraska--Continued
Lower Platte South Natural Resources District
Lower Republican Natural Resources District
Middle Niobrara Natural Resources District
Middle Republican Natural Resource District
Nebraska Department of--
- Environmental Control
- Water Resources

Nemaha Natural Resources District
North Platte Natural Resource District
South Platte Natural Resource District
Twin Platte National Resources District
University of Nebraska, Conservation and Survey Division
Upper Elkhorn Natural Resource District
Upper Loup Natural Resources District
Upper-Niobrara White Natural Resources District
Upper Republican Natural Resources District

Nevada:
Carson City, Department of Public Works
Clark County --
- Regional Flood Control District
- Sanitation District

Department Water Resources, California
Douglas County
Elko County
Las Vegas, City of
Las Vegas Valley Water District
Nevada Bureau of Mines and Geology
Nevada Department of--
- Conservation and Natural Resources--
  - Division of Environmental Protection
  - Division of Water Resources
- Transportation

Regional Water Planning and Advisory Board of Washoe County
South Tahoe, Public Utility District
Summit Lake Paiute Indian Tribe
Tahoe Regional Planning Agency

New Hampshire:
New Hampshire Department of --
- Environmental Services

New Jersey
Bergen County Department of Public Works
Brick Township Municipal Utilities Authority
Cape May, City of
Gloucester County Planning Commission
Lower, Township of, Municipal Utilities Authority
Morris City Municipal Utilities Authority
New Brunswick, City of

New Jersey--Continued
- New Jersey Department of --
  - Agriculture
  - Environmental Protection, Division of Water Resources
- North Jersey District Water Supply Commission
- Passaic Valley Water Commission
- Pinelands Commission
- Somerset County Board of Chosen Freeholders
- Washington Township Municipal Utilities Authority
- West Windsor Township
- Wildwood, City of
- Woodstown Sewerage Authority

New Mexico:
- Albuquerque, City of
- Albuquerque Metropolitan Arroyo Flood Control Authority
- Berralillo, County of
- Canadian River Municipal Water Authority
- Costilla Creek Compact Commission
- Elephant Butte Irrigation District
- Highlands University School of Technology
- Las Cruces, City of
- Las Vegas, City of
- Navajo Indian Nation
- New Mexico Bureau of Mines and Mineral Resources Division of Mining and Technology
- New Mexico Department of Highways
- New Mexico Environmental Improvement Division
- New Mexico State University
- New Mexico State University Agricultural Experiment Station
- Office of State Engineer
- Pecos River Commission
- Pueblo of Zuni
- Raton, City of
- Rio Grande Compact Commission
- Rio San Jose Flood Control District
- Ruidosa, Village of
- Santa Fe Metropolitan Water Board
- Santa Rosa, City of

New York:
- Amherst, Town of, Engineering Department
- Auburn, City of
- Brookhaven, Town of
- Chautauqua County Department of Planning and Development
- Cheektowaga, Town of
- Chenango County
- Cornell University--
  - Department of Natural Resources
  - Department of Utilities

New York--Continued
- Cortland County Planning Dept.
- Dutchess County Environmental Management Council
- Essex County Planning Department
- Hudson-Black River Regulating District
- Kiryas Joel, Village of
- Long Island Regional Planning Board
- Monroe County Department of Health
- Nassau, County of--
  - Department of Health
  - Department of Public Works
- New York City--
  - Department of Environmental Protection, Air and Water Resources-Energy
- New York State Department of--
  - Environmental Conservation--
    - Division of Fish and Wildlife
    - Division of Water
  - Transportation, Bridge and Construction Bureau
- New York State Power Authority
- Nyack, Village of, Board of Water Commissioners
- Onondaga County--
  - Department of Drainage
  - Water Authority
- Orange County Water Authority
- Putnam County Department of Planning
- Seneca County Soil Conservation District
- Suffolk County--
  - Department of Health Services
  - Water Authority
- Tompkins County Department of Planning
- Ulster County Legislators
- Vermont Department of Environmental Conservation

North Carolina:
- Asheville, City of
- Bethel, Town of
- Brevard, City of
- Chapel Hill, Town of
- Charlotte, City of
- Curritch County
- Durham, City of--
  - Department of Water Resources
- Fayetteville, City of
- Forsyth County
- Greensboro, City of
- Guilford County Soil and Water Conservation District
- High Point, City of
- Lexington, City of
- Mecklenburg County
- North Carolina State Department of --
  - Environment, Health, and Natural Resources
  - Transportation, Division of Highways

North Carolina--Continued
- Raleigh, City of
- Rocky Mount, City of
- Triangle Area Water Supply Monitoring, Project
  - Steering Committee

North Dakota:
- Dickinson, City of
- Lower Heart River Water Resources District
- Minot, City of, Public Works Dept.
- North Dakota Dept. of --
  - Game and Fish
  - Health
  - Parks and Recreation
  - Transportation
- North Dakota Geological Survey
- Oliver County Board of Commissioners
- Public Service Commission
- State Water Commission
- Three Affiliated Tribes Natural Resources Dept.

