

Activity: Biological Research

Subactivity: Biological Information Management and Delivery

	2009 Actual	2009 Recovery Act ³	2010 Enacted	2011			Change From 2010 (+/-)
				DOI-Wide Changes ^{1,2} (+/-)	Program Changes (+/-)	Budget Request	
Biological Information Management and Delivery (\$000)	21,965	0	24,946	-568	-1,628	22,750	-2,196
<i>Total FTE</i>	<i>74</i>	<i>0</i>	<i>73</i>	<i>-2</i>	<i>0</i>	<i>71</i>	<i>-2</i>

1) \$167 in fixed costs is absorbed.
 2) See the General Statement and Section G for Details on DOI-wide Changes.
 3) A new treasury account was created for the Recovery Act appropriations; direct allocations to programs were not made.

Summary of 2011 Program Changes for Biological Information Management and Delivery

Request Component	(\$000)	FTE
• Unrequested Congressional Increases	-1,628	0
TOTAL Program Changes	-1,628	0

Justification of 2011 Program Change

The 2011 budget request for the Biological Information Management and Delivery (BIMD) subactivity is \$22,750,000 and 71 FTE, a net program change of -\$1,628,000 and 0 FTE from the 2010 Enacted level.

State Conservation Data Agencies **(-\$1,428,000/ 0 FTE)**

The proposed reduction to the BIMD in 2011 will curtail support to coordinators of the national network of State conservation data agencies. Because State agencies obviously operate within their own boundaries, they require assistance coordinating their data and information management efforts to better facilitate collaboration and cross-border resource management. This reduction limits assistance available to State agencies in managing and providing public access to conservation-related data and information.

National Biological Information Infrastructure **(-\$200,000/ 0 FTE)**

The proposed reduction in National Biological Information Infrastructure (NBII) will diminish scientifically credible content in the area of pollinator data and information. The result of this action is a deceleration of activity aimed at identifying pollinator data and information resources

Biological Research

and making them available through the NBII for use by scientists and managers for conservation and biodiversity-related decisionmaking.

Program Performance Change

	2007 Actual	2008 Actual	2009 Actual	2010 Plan	2011 Base Budget (2010 Plan + Fixed Costs)	2011 Plan	Program Change Accruing in 2011	Program Change Accruing in Out-years
					A	B=A+C	C	D
1.4: Improve the understanding of National Ecosystems and Resources through interdisciplinary assessments								
% of data and information resources being accessed for science and science-based decision-making (BIMD)	13.11%	20.52%	21.34%	21.5%	21.5%	20.5%	-1%	21.00%
% of US land with land characterization and species distribution information available for resource management decision-making updated in the last 5 years (BIMD)	34%	37%	77%	80%	80%	75%	-5%	80%
<p>Note: Projected costs may not equal program change as these are full costs, which may include funds from other sources and (or) use averages.</p> <p>Column A: The level of performance and costs expected in 2010 at the 2011 level plus funded fixed costs. Reflects the impact of prior year funding changes, management efficiencies, absorption of prior year fixed costs, and trend impacts, but does not reflect the proposed program change.</p> <p>Column D: Out-year performance beyond 2011 addresses lagging performance — those changes occurring as a result of the program change (not total budget) requested in 2009. It does <u>not</u> include the impact of receiving the program change again in a subsequent out-year.</p>								

Program Overview

The BIMD mission is to create the informatics framework, provide scientific content (data, information and tools) from scientifically credible sources, and develop the public and private partnerships needed for the understanding and stewardship of our Nation's biological resources. BIMD provides access to data and information for science-based decisionmaking, particularly as it pertains to the conservation, management, and use of the Nation's natural resources. In addition, the program develops and makes available tools, models, visualizations, and applications to aid policy and resource managers in the analysis and synthesis of scientific data to support decisionmaking. The program works in cooperation with many organizations throughout the United States and the world to provide biological information to partners, stakeholders, customers, and the general public. Through a Web-based infrastructure that facilitates information sharing, interoperability, user-centered design and collaboration, the program ensures access to relevant data and information from USGS and other sources, and

applies standards to facilitate the multi-use and integration of data. A state-of-the-art search engine, implemented in 2009, provides users with the means to rapidly pinpoint useful data and information, and to preserve selected search results for efficient re-use.

The USGS plays a vital role in making biological data and information accessible and useable. USGS performance in this area is reflected in the availability of long-term environmental and natural resource information, data and systematic analyses needed by land and resource managers for informed decision making.

The Biological Informatics Program's goals are outlined in the program's 5-year plan (<http://internal-int.er.usgs.gov/director/planning/docs/BIO5yrPlan2005-2009.pdf>) are:

- Content: Increase the availability and usefulness of biological resources data and information;
- Tools: Implement technologies and tools to integrate, analyze, visualize, and apply biological information to natural resource issues;
- Infrastructure: Develop, apply, and promote the adoption of standard practices, protocols, and techniques to enhance knowledge discovery and retrieval from various resources;
- Research: Facilitate information science research that supports the advancement of biological informatics capabilities; and
- Customers: Apply innovative technologies and best practices to improve the development, description, and dissemination of biological information to customers.

The interdependent components of BIMD have been specifically designed to integrate information across geographic and political scales (local to global) and biological levels of organization (genomes to biomes). These components, detailed below, consist of the Gap Analysis Program (GAP), the Integrated Taxonomic Information System (ITIS), Vegetation Characterization (Veg), and the National Biological Information Infrastructure (NBII). In addition, BIMD provides funding and support to USGS Biology Science Centers for information technology and information management activities.

