



# FY 1998 Annual Financial Report



U.S. Department of the Interior  
U.S. Geological Survey

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## Your source for science you can use

As an unbiased, multi-disciplinary science organization that focuses on [biology](#), [geography](#), [geology](#), [geospatial information](#), and [water](#), we are dedicated to the timely, relevant, and impartial study of the landscape, our natural resources, and the natural hazards that threaten us.

## Science Topics

[GO Browse Science](#) Featured Topics

### Topics

A tool for browsing USGS science programs and activities.

Sample Topic:

### [Industrial pollution](#)

Introduction of harmful substances into the environment by manufacturing, power generation, mining, or material processing.



Mercury Rises as a Hot Science Topic  
USGS

scientists work to improve information on mercury sources, cycling, and toxicity, which will help land and resource managers understand what can be done to reduce mercury hazards to people and the environment. The large geographic scope and consequences of mercury contamination and enormous complexity of the problem require a scientific approach that integrates many scientific disciplines. [Learn More](#)

USGS

Science at Ecological Society of America



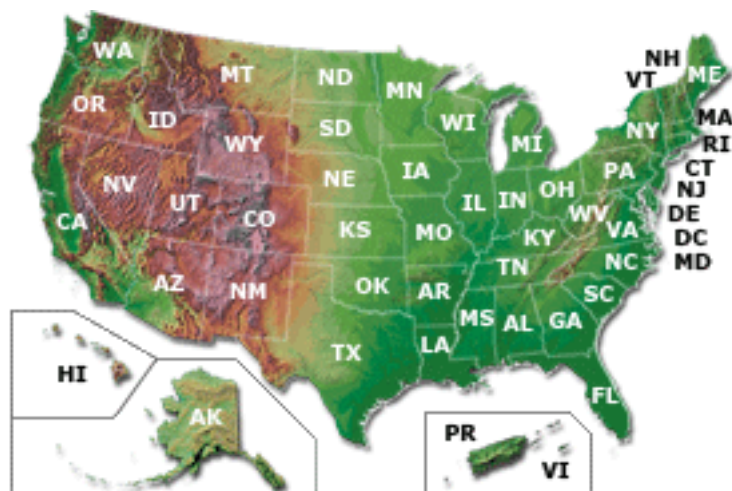
Invasive species, wildlife disease, and the effect of hurricanes on ecosystems are among the many and diverse topics that scientists of the USGS will discuss as they meet with other leading ecological scientists, educators, and policy-makers from around the globe at the 91st annual Ecological Society of America meeting.

[Learn More](#)



Where's Walrus?  
A new

## Science In Your Backyard



See also:

[Ecosystems](#) | [Coastal/Offshore](#) | [International](#)



USGS  
animation  
shows

walrus movements in the northern Bering Sea—the USGS led an effort to tag walruses with transmitters and track their movements remotely with satellites during a spring 2006 population abundance survey.

[Learn More](#)

Collaborative  
Commemoration  
of the Big  
Thompson  
Flood



On July 31, 2006, USGS scientists and its partners from local, State, and Federal agencies will commemorate the 30th anniversary of the Big Thompson flood, which ranks among the deadliest of Colorado's recorded floods. It is also considered one of the largest floods based on the drainage area in the United States and stresses the necessity of continuing research into the causes and effects of floods. The USGS conducts research and operates a nationwide streamgage network to reduce flood hazards and to increase public awareness. [Learn More](#)

[Featured Topics Archive](#)



## In the Spotlight

[FY 2007 President's  
Budget Request for USGS](#)

[Avian Influenza \(Bird  
Flu\)](#)

[ABC Movie on Bird Flu  
Pandemic - Fact or  
Fiction?](#)

[U.S. Interagency Strategic  
Wild Bird Monitoring Plan](#)

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[The Future of Land  
Imaging](#)

[U.S. Water Monitor](#)

[USGS Peer Review  
Agenda](#)

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Additional Resources

Recent News Releases



[USGS Report Identifies  
Asbestos Localities in  
Central U.S.](#) **NEW**

(Released: 8/8/2006  
6:24:02 AM)

[USGS Science at  
Ecological Society of  
America](#) **NEW**

(Released: 8/7/2006  
10:46:04 AM)

[USGS at 2006  
International Mercury  
Conference](#) **NEW**

(Released: 8/4/2006  
2:11:12 PM)

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Newsroom](#)

## • [Select a Hazard](#)

- [Intro](#)
- [Earthquakes](#)
- [Floods](#)
- [Hurricanes](#)
- [Landslides](#)
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- [Volcanoes](#)
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## Natural Hazards



Access activities and [real-time  
information](#) via the [Natural Hazards  
Gateway](#). **CAP**

Latest Information:

[Recent Earthquakes](#)

[Latest Hurricane Updates](#)

[WaterWatch - Current Streamflow Conditions](#)

[Mount St. Helens -- Latest Update](#)

[Kilauea - Latest Update](#)

USGS Publications

## Map and Geospatial Information

- [BEST Database Query Tool](#)
- [Gap Analysis Data Warehouse](#)
- [GeoMAC Wildland Fire Support](#)
- [Geospatial One-Stop](#)
- [Geographic Names Information System](#)
- [Remote Sensing - EROS](#)
- [National Atlas of the United States®](#)
- [NBII Metadata Clearinghouse](#)
- [Mineral Resources Spatial Data](#)
- [Seamless Data Distribution System](#)
- [The National Map](#)

## Frequently Asked Questions

- [How can I find and get historic USGS topographic maps?](#)
- [What are the file formats for the National Atlas map layers and data tables?](#)
- [What is Landsat 7?](#)

 [More FAQs](#)

## [Coastal Circulation and Sediment Dynamics in Hanalei Bay, Kaua'i, Hawaii, Part III, Studies of Sediment Toxicity](#)

(Released: 8/6/2006)

## [USGS Mineral Resources Program--Supporting Stewardship of America's Natural Resources](#)

(Released: 8/6/2006)

## [USGS Interactive Map of the Colorado Front Range Infrastructure Resources](#)

(Released: 8/4/2006)



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## [More Map and Geospatial Information](#)

### Fact of the Day

Lava from the eruption of Kilauea has covered about 40 square miles of rain forest and grassland, paved 8 miles of highway, destroyed 181 homes and other structures valued at \$61 million, and added almost 600 acres of new land to the Island of Hawaii. In addition, the release of sulfur dioxide gas during the ongoing eruption has led to volcanic air pollution and acid rain on parts of the island.

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## MESSAGE FROM THE ACTING DIRECTOR

The world around us continues to change rapidly and dramatically, and this accelerated pace of change adds new and exciting challenges for the U.S. Geological Survey (USGS). The USGS motto, "Science for a Changing World," expresses an important concept: As the world changes, USGS must continue to adapt and renew its people and organization. But simply responding to change is not enough, only through seizing the opportunities that change makes possible can USGS remain healthy and relevant to society.



*Thomas J.  
Casadevall*

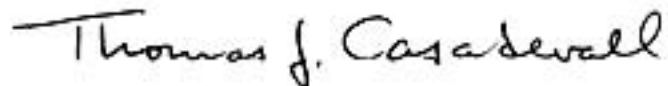
USGS activities cover a broad range of physical, chemical, and biological systems. This diversity of disciplines gives USGS great strength in dealing with the problems facing society that we are being called upon to address. Increasingly, we are being recognized for science that is interdisciplinary in scope and highly relevant to the issues important to the Nation. USGS is striving to increase this interdisciplinary approach to address issues with an integrated manner, particularly in making our data sets integratable with one another. We are encouraging and building science integration and data integrateability to ensure continued future success.

Over the past year, a great deal of thought and energy at the USGS has gone into looking both inward and outward, assessing our programs, partnerships, fiscal management systems, outreach activities, goals for the future, and many other crucial aspects. This intense assessment has resulted in some significant changes in the way USGS does business. We've taken the opportunity to extend the Bureau's energy and vision outwardly to vigorously access our customers and the broader scientific enterprise in this country. USGS currently works with nearly 2,000 partners in government at all levels, academia, and the private sector.

USGS is especially active in strengthening the bureau's role in the nation's scientific enterprise, including ties with the academic community to increase the diversity of our workforce and to bring in new perspectives and strength. Just as diversity in the scientific disciplines increases our ability to understand and solve problems, so does diversity in our workforce. An important aspect of developing closer ties with the academic community ensures that academia, as they train the workforce of the future, understand our needs for higher skilled, diverse future employees. Continued strong partnerships with colleges, graduate schools and other academic institutions will promote this educational process.

Our number one job at USGS is maintaining and enhancing our scientific and technical excellence. Our mission is to provide the Nation with reliable, impartial scientific information to describe and understand the Earth. USGS does not manage lands or regulate natural resources -- but we do provide the scientific and technical information that others need for sound decision-making.

The USGS has a strong, proud tradition of scientific excellence, built on its past but substantiated by our ability to face the challenge of providing "science for a changing world" and integrating our science to address the ever complex issues facing the Nation.

A handwritten signature in black ink that reads "Thomas J. Casadevall". The signature is written in a cursive, slightly slanted style.

**Thomas J. Casadevall**

*Acting Director*

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## MESSAGE FROM THE CHIEF FINANCIAL OFFICER

It pleases me to present the fiscal year (FY) 1998 financial report for the United States Geological Survey (USGS). The Department of the Interior's Office of the Inspector General has independently audited this report and has issued an unqualified audit opinion. This is USGS's third consecutive year receiving an unqualified opinion which indicates the emphasis we place on data integrity, financial reporting, and overall financial management.



*Barbara J. Ryan*

We have made noticeable changes to this year's report. For the first time we are reporting our Statement of Changes in Net Position by responsibility segment. We have also added the required Statement of Financing. We completed a comprehensive review of our construction and maintenance needs, and those results are presented in the notes to the financial statements. Finally, we have added a supplemental stewardship report that accentuates USGS research and development efforts.

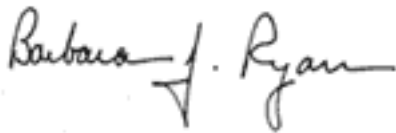
USGS made three significant systems conversions in FY 1998 to improve our accounting systems and enhance data integrity. We converted to a new version of our accounting software that can process transactions for the year 2000. This is a significant step toward making all USGS mission-critical systems year 2000 compliant. We also converted our existing general ledger accounts and balances to the government wide standard. This effort resulted in more reliable postings for our financial transactions and will improve our internal and external financial reporting. The third conversion was to a new, more efficient Department wide payroll system.

USGS actively supports the financial management goals of the Department of the Interior. Our previously mentioned unqualified audit opinion supports that Departmental goal, and the pace with which we correct identified audit findings likewise meets Departmental goals. The number of payments we make electronically is almost 50% higher than the Departmental average. We have reduced our number of late payments by over 20% this fiscal year; for the last six months of the year we exceeded the Departmental goal by about one-third, and we are working diligently to continue that trend. We have also referred essentially 100% of our delinquent debt to the Department of the Treasury for collection and offset, likewise in support of Departmental goals.

We intend to continue to review and improve our financial management practices next fiscal year. Procurement initiatives include the issuance of new credit cards throughout

USGS and the automatic interfacing of centralized procurement transactions with our accounting system. We will expand our emerging financial database to include other indicators of administrative performance, such as operating plans, performance goals, and personnel data. The various provisions of the Debt Collection Improvement Act, including debt transfer and payment by electronic means, will be fully implemented in FY 1999. We will continue implementing government wide accounting standards that will enhance the integrity of our financial data. Finally, we will continue to support Departmental financial management goals, including those mentioned previously, but especially the planning and reengineering efforts associated with our migration to a new financial management system.

Our past accomplishments and the challenges we have set for next year demonstrate our commitment to improving financial management and our support for USGS mission to provide science for a changing world.



**Barbara J. Ryan**

*Chief Financial Officer and  
Associate Director for Operations*

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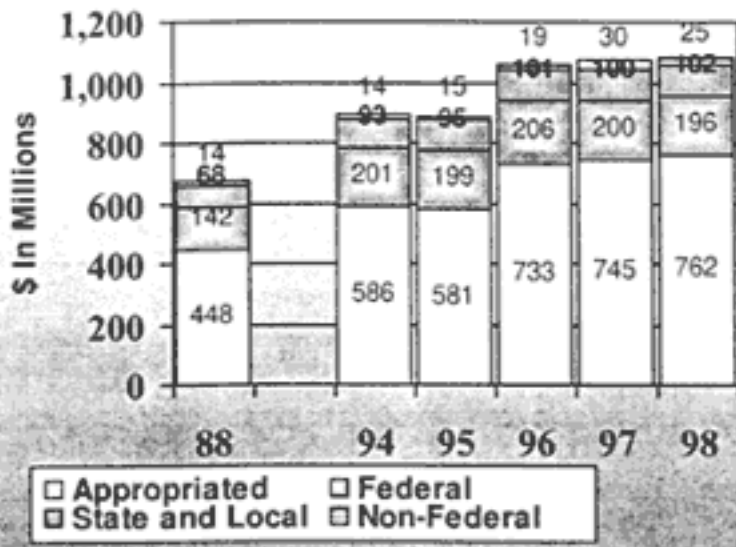
## Sources of U.S. Geological Survey (USGS) Funds

The source of funds for USGS are appropriated by Congress for Surveys, Investigations and Research, revenues for services and goods provided to other federal agencies such as Departments of Agriculture, Commerce, Defense and other Bureaus in the Department of Interior, Environmental Protection Agency, National Aeronautics & Space Administration, National Science Foundation, Federal Emergency Management Agency, and the Tennessee Valley Authority; revenues from goods and services provided to States and local communities and municipalities; and receipts from mapping sales to non-federal customers including individuals and companies.

The source of total funds for the USGS has grown in real dollars by 16 percent in the past ten years; by category of funds the change has been: appropriated funds increased by 22%; federal revenue decreased by 1%; State and local revenue increased by 7% and non-federal revenue increased by 28%.

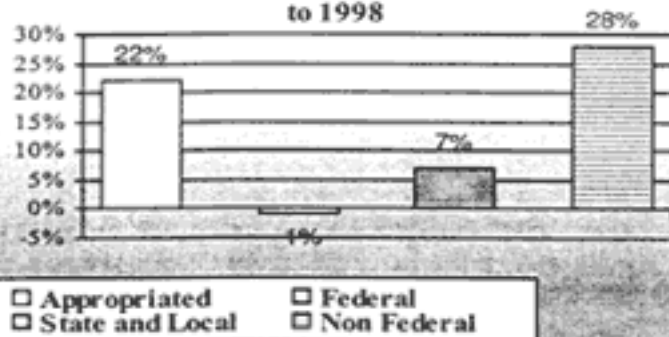
Distribution by percent has been relatively stable over the ten year period for non-federal and state/local revenue at 2 and 9/10% respectively. The appropriated funds have increased by 3% to 70% and Federal revenue has decreased by 3% down to 18% instead of 21%. The increase in appropriated funds is primarily attributable to the mergers of The National Biological Services as the Biological Resources Division and parts of the former U. S.

Source of Funds (Nominal)

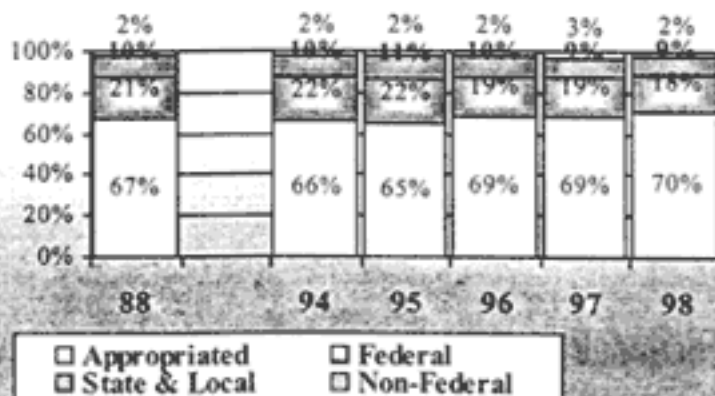


	88	94	95	96	97	98
Non-Federal	14	11	12	14	22	18
State & Local	68	75	74	76	74	73
Federal	142	162	156	155	148	140
Appropriated	448	472	454	551	551	545

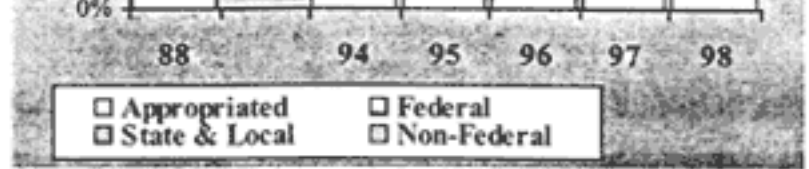
Percent Change in Real Dollars from FY 1988 to 1998



Percent of Sources



of 21%. The increase in appropriated funds is primarily attributable to the mergers of The National Biological Services as the Biological Resources Division and parts of the former U. S. Bureau of Mines to USGS.



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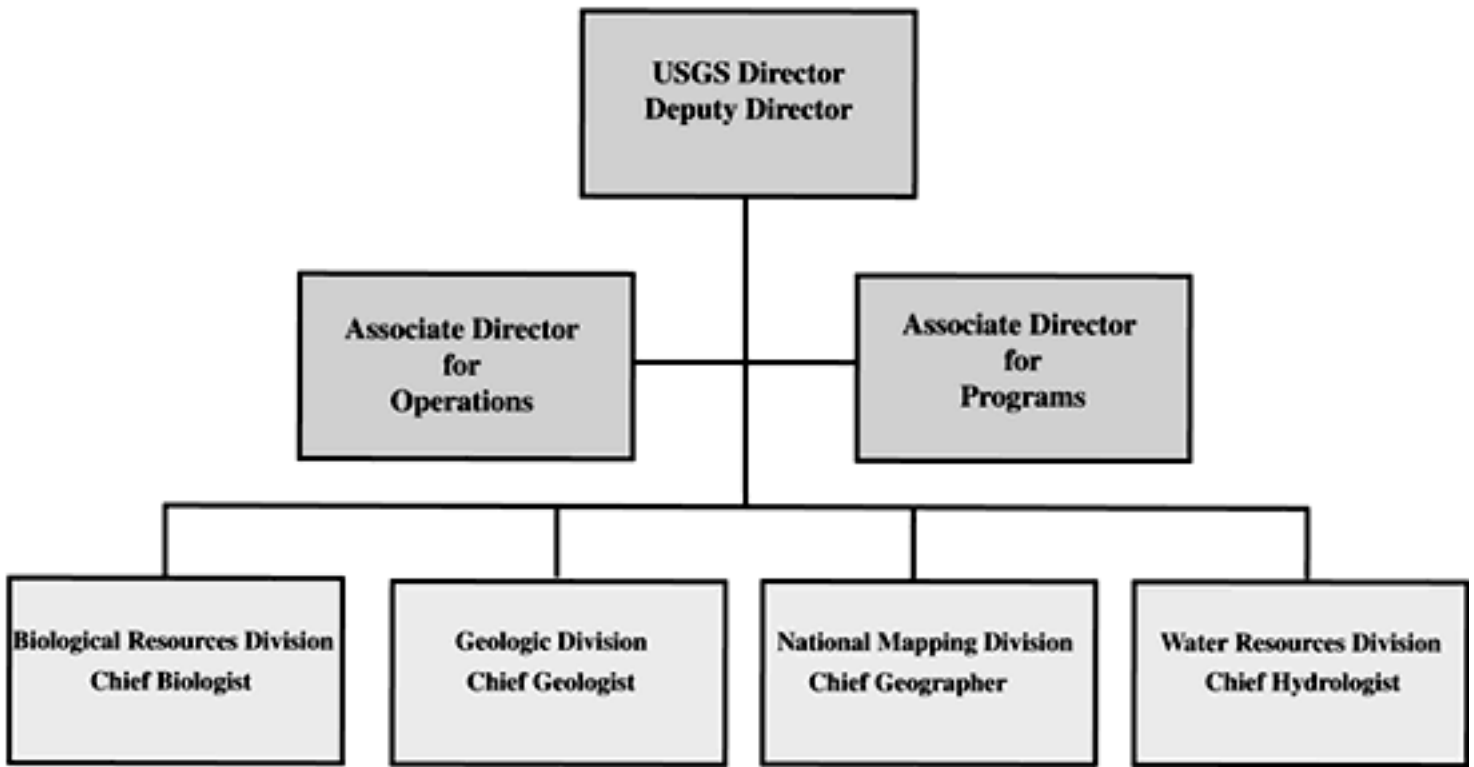
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## U.S. Geological Survey Organizational Chart



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## USGS ORGANIZATIONAL STRUCTURE

The U.S. Geological Survey (USGS), a bureau within the U.S. Department of the Interior, manages four major Federal natural science activities: the National Mapping Program; Water Resources Investigations; Biological Research; and Geologic Hazards, Resources, and Processes programs.

