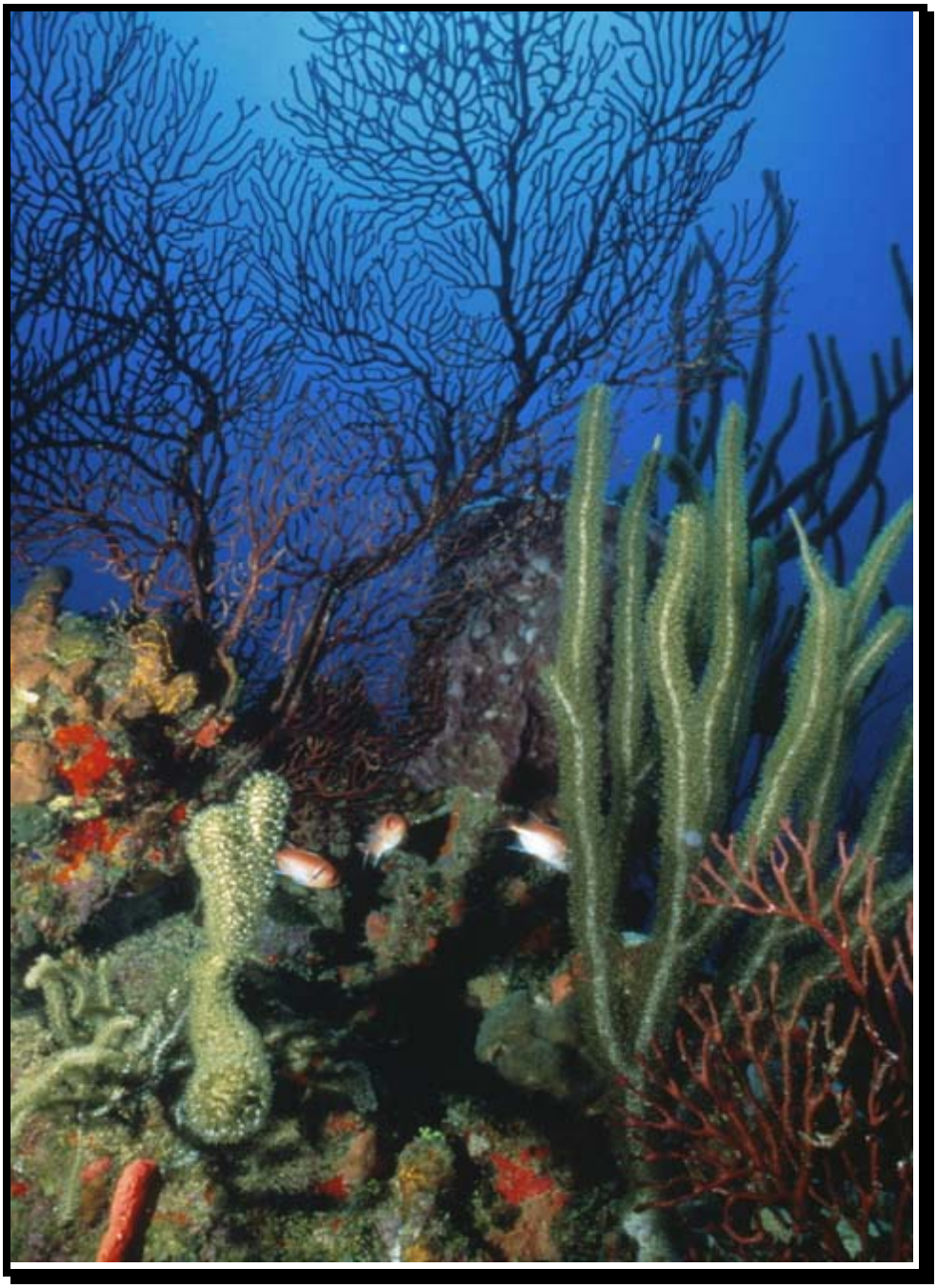
1998 Annual Report



Water Resources Division

National Park Service

The National Park Service Water Resources Division is responsible for providing water resources management policy and guidelines, planning, technical assistance, training, and operational support to units of the National Park System. Program areas include water rights, water resources planning, regulatory guidance and review, hydrology, water quality, watershed management, watershed studies, fishery management, and aquatic ecology.

TECHNICAL REPORTS

The National Park Service disseminates the results of biological, physical, and social research through the Natural Resources Technical Report Series. Natural resources inventories and monitoring activities, scientific literature reviews, bibliographies, and proceedings of technical workshops and conferences are also disseminated through this series.

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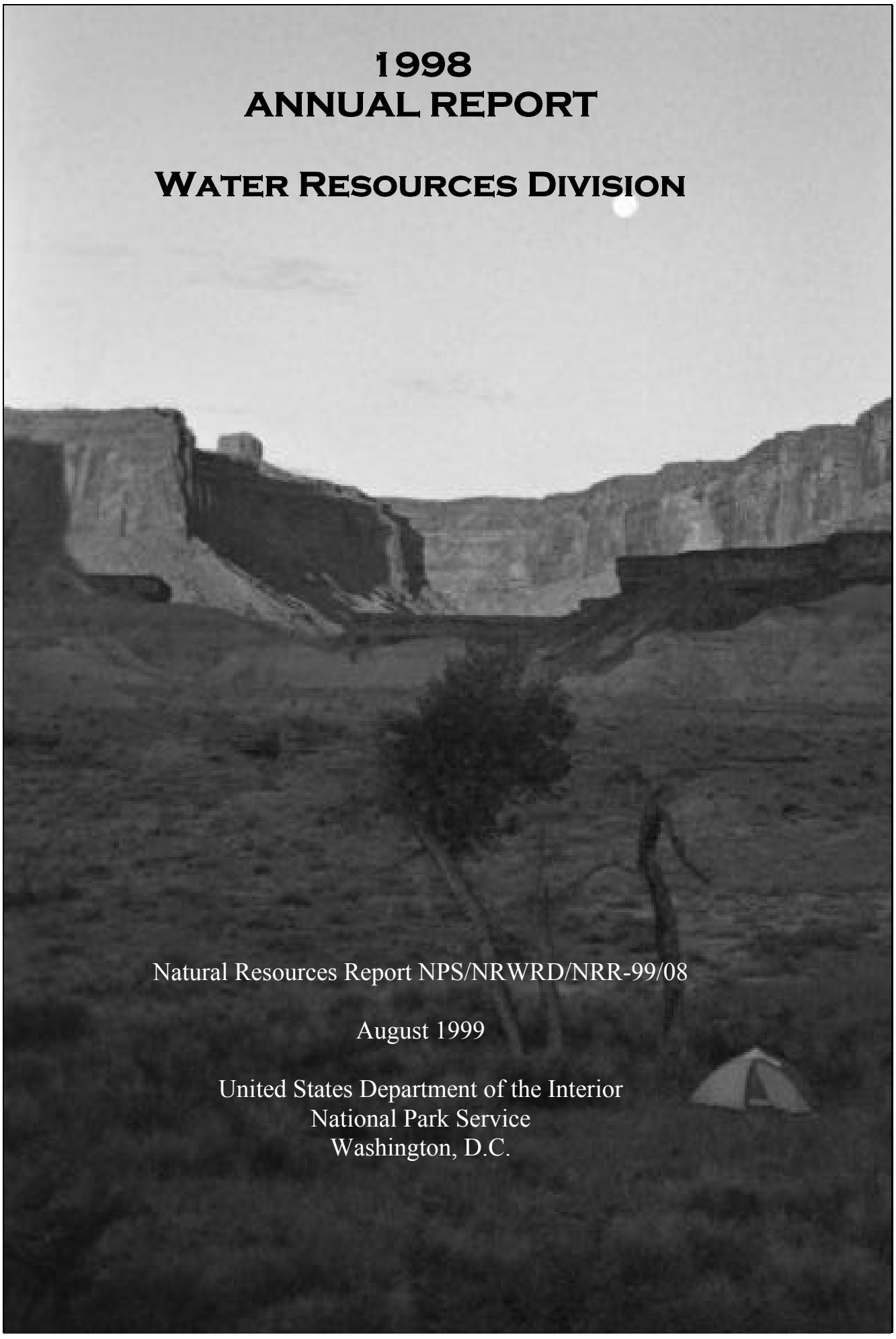
1998
ANNUAL REPORT

Water Resources Division



Natural Resources Report NPS/NRWRD/NRR-99/08

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Washington, D.C.

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A Word From the Associate Director, Natural Resource Stewardship & Science
Michael Soukup, Ph.D.

This Annual Report provides a summary of the significant accomplishments of the Water Resources Division (WRD) of the National Park Service (NPS) in 1998. WRD provides servicewide technical assistance and advice with respect to the preservation, protection, and management of water and aquatic resources of units of the National Park System. The Division carries out a broad-based water resources program involving leadership in a variety of activities, including water rights; water quality; floodplain management; ground water analysis; watershed and wetlands protection; water resources management planning; fishery management; policy, legislative, and regulatory analysis; information management; and training. The Division's workplan is developed by an annual call to the field to identify park needs and determine WRD priorities. In addition to national program responsibilities, the Division provides day-to-day support to parks, support offices, regional offices, and the Washington Office (WASO) in addressing the myriad of water resources issues and concerns facing NPS. The Division is located in Fort Collins, Colorado, with additional offices in Denver, Colorado, and Washington, D.C.

I am extremely pleased with the accomplishments of WRD reflected in this Annual Report. These accomplishments are indicative of the professionalism of the Division and the ability of the Division to work cooperatively with management and staff of parks, support offices, regional offices, and WASO to effectively address water resource issues of concern to NPS. I should go on to emphasize that these accomplishments would not have been possible without the continuing cooperation and support provided by all organizational levels of NPS. These collective efforts have created the environment necessary to match the level of technical expertise to the water-related threats faced by national parks in a changing landscape**.**

Comments from the Division Chief: Dan B. Kimball

As in previous years, 1997 proved to be an exemplary year for the Water Resources Division (WRD) of the National Park Service (NPS). The year was characterized by a number of significant accomplishments that are reflected in this Annual Report. However, 1997 was also a year of challenges for WRD in terms of meeting the ever-growing technical assistance needs of the parks while continuing to provide Servicewide water resources leadership. Some examples of significant accomplishments of WRD in 1997 include the following:

- With support of NPS's Servicewide Inventory & Monitoring Program, preparation of 44 park-specific water quality data inventory and analysis reports.

- Continuation of the operating partnership with the U.S. Geological Survey (USGS) to meet the long-term water quality needs of units of the National Park System by means of USGS's National Water-Quality Assessment Program (NAWQA) (e.g., through joint funding of pilot projects involving 12 parks).

- Major progress in preparing (or assisting in the preparation of) water resources management plans, scoping reports, and issue overviews for more than 20 parks.

- Involvement in major water resources issues facing NPS including the development of an Annual Operating Plan for the Colorado River; assessment of the effects of flooding at Yosemite National Park; evaluation of the proposed Eagle Mountain Landfill Project near Joshua Tree National Park, proposed lead exploration and mining upgradient of Ozark National Scenic Riverways, and a proposed power plant and lignite mine adjacent to Natchez Trace Parkway; restoration of the Elwha River in Olympic National Park; final reclamation of a uranium mill tailings site upstream of Canyonlands National Park; and evaluation of ground water issues at Cape Cod National Seashore and water quality issues at Biscayne National Park and Lake Mead National Recreation Area.

- Assistance in the development of fisheries management plans for St. Croix National Scenic Riverway, Glen Canyon National Recreation Area, Buffalo National River, Shenandoah National Park, and Colonial National Historical Park.

- Completion of a draft "Director's Order #77-1: Wetlands Protection" and draft "Procedures for Implementing Director's Order #77-1: Wetlands Protection."

- Restructuring of the Water Rights Branch of WRD to focus efforts on monitoring and enforcement of NPS water rights and funding of an "NPS water rights attorney" (utilizing an FTE of the Office of the Solicitor).

- Assistance in the replacement of Vendome Well to protect springs in the vicinity of Chickasaw National Recreation Area.

- Assistance in the development of programmatic oil and gas management plans and Environmental Impact Statements for Padre Island National Seashore, Big Thicket National Preserve, and Lake Meredith National Recreation Area.

- Significant participation in a natural resource management course titled "Fundamentals of Natural Resources for Professionals."

Consistent with the tradition of WRD, we are dedicated to providing technical assistance and advice of the highest quality to the parks and also to the national leadership on water resources matters which have Servicewide effects on units of the National Park System. I am extremely proud of the hard work and commitment to these goals that are demonstrated on a daily basis by the staff and management of WRD.

I should also note that the Division's efforts are greatly enhanced by the vigilance of park resource management staff in recognizing water resource issues and then contacting the Division for assistance. Our efforts are also supported by key staff in Regional and Support Offices and by the Division's Hydrologic and Fisheries Affiliates Program which is discussed later in this Annual Report.

The Water Resources Division will endeavor to remain focused on our principal mission, providing technical support to the parks. We will also endeavor to develop and implement new and more innovative, efficient, and cost effective ways to provide support to parks in preserving, protecting, and managing water and aquatic resources of the National Park System.

Washington Program Coordination Office Highlights

By Sharon Kliwinski, Washington Liaison

1998 was a year of significant change in the Washington Program Coordination Office. Bill Walker, Program Coordinator, accepted a new position with the U.S. Geological Survey (USGS), Biological Resources Division, as the team leader for Ecosystems and Biodiversity. Bill's service in the National Park Service spanned 15 years, which included his position as coordinator of the NPS Natural Resources Management Trainee Program. We are grateful for having had the pleasure of working with Bill in the Water Resources Division and continue to miss his competent, professional assistance.

With Bill's departure, it was necessary to prioritize our needs in the Washington Office and a few changes were made with regard to ongoing efforts. The NPS liaison to the Headquarters of the USGS Water Resources Division and our representation on the National Water Quality Monitoring Council were important tasks of this Office. These duties are now carried out through our Water Operations Branch in Fort Collins. Our relationship with USGS is growing and continues to be strengthened by our constant professional exchanges. In addition, our newly established liaison position with the U.S. Environmental Protection Agency has been put on hold while we address our staffing needs.

WRD continued to coordinate NPS involvement and activities under the President's Clean Water Action Plan. We are participating in the development of the Plan's Unified Federal Policy for Watershed Management, a far-reaching multi-agency effort to improve water quality and watershed management on Federal lands. NPS is participating in several other key actions called for in the Plan and regional efforts and coordination are also ongoing.

We continued to serve on the steering committee of the multi-agency document "Stream Corridor Restoration: Principles, Processes, and Practices." The committee gave its final approval of the document, which was printed and distributed to interested staff throughout the Service. This document represents a cooperative effort by many federal agencies to produce a common technical reference on stream corridor restoration.

We became immersed in a major new Departmental budget initiative called "Partnerships for America's Resources" or PAR. The initiative called for, among other things, the establishment of a new multi-million dollar fund for habitat conservation and restoration. Although PAR was ultimately not approved, remnants of it have made their way into the President's budget this year and new legislative is being drafted in Congress to establish a habitat restoration fund.

In our ongoing interest in watershed restoration, the Office organized a conference called Big South Fork of the Cumberland River, Exploring Opportunities for Watershed Restoration Partnerships. The one-day conference was held near Big South Fork National River and Recreation Area in Tennessee and was attended by 30 people, looking at ways to mitigate the acid mine drainage problems of the river.

In summary, 1998 was a year of change in the Washington Program Office. We continue to look forward to serving the National Park Service and to working with other agencies and organizations to improve communication and coordination at the Washington level.

Planning and Evaluation Branch Highlights

By Mark Flora, Chief

I am pleased to report on a highly rewarding and productive year for the Water Resources Division Planning and Evaluation Branch (PEB). During the year, PEB, working cooperatively with park staff and other agency cooperators, was able to assist in the completion of water resource management plans for three NPS units: Theodore Roosevelt National Park; Chickasaw National Recreation Area; and, Obed Wild and Scenic River. Water resources scoping reports were published for two NPS units: Grand Teton National Park and Voyageurs National Park. PEB also continued to provide funding support and technical assistance for continuing efforts to complete water resources planning activities at 17 park units.

Wetlands Program staff approved study plans and funding for FY98 projects at Denali National Park and Preserve, Capitol Reef National Park, Fire Island National Seashore, Big Bend National Park, San Juan Island National Historical Park, and Jean Lafitte National Historical Park and Preserve. Wetlands staff also guided the proposal development and funding process for five additional projects scheduled to begin in FY99 at Cape Cod National Seashore, Santa Monica Mountains National Recreation Area, Moores Creek National Battlefield, Pecos National Historical Park, and Zion National Park.

PEB worked closely with other WRD and individual park staffs on a broad range of wetland technical assistance projects during the year. Examples included: 1) developing and implementing a restoration plan for a drained wetland in Moores Creek National Battlefield; 2) performing a "functional condition" assessment on four stream systems in Tallgrass Prairie National Preserve; 3) assisting Padre Island National Seashore, Big Thicket National Preserve, and Lake Meredith National Recreation Area in developing oil & gas management plans; and 4) assisting Yosemite National Park with wetland delineations for the Merced River campground redevelopment project.

The most significant Servicewide accomplishment was completion of Director's Order #77-1: Wetland Protection and Procedural Manual #77-1: Wetland Protection, which clarify, update, and streamline NPS policies and procedures for protecting the more than 16 million acres of wetlands managed by the NPS. In addition, wetlands staff wrote NPS comments on proposed changes to the Clean Water Act Section 404 Nationwide Permit program, prepared a new wetlands section for the draft revised NPS Management Policies, and reprinted and distributed the educational brochure Wetlands in the National Parks.

Technical assistance with the management of aquatic biological resources and fishery issues continued to be significant during 1998. A list of issues common to many parks includes basic inventory and abundance data for aquatic or marine biological resources, restoring displaced native species or habitat, assessing and understanding the impact of non-natives or altered habitat, assessing and managing harvest, working successfully with states in establishing cooperative fishery management plans, and developing adequate and useful sampling methods and monitoring programs.

A number of parks throughout the system have become involved in projects seeking to restore native species in streams and lakes where they have either been displaced by introductions of non-natives, lost due to habitat changes, or, in the case of salmon and steelhead, have declined through over harvest. It is anticipated that the number of native species restoration projects will continue to grow in the coming years as more parks become aware of the status of their aquatic resources. WRD is working to coordinate individual park efforts in native-species restoration. A small cadre of NPS park biologist are gaining expertise in native species restoration techniques and are a valuable resource to others engaging in these efforts. Through the Fisheries Affiliates program, support has been provided to allow interpark exchange of personnel with this expertise to assist in the

planning and design of restoration projects. Thirteen parks were active with native species restoration during 1998. In addition to native species restoration, three other parks were provided funding and/or technical assistance with the design of studies involving the assessment of habitat alterations and/or their impacts on native species.

To better coordinate and manage park fishery resources, several parks throughout the system have expressed the need for interagency cooperative fishery management plans for their areas. The development of a cooperative management plan has been found to greatly improve working relationships with states and provide a better understanding of the long-term management goals with respect to park fishery resources. Cooperative plans have recently been completed in five park areas and were being developed with WRD technical assistance in two additional areas during 1998.

National level program activities related to marine and aquatic resources during 1998 largely focused on NPS responsibilities and requirements of Executive Order 12962 relating to recreational fishing improvements and reporting to the National Recreational Fisheries Coordinating Council, and coordinating NPS involvement and input into the new national coral reef protection initiatives under Executive Order 13089.

Director's Order #77-1: clarifying and streamlining NPS wetland protection policies and procedures

By Joel Wagner, Hydrologist

Executive Order 11990: Protection of Wetlands was the driving force behind publication of the original NPS wetland protection guidance in 1980. In effect for over 18 years, the 1980 guidelines did much to assure that NPS projects and activities were planned and implemented with a minimum of wetland degradation or loss. They also assured consistency in application of wetland protection procedures Servicewide, a fact that we draw upon when we want to hold special use permittees, concessioners, mineral developers, and others to the same standards of wetland protection that we demand of our own development efforts. In 1998, the decision to reissue policies and guidance under the new NPS directives system offered an opportunity to reexamine the 1980 guidelines and determine which have worked well, which need to be clarified or updated, and which could be streamlined or eliminated entirely without sacrificing the NPS commitment to wetland protection.

