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Annual Program Report

For

November 1996

[illegible] Geological Survey

By

Water Resources Research Center
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Fiscal Year 1996 Annual Report, #G2011
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For

The U.S. Department of the Interior
Geological Survey

By

The D.C. Water Resources Research Center
University of the District of Columbia
Washington, D.C. 20008

Dr. H.M. Watt
Director

November 1996

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ABSTRACT

This report summarizes the activities of the D.C. Water Resources Research Center for the period between August 1, 1995, and July 31, 1996. The Research Projects and the Technology Transfer activities which dealt with the area of emphasis are highlighted below. The drinking water quality situation frequently made the headlines of the local newspapers this year. The issues were the levels of the bacteria found the distribution system. The District's chronic bacteria problem indicates years of neglected pipe maintenance and replacement. The Army Corps of Engineers, which operates the city's two treatment plants added more Chlorine to kill the bacteria.

These difficulties along with the financial problems led to the creation of a new D.C. Water and Sewer Authority. The new 11 member authority will be an independent regional authority including 6 members from the District and 5 from the suburban communities. The new authority is expected to improve water infrastructure and quality. A key feature of the new authority, will be its ability to finance it's own capital projects.

Due to the above circumstances, the public's concern with both the quality and safety of the drinking water is real. The need to establish baseline data regarding the District's Consumers knowledge led to the study of *"Urban Drinking Water Consumption Choices. "*

Human activity has changed the concentration of the nutrients above natural levels, accelerating and increasing algal growth and eutrophication. These activities combined with natural biochemical and geological processes have created serious problems for the Anacostia River's water quality. Sedimentation build-up is found in all locations. The study entitled *"Anacostia Restoration Project"* provides essential information on biomass production, quantitative analysis of the distribution and abundance of benthic organisms, as well as essential information on the value of restoring the benthic macroinvertebrate community.

The Project entitled *"Biodiversity of Urban Headwater Streams in the Anacostia River Drainage System"* diagnoses the current status of the Anacostia River Basin and provides baseline knowledge for future monitoring of the Anacostia River water quality.

In addition to the above, the Center is involved with information dissemination, public outreach and advisory services to the D.C. government. A dozen seminars, workshops, and field trips were organized. The Center also published four issues of its newsletter "The Water Highlights" and ten outreach materials. About thirty five students from different fields of academic studies participated in the Center's activities and research projects.

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WATER PROBLEMS AND ISSUES IN THE DISTRICT OF COLUMBIA

Drinking water issues recently became of major concern to DC residents. DC water failed to pass the EPA set standard for bacteria for three consecutive months before it passed in September. The Delecarlia Water Treatment Plant increased the chlorine dose significantly and maintained it for about six weeks to flush-out the microbial growth from old distribution pipes. The DC government issued four boil water advisories during the past year for various drinking water problems. The DC distribution pipes are old, some of them are older than a hundred years. Old pipes are a good habitat for microbes. Lead contamination is another problem originating from old distribution pipes. Although there is no reliable information on lead concentration in DC drinking water supply system (including water fountains, coolers and bubblers in the schools and day care centers), EPA estimates about 25 percent of the country's water suppliers still have some lead distribution pipeline. These old pipes are often the source of water wastage through leaks. Turbidity and Cryptosporidium are two other major concerns for DC residents. The records showed no evidence of violation in finished water concerning these two pollutants.

While the causes of degradation to District of Columbia water resources are varied, the sources of degradation are consistent. Pollutants with major impacts are organic enrichment/dissolved oxygen, pathogens, and total toxics. These pollutants are directly associated with the persistent combined sewer overflows (CSOs) and urban runoff problems, common to an older urban setting. Estuaries in the District are heavily affected by pollutants such as organic enrichment, pathogens, and suspended solids. CSOs, runoff, and surface mining from upstream are the major pathways for these pollutants to enter the estuaries. Metals, organic enrichment, pathogens, oil and grease, toxics have major impacts on the rivers. Industrial and municipal point sources, CSOs, urban runoff, storage tank leaks, and highway maintenance and runoff, all contribute to the impaired condition of the District rivers.