### National Mapping Division (NMD)



*ESIC personnel explains map to customer.*

The mission of the U.S. Geological Survey's National Mapping Division is to meet the Nation's need for basic geospatial data, ensuring access to and advancing the application of these data and other related earth science information for users worldwide. In support of this mission, we:

- Ensure the production and availability of basic cartographic and geographic spatial data of the country;
- Coordinate National geospatial data policy and standards;
- Provide leadership for the management of earth science data and for information management;
- Acquire, process, archive, manage, and disseminate the land remote sensing data of the Earth; and
- Improve the understanding and application of geospatial data and technology.

### Water Resources Division (WRD)

The U.S. Geological Survey has the principal responsibility within the Federal Government to provide the hydrologic information and understanding needed by others to achieve the best use and management of the Nation's water resources. To accomplish this mission, the Water Resources Division, in cooperation with State, local, and other Federal agencies, performs the following activities.

- Systematically collects and analyzes data to evaluate the quantity, quality, and use of the Nation's water resources and provides results of these investigations to the public.

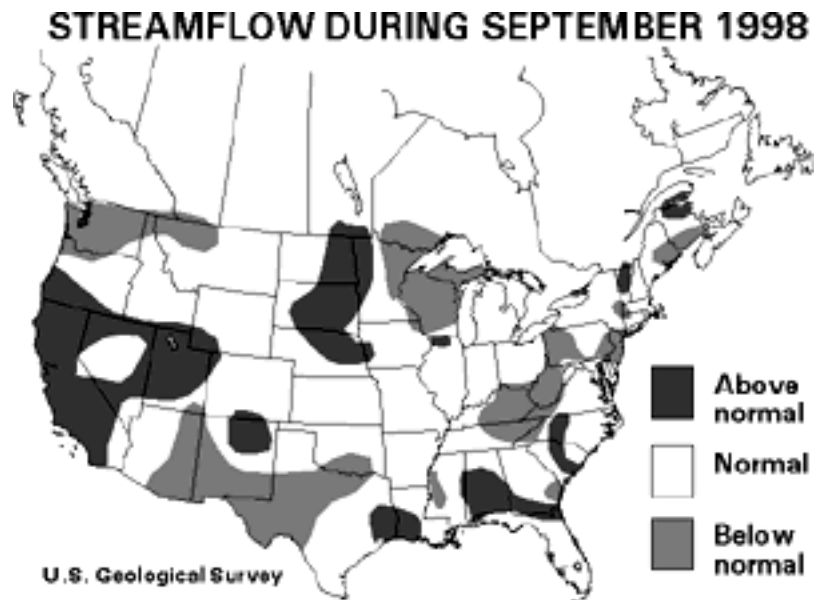
- Conducts water resources appraisals describing the occurrence, availability, and physical, chemical, and biological characteristics of surface and ground water.

- Conducts basic and problem-oriented hydrologic and related research that aids in alleviating water resources problems and provides an understanding of hydrologic systems sufficient to predict their response to natural or human-caused stress.

- Coordinates the activities of Federal agencies in the acquisition of water resources data for streams, lakes, reservoirs, estuaries, and ground water.

- Provides scientific and technical assistance in hydrologic fields to other Federal, State, and local agencies; to licensees of the Federal Energy Regulatory Commission; and to international agencies on behalf of the Department of State.

- Administers the State Water Resources Research Institutes Program and the National Water Resources Research Grants Program.



## **Biological Resources Division (BRD)**

The BRD mission is to work with others to provide the scientific understanding and technologies needed to support the sound management and conservation of our Nation's biological resources. A fundamental part of our mission is embodied in our deep commitment to make data and information on the Nation's biological resources more accessible to more people.

The majority of BRD programs and resources remain directed towards the needs and responsibilities of Department of the Interior resource management bureaus, such as studies supporting development of annual waterfowl regulations, research leading to better land protection strategies for National parks, and investigations seeking optimal water control practices for enhancement of fisheries.



*David Mech, BRD scientist, led a wolf study team in Denali National Park.*

But an equally important BRD objective has been the establishment and ongoing development of a National Biological Information Infrastructure (NBII), a network of distributed databases and information sources on biological resources. Today, NBII information is being used by Federal and State agencies, researchers, universities and museums, planning and environmental consultants, private companies, landowners, and the public.

In support of that objective, the BRD is engaged in a cooperative effort to define biological data standards and protocols needed to facilitate the use and sharing of biological data. This effort is building on existing standards and protocols, where possible, as well as on parallel National efforts for a National Information Infrastructure and a National Spatial Data Infrastructure.

## **Geologic Division (GD)**

The Geologic Division (GD) administers the Earthquake Hazards, Volcano Hazards, National Cooperative Geologic Mapping, Coastal and Marine Geology, Global Change and Climate History, Mineral Resources, Energy Resources, and Integrated Natural Resource Science programs. The GD also has program responsibilities for the Global Seismographic Network, landslide hazards, and international activities. GD can be described by seven science goals designed to address pressing issues facing the Nation in the next decade. In general, these goals focus on understanding human interaction with the natural environment and build upon long-term USGS investments in basic research into the fundamental geologic processes controlling how the Earth works. These goals are as follows.

- Conduct geologic hazard assessments for mitigation planning.
- Provide short-term prediction of geologic disasters and rapidly characterize their effects.

- Advance the understanding of the Nation's energy and mineral resources in a global geologic, economic, and environmental context.
- Anticipate the environmental impacts of climate variability. This goal defines a leadership role for the USGS within the U.S. National Global Change.
- Establish the geologic framework for ecosystem structure and function.
- Interpret the links between human health and geologic processes.
- Determine the geologic controls on ground-water resources and hazardous waste isolation.



The Geologic Division's ability to respond to each of these societally driven goals requires a sustained investment in documenting the present and past state of the Earth and in using this information to predict future changes.

The USGS is the Nation's largest water, earth, and biological science, and civilian mapping agency. The USGS works in cooperation with more than 2,000 organizations across the country to provide reliable, impartial scientific information to resource managers, planners, and other customers. This information is gathered in every State by USGS scientists to minimize the loss of life and property from natural disasters, contribute to the sound conservation and the economic and physical development of the Nation's natural resources, and enhance the quality of life by monitoring water, biological,

energy, and mineral resources.

The USGS has identified four principal theme areas -- Hazards, Natural Resources, Environment, and Information Management -- to more effectively communicate how USGS earth science information contributes to public policy issues.

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**Hazards:** Hazards are unpreventable natural events that, by their nature, may expose our Nation's population to the risk of death or injury and may damage or destroy private property, societal infrastructure, and agricultural or other developed land. USGS activities in the hazards theme area deal with describing, documenting, and understanding natural hazards and their risks. These activities include long-term monitoring and forecasting, short-term prediction, real-time monitoring, and communication with civil authorities and others during a crisis. Other significant activities are post-crisis analysis with scenario formulation to develop strategies to mitigate the impact of future events and preparation of coordinated risk assessments for regions vulnerable to natural hazards.

## Accomplishments in FY 1998

### Natural Hazards Information Center (NHIC)

Disasters cost this Nation, on average, more than \$1 billion per week. The costs of lives and property caused by disasters are reduced when people at risk take well informed actions before a disaster strikes, as well as conduct appropriate responses to disasters when they strike. Established in October 1997, the USGS Natural Hazards Information Center (NHIC) is a research facility that builds on the capabilities of existing scientific centers that study specific natural hazards such as volcanoes, earthquakes, and floods. The objectives of the Natural Hazards Information Center are to:

- Prototype a real-time hazards information facility.
- Operate as a research laboratory addressing such issues as data integration, analysis, modeling, and decision support technology.
- Support the on-going evolution of the USGS hazard data processing and delivery systems.

For more information about the NHIC check out our Web Site at [http://landslides.usgs.gov/html\\_files/nlic/nlicsun1.html](http://landslides.usgs.gov/html_files/nlic/nlicsun1.html).

### Louisiana Flood Alert

Flooding is a severe perennial problem in





## Amite River Basin, Louisiana

FLOOD TRACKING



Louisiana. Anything USGS can do to alleviate problems associated with flooding is quickly incorporated into the thinking and actions of elected officials. USGS participated as a key team player in Louisiana's hurricane preparedness drill on June 18. All State and Federal agencies that would respond to a hurricane coming ashore in Louisiana participated in the drill, which is held annually in the Louisiana Office of Emergency Preparedness (LOEP) Emergency Operations Center. These agencies included the Federal Emergency Management Agency, the National Weather Service, the U.S. Army Corps of Engineers, USGS, LOEP, Louisiana State Police, Louisiana Department of Transportation and Development, and Red Cross. At various times, USGS staff projected onto the main, large-scale screen, maps of gaging stations in the affected area of an imaginary hurricane. This was followed by graphs of the typical data available from these stations, including stage, rainfall, wind speed and direction, and conductivity. USGS has in place at LOEP's Emergency Operations Center a self-contained satellite downlink system with associated computers that can operate using the power from LOEP's emergency generators. In the event of a real hurricane, USGS personnel would staff the Center, and relay directly to State emergency officials real-time hydrologic information from the USGS Louisiana HydroWatch network.

In addition to participating in the hurricane preparedness drill, in FY 1998 USGS revised a previously published flood tracking chart for the Amite River Basin to include stations added to the flood-monitoring network in the basin since the original publication. Display holders have been filled and are being placed in all public libraries and Welcome Centers within the basin, and in the Governor's Office. The USGS real-time flood alert systems and the mass distribution of the flood tracking chart and associated information on flooding, as well as many other community activities, have helped secure a 15-percent decrease in flood-insurance rates for communities in flood-prone areas. To facilitate citizens' use of the charts, State and local agencies who cooperate with USGS are considering the placement of signs marking the locations of flood-alert monitoring stations.

## Volcano Hazards

*Expansion of Alaskan Monitoring to Improve*

*Aviation Safety* -- With funding provided by the Federal Aviation Administration (FAA) in FY 1996, FY 1997, and FY 1998, the Alaskan Volcano Observatory (AVO) has successfully expanded its monitoring of Alaskan volcanoes. These include several Central Aleutian volcanoes whose eruptions can produce volcanic-ash clouds highly damaging to aircraft in the heavily traveled airways across the North Pacific. The monitoring expansion will bring to 18 the number of volcanoes that are seismically monitored in real time by the AVO. Volcanic ash erupted into the high atmosphere is highly hazardous to modern high-performance jet aircraft because it erodes compressor blades, melts onto



*Redoubt Volcano*

critical engine parts, and causes loss of engine power. Hazardous concentrations of volcanic ash can drift at air-traffic altitudes for hundreds to thousands of miles downwind following a volcanic eruption. Worldwide, about 80 jet aircraft in the last 15 years have accidentally entered volcanic-ash clouds, putting thousands of passengers at risk. Using data from its monitoring networks, AVO provides eruption reports and prognoses of future activity to the National Weather Service (NWS), the FAA, and the aviation industry. The NWS uses USGS information to help track eruption clouds, and the FAA uses the USGS and NWS information to route air traffic away from dangerous ash clouds.

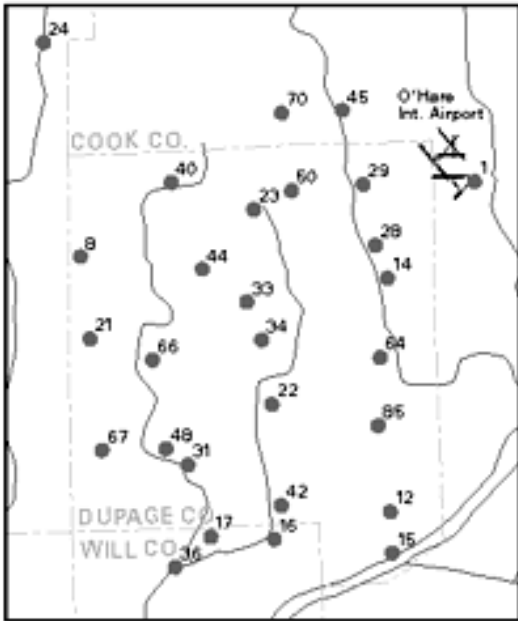
## **Landslide Hazards**

*Landslide Hazards Associated with El Niño Weather Effects* -- The USGS is contributing valuable information regarding the potential for landslide occurrences associated with El Niño weather effects by combining its computerized national landslide susceptibility map with national climate outlook maps produced by National Oceanic and Atmospheric Administration (NOAA). The distribution of El Niño-induced precipitation and temperature anomalies for 1997-1998 were predicted by NOAA's maps. This combination of USGS and NOAA information indicates where and when rainfall- and snowmelt-induced landsliding could occur. This information was frequently updated and refined and made available on the Internet at <http://landslides.usgs.gov/>, and indicated broad regions of the Nation that had increased potential for landslides during the El Niño climatic episode.



*El Niño related landslides along the California coast.*

## **Operational Flood Simulation System Development for Du Page County, Illinois**



Development of a near real-time operational flood simulation system has and will improve the hydrologic information available in Du Page County, Illinois, for issuing flood warnings and optimizing the operation of the Elmhurst Quarry Flood Control Reservoir. The project has two major components: (1) installation and operation of a comprehensive rain-gage network that will provide real-time rainfall data, and (2) development of a near real-time flood-simulation system. The objectives for the second component are: (1) simplify and interface computer models of the Salt Creek watershed into a near real-time flood-simulation system that is more robust and easier to use; (2) test the modified models; and (3) integrate the models with the data-retrieval and analysis systems being developed for the rain-gage network, to ensure that the models are user-friendly and produce timely results.

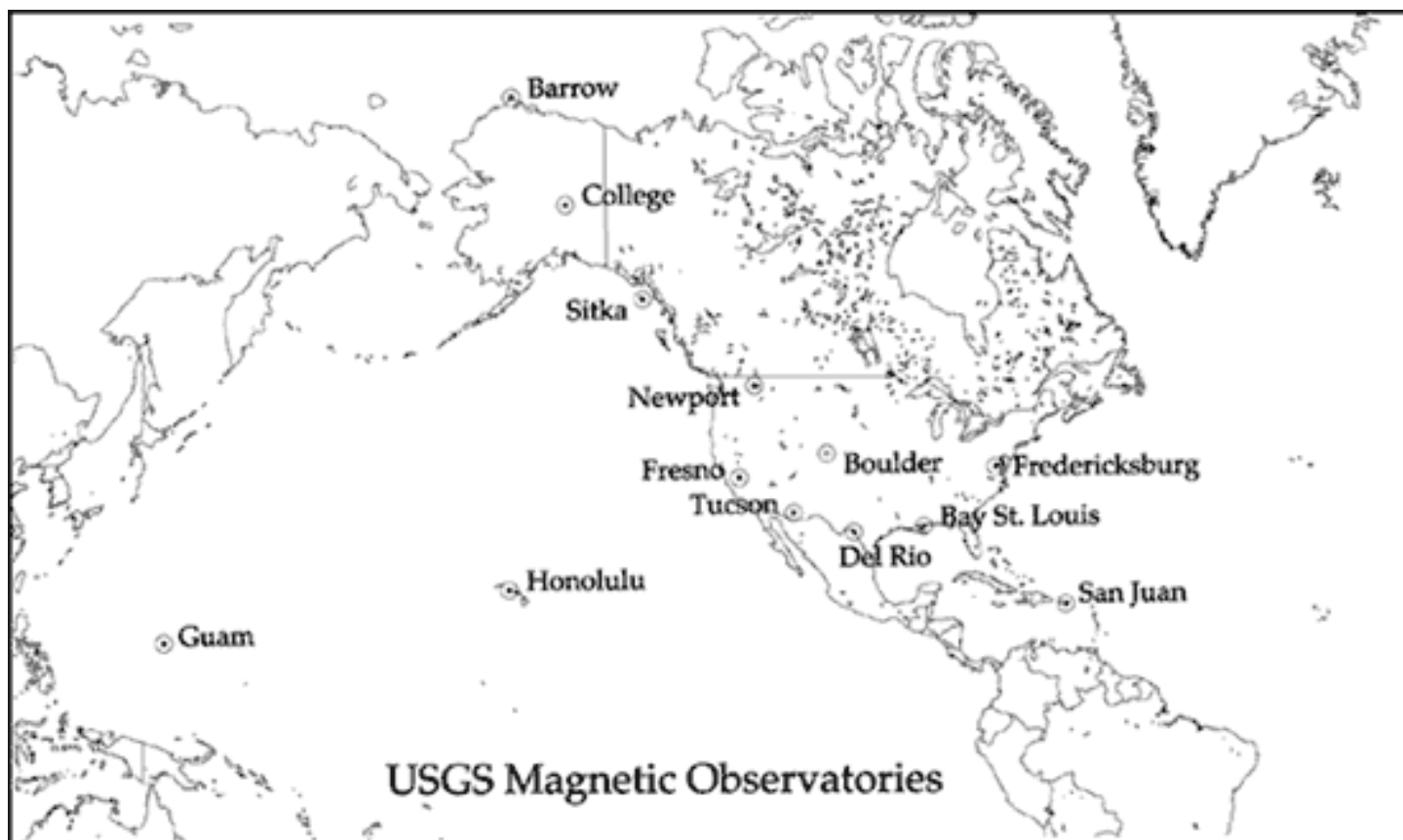
Appreciable progress has been made on the two major project

components during FY 1998. The rain-gage network is fully operational. The stand-alone simulation system is functional, and documentation is in preparation. The data input interface has been reviewed and enhanced. When it is completed, this system will increase the efficiency of all Du Page hydrologic and hydraulic modeling applications.