The following are the major objectives of the BIMD subactivity that are critical to the accomplishment of the Program goals:

- *Landscapes, Stewardship, and Species Distributions.* Gap Analysis Program (GAP) generates data sets and databases on native vertebrate species distributions and natural land cover types to provide State, regional, and national conservation assessments. In addition, Vegetation Characterization activities are performed on public lands (national parks) using a consistent methodology supported by national standards. Further work in this area includes the leadership role BIMD plays as the coordinator of the Forest Service-based office to implement the National Vegetation Classification Standard, v2.0. This standard was developed by an interagency group on which BIMD has participated for many years.
- *Biosystematics and Nomenclature.* ITIS is being developed as an authoritative source of species names and their hierarchical classification. The completed portions serve as a taxonomic standard for other program components and the global community, enabling the comparison of biodiversity data sets at all biological levels. In 2009, a framework document outlining the potential use of ITIS as a departmentwide standard was accepted by the Department, to be incorporated in a blueprint for the Department's Biological Data Line of Business. BIMD is working with representatives of other

Biological Research

Department bureaus to ensure that ITIS meets their needs for an authoritative taxonomy, and revising ITIS structures where necessary to accommodate special uses such as in Conventional on International Trade in Endangered Species (CITES)-related litigation.

- *Genomes to Biomes*. The NBII provides the biological community and others with a fully digital, interactive, distributed system that provides scientifically reliable biological data and information and a suite of tools for analysis, synthesis, and forecasting. Network-wide methods and standards for organizing content to enhance the retrieval, integration, and use of information are key components of the NBII. In addition, within the NBII, BIMD develops and maintains the infrastructure that hosts and enables the output of BIMD activities to be integrated and through Web services and feeds, populates the informational Web pages of the Biology science programs with up-to-date content.

The USGS national-level approach to managing biological science and natural resource data and information involves the application of standards that foster integration and provide opportunities for collaboration and cooperation. The USGS places a premium on partnerships at all levels of government and with nongovernmental entities, including the private sector. These partners use USGS-generated scientific data and information that contributes to the knowledge base, which then becomes available to Interior land and resource managers, and others.

The program works collaboratively with others to ensure USGS scientists, Interior resource managers and others have consistent, one-stop access to high quality data and information that can be used to address resource management issues. To that end, the program engages USGS science centers and other USGS programs, other Federal agencies, non-governmental organizations, museums, universities, international organizations, and other partners in the creation of data content and resources to address resource management needs.

For example, the NBII has over 250 partner organizations and agencies that help define the direction both of individual focus areas and of the NBII as a whole. Gap Analysis, Vegetation Characterization, and ITIS also collaborate with partners to ensure the inclusion of critical content, to share technology and to avoid duplication of effort among Federal programs.

Gap Analysis Program (GAP) ***<http://gapanalysis.nbii.gov/portal/server.pt>***

As the only Federal program that provides a national assessment of biodiversity, GAP assists resource managers in keeping common species common by identifying those species and plant communities that are not adequately represented in existing conservation lands. Those species not adequately represented constitute conservation “gaps.” Common species are those not currently threatened with extinction. GAP’s mission is to provide regional assessments of the conservation status of native vertebrate species and natural land cover types and to facilitate the application of this information to land management activities. This is accomplished through the following five objectives:

- Map the land cover of the United States;
- Map predicted distributions of vertebrate species for the United States;
- Document the representation of vertebrate species and land cover types in areas managed for the long-term maintenance of biodiversity;

- Provide this information to the public and those entities charged with land use research, policy, planning, and management; and
- Build institutional cooperation in the application of this information to State and regional management activities.

GAP produces and maintains current (less than 5 years old), high-quality datasets on the status of species and their habitats and identifies the degree to which native animal and plant species are represented in the present-day mix on conservation lands. The most recent data are available through an interactive map viewer and provide the most detailed land cover map that includes the entire United States in a seamless format. Currently, many of the GAP datasets are available nationwide. These products include digital databases describing State- or region-wide land-cover assemblages, distributions of mammals, birds, reptiles, and amphibians, and characterizations of land stewardship. The current emphasis of the program is to complete national scale data, building on its extensive archive of data resources, so that assessments can be made for the entire United States. This capability, only recently attained as many national data sets have come online, has made GAP an integral part of other national efforts, such as the EPA initiative to create an Atlas of Ecosystem Service for the Nation.

In 2009, GAP also completed a seamless national dataset of plant communities, defined as Ecological Systems. This is the most detailed vegetation dataset of current vegetation ever completed for the United States. These completions make it possible for the program to focus on its vertebrate species distributions. These data are crucial for meaningful conservation analysis for use in land use planning and global climate change assessments. GAP will continue updating land cover and protected areas data in selected regions as needed. The species distribution data is currently being advanced as quickly as possible to meet the needs of Federal and other partners. Providing consistent data across the United States is also important to State managers, allowing State conservation and land management agencies to better plan land use across State boundaries.

The USGS continues to emphasize GAP research and the development of applications to better serve the needs of Interior's land management bureaus, including FWS, BLM, and other agencies such as USFS. GAP continuously develops new methodologies for performing analyses, implements new mechanisms to facilitate access to GAP products, and develops new approaches to using GAP data to solve real-world problems.

Land Cover Mapping – GAP continues to employ Landsat imagery as the basis for landcover characterization, and also collaborates with programs such as USGS LANDFIRE to improve and speed up the mapping process.

Species Distribution Forecasting – GAP uses both expert opinion and data-based computer modeling in identifying specific areas in which each species is likely to occur. Models also take into account habitat preferences and actual observations of occurrence.

Stewardship – Understanding of the stewardship of U.S. lands is rapidly improving as is noted below. GAP provides clear information on which parcels of land across the country are managed for conservation using a four-level decision tree process.