The new *Director's Order #77-1: Wetland Protection* and the accompanying *Procedural Manual #77-1* were issued in October 1998. One important change is formal adoption of a "no-net-loss of wetlands" goal. To achieve that goal, we retained the planning steps from the 1980 guidance: 1) avoid wetland impacts to the extent practicable, and; 2) minimize any unavoidable impacts through design changes or other means. However, a third element, compensation for remaining unavoidable impacts through restoration of previously degraded wetlands, was added to complete the no-net-loss process. At a minimum, at least one acre of comparable wetland habitat must be restored to offset each acre that is degraded or lost due to NPS activities (some exceptions apply). The procedures also retain the wetland "Statement of Findings" as the means for documenting how proposed actions with adverse impacts on wetlands meet the requirements of D.O. #77-1; however, the public review and signature processes are clarified. The Cowardin et al. (1979) wetland classification system is now the standard for inventorying NPS wetlands and for determining if a site is subject to these procedures.

Streamlining the compliance process was a major goal. In the new procedures, seven classes of minor "water dependent" or "minimal impact" activities are identified as potentially excepted from the Statement of Findings and wetland compensation requirements. In addition, most "artificial" wetlands can now be

excepted. Safeguards are built into the procedures to assure that certain conditions must be satisfied before these actions can be excepted. We estimate that these changes will result in a 20% reduction in the number of projects requiring Statements of Findings or mandatory wetland compensation. Other streamlining changes include: 1) withdrawal of the mandatory 60-day public review period for NEPA documents that reveal adverse impacts on wetlands; and 2) delegation of Statement of Findings signature authority from the Director to Regional Directors.

Director's Order #77-1 and Procedural Manual #77-1 will be revised as necessary and reissued in October 2002. These documents can be downloaded from the NPS web site or are available from WRD.

Executive Order 13089: Protection of our Nation's Coral Reef Resources

By Jim Tilmant, Fisheries Program Leader

During 1998, a great deal of attention was directed toward determining the current status and management needs of our nation's coral reef resources by Presidential *Executive Order 13089* which was issued at a National Oceans Conference in Monterey, California, in June. The need for increased protection and better understanding of coral reef ecosystems has been increasingly raised by scientists, scholars, marine conservationists, and others over the past decade. However, the issue was thrust to the forefront in 1998 when coral reefs around the world appeared to have suffered the most extensive and severe bleaching and mortality in modern records. Coupled with these massive bleaching events has been the increasing recognition and cry for action concerning depletion and loss of marine fishery resources.

During the National Oceans Conference, numerous prominent scientist and ocean resource administrators called for increased protection of our ocean resources, including greater understanding and protection of coral reef resources. This led President Clinton to issue an Executive Order directing Federal agencies to do all that they can to increase understanding and protection of coral reefs under their jurisdiction. The Executive Order created a National Coral Reef Task Force to oversee and coordinate related agency activities.

The first Coral Reef Task Force meeting was held at Biscayne National Park in October. At that meeting the Task Force created several interagency working-groups and charged them with the task of compiling information available for their area of concern, developing recommended actions that would further the purposes of the Executive Order, and requested them to report back to the Task Force at its next meeting in March of 1999. The Task Force also endorsed a FY 2000 budget initiative that would provide additional funding to the agencies, including the National Park Service, to implement coral reef mapping, monitoring and protection actions. They directed those agencies that managed coral reef resources to conduct a review and update of the General Management Plans for those areas by the year 2002 to insure adequate protection was provided.

In response to *Executive Order 13089*, WRD compiled information on coral reefs under NPS jurisdiction and put together an overview report on areas with coral reefs, level of protection afforded reef resources at those areas, and the management issues they face (Tilmant 1998). This information was presented as briefing materials to the Coral Reef Task Force at their October meeting. In addition, the NPS has developed a $1.6 million budget initiative for the FY-2000 budget that would provide assistance directly to nine coral reef parks to increase their mapping, monitoring and protection of coral reef resources. WRD has taken the lead on coordinating NPS participation in the Coral Reef Task Force working-groups. Staff members from several coral reef parks and the Pacific Island Support Office have been asked to participate on the working-groups and provide NPS input. Coral reef research and monitoring studies have been continued at Biscayne, the Virgin

Islands and Buck Island Reef under individual park and USGS/BRD funding. New coral reef studies were initiated at War-in-the-Pacific with WRD project funds.

During the next few years, the major tasks will be to implement improved programs at those parks that receive any increased funding, initiate and complete the review or revision of the NPS coral reef park General Management Plans, and seek ways of increasing resource protection for coral reefs within the NPS system.

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Tilmant, J.T., 1998. Coral Reefs under National Park Service Jurisdiction; Overview of areas, protection, and management issues. Briefing report for the first Federal Coral Reef Task Force meeting, Oct. 19-20, 1998, Biscayne National Park. National Park Service, Water Resources Division, Fort Collins, CO. 8pp.

Water Resources Planning Session at the 1999 George Wright Society Meeting

By David Vana-Miller, Water Resources Planning Leader

Wally Hibbard, Superintendent
Big Cypress National Preserve

Given the advent of the Government Performance and Results Act and the revision of NPS-2 (Park Planning), PEB has begun to evaluate the water resources planning program. Of immediate interest - How successful (or unsuccessful) was the implementation of completed Water Resources Management Plans (WRMP), that are considered blueprints for park water resources management? To answer this question, PEB convened a concurrent session of five speakers at the 1999 George Wright Society meeting in Asheville, NC. The session, entitled "National Park Service's Water Resources Planning Program: You Want A Plan or You Have a Plan -- Now What?" was organized and chaired by PEB hydrologists, David Vana-Miller and Don Weeks. The session objectives were: 1) to evaluate the effectiveness of the water resources planning process within the content of overall park planning; 2) to determine if a WRMP's content allowed park managers to interact effectively in the local/regional water resources arena; and, 3) to discuss the successes and/or failures of protecting park water resources through WRMP implementation. Additionally, from PEB's perspective, this session would be a program review conducted in front of our customers. The session proved quite successful and provided a re-affirmation of the following points: 1) the planning process is as important as the WRMP itself, i.e. the process brings stakeholders together to produce regional ownership of the plan - in fact, each of three park units was able to fund over one million dollars in water-related projects through the financial assistance of stakeholders; 2) the WRMP provides a strong foundation for future proposal development; 3) the WRMP compliments and extends existing park management plans and maintains continuity for water resources management during staff changes; 4) strong participation from park staff is needed during the WRMP process to steer the plan in the right direction; and 5) WRMP implementation must begin immediately upon completion in order to maintain momentum from the planning process, tackles the current issues before they become dated and/or new issues evolve, and to demonstrate to stakeholders that the NPS is serious about water resources management.

Water Operations Branch Highlights

By William L. Jackson, Ph.D., Chief

Two major new programs were initiated through the Water Operations Branch (WOB) in FY99 that should greatly enhance the amount and quality of information on National Park water quality. Funding for the Administration's Clean Water Action Program was obtained in FY99. That program earmarks $2.5 million annually in the USGS Budget to address high-priority water quality monitoring and assessment projects in National Parks. A joint USGS-NPS process was established which resulted in the selection of 35 natural resource management plan water quality projects for implementation in FY99. Funding also was obtained from the Servicewide Inventory and Monitoring Program to initiate "Level 1" water quality inventories in parks known to lack sufficient baseline water quality information.

The WOB's core program remains one of technical assistance to parks dealing with hydrology (surface and ground water) and water quality issues. A complete listing of this assistance is provided later in this report. Examples of Branch technical assistance accomplishments in FY99 follow:

- Contamination issues were evaluated on land parcels scheduled for acquisition at several parks including Tuzigoot National Monument, Biscayne National Park, and San Antonio Missions National Historical Park.

- Assistance was provided in addressing stream restoration issues in such parks as Delaware Water Gap National Recreation Area, Fossil Butte National Monument, Point Reyes National Seashore, Devils Tower National Monument, Channel Islands National Park, and Grand Teton National Park. In 1998 the Federal Interagency Stream Corridor Restoration Handbook was published. The NPS served on the Steering Committee and also helped produce a chapter in the handbook.

- Many parks obtained assistance in evaluating flooding issues. WOB continued its support to Yosemite National Park in evaluating the large, January 1997 flood because numerous technical and planning issues emerged involving the true magnitude of the event.

- Numerous ground water management issues were addressed, including ground water supply issues at Rocky Mountain National Park, Death Valley National Park, and Saint Croix National Scenic Riverway. In addition, wellhead protection plans were developed for Capital Reef National Park, Bryce Canyon National Park, and Golden Spike National Historic Site. Finally, water quality protection issues were addressed at several parks including Cape Cod National Seashore, Cape Hatteras National Seashore, and Ozark National Scenic Riverway. The Ozark issue involved potential contamination from proposed lead exploration and mining.

- Many other issues involved considerable input from WOB. For example, at Padre Island National Seashore, Lake Meredith National Recreation Area, and Big Thicket National Preserve, WOB has been actively involved in assisting the park in oil and gas contamination remediation issues and in the preparation of oil and gas management plans and associated Environmental Impact Statements. At Kaloko- Honokohau National Historical Park, an in-house team was assembled to prepare an analysis of potential contamination issues associated with sewage treatment alternatives for a new, proposed visitor center.

These and the many other technical assistance activities summarized in this year's report reflect the breadth of the staff's technical expertise. It is my hope that parks will continue to value and utilize this expertise in addressing park hydrology and water quality issues.

Inventorying and Monitoring Program and Water Resources Division Initiate Field Level Water Quality Inventories

By Gary Rosenlieb, Water Quality Program Leader

A primary objective of the Servicewide Inventorying and Monitoring (I&M) Program is to insure that every unit

containing significant natural resources has at least a nominal inventory of its natural resources and that those data are available in a data management system consistent with park management needs. Since 1995 the Water Resources Division, through its Water Quality Data Inventory and Analysis Project, has assisted the I&M Program by identifying parks with the least water quality information on park surface-water resources. Based on an examination of existing data in the Environmental Protection Agency's national water quality data base, STORET, (including park data that has been archived in STORET by WRD), the following factors are used to identify parks that are "targeted" for water quality inventories: (1) the number of water quality observations that have been collected in the park, (2) the number of water quality observations in the study area (which includes the park), (3) the number of missing and old "Level I" water quality parameters in the study area, (4) whether the park participated in the process of identifying and uploading water quality data to STORET, and (5) whether the park has Resource Management Plan Project Statements that deal with water quality.

By January 1999 over 50 parks had been identified as lacking water quality data sufficient to describe the condition of their water resources. In accordance with the NPS's Strategic Plan for Conducting Level 1 Baseline Natural Resource Inventories in the National Park Service, these parks are targeted to receive funding from the I&M Program to complete Level I Water Quality Inventories on their key waterbodies. In FY98 and 99, Level 1 Inventories were initiated in the following parks: Fort Necessity National Battlefield, Pea Ridge National Military Park, Booker T. Washington National Monument, Arkansas Post National Memorial, George Washington Birthplace National Monument, Knife River Indian Villages National Historical Site, Petersburg National Battlefield, Little Big Horn Battlefield National Monument, Weir Farm National Historical Site, Nez Perce National Historic Park, Minute Man National Historic Park, Cumberland Island National Seashore, Marsh-Billings National Historic Park, White Sands, National Monument, Hubbell Trading Post National Historical Site, Appomattox Court House National Historic Park, Hagerman Fossil Beds National Monument, Thomas Stone National Historical Site, Wolf Trap Farm Park, Fort Frederica National Monument, Cape Lookout National Seashore, Ninety Six National Historical Site, Andersonville National Historical Site, and Fort Donelson National Battlefield.

The Level 1 field inventories primarily focus on collecting basic chemical, physical, and bacteriological information. Cumberland Island NS will, for the first time, collect data on 1) conductivity, pH, metal, and nutrient concentrations, and 2) fecal indicator bacteria from its diverse, and relatively undisturbed, water-based ecology (consisting of marine shoreline, estuarine and intertidal marshes, freshwater ponds, lakes, and free-flowing streams) and from groundwater sources that played an important role in the island's history. The targeted parks also have the latitude to seek pollutants that may be present because of adjacent land uses. For example, White Sands NM will be inventorying a suite of organic chemicals that may be flowing into the park from an adjacent defense facility.

Floodplain Determination in Yosemite National Park

By Gary Smillie, Hydrology Program Leader

In January 1997, Yosemite National Park was hit by the largest flood in a century in the Merced River. Damage to park infrastructure, including campgrounds, lodging units, and roads, was extensive. Following the flood, park managers decided to utilize floodplain-related actions identified in the 1980 General Management Plan for guidance in flood recovery activities. Fundamental to this plan is knowledge of the extent of the 100-year floodplain. WRD assisted the park in developing information related to the extent of the 100-year floodplain in various reaches of the river.

Ordinarily, determination of floodplain boundaries is a relatively simple task of fitting stream flow records to a probability distribution and then analyzing that distribution to estimate the likely return period (or frequency) of different size floods. Hydraulic modeling is then used to estimate the floodplain boundary of selected flood magnitudes. However, in the case of the Merced River, analysis of the flood record is complicated by the nature of flooding in Sierra streams. Generally, the largest flow of the year in the Merced River is the snowmelt peak which occurs in late spring. These floods are typically in the range of 4000 to 7000 cfs as measured at the USGS gage at Pohono Bridge. However, occasionally the annual maximum flow results from rain on snow as occurred in 1997, and these peaks are much larger, often over 20,000 cfs. The

flow rate measured in January 1997 was about 25,000 cfs, making it the largest in over 80 years of record, but, interestingly, there have been three other floods over 22,000 cfs in that same period. This unusual distribution of flood peaks caused uncertainty in the computation of the 100-year flood for the Merced River in Yosemite Valley and El Portal. Depending upon the method used, estimates of the 100-year flood in Yosemite Valley ranged from roughly 25,000 cfs to 40,000 cfs. This discrepancy in 100-year flood estimates had major implications for park planning. The Water Operations Branch worked closely with the park and hydrologists from USGS, BOR, FEMA, and COE to help resolve this discrepancy. At this writing it has been determined that 25,000 cfs best represents a 100-year flood magnitude in Yosemite Valley.

Analysis of Pilgrim Creek, Grand Teton National Park

by Gary Smillie, Hydrologist

Pilgrim Creek is a small stream in northern Grand Teton National Park that flows into Jackson Lake immediately upstream of Jackson Dam. The stream exits steep canyons in the Absaroka Mountains and flows over an alluvial fan before entering the lake. Channel activity is very dynamic on the alluvial fan as the sediment-rich stream seeks to migrate over a wide extent. While natural channel processes are generally tolerated (in fact promoted) in national parks, Pilgrim Creek has been leveed and channelized for several decades by the Bureau of Reclamation (BOR) to reduce the threat of channel migration into Jackson Dam. The north embankment of Jackson Dam extends longitudinally up the Pilgrim Creek alluvial fan and is in an area historically used by the creek.

Over the past several years the Water Operations Branch has assisted in a study by BOR to determine the seriousness of the threat posed by the creek to the dam and what action could be taken to manage this risk in a manner consistent with park policies. The continued manipulation of the channel is only appropriate in the park if it is clearly needed for protection of the dam. Results of the investigation indicate that the location of the present channel may be more stable than had been thought due to incision of the lower channel into lobes of the alluvial fan that have been fluvially inactive for a long time. The incision may have been caused during the recent drawdown of Jackson Lake to improve the structural integrity of the dam or could be due to excavation and relocation of the channel by human activity. Whatever the cause, the BOR now believes that for at least the next several years chances of a major channel realignment by Pilgrim Creek toward Jackson Dam is very unlikely. Furthermore, it has been determined that the real threat to the structure (should Pilgrim Creek move) is very low. For these reasons, the study recommends ceasing the former manipulation techniques used in the past and monitoring conditions associated with the channel. This approach will lessen obtrusive activities on the fan and allow Pilgrim Creek to develop more natural channel dynamics and morphology in the area formerly leveed and channelized.

Surface Coal Mine Impacts at Natchez Trace Parkway

By Mark VanMouwerik, Contaminants Specialist

Immediately adjacent to a portion of the Natchez Trace Parkway in northeastern Mississippi, a lignite (low-grade coal) surface mine and 440-megawatt coal-fired power plant were proposed by the Mississippi Lignite Mining Company (MLMC) in partnership with Tractebel Power. Recently approved, the 30-year, 5000-acre “Red Hills Lignite Mine” contains several seams of coal up to a depth of about 200 ft. The mine site makes up much of the watershed for two water resources in this area of the Parkway—the Little Bywy and Middle Bywy Creeks. Although regulatory requirements will be met to protect water quality during operations and strict reclamation requirements will be met once mining is over, changes in surface- and groundwater are expected. First, sedimentation ponds (for stormwater runoff) are expected to alter natural flow patterns after rain events. Second, the effect of mining through (and destroying) aquifers upgradient of the two streams could effect their baseflow, especially during critical, seasonal, low-flow periods. Third, surface water chemistry could change as the streams are initially re-routed and the stream channels eventually reconstructed. Fourth,

water quality could be affected by the accidental release of mining contaminants. Any one of these could have significant adverse impacts on aquatic life and riparian habitat downstream in the Parkway.

At the request of the Parkway, three divisions of the Natural Resource Program Center—Air, Geologic, and Water—entered into negotiations with MLMC. For water resources, these negotiations resulted in increased monitoring of baseline conditions both before and during mining. Although the mining company provided baseline surface- and groundwater data for their permit application and would continue collecting data during mining, this was considered insufficient by WRD. Negotiations resulted in an agreement whereby MLMC increased baseline monitoring of Parkway water resources by 1) installing two new gauging stations in the Little Bywy and Middle Bywy Creeks, 2) regularly sampling these streams for a broad suite of parameters, 3) installing monitoring wells between the future mine site and the two streams to measure groundwater quality downgradient of the mine and the contribution of groundwater to baseflows, and 4) increasing long-term studies of aquatic life in these streams. Regular reports will be made to the Parkway and WRD, and any problems possibly requiring mitigation will be discussed between MLMC and NPS.

Water Rights Branch Highlights

By Chuck Pettee, Chief

Because of the strong feelings we Americans have about water rights, Water Rights Branch (WRB) staff spend a lot of time working on issues which concern park neighbors. We are keenly aware of the potential for damaging relations between parks and their neighbors through water right actions. As a result, we look for opportunities to resolve water rights issues outside of the frenzied atmosphere of administrative or court hearings. This year we have continued to participate in ongoing negotiations to attempt to settle adjudications for park water rights in Utah, Arizona, and Colorado. We have reached agreements in principle with the State of Utah for adjudicating water rights at Hovenweep and Cedar Breaks National Monuments and developed draft settlement stipulations with two opposing parties in the Little Colorado River adjudication in Arizona. New in 1998 was the Alternative Dispute Resolution (ADR) process begun by the State of Oregon to provide a mechanism to settle issues for the Klamath River Basin adjudication. NPS has entered this ADR process in an attempt to settle issues related to water rights claims for Crater Lake National Park.

Our monitoring and enforcement activity has also turned towards negotiation partnerships. In Nevada, NPS has entered into an agreement with other federal bureaus to work cooperatively in water resource data collection and to conduct inter-bureau review of proposed federal water developments early in the planning stages. We are also discussing an arrangement with Nye County, Nevada that would establish early communication about private water developments with opportunity to resolve conflicts before they become protest actions. While we don't anticipate that these agreements will eliminate all actions which park neighbors may consider contentious (e.g. protests), we hope they will reduce the number and at the same time increase the amount of data available for future decisions.