The Anacostia River Water quality continues to be the most pressing water resources issue in the District of Columbia. The Anacostia Watershed still suffers from chronic problems of dumping, sewage leaks, combined sewer overflow, erosion, and sedimentation. The major cause of the Anacostia River pollution comes from non-point source pollutants. Non-point source pollutants are those contaminants that are carried away by heavy rain and cannot be traced to a specific source. The non-point source pollution creates significant problems to urban areas. The local agencies have performed a number of research projects in the Anacostia Watershed. The research studies have given scientific and technical information to the restoration team. Studies are directed towards the identification of critical water quality problems and trends, the assessment of pollution loading and the evaluation of the restoration projects. The restoration research accomplishments include: the investigation of the dynamics of the bottom sediments, the automated storm monitors to estimate urban pollutant loads generated during storm events, the field assessment of the effectiveness of sediment traps, and the coordinated Anacostia monitoring plan for the long-term monitoring of the core stations.

The toxic nature of these urban pollutants is also a major concern. In urban areas, the pollutants originate from many activities including materials spilled on parking lots and highways, chemical applications to golf courses, business and residential landscapes, and construction activities which result in soil disturbances. The threat of pollution resulting from previous land uses is not readily apparent and little understood. Abandoned railways and inactive dumps are not obvious hazards, yet they may be a continuous source of contaminants. Identifying and quantifying the risk they pose should be the first step in addressing this problem.

The goals and projects taken to improve the Anacostia River Water Quality relate to stopping CSOs and identifying and managing toxicants.

PROGRAM GOALS AND PRIORITIES

A. PROGRAM GOALS

The goals of the FY 96 D.C. Water Resources Research Center Program were to identify policy issues and management problems of the District of Columbia. In the District of Columbia the following high priority issues have been identified: drinking water; point and non-point sources of toxics in DC river sediments; sediment standards for DC waters; bio-criteria applicable in DC waters as a basis for future water quality standards; evaluation of water quality standards set for the Anacostia; identifying sources and quantifying pollutant loadings in the Anacostia Basin; development of remediation plans for sub-watersheds; assessment of potential improvement of Rock Creek into a trout stream; development of innovative technologies for Combined Sewer Overflow (CSO) management; residential pesticide use. The center's areas of focus also include institutional management issues.

Research to support the Anacostia River restoration efforts have remained the major focus of the Center during the past year. The research projects address not only pollution problems of the Anacostia River, but also the public outreach, the youth education program, the information dissemination and the training activities that are designed to effectively support a better understanding of the Anacostia River and its role in the urban environment.

The Center's public service aspect includes both formal and informal meetings with representatives of federal, local and private agencies. The Center also provides a forum for exchange of information between scientists, managers, experts and the general public on subjects pertinent to land and water resources. It engages in a broad range of activities to raise the level of awareness of the general public, including youth, concerning water issues through publications, seminars, field trips and exhibits. Finally, the Center assists management agencies and other experts in keeping abreast of the latest water research developments.

B. PROGRAM PRIORITIES

The FY 1996 DC WRRC's research program priorities are described below:

-*Reduce pollutant loads in the tidal estuary to measurably improve water quality conditions* .

-*Restore and protect the ecological integrity of degraded urban Anacostia River tributaries to enhance aquatic diversity and encourage a quality urban fishery.*

-*Make the public aware of its role in the Anacostia River clean-up, and increase its participation in restoration activities.*

-*Perform Anacostia river research, which includes: study of physical, chemical and biological characteristics in estuary funnel.*

-*Investigate mechanisms that influence non point source pollutants, including erosion and sedimentation.*

RESEARCH PROJECT SYNOPSES

The fiscal year 1996 research projects described on the following pages are:

02 Urban Drinking Water Consumption Choices in the District of Columbia Dr. Ocran, Howard University

03 Anacostia River Restoration Project - Technical Support for Water Quality Modeling for the Kingman Lake and Fort, Dr. Guerrero, Dept. of Environmental Science, The University of the District of Columbia

04 Biodiversity of Urban Headwater Streams in the Anacostia River Drainage System Dr. Middendorf, Howard University

SYNOPSIS

TITLE:	Urban Drinking Water Consumption Choices in the District of Columbia
INVESTIGATOR:	Dr. Kwamena Ocran, Howard University, Washington, D. C.
FOCUS CATEGORIES:	TS; WQL; WS; WU; TRT.
CONGRESSIONAL DISTRICT:	District of Columbian
DESCRIPTORS:	Urban Water Systems, Toxic Substances, Water Treatment, Water Quality, Health Effects, Heavy Metals, Leaching, Public Health Organic Compounds.