Biological Research

Protected Areas Database of the United States (PAD-US) – As part of its mission, GAP has developed protected areas information since the late 1980s. As a result of this work, BIMD was invited to join a partnership of Federal and non-Federal conservation data stewards whose goal it was to create a national-level database on the Nation's protected areas. With encouragement and approval by the International Union for the Conservation of Nature (IUCN), this database has become the U.S. source for annual updates to the World Database on Protected Areas <<http://www.wdpa.org/>>. PAD-US version one was published and submitted to the UNEP-World Conservation Monitoring Center (WCMC) in April 2009, with an online map viewer released in June 2009, using in large part GAP datasets as the basis for U.S. protected areas information. These data, which show the spatial assemblage of lands legally protected for their biodiversity values, provide a

"I'm writing to thank the Gap Analysis Program (GAP) for making select protected areas from PAD-US version 1 available for incorporation into the recent Google Maps update thus making the data freely and easily accessible and usable to the public. We chose PAD-US data as we found it to be the most well organized and comprehensive dataset of all comparable national datasets we evaluated." December 14, 2009, Michael E. Jones Strategic Partner Development Google, Inc. (letter)

"I want to thank you for the investment of time and money that USGS, through the GAP Programme has made by providing information to the World Database on Protected Areas (WDPA). This dataset ... is a shining example of government/NGO cooperation and is currently one of the highest quality country datasets in the WDPA. We wish to further thank you for clarifying the role of USGS in providing this data on behalf of the USA." April 20, 2009, Jon Hutton – Director, UNEP World Conservation Monitoring Centre (e-mail)

foundational dataset for many conservation assessments. PAD-US includes an interactive map viewer of the entire United States that shows public lands, legally protected for their biodiversity values, and incorporates a national database describing land managers, sources of information, and the classification of the unit by International Union of Conservation

Nations (IUCN) protection status. PAD-US is the official source of protected lands for the World Database of Protected Areas. PAD-US data currently is being ingested by Google for integration into GoogleMaps.

Vegetation Characterization <http://biology.usgs.gov/npsveg/>

The goal of the Vegetation Characterization program (VCP) is to meet specific information needs identified by NPS with additional cooperative projects for FWS at Ouray and Lacreek National Wildlife Refuges, both now served on the Website, and for BLM at Gunnison Gorge National Conservation Area.

Vegetation Characterization activities are based on peer-reviewed, objective science. Comprehensive vegetation information is provided at national and regional levels, while also serving the local management needs of individual parks. Stringent quality control procedures ensure that products are accurate and consistent for initial inventory purposes and replicable for monitoring purposes. The spatially enabled digital products produced by the program are available on the World Wide Web. In performing this work, USGS scientists collaborate with NPS on protocol design and implementation that allows for integration of data analyses and field data collection (e.g. a monitoring protocol that meets both invasive inventory requirements, as well as fire fuel monitoring needs).

Products are aimed at monitoring efforts such as planning and designing monitoring protocols, performing statistical data analyses, and achieving efficiencies such as dovetailing protocols for

invasive species inventory and fire fuels related to vegetation to ensure integrated field data collection protocols.

Activities performed under this component include a suite of products produced for each assessed unit, and ongoing work to develop and implement the National Vegetation Classification Standard:

Spatial Data – includes aerial photography, map classification, map classification description and key, spatial database of vegetation communities, hardcopy maps of vegetation communities, metadata for spatial databases, and a complete accuracy assessment of spatial data.

Vegetation Information – includes vegetation classification, dichotomous field key of vegetation classes, formal description for each vegetation class, ground photos of each vegetation class, and field data in database format.

National Vegetation Classification Standard – The NVCS provides the framework for interagency data collection related to the inventorying and monitoring of the Nation's vegetation. The BIMD Vegetation Characterization activity will continue to work with Federal Geographic Data Committee (FGDC) and its Vegetation Subcommittee to implement the newly revised National Vegetation Classification standard across Interior and the broader Federal community, including a database of its classification entities. An interagency coordination office has been established for the NVCS with funding from the VCP. VCP will continue efforts to digitize and archive program photography with EROS and serve newly completed NPS park project data.

Integrated Taxonomic Information System (ITIS)
<http://biology.usgs.gov/bio/itis.html>

USGS leads and works with other Federal agencies (including EPA, USDA, NOAA, Smithsonian Institution, NSF, FWS and NPS), organizations, institutions, and taxonomic specialists across the United States and internationally to develop and operate the largest taxonomic thesaurus and database of its kind in the world. ITIS provides scientific names (each with a unique Taxonomic Serial Number) as the "common denominator" across databases for accessing information on such topics as biodiversity, invasive species, declining amphibians, migratory birds, fishery stocks, pollinators, agricultural pests, emerging diseases, and climate change effects on species distribution. ITIS supports the development of the only comprehensive national taxonomic database that provides free access (both through the Web and by automated machine methods through the broader internet) to standard, well documented and scientific names and their synonyms for all living organisms in the United States.

The goal for ITIS is to create an easily accessible database with reliable information on species names and their hierarchical classification. The database is continuously reviewed by experts to ensure high quality with valid classifications, revisions, and additions of newly described species. ITIS includes documented taxonomic information on all organisms from both aquatic and terrestrial habitats. While the primary focus of ITIS has been on native North American species, thousands of non-native species from other continents are also documented in ITIS, and geographic coverage continues to expand and will eventually be worldwide. ITIS is coordinating its efforts with several national and international biodiversity programs.

For each scientific name, ITIS includes the authority (author and date), taxonomic rank, associated synonyms and vernacular names where available, a unique taxonomic serial

Biological Research

number, data source information (publications, experts, etc.) and data quality indicators. Expert reviews and changes to taxonomic information in the database are tracked.

National Biological Information Infrastructure (NBII)

<http://www.nbii.gov>

The NBII is an electronic library of biological data, information, and associated tools and technologies that is accessible for customers and partners to use in making informed decisions regarding resource management, environmental considerations, disease vectors, control of invasive species, and other issues.