Of course, the underpinnings for any park involvement in negotiations or collaboration on data collection is a solid understanding of the water-dependent resources or other park water needs which require protection. WRB constantly strives to improve our internal data management. In this era of mushrooming technology, there are many opportunities to improve the efficiency of our data collection and management activities. Articles in this report describe two opportunities being explored by the WRB. Having accurate and appropriate data is critical but may not accomplish much unless it is communicated effectively. To address this need, the WRB sponsored an effort among Interior Department bureaus to develop a training course for improving the skill of staff in

delivering expert witness testimony. The first water rights expert witness training session occurred this year and is described in an article in this report.

We often remind ourselves that WRB staff are only consultants to parks and it bears repeating that park management and staff are more aware than WRB staff of issues in and surrounding their parks and the potential for impact to water-related resources or water rights. We are thankful for the availability and professionalism of park management and staff and appreciate their critical role in the NPS water rights program. We continue to encourage field managers to call upon the WRB whenever water rights issues are, or could be, affected by management decisions or proposals by park neighbors.

Protecting groundwater rights at Lake Mead National Recreation Area

By Jeff Hughes, Hydrologist

Springs and water-related resource attributes are important features of Lake Mead National Recreation Area (LAME). The springs provide water for vegetation and wildlife habitat and create an environment that many visitors use and enjoy. Though springs within the park appear to originate from a variety of sources, most springs are not fed by water from Lake Mead rather they are recharged by ground water. Many springs discharge ground water that originates outside the low elevations within the park. The NPS is concerned that rapid population growth in portions of southern Nevada has spurred the proliferation of large-scale ground water development proposals to the north and west of Lake Mead, possibly along flow paths leading to park springs.

Groundwater originates by infiltration of precipitation in mountainous areas receiving greater amounts of precipitation and from infiltration of runoff at the margins of valleys. Lake Mead lies at the southern boundary of Nevada's Colorado River ground-water region. NPS has protested applications for groundwater appropriation in the White River groundwater flow system, a sub-regional groundwater system, because it is concerned that ground water withdrawals (existing and proposed) will reduce or eliminate the discharge of the springs within LAME by capturing water destined to the springs. Given that pumping occurs over a long period of time, the senior rights of the NPS would be impaired. However, additional information on the hydrology and hydrogeochemistry of these springs is needed to determine if ground water development in Nevada is occurring in source areas or along flow paths leading to springs. This need is emphasized in a 1995 hearing before the Nevada State Engineer, at which the NPS acknowledged the need to determine the source of water for Rogers-Bluepoint spring complex (Ruling 4243).

To address these concerns, NPS initiated a study to provide a comprehensive database of spring chemical and isotopic composition and determine the source areas of and flow paths to selected springs. The study, completed in March 1998 by Water Resources Center, Desert Research Institute1, describes thirty-one springs within LAME and five nearby springs. Three classifications of source area were defined, based primarily on hydrogeologic setting and stable isotopic data, as local springs, subregional springs, and springs derived from Lake Mead water. About one-third of the springs are considered to be of local ground water systems. Their stable isotopic values indicate they receive most or all recharge locally within LAME or from low elevation areas near the park. Subregional springs, for example Rogers and Bluepoint Springs, are those whose discharge is dominated by ground water recharged at higher elevations and appear to be most strongly related to ground water systems that extend to the north to the Weiser Wash and Mormon Mountains area, rather than to the White River ground-water flow system. The stable isotopic values are indicative of higher elevation recharge

sources than most of the region surrounding Lake Mead. A third set of springs is derived from recirculated Lake Mead water. Higher discharge rates of several of these springs and stable isotopic values are indicative of the present composition of Colorado River water, and implicate Lake Mead as the most probable source.

Water Rights Expert Witness Training

By Dan McGlothlin, Hydrologist

The Water Rights Branch (WRB) in the National Park Service's (NPS) Water Resources Division provides Servicewide leadership for the preservation, protection, and management of water rights resources of units of the National Park System. This responsibility includes development and presentation of information as evidence in support of litigation or negotiation and administrative hearings. Recent experiences dictate the need for improved delivery of expert or factual testimony by NPS technical staff whom is likely to be involved in lawsuits or administrative proceedings. In Nevada, for example, the NPS has filed numerous protests to water right applications for non-park water development adjacent to three NPS units. Any protest may lead to administrative hearing by the Nevada State Engineer, and/or litigation by the NPS. Therefore, NPS staff or other technical experts may be called upon at any time to provide expert testimony in behalf of NPS water rights interests. To provide credible testimony, NPS staff must be prepared for the rigors of testimony.

To address this need, WRB sought the assistance of the Bureau of Land Management's National Training Center to develop training for bureau specialists in the preparation and delivery of testimony in water rights proceedings. Most courses on witnessing techniques are not tailored to meet the specialized needs of federal water rights professionals and experts called upon to testify in behalf of federal water rights. With course design assistance provided by WRD and representatives of Fish and Wildlife Service, BLM, Bureau of Reclamation, Office of the Solicitor and Department of Justice, the Interagency Water Rights Expert Witness Preparation Training Course was developed for federal personnel who need training in the techniques of "witnessing" in a water rights context. The course utilizes experienced attorneys and expert water rights professionals to provide instruction in technical case preparation and delivery of testimony. The key element of this session is the trainee's opportunity to gain experience in delivering expert testimony under "live" conditions in the form of a mock trial. The course also provides attorneys an opportunity to: polish their skills in representing their client in the courtroom/hearing setting; practice examining witnesses and become familiar with skills and the limitations of the scope of an expert's testimony; and discuss current technical issues concerning case preparation.

The pilot session was held November 16 - 20, 1998, and was attended by DEVA, WRD and Fish and Wildlife Service personnel. To prepare the participants for their "day in court", students were required to complete as a pre-class assignment an "Expert Report" describing opinions and the bases for those opinions. Students received a substantial set of water rights case materials sufficient to formulate and support their opinions concerning an actual water rights case. They then reviewed their testimony with their attorney, and testified in a 45-minute "trial". Attorneys experienced in water rights litigation and administrative procedures carried out direct and cross-examination of the witness in the mock trial. An added touch of realism - the trier of fact was a retired water court judge from Colorado.

The pilot session was well-received and confirmed that the "live fire" format is a viable learning tool for witness preparation. The BLM plans to offer the interagency training in FY2000.

Review of Permit Application to Divert Water Above Catoctin Mountain Park

by Jeff Hughes, Hydrologist

The State of Maryland (State) operates Hunting Creek Lake Reservoir within Cunningham Falls State Park, directly upstream of Catoctin Mountain Park (CATO). The reservoir is located on Big Hunting Creek, which flows through CATO. The park was notified that the State was renewing their water use permit at Cunningham Falls State Park. The State was proposing to increase the amount of water they use for sanitary purposes and a

potable water supply from an annual average of 15,000 gallons per day (gpd) to 25,000 gpd, with maximum daily withdrawals increased from 50,000 gpd to 100,000 gpd. NPS was concerned that this increase in water diversion would be detrimental to park resources dependent on flows from Big Hunting Creek.

CATO administers the land adjacent to Big Hunting Creek within NPS boundaries and is therefore entitled to riparian water rights on the Creek. However, the quantity of water the park is entitled to under the riparian doctrine for instream flows for environmental purposes has not been determined. The amount of the proposed diversion would likely be viewed by a court as small compared to the amount of water in the stream. Therefore, NPS decided not to take the position that the proposed increase in diversion would unreasonably interfere with NPS riparian water rights for Big Hunting Creek.

The Water Rights Branch (WRB) reviewed and provided comments to CATO staff on the State's evaluation which analyzed the effects of the increased diversion. The evaluation concluded that there were no "unreasonable impacts" to streamflow and other water-related resources. However, the report did not provide sufficient information to support this conclusion. Park staff and the State Department of the Environment representatives discussed resource protection concerns and agreed to monitor stream temperature and discharge below the reservoir, conduct an investigation into water distribution system losses, and determine how much water is required to operate the State Park facilities. During 1999, the State will reevaluate the amount of water it needs and adjust its permit accordingly.

The negotiation process with the State enabled NPS to avoid costly litigation and the uncertain outcome associated with a trial or hearing and provided protection for its water-related resources. In addition, the State is committed to resuming the collection of streamflow information.

Klamath River Basin Adjudication

By Ron Thomasson, Hydrologist

The Klamath River rises in south central Oregon and flows south to the Oregon/California border. From the border, the river flows southwesterly across northern California to the Pacific Ocean. Water within the upper basin has been primarily used for agricultural purposes. However, more and more water is being used to meet environmental concerns both within the upper basin and downstream. Due to the increasing competition for the limited water resources of the Klamath River, conflict over water within the upper basin has intensified. In an effort to prioritize water use within the basin, the State of Oregon has begun a process to adjudicate federal reserved and vested (pre-water code) water rights in the upper Klamath River Basin.

Approximately one-half of Crater Lake National Park (CRLA), including Crater Lake, lies within the western portion of the upper Klamath River Basin. Numerous tributary streams rise within the park eventually contributing to the flow of the Klamath River. In order to protect the resources of the park, NPS filed Federal reserved water right claims in the adjudication for ten of these streams. For each of the ten streams, NPS filed two claims; one to protect the instream values of the stream and the other to allow a small amount of consumptive use of the stream for domestic, administrative, and wildlife watering purposes. NPS has also filed a federal reserved water right claim to maintain the natural water levels of Crater Lake.

Including those claims filed by the NPS, over 700 water right claims were filed in the adjudication by federal agencies, the Klamath Indian Tribe, water districts, and local farmers and ranchers. In an effort to resolve these claims without the usual contentious litigation associated with an adjudication, the State has initiated a parallel

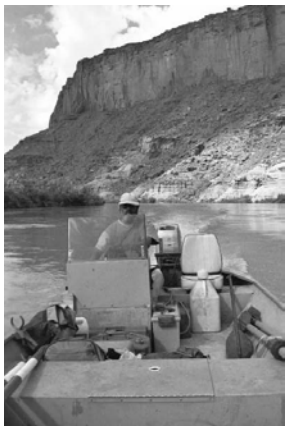
Alternative Dispute Resolution (ADR) process. The purpose of the ADR is to bring together the basin's stakeholders to resolve as many issues as possible prior to the litigation portion of the adjudication. The ADR process began in September 1997, and consists of monthly meetings in which the rules and procedures of ADR settlement negotiations are developed by the participants.

NPS has chosen to work within the ADR framework to negotiate settlement of its CRLA water right claims. In October 1998, NPS formed a negotiation group, consisting of local ranchers, representatives of the state, environmental groups and the Klamath Indian Tribe, as well as, CRLA and WRD staff. To date, meetings have been held to identify issues associated with the Park's claims and possible solutions have been identified. Future meetings will be conducted to identify the preferred solution and flesh out the details of that solution. Once the details are worked out, a settlement agreement will be prepared and entered into the adjudication for adoption as a final decree. Hopefully, by working together and using some creative thinking, the negotiation group can resolve the issues to the satisfaction of all parties and costly, time-consuming litigation can be avoided.

Doppler technology aids in large river studies

by Brian L. Cluer, Hydrologist

Resource managers often need river channel and hydraulic data to describe existing resource conditions or to estimate impacts of a past or potential change in the river's watershed. In small rivers, researchers obtain this data by wading and taking simple measurements of depth and velocity. This topographic and flow information is logistically difficult or impossible to obtain in rivers too deep to wade or during flood events. In the past, large river flow information has been obtained by taking depth and velocity measurements from cables stretched across rivers. Not only are these techniques slow and result in very little information for the effort expended, they also limit the locations for data collection. In recent years, hydroacoustic equipment has been produced that fills these scientific data collection needs in large river environments.



Hydroacoustic echo sounding is commonly used to measure water depth, providing topographic data for river channel mapping. A sophisticated multi-beam hydroacoustic echo sounder is now available that can also measure the velocity of river flows. By sending and receiving acoustic energy from different heights within the water column, and then applying the Doppler shift theory, the acoustic Doppler current profiler (ADCP) determines the velocity and trajectory of particles suspended in the water column. Recent advances have made these new ADCP echo sounder units operable in large rivers where average flow depths exceed 5 feet. Attaching an ADCP to a maneuverable boat, the three dimensional velocity field of a reach of river can be measured quickly and accurately. When the ADCP is integrated with a navigation/tracking device, such as a survey-grade global positioning system (GPS), spatially precise map data can be collected on the channel bottom topography, the water surface, the three-dimensional flow field, and the discharge of a river reach.

In 1998, staff from WRD used an ADCP, integrated with a GPS-GLONASS (combined U.S. and Russian satellite surveying system), mounted on a motorized raft to collect needed flow and topographic data on the Green River in Dinosaur and Canyonlands National Parks (Utah). The integrated system delivered spatial positions with 4 cm accuracy in elevation, and 1-2 cm horizontally, correlated with detailed flow depth and velocity data. Over 15,000 data positions distributed over a 4-mile reach were measured in about 15 hours from a power boat zig-zagging back and forth across the river channel. Channel maps, water surface maps, and flow field (velocity) maps of two 4-mile reaches were constructed from the data obtained in June 1998. The river channel and hydraulic data collected using the ADCP and GPS-GLONASS is substantially more detailed and accurate than data obtained using conventional means, and required much less time to acquire.

Buried Sensor Measures Erosion and Deposition in Spawning Beds and Sandbars

By Michael C. Carpenter, Research Hydrologist, U.S. Geological Survey, Tucson, Arizona and Brian L Cluer, Hydrologist

Figure 1. Load-Cell Scour Sensor

Resource managers now have a technique available to them to monitor (1) erosion and deposition of spawning beds of native fishes from razorback suckers to salmon; (2) scour around bridge piers; and (3) erosion, deposition, and bed transport of streams, washes, and rivers, and (4) shoreline processes on lakes and seashores. The load-cell scour sensor (fig. 1) consists of a rectangular, shallow stainless-steel chamber with a thin stainless-steel foil across the top. The chamber is filled with water and a pressure sensor is attached in the side to measure the water pressure inside. The sensor and the electrical cable connecting it to a datalogger on the bank are buried under the streambed below anticipated scour depth. The weight of the overlying sediments and water are transferred to the foil, water inside the chamber, and in turn to the pressure sensor ported to the inside of the chamber. A second pressure sensor, ported to the sediments outside the chamber, measures the pore pressure or weight of the overlying water. The difference in output between the two pressure sensors is the weight of the sediment, whether the water level is above the bed (free-flowing stream) or below the bed (dry wash). Sensitivity and accuracy of the sensor are 0.01 ft of sediment or less with a range of burial exceeding 15 feet of saturated sediments plus 15 feet of water.

The sensor was an outgrowth of cooperative work between the U.S. Geological Survey and the National Park Service on rilling erosion of sandbars on the Colorado River in the Grand Canyon, which ended in 1993. The sensor was used to measure scour and deposition in the spring 1996 Controlled-Flood Experiment on the Colorado River in the Grand Canyon (fig. 2). The sandbar was scoured to a depth greater than the sensors were placed, and the sensors were battered in the current against the canyon wall until they were removed several months later. The sensors were still functioning at the time of removal.

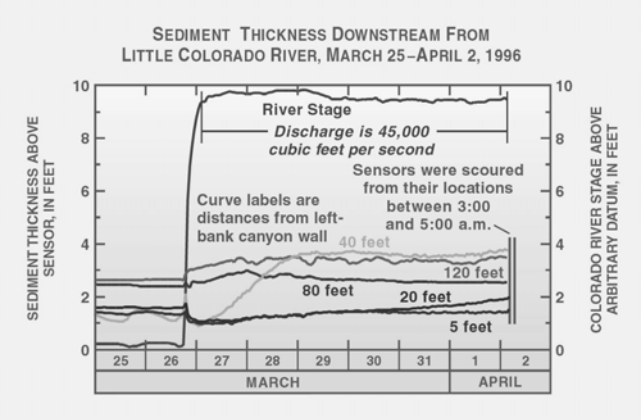


Figure 2. Measurements of scour and deposition during 1996 Controlled-Flood Experiment.

Field trials are underway at spawning beds of razorback suckers in Dinosaur National Monument in the Green River downstream from Flaming Gorge Dam (fig. 3) and on the Yampa River upstream from the confluence with the Green River. Both sites consist of arrays of sensors in spawning areas that become covered with sediment that adversely affects spawning. This work was done by Michael Carpenter, Joe Lockett, and Nathan Blomgren of the USGS and Brian Cluer and Ed Wick of the National Park Service, in conjunction with Tim Modde, U.S. Fish and Wildlife Service. Funding was provided by the Office of Technology Transfer.

Work is underway to develop a version of the sensor that has wireless communication to eliminate the logistical problems of cable between the sensors and the datalogger. Additional applications include studies of or warnings of quick sand in channels, and the installation of multiple sensors in two or more closely-spaced cross sections for automated slope-area discharge measurements at sites in meandering sand channels that are inaccessible during flows, such as in the arid Southwest.

Support Provided to Regions, Parks, and Other National Park Service Organizational Units

ALASKA CLUSTER

Planning and Evaluation Branch

Provided wetland compliance training materials to Regional staff.

Participated in discussions on development of a wetland mitigation bank for Alaska parks.

Denali National Park & Preserve

*Provided review and comment on a research report concerning stream classification and monitoring which is part of the long-term ecological monitoring program being developed for the park.

*Visited the park to examine future projects that may impact wetlands, including: expansion of the maintenance yard (Butler pad), Savage River trail, Primrose trail, road rehabilitation, and the Toklat gravel extraction site and equipment storage area.

*Provided assistance in preparation and approval of a task order for a FY99 WRD-funded wetland project titled "Wetlands Mapping of Transportation Corridors."

*Met with representatives from the Alaska Regional Office, Denali National Park & Preserve and Wrangell-St. Elias National Park & Preserve to develop concepts for wetland mitigation bank for Alaska parks.

*Assisted the park in developing a wetland Statement of Findings for "Gravel Acquisition to Upgrade the McKinley Bar Trail." Certified the technical adequacy of the wetland analyses and certified consistency with NPS procedures for implementing Executive Order 11990 – "Protection of Wetlands."

*Provided technical review and comment on the park's Resource Management Plan.

Glacier Bay National Park and Preserve

*Provided technical assistance in the development of an Environmental Assessment that addresses options for the phase out and reduction of commercial fishing activities within the park. Assisted the park with two public workshop sessions concerning the commercial fishing issues.

*Reviewed commercial Dungeness Crab harvest and effort data and provided input concerning a petition to the State to consider an early closure of the commercial crab season based on low stock abundance.

*Assisted park and regional staff in developing a draft wetland Statement of Findings for the Bartlett Cove Dock Rehabilitation project.

Katmai National Park & Preserve

*Collected water-related information and initiated activities for preparation of the Water Resources Scoping Report.

*Assisted Regional Office staff in preparing a task order for National Wetland Inventory mapping for the park.

Water Operations Branch

Bering Land Bridge National Park

*Completed a draft report on water quality of Serpentine Hot Springs.

Denali National Park and Preserve

*Provided extensive technical review of proposed aquatic invertebrate monitoring methods. Summarized available information on biocriteria and state/federal rapid bioassessment protocols approved for biocriteria decisions.

*Advised park staff of contaminant issues related to fly ash generated from burning coal.

*Provided summary information of environmental concerns related to de-icer chemicals.

*Provided review and comments on the park's Resource Management Plan.

Gates of the Arctic National Park and Preserve

*Reviewed water quality inventory and monitoring report.

Glacier Bay National Park and Preserve

*Provided park staff with guidance on aquatic invertebrate monitoring methods, rapid bioassessment protocols, and biocriteria.

Klondike Gold Rush National Historical Park

*Reviewed project statement and discussed options with park staff to fund a site inspection of the bank stabilization needs on the Taiya River in order to conduct a feasibility study for erosion control.

*Uploaded water quality data from a 1994 U.S. Forest Service "Ecological Inventory of Klondike Gold Rush National Historical Park and Adjacent National Forest Lands" and the U.S. Geological Survey National Geochemical Data Base: National Uranium Resource Evaluation Program to STORET.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Lake Clark National Park and Preserve

*Reviewed and approved study plan for a water quality assessment.

Sitka National Historical Park

*Uploaded Indian River water quality data collected in 1996 and 1997 during a Phase II Site Assessment conducted by Shannon Wilson, Inc. to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

*Reviewed water quality data for the Indian River prior to processing the park's baseline data report.