PROBLEMS AND RESEARCH OBJECTIVES;

For several decades municipalities in the United States have spent billions of dollars to provide safe drinking water to protect the public health of their communities by establishing comprehensive water treatment practices. Yet, there has been a growing public concern with both the quality and safety of drinking water. Therefore, consumers have increasingly resorted to alternative sources of drinking water, such as bottled water or home water treatment units. The major objective of this research was to conduct an investigation (survey) to establish baseline data on public attitudes toward drinking water issues in the District of Columbia. Specifically, the research was designed to: 1) measure the extent of consumer awareness within the various wards of the city regarding possible contamination of their public drinking water with harmful substances; 2) determine the percentage of consumers who are dissatisfied with the D.C. water supply quality and are using alternative drinking water sources; 3) determine the consumers' willingness to pay for the cost of improving water quality and safety.

METHODOLOGY:

Two hundred and forty (240) District of Columbia water consumers were randomly selected for voluntary participation in this research. Thirty (30) participants were selected from each of the eight (8) wards of the District. The data were obtained by using a survey questionnaire which was completed by each participant. All respondents were questioned on; 1) how they rate the quality of their water, 2) taste and odor complaints, 3) awareness or fear of contamination, 4) willingness to pay for better water treatment to avoid risk, 5) confidence in the water utility system and 6) use of bottled water and/or home treatment devices.

PRINCIPAL FINDINGS AND SIGNIFICANCE:

A) Water Rating,:

One of the first objectives of the survey was to determine how D.C. consumers rate the quality of their tap water. The ratings were from "Excellent" to "Not Safe to Drink". Forty percent (40%) of the respondents rated their tap water to be "about average"; twenty eight percent (28%) felt their tap water was "below average" and twelve percent (12%) stated it was "not safe to drink". Others refused to respond .

B) Consumers' Knowledge about Harmful Substances in their Tan Water:

Sixty percent (60%) of the consumers believed that the drinking water supplied by the city contains harmful substances and almost the same percentage (60%) indicated that they were aware of contamination in their tap water within the past 2 years. Nineteen percent (19 %) of the consumers did not believe that there were contaminants in their tap water. A fairly large percentage (31.24%) of the consumers did not respond to the question. When asked what this harmful substance was, 40 percent listed "chlorine" and 45 percent listed "lead" as the most harmful substances

C) Taste and Odor:

About 52 percent of the participants indicated that their tap water had a bad taste, an odor or bad after taste.

D) Consumers' concern about encountering Contaminants in Tap Water and possibility of dying from these Contaminants:

35.83 percent of the respondents had somewhat serious concern about the contaminants in their tap water; 20.42 percent did not have any serious concern and 13 percent did not consider the contaminants to be serious at all. There were no responses from 19.58 percent of the participants.

E) Consumers' Willingness ss to pay to Improve the Quality of their Tap Water:

39.58 percent of the consumers were willing to pay more than $1.00 extra each month to the water utility to have any substance removed in the tap water whose chances of causing death over their lifetime equal to the chances of being killed by a lightening. To the same question 20 percent responded that they were willing to pay less than $1.00 extra each month,

19.58 percent were not willing to pay anything and 20.42 percent had no responses.

In another situation in which a suspected but proven carcinogen might be found in the local tap water, 34.17 percent of the consumers indicated a willingness to pay more than a dollar extra to their water utility to have it removed; 20 percent indicated willingness to pay less than a dollar extra; 14 percent did not feel as to pay anything and 31.24 percent did not respond to the question.

F) Consumers' Knowledge of Tap Water Research and Willingness to Contribute:

When consumers' were asked whether they have heard anything about research being conducted on tap water quality and treatment, 53.33 percent answered "Yes"; 27.50 percent answered "No" and 18.75 percent gave no answers. To another question, if they believed that more research is needed concerning tap water quality, 75 percent said "Yes" and 3.75 percent said "No" and 21.25 percent gave no answer. To a supplementary question, whether they would be willing to support this research through increased water rates, 55.42 percent said "Yes", 25.83 percent said "No" and 18.33 percent did not respond.