Ohio:
- Akron, City of
- Canton, City Water Department
- Columbus, City of
- Eastgate Development and Transportation Agency
- Freemont, City of
- Lima, City of
- Miami Conservancy District
- Ohio Department of--
  - Natural Areas and Preserves
  - Natural Resources
    - Division of Water
    - Division of Reclamation
  - Transportation
- Ohio State University
- Ross County
- Seneca Soil and Water District
- Summit County
- Toledo Metropolitan Area Council of Governments
- University of Cincinnati, Dept. of Geology
- University of Toledo

Oklahoma:
- Ada, City of
- Association of Central Oklahoma Governments
- Oklahoma Conservation Commission
- Oklahoma Geological Survey, University of Oklahoma
- Oklahoma State Health Department
- Oklahoma Water Resources Board
- Wellington, Town of

Oregon:
- Ashland, City of, Public Works
- Clark County Intergovernmental Resources Center
- Confederated Tribes of--
  - Warm Springs Indian Reservation
- Coos Bay-North Bend Water Board
- Douglas County Board of Commissioners
- Eugene City Water and Electric Board
- Jackson County
- Klamath Tribe
- McMinnville City Water and Light Department
- Oregon Department of--
  - Fish and Wildlife
  - Human Resources, State Health Division
  - Natural Resources, Analysis and Planning
    - Management Services Division
  - Transporation, Highway Division
  - Water Resources
- Portland, City of
  - Bureau of Environmental Services
  - Bureau of Water Works
- Umatilla Indians Reservation
- Unified Sewerage Agency

Pennsylvania:
- Allentown, City of, Engineering Dept.
- Berks County
- Bethlehem, City of
- Bucks County
- Chester County Water Resources Authority
- Delaware County Solid Waste Authority
- Delaware River Basin Commission
- Erie County Department of Health
- Geological Survey, University of Delaware
- Harrisburg City Department of Public Works
- Joint Planning Commission of Lehigh - Northhampton Counties
- Letort Regional Authority
- Media Borough Water Department
- New York State Department of Environmental Conservation
- North Penn Water Authority
- North Wales Water Authority
- Pennsylvania State--
  - Environmental Resources --
    - Bureau of Community Environmental Control
    - Bureau of Mining and Reclamation
    - Bureau of Soil and Water Conservation
    - Bureau of Topographic and Geologic Survey
    - Bureau of Water Quality Management
    - Bureau of Water Resources Management
- Philadelphia City Water Department
- Susquehanna River Basin Commission
- University Area Joint Authority

Pennsylvania--Continued
- Williamsport, City of, Bureau of Flood Control

Rhode Island:
- Governor's Office of Housing, Energy, and Intergovernmental Relations
- Narragansett Bay Water Quality Commission
- New Shoreham, Town of
- Rhode Island State Department of Environmental Management, Division of Water Resources
- State Water Resources Board

South Carolina:
- Beaufort-Jasper County Water Authority
- Charleston Commission of Public Works
- Cooper River Water Users Association
- Lee County
- Myrtle Beach, City of
- Oconee County Sewer Commission
- South Carolina State--
  - Department of
    - Health and Environmental Control
    - Highways and Public Transportation
  - Public Service Authority
  - Sea Grant Consortium
  - Water Resources Commission
- Spartanburg Sanitary Sewer District
- Spartanburg Water System
- University of South Carolina
- Waccamaw Regional Planning and Development Commission
- Western Carolina Regional Sewer Authority

South Dakota:
- Belle Fourche Irrigation District
- East Dakota Water Development District
- Lawrence County
- Mellete-Todd County Water Quality Board
- Minnehaha County
- Rapid City, City of
- Rosebud Sioux Tribe
- Sioux Falls, City of
- Sisston-Wahpeton Sioux Tribe
- South Dakota Department of--
  - Game, Fish, and Parks
  - Transportation
  - Water and Natural Resources--
    - Geological Survey Division
    - Water Resource Management
    - Water Quality Division
    - Water Rights Division
- South Dakota North Central Resource Conservation and Development
- South Dakota School of Mines and Technology