## **Earth's Magnetic Field -- Geomagnetism**

*Expanded Observatory Program* -- In FY 1998, the USGS Geomagnetism Program entered into a long-term partnership with the Navy and the National Imagery and Mapping Agency (NIMA) to provide these agencies and the Department of Defense (DOD) with critical geomagnetic data. The DOD agencies and NIMA require specific models of the Earth's magnetic field for navigation and for other purposes. New sources of crucial geomagnetic data, particularly from the ocean area of the world are needed to make

these models. This partnership will enable the program to establish completely instrumented geomagnetic observatories in oceanic regions of the world, especially in the southern hemisphere, areas from which no continuous geomagnetic data are currently available. The data from these "critical gaps" in the present coverage will be the basis for the long-term modeling and charting activities that will provide the 5-year geomagnetic models to our partners in 2001.



*USGS Magnetic Observatory locations*

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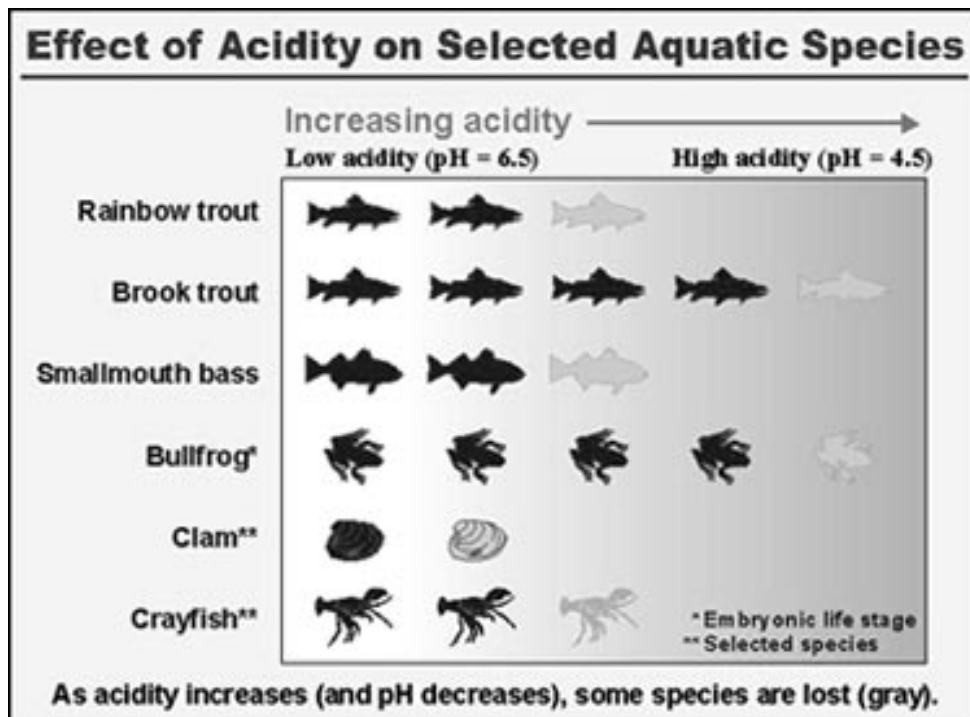
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**Resources:** The natural resources of our Nation are its land, water, minerals, and energy. These renewable and nonrenewable resources are needed to sustain life and to maintain and enhance our economic strength. USGS activities in the natural resources theme area inventory the occurrence and assess the quantity and quality of natural resources. Activities also include monitoring changes to natural resources, understanding the processes that form and affect them, and forecasting the changes that may be expected in the future.

## Helping to Mitigate Acid Mine Runoff



Over 400,000 abandoned mines are found on Federal lands. In addition, many more are adjacent to Federal lands or are affecting water quality and biological resources under Federal stewardship. Defunct mines have contaminated public and private lands with more than 50 billion tons of untreated mine waste. In the Appalachian coal region, acid mine drainage (AMD) has degraded more than 8,000 miles of streams and has left some aquatic habitats virtually lifeless. The cleanup and remediation of abandoned mine sites will require a huge investment of taxpayers' dollars. In West Virginia alone, the coal

industry is spending approximately \$1 million each day to treat acid mine drainage.

USGS scientists are applying their knowledge and expertise to develop environmentally acceptable and cost-effective treatment processes for acidic, metal-laden drainage from abandoned coal mines. This restoration technology integrates fluidized bed reactors with carbon dioxide adsorption and desorption steps to circumvent problems that limit wide spread use of limestone as an acid neutralizing reagent. Field tests of the technology are currently being conducted in cooperation with the National Park Service, the Freshwater Institute, and the Pennsylvania State Department of Environmental Protection. Field tests include establishing the effects of the treatment process on acid-sensitive aquatic invertebrates and fish. Treating only a portion of the stream with super-treated effluent reduces the need for large, expensive



equipment and decreases the costs of all aspects of the treatment process.

## Microbiological Quality of Public Water Supplies

In cooperation with the Missouri Department of Natural Resources, Public Drinking Water Program, the USGS sampled 109 public water supply (PWS) wells in 1998 to characterize the microbial activity of ground water in the Ozark Plateaus region. Much is known about bacterial contamination, but little is known about viral contamination and its relation to the bacterial and chemical characteristics of the ground water. Results of this study will provide State regulatory agencies with data needed to make informed decisions on treatment of potable ground-water supplies in the Ozark Plateaus and will provide useful and timely input to the U.S. Environmental Protection Agency for establishing ground-water disinfection rules for this type of carbonate aquifer system.



*Sampling for microbes*

Preliminary results indicate that microbiological contamination of PWS wells in the Ozark Plateaus is not widespread. A USGS Fact Sheet describing the cooperative study and presenting the results of the first round of sampling is available on the USGS Missouri District home page at <http://wwdmorll.er.usgs.gov/>.

## Swift Fox Range Expansion and Population Growth



Swift foxes, a species of the short-grass prairie ecosystem, have suffered major population declines. (The current status of the swift fox is a candidate species with a "warranted but precluded" recommendation for listing as endangered [Federal Register, U.S. Fish and Wildlife Service, Ecological Services, Pierre, South Dakota].)

Factors limiting expansion of swift foxes into unoccupied portions of their historical range are unknown, but availability of suitable habitat and scarcity of food historically have been suggested as possible limiting factors.

Instead, preliminary findings of current research at USGS suggest that interspecific competition with red foxes may be preventing swift foxes from pioneering into areas with suitable habitat. Interspecific competition could seriously compromise management being proposed for the conservation of swift fox. Attempts to translocate swift foxes to new areas could be extremely difficult or impossible if large populations of red foxes reside in areas considered for translocation projects. Where coyote management is being contemplated to enhance survival of swift foxes, it is important to understand the relationships between these canids. In many situations, control of coyotes will enhance distribution and abundance of red foxes and thus, negatively affect swift fox populations. The conflict between the swift and red foxes has



potential for greater impact than the conflict between swift foxes and coyotes. Without understanding interspecific relationships, we risk ineffective or possible failure of management programs, loss of time and funds, and the conservation of the species may be compromised.

## **Bison and Brucellosis in the Greater Yellowstone Area**

The successful long-term management of bison and brucellosis in the Greater Yellowstone Area is influenced by many issues relating to bison population ecology and the epidemiology of brucellosis. In an effort to develop a more comprehensive understanding of these issues, USGS scientists are leading a collaborative effort with university, State, and Federal groups involving a number of studies. Ecological studies focus on forage availability, habitat use, and bison population dynamics. Brucellosis research includes examining the risk of transmission of the disease from wildlife to cattle, identification of exposed animals in the field, and the safety of vaccines to wildlife species. The information gained from these studies assists Park managers, Federal and State officials, Congress, and others in developing future bison management plans. For example, preliminary data are being used to project the outcomes of various management alternatives identified in the Draft Environmental Impact Statement for the Interagency Bison Management Plan for the State of Montana and Yellowstone National Park.

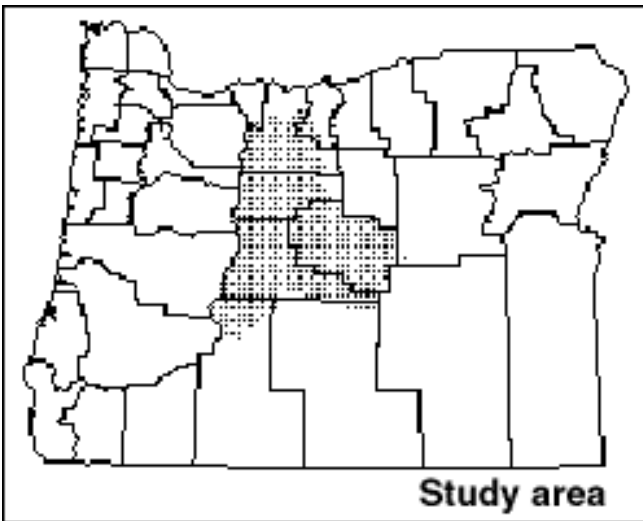


## **Dynamics of Wolves and Their Prey in Denali National Park**

Management of wolves and their prey is currently a major National environmental issue with recovery of threatened and endangered wolf populations in the western U.S. In Alaska, the contentious wolf management debate continues, and Federal land managers are playing a larger role because of subsistence management responsibilities. USGS scientists are studying the population dynamics of wolves and their major prey species, caribou and moose, in Denali National Park. This research will aid managers in understanding fluctuations in wolf and prey populations and in making predictions of future population trends necessary for harvest management and reestablishment of wolf populations. The USGS collaborated with co-authors from the National Park Service to publish a book in 1998 entitled "The Wolves of Denali." This volume is a summary of the most comprehensive study of wolves and their prey ever available and includes important information for students, researchers, and managers.



## Ground-Water Resources, Deschutes Basin



*Study area of ground-water resources in the Deschutes Basin*

USGS has worked in cooperation with the Oregon Water Resources Department, Deschutes and Jefferson Counties, the Confederated Tribes of the Warm Springs Reservation, and the cities of Bend, Redmond, and Sisters, on a project to evaluate the ground-water resources of the Deschutes Basin in Oregon. Data collected and computer simulations for this study have removed much uncertainty about regional ground-water/surface-water relations. Information from USGS studies has allowed State regulators to act on water-right applications in a manner that is more technically sound than methods used previously. A reassessment of ground-water policy in the basin, brought about in part by USGS project results, is presently underway by the Oregon Water Resources Department. In addition, USGS project staff have been interviewed by local news media on several occasions,

resulting in numerous newspaper articles and segments on local news channels. This frequent interaction with the news media has significantly increased public awareness relative to water resources issues in the Upper Deschutes Basin.

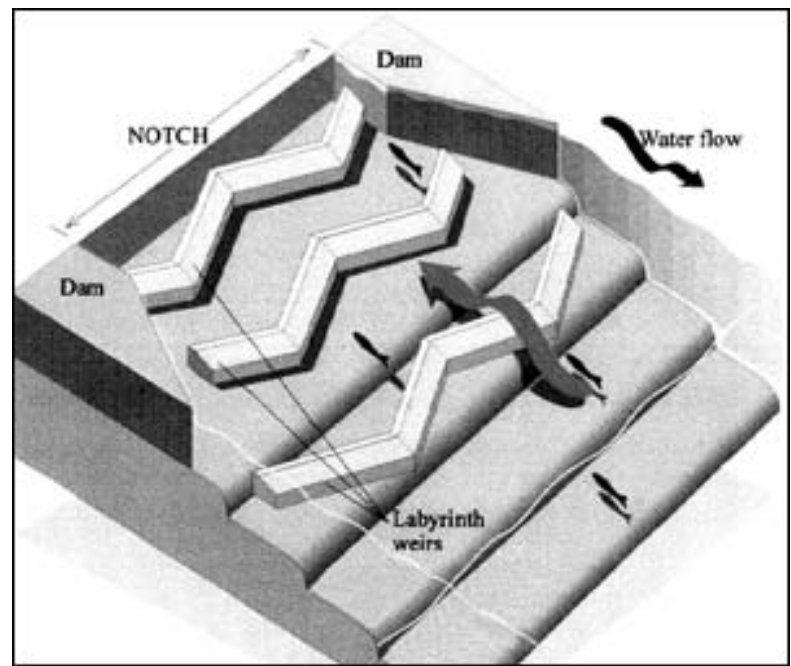
## Water Banking, Rialto Colton Basin

A ground-water investigation, in cooperation with the San Bernadino Valley Municipal Water District in the Rialto Colton Basin of San Bernadino County, California, has showed that artificial recharge ponds operated by the Municipal Water District are isolated from the main ground-water system by a previously unmapped fault. As a result of these findings, the Municipal Water District has ceased the recharge operations at these facilities.

## Little Falls Dam -- Resolving a Fish Passage Issue

The Fish Passage Team at the Center's Conte Anadromous Fish Laboratory has worked with a

consortium of Federal agencies within the Washington, D.C. area to develop an effective fish passage design for the Little Falls Dam. The dam, located on the Potomac River about six miles below the District, is an example of one of the numerous low head dams in the U.S. that is blocking migration of fish species. To provide effective fish passage, the design of a new passage structure would not only have to permit fish, such as shad, to pass upstream, but had to satisfy requirements for boaters and also maintain the head of water behind the dam for major Capital district buildings such as the White House and the Pentagon. The basic accepted design completed by the Conte Staff was a notch in the dam with an inclined plane (lower river side), including a unique labyrinth on the plane which



would permit fish passage, but also maintain the dam water-head and not be a danger to boaters. The Corps of Engineers will start to install the Conte design work during the 1998 summer period. When in place, the fish passage will provide an enhanced fishing experience for area visitors and residents.

## Scientific Framework for Decision Support Systems

In cooperation with ESRI, Inc., the USGS recently completed a new Geologic Information Systems (GIS) decision support system designed to operate on the World Wide Web, and produced demonstrations of the product for examining resources in Alaska and for evaluating abandoned mine lands in Montana. The Alaska product has been released via CD-ROM and the Montana products are about to be released. These products were derived from an ongoing 5-year project to disseminate electronically the National and regional databases of geochemistry, geophysics, mineral and mine localities, and lithology, as well as extensive science applications developed using the data. These applications support policy and regulatory decisions and provide scientific background for land management, environmental assessment, and resource inventories. For example, data layers describing existing wetlands, weathering properties of ore-bearing rocks, and location of mine tailings can be combined to help plan for relocation of tailings (mining residue) away from water sources. Rapid access to data meets the needs of our partners and customers, including the Bureau of Land Management, US Forest Service, National Park Service, and States, for real-time access to data in formats they can use for interactive analysis in support of planning, remediation, and the full spectrum of land use and management decisions.

## National Oil and Gas Resources

USGS petroleum research has been prioritized to improve our understanding of oil and gas occurrences and to reduce the uncertainties associated with oil and gas resource estimates. For example, the North Slope of Alaska is believed to have the greatest oil potential of any onshore area of the United States, and the USGS is conducting an intensive reexamination of the geology and petroleum potential of that region. The initial focus of this effort is the eastern North Slope, which includes the coastal plain of the Arctic National

Wildlife Refuge (ANWR). This work will produce the most up-to-date and comprehensive analysis of the oil and gas potential of the ANWR coastal plain and will produce a digital base of information that will facilitate land use and environmental decision making by the Federal Government. The ANWR effort will be completed in FY 1998, although the overall North Slope project will continue for several years as the focus of research shifts westward to areas that include the National Petroleum Reserve in Alaska (NPRA).

## **Federal-State Cooperative Program -- Bridge Scour Studies**



*Example of bridge scour*

Because of increasing National concern about the safety of highway bridges subject to scour, Departments of Transportation in all States have been mandated to complete scour assessments on all Federally funded highway bridges. Complete scour assessments require fairly complex hydraulic analysis that are expensive and time consuming. USGS hydrologists in Montana, in cooperation with the Montana Department of Transportation (DOT), developed a method for rapidly estimating bridge scour depth based on limited, easily measured data that could be applied to a large number of sites in a fairly short time. The method is based on data from similar USGS studies in 10 States. USGS

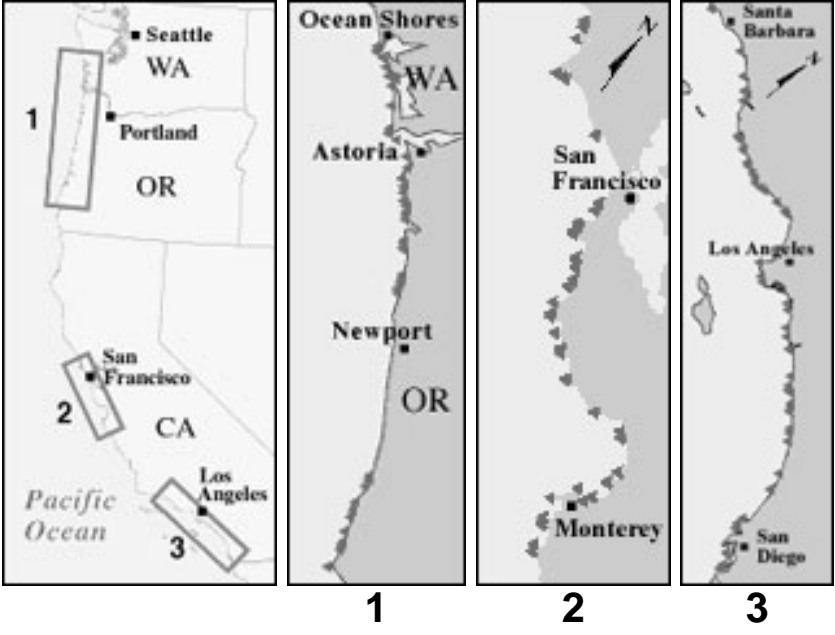
subsequently used the method to estimate scour depths at over 1,500 bridges in Montana, thereby greatly helping the Montana DOT to meet the National deadline for preliminary scour assessment. This study provided the Montana DOT with scour assessments on a timely basis that could not have been completed using conventional methods. In 1998, the rapid-estimation method has been used by USGS offices in other States to help State DOT's meet National deadlines and help ensure public safety. Cost savings to the State agencies are estimated to have been substantial.

## **Stream Bank Erosion**

During 3 years of investigating stream bank erosion in cooperation with the Alaska Department of Fish and Game, the Alaska Department of Environmental Conservation, and the Lake and Peninsula Borough, USGS hydrologists discovered that, during below normal flow years, as much as 97 percent of annual bank erosion is caused by boat wakes. In addition, areas of rivers that do not typically experience significant erosion, such as the inside of meander bends, have been undercut more than 4 feet during a single season of boat traffic. Even remote rivers with low numbers of boats, such as the Alagnak River in southwestern Alaska, experience substantial stream bank erosion induced by boat wakes. Accelerated bank erosion may degrade important habitats and threaten Alaska's economically valuable salmon resources. The results of the studies will be used to manage recreational activities on rivers in Alaska.

## **Coastal & Marine Geology**

As part of its response to El Niño and its coastal storms, the USGS and its Federal partners collected baseline data in October 1997 on the exact location of coastal features. The USGS, NOAA, and the National Aeronautics and Space Administration surveyed more than 1000 kilometers of coastal Washington, Oregon, and California using an advanced, high-resolution, laser-based topographic surveying system. These areas will be resurveyed after El Niño to document physical changes caused by the event. In addition, the USGS and State, local, and university cooperators are monitoring shoreline change at established coastal sites. Monitoring at a previously established ocean current and sediment network in central California has been extended through the El Niño event. These studies provide the basis for anticipating the threat posed by extreme climate events.