Wrangell-St. Elias National Park and National Preserve

*Provided advice to park staff regarding flooding conditions at McKinley Bar.

Water Rights Branch

Sitka National Historical Park

*Initiated settlement discussions with the State of Alaska, Sheldon Jackson College, and the Borough of Sitka to resolve water rights issues on the Indian River.

*Initiated a cooperative data collection program to investigate streamflow and water use on the Indian River.

Reviewed and provided comments to EPA on deficiencies in Outstanding National Resource Water (ONRW) designation process in the State of New Mexico Water Quality Standards.

COLORADO PLATEAU CLUSTER

Planning and Evaluation Branch

Presented a briefing to Regional office staff regarding proposed changes in NPS wetland protection procedures (*D.O. #77-1:Wetland Protection* and *Procedural Manual #77-1: Wetland Protection)*.

Canyonlands & Arches National Parks

*Provided technical assistance, review, and oversight for the draft Water Resources Management Plan.

*Reviewed and approved the Investigator's Annual Report and approved 2nd year funding for the project "Characterization and Identification of Water Quality and Biotic Components in Isolated Springs along the Colorado River Drainage System, Utah and Arizona: *Canyonlands National Park, Grand Canyon National Park,* and *Glen Canyon National Recreation Area.*"

Capitol Reef National Park

*Reviewed and approved final study plan for the WRD-funded project "Oxbow Wetland Ecology."

*Provided onsite technical assistance and recommendations for hydrologic monitoring, topographic surveys, soil moisture determinations, and tamarisk control for the "Oxbow Wetland Ecology" project.

Dinosaur National Monument

*Attended a meeting of the Flaming Gorge Technical Integration Team and principal investigators to review the status of the Integrated Biology/Hydrology Report and Biological Opinion on the effects of operation of Flaming Gorge Dam.

Glen Canyon National Recreation Area

*Assisted the park in the negotiation and development of a research study to be conducted by the Biological Resources Division of the USGS which will address the importance and use of river inflow areas on Lake Powell to the endangered Colorado Squawfish and Razorback Sucker as well as other native fish species.

*Reviewed and approved the Investigator's Annual Report and approved 2nd year funding for the project "Characterization and Identification of Water Quality and Biotic Components in Isolated Springs along the Colorado River Drainage System, Utah and Arizona: *Canyonlands National Park, Grand Canyon National Park,* and *Glen Canyon National Recreation Area.*"

Grand Canyon National Park

*Reviewed and approved the Investigator's Annual Report and approved 2nd year funding for the project "Characterization and Identification of Water Quality and Biotic Components in Isolated Springs along the Colorado River Drainage System, Utah and Arizona: *Canyonlands National Park, Grand Canyon National Park,* and *Glen Canyon National Recreation Area.*"

Zion National Park

*Provided assistance with NPS wetland compliance and Clean Water Act permit information for an irrigation diversion project.

*Assisted the park with initial work on a task order, study plan, and location of a contractor for a WRD-funded wetland project titled "Inventory Wetlands and Riparian Vegetation."

*Assisted park staff in developing a proposal to conduct parkwide wetland mapping with enhanced ground truthing.

Water Operations Branch

Arches National Park

*Reviewed draft Water Resources Management Plan.

Bryce Canyon National Park

*Prepared wellhead protection plan for the park's water supply wells.

Canyonlands National Park

*Provided assistance in writing project plan to study the potential rise of pH in the Green River and Colorado River and the potential interactions between higher pH levels and ammonia.

*Advised the Fish and Wildlife Service, the Biological Resources Division of USGS, and the park on ammonia aspects to be covered in a study of the effects of leachate from the Atlas Mill tailings on endangered fish in the Colorado River.

*Provided the park, State of Utah, Fish and Wildlife Service, and others working on the effects of the Atlas tailings pile with information on metals toxicity, ammonia toxicity, effects on fish, effects of ammonia on metals transport, and appropriate field and lab methods.

*Reviewed and provided comments for a contracted EPA-style Site Assessment of an abandoned landfill.

*Reviewed draft Water Resources Management Plan.

Capitol Reef National Park

*Prepared wellhead protection plan for the park's water supply well.

*Advised park on groundwater monitoring plan for a wetland study.

Cedar Breaks National Monument

*Advised on feasibility of constructing a water supply well to replace the current spring source.

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Chaco Culture National Historical Park

*Develop groundwater monitoring plan for Chaco Wash.

*Performed WRD project coordination for erosion control study being performed for the park by Bureau of Reclamation. Final project report was issued in 1998.

*Made a preliminary recognizance trip for riparian monitoring project to plan for surveys of cross sections and bench marks.

Colorado National Monument

*Uploaded water quality data from the U.S. Geological Survey National Geochemical Data Base: National Uranium Resource Evaluation Program to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Assisted park with geo-referencing and mapping a boundary survey for use in GIS.

Dinosaur National Monument

*Assisted park staff in writing a project plan for USGS to study a potential upward trend in pH in the Green River.
*Made field trip and developed recommendations regarding sedimentation problems at Gates of Lodore boat launch facility.

*Collected several periods of data, retrieved WRD stage recording equipment, and transferred processed data collected on the Green River at Gates of Lodore to new project monitoring team.

El Malpais National Monument

*Conducted extensive hydrologic and topographic surveys and analysis on proposed trailhead development which may conflict with stream restoration for Agua Fria Creek and protection of lava caves.

El Morro National Monument

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

*Reviewed water quality and biology reports for WRD-funded study.

Fossil Butte National Monument

*Provided continual geomorphic and hydrologic assistance in removing and reclaiming two stock dams and their associated gullies by reviewing and recommending priority tasks based on a range of anticipated funding.

*Reviewed watershed restoration plan and discussed with park staff associated RMP project statements for submission to the funding process.

*Retrieved WRD automatic equipment monitoring precipitation at a remote site in study watershed to compare data with park's main weather station.

*Uploaded water quality data from miscellaneous park records and the U.S. Geological Survey National Geochemical Data Base: National Uranium Resource Evaluation Program to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Glenn Canyon National Recreation Area

*Reviewed progress report and assisted park with interpretation of bacteria data and genetic testing results.

*Attended meeting on Interagency Long-Term Monitoring and Research at Lake Powell.

*Attended two interagency meetings related to the strategic plan for addressing human health issues at Lake Powell. Served on the Technical Advisory Committee tasked with developing bacteria water quality monitoring guidelines and protocols.

Grand Canyon National Park

*Reviewed and commented on proposal to develop a groundwater supply for a new development south of Tusayan (Canyon Forest Village).

*Provided fiscal and technical management and guidance for WRD funded projects to characterize and identify water quality and biotic components.

Mesa Verde National Park

*Provided information to park and USGS staff on air pollutants that might be impacting water quality in park waters, and summarized the types of tasks that would need to be done to better document the issue.

Navajo National Monument

*Uploaded water quality data from the 1982 Water Resources Management Profile and from the Navajo Tribal Utility Authority (1988/1991) to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Pipe Spring National Monument

*Coordinated WRD funded project for geohydrologic study by USGS on decline of springflow.

*Provided WRD hydrologic data, references, and field expertise to USGS researchers, including information on unique aquifers and geologic structure essential to protecting spring flow in the park.

Timpanogas Cave National Monument

*Uploaded water quality data from a 1994 Preliminary Investigation of the Hydrogeology and Hydrochemistry and its Implications for Cave Management" to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Walnut Canyon National Monument

*Uploaded water quality data from the USGS National Geochemical Data Base: National Uranium Resource Evaluation Program to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Zion National Park

*Made trip to park to assess damage caused by large flood in Sammys Canyon. Assisted DSC planners in developing improved layout for new bus maintenance facility.

*Assisted park staff in assessing the causes of the failure of a segment of park road. Also reviewed consultant's hydraulic modeling and assisted in the development of alternatives for reconstructing the road in a more stable manner.

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Water Rights Branch

Bryce Canyon National Park

*Provided park with report detailing existing and future water use needs.

Canyonlands National Park

*Provided review comments on the final Southeast Utah Group Water Resources Management Plan.

*Initiated data collection on the Green River to determine instream flow needs for use in settlement discussions with the State of Utah and the Bureau of Reclamation.

*Processed topographic and hydraulic data and produced a two-dimensional flow model for the Fort Bottom area.

*Provided funding to improve a flow routing model for the Green River.

*Prepared a summary of existing literature and research for instream flow needs and water-related resource attributes for the Green River.

*Attended Flaming Gorge Work Group meetings.

Capitol Reef National Park

*Completed hydraulic and hydrologic analyses, and sediment transport studies of the Fremont River for use in quantifying instream flow needs.

*Completed regional water rights analysis.

Cedar Breaks National Monument

*Prepared a draft water rights settlement agreement with the State of Utah to recognize Federal reserved and state appropriative water rights.

Chaco Culture National Historic Park

*Prepared draft Scope of Work to define studies necessary to determine the dependence of riparian vegetation in Chaco Wash on seasonal flows and alluvial groundwater for the San Juan Adjudication.

Colorado National Monument

*Reviewed Colorado water right resumes for Water Division 5 to determine if protests were necessary to protect park water rights.

Dinosaur National Monument

*Assisted SOL and the park with the issue of water diversion by the Mantle Ranch.

*Initiated data collection on the Green River to determine instream flow needs for use in settlement discussions with the State of Utah and the Bureau of Reclamation.

*Processed topographic and hydraulic data and produced a two-dimensional flow model for the Island Park area.

*Provided funding to improve a flow routing model for the Green River.

*Prepared a summary of existing literature and research for instream flow needs and water-related resource attributes for the Green River.

*Attended Flaming Gorge Work Group meetings.

*Reviewed Colorado water right resumes for Water Division 6 to determine if protests were necessary to protect park water rights.

Grand Canyon National Park

*Continued South Rim spring monitoring program.

*Conducted technical reviews of proposed settlement alternatives for the Department of Justice (DoJ) in the Little Colorado River Adjudication.

*Briefed park management on status of water rights negotiations in the Little Colorado River Adjudication.

*Prepared draft stipulations with State Parties to resolve water rights issues.

*Provided contract administration of USGS studies to prepare conceptual model and water budget for the regional groundwater flow system and bibliography for the Little Colorado River (LCR) Basin.

*Provided funding to the USGS to continue a well monitoring program designed to monitor water levels and protect water rights in the LCR Basin.

*Participated in settlement discussions with Parties involved in the Little Colorado River adjudication.

*Provided water rights guidance and review of the Draft Environment Impact Statement for Tusayan Growth.

*Assisted Park and Region with response to FOIA request from the Havasupai Tribe.

Hovenweep National Monument

*Briefed park management of status of water rights negotiations with the State of Utah.

*Prepared a draft water rights settlement agreement with the State of Utah to recognize Federal reserved and state appropriative water rights.

*Reviewed Colorado water right resumes for Water Division 7 to determine if protests were necessary to protect decreed water rights.

Hubbell Trading Post National Historical Site

*Briefed park management on status of water rights negotiations in the Little Colorado River Adjudication.

*Provided contract administration of USGS studies to prepare conceptual model and water budget for the regional groundwater flow system and bibliography for the Little Colorado River Basin.

*Provided funding to the USGS to continue a well monitoring program designed to monitor water levels and protect water rights in the LCR Basin.

*Participated in settlement discussions with Parties involved in the Little Colorado River adjudication.

*Prepared draft stipulations with State Parties to resolve water rights issues.

*Assisted park with discussions with the Navajo Nation to develop a water users association for water from the Ganado Irrigation project.

*Assisted the park, SOL, and DoJ in resolving water rights conflicts with the Navajo Nation over the use and delivery fees for the headquarters well.

Mesa Verde National Park

*Reviewed Colorado water right resumes for Water Division 7 to determine if protests were necessary to protect decreed water rights.

Petrified Forest National Park

*Briefed park management on status of water rights negotiations in the Little Colorado River Adjudication.

*Provided contract administration of USGS studies to prepare a conceptual model and water budget for the regional groundwater flow system and bibliography for the Little Colorado Basin.

*Provided funding to the USGS to continue a well monitoring program designed to monitor water levels and protect water rights in the LCR Basin.

*Participated in settlement discussions with Parties involved in the Little Colorado River adjudication.

*Prepared draft stipulations with State Parties to resolve water rights issues.

*Updated and finalized present and future consumptive-use needs for water rights stipulations.

Pipe Spring National Monument

*Assisted with request for information concerning the water use agreement between the NPS, local cattlemen, and the Kaibab Indian Tribe

*Evaluated applications for water rights to be developed near the park.

*Reviewed USGS report on the origin of water issuing from Pipe Springs.

Rainbow Bridge National Monument

*Provided guidance to park management in the resolution of concerns between the NPS and the Navajo Nation for the settlement of water rights issues on Bridge Creek and a spring.

Sunset Crater Volcano National Monument

*Briefed park management on status of water rights negotiations in the Little Colorado River Adjudication.

*Provided contract administration of USGS studies to prepare conceptual model and water budget for the regional ground-water flow system and bibliography for the Little Colorado River Basin.

*Provided funding to the USGS to continue a well monitoring program designed to monitor water levels and protect water rights in the LCR Basin.

*Participated in settlement discussions with Parties involved in the Little Colorado River adjudication.

*Prepared draft stipulations with State Parties to resolve water rights issues.

*Updated and finalized present and future consumptive-use needs for water rights stipulations.

Timpanagos Cave National Monument

*Assisted in negotiations with the Utah State Engineer's Office to resolve reserved water right claims for the park.

Walnut Canyon National Monument

*Provided funding for the crest-stage gaging program with the City of Flagstaff to determine the frequency and magnitude of high flows in the park.

*Continued negotiations with the City of Flagstaff to resolve Federal reserved water right claims for the park.

*Briefed park management on status of water rights negotiations in the Little Colorado River adjudication.

*Provided contract administration of USGS studies to prepare a conceptual model and water budget for the regional groundwater flow system and bibliography for the Little Colorado River Basin.

*Provided funding to the USGS to continue a well monitoring program designed to monitor water levels and protect water rights in the LCR Basin.

*Coordinated with the Forest Service to resolve water rights issues relating to watershed development and water rights ownership at Lower Lake Mary.

*Participated in settlement discussions with Parties involved in the Little Colorado River Adjudication.

*Prepared draft stipulations with State Parties to resolve water rights issues.

Wupatki National Monument

*Briefed park management on status of water rights negotiations in the Little Colorado River Adjudication.

*Provided contract administration of USGS studies to prepare a conceptual model and water budget for the regional ground-water flow system and bibliography for the Little Colorado River Basin.

*Provided funding to the USGS to continue a well monitoring program designed to monitor water levels and protect water rights in the LCR Basin.

*Participated in settlement discussions with Parties involved in the Little Colorado River Adjudication.

*Prepared draft stipulations with State Parties to resolve water rights issues.

*Assisted the park in obtaining affidavits to document the date of first use for Peshlaki and Heiser Springs for inclusion in stipulations for the Little Colorado River Adjudication.

*Updated and finalized present and future consumptive-use needs for water rights stipulations.

Zion National Park

*Assisted SOL in the preparation of the Implementation Plan for the Zion Water Rights Settlement Agreement.

*Provided funding to continue the East Fork stream gage to monitor and enforce the instream flow rights established by the Zion Water Rights Settlement Agreement.

*Assisted park with evaluation of proposed water development near the east entrance.

*Assisted park with evaluation of proposed ditch rehabilitation along Shunes Creek.

*Reviewed and commented on draft publication summarizing sediment studies on the East and North Forks of the Virgin River.

*Evaluated water rights applications to determine if the applications were consistent with the Zion Water Rights Agreement.

ROCKY MOUNTAIN CLUSTER

Planning and Evaluation Branch

Devil's Tower National Monument

*Provided technical review of the Resources Management Plan.

*Assisted park in the evaluation of the fish community monitoring program and the development of long-term sampling protocols for fish populations on the Belle Fourche River.

Grand Teton National Park

*Provided technical assistance and review for the completion of a Water Resources Scoping Report.

*Reviewed and commented on the draft “Snake River Pit Reclamation Planning and Design Resource Book.”

*Met with representatives of the park, the Denver Service Center, the U.S. Army Corps of Engineers, the Environmental Protection Agency, and the Wyoming Department of Environmental Quality to discuss agency comments on alternatives for additional gravel extraction and restoration of the Snake River Gravel Pit; prepared recommendations for park management.

Rocky Mountain National Park

*Provided onsite technical assistance regarding the decline of willow habitat in montane meadows on the east side of the park, including how hydrology and stream geomorphology relate to establishment and maintenance of willows.

Yellowstone National Park

*Reviewed and commented on a wetland Statement of Findings for the West Thumb to Lake Junction road rehabilitation project.

*Assisted staff in locating qualified candidates for wetland delineation projects in the park.

Water Operations Branch

Bent's Old Fort National Historic Site

*Uploaded water quality data from the U.S. Geological Survey National Geochemical Data Base: National Uranium Resource Evaluation Program to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Bighorn Canyon National Recreation Area

*Conducted floodplain analysis on Crooked Creek for a proposed visitor contact facility.

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Black Canyon of the Gunnison National Monument

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Curecanti National Recreation Area

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Florissant Fossil Beds National Monument

*Conducted detailed topographic survey to support dam removal and riparian restoration research.

*Uploaded park-collected water quality data (1992-1997), Environmental Protection Agency R-EMAP data, and data from the U.S. Geological Survey National Geochemical Data Base: National Uranium Resource Evaluation Program to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Fort Laramie National Historic Site

*Documented streambank repairs on the Laramie River with photographs and acquired published reports on the project conclusion.

*Uploaded water quality data from the U.S. Geological Survey National Geochemical Data Base: National Uranium Resource Evaluation Program to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Glacier National Park

*Provided information to new General Management Plan under development regarding flood hazard at various locations in park.

Grand Teton National Park

*Planned wellhead protection.

*Monitored groundwater at sewage lagoons.

*Established baseline hydrogeology for restoration of Snake River gravel pit.

*Conducted a geomorphic assessment of Ditch Creek to evaluate causes and implications of a recent channel avulsion.

*Performed floodplain analysis for a proposed entrance station site and three proposed visitor center sites.

*Conducted geomorphic assessment of the Savage irrigation ditch and the adjoining Gros Ventre River.

*Assessed headgate stability of several irrigation diversions on Spread Creek.

*Participated in a work group coordinated by the Bureau of Reclamation studying the options for management of risk to Jackson Dam from Pilgrim Creek. Authored a section in the final report presenting a hydrologic model for Pilgrim Creek.

*Provided advice regarding flooding potential and geomorphic stability at Moose Headquarters.

*Reviewed water resources scoping report.

*Reviewed draft USGS groundwater report for WRD-funded study.

*Reviewed road drainage issues at Emma Matilda Creek.

Great Sand Dunes National Monument

*Determined cause of disappearance of interdunal wetlands.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Rocky Mountain National Park

*Advised on feasibility of constructing water supply wells for several park facilities.

*Summarized ammonia issues to BRD researchers studying nitrogen effects.

*Assisted in the development of a project statement related to potential geomorphic changes caused by elk overgrazing.

*Examined dying willow stands in abandoned beaver ponds in Moraine Park to determine if hydrologic studies are needed. Provided Park staff with copies of old maps of ditches and hay meadows from water right dockets that may affect declining willow research. Discussed results of Grand Ditch wetland study with researchers.

Yellowstone National Park

*Reviewed several research and monitoring reports on metals contamination in Soda Butte Creek.

*Advised park staff and USGS Project Manager on Quality Assurance/Study Design issues that need to be considered in future studies of Soda Butte Creek.

*Provided park with ammonia and cyanide summaries related to McLaren Tailings water pollution issues and snowmobile air pollution issues.

*Made a site visit and provided alternatives for managing sedimentation problem in sink holes in the Mammoth Hot Springs area.

*Uploaded water quality data from an NPS WRD Technical Report on Water Quality Impacts from Boat Discharges at Bridge Bay Marina in Yellowstone Lake and the USGS National Geochemical Data Base: National Uranium Resource Evaluation Program to STORET.