South Dakota--continued
- South Dakota State University
- Watertown, City of
- West Dakota Water Development District

Tennessee:
- Alamo, City of
- Alcoa, City of
- Bartlett, City of
- Blountville, City of, Utility District
- Collinwood, City of
- Columbia, City of
- Dickson, City of
- Eastside Utility District
- Erwin, Town of
- Franklin, City of
- Germantown, City of
- Gladeville Utility District
- Government of Nashville and Davidson County Department of Public Works
- Hixson Utility District
- Humphreys County Commissioners
- Jackson, City of, Utility Division
- Johnson City, City of
- Knoxville, City of
- Lawrenceburg, City of
- Lebanon, City of
- Lincoln County Board of Public Utilities
- Memphis, City of--
  - Light, Gas, and Water Division
- Memphis State University
- Murfreesboro Water and Sewer Department
- Pigeon Forge, City of
- Rogersville, Town of
- Sevierville, City of
- Shelby County Public Works
- Suck Creek Utility District
- Tennessee Department of--
  - Agriculture
  - Health and Environment--
    - Division of Water Management
    - Transportation
- Tennessee State Planning Office
- Tennessee Wildlife Resources Agency
- University of Tennessee
- Upper Duck River Development Agency
- Wartrace, City of

Texas:
- Abilene, City of
- Arlington, City of
- Austin, City of--
  - Dept. of Environmental Management
  - Regulatory Affairs and Quality Control

Texas--continued
- Bexar-Medina-Atascosa Counties, Water Improvement District No. 1
- Brazos River Authority
- Coastal Water Authority
- Colorado River Municipal Water District
- Corpus Christi, City of
- Dallas, City of--
  - Public Works Department
  - Water Utilities Department
- Edwards Underground Water District
- El Paso City Public Service Board
- Fort Worth, City of, Water Dept., Water Pollution Control
- Franklin County Water District
- Gainesville, City of
- Galveston County
- Garland, City of
- Georgetown, City of
- Graham, City of
- Greenbelt Municipal and Industrial Water Authority
- Guadalupe-Blanco River Authority
- Harris County Flood Control District
- Harris-Galveston Coastal Subsidence District
- Houston, City of
- Lavaca-Navidad River Authority
- Lower Colorado River Authority
- Lower Neches Valley Authority
- Lubbock, City of
- Nacogdoches, City of
- North Central Texas Municipal Water Authority
- Northeast Texas Municipal Water District
- North Texas Municipal Water District, Research and Development
- Orange County
- Pecos River Commission
- Red Bluff Water Power Control District
- Red River Authority
- Sabine River Authority of Texas
- Sabine River Compact Administration
- San Angelo, City of
- San Antonio, City of--
  - Department of Environmental Management
  - Public Service Board
  - Water Board
- San Antonio River Authority
- San Jacinto River Authority
- Tarrant County Water Control and Improvement District No. 1
- Texas Water Development Board
- Titus County Fresh Water Supply District No. 1
- Trinity River Authority
- Upper Guadalupe River Authority
- Upper Neches River Municipal Water Authority

Texas--Continued
- West Central Texas Municipal Water District
- Wichita County Water Improvement District No. 2
- Wichita Falls, City of

Utah:
- Bear River Commission
- Five County Association
- Moon Lake Electric Association
- Ogden River Water Users
- Salt Lake County Division of Flood Control
- Utah Department of--
  - Agriculture, Environmental Quality Section
  - Health, Division of Environmental Health
  - Natural Resources--
    - Geological and Mineral Survey
    - Oil, Gas, and Mining Division
    - Water Resources Division
    - Water Rights Division
    - Wildlife Resources Division
- Tooele, City of
- Tooele County
- Weber Basin Water Conservancy District
- Weber River Water Users Association

Vermont:
- Vermont Department of Environmental Conservation

Virginia:
- Accomack, Northampton Planning District Commission
- Alexandria, City of
- Delaware Geological Survey
- Henrico, County Department of Public Utilities
- James City, County of
- James City Service Authority
- Maryland Department of the Environment
- Maryland State Highway
- Newport News, City of
- Northern Virginia Planning District Commission
- Prince William Health District
- Rappahannock-Rapidan Planning District Commission
- Roanoke, City of
- Southeastern Public Service Authority of Virginia
- Hampton Roads Planning District Commission
- University of Virginia, Department of Environmental Sciences
- Virginia Beach, City of, Dept. of Public Utilities
- Virginia Department of Transportation
- Virginia State Water Control Board
- Williamsburg, City of
- York County