The USGS works with more than 250 public and private partners in implementing the NBII to jointly determine content priorities and focus, execute projects aimed at improving access to critical data and information, and develop new tools and models. BIMD manages these activities and maintains the technological infrastructure that ties them all together.

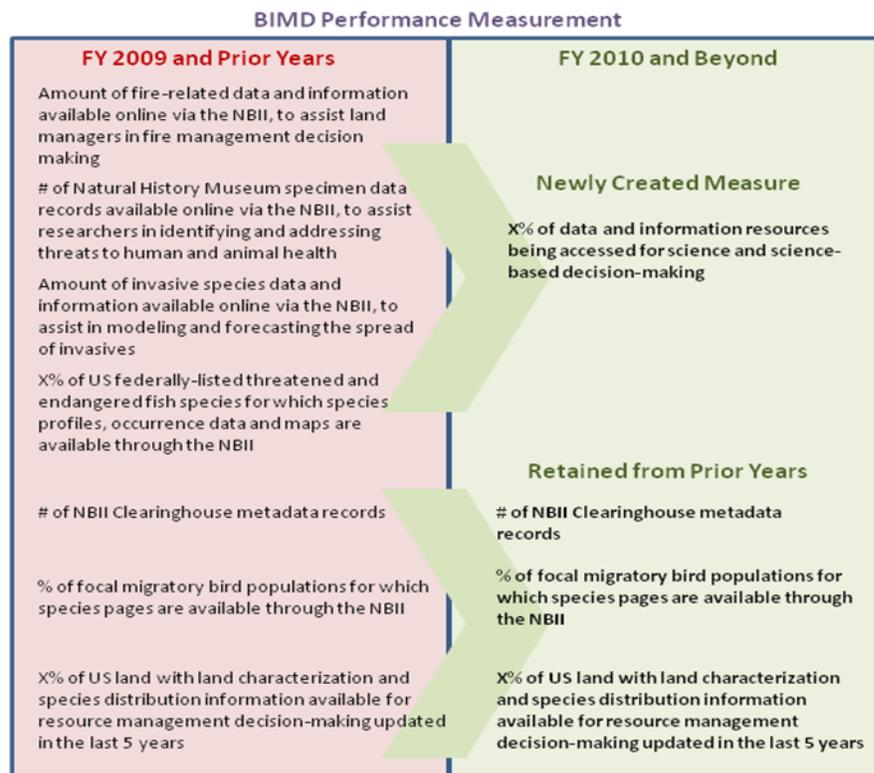
NBII focuses activities both regionally and thematically. Regional focus areas provide services within a particular geographic area of the country. Within a region, activities address broad biological themes and issues that are high priority to stakeholders in that region. Currently, NBII has eight regional focus areas, the BIMD managers of which coordinate, and integrate activities, products and services to leverage work on a national scale.

The thematic focus areas of NBII coordinate data and information activities nationally within the scope of their assigned scientific themes. In doing so, they both initiate data gathering activities and coordinate relevant local data sets from the Regions. They also place a high priority on developing tools to allow users to interact with data from diverse sources. NBII has four major thematic focus areas: invasive species; wildlife disease; bird conservation; and fisheries and aquatic resources. In addition, NBII supports a number of high-profile projects, such as pollinator decline, climate change, and the impact of habitat change on threatened species such as sage grouse.

The National Biological Information Infrastructure that underlies the data and information network consists of the hardware and software required to make the network run, and also supports a suite of standards that must be implemented to make network-wide interoperability, data sharing and integration possible. As this structure grows, a robust infrastructure becomes more and more critical so that necessary products and services may be provided to the entire enterprise and not duplicated at multiple locations. This infrastructure enables network-wide search, access, and retrieval, as well as sharing of tools.

2011 Program Performance

This section details a transition in BIMD’s performance measurement process, and also highlights several significant recent accomplishments. Throughout 2009, BIMD worked to refine and streamline its performance metrics and reporting to better reflect the work of the Biological Informatics Program and the outcomes of that work in a holistic fashion. BIMD began to track and report four measures in 2010. Of these, three were retained from prior years and one was newly created. The new measure replaced several older measures, which presented a fragmented picture of program activities. The transition of the old measures to the new is shown in the figure to the right. A table of measures and metrics appears at the end of this section.



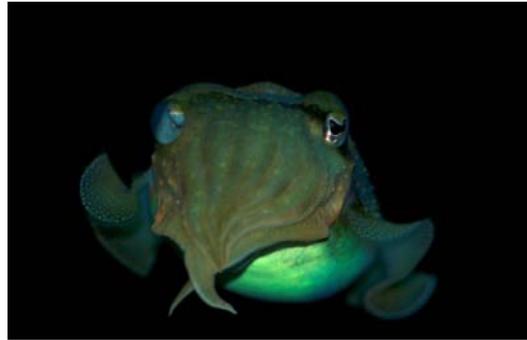
NBII Selected as Host for OBIS-USA — The Ocean Biogeographic Information System of the US (OBIS-USA) is the U.S. component of a global biogeographic information system for marine species. It was established in cooperation with the U.S. National Committee for the Census of Marine Life (CoML), a committee composed of nationally renowned marine scientists. OBIS-USA is a partnership of State, Federal, and scientific organizations. OBIS strives to provide access to geographic and temporal data on marine species to support improved understanding of our oceans biota and management of those resources. The USNC views OBIS-USA as one of its most important legacies from the ten-year Census of Marine Life Program. The system became operational with 2.5 million records covering 67,000 species. System functionality includes various tools to assess the data for completeness and quality, designated in the system as “suitability for use,” which allows researchers to better determine if the data are appropriate for use in the context of what they are trying to accomplish. In 2010 and 2011, the database will grow to over 10 million records and BIMD will begin to address the ability to integrate the biological/species data with physical and chemical data to aid in forecasting species distributions, monitoring changes in species in response to our changing environment,

Biological Research

support marine spatial planning and the Integrated Ocean Observing System. The data will benefit management of marine species and will facilitate implementation of ecosystem-based management as the approach is implemented. The data are spatial in nature and so will interoperate within the emerging integrated ocean observing system and will support marine spatial planning.