*Extent of surveys measuring the effects of El Niño storms on the Pacific coast...Triangles along the above coasts were locations of these surveys.*



*Main Beach, Santa Cruz the day after Christmas 1997, showing a wide beach early in winter before the onset of heavy El Niño storms.*



*El Niño winter conditions at Main Beach, Santa Cruz near the Boardwalk February 6, 1998, showing dramatic effects of storms causing extensive coastal erosion.*

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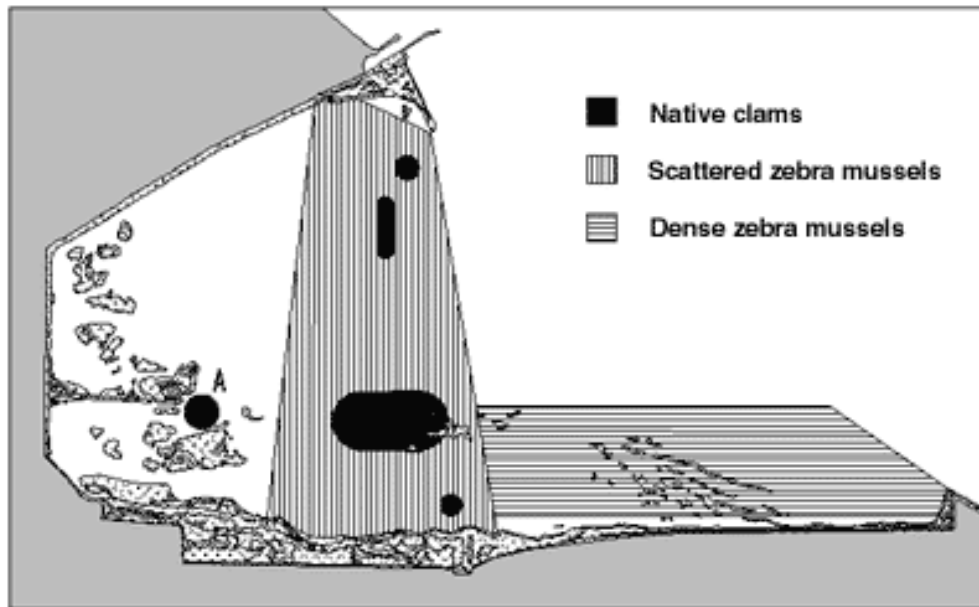
**Environment:** Our Nations environment the air, water, soil, and plant and animal life is constantly changing as natural processes and human actions affect it. USGS activities in the environment theme area include studies of natural physical, chemical, and biological processes, and of the results of human actions; the goal is to provide the understanding and scientific information needed to recognize and mitigate adverse impacts and to sustain the environment. Activities include data collection, long-term assessments, ecosystem analysis, predictive modeling, and process research on the occurrence, distribution, transport, and fate of contaminants, as well as the impacts of contaminants on plant and animal life.

## Climate-Driven Vegetation Changes

The USGS, in cooperation with University of Oregon and Colorado scientists, has determined the range of climate factors that control the distribution of vegetation in the western U.S., including specific types of trees and scrubs. This information has been organized into a database and conceptual model that can be used to gain insights into changes in vegetation that might occur under different climatic conditions. Knowledge of such changes is of critical importance to long-term management decisions made by DOI, Natural Resources Conservation Service (NRCS), State, forestry, and other land use planners. This knowledge gained by scientific models and experiments demonstrate that the effects of climate change are complex, and point to the need for developing capabilities to test and refine the projections and impacts of future changes.

## Burrowing Saves Lake Erie Clams

Freshwater clams in North America have been virtually eliminated from water that is colonized by the exotic zebra mussels. Near total mortality has been reported in western Lake Erie, but USGS biologists have discovered a large population of native clams in a Lake Erie wetland (Metzger Marsh) that shows little sign of infestation. Field observations and laboratory experiments show that soft sediments trigger burrowing by clams. This discourages infestation and physically removes any attached zebra mussels. These results provide promise that at least some clams are using the wetland as a refugium, and that the clams may be available to recolonize Lake Erie if zebra mussel populations ultimately decline.



*Aerial view of native clams in Lake Erie wetland that shows little sign of infestation.*

## **Mt. Rainier Air Pollution Findings**

Recent studies by USGS scientists and students have shown that Mt. Rainier National Park is the most polluted area of Washington State in terms of tropospheric ozone. This colorless gas is formed from nitrogen oxides and organic compounds, common components of fossil fuel emissions, in the presence of sunlight. It is highly toxic to both humans and vegetation at very low concentrations. Pollutants produced in the Seattle-Tacoma metropolitan area are transported eastward toward the Cascade Range, where Mt. Rainier is directly in the path of the pollutant plume. Weekly average concentrations of ozone are actually higher in the Mt. Rainier regions than they are in the Seattle area, with the highest exposures at high elevations up to 8,000 feet. Ozone synthesis is enhanced by warm, sunny weather, so rural residents, recreational visitors, and alpine vegetation are exposed to potentially harmful levels of ozone during the summer when park visitation is highest and plants are metabolically active. As the human population of the Seattle-Tacoma region continues to increase and more motorized vehicles crowd local highways, air pollution levels can be expected to increase as well. Ongoing cooperative work between USGS scientists and the National Park Service will provide an early warning to future changes in air quality and the health of sensitive plant species in Mt. Rainier National Park.



*USGS scientist collecting air quality samples at Mt. Rainier National Park.*

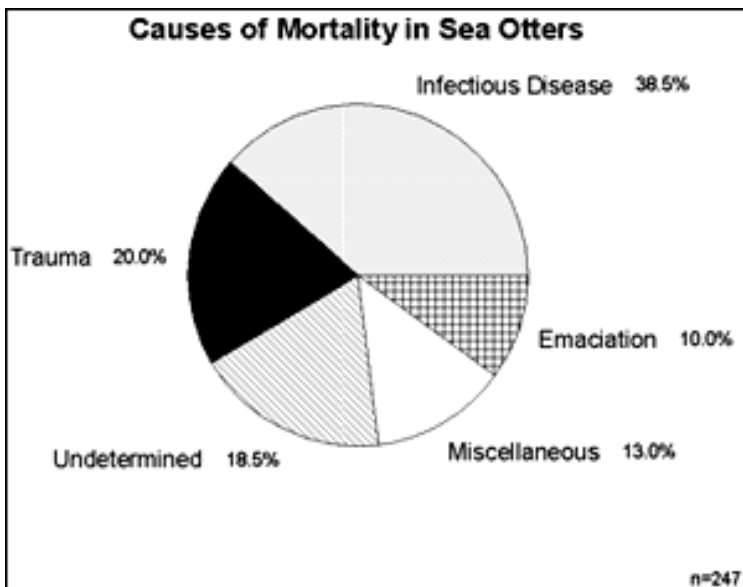


*Mt. Rainier, USGS photo by Lyn Topinka.*

## **USGS Data Help Determine Cause of Fish Disease Outbreak in Southeast Florida**

Historical flow data from two long-term stations, the Caloosahatchee Canal discharging to the west coast and St. Lucie Canal discharging to the east coast, are being used by the Florida Department of Environmental Protection (FDEP) to examine the correlation of low salinity to recent outbreaks of fish disease. Historical data from the St. Lucie Canal will be used to examine the frequency of this year's high, El Niño related discharges and to determine if previous outbreaks of fish disease were related to periods of high flow. Historical discharges from both stations will be compared and used to determine why fish disease outbreaks are apparently confined to the east coast. Results of these analysis were presented by FDEP staff at a town meeting in Stuart, Florida on April 21, 1998.

## **Further Decline in Southern Sea Otter Population**



California's threatened southern sea otter population has not increased since 1994. At the request of the U.S. Fish and Wildlife Service (FWS), USGS pathologists have been determining the causes of mortality of southern sea otters. To date, findings have shown that California sea otters have an unexpectedly high mortality from infectious diseases. The variety and frequency of the diseases led USGS pathologists to suspect that something may be suppressing the sea otters' immune systems, making them more vulnerable to infectious diseases. Tissues from a subset of dead adult otters were analyzed for two classes of aquatic contaminants known to suppress animal immune system. The chemical analyzes revealed that tissues from southern sea otters have high

Miscellaneous category = causes of mortality were determined, but the percentage of the population was so small that they were lumped together into one category.

concentrations of one of these known contaminants. While USGS's results show that the southern sea otter population has high rate of mortality caused by infectious disease and that the population is being exposed to some

classes of immune suppressive marine contaminants, no direct cause-and-effect linkage has been made. This information was presented to the Southern Sea Otter Recovery Team at their March 1998 meeting. The information will help Recovery Team biologists determine where to focus future sea otter research.



## Ash Meadows Habitat Restoration



*USGS scientists at Ash Meadow Wildlife Restoration site.*

Ash Meadows National Wildlife Refuge is the home of three Federally listed endangered fishes and one Federally listed aquatic insect. These species have declined in number and distribution because their aquatic environment has been greatly altered by man and invaded by non-native fishes. USGS scientists have researched the habitat use, life history, and interspecific interactions of the indigenous species with non-native fishes. This information is being employed by the U.S. Fish and Wildlife Service to restore stream habitat on the Ash Meadows National Wildlife Refuge. USGS scientists assisted in the design of stream habitat that favors the Federally listed native over non-native species. The results of the research and stream restoration will lead to the delisting of four Federally listed species.

## Pesticides in the Willamette River Basin

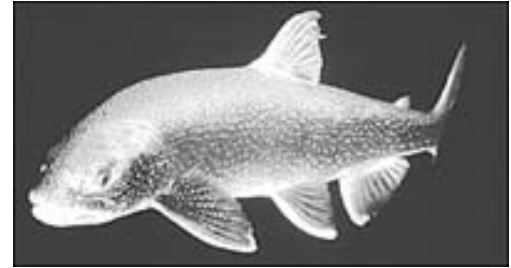
In January 1998, USGS released a report describing Phase III of the Willamette River Basin Water Quality Study, a cooperative study with the Oregon Department of Environmental Quality (DEQ). The report describes

pesticide concentrations and other water-quality considerations in small watersheds in the Willamette Basin that have intensive upstream agricultural or urban land uses. Streams in these watersheds have somewhat higher pesticide concentrations and more exceedances of water-quality criteria for bacteria and temperature than larger streams studied previously. The report has had an impact on State decision making because the DEQ is required to list water-quality-limited streams under the Clean Water Act and has, until now, focused on larger streams in the basin that typically have more data. Several other repercussions of the study include: (1) a recommendation in a report by the Governor's Task Force on the Willamette River, to implement many land-use practices that

could reduce pesticide occurrence in streams; (2) inclusion of USGS at a Town-Hall style meeting with the Governor at the State Capitol Building, to discuss water-quality issues in the Willamette; (3) use of data by entities considering the Willamette River for a drinking water source; (4) impetus for debate and introduction to the legislature of a pesticide use reporting law; (5) use of the study's findings by local watershed councils to help decide on watershed management issues; and (6) the Oregon Department of Transportation's decision to investigate pesticide runoff from vegetation management along rights-of-way.

## **Lake Trout Restoration in Lake Superior**

USGS biologists, working closely with State and tribal fishery management agencies, demonstrated that the survival of hatchery-reared lake trout stocked by the U.S. Fish and Wildlife Service has declined over the past 20 years. Results of this work led to the decision to end stocking throughout most of Lake Superior and place greater emphasis on protecting wild stocks to further lake trout restoration. This combined science and management approach is now being adapted to restore lake trout in the other Great Lakes as well as to other native species in all of the Great Lakes.



## **Improving Fish Health in the Chesapeake Bay**

The USGS is contributing to the Bay restoration by participating in the multi-agency Chesapeake Bay Program. USGS laboratories are conducting multi-disciplinary scientific studies to better understand Bay restoration issues and to assist resource management agencies in designing and implementing effective restoration strategies. USGS scientists, in cooperation with the State of Maryland, conducted analyses of fish kill and disease events which suggest that fungi and bacteria may be the primary infectious agents that caused lesions in striped bass, white perch, bullheads, and other estuarine fish in the Bay. Non-point source run-off may be a factor in stimulating microbial infections. It is also likely that restoration of riparian zone vegetation is a solution to reduce non-point source pollution. In addition, USGS scientists are analyzing changes in land cover types in the Bay watershed over time and linking these changes to nutrient and sediment loads. This information, along with other data collected by USGS and other agencies, will be invaluable for determining the effect of land use practices on the nutrients and sediments entering the Bay and their effects on water quality and living resource responses, including fish health. USGS works with more than 25 Federal agencies, as well as State and local agencies, universities, and private interest groups under the Chesapeake Bay Program. This multitude of Federal, State, and local agencies will use USGS information to support policy formulation and decision making for the restoration of the Bay. This information is especially in demand by land and resource managers as they develop management practices for future Bay restoration.

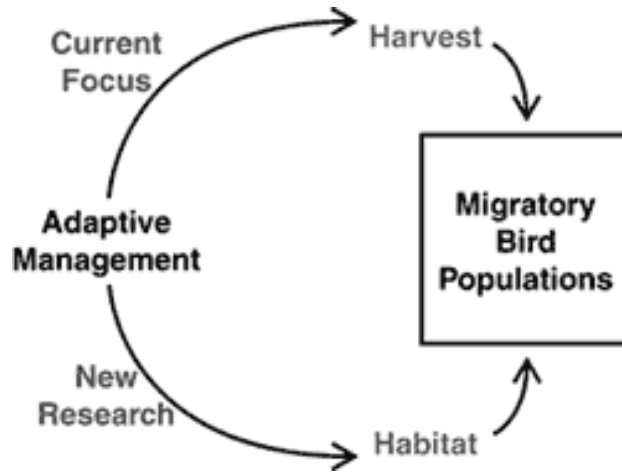
## **Adaptive Management of Waterfowl Populations**

The USGS has an initiative to develop and implement new methods of determining how habitat conditions and hunting affect waterfowl populations. Models developed for adaptive management of hunting are revolutionizing Federal and State regulation of waterfowl hunting. In partnership with the U.S. Fish and Wildlife Service and other State and Federal resource managers, USGS scientists are expanding this innovative approach by developing scientific tools for designing effective conservation



*Northern pintail ducks*

programs. The goal is to incorporate detailed habitat informant models for waterfowl, so that effects of both hunting and habitat management on waterfowl can be evaluated.



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**Information:** Information management is both a strategy, driven by customer needs, and an infrastructure, shaped by technology, for handling and distributing information. Information management crosses disciplinary and administrative boundaries. USGS information management activities organize, catalog, archive, maintain, and disseminate earth and biological science data and information so that all potential users are aware of and can acquire the information. The USGS distributes a variety of high quality earth and biological science information in the form of data bases, maps, and scientific and general interest publications. An increasing amount of this information is now available over the Internet and on CD-ROM. Properly managed information can be combined and interpreted for new understandings of earth and biological processes, and has multiple uses across disciplines in Government, the private sector, and the general public.

## **Geographic and Cartographic Information**

### **The National Atlas of the United States of America**

The new National Atlas of the United States is an ambitious, Government-wide partnership led by the USGS that aims to make geographic information more readily accessible to individual Americans. The National Atlas is designed to promote greater geographic awareness through the development and delivery of products that provide easy to use, map-like views of our natural and societal landscapes. It will include products designed to stimulate children and adults to visualize, comprehend, and even marvel at the complex relationships between environments, places, and people. The National Atlas is intended to serve the interests and needs of a diverse populace in many ways, such as:

- an essential reference,
- a framework for information discovery,
- an instrument of education,
- an aid in research, and
- an accurate and reliable source for scientific information.

The USGS and its partners delivered the first new National Atlas products in 30 years during FY 1998. These included:

- an online, interactive mapping system that allows citizens to make and explore their own maps within their favorite World Wide Web (WWW.) browser,
- information pages on the WWW that describe this project and its opportunities for business partnerships,
- an interactive mapping engine for the interagency <http://www.recreation.gov/> web site,
- innovative and redesigned National Atlas paper maps, and
- complete, consistent, and authoritative digital map layers that can be downloaded and used to explore information gathered at a National level.



## USGS and Microsoft Form Research Partnership

Now, with a few computer mouse clicks, scientists, planners, consumers, and school children can see U. S. Geological Survey aerial images with resolutions as close as 1.0 meters<detailed enough to distinguish buildings and cars, but not people<over the Internet using the new Micro-soft TerraServer. The website can be reached at <http://www.terraserver.microsoft.com/>. The U.S. Geological Survey and the Microsoft Corporation entered into a cooperative research and development agreement (CRADA) to make vast amounts of geospatial data available to the general public through the Internet. As part of a 36-month joint effort, Microsoft agreed to modify a massive volume of USGS geospatial data so the images can be quickly and easily displayed with unprecedented clarity over the Internet. The Microsoft TerraServer website opened to the public in June 1998 serving more than one terabyte (1 trillion bytes) of geospatial data from a user-friendly interface. The TerraServer enables users to view and download digital orthophoto quadrangle (DOQ) images<digital images of aerial photography that combine the image characteristics of a photograph with the geometric qualities of a map.



The initial response to the TerraServer has been spectacular. Early statistics show the average number of hits at 12 million per day with a peak of almost 29 million hits on July 1. TerraServer is a mutually beneficial research effort where the Federal government and private industry have come together to provide general public access to USGS geospatial data while allowing Microsoft and other project partners to promote their technological contributions. The USGS looks forward to future opportunities in which to partner with private sector entities to expand access to valuable data and information resources.

## USGS Digital Raster Graphics Now Available Nationwide



*Summer campers learning to use a topographic map.*

USGS Digital Raster Graphics (DRG's)-that is, computer-readable images of topographic maps-are now available for all of the United States, Puerto Rico, the U.S. Virgin Islands, and the Pacific islands. DRG development began in early 1994; production began in October 1995. The DRG's of the Pacific islands, finished in March 1998, marked the completion of nationwide DRG coverage.

The program involved producing DRG's for approximately 59,000 topographic maps in 22 years, a massive undertaking conducted with project partners in the Federal and private sectors. DRG's have become an extremely valuable tool for use in emergency and hazards relief applications. Sales for FY1998 are projected to surpass 1 million

dollars.

## Digital Ortho-Imagery Grows

National coverage of digital ortho-imagery quadrangles (DOQ's) grew to 48 percent in FY1998, up from 28 percent in FY1997. DOQ's are digital images that combine the image characteristics of an aerial photograph with the geometric qualities of a map. During the 1998 forest fire emergency in Florida, DOQ's provided up-to-date cartographic information for fire fighters. DOQ's are also used in Florida and elsewhere to update geospatial data relating to land use, hydrography, and transportation. Computer users around the world can now view and download the high resolution aerial images of USGS DOQ's at the Microsoft TerraServer website (<http://www.terraserver.microsoft.com/>).