G) How Consumers rate the Overall Performance of Water Utility Personnel:

The number of respondents and their ratings were as follows: 5 (2.08%) very good; 36 (15 %) good; 71 (29.58 %) neither good nor bad; 22 (9.17 %) bad; 8 (3.33 %) very bad and 98 (40.84 %) no rating.

H) Consumers' use of Bottled Water and Home Treatment Devices:

Sixty three percent of the respondents use bottled water and eighteen percent of respondents use home treatment devices.

The significance of these findings is that the data generated by this survey indicate that consumers rating of their drinking water is not high. Only 40 percent of the respondents rated the water to be "about average". The data relating to consumers' general attitudes about their tap water reveal that they have concerns about contaminations in the water. A large percentage (60%) of the respondentsbelieve that their drinking water supplied by the city contained harmful substances. It is in this setting that the majority of the respondents (63 %) have resorted to alternative sources of drinking water (bottled water). However, the rating of overall performance of the water utility personnel is positive. Additionally, over 55 percent of these consumers expressed willingness to support more research and improvement in the D.C. water system. Drinking water quality issues have attracted considerable attention recently. Reports released by the Natural Resource Defense Council (NRDC) and U.S. Environmental

Protection Agency in June, 1995 support and strengthen the beliefs and concerns of the D.C. drinking water consumers. These reports revealed that several million Americans, including many in Washington area, are drinking tap water contaminated by lead, fecal bacteria, other pollutants and toxic chemicals. Additionally, during the past two or three years there have been frequent health advisories issued by the D. C. Health Department urging residents to boil their water before drinking, because of harmful agents found in the water supply system.

SYNOPSIS

TITLE

Biodiversity of Urban Headwater Streams in the Anacostia River Drainage System

INVESTIGATORS

Broderick Eribo Richard
Duffield Jack Frankel
George Middendorf (PI)
Raymond Petersen
Muriel Poston
David Schwartzman

Department of Biology, 415 College Street NW, Howard University, Washington DC 20059

FOCUS CATEGORIES

Conservation (COV); Ecology (ECL); Nonpoint Pollution (NPP); Water Quality (WQL); Wetlands (WL)

CONGRESSIONAL DISTRICT:

District of Columbia

DESCRIPTORS:

Benthos; Bioindicators; biomonitoring; fish ecology; insects; invertebrates; runoff; springs; streams; urban drainage; watershed management; wetlands

PROBLEM & RESEARCH OBJECTIVES:

Maintaining and improving the health of the Anacostia basin is critical to the environmental health of the Washington area. An important requirement for diagnosing the current status of the basin is a survey of flora and fauna associated with stream headwaters to provide baseline data and *thereby* allow monitoring *of* future changes. There is insufficient knowledge about the presence and density of various species as effective indicators of stream health in this drainage. This project will provide a critically-needed survey of selected microbial, plant and animal species in the upperheadwater, areas of the Paint Branch and Sligo Creek watersheds. These data will provide critical benchmarks for future assessments of improved or diminished health of the ecosystem.

Because of the delayed funding of this project we were unable to begin our collections as planned earlier. Our efforts are on-going and this report represents a preliminary summary of efforts to date.

METHODOLOGY

Three collection and study sites were located at:

#1 Good Hope Tributary at Hobbs Road
#2 Paint Branch at Randolph Road
#3 Paint Branch at Powder Mill Road

Methodologies associated with each portion of the study are discussed below.

Microorganisms-- Water samples were collected from the microlayer and epilithic scum on bottom sediment and placed into sterile plastic bottles. Total aerobic bacterial count was determined by direct plating on standard plate count and agar membrane filter methods. Fecal coliform and enterococcus tests were performed as described in the EPA Test Methods.

BryWhvtes and Vascular Plants-- The occurrence and distribution of the aquatic moss Frontinalis, a species typically found in swiftly moving streams and associated with trout habitat, was determined at each site. Voucher specimens were collected in triplicate as dried herbarium specimens and as alcohol preserved samples.