NBII Library of Images from the Environment (LIFE) Leads Development of International Standard for Biological Media

— NBII LIFE is a collaboration to make diverse, high-quality digital images, some of which are rare, of the environment freely available for research and other nonprofit uses. To enable search and retrieval of images, BIMD has been a key player in the development of an international standard for biological media that will promote interoperability among global image/media galleries and other sources of scientific non-print media. In collaboration with leads of scientific image galleries worldwide, LIFE has been instrumental in creating a schema for organizing the data about images and other media that formed the basis for the new standard, which allows each image to be described, searched and retrieved as a scientific record. Due to their standardized and scientifically verified descriptions, some of LIFE's 15,000 images are being used by and currently appear in material published by USGS, EPA, NIH, FWS, NASA, the Library of Congress, the USDA, the Smithsonian, the U.S. Botanic Gardens, National Geographic, the National Phenology Network, Public Radio International, Encyclopedia Britannica, the Washington Post, and Science magazine, as well as multiple State and local governments, universities, libraries and museums. Throughout 2010, the new standard will be guided through the international ratification process. Also in 2010, LIFE will begin accepting audio and video recordings in addition to still images, which will be cataloged using this standard to ensure their availability to researchers and managers. LIFE provides access to authoritative images that are freely available for education, research and decisionmaking about our Nation's resources. Due to the scientific rigor applied to documenting each image, LIFE images are being used to illustrate specific characteristics of a species or habitat; determine species distributions and niches; examine environmental and temporal influences on behavior and plant phenology; and examine changes in habitat over time or after disasters; and more. The data associated with an image can be fed into models, such as for predicting the spread of an invasive species.



*"We just posted an article, "**100 Excellent Websites for Exploring the Ocean Online**" I am happy to let you know that your site has been included in this list." K. Sonora, MatchaCollege.com, (email March 20, 2009)*

"We have used some of your images for an educational brochure We appreciate the availability of such great photos for public use." Ericka Pilcher, Natural Sounds Program, National Park Service (email April 13, 2009).

NBII Implements State-of-the-Art Search Capabilities — To accommodate rapidly increasing content and the need for fast and accurate retrieval of data and information, the NBII implemented a new, leading-edge search engine. The search engine covers the entire NBII Web site, resource catalog and many other Web sites specifically indexed for their biologically-relevant content. It also searches other databases (e.g., the Government Printing Office's online Catalog of U.S. Government Publications and EPA's National Environmental Publications Internet Site). The search engine features advanced relevance-ranking of search results, as well as the ability to "cluster" search results into conceptual subsets organized by terms that occur with high frequency throughout the total result. In 2010 and beyond, the NBII will be

continually expanding the content covered by the search engine, integrating more collections and sources into its scope, developing a true "one-stop" location for biological information. The new search engine allows users to do simple keyword searches or to use more advanced techniques. Results with geospatial coordinates are integrated with Google Maps, allowing users to immediately see the range or points described in each resource, and the search engine automatically presents available images related to the search. This high level of integration, coupled with state of the art search functionality allows users to pinpoint useful resources quickly without having to wade through pages of search results.

USGS Interdisciplinary Microbiology Web Site — This Web site provides for the first time a single online location for integrating microbiology data and information from across all of USGS. The site features research summaries, images, and contact information for scientists and facilities across USGS disciplines. The Web site: <http://microbiology.usgs.gov/> was released on July 10, 2009. The site has added 17 new research summaries since its release, for a total of 70 research summaries from 60 USGS scientists. In addition, the site has collected and posted the names of over 100 USGS scientists involved in some aspect of microbiology research. The Web site is expected to continue posting new research summaries, featured topics, and publication citations monthly. This site facilitates collaboration among scientists and increases the understanding of USGS microbiology to the public. It is also a communication tool that demonstrates the bureau's available tools, current research, and expertise to potential partners and collaborators, as well as serving the information needs discussed by USGS scientists at the USGS Interdisciplinary Microbiology Workshop (October 2008) for a central place to find the centers, scientists, and research involved in USGS microbiology.

NBII Designated As Home for National Fish Habitat Action Plan Data System — One of the NBII's targeted focus areas for data and information management is fisheries and aquatic resources. The NBII was designated by the National Fish Habitat Board (Board) to house the data delivery system supporting the National Fish Habitat Action Plan. The first phase of the data system will be completed in 2011 to facilitate the transfer of data between and among the Fish Habitat Partnerships and the Board. This accomplishment will further the progress of development to enable visualization of these data and Web mapping capabilities which will support the States, non-governmental organizations, industry, and Federal agencies within and external to Interior that are working to improve the Nation's fish habitat.

Texas Coastal Fisheries Mapping Application Goes Online — With all of the stresses being placed on Texas' coastal fisheries, it is important to monitor them to determine whether populations are increasing or decreasing and whether management actions may be necessary. Of the many agencies collecting data in the Gulf, using a variety of formats; the result is that each dataset tells only a part of the story about the state of Gulf coastal fisheries resources, and the datasets cannot be easily integrated. This application allows resource managers to access previously disparate datasets in a consolidated and user-friendly interface. To enable this integration, BIMD worked directly with several State agencies in Texas to acquire coastal fisheries monitoring data, and reformatted the data as necessary to allow scientists and managers to display these data in a single online mapping application where they can view physical characterizations by estuary. The application provides hydrologic information on average salinity, dissolved oxygen and water temperature for each estuary, with data available for downloading. The work involved time series trend graphs for each bay/species; calculating relative abundance; performing quality assurance for data in the database; creating the mapping application in ArcGIS; integrating time series graphs into the application; and creating the ability to download the fisheries data. Beginning in 2010, the application will be extended to include the coasts of Louisiana, Mississippi, and Alabama.