*Attended a meeting in Cheyenne, Wyoming, related to water quality monitoring in Soda Butte Creek. Negotiated with USGS for NAWQA monitoring in park streams.

*Provided assistance for the development of a park-specific GPRA goal.

*Represented the park at a State of Wyoming Department of Environmental Quality meeting for the development of total maximum daily loads.

Water Rights Branch

Bent's Old Fort National Historic Site

*Evaluated water rights applications filed in Water Division 2 to determine impact of diversions or changes on the park.

Bighorn Canyon National Recreation Area

*Assisted with Resource Management Plan.

Black Canyon of the Gunnison National Monument

*Assisted park and Region with negotiations for the quantification of a reserved water right.

*Conducted studies to quantify reserved water right.

*Reviewed water rights issues associated with the proposed legislation to designate the monument as a national park.

*Evaluated water rights applications in Water Division 4 to determine impact of diversions or changes on the park.

*Provided additional hydraulic modeling to the USGS BRD for use in riparian vegetation studies.

*Participated in the Aspinall Unit Operations meetings.

Florissant Fossil Beds National Monument

*Evaluated water rights applications in Water Division 1 to determine impact of diversions or changes on the park.

*Prepared and finalized a report summarizing park water rights.

*Researched ownership history of lands acquired from the Bureau of Land Management.

Glacier National Park

*Evaluated non-NPS water-right applications to implement the Montana Water Rights Compact.

Grand Teton National Park

*Provided water rights review for the Water Resources Scoping Report.

Grant-Kohrs Ranch National Historic Site

*Monitored progress of Montana adjudication for Basin 76G.

Great Sand Dunes National Monument

*Assisted DoJ, SOL, FWS, and park staff in developing technical strategy to prepare to respond to Stockman's proposed water development.

*Assisted park in the construction of monitoring wells in the Sand Creek area.

*Evaluated water rights applications in Water Diversion 3 to determine impact of diversions or changes on the park.

*Reviewed feasibility report for the Rio Grande Decision Support System.

Rocky Mountain National Park

*Reviewed study to evaluate the effects of Grand Ditch on hydrology of Colorado River and associated wetlands.

*Provided assistance to the park and DoJ in an attempt to resolve water rights issues between the United States and the Grand Lake Metropolitan Recreation District regarding Harbison Ditch.

*Evaluated water rights applications in Water Division 1 to determine impacts of diversions or changes on the park.

Yellowstone National Park

*Evaluated non-NPS water right applications to implement the Montana Water Rights Compact.

*Attended Soda Butte Creek Conference.

*Continued support for investigations by the USGS and Montana Bureau of Mines to describe the hydrogeologic system of the Soda Butte Creek drainage upstream from the park boundary.

*Assisted the park in evaluating its earth resources program needs.

*Collected streamflow data for Soda Butte Creek in support of the Water Rights Compact.

*Negotiated settlement of NPS protests to applications for groundwater.

SOUTHWEST CLUSTER

Planning and Evaluation Branch

Amistad National Recreation Area

*Provided review and recommendations concerning the potential impacts of fishing tournaments.

*Assisted with the development of a DOI fact sheet discussing border-related water resource issues.

Bandelier National Monument

*Assisted the park in the initiation of the development of a Water Resources Management Plan

Big Bend National Park

*Assisted with the development of a DOI fact sheet discussing border-related water resource issues affecting BIBE and the Rio Grande Wild & Scenic River.

*Assisted the park and USGS (Texas District) in developing three project statements relating to water quality needs, which were successfully funded through the NPS-USGS Water Quality Partnership under the Clean Water Action Plan.

*Reviewed and approved the detailed study plan for the FY98/99 WRD-funded project titled "Restore Mosquitofish Habitat."

Big Thicket National Preserve

*Assisted in the development of a water quality-related project statement, which was successfully funded through the NPS-USGS Water Quality Partnership under the Clean Water Action Plan.

*Reviewed and commented on funding proposals for the Oil and Gas EIS/Minerals Management Plan.

*Advised Park staff on methods for improving the accuracy of wetland maps, which will be used to protect resources from potential impacts of oil and gas exploration and development; provided position description for GS-7 wetland specialist.

Carlsbad Caverns National Park

*Advised park staff regarding wetland compliance issues associated with vegetation removal along a powerline right-of-way.

*Provided NPS wetlands compliance and Clean Water Act permit information for a waterline construction project.

*Provided information on wetland delineation, Corps of Engineers 404 permitting program, and NPS wetlands compliance for inclusion into park newsletter.

*Began discussions on wetland delineation project for Rattlesnake Springs.

Chiricahua National Monument/Fort Bowie National Historic Site

*Provided technical review and comment on the General Management Plan project agreement.

Chickasaw National Recreation Area

*Provided technical assistance and review leading to the completion of a Water Resources Management Plan.

Guadalupe Mountains National Park

*Reviewed and provided comments on proposal to remove exotic fish and establish a Rio Grande Cutthroat trout population in McKittrick Canyon.

Lake Meredith National Recreation Area

*Assisted the park with preparation of a response letter to a Corps of Engineers public notice for a project below Sanford Dam, and alongside park property that occurred without a Clean Water Act Section 404 permit.

*Assisted the park with preparation of a funding proposal for fencing to protect riparian wetlands and sensitive spring areas from livestock and human intrusion.

*Reviewed and commented on funding proposals for the Oil and Gas EIS/Minerals Management Plan.

*Provided assistance with NPS wetland compliance and Clean Water Act permit information for various park projects.

Padre Island National Seashore

*Advised Denver Service Center staff regarding wetland compliance issues associated with construction of expanded sewage treatment facilities.

*Reviewed the draft EIS for the Western Planning Area, Gulf of Mexico Outer Continental Shelf Oil & Gas Lease Sales, distributed by the Minerals Management Service.

*Participated in development of the Oil & Gas EIS/Minerals Management Plan, consisting of identification of sensitive resource areas, alternatives development, and evaluation of the affected environment and environmental consequences. Reviewed and commented on the draft EIS.

*Began preliminary discussions concerning NPS wetland compliance and Clean Water Act permit information for the redesign of the wastewater treatment ponds.

Pecos National Historical Park

*Continued development of a final Glorieta Creek channel and floodplain restoration design. Analysis of water level, topographic, and vegetation data yielded a set of design parameters that are being used to fine-tune the initial restoration plan.

*Reviewed and commented on the draft Environmental Assessment for restoration of Glorieta Creek and its floodplain.

Washita Battlefield National Historic Site

*Conducted an on-site visit and meetings with state and local water resources professionals in order to initiate a Water Resources Issues Overview in support of the pending General Management Plan development activities.

White Sands National Monument

*Provided review and comment on a proposal to conduct an experimental introduction of desert pupfish into some pond waters of the park.

Water Operations Branch

Bandelier National Monument

*Provided oversight of a study entitled "Ecological, Hydrological, and Geochemical Effects of the Dome Fire on the Capulin Watershed, Bandelier National Monument, New Mexico."

*Provided comments supporting park as an Outstanding Natural Resource Water (ONRW) in New Mexico.

Capulin Volcano National Monument

*Uploaded water quality data from the USGS National Geochemical Data Base: National Uranium Resource Evaluation Program to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Carlsbad Caverns National Park

*Investigated the hydrogeology of Rattlesnake Springs.

Casa Grande Ruins National Monument

*Assessed impacts of water table declines.

Chickasaw National Recreation Area

*Reviewed park's water quality monitoring program and water quality data. Provided recommendations on monitoring protocols and instrumentation.

Chiricahua National Monument

*Provided guidance and hydraulic information for development of a floodplain Statement of Findings for Bonita Campground.

Coronado National Memorial

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Fort Union National Monument

*Uploaded water quality data from the USGS National Geochemical Data Base: National Uranium Resource Evaluation Program to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Gila Cliff Dwellings National Monument

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Guadalupe Mountains National Park

*Inventoried and assessed potential of unused water supply wells on acquired lands.

*Inventoried and compiled historical data for springs.

*Assisted with hydrogeologic map preparation in support of technical assistance effort.

Lyndon B. Johnson National Historical Park

*Analyzed water quality data collected on the Pedernales River for GMP.

Lake Meredith National Recreation Area

*Rewrote sediment study proposal (including cost estimates) to assess possible contamination from adjacent oil and gas operations.

*Provided guidance and recommendation on the development of an Oil and Gas Management Plan.

Organ Pipe Cactus National Monument

*Conducted dam stability analysis of Quitobaquito Springs water retention structure.

*Provided advice regarding stabilization of hillside erosion in sensitive area.

*Conducted geomorphic assessment of Aguajita Wash where it intersects with Puerto Blanco road.

*Conducted informal water quality monitoring training for park staff.

Palo Alto Battlefield National Historic Site

*Advised on hydrologic monitoring for wetland restoration.

Pecos National Historical Park

*Uploaded water quality data from a Water Quality Assessment of the Pecos River and Glorieta Creek (1995-1997) to STORET.

*Reviewed a final report and served as COTR for WRD-funded water quality project.

*Conducted topographic, wellhead, and construction survey for an ongoing riparian/stream restoration project.

*Provided project coordination and consultation related to the floodplain/wetland restoration project underway. Final design was completed in 1998.

Petroglyph National Monument

*Inspected and submitted recommendations to arrest erosion in the park near a storm water pond in new housing development.

*Uploaded data from a 1961 USGS groundwater report and the City of Albuquerque's stormwater sampling program to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Saguaro National Park

*Evaluated the impact of declining water tables on park water supply well in Avra Valley.

*Assisted with hydrogeologic map preparation.

Salinas Pueblo Missions National Monument

*Uploaded water quality data from the 1997 Water Resource Management Plan and the USGS National Geochemical Data Base: National Uranium Resource Evaluation Program to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

San Antonio Missions National Historical Park

*Interpreted water quality data in determining threat to park.

*Provided detailed comments on draft feasibility study for potential NPS acquisition of lands near Brooks Air Force Base.

*Uploaded an extensive water quality database from the City of San Antonio's Metropolitan Health District and the USGS National Geochemical Data Base: National Uranium Resource Evaluation Program to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Tonto National Monument

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Tuzigoot National Monument

*Provided assessment of water quality, sediments, and other contaminants issues at Tavasci Marsh.

*Assessed potential ecological risks from contaminated sediment in neighboring wetland.

*Developed letter supporting EPA decision to permit the Verde Ranch Development under the stormwater program.

White Sands National Monument

*Reviewed water quality data from adjacent Air Force Base in predicting potential for Park contamination.

Water Rights Branch

Chickasaw National Recreation Area

*Provided technical expertise and contractor's inspections of work to construct a new well to replace Vendome Well.

*Assisted graduate student in preparing thesis proposal to investigate the hydrogeology of the aquifer where the Vendome Well is completed.

Coronado National Memorial

*Monitored progress of San Pedro River adjudication.

Fort Bowie National Historic Site

*Monitored progress of Upper Gila River adjudication.

*Continued negotiation for withdrawal of protests for water right filings for Apache and Mine Tunnel Springs.

Montezuma Castle National Monument

*Monitored progress of Verde River Adjudication.

Pecos National Historical Park

*Assisted SOL and park in determining the water rights status of impoundments on Glorieta Creek.

Saguaro National Park

*Monitored progress of San Pedro and Santa Cruz River Adjudications.

*Reviewed water rights acquired through land exchanges.

Tonto National Monument

*Monitored progress of Salt River Adjudication.

Tuzigoot National Monument

*Monitored progress of Verde River Adjudication.

*Evaluated Tavasci Marsh acquisition proposal to determine if the NPS should acquire rights to Shea Springs.

MIDWEST REGION

GREAT LAKES CLUSTER

Office of the Division Chief

*Served as the official NPS observer to the Great Lakes Commission.

Planning and Evaluation Branch

Grand Portage National Monument

*Assisted park staff with a wetland regulatory issue and provided a model scope of work for a wetland delineation project.

Pictured Rocks National Lakeshore

*Assisted the park in the revision of a 1998 technical assistance request for a Water Resources Scoping Report.

Saint Croix National Scenic River

*Provided technical assistance in the final stages of development of an interagency cooperative fisheries management plan for the St. Croix and Namekagon Rivers.

Sleeping Bear Dunes National Lakeshore

*Provided onsite technical assistance regarding issues including the lack of an adequate inventory and characterization of wetlands, the effects of Platte River dredging on aquatic resources, fish hatchery effluent impacts, impacts of a proposed fish egg-take station, and the effects of tubers and boaters on Platte River channel vegetation.

*Provided technical review of a study plan for the development of zooplankton-based multimetric indices of biological integrity.

Theodore Roosevelt National Park

*Assisted in the technical development and review of a Water Resources Management Plan.

Voyageurs National Park

*Provided technical support for the development of a Water Resources Scoping Report.

Water Operations Branch

Apostle Islands National Lakeshore

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Cuyahoga Valley National Recreation Area

*Commented on draft USGS study of benthic macroinvertebrates and PAH contamination in sediments of tributaries to the Cuyahoga River.

Grand Portage National Monument

*Uploaded park-collected bacteriological data (1981-1991) and water quality data from a Colorado State University report on the Ecological Monitoring of Two Streams (1994-1995) to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Indiana Dunes National Lakeshore

*Commented on draft USGS study of sediment contamination of Grand Calumet Lagoons.

*Reviewed a water quality project proposal for Kampinos National Park in Poland which contains a glaciated lake system similar to the Great Lakes in the USA.

Isle Royale National Park

*Provided a draft plan, including cost estimate, to sample aquatic resources for motor boat pollution.

*Provided information on the effects of motorboats on hydrocarbon water pollution.

*Served as project officer for WRD-funded study entitled "Investigation of Processes Influencing Elevated Fish Mercury Levels in Isle Royale National Park."

*Served as project officer for WRD-funded study entitled "A survey of unionid mussels in the aquatic systems of two National Park Service units." Provided detailed comments on QA/QC needs for general biological studies.

*Continued to serve as project officer for a WRD-funded study on zooplankton populations in backcountry lakes (title: "Enumeration of Zooplankton Samples, Isle Royale National Park").

Pictured Rocks National Lakeshore

*Served as project officer for WRD-funded study entitled "A survey of unionid mussels in the aquatic systems of two National Park Service units." Provided detailed comments on QA/QC needs for general biological studies.

Saint Croix National Scenic Riverway

*Advised on rehabilitation of water supply.

*Coordinated with park and USGS on development of project to monitor sediment and nutrient discharges from tributaries to the St. Croix River to complement other ongoing NAWQA studies. Reviewed and approved study plan for project.

Sleeping Bear Dunes National Lakeshore

*Served as project officer for a WRD-funded study to document the baseline occurrence of mussels in lakes and ponds.

*Provided information on effluent guidelines for fish hatcheries.

*Provided review and comments on NPDES permit for Platte River Fish Hatchery.

*Discussed river dredging and recreation impacts of the Platte River with park staff and concurred with on-site assessment by the NPS wetlands coordinator.

Voyageurs National Park

*Reviewed Water Resources Scoping Report.

*Reviewed park's water quality monitoring program and water quality data. Provided recommendations on monitoring protocols and instrumentation.

Water Rights Branch

Voyageurs National Park

*Reviewed and commented on draft Water Resources Scoping Report.

GREAT PLAINS CLUSTER

Planning and Evaluation Branch

Ozark National Scenic Riverways

*Approved the final report for the WRD-funded project "Inventory and Characterization of the Riparian Zone of the Current and Jacks Fork Rivers."

Tallgrass Prairie National Preserve

*Evaluated the “functional condition” of four representative stream systems using the "Process for Assessing Proper Functioning Condition" method; wrote a project statement describing recommended follow-up evaluations of stream geomorphology in the preserve.

Water Operations Branch

Agate Fossil Beds National Monument

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Badlands National Park

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Buffalo National River

*Delineated karst hydrogeology of the Crooked Creek watershed.

*Revised 35 station descriptions in STORET for the water quality monitoring program.

Homestead National Monument of America

Uploaded data from a Colorado State University report on macroinvertebrate assemblages and water quality (1989-1990) and miscellaneous park records on Cub Creek water quality monitoring (1992-1997) to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Hot Springs National Park

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Missouri National Recreational River

*Uploaded water quality data from the City of Yankton, South Dakota Water Department and the Lewis and Clark Conservation District to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Ozark National Scenic Riverways

*Assisted in evaluating potential impacts of proposed lead exploration and mining in the watershed of the park.

Pipestone National Monument

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Tallgrass Prairie National Preserve

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Theodore Roosevelt National Park

*Provided information on biocriteria, rapid bioassessment methods, remediation goals for uranium, IPM/leafy spurge issues, and herbicide use issues.

Ulysses S. Grant National Historical Park

*Inspected park and developed recommendations on flood and erosion problems.

Wilson's Creek National Battlefield

*Helped develop a baseline water quality monitoring plan.

Wind Cave National Park

*Met with park staff about their surface water resource management program and RMP project statements. Facilitated the electronic transfer of completed, but unpublished, baseline water quality report for immediate park use.

*Uploaded park-collected water quality data and data from the USGS National Geochemical Data Base: National Uranium Resource Evaluation Program to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

NATIONAL CAPITAL REGION

*Reviewed proposed uses of wood preservatives such as CCA and provided summary information on environmental effects of these products.

NATIONAL CAPITAL CLUSTER

Planning and Evaluation Branch

Chesapeake and Ohio Canal National Historical Park

*Assisted the park in developing its FY99 technical assistance request for a Water Resources Scoping Report.

Water Operations Branch

Chesapeake and Ohio Canal National Historic Park

*Assisted DSC in developing recommendations for future work related to providing flood protection to park cultural resources.

Greenbelt Park

*Uploaded park-collected water quality data (1981-1984) and other miscellaneous water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

National Capital Parks-Central

*Uploaded park-collected water quality data (1995-1997) to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

National Capital Parks-East

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Prince William Forest Park

*Provided fiscal and technical management and guidance for WRD funded project to determine post-reclamation water quality of Cabin Branch Pyrite Mine.

Water Rights Branch

Catoctin Mountain Park

*Evaluated the impacts of a permit application filed by State of Maryland and provided assistance to park on a negotiation strategy.

NORTHEAST REGION

ALLEGHENY CLUSTER

Planning and Evaluation Branch

Johnstown Flood National Memorial

*Assisted the park in developing a wetland Statement of Findings for the "Forest Hills Municipal Authority Wastewater Project; South Fork of the Little Conemaugh River." The project involves routing a regional sewer line through the park in a manner that minimizes wetland impacts. Certified the technical adequacy of the wetland analyses and certified consistency with NPS procedures for implementing Executive Order 11990 – "Protection of Wetlands."

New River Gorge National Recreation Area

*Provided a review and comment on a research proposal being developed by NERI for a historic evaluation of native fish populations within the park.

*Provided technical review of draft sections of the Water Resources Management Plan.

Water Operations Branch

Friendship Hill National Historic Site

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six EPA databases.

Johnstown Flood National Memorial

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report in conjunction with Allegheny Portage Railroad National Historic Site.

New River Gorge National River

*Reviewed possible impacts of underground coal mining to Glade Creek.

CHESAPEAKE CLUSTER

Planning and Evaluation Branch

*Assisted in the development of a survey pertaining to Chesapeake Bay Initiative land use issues for NPS units located within the Chesapeake Bay Watershed.

Colonial National Historical Park

*Provided assistance with NPS wetland compliance for the replacement of bridge supports at the Jamestown Island bridges.

Delaware Water Gap National Recreation Area

*Attended a Delaware River Basin Commission meeting on establishing water quality standards and monitoring criteria and to review fishery issues with the park.

Fredericksburg and Spotsylvania County Battlefields Memorial National Military Park

*Assisted the park in developing a wetland Statement of Findings for restoration of the historic landscape at the Bloody Angle**.** Certified the technical adequacy of the wetland analyses and certified consistency with NPS procedures for implementing Executive Order 11990 – "Protection of Wetlands."

Gettysburg National Military Park

*Reviewed and provided comments on the draft GMP/EIS.

Hampton National Historic Site

*Reviewed and provided comments on the General Management Plan project agreement.

Shenandoah National Park

*Continued to provide assistance with Clean Water Act Section 404 permit information on the Hog Camp restoration project.