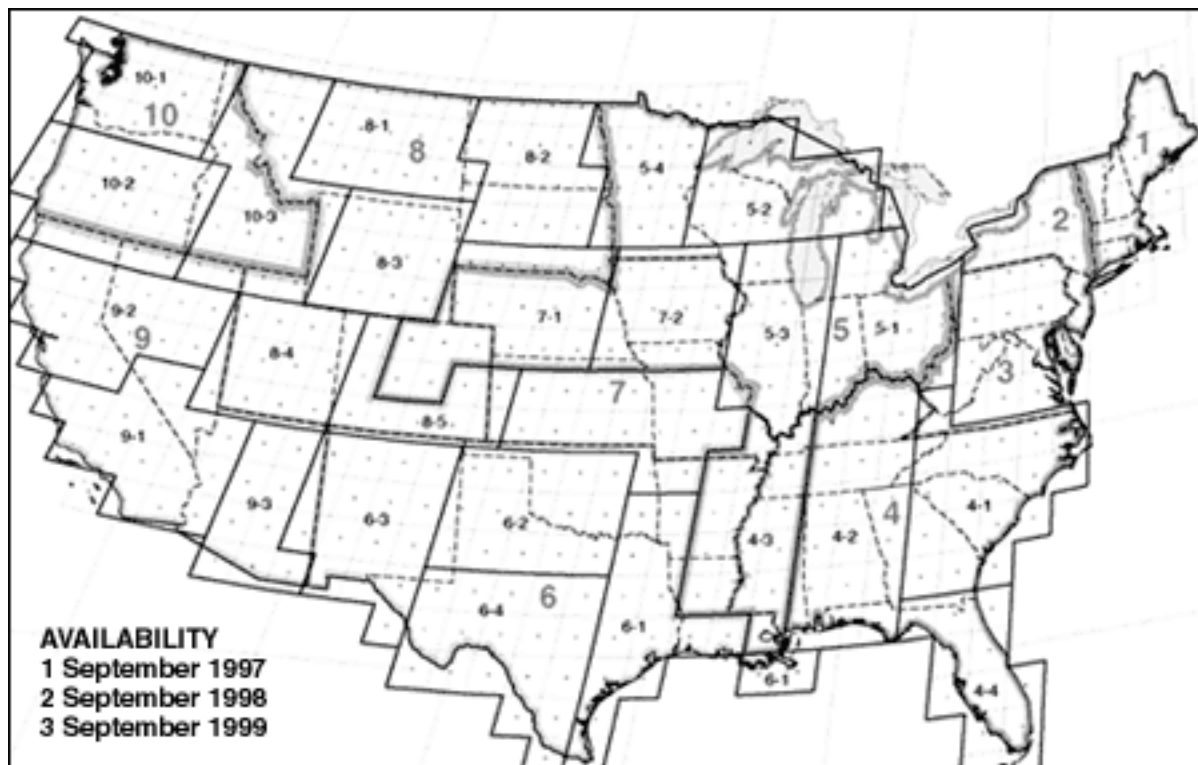
*DOQ's support fire fighting efforts*

## Regional Land Cover Mapping



Land cover mapping was completed for 23 of the conterminous States in FY 1998, bringing the total number of States completed to 30. The remaining 18 States will be completed in FY 1999, the final year of the project.

The Multi-Resolution Landscape Characteristics (MRLC) Consortium was formed in 1993 to consolidate Federal agency requirements for satellite data. Members include the U.S. Geological Survey, U.S. Environmental Protection Agency, National Oceanic and Atmospheric Administration, and U.S. Forest Service. This nationally consistent 30-meter land cover data set is based on Landsat Thematic Mapper data and uses a consistent protocol and the hierarchical classification system adopted by the MRLC partners. The land cover data are used for land and water management, environmental monitoring, crop and vegetation studies, and climatic investigations.



## National Spatial Data Infrastructure

The USGS, as co-chair of the Federal Geographic Data Committee (FGDC), is supporting the development, implementation, and promotion of National Spatial Data Infrastructure (NSDI) data standards. In FY 1998 the USGS led four National standards development efforts: (1) the National

Standard for Spatial Data Accuracy, (2) the Content Standard for Digital Orthoimagery, (3) the Content Standard for Digital Gridded Land Elevation Data, and (4) the Content Standard for Digital Geospatial Metadata. Additionally, the USGS is the maintenance authority for the Spatial Data Transfer Standard (SDTS) and supporting data profiles. The American National Standards Institute formally adopted SDTS as a national standard in July 1998.

Such data standards provide the geospatial data community with an improved and consistent approach for using and sharing geospatial data. They constitute a critical component to vigorous implementation of the National Spatial Data Infrastructure.

## National Cooperative Geologic Mapping



*U.S. map depicts the distribution, character, and temporal and structural relations of bedrock units throughout the United States.*

To reduce the loss of life and property from debris flows and landslides, the USGS is cooperating with the State of California and counties and the National Weather Service to produce and distribute geologic maps which depict debris flow and deep-seated landslide hazard zones, as a component of landslide advisory notifications throughout the major urban areas of coastal California. This effort is being undertaken in anticipation of major winter storms that may result from the current El Niño phenomenon. USGS experience with catastrophic events associated with the previous El Niño of 1982-1983, combined with the availability of digital data (elevation, geologic materials, and locations of previous debris flows and landslides in the San Francisco Bay region), provide the basis for joint cooperation in targeting areas of particular vulnerability. The

databases and resulting maps are generated from a geographic information system that includes cultural features such as roads, power grids, and population centers. Emergency response teams will use USGS database map information to evaluate the risk to society of this unusual weather phenomenon.

## Ground Water Atlas of the United States

USGS has completed publication of an atlas of the Nation's major aquifers. The atlas comprises a series of print publications which describe the location, the extent, and the geologic and hydrologic characteristics of the important aquifers of the Nation. The series consists of 13 chapters, which describe the ground-water resources of regional areas that collectively cover the 50 States, Puerto Rico, and the U. S. Virgin Islands.

The Atlas also serves as a basic reference that describes the location, extent, and geologic and hydrologic characteristics of all the major aquifers. More information on the Ground Water Atlas can be found on the USGS Web site at <http://wwwcapp.er.usgs.gov/publicdocs/gwa/>.

## Water Science for Schools

USGS's "Water Science For Schools" is a topic based Outreach World Wide Web site aimed at students, aged 9 to 90, who want to find out more about the many aspects of water. Topics include Water Basics, Earth's Water; and Special Topics such as Water Quality, Acid Rain, Water Use, and Water Data and Maps. The Web site also includes a Water Question-and-Answer section, a Picture Gallery; and an Interactive Activity Center where students can answer Challenge Questions, Opinion Surveys, and Questionnaires. The site is available at <http://ga.water.usgs.gov/edu/index.html>.

## "WEBCAM" Installed at Verde River

The USGS Arizona District has taken a step forward to the very edge of World Wide Web technology with the installation of a "webcam" at a streamflow gage on the Verde River near Scottsdale, Arizona. This camera is installed in the gage house and transmits still pictures of the Verde River every hour. This is the first time USGS has used "live" images from a gage site to confirm hydrologic conditions at that site. These pictures are displayed on a web page at [http://az.water.usgs.gov/webcam/cam\\_09511300.html](http://az.water.usgs.gov/webcam/cam_09511300.html).



*Webcam installed at streamgage shelter at Verde River near Scottsdale, Arizona.*

## Decision Support for Restoration of Native Plants

The Beta Version 2.0 of a World Wide Web-based tool known as VegSpec was released to the public of wind breaks, or a host of other desires. In many of these cases, correct selection of plant species for a particular site relies on the best judgment of land managers based on regional soils and climate and on information contained in plant material handbooks. This information can be difficult for land managers to locate and incorporate in their decision-making. VegSpec is a decision-support tool that can help in this process. The USGS has been cooperatively developing this tool with the U.S. Department of Agriculture-Natural Resources Conservation Service and the U.S. Army Construction Engineering Research Laboratories. This software automates the selection of plants species based on site-specific conditions, and assists in the design and application of practices for establishment of wildland vegetation throughout the United States. Version 2.0 is a major refinement of a text-based version with a new graphical user interface. It also allows for efficient web-based access using current browser software.





*Riparian buffer strip*

## USGS Metadata Clearinghouse



In FY 1998, the USGS initiated operation of an online Metadata Clearinghouse as part of the National Biological Information Infrastructure (NBII) program. The NBII Metadata Clearinghouse (<http://www.nbio.gov/clearinghouse.html>) can be used to identify existing sources of biological information from government

agencies, universities, and many other organizations. Internet users can search through an online catalog of standardized descriptions of biological data sets, technical reports, and other information products to locate sources that meet their particular requirements. Descriptions of additional data sets and information products are being added continually to the Clearinghouse. The USGS provides training and technical assistance to other Federal agencies, State governments, and individual scientists to help them to document their significant biological data sets and information products so that they can be included in the NBII Clearinghouse.

## Access Expanded to Integrated Taxonomic Information System



In FY 1998, the USGS collaborated with 5 other Federal agencies to expand public access to information on the names and classifications of North American plant and animal species through the Integrated Taxonomic

Information System (ITIS) at . ITIS is the only comprehensive online source of scientific and common

species names in the world today. In April 1998, USGS and its Federal partners received a Hammer award for Reinventing Government from the Vice President's National Performance Review. In FY 1998, the USGS also added to the ITIS system by providing access to an online directory of information on taxonomic scientists of North America and their respective areas of expertise (<http://www.nbii.gov/tred/>).



*In April 1998, a scientific team from the U.S. Geological Survey received the Vice president's Hammer Award for the Integrated Taxonomic Information System (ITIS).*

## **An Approach for Science-Based Decision-Making: Integration of Science, Monitoring, and Management**

A prototype decision support system has been developed by USGS scientists and Upper Mississippi River National Wildlife and Fish Refuge (U.S. Fish and Wildlife Service) to provide a rapid-access, user-friendly, and scientifically-based tool to aid Mississippi River managers. Since most resource issues are evaluated in a partner-public framework, communicating often complex and voluminous scientific information rapidly and succinctly is central to successful science-based conflict resolution. This project built upon a joint effort "The Management Strategy for Migratory Birds on the Upper Mississippi River Corridor" to provide an integrated, ecological, and pro-active approach to management of migratory bird habitats in the context of other landscape, biological, and sociological components. Data from the Long-term Resource Monitoring Program, a cooperative State-DOI-Army Corps of Engineers effort authorized under the Water Resources Development Act of 1986, provide much of the underpinnings for the project. This is a digital decision support system that becomes an electronic ecosystem encyclopedia for planners. It integrates physical, land cover, biological, and social themes. Software provides for visual integration and cataloguing of most types of digital information including scalable GIS layers, text, and scanned images. The system is PC-based with available commercial software, making the manager's interface accessible and cost-effective. The prototype system is used daily by the La Crosse

District of the Upper Mississippi River National Wildlife and Fish Refuge to make management decisions.

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## Y2K

In response to the need to ensure all computers and information systems are ready for the Year 2000, the Department of the Interior has implemented a Department-wide initiative to analyze and correct potential Year 2000 conflicts. A discussion of Interior's state of readiness, the costs of addressing Year 2000 issues, the risks to the Department of Year 2000 issues, and the Department's contingency plan is presented in management's discussion and analysis included in the Department of the Interior's Fiscal Year 1998 Accountability Report.

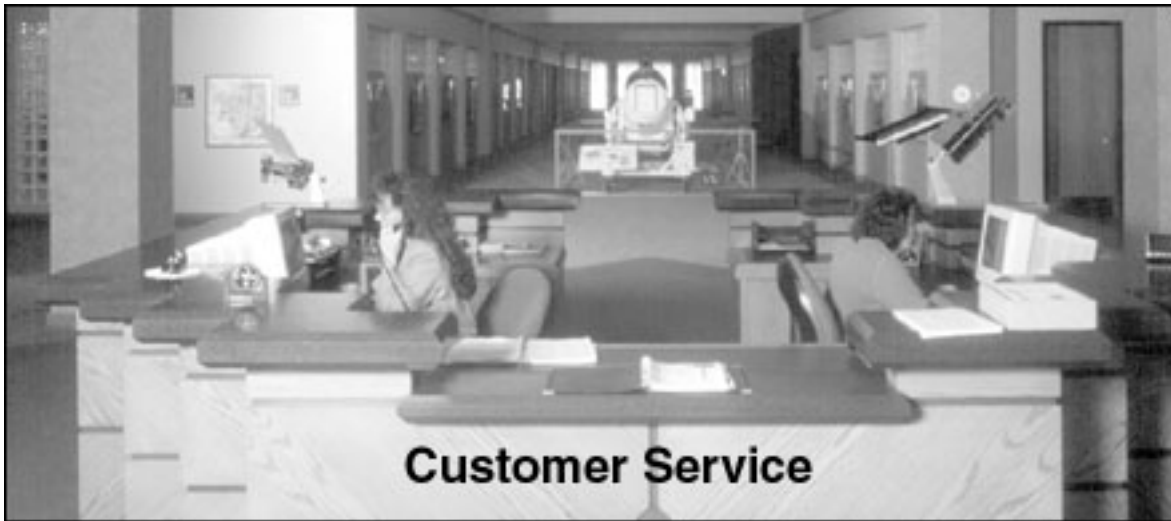
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In Fiscal Year 1998, the U.S. Geological Survey made a formal commitment to its customers by adopting a bureau-wide customer service policy developed by the bureau's Customer Service Team. This policy, which will become a chapter in the USGS Manual, reaffirms the USGS pledge to serve its customers with excellence. The policy outlines the USGS responsibility to work with customers to improve the practical value of the information, services, and products that it provides, as well as improving the delivery mechanisms used to distribute these. USGS employees are reminded by the policy of the importance of interacting proactively with customers, identifying their needs, and integrating these needs into USGS program planning and implementation. The policy also establishes a framework for complying with authorities, such as Executive Order 12862, "Setting Customer Service Standards," and the April 1998 Presidential Memorandum, "Conducting Conversations with America."

As part of the policy, USGS adopted the following standards for customer service. USGS customers should expect:

- Credible, relevant, impartial information about the natural sciences and the support systems for these sciences;
- Courteous and respectful treatment;
- Prompt and accurate answers to questions;
- Timely responses to information requests through single-point contact whenever possible;
- Customer input to be considered in USGS plans, programs, and services; and
- Prompt attention to mistakes and problems, and corrections made to repair these.

The policy also tasks USGS program managers with meeting requirements of the Executive Order including:

- Setting annual customer service goals,

- Measuring progress in meeting goals and ensuring these goals are achieved,
- Obtaining feedback from customers regarding services and products,
- Collecting data needed for an annual customer service progress report,
- Identifying opportunities for improvement,
- Identifying pilot opportunities for highlighting customer service, and
- Developing customer service performance measures and incorporating these into programs as part of the Government Performance and Results Act (GPRA) and annual performance planning process.



*Field checking AVIRIS maps in Yellowstone National Park.*

The USGS Customer Service Team continued to champion customer service within the bureau and to increase awareness of the importance of working with customers. To develop ways to obtain customer feedback, the team submitted a request to the Office of Management and Budget to approve a three-year program of information collections regarding customer satisfaction with specific activities of the USGS. Once approved, the "generic clearance" to conduct such information collections will enable the USGS to formally survey its customers using a variety of tools including questionnaires, comment cards, web-based feedback surveys, and focus groups. All surveys will be voluntary and customers will be randomly sampled. A quantitative analysis of

customer satisfaction data related to information, product and service timeliness, accuracy, usefulness, and quality will be made and used as a basis for continuous improvement. Copies of the master plan for conducting the three-year program of customer satisfaction information collections can be obtained by e-mailing [customer@usgs.gov](mailto:customer@usgs.gov).

In Fiscal Year 1998, the USGS released a report to customers summarizing progress made in meeting our FY 1997 customer service goals. A copy of the report can be seen at <http://pubs.usgs.gov/customer/1997/>. The report also contains the USGS Fiscal Year 1998 Customer Service Plan.

The FY 1998 Customer Service Plan offers the following goals for USGS in 1998.

Goal 1: USGS customers are satisfied with our products, information and services.

Goal 2: USGS products are delivered to our customers in a timely and accurate manner.

Goal 3: Customer needs are integrated into USGS program planning and product development.

Goal 4: Products, services, and information provided by USGS to its customers make this a better world.

Highlights of progress in meeting these goals for FY 1998 follow.

## **Biological Resources Program's Annual Survey**

The USGS Biological Resources Program sponsors an annual survey of its partners to determine satisfaction levels with various aspects of its service. Its most recent survey yielded some interesting findings, particularly as these relate to the way in which customers use USGS information. When asked about satisfaction with USGS biological research products, 98 percent of respondents who used these products; which include research findings published in reports, journal articles, monographs, and books; indicated that they were very satisfied or satisfied with these.

Of those responding, 99 per cent used technical assistance services (including assistance with application of research results, methods, and tools; site visits to advise or instruct; and written or phone consultations) and were very satisfied or satisfied with these services. Respondents to the survey provided concrete examples of how USGS biological resource program information is being used. Also 75 percent indicated that they used this information to help

*"All our management related to brucellosis-infected mammals is based on USGS information provided. We could not manage effectively without this information."*

U.S. Fish and Wildlife

them make land or resource decisions. For example, one customer noted that the "Data obtained from this USGS study resulted in major changes in commercial fishing practices in Prince William Sound, Alaska." Another noted that "The information, provided by USGS, was used for our analysis of effects to listed and sensitive species— for rulemaking that will address the conservation of the northern spotted owl on non-federal lands—The project involved incredible volumes of data and a rather complicated analysis. Without their USGS help, I do not think we could have completed this project as effectively." Such information is being used by the USGS not only to improve customer satisfaction levels with products, services, and information, but to meet customers expectations and, "make this a better world."

## **National Cooperative Geologic Mapping Program**

The USGS National Cooperative Geologic Mapping Program identified its key customers and held a workshop in May 1998 to solicit input from these potential users of a USGS product: the National Geologic Map Database. Over 40 users representing other Federal agencies, State agencies, libraries, universities, museums, business and industry, and professional societies were presented with an overview of the Congressionally-mandated project. These customers were also given an opportunity to interact with the Internet-delivered prototype database. Participants suggested numerous improvements to the interface, content, and project schedule, and offered ideas for future cooperation with their own sectors. A summary of the workshop results was provided in September 1998 to all participants. The summary outlines plans for and progress toward implementing the suggestions collected from these

customers. In addition, two geologic map user forums in the Mid-Atlantic Region and the Central Great Lakes Region have been held to solicit customer input on improving geologic maps produced by the USGS. The Mid-Atlantic forum produced USGS Circular 1148 which documents how customer input was used in program planning. In response to customer needs expressed in the Great Lakes Forum, a new coalition between the USGS and the geologic surveys of Ohio, Indiana, Illinois, and Michigan was formed to map glacial sediments which contain critical ground water aquifers.

## National Atlas

The National Atlas of the United States project is an Access America initiative under the Vice President's National Partnership for Reinventing Government. The Atlas is an interagency effort, led by the USGS, to make geographic information more accessible and useful to Americans. Products and information are online at this Universal Resource Locator (<http://www.usgs.gov/atlas/>).



It has been clear since the inception of the project that success could only be achieved through partnerships with other Government organizations and the private sector and through effective communication between National Atlas developers and the American public. Project managers sought and received Office of Management and Budget clearance to collect customer input and have since engaged in a number of activities designed to include public opinion in reaching product development decisions.