Invertebrates -- The invertebrate component of this study primarily focused on the collection and identification of aquatic insects. Studies focused on the Good Hope tributary of Paint Branch. Collection efforts, using a variety of techniques, focused on Plecoptera.

Fish -- Intensive dip net sampling efforts were made in the fall of 1995 and continued throughout the spring and summer of 1996. The distribution of non-salmonoid fish species was examined at a number of locations around the intersection of Paint Branch and Randolph Road (#2). Ongoing efforts there and other collections at the remaining sites will be made over the next year.

Amphibians and Reptiles-- Initial library research indicated a large number of species expected to be found in the Montgomery and Prince Georges Counties region. Transects, quadrat-searches and timed-visual searches have been conducted biweekly at each site beginning in June 1996.

Degree and effects of urbanization- The effects of human habitation and urbanization are being assessed through examination of the amount and distribution patterns of human-generated debris, with particular focus on floatable debris. Transect searches have been conducted biweekly at each site beginning in June 1996.

PRINCIPAL FINDINGS AND SIGNIFICANCE. -

A brief summary of finding to date, for each portion of the study, are provided below:

Microorganisms-- Initial surveys revealed the following genera: Alcaligenes, Vibro, Aeromononas, and Acinetobacter. Since microbial communities are expected to be in a state of flux due to environmental changes, several samples from three sites need to be analyzed during various seasons of the year in order to have a clear understanding of the autochthonous bacteria. Bryophytes and Vascular Plants-- The aquatic moss Frontinalis has been found along the entire length of Good Hope Tributary, but was not seen below the junction of Good Hope Tributary with

Paint Branch. Surveys are currently being conducted on other tributaries of the Paint Branch system.

Invertebrates -- In sixteen collecting trips during the winter and early spring months, seven species of stoneflies were found, including: Allocapnig recta, A. nivicola, Taeniopterpx maura, 1. meteaui, Paraleuctra sara, Prostoig is milis and Isoperla is milis.

-- Collections to date reveal the presence of Rosyside dace (Clinostomus funduloidesl and Northern hog sucker (Hypertelium nigricans).

Amphibians and Reptiles-- While all of the amphibians and reptiles reported for Montgomery and Prince Georges Counties were not expected to occur in the Good Hope/Paint Branch area, far fewer were observed. Only seven southern leopard frogs (Rang utricularia), one American toad (Bufo americanus), and one eastern box turtle (Terenene caroling were found at site #1; two eastern box turtles and two southern leopard frogs were recorded at site #2; and no amphibians or reptiles were seen at site #3.

Degree and effects of urbanization-- While specific data of human-generated debris are currently being analyzed, it is clear that the amount of debris increases dramatically as one moves downstream. Data concerning mobility of this debris have not yet been examined.

The Synopsis of the project titled, "Anacostia River Restoration Project - Technical Support for Water Quality Modeling for the Kingman Lake and Fort" by Dr. Guerrero, Department of Environmental Science, The University of the District of Columbia, will be available later.

ATTACHMENT F TRAINING ACCOMPLISHMENTS

Field of Study	Undergrad	MS	PhD	Post-PhD	Total
Biology	4				
Kwame Asomani	M.S. Candidate				
Choice Eregie	M. S. Candidate				
Robert Hamilton IV	M.S. Candidate				
Neil Morgan	M. S. Candidate				

INFORMATION TRANSFER ACTIVITIES

A. Principal Activities

DC WRRC completed relocation and consolidation of its offices and laboratories to new university facilities off campus in an urban residential community.

DCWRRC Director continued to serve as a member of the Executive Board of the National Institutes of Water Resources (NIWR) and as Chairperson of the Mid Atlantic Region. The Center provided a focus for support to the NIWR in its successful efforts in working with the Congress and the Executive Branch to gain approval of a new five year authorization for the National Water Institutes Program. In addition, these efforts were successful in getting approval of a Congressional appropriation for FY 97 that will enable the Institutes program to continue.

The Center continued to provide assistance to the American Red Cross in pursuit of its programs in countries of South and Central Africa. The Center's *focus* after completing in-country assistance in Rwanda last year has been to advise and assist in the preparation of proposals by the American Red Cross *for* water related projects in Angola, Mozambique, Malawi and Zimbabwe.