Valley Forge National Historical Park

*Reviewed and commented on a proposal to "Restore the Forested Riparian Zone along Valley Creek."

Water Operations Branch

Appomattox Court House National Historical Park

*Uploaded water quality data from the USGS National Geochemical Data Base: National Uranium Resource Evaluation Program to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six EPA databases.

Assateague Island National Seashore

*Advised park staff on field protocols for epiphytic algae, rapid bioassessment protocols, and biocriteria.

Colonial National Historical Park

*Responded to several technical assistance requests by providing information on biocriteria/rapid bioassessment protocols, reports, and data generated by Navy contractors, and draft responses for the park.

*Reviewed and commented on various versions of a shallow groundwater proposal submitted by the USGS.

Delaware Water Gap National Recreation Area

*Provided technical guidance in how to determine the extent of groundwater contamination from a leaking, underground storage tank.

*Made recommendations following field inspection of: 1) reducing costs and impact of proposed stream stabilization threatening a cultural site; 2) conducting studies of impact prediction and monitoring changes of dam repairs threatening a rare, protected wetland; and 3) reducing sedimentation in downstream trout fishery and reducing costs during multiple dam deactivation projects.

*Provided coordination and review of WRD-funded project to restore stream channel at Pool Colony and develop dam deactivation protocols.

*Provided assistance with the interpretation of Servicewide GPRA Goal.

Eisenhower National Historic Site

*Reviewed grant proposal for water quality and aquatic life habitat studies in Marsh Creek.

Gettysburg National Military Park

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Hopewell Furnace National Historic Site

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six EPA databases.

Richmond National Battlefield

*Provided continued technical assistance to Park and Regional staff regarding field methods and safety precautions measures.

Shenandoah National Park

*Advised on availability of groundwater for additional development at Lewis Mountain, Camp Hoover, and Dickey Ridge.

*Developed detailed design criteria for multiphase, stream restoration project.

*Reviewed watershed study protocol for collection of hydrochemical data by the University of Virginia.

Thomas Stone National Historic Site

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six EPA databases.

NEW ENGLAND CLUSTER

Planning and Evaluation Branch

*Provided technical review and comment on the Boston Harbor Islands and New Bedford Special Resource Studies project agreements.

Acadia National Park

*Assisted in developing the draft Water Resources Management Plan.

Cape Cod National Seashore

*Reviewed and commented on the draft Water Resources Management Plan.

Fire Island National Seashore

*Reviewed and approved the detailed study plan for the FY98/99 WRD-funded project "Monitor Estuarine Habitat."

Saratoga National Historical Park

*Continued work on the Water Resources Management Plan draft, which will be completed in 1999.

Water Operations Branch

Acadia National Park

*Assisted in interpreting lead concentrations in soil, reviewed the State of Maine's response, and developed a sampling plan to further define contamination.

*Advised on mercury issues and ammonia/nitrogen issues.

*Reviewed USGS Biomonitoring of Environmental Status and Trends Program plans to do additional work in the Park.

*Provided fiscal and technical management and guidance for WRD funded project to do nutrient loading monitoring of the Northeast Creek estuarine watershed.

Cape Cod National Seashore

*Assessed ecological impacts of groundwater withdrawals on aquatic resources.

*Studied eutrophication trends in the past 500 years in kettle pond sediments.

*Reviewed final reports and recommendations from the Lower Cape Water Management Task Force.

*Assessed impacts of groundwater withdrawals by Provincetown from the North Truro Air Base.

Gateway National Recreation Area

*Explained to park staff the various steps that would have to completed to determine if fish are being feminized by endocrine disrupting chemicals.

Morristown National Historical Park

*Provided review and comments on draft report entitled "Morristown Park Bacterial Study."

Sagamore Hill National Historic Site

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six EPA databases.

Saratoga National Historical Park

*Provided review of proposed study plan to quantify presence of hazardous materials.

Water Rights Branch

Cape Cod National Seashore

*Monitored progress of ongoing work to address effects of groundwater withdrawals on aquatic resources.

*Reviewed and accepted scope of work for aquatic invertebrates inventory.

*Provided guidance to park management on sale and lease of park water and water rights.

*Reviewed methods for possible exchange of NPS rights to Provincetown.

PACIFIC WEST REGION

Participated in the "Earth Processes in Park Management" session of the Pacific West Region's Vital Signs Workshop. Products of the workshop included recommendations for including dynamic earth processes such as erosion and sedimentation in NPS management policies and guidance.

COLUMBIA CASCADES CLUSTER

Planning and Evaluation Branch

Crater Lake National Park

*Advised park staff regarding wetland compliance requirements for a temporary structure to enhance native fish species.

Mount Rainier National Park

*Through WRD's Affiliates Program, Mount Rainier was provided technical assistance in developing a proposal and plans to conduct a fresh water mollusk survey by Sue Jennings of Saint Croix NSR. Sue visited the park and spent one week working with park staff reviewing data and reports, identifying issues of concern, compiling a list of probable species, and writing a Resource Management Plan project statement to conduct a baseline inventory of mollusks.

Olympic National Park

*Provided assistance with NPS wetland compliance and Clean Water Act permit information for the Lake Crescent boat dock replacement.

San Juan Island Historical Park

*Reviewed and approved a final study plan for the WRD-funded project "Inventory and Characterize Wetland Resources."

Whitman Mission National Historical Site

*Provide assistance on possible wetland restoration alternatives for the Doan Creek project.

Water Operations Branch

City of Rocks National Reserve

*Uploaded water quality data from the USGS National Geochemical Data Base: National Uranium Resource Evaluation Program to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Crater Lake National Park

*Provided extensive technical comments to Oregon State principal investigator on the draft report summarizing petroleum hydrocarbons in Crater Lake.

*Uploaded data from a 1996 Baseline Study of Water Resources by the University of Idaho, park-collected water quality data (1995-1997), and data from the USGS National Geochemical Data Base: National Uranium Resource Evaluation Program to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six EPA databases.

North Cascades National Park

*Reviewed contractor's proposal to further define groundwater contamination from a now-removed, leaking underground fuel tank at Hozomeen Campground.

*Participated in a Long-Term Ecological Monitoring (LTEM) workshop and developed project statements for the development of a long-term water resources monitoring program.

Olympic National Park

*Participated in an Environmental Monitoring Workshop and identified opportunities for partnership with state and Federal regulatory agencies.

*Provided information on the potential hazards of Silv-ex, a fire-fighting chemical spilled into a park creek.

*Inspected conditions associated with bank erosion at Kalaloch Lodge.

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Reviewed draft USGS report for NAWQA nutrient study in the Elwha River Basin.

Oregon Caves National Monument

*Uploaded park-collected water quality data (1992-1993) from a baseline water inventory of waters in, near, and contributing to the cave system to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six EPA databases.

San Juan Island National Historical Park

*Helped park staff focus ideas on how to do a baseline study of marine biological resources.

Water Rights Branch

City of Rocks National Reserve

*Assisted DoJ and SOL as requested in ongoing Snake River Basin Adjudication.

Crater Lake National Park

*Coordinated with SOL and DoJ, as well as technical specialists from other agencies, to ensure consistent claims for Federal reserved water rights.

*Assisted in developing strategies for protecting the park's authorization to use water, specifically as it relates to water right priority.

*Reviewed alternative water development scenarios and provided recommendations to the park, SOL, and DoJ for use in water rights negotiations with the Annie Creek water users.

*Participated in Klamath Alternative Dispute Resolution (ADR) process to secure greater understanding and acceptance of the park's water right claims.

*Initiated settlement discussions with water rights users in Annie Creek, within the context of ADR, to attempt to resolve conflicts over water use in Annie Creek and obtain recognition of Federal reserved water rights in the Klamath Adjudication.

Craters of the Moon National Monument

*Assisted DoJ in finalizing a decree that recognizes boundary modifications and NPS claims in the Snake River Basin Adjudication.

Lake Roosevelt National Recreation Area

*Assisted park in the completion of the Water Resources Management Scoping Report.

San Juan Island National Historical Park

*Prepared revised draft hydrologist's report on park water resources and rights.

PACIFIC/GREAT BASIN CLUSTER

Planning and Evaluation Branch

Cabrillo National Monument

*Assisted with the development and holding of a workshop session with local marine experts and agency officials to address the issue of declining intertidal marine organisms within the park.

Death Valley National Park

*Provided onsite review of alternatives and began the process of assessing the environmental impacts of modifying the water delivery systems in the Furnace Creek area of the park.

*Reviewed and commented on a draft report titled "Wetland and riparian resources of Death Valley National Park and their susceptibility to water diversion activities."

*Provided on-site technical support to view the Furnace Creek infiltration gallery/water delivery system and Travertine Springs ecosystem. Began discussions on preparing an EIS to evaluate alternatives for water collection and delivery.

Golden Gate National Recreation Area

*Advised park staff on wetland compliance requirements related to the Big Lagoon restoration and other wetland issues.

Great Basin National Park

*Through the Fisheries Affiliates Program, Great Basin was provided technical assistance and recommendations concerning a cooperative interagency program to reestablish the native Bonneville Cutthroat trout to park streams.

Joshua Tree National Park

*Visited the park and provided an evaluation of the potential management problems and methods for the control of exotic goldfish within the Baker Dam reservoir.

Lake Mead National Recreation Area

*Reviewed a draft Bureau of Reclamation EIS for construction of the Clark County Wetlands Park along the Las Vegas Wash, which ultimately flows into the park.

Mojave National Preserve

*Assisted in the development of a scope of work for and the technical review of the draft Water Resources Scoping Report.

Redwood National Park

*Reviewed the draft report "Management and Restoration Alternatives for the Redwood Creek Estuary and Draft Environmental Assessment" and determined that no wetlands Statement of Findings would be required for the restoration effort.

Yosemite National Park

*Reviewed and commented on four drafts of the wetland delineation report for the campground redevelopment project. Visited the park to view the project area and discuss site-specific wetland delineation questions.

*Provided assistance with NPS wetland compliance and Clean Water Act permit information for the Mirror Lake Trail.

*Reviewed and commented on the EA and FONSI for the Cook's Meadow restoration project.

Water Operations Branch

Cabrillo National Monument

*Participated in scoping meeting to determine the park's water quality issues.

Channel Islands National Park

*Informed park staff of methods necessary to determine if soil contaminated by diesel fuel components (PAHs, alkyl PAHs, and Benzene/Toluene/Ethyl Benzene/Xylene) have been effectively bio-remediated.

*Conducted floodplain and channel hydraulic analysis for Windmill and Cherry Creeks.

*Established high accuracy control and monuments for stream channel reference sites on Quamada Creek.

*Prepared hydrologic and geomorphic analysis of the December 1997 flood on Scorpion Creek.

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Provided field assistance for the establishment of a riparian monitoring system on Santa Rosa Island.

*Provided fiscal and technical management and guidance for a WRD-funded project to initiate restoration of riparian communities on Saint Rosa Island.

Death Valley National Park

*Advised on alternative sources of potable water for the Furnace Creek area.

*Served as project officer and technical advisor on a WRD-funded project to study aquatic invertebrate fauna and water quantity and quality issues in the Travertine and Nevares Springs complex. A unique suite of insect and mollusk species characterizes this complex.

Devils Postpile National Monument

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six EPA databases.

Golden Gate National Recreation Area

*Provided recommendations on types of equipment for analyzing ammonia, nitrate, and phosphorus.

*Provided interpretation on the applicability of Section 401 of the Clean Water Act to grazing activities in the Park.

John Muir National Historic Site

*Provided assistance regarding flooding and erosion issues by developing a project statement to assess watershed conditions and participated in local watershed planning group and flood control district proposals.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Joshua Tree National Park

*Coordinated completion of WRD-funded investigation of historical water and chemistry study to be incorporated into the park's baseline water quality report. Provided hydrological support to park staff during landfill permitting process.

Lake Mead National Recreation Area

*Assisted park in managing a group of technical experts tasked with determining the seriousness of pesticide levels in Lake Mead fish. Wrote up the results and helped explain the meaning of the results and accompanying quality assurance information to park management and to the press.

*Attended a national perchlorate meeting, advised park on perchlorate issues, and began serving as part of an interagency review team on perchlorate issues.

*Provided detailed review comments on a State of Nevada draft document entitled “Las Vegas Wash – Lake Mead Water Quality Standards Rationale.”

*Advised park staff on petroleum contamination issues relating to jet skis and other personal watercraft.

*Provided professional support and technical assistance in the field on an erosion prevention project to protect a rare, native grass meadow in the Shivwits area.

*Participated in Long-Term Ecological Monitoring Workshop.

Lava Beds National Monument

*Uploaded some old U.S. Geological Survey water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Mojave National Preserve

*Assisted in the preparation of a Water Resources Scoping Report.

*Conducted detailed floodplain and channel hydraulic analysis for proposed visitor center at Kelso Depot and developed recommendations for mitigation of flood hazard.

*Conducted floodplain analysis for Hole In The Wall Campground.

Point Reyes National Seashore

*Assisted the park in developing a project proposal to document impacts of grazing, agriculture, and recreation on key water resources. Reviewed and approved study plan for project.

Redwood National Park

*Reviewed and discussed with park staff a study plan for sediment monitoring and analysis.

Whiskeytown-Shasta-Trinity National Recreation Area

*Advised park and Regional staff on petroleum contamination issues relating to jet skis and other personal watercraft.

*Attended a meeting and field tour of watershed restoration efforts by a local community college that is stabilizing old logging roads in the park. Assessed shoreline erosion problem on large recreational reservoir and made recommendations for repairs.

Yosemite National Park

*Advised on feasibility of constructing water supply wells in the Tuolumne Meadows area.

*Provided advice and technical assistance to park staff regarding the proposed removal of Cascade Diversion Dam. Techniques for the management of sediment stored behind the dam and implications to downstream water quality were discussed. A site visit was made with a bank stabilization expert from Bureau of Reclamation to develop alternatives for innovative erosion control at this project site.

*Participated on a team responsible for responding to public comment on the draft Valley Implementation Plan EIS.

*Continued to assist the park in evaluating flood-frequency issues associated with the January 1997 flood on the Merced River.

*Participated extensively with park staff and DSC personnel in the development of alternatives related to flood recovery activities.

*Processed and delivered information related to cross section surveys of Cascade Dam sediment deposition and downstream environments from previous year. Utilized baseline monitoring format for consistency with park database. Survey data file was also sent to project engineers with the Federal Highway Authority at the park's request.

*Revised and sent fresh copies (analog and digital) of flood inundation maps to the park.

Water Rights Branch

Death Valley National Park

*Continued development of project and study plans to protect water rights.

*Coordinated investigations with other entities at the seventh annual Devil's Hole workshop in Stateline, NV.

*Monitored Devil's Hole pool level and discharge of Nevares, Texas, and Travertine springs.

*Protested 19 Nevada Water Right applications.

*Negotiated with U.S. Ecology, Inc. concerning its water right applications in Amargosa Desert and recommended to the park that the protest be withdrawn.

*Compiled and reviewed monitoring data on Department of Energy and Barrick Bullfrog water permits. Completed report summarizing the status of the Barrick Bullfrog monitoring program.

*Completed report summarizing the status of the Saga Exploration monitoring program.

*Completed water rights section for report on potential lands for Timbisha Indian Tribe and reviewed the entire report.

*Continued multi-year USGS study of evapotranspiration at Death Valley salt pan.

*Assisted DoJ with preparation of memorandum of understanding among Federal agencies that manage lands in southern Nevada.

*Prepared comments on report on outside threats to the groundwater resources of the Park.

*Prepared funding initiatives to expand NPS's technical investigations in the Death Valley groundwater system.

*Reviewed USGS proposal to update Death Valley regional groundwater flow model and prepared task order. Participated in USGS-DOE planning meetings on model development.

*Reviewed water uses data report and initiated update to report.

*Provided Nye County with monitoring data for Devils Hole and DEVA Springs.

*Reviewed proposal by USGS to develop statistical analysis of Devils Hole data.

*Reviewed DOE's UGTA ground-water flow model.

Golden Gate National Recreation Area

*Assisted in negotiations with Muir Beach Community Services District concerning the District's Redwood Creek application.

*Assisted the park in the development of a study to determine the hydrologic connectivity between Muir Beach's groundwater pumping and streamflow in Redwood Creek.

*Initiated research into the status of water rights held for Stinson Beach.

Great Basin National Park

*Completed field reconnaissance of Baker, Lehman, and Snake Creeks and the proposed withdrawal by the Baker General Improvement District (BGID).

*Prepared report on the potential effects of groundwater withdrawal by BGID.

*Provided guidance to park concerning White Pine County's proposed water development plan.

*Provided comments on water rights language in a grazing permit.

Lake Mead National Recreation Area

*Submitted annual report to Moapa Valley Water District regarding Rogers Spring as required by monitoring plan.

*Reviewed draft report of findings for the investigation by Desert Research Institute of the origin and flowpaths of water issuing from selected springs.

*Completed field reconnaissance of the Coyote Springs Valley, Muddy River, and Rogers-Bluepoint Springs areas.

*Provided funding to monitor discharge of Rogers Spring.

*Protested 19 water right applications.

*Developed contract for assistance in planning and installing flume to replace deteriorated weir at Rogers Spring and installed a flume to monitor spring discharge at Rogers Spring.

Point Reyes National Seashore

*Provided water rights assistance for the Giacomini land exchange including a request by North Marin to purchase water rights associated with the Giacomini land exchange.

*Provided water rights assistance on Pasternak's request to drill a horizontal well in Devil's Gulch.

*Reviewed opportunities to file petitions with the State Water Resources Control Board to change water rights to instream beneficial uses.

Multi-Park

*Reviewed water right applications for Nevada and California.

*Attended the annual conference of the Nevada Water Resources Association.

*Submitted Reports of Licensee and Progress Reports for California parks.

*Prepared comments on draft Nevada State Water Plan.

*Provided assistance to parks in Washington and the SOL to determine if the NPS needed to register claims with the state.

PACIFIC ISLAND CLUSTER

Planning and Evaluation Branch

American Memorial Park

*Reviewed the draft report "Hydrogeomorphic Functional Assessment Method for Depressional Wetlands of the Northern Mariana Islands," prepared by an interagency team consisting of the Corps of Engineers Waterways Experiment Station, EPA, Natural Resources Conservation Service, U.S. Fish and Wildlife Service, and the Commonwealth of the Northern Mariana Islands Governor's Office and Division of Environmental Quality.

*Worked with the USGS (Honolulu), the U.S. Fish and Wildlife Service (Saipan), and Park staff to develop a proposal titled "Characterize Hydrology, Water Quality, and Salinity Regime of the American Memorial Park Palustrine Wetland for Use in Evaluating Restoration Potential."

Kaloko-Honokohau National Historical Park

*Provided review and comments on a report concerning "Development of a monitoring program to assess physical, chemical and biological components of Kaloko Fishpond."

National Park of American Samoa

*Continued to gather information for the development of the Water Resources Scoping Report for the Park. This included working with the Honolulu Office of the Army Corps of Engineers to obtain several obscure documents.

War-in-the-Pacific National Historic Park

*Provided technical assistance in the development of a post-Typhoon Paka assessment plan for marine resources.

*Assisted in developing a project proposal for the characterization of coral reefs within the park.

Water Operations Branch

Haleakala National Park

*Uploaded water quality data from the Alelele Stream Assessment conducted by the USGS Biological Resources Division (1994-1995) to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Hawaii Volcanoes National Park

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Kaloko-Honokohau National Historical Park

*Assessed potential impact of Park's septic leachfield.

*Assisted in the determining the impacts on water quality from the discharge of wastewater.

*Advised park, Region, and USGS on the meaning of groundwater data on phenols.

*Summarized risks of increased avian botulism and other biological effects which might result from sewage inputs to the Aimakapa fishpond.

*Evaluated potential impacts from wastewater discharges on Aimakapa Pond and anchialine pools near a proposed park visitor center. Developed analysis model and produced a technical report for DSC and the park.

*Co-authored report entitled "Potential Influences of Wastewater Discharges on Aimakapa Pond and Adjacent Anchialine Pools."