Biological Research

Program Performance Overview

The Biological Information Management and Delivery addresses the Department of the Interior strategic goal of improving the understanding of national ecosystems and resources through integrated interdisciplinary assessment and by providing the science information that resource managers need. The following table highlights important performance measures for the Biological Information Management and Delivery:

End Outcome Goal 1.4: Improving the understanding of national ecosystems and resources through integrated interdisciplinary assessment

End Outcome Goal End Outcome Measure / Intermediate Measure	Type	2006 Actual	2007 Actual	2008 Actual	2009 Plan	2009 Actual	2010 Plan	2011 Plan	Change from 2010 Plan to 2011	Long-term Target 2012
Intermediate Outcome Measures and Bureau and Outcome Measures										
Ensure availability of long-term environmental and natural resource information, data and systematic analyses needed by land and resource managers for informed decisionmaking										
X% of US land with land characterization and species distribution information available for resource management decisionmaking updated in the last 5 years (BIMD)	C	42.3%	34%	37%	40%	77%	80%	75%	-5%	80%
% of focal migratory bird populations for which species pages are available through the NBII (BIMD)	C	UNK	8%	15%	22%	22%	29%	36%	+7%	40%
Comments	Shared measure with FWS									
X% of data and information resources being accessed for science and science-based decisionmaking (BIMD)	C	UNK	13.11%	20.52%	21.00%	21.34%	21.5%	20.5%	-1%	21.00%
Total projected cost (\$000)		---	\$5,750	\$5,250	\$5,250	\$5,000	\$5,750	\$5,550	-\$200	\$5,750
Actual cost per catalogued resource in NBII (whole dollars)		---	\$175	\$102	\$102	\$94	\$106	\$111	\$5	\$106
Output Measure										
# of records in the NBII Metadata Clearinghouse available to document biological data sets and information products (BIMD)	C	26,808	29,170	41,000	41,500	43,366	74,000	76,000	+2,000	78,000
Total projected cost (\$000)		\$580	\$580	\$580	\$580	\$572	\$570	\$570	0	\$570
Actual cost per metadata record (whole dollars)		\$21.63	\$19.88	\$14.14	\$13.97	\$13.19	\$7.70	\$7.50	-\$0.20	\$7.30
Comments	Measure is cumulative; target reflects significant growth due to a large partner contribution.									

Science Centers and Field Stations Summary
(2011 Greenbook Updates – BRM & BIMD)

Center Name	Location	2009 ¹⁷ Estimate (\$000)	2010 ¹⁷ Estimate (\$000)	2011 ¹⁷ Estimate (\$000)
Center for Biological Informatics	Lakewood, CO	5,874	5,639	5,639
Program Description: The Center facilitates access to and use of biological data and information through leadership in establishing standards, developing information products, and using information technologies. The Center supports such programs as GAP Analysis, the USGS/National Park Service Vegetation Mapping, and the National Biological Information Infrastructure.				
Upper Midwest Environmental Science Center	LaCrosse, WI	3,638	3,638	3,638
Program Description: The Center provides scientific leadership in a variety of areas including river ecology, restoration of degraded habitats, development of chemicals for fishery management, declining species, invasive aquatic species impacts and control, contaminants, and development of decision support models. The Center has lead responsibility for the Upper Midwest Amphibian Research and Monitoring Initiative and the Long Term Resource Monitoring Program on the Upper Mississippi River. Scientists at the Center anticipate emerging problems and information gaps and provide the leadership and the commitment to action needed for effective resource management.				
Field Stations: N/A				
Leetown Science Center	Leetown, WV	7,773	7,773	7,773
Program Description: The Center conducts research to provide land and resource managers information needed to restore, enhance, maintain, and protect biological resources and their supporting systems.				
Field Stations:				
Aquatic Ecology Laboratory	Leetown, WV	2,110	2,110	2,110
Fish Health Research Laboratory	Leetown, WV	1,506	1,506	1,506
Southern Appalachian Field Laboratory	Knoxville, TN	426	426	426
Great Smoky Mountain Field Station	Gatlinburg, TN	35	35	35
Northern Appalachian Research Laboratory	Wellsboro, PA	1,163	1,163	1,163
Conte Anadromous Fish Research Laboratory	Turners Falls, MA	1,687	1,687	1,687
Orono Field Station	Orono, ME	125	125	125
Columbus Field Station	Columbus, OH	147	147	147
Restoration Technology Laboratory	Leetown, WV	396	396	396
Directorate/Information Resources Management	Leetown, WV	178	178	178
National Wildlife Health Center	Madison, WI	4,449	4,449	4,449
Program Description: The Center provides national and international leadership for addressing health issues involving wildlife resources under Interior's stewardship and to foster partnerships with others to address wildlife health as a component of ecosystem health.				
Field Stations:				
Honolulu Field Station	Honolulu, HI	240	240	240