International interests of the Center were further enhanced by its association with a new and exciting initiative involving the creation of an Encyclopedia of Life Support Systems (EOLSS) which addresses global issues including the Environment, Water, Food & Agriculture and Common Science and Technology.

DCWRRC Director, leads the water group responsible for planning and developing water themes and related subject matter and their correlation with other elements of the Encyclopedia. The NIWR and other US water experts are closely associated with the Encyclopedia project.

The main emphasis of the Center however, has been directed to implementing its information transfer programs for the benefit of local and regional constituencies. The Center continued a variety of scheduled activities including; seminars, exhibits, publication production and distribution, including its quarterly newsletter "Water Highlights". Many of the Center's activities are jointly undertaken with other local and federal governmental agencies, regional organizations, professional associations and educational institutions through projects conducted both on and off campus. New and revised editions of several reference documents and brochures of general interest have been published.

The Center continues to aim at a multi-faceted audience to disseminate its information. In addition to the following listed groups, because of its urban nature, the District of Columbia has a special inner city population that must be reached to promote increased awareness of water and related environmental problems and issues.

a) University faculty members and principal investigators and other experts through the Center's publications, seminars, workshops and conferences.

b) Local and regional government administrators, managers and decision makers associated with problem identification and water management political issues.

c) The general public, including pre-college students, undergraduate and graduate students through conferences, exhibits, newsletters, brochures and pamphlets, audio-visual and slide presentations and special public tours.

These are complemented by other activities such as providing speakers on request and presenting high school and elementary school students with special awards for water research projects presented during the annual DC Science Fair.

In addition, a selected number of junior and senior high schools will be participating in cooperative field and laboratory projects in connection with the new Hydrology Learning Center at the Rock Creek Park Nature Center. A newly established stream gage near by will provide the focus for water quality monitoring and data analysis on site and via remote hookups through modems and PC's at various school and institutional locations.

B. Presentations and Meetings

The Center continued its sponsored seminars, symposia, and workshops for future telecasting on the university's cable television station.

1) Staff members of the Center have participated and/ or attended a number of conferences, meetings, and seminars, including those sponsored by the following:

The Interstate Commission on the Potomac River Basin (ICPRB);

The Washington Metropolitan Council of Governments (COG);

The Chesapeake Bay Restoration Program Scientific and Technical Advisory Committee (STAC);

The National Association for Equal Opportunity in Higher Education (NAFEO);

The D.C. Soil and Water Conservation District Commission;

The Congressional Black Caucus Annual Meeting on Environmental and Technology Issues Forums;

The national and regional meetings of the National Water Resources Institutes Directors;

The U.S. Department of Agriculture - Soil Conservation;

The American Water Resources Association (AWRA);

Federal Water Quality Association;

Intergovernmental Task Force on Monitoring Water Quality (ITFM);

American Water Works Association;

Anacostia Neighborhood Museum, Smithsonian Institution

2) The Center has arranged meetings and /or had consultations with a number of agencies on matters of mutual interest pertaining to D.C. water problems and issues including:

The D.C. Department of Consumer and Regulatory Affairs regarding environmental management/water research priority issues and the work of the Center's Research Advisory Council

World Bank Sustainable Development Issues

The D.C. Department of Public Works and new DC Water and Sewer Authority regarding requirements for environmental research and planning

Follow-up on monitoring efforts by the science and engineering faculty of several local universities, who are coalition partners in the follow-up of a recently completed three year assessment of ground water in the District of. Columbia

The Office of Technology Assessment (OTA) and the National Science Foundation regarding education and scientific manpower issues impacting the minority community

The Interstate Commission for the Potomac River Basin

Board on Ocean and Atmosphere Division of the NASULGC

The University of the District of Columbia Agricultural Experiment Station and the Cooperative Extension Service

The USAID regarding University Linkages Program to establish cooperative programs in water resources with counterpart institutions

The D.C. Public Schools Administration regarding promotion of pre college student and teacher training institutes in environmental science education

The US National Park Services and the USGS regarding establishment of a stream gaging station in Rock Creek Park.