*Reviewed the Texas A&M data on pesticides, PAHs, and other contaminants and wrote up a summary of what the data means.

*Reviewed draft USGS groundwater assessment report for WRD-funded study at park.

Pu'uhonua o Honaunau National Historical Park

*Uploaded water quality data from an Evaluation of Anchialine Fishponds (1992) and an Aquatic Survey of the Kona Coast Ponds (1974) to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Water Rights Branch

Kalaupapa National Historical Park

*Prepared draft hydrology report for Waikolu Stream.

Kaloko-Honokohau National Historical Park

*Continued a groundwater modeling study with USGS to determine effects of proposed groundwater withdrawals.

*Reviewed USGS report on groundwater system and potential effects of pumping on park water resources.

Multi-Park

*Reviewed well applications for potential impacts to park water resources.

SOUTHEAST REGION

APPALACHIAN CLUSTER

Planning and Evaluation Branch

Cumberland Gap National Historical Park

*Assisted the park and Denver Service Center in developing a wetland Statement of Findings for the relocation of U.S. Highway 58. Certified the technical adequacy of the wetland analyses and certified consistency with NPS procedures for implementing Executive Order 11990 – "Protection of Wetlands."

*Provided technical assistance for and concurred with an Executive Order 11990 "Wetlands Statement of Findings" for the US Highway 58 Road Relocation. Assisted DSC and the Southeast Regional Office with evaluation of a draft wetland restoration plan.

Moores Creek National Battlefield

*Completed a trip report that sets the stage for restoring a drained savannah wetland just north of the park visitor center. The report included: 1) an "existing conditions" vegetation map; 2) locations of relic savannah wetland plant species (including state rare, threatened, and endangered species); 3) a hydrologic restoration plan; and 4) recommendations for a new prescribed fire regime.

*Applied for and received a Clean Water Act Section 404 permit and state water quality certification for the savannah wetland restoration project.

*Prepared a project statement for vegetation monitoring within the savannah restoration area. Vegetation plots and transects will be used to periodically assess the progress of restoration and to determine the need for any supplemental restoration measures.

*Prepared a justification for moving a small parking lot drain so that runoff does not compromise restoration of the savannah wetland.

Obed Wild & Scenic River

*Provided technical support and review in the completion of the Water Resources Management Plan.

Water Operations Branch

Abraham Lincoln Birthplace National Historic Site

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Big South Fork National River and Recreation Area

*Evaluated potential impacts of septic leachfield in floodplain of Charit Creek.

*Provided park staff with guidance on methods that might be used to monitor mussels and other invertebrates and overall biological and chemical integrity using rapid bioassessment.

*Participated in progress and status review of Gannett-Flemming report for Phase III Conceptual Alternatives for Remediating Contaminated Mine Drainage Sites. Facilitated uploading of Ganett-Flemming Phase III report for procurement process.

*Finalized Scope of Work to obtain professional A&E services for remediation of contaminated mine drainage.

*Finalized Tasking Order to obtain government procurement services from the Department of Energy.

*Assisted in design of poster depicting use of watershed prioritization process for contaminated mine drainage.

*Provided comments to the State of Tennessee for designation of the Big South Fork of the Cumberland River as an Outstanding National Resource Water.

*Assisted with the development of an agenda and coordination of a meeting for multi-agency watershed restoration group.

Carl Sandburg Home National Historic Site

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Cowpens National Battlefield

*Uploaded water quality data from the U.S. Geological Survey National Geochemical Data Base: National Uranium Resource Evaluation Program to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Cumberland Gap National Historical Park

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Great Smoky Mountains National Park

*Provided review and recommended revisions to the Foothills Parkway Water Quality Monitoring Plan.

Guilford Courthouse National Military Park

*Uploaded water quality data (1996-1998) from the City of Greensboro Storm Water Runoff Services to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Mammoth Cave National Park

*Provided fiscal and technical management and guidance for a WRD-funded project to establish a water quality monitoring program.

Obed Wild and Scenic River

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

*Provided interpretation of the anti-degradation policy to the park.

Russell Cave National Monument

*Uploaded water quality data from a 1994 Assessment of the Ecological Resources of the Caves (1992-1993) to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

Stones River National Battlefield

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Water Rights Branch

Obed Wild and Scenic River/Big South Fork National River and Recreation Area

*Evaluated proposal to divert water from Lake Cumberland by McCreary County and prepared request for assistance by SOL.

*Reviewed study plan prepared by Corps of Engineers for evaluating water supply alternatives in the Cumberland Plateau region.

*Provided funding for the initiation of streamflow monitoring on Obed River.

ATLANTIC COAST CLUSTER

Planning and Evaluation Branch

Canaveral National Seashore

*Assisted in the preparation of a project statement for the development of a Water Resources Management Plan.

*Reviewed and commented on draft DCP/EA for Seminole Rest.

*Participated in multi-agency symposium on research and monitoring projects in Mosquito Lagoon.

Chattahoochee River National Recreation Area

*Provided technical review and oversight for the development of a Water Resources Management Plan. Assisted with researching and obtaining existing hydrological information from local counties, area environmental firms, the University of Georgia, Georgia Environmental Protection Division, Georgia Game and Fish Division, U.S. Fish and Wildlife Service, U.S. Geological Survey, and National Resources Conservation Service.

Fort Pulaski National Monument

*Advised park and Regional staff regarding wetland compliance requirements associated with construction of a parking lot in an area that may be wetland habitat.

Water Operations Branch

Canaveral National Seashore

*Informed park staff of potential for perchlorate contamination in groundwater and the possible consequences thereof.

Cape Hatteras National Seashore

*Investigated potential for impacts to water quality in the shallow groundwater system from septic field leachate.

Castillo de San Marcos National Monument

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Congaree Swamp National Monument

*Reviewed USGS Biomonitoring of Environmental Status and Trends Program report for the Park and provided comments for improving the process.

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Fort Frederica National Monument

*Issued a Baseline Water Quality Data Inventory and Analysis Report documenting water quality data retrievals from six Environmental Protection Agency databases.

Timucuan Ecological and Historic Preserve

*Recommended detailed study design and lab methods changes related to a sediment contaminants and fish study entitled: "Comparative Evaluation of Physical and Biological Parameters…."

Water Rights Branch

Cape Hatteras National Seashore

*Coordinated (through East Carolina University and the Virginia Institute of Marine Science) studies to monitor/assess potential impacts of water withdrawals on island vegetation.

*Continued North Carolina State University investigation to describe spatial and temporal variations of water table.

GULF COAST CLUSTER

Planning and Evaluation Branch

Big Cypress National Preserve

*Assisted in candidate evaluation for BICY hydrologist position.

*Prepared Park Science article on BICY's hydrology program.

*Reviewed Seminole permit applications for Big Cypress Reservation.

*Assisted with USGS/NPS project statement on Barron River Canal.

Biscayne National Park

*Provided on-site technical support to review park commercial and recreational fishing issues and to assist in the development of a funding proposal calling for the development of a Park Fisheries Management Plan.

Dry Tortugas National Park

*Consulted with park managers on a proposed "No-take" Ecological Marine Preserve within the Florida Keys National Marine Sanctuary (adjacent to DRTO) and attended workshop sessions held by the National Marine Sanctuaries program office on the proposed ecological preserve.

Everglades National Park

*Assisted the park in developing a combined wetland and floodplain Statement of Findings for the "Taylor Slough Bridge Replacement and Old Ingraham Highway Removal." Certified the technical adequacy of the wetland and floodplain analyses and certified consistency with NPS procedures for implementing Executive Orders 11990 – "Protection of Wetlands" and 11988 – "Floodplain Management."

*Reviewed and commented on the "Environmental Assessment: Hole-in-the-Donut Soil Disposal."

*Advised park staff regarding wetland compliance needs associated with construction of a temporary visitor center at Flamingo.

Gulf Islands National Seashore

*Advised park staff regarding failure by the developer of an adjacent housing subdivision to meet a number of 404 permit conditions that were supposed to protect park wetlands.

*Continued to provide assistance concerning the Beverly Place Subdivision by reviewing permit conditions and non-compliance photos.

Jean Lafitte National Historical Park and Preserve

*Reviewed and commented on the "Plan of Operations and Environmental Assessment of Proposed Three Dimensional Seismic Testing within and near the Jean Lafitte National Historic Park and Preserve." The plan covered the Couba Island area of the park and concerned oil and gas exploration using 3-D seismic techniques.

*Reviewed and approved the detailed study plan for the WRD-funded project titled "Monitor Tallow Invasion."

*Provided preliminary assistance with NPS wetland compliance for the maintenance yard expansion.

Natchez Trace Parkway and National Scenic Trail

*Participated on a WRD team providing assistance to Natchez Trace Parkway in the evaluation and review of the proposed Red Hills lignite mine adjacent to the Jeff Busby section of the Parkway. Met with the mining company representatives, provided a review of the state mining application and the draft EIS, and provided recommendations to the park on permit stipulations, additional study requirements, and monitoring needs with respect to fishery resources.

*Reviewed and commented on a wetland delineation contractor bid and a draft and final wetland delineation report for four replacement bridges: Cypress Creek, Cypress Creek Relief, Dulen (Cooper) Branch, and Sweetwater Branch. Provided assistance with NPS wetland compliance.

*Provided technical assistance for and concurred with an Executive Order 11990 "Wetlands Statement of Findings" for the section 3X, southern terminus road segment EIS. Provided assistance in locating wetland restoration sites to serve as mitigation for wetlands impacted from the project.

*Reviewed and commented on the draft Wetland Statement of Findings for the Palmetto Road (3D26) EA.

*Reviewed and commented on funding proposals for the Red Hills Power Project EIS, reviewed the wetland delineation report, reviewed and commented on the draft EIS and permit, compiled Water Resource Division comments on the draft EIS, and reviewed the Record of Decision.

New Orleans Jazz National Historical Park

*Reviewed the General Management Plan for the Park.

Water Operations Branch

Big Cypress National Preserve

*Reviewed USGS and park plans for a study of Barron River contaminants. Provided suggestions for methods.

*Verified and updated the secondary names of the park's water quality monitoring stations in STORET.

Big Thicket National Preserve

*Assessed causes and provided recommendations regarding extreme bank erosion at a public swimming beach.

*Evaluated design alternatives for stabilization of high pressure gas line exposed at an eroding stream bank.

*Reviewed groundwater system for analysis of potential impacts due to 3-D seismic operations.

*Provided assistance on the evaluation of contamination of environmental media from oil and gas operations.

*Provided guidance and recommendation on the development of an Oil and Gas Management Plan.

Biscayne National Park

*Interpreted water quality data from neighboring Air Force base and solid waste landfill.

*Drafted a letter for the Superintendent's signature to provide detailed comments on the Air Force Remedial Investigation and Risk Assessment for operating Unit 11 of Homestead Air Force Base.

*Drafted a letter for the Superintendent's signature summarizing criteria which should be considered in the clean-up of Military Canal and stating why NPS needs to be part of the Homestead Air Force Base Closure Team.

*Analyzed an extensive EPA data set, then drafted a letter for the Superintendent's signature summarizing the meaning of the EPA sediment data collected from Military Canal. Attended a meeting with EPA and the Superintendent to discuss the meaning of the data.

*Represented the park at various technical meetings discussing contamination impacting Biscayne Bay. Helped lead a series of interagency meetings that resulted in the development of preliminary water quality goals for ammonia and other contaminants in various Biscayne Bay habitats.

*Helped design and select a principal investigator for a new study of the effects of groundwater ammonia on Biscayne Bay.

*Assisted park in finding potential sources of color IR remote sensing images to be used in finding zones of groundwater influence in the bay.

*Reviewed and commented on technical portions of the draft supplemental EIS for Homestead Air Force conversion to public uses.

*Attended an interagency meeting and summarized technical aspects of groundwater concerns to USGS researchers working on related topics.

Buck Island Reef National Monument

*Uploaded a variety of water quality data to STORET in preparation for producing a Baseline Water Quality Data Inventory and Analysis Report.

De Soto National Memorial

*Assessed the potential for water quality impacts from neighboring residential development.

Everglades National Park

*Advised staff on parking lot contaminants and lot runoff mitigation.

Jean Lafitte National Historical Park and Preserve

*Provided hydrologic and hydrochemical review of proposed 3-D seismic operation.

*Attended NAWQA liaison committee meeting and assisted staff in scoping and developing water quality monitoring projects.

Natchez Trace Parkway and National Scenic Trail

*Assisted in evaluating potential water resource impacts of proposed lignite strip mine (and associated power plant) immediately adjacent to the park and reached agreement with mining company to collect water data before, during, and following mining.

*Assisted in the development of hydrologic data related to a proposed coal mining operation adjacent to the Parkway.

Padre Island National Seashore

*Responded to Louis Dreyfus appeal of Section 9 B demand letter for clean-up requirement at Yarborough Pass site.

*Developed analysis of metal contamination at Yarborough Pass facility.

*Provided guidance and recommendation on the development of an Oil and Gas Management Plan.

*Provided review comments on Oil and Gas Management Plan and Environmental Impact Statement.

*Advised on methods and recommended QA/QC methods related lab and field protocols for collection of petroleum contaminated samples.

*Provided information on mercury in soils based on other studies around the country, including those from nearby Lavaca Bay and experiences of Florida and Wisconsin researchers.

*Wrote the sampling protocol "Guideline for the Detection and Quantification of Contamination for Pre- and Post-Oil-and-Gas Operations" for the Oil and Gas Management Plan/EIS.

Virgin Islands National Park

*Coordinated WRD-funded road erosion and sediment study, reviewed study plans, and directed extensive research equipment preparation, property management, and instrument repairs.

*Revised and updated Park-collected (1988-1997) water quality data in STORET.

Water Rights Branch

Natchez Trace Parkway and National Scenic Trail

*Assisted the Park with water rights information concerning proposed lignite mine.

SERVICEWIDE

Assisted in the development and presentation of the WRD Hydrologist/Aquatic Resources Professional Meeting conducted from October 26-30, 1998.

Participated in the General Management Plan "Choosing by Advantage" priority setting meetings for FY99 – FY01.

Participated in SERO Project Statement Improvement Workshop.

Reviewed and commented on two Federal Register notices proposing changes to the Clean Water Act Section 404 Nationwide Permit program. Disseminated information to the Natural Resource Bulletin Board, WRD quarterly report and monthly ADNRSS report on the proposed changes to the Nationwide Permit program. Provided individual assistance to Regional Water Resource Program Managers concerning the changes.

Reviewed the 4th Circuit Court ruling on regulation of wetlands. Reviewed the appellate court's decision on revoking the Tulloch Rule concerning wetland activities regulated by the Corps of Engineers.

Chaired a 6-paper session at the annual Society of Wetland Scientist's conference titled "Variations on a Theme: The Diversity of Wetland Ecosystems."

Completed final publication of *Director's Order #77-1: Wetland Protection* and *Procedural Manual #77-1: Wetland Protection.*

Completed publication of a Water Resources Division Fisheries Program Factsheet.

Prepared a draft revision of the "Wetlands" section of the *NPS Management Policies*.

Reviewed and commented on the draft revision of the "NPS Cultural Resource Management Guideline."

Presented a lecture on wetland and floodplain protection and management for the "Fundamentals for Natural Resources Managers" course at the Albright Training Center.

Applied for and received a grant from the NPS "Parks as Classrooms" program to co-fund reprinting of the brochure "Wetlands in the National Parks." Coordinated revision, printing, and Servicewide distribution of the brochure.

Reviewed and wrote NPS comments on a Federal Register notice proposing changes to the Clean Water Act Section 404 Nationwide Permit program.

Developed NPS definitions and interpretations of wetland terms (e.g., creation, enhancement, and restoration) for the Federal Geographic Data Committee, Wetlands Subcommittee.

Attended a National Forum on Contaminants in Fish sponsored by the American Fisheries Society, EPA, and USF&WS. During this Forum, the Federal Action Plan for providing technical assistance to State, Tribes, and others regarding contaminants in fish and health risks was reviewed.

Reviewed and provided comments to the Department on the National Marine Fisheries Service's proposed Interim Final Rule to Implement the Essential Fish Habitat Provisions of the Magnuson-Stevens Fishery Conservation and Management Act.

Attended the December meeting of the National Recreational Fisheries Coordinating Council.

Completed an annual report of NPS accomplishments toward implementing the National Recreational Fisheries Resources Conservation Plan under Executive Order 12962 and submitted this report to the National Recreational Fisheries Coordination Council.

Provided input to the White House Council on Environmental Quality for the National Oceans Conference held on 11-12 June in Monterey, California. Information forwarded to the CEQ included base efforts for resource inventory, monitoring, and protection occurring within NPS coastal marine parks and additional proposed actions that would lead to greater protection of NPS coral reef resources.

Provided a response to a national campaign effort by the organized group "People for the Ethical Treatment of Animals" (PETA) to ban recreational fishing within National Parks. The response reinforced existing NPS Federal regulations and policies stating that fishing will be allowed to continue in all national parks unless specifically prohibited by law and, except in designated areas or as specifically provided for in the Code of Federal Regulations, will be carried out in accordance with state laws.

Provided briefing information to the Secretary for use with the national Coral Reef Task Force. A briefing session was provided to the Assistant Secretaries Office in Washington concerning background information on National Parks with coral reef resources, including amount of habitat managed, current management status of these areas, level of reef protection and current management issues.

Organized and chaired a session concerning the possibilities for "Increasing the Protection of our Marine Parks" at a Coastal Superintendent's Conference held at Cape Cod National Seashore.

Assisted the Air Resources Division in locating a person to collect fish and aquatic biota samples for the national cooperative EPA baseline contaminants study being conducted at several national parks. Attended a training session for the national collection teams at Rocky Mountain National Park.

Attended the USGS, Biological Resources Division, national fisheries research program meeting in Madison, Wisconsin. Participation in this meeting provided an opportunity for NPS input in the identification of national fisheries research priorities for the BRD.

Attended the Annual Meeting of the American Fisheries Society.

Updated water rights information contained in National Park Service's dockets.

Presented talk on "Water Rights and the National Park Service" at the Fundamentals for National Resources Management training course.

Participated in quarterly meetings with other federal agencies to coordinate water rights issues.

Computerized Servicewide water rights records.

Reviewed the report of the Western Water Policy Review Advisory Committee.

Developed and participated in the pilot training session "Expert Witness Preparation for Water Rights Proceedings."

Developed and tested data bases for managing information on NPS reviews of water rights applications and protests.

PUBLICATIONS

Planning & Evaluation Branch

Berkley, J., G. R. Reetz, and D. Vana-Miller. 1998. Water Resources Management Plan, Theodore Roosevelt National Park (North Dakota). US Environmental Protection Agency and National Park Service, Denver, CO 119 pp.

Blackstun, D., L. Woosley, M. Flora, and R. Durall. 1998. Water Resources Issues in the Rio Grande—Rio Conchos to Amistad Reservoir Subarea. U.S.-Mexico Border Field Coordinating Committee Fact Sheet #3, US Department of the Interior, Washington, DC 8 pp.

Flora, M.D., 1998. Assessing the effects of NAFTA in border water resources. In: Natural Resource Year in Review – 1997. National Park Service, Washington, DC. p. 23.

Kenney, P.M., A.J. Pernas, and D.P. Weeks. 1997. (Abstract) Turner River Restoration. 1997 9th Annual International Conference of the Society for Ecological Restoration, November 12-15, 1997. Ft. Lauderdale, Florida.

National Park Service. 1998. Director's Order #77-1: Wetland Protection. U.S. Department of the Interior, National Park Service, Washington, DC. 4 pp.

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Tilmant, J.T. 1998. Coral Reefs under National Park Service Jurisdiction; Overview of areas, protection, and management issues. Briefing report for the first Federal Coral Reef Task Force Meeting, Oct. 19-20, 1998, Biscayne National Park. National Park Service, Water Resources Division, Fort Collins, CO. 24pp.

Tilmant, J.T. 1998. National Park Service, National Recreational Fishery Resources Conservation Plan, Agency Accomplishment Report for 1997. National Park Service, Water Resources Division, Fort Collins, CO. 8pp.