Decisions related to the development of National Atlas data and information products and the introduction of an online, interactive mapping system have greatly benefitted from public input. The USGS has used focus groups, in-person surveys, online surveys, and electronic mail exchanges as methods to solicit public views of a National Atlas. Americans voluntarily supply their views on thematic content, software functionality, and potential uses for a National Atlas. This enables the Government and its partners to concentrate early product development efforts on meeting the most important expectations and needs identified through rigorous customer assessment.

## World Wide Web Increased Streamflow Data Available

Building on the success of real-time streamflow information on the World Wide Web and the incredible response of customers to this kind of access, the USGS announced in March 1998 the availability of 160 million daily records of water data, spanning more than a century. Customers are now able to go into the data base (data from almost 19,000 stream gages are available online) and

*"Your web versions of stream flow data is nothing short of superb. By printing out a station's data dialing in the week before a trip, an excellent picture of what is happening on the river is revealed to me...In short, thank you for providing a fantastic resource to the "river rats" of Virginia. True, we may look a little grizzled after a day or two on the water, but we appreciate good science with practical applications."*

download needed information. In the past, such retrievals involved extensive discussion between customers and USGS staff about the retrieval and the format of output, and involved several days from initiation to data delivery. Retrievals now only take customers a few minutes from start to finish and require no intervention from USGS staff. Customers for this information include civil engineers doing water-resource design and planning work; Federal, State, and local officials responsible for water supply and discharge permitting; scientists and students researching natural resources; and citizens interested in river conditions within their own watershed. In June 1998, more than 320,000 pages of daily streamflow information were served

to customers, 90 percent of which were outside the USGS. The daily streamflow records accessed in June is a subset of the more than 1.5 million pages of information served by the USGS World Wide Web site at <http://water.usgs.gov/>.

## **Cooperative Research and Development Agreement with Microsoft**

The USGS entered into a cooperative research and development agreement with Microsoft to build a geospatial data browsing and retrieval capability for the general public. The Web site that was developed as a result of this agreement displays browse images of the more than 60,000 digital orthophoto quadrangles available from the USGS, serving more than one terabyte of data. From its opening on June 24, the TerraServer Web site has averaged 3,000 simultaneous users and is shaping up to be an exceedingly popular site. At the site, users can download the browse image they have seen on their screen as well as go directly to USGS to order the digital orthophoto quadrangle files for the images they have viewed. This site has expanded customer access to USGS data and given the general public, as well as geospatial data users, an entirely new view of USGS digital orthophoto quadrangles. Customers who link to the site include a student who shows the TerraServer view of his neighborhood on his homepage and a Fairfax County teacher who will conduct a workshop for early elementary school teachers featuring the TerraServer and the USGS images as classroom tools to teach mapping. Law enforcement agencies are interested in using the browse images for a quick view of crime areas. As feedback from users of the TerraServer site continue, the USGS will be able to identify additional customers and uses for Digital Orthophoto data.

## **National Water Quality Assessment Program**

The production of summary reports on the first 20 study units of the USGS National Water Quality Assessment (NAWQA) Program on the status and trends of the quality of the Nation's surface and ground water resources provided an opportunity to directly deliver copies of these fact-filled reports to more than 1,000 customers





*USGS employee analyzing a new  
sediment core*

who needs and use water-quality information in their daily responsibilities related to the country's water resources. This direct customer linkage effort is part of a developing customer contact data base that will ensure that USGS water resources information is delivered in a timely and proactive manner, as well as providing a feedback loop to continue to address the kind and manner of information delivered to customers.

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## Financial Statements

### Limitations of the Financial Statements

- The financial statements have been prepared to report the position and results of operations of the entity, pursuant to the requirements of 31 U.S.C. 3515(b).
- While the statements have been prepared from the books and records of the entity in accordance with the formats prescribed by OMB, the statements are in addition to the financial reports used to monitor and control budgetary resources which are prepared from the same books and records.
- The statements should be read with the realization that they are for a component of the U.S. Government, a sovereign entity. One implication of this is that liabilities cannot be liquidated without legislation that provides resources to do so.

[Consolidated Balance Sheet](#)

[Consolidated Statement of Net Costs](#)

[Consolidated Statement of Changes in Net Position](#)

[Combined Statement of Budgetary Resources](#)

[Consolidated Statement of Financing](#)

[Consolidating Statement of Net Costs](#)

[Consolidating Statement of Changes in Net Position](#)

[Combining Statement of Budgetary Resources](#)

[Notes to Financial Statements](#)

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## Required Supplement Stewardship Information

### Research and Development Annual Stewardship Information For the Fiscal Year Ended September 30, 1998

Federal investment in research and development comprises those expenses for basic research, applied research, and development that are intended to increase or maintain national economic productive capacity or yield other benefits. Expense data are expressed in nominal dollars for the fiscal year 1998.

Following is a summary of stewardship data for the U. S. Geological Survey for fiscal year ending September 30, 1998.

#### **Program: U.S. Geological Survey (USGS)**

Program Expenses (\$millions) <sup>a</sup>	1998 <sup>b</sup>
Basic Research	57
Applied Research	461
Development	28
Allocation of Indirect Costs <sup>c</sup>	54
Total	601

#### **Narrative Discussion:**

The USGS Research and Development program was authorized by the Organic Act of March 3, 1897 (43 U.S.C. 31 et seq.) to provide for the examination of geological structures, mineral resources, and products within and outside the national domain, that is Earth science. Earth science research, development and information is responsible for saving lives and property, safeguarding human health, enhancing the economic vitality of the Nation and its people, assessing resources, characterizing environments, and predicting the impact of contamination.

USGS provides credible, objective and unbiased information needed by managers of the Nation's natural resources and resources managers in DOI. This information aids in the solutions of critical societal

problems through research, investigation, application of state-of-the-art geographic and cartographic methods. USGS research assesses and predicts biological consequences of various policies and management practices.

## **Heritage Assets Annual Stewardship Information**

Heritage assets are PP&E that possess one or more of the following characteristics: historical or natural significance; cultural, educational or aesthetic value; or significant architectural characteristics. The cost of heritage assets is not often relevant or determinable. In addition, the useful life of heritage assets is generally not reasonably estimable for depreciation purposes. The most relevant information about heritage assets is their existence and condition. Therefore, heritage assets are reported in terms of physical units.<sup>d</sup>

Number of Bureau Units Holding Museum Property:	5
Number of Other Institutions Holding Museum Property for Bureau:	2
<u>Objects in Bureau Facilities:</u>	Art: 61 History: 10 Documents: 3 Biology: 31
<u>Objects in Other Institutions:</u>	History: 1 Biology: 36,000
<u>Total Number of Bureau Objects:</u>	36,106

### Description of the methods of acquisition and withdrawal of heritage assets:

No museum items have been acquired or withdrawn since the USGS museum program began. The Biology collection transferred from Fish and Wildlife when National Biological Resources was integrated with USGS in FY 1996. No additional items have been added since the transfer.

### Condition of the assets and an estimate of any deferred maintenance related to the assets:

Good; no deferred maintenance related to any of the collection.

## **Heritage Asset - Scientific Library Collection**

A. Description of heritage asset category: The U.S. Geological Survey Library collections cover all aspects of the earth sciences and related interdisciplinary subjects. The collections are intended to be as comprehensive as possible in its coverage of worldwide literature. Holdings include extensive sets of

State and foreign geological survey publications, as well as publications from geological and other scientific societies, from universities and institutions, and from other government agencies throughout the world. Special collections include the George F. Kurt collection of books on gems and minerals, the Alvison collection on Russian geology, minerals and mining, extensive photographs taken during USGS field work, and field notebooks and additional material relating to USGS projects.

B. The number of collection or physical units at year end: The U.S. Geological Survey Library contains 1.6 million books and periodicals and 1.3 million non-book items for a total of 2.9 million items.

Units added during the year: 10,000

Units withdrawn during the year: 8,000

C. Method of acquisition and withdrawal: Materials are acquired from extensive exchange agreements with institutions and agencies worldwide, from research projects and purchases from a wide variety of publishers and institutions. Items are withdrawn only after critical analysis of the collection is made by the professional library staff.

D. Condition of the assets and estimated deferred maintenance: Approximately 35 percent of the collection is in good condition, 40 percent is in fair condition, and 25 percent in poor condition. No deferred maintenance related to the library collection.

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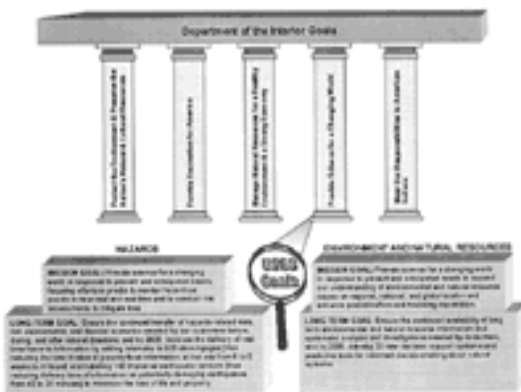
# U.S. Geological Survey Government Performance Results Act (GPR) Act Strategic Plan

**Vision -- "The USGS is a world leader in the natural sciences through our scientific excellence and responsiveness to society's needs."**

**Mission -- "The USGS serves the Nation by providing reliable scientific information to: describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy and mineral resources; and enhance and protect our quality of life."**

## Relationship to Departmental Goals

The U.S. Geological Survey has two GPR Program Activities -- Hazards and Environment & Natural Resources. Each Program Activity has a Mission Goal and an associated Long-term Goal. The Mission and Long-term Goals directly support the Department of the Interior Goal # 4, "Provide Science for a Changing World." As such, USGS science contributes to all of the Department of the Interior (DOI) goals by focusing on the provision of scientific information to support these efforts.



Department of the Interior goals

GPR Strategic Plan					
GPR Annual Plan					
Old GPR Strategic Plan	New GPR Strategic Plan	Old GPR Strategic Plan	New GPR Strategic Plan	Old GPR Annual Plan	New GPR Annual Plan
8 Strategic Business Activity Goals	2 Mission Goals	87 Strategic Performance Goals	2 Long-term Goals	112 Annual Performance Goals	87 Annual Performance Goals
Sub-2 Hazards	Hazards	14	Hazards	17	5
Sub-1 Water Availability & Quality		11		26	
Sub-3 Geographic & Cartographic Information		7		19	
Sub-4 Contaminated Environments		6		12	
Sub-5 Land and Water Use		9		12	
Sub-6 Nonrenewable Resources	Environment & Natural Resources	3	Environment & Natural Resources	7	3
Sub-7 Environmental Effects on Human Health		3		4	
Sub-8 Ecological Resources		12		21	

GPR strategic plan

*To open a larger image in a new window, click on a thumbnail*

Under the Hazards GPR Program Activity or mission goal, USGS provides science for a changing world in response to present and anticipated needs, focusing efforts to predict & monitor hazardous events in near-real and real-time and to conduct risk assessments to mitigate loss.

Within this mission context, our long-term goal is to ensure the continued transfer of hazards-related data, risk assessments, and disaster scenarios needed by our customers before, during, and after natural disasters, and by 2005, increase the delivery of real-time hazards information by

adding telemetry to 600 streamgages (thus reducing the time it takes to provide flood information at these sites from 6 to 8 weeks to 4 hours) and installing 140 improved earthquake sensors (thus reducing delivery time of information on potentially damaging earthquakes from 40 to 20 minutes) to minimize loss of life and property.

Under the Environment and Natural Resources GPRA Program Activity or mission goal, USGS provides science for a changing world in response to present and anticipated needs to expand our understanding of environmental and natural resource issues on regional, national, and global scales and enhance predictive/forecast modeling capabilities.

Within this mission context, our long-term goal is to ensure the continued availability of long-term environmental and natural resource information and systematic analysis and investigations needed by customers, and by 2005, develop 20 new decision support systems and predictive tools for informed decisionmaking about natural systems.

### **Adjustments to the Strategic Plan**

During FY 1998 the Strategic Plan was refocused. The USGS Vision and Mission statements remain similar. Minor wording changes and the addition of a strategic direction highlight the shift in the new plans' focus toward more customer-involvement. Further, a substantial reduction in the number of goals and performance measures has been achieved through aggregation in the new strategic and annual plans.

This interim adjustment to the 1997 Strategic Plan was guided by ongoing stakeholder meetings and workshops as well as intervening program evaluations such as the National Academy of Public Administration's review and report titled *Geographic Information for the 21st Century < Building a Strategy for the Nation* published January 1998. USGS review policy has the goal of conducting an independent peer review of ongoing programs every 5 years, combined with more frequent independent internal program management reviews. The review schedule has been updated in the revised Strategic Plan. These evaluations will continue to provide the USGS learning and growth opportunities to continue to refine strategy, implementation, and the quality and relevance of our scientific programs. A comparison of the old and refocused Strategic Plan is provided below.

<b>Old Strategic Plan</b>	<b>Refocused Strategic Plan</b>
<p><b>Vision</b> The U.S. Geological Survey is an earth science organization that is recognized worldwide as scientifically credible, objective, and demonstrably relevant to society's needs.</p>	<p><b>Vision</b> The USGS is a world leader in the natural sciences through our scientific excellence and responsiveness to society's needs.</p>

**Mission**

The U.S. Geological Survey provides the Nation with reliable, impartial information to describe and understand the Earth. This information is used to:

- minimize loss of life and property from natural disasters;
- manage water, biological, energy, and mineral resources;
- enhance and protect the quality of life; and
- contribute to wise economic and physical development.

**Mission**

The USGS serves the Nation by providing reliable scientific information to:

- describe and understand the Earth;
- minimize loss of life and property from natural disasters;
- manage water, biological, energy and mineral resources; and
- enhance and protect our quality of life.

**Strategic Direction**

The USGS will combine and enhance our diverse programs, capabilities, and talents with increased customer involvement to strengthen our science leadership and contribution to the resolution of complex issues.

**Financial Management and Performance Reporting**

The USGS is committed to ensuring the integrity of its financial data, operate in an efficient and effective manner, and provide quality data to our customers and constituents. These are the same objectives as the financial managers in the Department of the Interior. Accordingly, USGS has endorsed the Department's financial management strategic goals and adopted them as our own. These goals, the criteria used to measure our performance, our recent performance, and our target goals are shown below.

### Strategic Goal 1

Continue to strengthen the integrity of financial operations to ensure accuracy of financial data and management control over activities.

**Strategic Goal 1.A:** By FY 2000 and annually thereafter, achieve unqualified (clean) audit opinions on the USGS financial statements

**Performance Measures:** Audit opinion on financial statements.

Results:	Fiscal Year	1996	1997	1998
	Audit Opinion	Unqualified	Unqualified	Unqualified

**Strategic Goal 1.B:** By September 30, 2002, correct within one year 75% of the internal control weaknesses reported in financial statement audits, and correct all internal control weaknesses within three years of being reported.

**Performance Measures:** Percent of new internal control weaknesses corrected within one year and three years.

Results:	Fiscal Year	1996	1997	1998
	Action:	implemented all recommendations	no findings	in process

### Strategic Goal 2

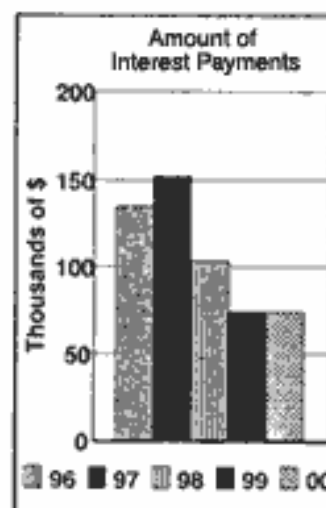
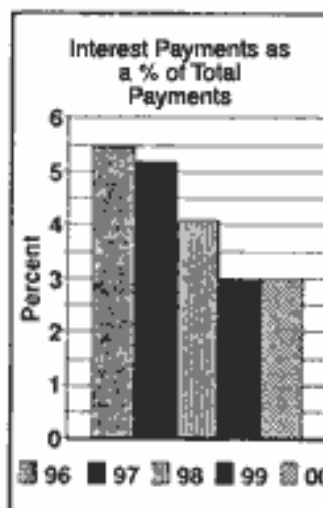
Optimize financial management operations to increase customer satisfaction and decrease costs.

**Strategic Goal 2.A:** By September 30, 2002, reduce the percentage of payments with interest penalties and the percentage of interest paid to a level at or below the government-wide average

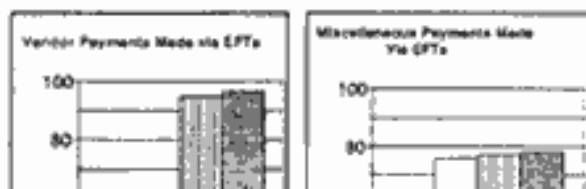
**Performance Measure:** Percent of the number of late payments requiring interest penalties to the total number of payments subject to the Prompt Payment Act

Results:	Actual Performance			Target	
	1996	1997	1998	1999	2000
Interest Payments as a % of Total Payments	5.5%	5.2%	4.1%	3.0%	3.0%
Amount of Interest Payments (\$000)	135	152	104	75	75

### Optimize financial Management Operations Goal 2A



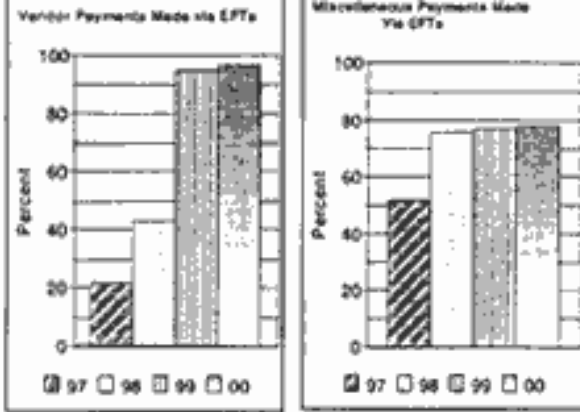
### Optimize Financial Management Operations Goal 2.B



**Strategic Goal 2.B:** By FY 2000, use electronic funds transfer (EFT) to the maximum extent possible to include all payments except those covered by waiver.

**Performance Measures:** Percentage of vendor payments made via EFT and purchase card, and percentage of miscellaneous payments made via EFT, purchase card, and other electronic means.





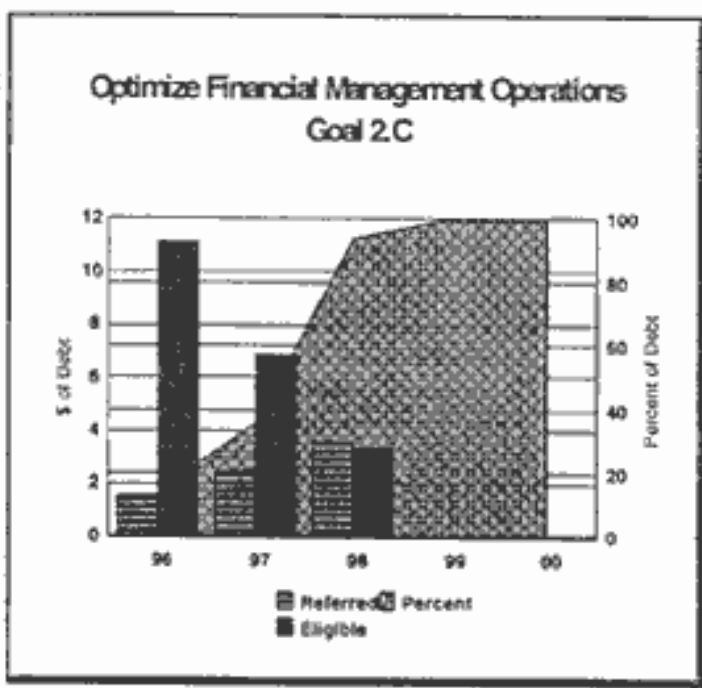
**Performance Measures:** Percentage of vendor payments made via EFT and purchase card, and percentage of miscellaneous payments made via EFT, purchase card, and other electronic means.