The National Wildlife Federation in developing and expanding in areas of cooperation to promote public awareness and understanding of natural environmental problems and issues.

Newsletters:

During FY 1996, the Center published regular newsletters containing timely information on District government, regional and federal water resources agencies, professional organizations, water policy issues, science programs for students and other related activities in the Washington metropolitan area. Special features included full articles on:

Anacostia River Restoration

Congress' Approves WRI Reauthorization and Appropriations

Independent DC Water Sewer Authority Established

Drinking Water Safety

Special Water Awards

Drinking Water Resources

WRRC Projects Completed

Waterborne Diseases

New Encyclopedia for Life Support Systems (EOLSS)

Clean Water Act Report

Internet Water Sites of Interest

The newsletters also reported on completed and ongoing water research projects sponsored by the Center, highlighted seminar programs, briefed on District and local government and water agency missions and functions, announced special water events, meetings, and conferences, and listed vacancy announcements and publications received.

COOPERATIVE ARRANGEMENTS

The Center continued during FY 1996 to emphasize activities relating to development and maintenance of joint cooperative efforts with D.C. government and other local agencies. These activities were in part inspired by revised bilateral and multilateral river (Anacostia) and related Chesapeake Bay restoration policies and related planning and implementing actions which provided vehicles for accelerated interaction between WRRC and a multitude of participating agencies and organizations.

Noteworthy among these efforts are:

The Memorandum of Understanding between the USGS, the National Park Services, and the University of the District of Columbia.

Numerous meetings and consultations with the Interstate Commission on the Potomac River Basin (ICPRB) and staff regarding joint projects.

Continued interaction with the Chesapeake Bay Restoration Program's Scientific and Technical Advisory Committee (STAG) and other affiliates relating to the Bay program.

Advice and assistance to local citizens and environmental groups seeking to expand their knowledge of water and other environmental issues and problems in the District.

Consultation with the Sea Grant Program, University of Maryland regarding joint research efforts and public outreach and education projects

The Center continues to officially represent the government of the District of Columbia on the following major regional bodies:

The Interstate Commission on the Potomac River Basin (ICPRB); The Washington

Metropolitan Council of Governments (COG); The Chesapeake Bay Restoration

Program Scientific and Technical Advisory Committee The Chesapeake Bay Alliance

The Center has cooperative agreements for research with the following:

The Dept. of Biological and Environmental Sciences of the University of the District of Columbia for a project entitled: *"Anacostia River Restoration Project"*

The Dept. of Biology of Howard University for a project entitled: *"Biodiversity of Urban Headwater Streams in the Anacostia Drainage System "*

Research Advisory Council

The Dept. of Civil Engineering of Howard University for project entitled: *"Urban Drinking Water Consumption Choices in the District of Columbia "*

The membership of the D.C. Water Resources Research Center's Research Advisory Council and the Technical Evaluation Committee are outlined as follows:

Mrs. Dorothy Barton
Division of Curriculum & Educational
Technology Langdon Elementary School

Dr. Michael Chi
Emeritus Professor
The Catholic University of America
Chi Associates, Inc.

Chief, Washington Aqueduct
Division Corps of Engineers
Department of the Army

Director Department of
Public Works

Dr. James Johnson
Professor and Chair Dean,
School of Engineering
Howard University

Dr. Dave M. Kargbo
Environmental Protection Agency, Region III

Mr. Herb Sachs
Executive Director
Interstate Commission on the Potomac River Basin

Mr. Robert Stanton
Regional Director
National Capital Region
National Park Services

Mr. Charles Terrell
U.S. Soil Conservation Service
Department of Agriculture

Technical Evaluation Committee

Dr. Edward H. Bryan
Program Director, National Science Foundation
Washington, D. C.

Dr. Mark Bundy
Resources Economist, Maryland Department of Natural
Resources Annapolis, MD

Dr. Frederick Carson
Associate Professor, The American University
Washington, D. C.

Dr. Benedict T. DeCicco
Professor, The Catholic University of America
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University of the District of Columbia - Washington, D.C.

Mr. Timothy Karikari
Engineer, Soil Resources Branch, DC Depart. Cons. Regul. Aff.
Washington, D.C.