Biological Research

Center Name	Location	2009 ^{1/} Estimate (\$000)	2010 ^{1/} Estimate (\$000)	2011 ^{1/} Estimate (\$000)
Patuxent Wildlife Research Center	Laurel, MD	13,301	13,301	13,301
Program Description: The Center focuses on wildlife research and management, specializing in wildlife conservation, especially in such areas as waterfowl harvest management, wildlife habitat improvement, the effects of environmental contaminants, endangered species conservation, migratory bird management, and wildlife population analysis.				
Field Stations:				
Orono	Orono, ME	169	169	169
Athens	Athens, GA	966	966	966
Vicksburg	Vicksburg, MS	355	355	355
Narragansett	Narragansett, RI	507	507	507
Smithsonian	Washington, DC	1,515	1,515	1,515
Syracuse	Syracuse, NY	142	142	0
Blacksburg	Blacksburg, VA	164	164	164
Biological Science Office of the Florida Integrated Science Center (formerly the Florida Caribbean Science Center)				
Biological Science Office of the Florida Integrated Science Center (formerly the Florida Caribbean Science Center)	Gainesville, FL	4,738	4,833	4,833
Program Description: The Center provides natural resource managers with scientific information needed for effective conservation with emphasis on biological resources of the Florida peninsula, the Southeastern States, and the Caribbean region. The Center focuses on coastal and marine ecology, ecosystems restoration ecology, invasive species, and biological diversity.				
Field Stations:				
Northeast Laboratory	Gainesville, FL	0	0	0
South Florida Field Stations	Miami/Homestead/ Ochopee, FL	874	891	909
Virgin Islands Field Station	St. John, U.S. Virgin Islands	179	183	187
Center for Coastal Geology and Regional Marine Studies	St. Petersburg, FL	591	603	615
Great Lakes Science Center				
Great Lakes Science Center	Ann Arbor, MI	8,001	8,001	8,001
Program Description: The Center meets the Nation's need for scientific information for restoring, enhancing, managing, and protecting the living resources and their habitats in the Great Lakes Basin Ecosystem. This mission is accomplished with scientific knowledge gained through quality research, inventory and monitoring, and information transfer.				
Field Stations:				
Lake Superior Biological Station	Ashland, WI	906	906	906
Lake Ontario Biological Station	Oswego, NY	751	751	751
Lake Erie Biological Station	Sandusky, OH	469	469	469
Cheboygan Vessel Base	Cheboygan, MI	263	263	263
Munising Biological Station	Munising, MI	156	156	156
Lake Michigan Ecological Research Station	Porter, IN	362	362	362
Hammond Bay Biological Station	Hammond Bay, MI	38	38	38
Tunison Lab. of Aquatic Science	Cortland, NY	705	705	705

Science Centers and Field Stations

Center Name	Location	2009¹⁷ Estimate (\$000)	2010¹⁷ Estimate (\$000)	2011¹⁷ Estimate (\$000)
Fort Collins Science Center	Fort Collins, CO	8,800	8,800	8,800
Program Description: The Center conducts research and develops technical applications to assist land managers in understanding and managing biological resources, habitats and ecosystems. The Center is home to the National Institute of Invasive Species Science. The Center conducts research related to species & habitats, aquatic systems, riparian ecology, global change, fire ecology, and herbivore ecosystems in support of Department of the Interior bureaus and the International Center for Applied Ecology.				
Field Stations:				
Arid Lands Field Station	Albuquerque, NM	600	600	600
Jemez Mountain Field Station	Los Alamos, NM	154	160	160
Northern Prairie Wildlife Research Center	Jamestown, ND	4,476	4,476	4,476
Program Description: The Center develops research information on the quantitative ecological requirements for sustainable wildlife populations primarily in grasslands and wetlands, determines the distribution of flora and fauna, and identifies consequences of habitat loss, management, and restoration.				
Field Stations: N/A				
Columbia Environmental Research Center	Columbia, MO	6,359	6,500	6,500
Program Description: The Center provides scientific information and data needed to address national and international environmental contaminant issues, and effects of habitat alterations on aquatic and terrestrial ecosystems.				
Field Stations:				
Texas Gulf Coast	Corpus Christi, TX	406	419	431
Texas Gulf Coast	College Station, TX	142	0	0
Padre Island Field Station	Padre Island, TX	0	0	0
International Falls Field Station	International Falls, MN	98	0	0
Yankton Field Station	Yankton, SD	107	110	113
Jackson Field Station	Jackson, WY	133	137	141
National Wetlands Research Center	Lafayette, LA	4,850	4,850	4,850
Program Description: The Center conducts research to address loss of wetlands in coastal systems, the changes in fresh and estuarine systems because of changes in water quality, and the resulting effects on birds.				
Field Stations:				
Corpus Christi Field Station	Corpus Christi, TX	90	90	90
Baton Rouge Field Station	Baton Rouge, LA	106	106	106

Biological Research

Center Name	Location	2009 ¹⁷ Estimate (\$000)	2010 ¹⁷ Estimate (\$000)	2011 ¹⁷ Estimate (\$000)
Northern Rocky Mountain Science Center	Bozeman, MT	2,776	2,595	2,624
Program Description: The Center conducts research to provide land and resource managers information needed to restore, enhance, maintain, and protect natural resources of the Rocky Mountain ecosystems.				
Field Stations:				
Glacier Field Station	West Glacier, MT	630	612	392
Missoula Field Station	Missoula, MT	131	156	163
Western Fisheries Research Center	Seattle, WA	3,706	3,818	3,818
Program Description: The Center provides scientific research and technical assistance to support the best possible stewardship of the natural resources, emphasizing fish populations and aquatic ecosystems of the West.				
Field Stations:				
WFRC Seattle Lab	Seattle, WA	1,990	1,990	2,050
Columbia River Research Lab	Cook, WA	402	402	414
Reno Field Station	Reno, NV	327	327	337
Dixon Field Station	Dixon, CA	236	236	243
Klamath Falls Field Station	Klamath Falls, OR	552	595	613
Marrowstone Marine Station	Nordland, WA	156	156	161
Biological Science Office of the Alaska Science Center	Anchorage, AK	6,555	6,620	6,620
Program Description: The Center provides biological information and research findings to resource managers, policymakers, and the public to support sound management of biological resources and ecosystems in Alaska. The Center's research focuses on arctic and subarctic ecosystems, marine mammal ecology, migratory birds, and terrestrial mammal ecology. The Center has duty stations in various locations that do not have independent budgets.				
Pacific Island Ecosystems Research Center	Honolulu, HI	3,000	3,000	3,000
Program Description: The Center conducts research to provide managers of terrestrial and marine resources information needed to restore, enhance, maintain, and protect biological resources and their supporting ecosystems in the Pacific Basin.				
Field Stations:				
Kilauea Field Station	Hawaii National Park, Hawaii, HI	1,884	1,978	2,000
Haleakala Field Station	Makawao, Maui, HI	343	360	365
Manoa Field Station	Honolulu, Oahu, HI	48	50	52
Western Ecological Research Center	Davis, CA	6,832	6,968	6,968
Program Description: The Center provides biological information and research findings to resource managers, policymakers, and the public to support sound management of biological resources and ecosystems in California, Nevada, Arizona, and Utah. The Center's research focuses on work related to endangered species, waterfowl, amphibians, fire ecology, global change, and other ecological issues.				
Field Stations:				
Santa Cruz Field Station	Santa Cruz, CA	660	673	686
Dixon Field Station	Dixon, CA	843	860	877
Davis Station	Davis, CA	184	188	191