Results:	Actual Performance		Target	
	1997	1998	1999	2000
Vendor Payments Made via EFT	22%	43%	94%	95%
Miscellaneous Payments Made via EFT	52%	76%	77%	78%

**Strategic Goal 2.C:** By September 30, 2000, refer all eligible delinquent debt to the Department of Treasury for collection by offset.

**Performance Measure:** Percent of eligible delinquent debt referred to Treasury.

Results:	Actual Performance			Target	
	1996	1997	1998	1999	2000
Delinquent Debt Eligible for Referral (\$M)	\$ 11.1	\$ 6.9	\$ 3.6		
Delinquent Debt Referred (\$M)	\$ 1.6	\$ 2.5	\$ 3.4		
% of Eligible Delinquent Debt Referred	14%	36%	94%	100%	100%



### Strategic Goal 3

Improve financial and performance reporting to better support management decisions at all levels and to ensure compliance with the Government Management Reform Act and the Government Performance and Results Act.

**Strategic Goal 3.A:** By September 30, 2000, combine annual financial and performance reports to provide an accurate overview of financial operations and program results, linking relevant budget, performance, and cost information.

**Performance Measure:** Percentage of USGS' critical performance goals reported in the annual financial report.

Results:	Actual Performance		Target	
	1997	1998	1999	2000
% of Performance Goals in Annual Report			80%	90%
% of Performance Goals Including Cost Data			20%	30%

**Strategic Goal 3.B:** By September 30, 2000, produce interim financial statements

**Performance Measures:** Number: interim financial statements per year; and interim performance data reports per year.

Results:	Actual Performance		Target	
	FY 1997	FY 1998	FY 1999	FY 2000
# of Interim Financial Statements	0	0	2	4
# of Interim Performance Reports	0	0	1	2

# of Interim Financial Statements	0	0	2	4
# of Interim Performance Reports	0	0	1	2

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# United States Department of the Interior

OFFICE OF INSPECTOR GENERAL  
Washington, D.C. 20240

MAR 31 1999

## AUDITORS REPORT

### Memorandum

To: Director, U.S. Geological Survey

Subject: Auditors Report on U.S. Geological Survey Financial Report for Fiscal Years 1998 and 1997  
(No. 994-404)

## SUMMARY

In our audit of the U.S. Geological Survey's financial report for fiscal year 1998, we found the following:

- The principal financial statements were fairly presented in all material respects. The Geological Survey's principal financial statements consist of the Consolidated Balance Sheet as of September 30, 1998, and 1997; the Consolidated Statement of Net Costs, Consolidated Statement of Changes in Net Position, and Combined Statement of Budgetary Resources for the fiscal years ended September 30, 1998, and 1997; and the Consolidated Statement of Financing for the fiscal year ended September 30, 1998.
- Our tests identified three internal control weaknesses that we consider to be reportable conditions. These conditions were in the areas of financial integrity, deferred maintenance, and the data processing environment at the Geological Survey's Reston Enterprise Data Services Center.
- Our tests of compliance with laws and regulations identified no instances of noncompliance that are required to be reported.

Our conclusions are detailed in the sections that follow.

# OPINION ON FINANCIAL STATEMENTS

In accordance with the Chief Financial Officers Act of 1990, we audited the Geological Survey's principal financial statements for the fiscal years ended September 30, 1998, and 1997, as contained in the Geological Survey's accompanying "1998 Annual Report." The Geological Survey is responsible for these principal financial statements, and we are responsible for expressing an opinion, based on our audit, on these principal financial statements.

Our audit was conducted in accordance with the "Government Auditing Standards," issued by the Comptroller General of the United States, and with Office of Management and Budget Bulletin 98-08, "Audit Requirements for Federal Financial Statements," as amended, and was completed on February 16, 1999. These audit standards require that we plan and perform the audit to obtain reasonable assurance as to whether the accompanying principal financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the principal financial statements and the accompanying notes. An audit also includes assessing the accounting principles used and the significant estimates made by management. We believe that our audit work provides a reasonable basis for our opinion.

In our opinion, the principal financial statements, including the accompanying notes, present fairly, in all material respects, the consolidated financial position of the Geological Survey as of September 30, 1998, and 1997, and its consolidated net costs, changes in net position, and combined budgetary resources and outlays for the years then ended, and its consolidated financing for the year ended September 30, 1998, on the basis of accounting described in [Note I](#) of the principal financial statements.

Our audit was conducted for the purpose of forming an opinion on the consolidated and combined principal financial statements taken as a whole. The accompanying consolidating and combining information is presented for purposes of additional analysis of the consolidated and combined principal financial statements. The consolidating and combining financial statements for fiscal year 1998 (pages 38-40) were subjected to the auditing procedures applied in the audit of the consolidated and combined principal financial statements and, in our opinion, are fairly stated in all material respects in relation to the consolidated and combined principal financial statements taken as a whole.

The [required supplementary stewardship information](#) is not a required part of the principal financial statements but is supplementary information required by the Financial Accounting Standards Advisory Board. We have applied certain limited procedures, including discussions with management, on the methods of measurement and presentation of the supplemental information. However, we did not audit the information and therefore express no opinion on it.

# REPORT ON INTERNAL CONTROLS

Management of the Geological Survey is responsible for establishing and maintaining an internal control structure which provides reasonable assurance that the following objectives are met:

- Transactions are properly recorded, processed, and summarized to permit the preparation of the principal financial statements and required supplementary stewardship information in accordance with Federal accounting standards.
- Assets are safeguarded against loss from unauthorized acquisition, use, or disposition.
- Transactions are executed in accordance with (1) laws governing the use of budget' authority and with other laws and regulations that could have a direct and material effect on the principal financial statements or required supplementary stewardship information and (2) any other laws, regulations, and Governmentwide policies identified by the Office of Management and Budget.

Because of inherent limitations in any internal control structure, errors or fraud may occur and not be detected. Also, projections of the internal controls over financial reporting to future periods are subject to the risk that the internal controls may become inadequate because of changes in conditions or that the degree of compliance with the policies or procedures may deteriorate.

In planning and performing our audit, we obtained an understanding of the relevant internal control policies and procedures, determined whether these internal controls had been placed into operation, assessed control risks, and performed tests of controls in order to determine our auditing procedures for the purpose of expressing an opinion on the principal financial statements and not to express assurance on the internal controls over financial reporting. Consequently, we do not express an opinion on the internal controls. We also reviewed the Geological Survey's most recent report required by the Federal Managers' Financial Integrity Act of 1982 and compared it with the results of our evaluation of the Geological Survey's internal control structure.

Our consideration of the internal controls over financial reporting and compliance would not necessarily disclose all matters in the internal control structure over financial reporting that might be reportable conditions. Under standards established by the American Institute of Certified Public Accountants and by Office of Management and Budget Bulletin 98-08, reportable conditions are matters coming to our attention relating to significant deficiencies in the design or operation of the internal controls that, in our judgment, could adversely affect the Geological Survey's ability to record, process, summarize, and report financial data consistent with the assertions by management in the financial statements. The reportable conditions we noted were as follows:

- The Geological Survey needs improved controls over financial integrity.
- The Geological Survey needs improved controls over deferred maintenance management and reporting.

- The Geological Survey needs improved controls over the data processing environment at its Reston Enterprise Data Services Center.

A material weakness, as defined by the American Institute of Certified Public Accountants and by Bulletin 98-08, is a reportable condition in which the design or operation of one or more of the internal control components does not reduce to a relatively low level the risk that misstatements in amounts that would be material in relation to the financial statements being audited may occur and not be detected within a timely period by employees in the normal course of performing their assigned functions. We do not consider any of the reportable conditions to be material weaknesses.

## Overview of Internal Control Findings

In performing our tests of internal controls as part of our audit of the financial statements for fiscal year 1998, we identified weaknesses in the Geological Survey's internal control structure over financial integrity, deferred maintenance, and the data processing environment at the Reston Enterprise Data Services Center. We consider these weaknesses to be reportable conditions because they adversely affect the Geological Survey's ability to record, summarize, and prepare accurate and reliable financial statements in accordance with Federal accounting standards.

### A. Geological Survey Needs to Improve Controls Over Financial Integrity

The Geological Survey did not have sufficient internal control procedures to ensure that the general ledger control balances for the Advances From Others (Federal and Public), Accounts Receivable Unbilled (Federal and Public), Undelivered Orders (Federal and Public), Equipment, and Deposit Suspense Liability (Federal) accounts were accurately stated and properly supported by detailed subsidiary information. In addition, the Geological Survey needs to improve the accounting for investments made by the Working Capital Fund.

**Accounts Receivable Unbilled and Advances From Others.** During our testing of the subsidiary ledger for Accounts Receivable Unbilled at September 30, 1998, we found accounts that had incorrect balances. These errors occurred for the following reasons: - The collection of advances for reimbursable agreements, primarily between the Geological Survey's Working Capital Fund and divisions (intrabureau transactions), was recorded incorrectly as a collection against the Accounts Receivable Unbilled account, thus decreasing this asset account. The collection of advances should have been recorded as an increase in the Advances From Others account (a liability account that is included in the Deferred Revenue line item in the financial statements). The collection of advances was recorded incorrectly because the accounting documents for the advances did not clearly identify the payments as advances.

- Collections on reimbursable agreements were not consistently posted to the correct customers or to the correct fiscal year. As a result, both the Advances From Others and the Accounts Receivable Unbilled accounts were overstated.

- The Project Cost Accounting System did not adjust amounts in the Advances From Others account when project costs were reallocated to additional project participants. Project participants provide advances of funds that are reduced by the accounting system when costs are incurred. However, when these costs are allocated to new participants of the projects, the System does not adjust for this reallocation by reducing the costs and increasing the advance amounts for the existing participants.
- The Project Cost Accounting System did not always liquidate advances based on earnings, resulting in both the Advances From Others and the Accounts Receivable Unbilled accounts being overstated.

When these issues were brought to management's attention, adjustments totaling \$4.8 million were made to both the Accounts Receivable Unbilled and the Advances From Others accounts.

We identified this internal control weakness in our reports based on audits of the financial statements of the Geological Survey for fiscal years 1997 and 1996. As of September 30, 1998, the only recommendation that had not been implemented was Recommendation 5, "[e]stablish an internal control procedure which requires periodic reviews of the subsidiary ledger reports to ensure the financial integrity of the data. " The Geological Survey informed us that they are continuing to work on implementing this recommendation and th o applicable to each of the issues that follow.

**Undelivered Orders.** During our interim testing of the Undelivered Orders account, we concluded that the reported balance was overstated because orders placed prior to fiscal year 1997 had been received. However, the orders were recorded as undelivered because (1) the vendors had not submitted billing invoices, thus the Geological Survey had not paid for the goods or services, and/or (2) remaining obligated amounts were not always deobligated. These invalid undelivered orders were not identified by the Geological Survey because it did not have a policy requiring periodic aging and analysis of outstanding orders for goods and services. Once we informed management of this condition, the Geological Survey took action to reduce the balance of undelivered orders by \$10.6 million.

**Excess Equipment Acquired From the General Services Administration.** The Geological Survey acquires excess equipment from the General Services Administration at no cost except for transportation and handling. According to Statement of Federal Financial Accounting Standards No. 6, "Accounting for Property, Plant, and Equipment," which was effective in fiscal year 1998, general property, plant, and equipment transferred from other Federal entities are required to be recorded at the transferring entity's net book value (original cost less accumulated depreciation). However, according to the standard, if the receiving entity cannot reasonably determine the transferring entity's net book value, the cost of the transferred property is to be its fair value at the time of transfer.

The September 30, 1998, subsidiary account for equipment initially reported \$28.5 million in excess equipment acquired from the General Services Administration. Based on our testing, we determined that



the account was overstated because the amount recorded as the cost of the equipment, which is the amount depreciated, was the original acquisition cost rather than the net book value of the equipment at the time of the transfer. This error occurred because the Geological Survey's Property Manual requires the acquisition cost of excess property to be the acquisition cost incurred by the former owner in accordance with General Services Administration policy and instructions for Standard Form 122, "Transfer Order, Excess Personal Property," which is used to document the transfer of excess equipment from the General Services Administration. However, we found that the General Services Administration's policy and instructions for Standard Form 122 had not been revised to comply with the accounting requirements of the new standard.

Unless the General Services Administration revises its policy and instructions for Standard Form 122 to comply with this accounting requirement, the Geological Survey will have to follow up with the General Services Administration to obtain the net book value on excess equipment, since this information is not provided on Standard Form 122. After informing management of this condition, the Geological Survey reviewed the subsidiary account data and decreased the equipment account by \$10.6 million and the accumulated depreciation by \$6.2 million.

**Deposit Suspense Liability (Federal).** The Geological Survey needs to establish an internal control procedure that requires periodic reviews of the Federal Deposit Suspense Liability account. The Geological Survey uses this account for posting payments made for goods and services received that do not have adequate information (such as division, cost center, or object class) at the time of payment to determine how or where to recognize the expenses. At the beginning of fiscal year 1998, this account balance was \$5.2 million; however, it increased to \$15.9 million by the end of the year. After we inquired about this account, the Geological Survey made adjusting entries to decrease \$14.3 million from the account for financial statement purposes; however, the Geological Survey needs to determine where these payments should be posted in the subsidiary ledgers of the accounting system.

**Working Capital Fund Investment Plan Accounting.** The Geological Survey needs to improve accounting for the investment plan, a component of its Working Capital Fund. Since fiscal year 1995, the Geological Survey has been authorized, by an amendment to Public Law 101-512 (Department of the Interior Appropriation Act), to accumulate monies without fiscal year restraint to be used for specified equipment purchases, improvements, services, or repairs. As a result of this authorization, the Geological Survey established policies which require that (1) eligible participants make deposits of \$5,000 or more, (2) the deposited monies be accumulated for at least 2 fiscal years, and (3) acquisitions with deposited funds be made no sooner than the third year of the depositor's participation in the plan.

During our analysis of the account posting models for the investment plan, we determined that an expense and a corresponding revenue were recognized at the time the investing parties (other divisions within the Geological Survey) made deposits to the investment plan. This accounting treatment is not in accordance with the principles of accrual accounting or the basis of accounting described in Note I of the Financial Statements, under which expenses are recognized when goods or services are received and revenues are recognized when earned. At the time the deposit is made, no expense has been incurred because goods or services have not been received. Instead, the investing party has made a prepayment

(advance to others). Similarly, no revenue has been earned at the time the deposit is made because work has not been performed. Instead of revenue, a liability (advances from others) should be recognized in the Working Capital Fund.

When an asset is acquired or a service provided, the investing party should recognize the asset or expense and liquidate the advance, and the Working Capital Fund should reduce its cash for an asset acquisition or recognize revenue for a service provided and liquidate the prepayment liability. After we notified the Geological Survey of this deficiency, it made adjustments to establish \$28.2 million in Advances From Others in the Working Capital Fund and establish \$28.2 million in Advances to Others in the investing fund, as well as making additional adjusting entries to correct expenses, revenues, and budgetary accounts.

While the Geological Survey has corrected the financial errors identified by our testing,. we believe that procedures for monitoring, analyzing, and reviewing the accounts need to be developed and implemented to ensure the integrity of the financial data. Periodic reviews of the subsidiary ledger reports are essential to ensure the financial integrity of the data in the Geological Survey's accounting system.

## **Recommendations**

In addition to the unimplemented prior recommendation related to the Accounts Receivable Unbilled and the Advances From Others accounts made in our reports from fiscal years 1997 and 1996, we recommend that. the Director, U.S. Geological Survey, direct the Chief Financial Officer to:

1. Establish a policy requiring periodic aging and analysis of outstanding orders for goods and services to ensure their validity and establish policies for when unliquidated obligations should be deobligated.
2. Modify the Property Manual to comply with Statement of Federal Financial Accounting Standards No. 6.
3. Establish policies and procedures for clearing amounts posted to the Federal Deposit Suspense Liability account in a timely manner.
4. Modify the account posting models to correctly account for deposits made to the Working Capital Fund's investment plan and develop and implement procedures to properly and accurately account for the deposits to the investment plan.

## **U.S. Geological Survey Response and Office of Inspector General Comments**

In the March 25, 1999, response to our draft audit report from the Associate Director for Operations, U. S. Geological Survey, the Geological Survey indicated concurrence with Recommendations 1 and 3,

partial concurrence with Recommendation 4, and nonconcurrence with Recommendation 2. The Geological Survey's specific responses and our comments are in the paragraphs that follow.

**Accounts Receivable Unbilled and Advances From Others** (Prior report recommendation). The Geological Survey said that it "agree[d] that more stringent review of... accounts receivable and advance reports would act as a compensating control for some of the system deficiencies" related to advances and unbilled accounts receivable. It further stated that it will "institute a policy for bureauwide review of this data and institute procedures to ensure this is done."

**Undelivered Orders** (Recommendation 1). The Geological Survey said that it "believe[d] a large part of this problem may be related to intergovernmental billings," that it has "initiated an inter-divisional effort" to address this problem, and that it will "issue guidance" to its field offices for reviewing unliquidated obligations. We are requesting that the Geological Survey provide a target date and the title of the official responsible for implementing this recommendation.

**Excess Equipment Acquired From the General Services Administration** (Recommendation 2). The Geological Survey said that although it could revise its policy that ("the acquisition cost of excess/available property shall be the value identified as the acquisition cost by the former owning agency/bureau"), compliance with this policy "would be nearly impossible until a governmentwide policy is developed and issued that requires net book value, or at least the age of excess/available property, to be provided to the receiving entity." The Geological Survey "suggest[ed] that [we] withdraw this finding at the bureau level and reissue it at the Department of the Interior level."

Although we agree that the most efficient process for implementing this accounting requirement would require the cooperation of the General Services Administration, the Geological Survey is responsible for complying with applicable laws, regulations, and Federal accounting standards and compliance is possible with adequate followup on the part of the Geological Survey to obtain the necessary information from the General Services Administration. We request that the Geological Survey reconsider this recommendation to modify the Property Manual to comply with the accounting requirements of Standard No. 6.

**Deposit Suspense Liability** (Recommendation 3). The Geological Survey agreed that it needs "to implement a workable procedure that satisfies general ledger requirements and the needs of the Department of the Treasury." It further stated that it has "initiated an effort to address these needs and requirements." We are requesting that the Geological Survey provide a target date and the title of the official responsible for implementing this recommendation.