Wagner, J. and M. Martin. 1998. "Progress in Restoring a Savannah Wetland at Moores Creek National Battlefield, North Carolina." In: 1997 Annual Report: National Park Service, Water Resources Division, Fort Collins, CO.

Weeks, D.P. and R.J. Andrasik. 1998. Voyageurs National Park (Minnesota) Water Resources Scoping Report. Technical Report NPS/NRWRS/NRTR-98/201. Water Resources Division, National Park Service, Fort Collins, CO 51 pp.

Weeks, D.P. and C.J. Bates, 1998. The Big Cypress hydrology program: A proactive approach to establishing effective multiagency partnerships, *Park Science*. U.S. Dept. of the Interior, National Park Service, and 18 (1): 24-25, 27.

Wikle, T., M. Nicholl, T. Brown, J. Nord, R. Parker, and D. Weeks, 1998. Water Resources Management Plan, Chickasaw National Recreation Area (Oklahoma). Oklahoma State University, Stillwater, OK, 121 p.

Water Operations Branch

Rosenlieb, Gary W., Barry A. Long, Larry Martin, Matt Hagemann, Roy Irwin, and Jim Tilmant. 1998. Potential influences of wastewater discharges on Aimakapa Pond and nearby anchialine pools, Kaloko-Honokohau National Historic Park. National Park Service, Water Resources Division. Fort Collins, CO. 16 pp.

Water Rights Branch

Cinderelli, D.A. and B.L. Cluer. 1998. *Deposition processes and sediment supply in resistant-boundary channels: examples from two case studies*. In: Tinkler, K, and Wohl, E., eds.: Rivers Over Rock, Fluvial Processes in Bedrock Channels, American Geophysical Union, Geophysical Monograph 107, pg. 105-132.

Cluer, B.L. 1998. *Sediment hysteresis effects on fine grained deposits*. Proceedings, American Society Of Civil Engineers, Wetlands Engineering and River Restoration Conference, March 1998, Denver, Colorado.

Elliott, J.E.and L. Hammack. Draft *Geomorphic and sedimentologic characteristics of alluvial reaches in the Black Canyon of the Gunnison National Monument, Colorado.* USGS-WRIR.

Elliott, J.E. and L. Hammack. In Press. *Entrainment of riparian gravels and cobbles in an alluvial reach of a regulated canyon river.* Regulated Rivers.

Hansen, W.R. and D.J. McGlothlin. 1998. *Federal reserved water rights at Zion National Park.* In: Water in the West: Challenge for the Next Century. Report of the Western Water Policy Review Advisory Commission. June 1998. pg 4-13.

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Pohlmann, Karl F., D.J. Campagna, J.B. Chapman, and S. Earma. 1997. *Investigation of the origin of springs in the Lake Mead National Recreation Area.* Final Report. University and Community College System of Nevada, Desert Research Institute. Prepared for the National Park Service, Water Resources Division, Fort Collins, CO under National Park Service Cooperative Sub-Agreement CA-8019-2-9003. 51 pp and appendices.

Wick, E.J. and B.L. Cluer. 1998. *Altered Green River (Utah) flows impact rare fish*. Proceedings, American Society Of Civil Engineers, Wetlands Engineering And River Restoration Conference, March 1998, Denver, Colorado.

CONTRIBUTOR

Baron, J.S., T. LaFrancois, B.C. Kondratieff. 1998. "Chemical and Biological Characteristics of Desert Rock Pools in Intermittent Streams of Capitol Reef National Park, Utah." Great Basin Naturalist, Vol. 58, No. 3, July 1998, pp. 250-264.

Cooper, D.J. and S.M. Kennedy. 1995. "Suggested Restoration Plan for the Eureka Ditch on Bighorn Flats, Rocky Mountain National Park, CO." Colorado State University, Department of Fishery and Wildlife Biology, Fort Collins, CO. 25 pp.

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Greene, M.M. and M.P. Mann. 1997. "Great Basin National Park Parkwide Riparian and Wetland Functional Condition Assessment Project Report." Great Basin National Park, Baker, Nevada.

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PRESENTATIONS

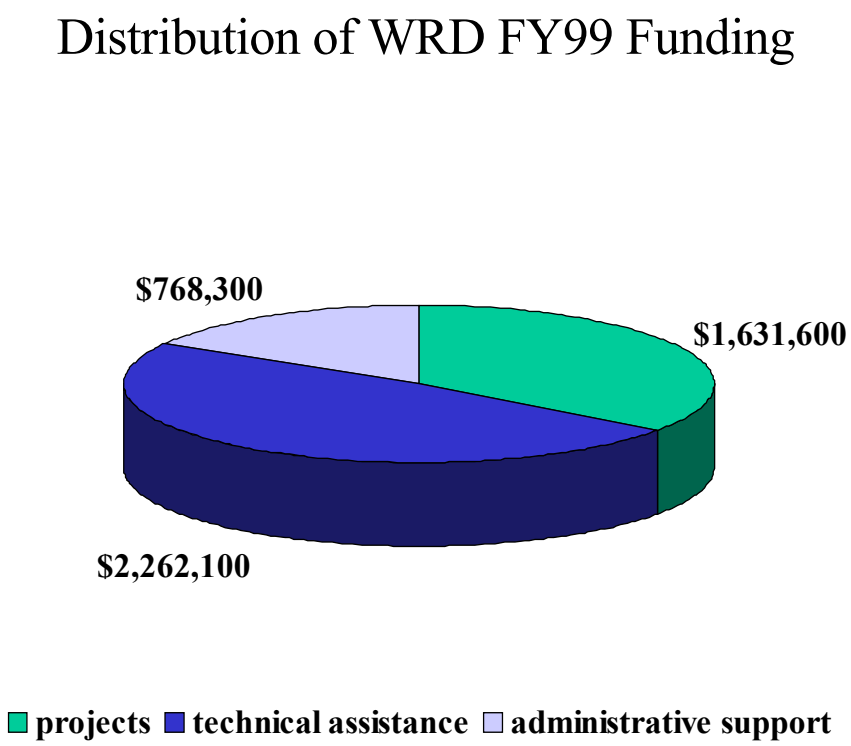
Tilmant, J.T. 1998. Natural population changes and impacts associated with stock exploitation under a commercial fisheries. Presented to a public workshop on Glacier Bay commercial fisheries and management alternatives, Juneau, Alaska. June 3, 1998.

Weeks, D.P., 1998. Canaveral National Seashore: Water Resources Management Plan. Mosquito Lagoon Coordination Meeting, Research and Management Issues, April 21, 1998. Brevard County Community College, Titusville, FL.

Financial Status Of The Water Resources Division

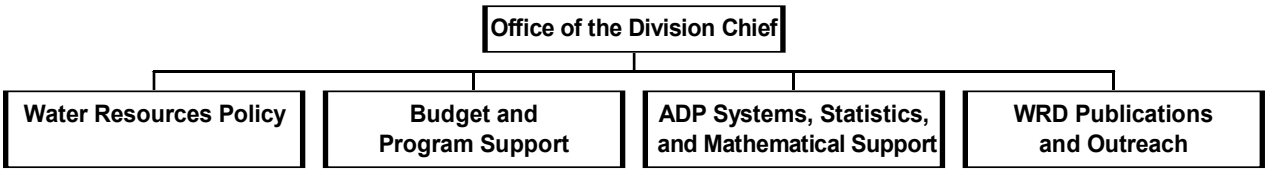
By Dan B. Kimball, Division Chief
and Debi Cox, Program Analyst

FY99 base funding for the Water Resources Division (WRD) was $4,662,000. The figure below illustrates the distribution of total WRD funds among technical assistance, project, and administrative support costs. Technical assistance, which is predominately day-to-day operational support to the parks includes staff salaries, travel, and associated expenses. Administrative support includes program management costs, administrative support, equipment, and supplies and materials Divisionwide. The projects category includes funds supporting WRD-sponsored projects in the areas of general water resources, water quality, wetlands protection, and water rights. Tables 1, 2, 3, 4, and 5 list WRD-sponsored projects for FY99.



Office of the Division Chief

Organization and Staff



Dan Kimball: Division Chief, MS in Water Resources Administration. Specialty areas include water and natural resources management planning and evaluation of complex regulatory issues.

Sharon Kliwinski: Water Resources Washington Liaison, BS in Environmental and Pollution Sciences. Specialty area includes environmental legislation and regulations; natural resource policy issues; and mining laws, policies, and programs.

Dave Ryn: Mathematician, MS in Mathematics. Specialty areas include computer and statistical technology.

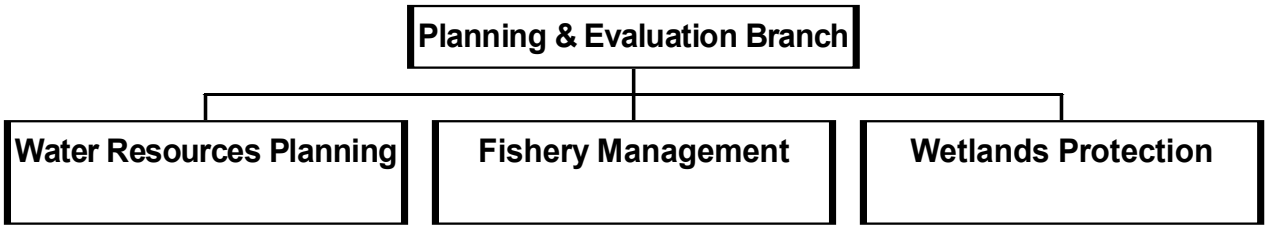
Debi Cox: Program Analyst, BA in Anthropology.

Patty Hennessy: Secretary, BBA in Management.

Carol Liester: Purchasing Assistant.

Planning and Evaluation Branch

Organization and Staff



Mark Flora: Branch Chief. MS in Environmental Science (Water Resources). Specialty areas include water resources management planning, water quality, and watershed management.

Joel Wagner: Wetlands Protection Program Team Leader, MS in Environmental Science (Water Resources). Specialty areas include wetlands science, hydrology, restoration, and regulatory issues.

Leslie Krueger: Natural Resource Specialist, BS in Water Resources. Specialty areas include wetlands science, management, and regulatory issues.

Jim Tilmant: Fishery Management Program Team Leader, MS in Wildlife and Fisheries. Specialty areas include aquatic and marine resources management, fish biology, and population dynamics.

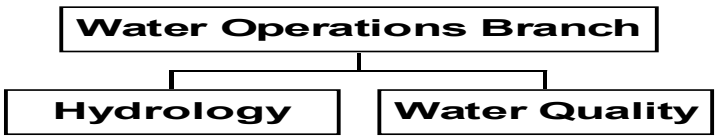
David Vana-Miller: Water Resources Planning Program Team Leader, MS in Marine Biology. Specialty areas include water resources planning, aquatic and marine resources management, and water quality.

Don Weeks: Hydrologist, MS in Geology (emphasis in hydrogeology). Specialty areas include water resources management planning, water quantity, and water quality.

Lael Wagner: Secretary

Water Operations Branch

Organization and Staff



Bill Jackson: Branch Chief, Ph.D. in Hydrology. Specialty areas include sedimentation processes, fluvial geomorphology, and river rehabilitation and management.

Gary Rosenlieb: Water Quality Program Leader, MS in Water Resources. Specialty areas include water quality (chemistry and microbiology), groundwater quality, and hazardous materials management.

Gary Smillie: Hydrology Program Leader, Hydrologist/Hydraulic Engineer, MS in Civil Engineering. Specialty areas include flood-frequency analysis, open-channel hydraulics, floodplain management, and sediment transport.

Matt Hagemann: Hydrologist, MS in Geology. Specialty areas include transport of groundwater contaminants, groundwater monitoring, groundwater cleanup, and application and interpretation of environmental regulations and policy.

Rick Inglis: Hydrologist, BS in Watershed Science. Specialty areas include field hydrologic data collection using automated recorders, watershed management, ground water monitoring, and data analysis.

Roy Irwin: Senior Contaminants Specialist, Ph.D. in Biology. Specialist in environmental contaminants and biological aspects of water quality (including bio monitoring).

Barry Long: Hydrologist, BS in Watershed Sciences, MS in Forest Hydrology. Specialty areas include physical-chemical aspects of water quality.

Larry Martin: Hydrogeologist, MS in Hydrology. Specialty areas include hydrogeology, groundwater surface water interaction, well siting, drinking water source protection, and aquifer testing.

Michael Martin: Hydrologist, BS in Environmental Geology, MS in Watershed Science. Specialty areas include geochemistry, water quality, geomorphology, flood analysis, and tropical aquaculture.

Dean Tucker: Computer Programmer-Analyst, Ph.D. in Forestry. Specialty areas include data management, computer graphics, and water resources applications in GIS.

Mike Matz: Research Associate, MS in Civil Engineering. Specialty areas include water quality planning and management; inventory and monitoring; and data analysis.

Mark VanMouwerik: Contaminants Specialist/Research Associate, MS candidate in Environmental Health, BS in Biology.

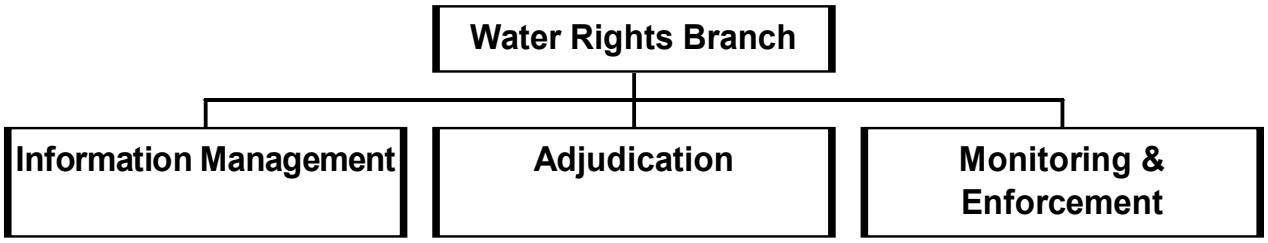
Pat Wiese: Secretary

STUDENT ASSISTANTS

Elizabeth Eisenhauer: GIS specialist, MS candidate in Geology (1997), BS in Geology (1988).

Water Rights Branch

Organization and Staff



Chuck Pettee: Branch Chief, Supervisory Hydrologist, MS in Watershed Science. Specialty areas include water rights, surface water hydrology and hazardous materials.

Jeff Albright: Supervisory Hydrologist, Information Management Program Leader, MS in Watershed Management. Specialty areas include surface water hydrology, field methods, and instrumentation.

Bill Hansen: Supervisory Hydrologist, Adjudication Program Leader, MS in Hydrology. Specialty areas include water law, surface water hydrology, field methods, and watershed management and rehabilitation.

Dan McGlothlin: Supervisory Hydrologist, Monitoring and Enforcement Program Leader, BS in Watershed Hydrology. Specialty areas include water rights law and administration and water resources policy.

Henrique Barreto: Hydrologist, BS in Computer Science, MS in Geography. Specialty areas include fluvial geomorphology, surface water hydrology, data analysis, and instrumentation.

Brian Cluer: Hydrologist, Ph.D. in Earth Resources. Specialty areas include fluvial geomorphology, surface water hydrology, hydraulics and sediment transport processes, two-dimensional flow modeling, remote sensing of fluvial processes, and monitoring changes in fluvial systems.

Chris Gable: Hydrologist, BS in Watershed Sciences. Specialty areas include surface water hydrology, water quality control, field methods, instrumentation, and data analysis.

Jim Harte: Hydrologist, BS in Forestry/Watershed Sciences. Specialty areas include surface water hydrology, sediment transport, and watershed management.

Jeff Hughes: Hydrologist, MS in Watershed Sciences. Specialty areas include water rights, surface water hydrology, and field methods.

Eric Moser: Hydrologist, MS in Physical Sciences. Specialty areas include surface water hydrology, field methods, and data analysis.

Ron Thomasson: Hydrologist, BS in Civil Engineering. Specialty areas include surface water hydrology, hydraulics, field methods, water rights, and data analysis.

Brad Gillies: Research Associate: Colorado State University. BS in Watershed Science. Specialty areas include field methods and data analysis.

Lauren Hammack: Research Associate; Colorado State University. MS in Earth Sciences (Watershed Science). Specialty areas include fluvial geomorphology, surface water hydrology, hydraulics, sediment transport, field methods, and data analysis.

Flora Romero: Secretary.

Michelle da Luz: Student Research Technician, Colorado State University, Monitoring and Enforcement Group.

Eric Lord: Student Research Technician, Colorado State University, Monitoring and Enforcement Group.

Marlene Meirath: Student Research Technician, Colorado State University, Information Management Group.

Jeremey Lawrence: Student Research Technician, Colorado State University, Information Management Group.

David Curtice: Student Research Technician, Colorado State University, Information Management Group.

Nick Mazour: Data Specialist Intern, Colorado State University, Information Management Group

Ted Shannon: Applications Programmer, Colorado State University, Information Management Group.

Jennifer "Rose" Wallick: Volunteer, Colorado State University

AWARDS

Office of the Division Chief

Patty Hennessy received an "On-the-Spot" Award for her efforts in covering the extra workload during administrative support vacancies.

Water Operations Branch

Barry Long received a Certificate of Appreciation for his contributions to the NPS-USGS FY99 water quality partnership evaluation panel.

Water Rights Branch

Dan McGlothlin received an "On-the-Spot" Award for developing and implementing a procedure for procuring funds to timely pay protest fees to the State of Nevada.

Peter Fahmy received a STAR Award for his contribution to NPS settlement negotiations for the Little Colorado River Adjudication and to NPS policy for the sale or least of park water. Peter is with the Office of the Solicitor assigned to assist the NPS nationwide with water rights issues.

CREDITS

PHOTOGRAPHS

Canyonlands National Park, Mark VanMouwerik/title page

Great Blue Heron, Joel Wagner/5

Orchid, Joel Wagner/6

GWS Meeting, David Vana-Miller/7

Brian Cluer using doppler equipment, Canyonlands National Park, Mark VanMouwerik/16

Load Cell Scour Sensor, Brian Cluer/17

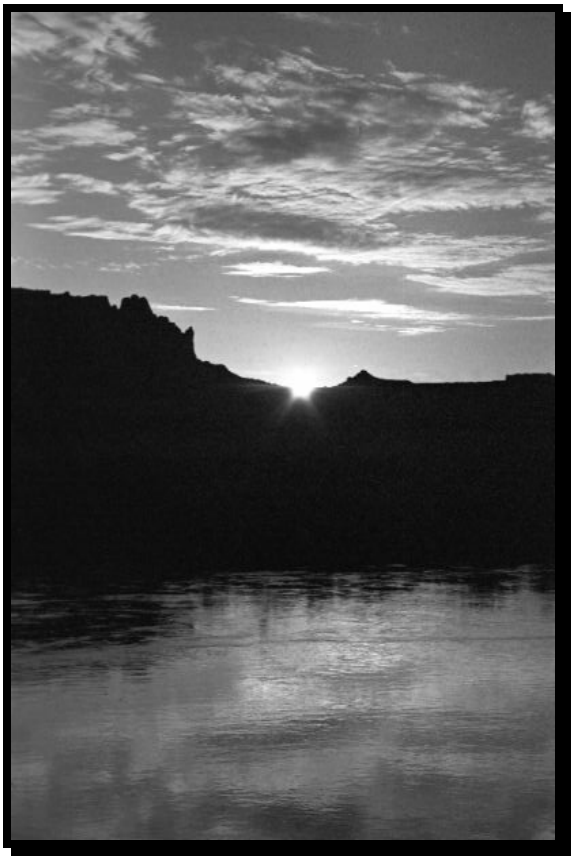
Sediment Thickness during Controlled-Flood Experiment, Grand Canyon National Park, Brian Cluer/18

Field Trials at spawning beds, Dinosaur National Monument, Brian Cluer/18

Canyonlands National Park, Mark VanMouwerik/inside back cover

Chief Editor Dan Kimball

Editorial Assistant Patty Hennessy



As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural and cultural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people. The Department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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NATIONAL PARK SERVICE
Department of the Interior