Dr. Akbar Montasser
Professor, Department of Chemistry, G.W.U.

PUBLICATIONS AND PRESENTATIONS

1) The D.C. Water Resources Research Center, May 1995. List of Seminars/Conferences. DC WRRC Report No. 165. D.C. Water Resources Research Center, Washington, D. C.

2) The D.C. Water Resources Research Center, August 1995. "Glossary of Water Terms." DC WRRC Report No. 166. D.C. Water Resources Research Center, Washington, D. C.

3) The D.C. Water Resources Research Center. "Book of Abstracts." September 1995. DC WRRC Report No. 167. D.C. Water Resources Research Center, Washington, D.C.

4) The D.C. Water Resources Research Center. August 1995 "Directory of Expertise." DC WRRC Report No. 168. D.C. Water Resources Research Center, Washington, D.C.

5) The Water Resources Research Center. FY 1994 Program Report. September 1995. DC WRRC Report No. 170. DC Water Resources Research Center, Washington.

6) The Water Resources Research Center, January, 1996. FY 1996 Water Research Institute Program (FY 1996 Program Plan). DC WRRC Report No. 171. D.C. Water Resources Research Center, Washington, D.C.

7) Lieber, H., September 1995. "Chesapeake Bay Water Quality Management" Project No. 94-03, DC WRRC Report No. 172. DC Water Resources Research Center, Washington, D. C.

8) Azani, C., "Feasibility Study of Recreational Potential of Anacostia River along the North Eastern Part of Washington, D.C." Project No. 94-04, DC WRRC Report No. 173. DC Water Resources Research Center, Washington, D. C.

9) Logan, W., "A Pilot Study of the Appropriateness of Inexpensive Methods for Piezometer Installation at Sites along the Anacostia River, Washington, D.C. Project No. 94-05, DC WRRC Report No. 174. DC Water Resources Research Center, Washington, D. C.

10) Ocran, K., "Lead in Residential Drinking Water; Risk Assessment" Project No. 94-07, DC WRRC Report No. 176. DC Water Resources Research Center, Washington, D. C.

TRAINING ACCOMPLISHMENTS

Field of Study	Academic Level Undergraduate	Master's Degree	Ph D. Degree	Post Ph D.	Total
Chemistry	1				1
Engineering.;					
- Agricultural					
- Civil	2	1	1		3
Environmental					
Geology Hydrology					
Agronomy					
Biology	4				4
Ecology					
Computer Science					
Economics Geography					
Law					
Resources Planning Other (Business Mgmt)					
Total	5	1	1	7	

POSTGRADUATE EMPLOYMENT*

	Employer					
	Degree			Government		
Student	BS	MS	Ph.D.	Federal	State	Local Private College Sector Univ.
1	X				X	
2	X				X	
3		X				X
4	X					X
5						
6						

* Preliminary As of November 1996

Water Resources Center Special Awards to D.C. High School Students

DCWRRC presented special water awards and prizes to students from District Schools for their science projects displayed at the 1996 D.C. Science Fair. Dr. Vicki Guerrero, a UDC faculty member and WRRC Principal Investigator performed outstanding judging duties in electing finalists, as she has for the past nine years.

The names of individual student awardee's, their project titles and their schools are listed as follows:

Grand Prize: Jcji Rice -*"The* Effects of a *Restored Wetland (the Kenilworth Marsh) on the* Water Quality"; Woodson Senior High School.

First Place: Ben Wiseman -*"The* Effect of Limestone on Coniferous Trees"; Alice Deal Junior High School

Second Place: Charles Murray, Jr.-Saving *the Chesapeake* Bay One Yard at a Time ", Gonzaga College High School

Second Place: Calvin Wingfield -*"The* Effects of Acid Rain on Plant Roots'..* Jefferson Junior High School

Third Place: Luca Adelfio -*"Fish, Crayfish and Insects, Oh My ! ";* Sidwell Friends School

Honorable Mention: Issa Abdulcadir -"Water Quality in *Rock Creek Park";* Saint Albans School

Honorable Mention: Asia Carter -"Is *there* Life in Washington Rivers"; Baccus Junior High School

Honorable Mention: Jamal Mackay & Mathew Fairley -"Water Quality"; Jefferson Junior High School