**Working Capital Fund Investment Plan Accounting** (Recommendation 4). The Geological Survey said that it did "not totally agree" with our position on the accounting treatment of the Working Capital Fund investments. The Geological Survey agreed that deposits to the investment plan "could be recognized as an advance from others instead of revenue" and agreed to change the account posting models "to correctly account for deposits." However, the Geological Survey disagreed with recognizing

an advance to the Working Capital Fund instead of an expense at the time a deposit is made to the investment plan. According to the Geological Survey, "Systematically, it will be nearly impossible to identify the year in which to liquidate the advance from the annual appropriation." The Geological Survey also proposed changing the procedures for accounting for the investment component by having the Working Capital Fund retain ownership of equipment purchased by the investment component rather than the investing party retaining ownership.

Although we agree that it may be difficult to accurately account for the deposits to the investment component under the Geological Survey's current financial accounting system, we believe that recognizing an expense when a deposit is made is not consistent with the accrual method for recording accounting transactions described in Note 1, which states that revenues are recognized when earned and expenses are recognized when goods or services are received, without regard to receipt or disbursement of cash." We request that the Geological Survey reconsider this recommendation.

## **B. Geological Survey Needs Improved Controls Over Deferred Maintenance Management and Reporting**

In accordance with Bulletin 98-08, we reviewed the internal controls related to the transactions and other data that support the reported information on deferred maintenance to determine whether the estimates were properly supported, processed, and summarized. We found that formal policies and procedures for conducting periodic condition assessment surveys and computing deferred maintenance funding estimates need to be established to promote consistency and accuracy. The supervisory and monitoring controls over deferred maintenance require strengthening to ensure that the deferred maintenance estimate is supported by adequate documentation.

### **Recommendation**

We recommend that the Director, U.S. Geological Survey, establish policies and procedures for conducting periodic condition assessment surveys and estimating the deferred maintenance needs of the Geological Survey, including the requirement that the data and methodologies used to compute the estimates should be documented and reviewed and approved by supervisors.

### **U.S. Geological Survey Response and Office of Inspector General Comments**

The Geological Survey said that it has "initiated an effort to address" the needs and requirements to implement the recommendation and is "pursuing the development of a maintenance management system" after receiving final guidance from the Department. Based on the response, we request that the Geological Survey provide a target date and the title of the official responsible for implementing the recommendation.

## **C. Geological Survey Needs Improved Controls Over the Data Processing**

## **Environment at the Geological Survey's Reston Enterprise Data Services Center**

The report "Stronger Controls Needed Over the Data Processing Environment at the U.S. Geological Survey, Reston General Purpose Computer Center," issued by the Office of Inspector General, U.S. House of Representatives, in December 1996, identified 42 significant weaknesses and made 72 recommendations for corrective actions to the Geological Survey. Specifically, the report stated that weaknesses existed in Computer Center management and operations; mainframe computer system physical and logical security; telecommunications security; protection of the local area network from unauthorized access and use; and contingency planning, including backup procedures for preventing data loss and for the recovery of data in case of a disaster. The Geological Survey concurred with the findings and recommendations contained in the House report and took immediate actions to resolve the deficiencies that could have adversely impacted the integrity and security of financial data processed on the Federal Financial System. In its report, the House's Office of Inspector General stated that it believed that the "actions taken and the continuing commitment demonstrated" by Geological Survey management "to resolve the deficiencies identified has greatly reduced the risk" to the Computer Center's "processing environment."

The report "Additional Controls Needed Over the Data Processing Environment at the U.S. Geological Survey, Reston Enterprise Data Services Center" (No. 98-CAO-13), issued by the Office of Inspector General, U.S. House of Representatives, in November 1998, was the second report issued by the House's Office of Inspector General on the Data Services Center. That review found that the Geological Survey had made significant progress in addressing the weaknesses and problems identified in the 1996 report. The report stated that corrective actions had been completed for 39 of the 72 recommendations, 2 recommendations were otherwise resolved, and 7 recommendations were superseded by new recommendations. For the remaining 24 recommendations, substantial progress had been made on 2 recommendations, some progress was made on 8 recommendations, limited progress was made on 6 recommendations, and no actions were taken on 8 recommendations.

The report identified additional weaknesses in the general control areas of Data Center management and operations; mainframe computer system physical and logical security; telecommunications security; and contingency planning, including backup procedures for preventing data loss and for the recovery of data in case of a disaster. According to the report, the identified weaknesses increased the risk of unauthorized access and modifications to, and disclosure of, information processed on the Data Center's mainframe computer. Also, the report noted that the weaknesses increased the potential for operational errors, which could adversely affect service continuity. Based on the Geological Survey's October 15, 1998, response, 2 of the 24 new recommendations were considered resolved and implemented and 22 recommendations were considered resolved but not implemented.

The report stated that the Geological Survey had notably improved controls over its mainframe operations, system software, and telecommunications security. However, the report identified 46 recommendations (24 from the prior report and 22 from the current report) that had not been

implemented. We believe that the actions planned by the Geological Survey should be sufficient to correct the deficiencies identified; therefore, we did not make any further recommendations.

## **U.S. Geological Survey Response**

In its March 25, 1999, response, the Geological Survey stated that it had "aggressively initiated an effort to implement all recommendations noted."

## **Stewardship and Performance Measures**

We considered Geological Survey's internal controls over the required supplementary stewardship information by obtaining an understanding of the Geological Survey's internal controls relating to the preparation of the required supplementary stewardship information to determine whether these internal controls had been placed in operation, assessed the control risk, and performed tests of these controls as required by Bulletin 98-08. However, providing assurance on these internal controls was not an objective of our audit, and accordingly, we do not provide assurance on such controls.

With respect to the internal controls related to the reported performance measures, we did not obtain an understanding of the design of significant internal controls related to the existence and completeness assertions. Accordingly, we do not provide assurance on such controls.

We also identified other internal control conditions that, in our judgment, were not required to be included in this audit report but should be communicated to management. We will report these issues in a management letter to be issued separately.

## **REPORT ON COMPLIANCE WITH LAWS AND REGULATIONS**

The management of the Geological Survey is responsible for complying with laws and regulations applicable to the Geological Survey. As part of obtaining reasonable assurance as to whether the Geological Survey's principal financial statements are free of material misstatement, we performed tests of the Geological Survey's compliance with certain provisions of laws and regulations, noncompliance with which could have a direct and material effect on amounts contained in the principal financial statements and certain other laws and regulations specified in Bulletin 98-08, including the requirements referred to in the Federal Financial Management Improvement Act of 1996. However, providing an opinion on compliance with certain provisions of laws and regulations was not an objective of our audit, and accordingly, we do not express such an opinion.

The results of our tests of compliance with laws and regulations discussed in the preceding paragraph, exclusive of the Federal Financial Management Improvement Act, disclosed no instances of noncompliance that are required to be reported under the "Government Auditing Standards" or Bulletin 98-08.

Under the Federal Financial Management Improvement Act, we are required to report whether the Geological Survey's financial management systems are in substantial compliance with requirements for Federal financial management systems, Federal accounting standards, and the U.S. Government Standard General Ledger at the transaction level. To meet these requirements, we performed tests of compliance using the implementation guidance for the Federal Financial Management Improvement Act included in Appendix D of Bulletin 98-08. The results of our tests disclosed no instances in which the Geological Survey's financial management system was not in substantial compliance with these three requirements.

## **CONSISTENCY OF OTHER INFORMATION**

We reviewed the financial information presented in the Geological Survey's overview and in the required supplementary information to determine whether the information was consistent with the principal financial statements. Based on our review, we determined that the information in the overview and in the required supplementary information was consistent with the principal financial statements.

## **PRIOR AUDIT COVERAGE**

Other than the unimplemented recommendations discussed in the Internal Control section of this report, our review of prior Office of Inspector General and General Accounting Office audit reports disclosed that there were no significant unresolved or unimplemented recommendations which affected the Geological Survey's principal financial statements.

## **OBJECTIVE, SCOPE, AND METHODOLOGY**

Management of the Geological Survey is responsible for the following:

- Preparing the principal financial statements and the required supplementary information referred to in the Consistency of Other Information section of this report in conformity with the basis of accounting described in Note I to the principal financial statements and for preparing the other information contained in the "1998 Annual Report."
- Establishing and maintaining an internal control structure over financial reporting. In fulfilling this responsibility, estimates and judgments are required to assess the expected benefits and related costs of internal control structure policies and procedures.
- Complying with applicable laws and regulations.

We are responsible for the following:

- Expressing an opinion on the Geological Survey's principal financial statements.
- Obtaining an understanding of the internal controls over financial reporting and compliance and reporting the results of this review based on the internal control objectives in Bulletin 98-08, which requires that transactions be properly recorded, processed, and summarized to permit the preparation of the principal financial statements and the required supplementary information in accordance with Federal accounting standards and that assets be safeguarded against loss from unauthorized acquisition, use, or disposal.
- Testing the Geological Survey's compliance with selected provisions of laws and regulations that could materially affect the principal financial statements or the required supplementary information.

To fulfill these responsibilities, we took the following actions:

- Examined, on a test basis, evidence supporting the amounts disclosed in the principal financial statements.
- Assessed the accounting principles used and the significant estimates made by management.
- Evaluated the overall presentation of the principal financial statements.
- Obtained an understanding of the internal control structure related to safeguarding assets; compliance with laws and regulations, including the execution of transactions in accordance with budget authority; and financial reporting.
- Tested relevant internal controls over the safeguarding of assets, compliance with laws and regulations, and financial reporting and evaluated management's assertion about the effectiveness of internal controls.
- Tested compliance with selected provisions of laws and regulations.

We did not evaluate all of the internal controls related to the operating objectives as broadly defined by the Federal Managers' Financial Integrity Act, such as those controls related to preparing statistical reports and ensuring efficient operations. We limited our internal control testing to those controls needed to achieve the objectives outlined in our report on internal controls.

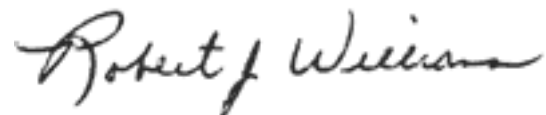
In accordance with the Departmental Manual (360 DM 5.3), we are requesting a written response to this report by May 14, 1999. In that regard, target dates and titles of the officials responsible for implementation of Recommendations A. 1, A.3, and B. I should be provided. Also, the Geological Survey should reconsider its responses to Recommendations A.2 and A.4, which are unresolved. If concurrence is indicated, action plans that include target dates and titles of officials responsible for



implementation should be provided.

The legislation, as amended, creating the Office of Inspector General requires semiannual reporting to the Congress on all audit reports issued, actions taken to implement audit recommendations, and identification of each significant recommendation on which corrective action has not been taken.

This report is intended for the information of management of the Geological Survey, the Office of Management and Budget, and the Congress. However, this report is a matter of public record, and its distribution is not limited.



Robert J. Williams  
Assistant Inspector General for Audits

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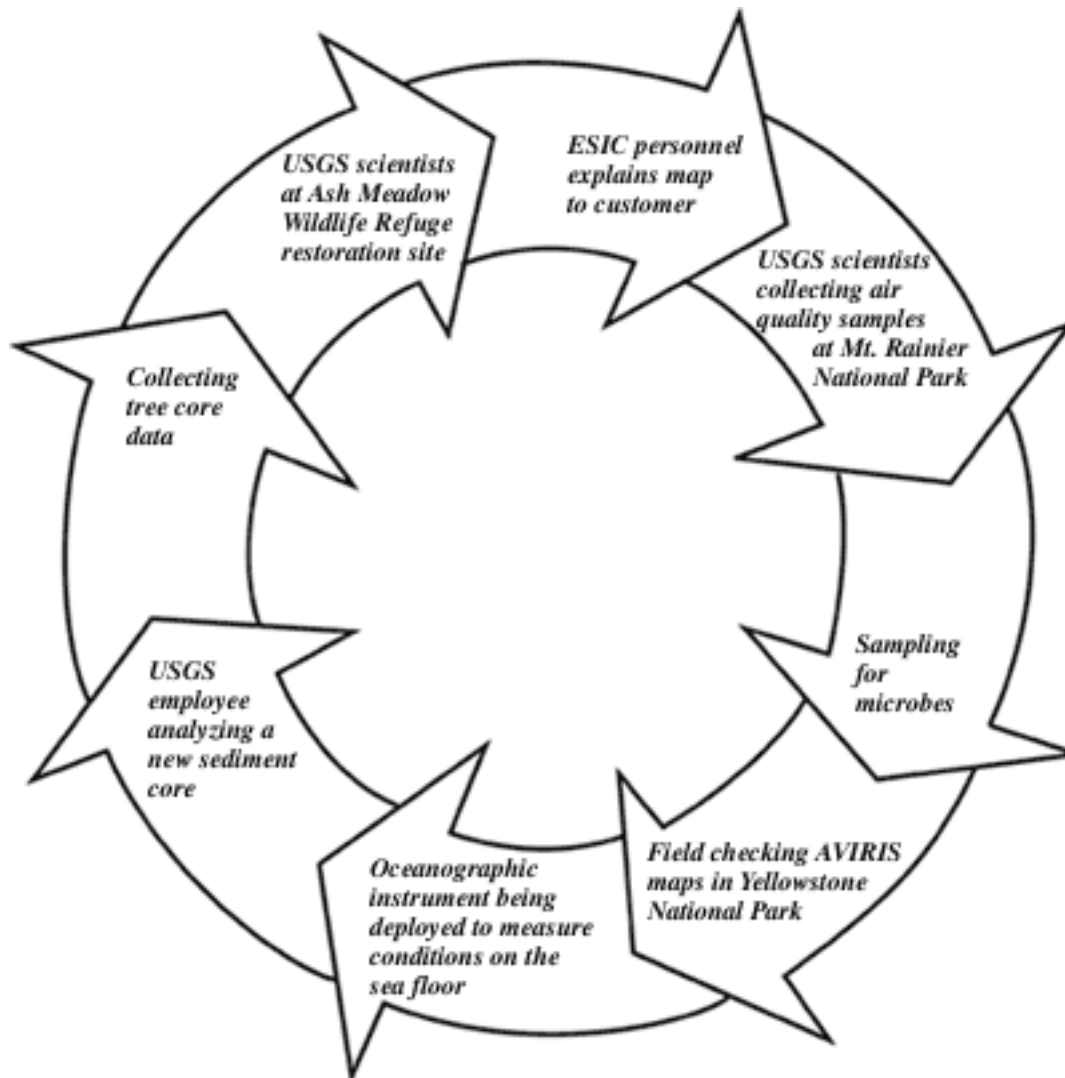
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*Fish and Wildlife Service and New Jersey state biologists examine a bog turtle on private land in New Jersey. Under the Landowner Incentive Program, which supports cooperative efforts with private landowners interested in conserving natural habitat for species at risk, the New Jersey Endangered and Nongame Species Program will receive funds to protect habitat for the turtle and other endangered and threatened species.*

[Photo Credit: John Organ/USFWS]

## Kempthorne Announces \$19 Million in Grants to States to Help Landowners Conserve Imperiled Species

(CHICAGO) – Interior Secretary Dirk Kempthorne announced Sunday nearly \$19 million in grants to 37 states, Puerto Rico and the U.S. Virgin Islands to support cooperative efforts to conserve habitat for imperiled wildlife on private lands.

The cost-share grants, part of the Bush Administration's Landowner Incentive Program (LIP), enable states and territories to develop innovative approaches to habitat conservation in partnership with landowners. [more ▶](#)



## Secretary Kempthorne Meets with Tribal Leaders in South Dakota



**Bureau of Indian Affairs** [II▶](#)

**Kempthorne Praises President's Nomination** of Carl J. Artman to be Assistant Secretary For Indian Affairs [more ▶](#)



**U.S. Fish and Wildlife Service** [II▶](#)

**Secretary Kempthorne and Sen. Domenici** highlight latest step in one of the country's most successful endangered species recovery programs – the reintroduction of the aplomado falcon to New Mexico. [more ▶](#)



**Bureau of Reclamation** [II▶](#)

**Reclamation Works with Las Vegas, NM** to Ease Water Shortage. [more ▶](#)



**U.S. Geological Survey** [II▶](#)

**USGS launches new Web site** and fact sheets on earthquakes, floods, hurricanes, landslides, tsunamis, volcanoes, and wildfires. [more ▶](#)



**National Park Service** [II▶](#)

**National Park Service Director Fran Mainella** Announces Resignation. [more ▶](#)



**Bureau of Land Management** [II▶](#)

**Geothermal rules** encourage alternative energy development on Federal lands. [more ▶](#)



**Minerals Management Service** [II▶](#)

**The MMS recently published** a final rule implementing new cost recovery fees related to the Regulation of Oil and Gas Activities on the Outer Continental Shelf (OCS). [more ▶](#)



**Office of Surface Mining** [II▶](#)

**The US Office of Surface Mining** will honor the nation's best examples of mine land reclamation performed this year by coal companies, States and Indian Tribes. OSM's annual reclamation awards, to be announced in the fall, recognize excellence in restoring mined lands to beneficial use and attention to the needs of nearby communities. [more ▶](#)

- › Glacier National Park
- › Grand Canyon
- › Big Bend National Park



The Point Reyes National Seashore Web Camera is one of several webcams available on [doi.gov](http://doi.gov).

Interior Secretary Dirk Kempthorne met with tribal leaders from five of South Dakota's Indian reservations this past Sunday. Among the tribal leaders present at the Rapid City meeting were Alex White Plume, President Oglala Sioux Tribe and Michael Johnson, Chairman Lower Brule Sioux Tribe.

- [See Additional Photos](#)

**Secretary Kempthorne Praises President's Nomination of C. Stephen Allred to be Assistant Secretary, Land and Minerals Management** [more ▶](#)

**DOI Information on Avian Influenza** [new ▶](#)

Visit [Pandemic & Avian Flu.gov](http://Pandemic & Avian Flu.gov) for all related federal information.



### Your Interior Department

The Department of the Interior, comprising the eight bureaus listed at the right:

- Manages 1 out of every 5 acres of land in the US.
- Provides the resources for nearly one-third of the Nation's energy.
- Works with 561 federally recognized Indian Tribes.
- Administers U.S. responsibility to four overseas Territories.
- Provides water to 31 million citizens through 820 dams and reservoirs.
- Receives almost 500 million visits each year to 390 units of the national park system, 545 wildlife refuges and vast areas of multiple use lands.
- Provides opportunities for hunters and anglers, working to improve habitat on millions of acres of public and private lands.

Below are links to some DOI sites that may be of interest.

#### Water

- Floods
- Supply in the West
- Conservation
- Resources

#### Science

- Astrogeology at USGS
- Hurricanes
- Earthquakes
- Energy

#### Land

- Fire
- Maps
- Parks/Refuges/BLM Lands
- Offshore Lands/Volcanoes

#### Wildlife

- Endangered Species
- Habitats & Conservation
- Wild Horse & Burro Adoption
- Duck Stamps

#### Communities

#### InfoLinks

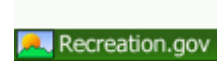


Share the Experience  
An Interagency Public Lands  
Photo Contest

No FEAR Act Notice

- Special Trustee
- Indian Trust
- Territories and Islands

- [www.HealthyForests.gov](http://www.HealthyForests.gov)
- Avian Influenza Information
- 2005 Hurricane Recovery



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Last Updated on 08/07/06*