Washington:
- Bellevue City Public Works Department
- Chelan County Public Utilities District #1
- Clark County Intergovernmental Research Center
- Confederated Tribes of the Umatilla Indian Reservation
- Department of Natural Resources
- Douglas County Public Utilities District #1
- Hoh Indian Tribe
- King County Department of Public Works
- Kitsap County Public Utility District No. 1
- Lewis County Public Works Department
- Okanogan County Department of Public Works
- Pend Oreille County Public Utility District No. 1
- Pierce County
- Puget Sound Water Quality Authority
- Quinault Business Committee
- Seattle Department of Lighting
- Seattle-King County Department of Public Health
- Skagit County Department of Public Works
- Snohomish County, Board of Commisioners
- Snohomish County-Public Utility District 1
- Swinomish Tribal Community
- Tacoma, Dept. of--
  - Public Utilities
  - Public Works
- Thurston County Department of--
  - Health
  - Public Works
- Washington Department of--
  - Administration, Capitol Buildings and Grounds
  - Facilities
  - Ecology
  - Emergency Management
  - Fisheries
- Whatcom County
- Yakima Tribal Council

West Virginia:
- Eastern Panhandle Regional Planning and Development Council
- Morgantown Utility Board
- Region VII Planning and Development Council
- Research Corporation, Marshall University
- Washington Public Service District
- West Virginia Department of--
  - Commerce
  - Health, Office of Environmental Service
  - Highways
  - Natural Resources, Division of Water Resources
- West Virginia Geological and Economic Survey

Wisconsin:
- Bad River Tribal Council

Wisconsin--Continued
- Balsam Lake Protection and Rehabilitation District
- Beaver Dam, City of
- Big Muskego Lake
- Chippewa County Land Conservation Department
- Dane County --
  - Department of Public Works
  - Regional Planning Commission
- Delavan, Town of
- Fond du Lac, City of
- Fowler Lake Management District
- Green Bay Metropolitan Sewage District
- Green Lake Sanitary District
- Hillsboro, City of
- Hills Lake Management District
- Lac Courte Oreilles Governing Board
- Little Muskego Lake District
- Madison Metropolitan Sewage District
- Menominee Indian Tribe of Wisconsin
- Oconomowoe Lake, Village of
- Okauchee Lake Management District
- Oneida Tribe of Indians
- Peshtigo, City of
- Powers Lake, District of
- Red Cliff Band of Lake Superior Chippewas
- Rock County
- Southeastern Wisconsin Regional Planning Commission
- Thorp, City of
- University of Wisconsin -- Extension, Geological and Natural History Survey
- Waukesha Water Utility
- Waupun, City of
- Wind Lake Management District
- Wisconsin Department of--
  - Justice
  - Natural Resources
  - Transportation, Division of Highways
- Wisconsin Winnebago Business Committee
- Wittenbert, Village of

Wyoming:
- Cheyenne, City of
- Evanston, City of
- Evansville, Town of
- Freemont County
- Gillette, City of
- Laramie County
- Midvale Irrigation District
- Northern Arapahoe Tribe
- Shoshone Tribe
- Teton County
- Uinta County
- Water Development Commission

Wyoming--continued
- Wind River Environmeental Quality Commission
- Wyoming Department of--
  - Agriculture
  - Environmental Quality
  - Game and Fish
  - Highways
- Wyoming State--
  - Attorney General
  - State Engineer
  - Water Research Center

Commonwealth and Territories:
- Commonwealth Utility Commission, Saipan
- Government of --
  - American Samoa
    - Department of Water & Power
    - Environmental Protection Agency
  - Guam
    - Environmental Protection Agency

Commonwealth and Territories--Continued
- Government of Kosrae
- Government of Palau
- Municipality of Rota
- Municipality of Tinian
- Puerto Rico:
  - Aqueduct and Sewer Authority
  - Department of --
    - Health
    - Electric Power Authority
    - Environmental Quality Board
    - Industrial Development Company
    - Natural Resources
    - Planning Board
- Trust Territory-Northern Marianas
- Virgin Islands
  - Virgin Islands Dept. of Planning and Natural Resources
  - Virgin Islands Water and Power Authority