Science Centers and Field Stations

Center Name	Location	2009^{1/} Estimate (\$000)	2010^{1/} Estimate (\$000)	2011^{1/} Estimate (\$000)
Western Ecological Research Center Field Stations (continued):				
San Diego Field Station	San Diego, CA	1,237	1,262	1,287
Channel Island Field Station	Ventura, CA	287	293	298
Point Reyes Field Station	Point Reyes, CA	249	254	259
Redwood Field Station	Arcata, CA	153	156	159
Sequoia-Kings Station	Tree Rivers, CA	584	596	607
Yosemite Field Station	Portal, CA	385	393	400
San Francisco Bay Field Station	Vallejo, CA	460	469	478
Box Springs Field Station	Riverside, CA	214	218	222
Las Vegas Field Station	Las Vegas, NV	953	972	991
Forest and Rangeland Ecosystem Science Center				
	Corvallis, OR	6,117	6,117	6,117
Program Description: The Center provides scientific understanding and technology to support sound management and conservation of forest and rangeland ecosystems in the Pacific Northwest and Intermountain West.				
Field Stations:				
Regional Ecosystem Office	Portland, OR	0	0	0
Corvallis Research Group	Corvallis, OR	2,259	2,019	2,220
Olympic Field Station	Port Angeles, WA	606	468	515
Snake River Field Station	Boise, ID	1,468	1,828	2,011
University of Washington Field Station	Seattle, WA	135	183	201
Southwest Biological Science Center				
	Flagstaff, AZ	2,128	2,234	2,234
Program Description: The Center conducts research and provides technical support to assist land managers with resource management and stewardship throughout the Southwest. Research focuses on arid-lands ecology, invasive species, ecosystem restoration, climate change, endangered species, wildlife-human interactions, inventory and monitoring, and other ecological issues. The Center also includes the Grand Canyon Monitoring and Research Station, which studies the effects of the operation of Glen Canyon Dam on downstream resources within the Colorado River Ecosystem under the framework of adaptive management.				
Field Stations:				
Grand Canyon Monitoring and Research Center	Flagstaff, AZ	0 (funded by receipts from power revenue)	0 (funded by receipts from power revenue)	0 (funded by receipts from power revenue)
Sonoran Field Station	Tucson, AZ	650	650	650
Colorado Plateau Field Station	Flagstaff, AZ	846	846	846
Canyonlands Field Station	Moab, UT	632	632	632

^{1/} Science Center and Field Station funding are estimates and do not include cyclical funds.

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Activity: Biological Research

Subactivity: Cooperative Research Units

	2009 Actual	2009 Recovery Act ³	2010 Enacted	2011			Change From 2010 (+/-)
				DOI-Wide Changes ^{1, 2} (+/-)	Program Changes (+/-)	Budget Request	
Cooperative Research Units (\$000)	16,949	0	19,313	-170	0	19,143	-170
Total FTE	126	0	141	0	0	141	0

1) \$300 in fixed costs is absorbed.
 2) See the General Statement and Section G for Details on DOI-wide Changes.
 3) A new treasury account was created for the Recovery Act appropriations; direct allocations to programs were not made.

Justification of 2011 Program Changes

The 2011 budget request for the Cooperative Research Units (CRU) subactivity is \$19,143,000 and 141 FTE. There are no program changes requested for CRU in 2011.

Program Overview

The CRU program is a unique cooperative relationship among the USGS, State fish and wildlife agencies, host universities, and the Wildlife Management Institute. The FWS is a formal cooperator, as well, to most of the individual Units. Since 1935, this cooperative relationship has provided a strong connection between the USGS, State and Federal management agencies, and the national university community. The individual resources of each cooperator are leveraged to deliver program outcomes that far exceed what any one cooperator could achieve alone.

The goals of the CRU program are to sustain and maintain:

- A cost-effective, national network of Federal, State, and university partnerships pursuant to the Cooperative Research Units Act of 1960, with a legislated mission of research, education, and technical assistance focused on fish, wildlife, ecology, and natural resources.
- A customer-oriented network of expertise for research, teaching, and technical assistance that is responsive to the information needs of State and Federal resource agencies.
- Science capabilities responsive to resource management needs of Interior bureaus.
- A premiere program for graduate education and training of future natural resources professionals having skills to successfully serve the broad natural resources management community.

The CRU program is comprised of 40 CRUs located at universities in 38 States, with a headquarters office in Reston, VA. The program is designed to leverage cooperative partnerships with Federal and State agencies to address mutual needs of all partners in a cost effective manner. The USGS stations Federal scientists at universities to help identify and

Biological Research

respond to natural resource information needs through the pooling of resources among agencies; participate in the advanced scientific training of university graduate students; and provide Federal and other natural resource managers access to university expertise and facilities. Federal support of the CRUs is multiplied by State and university cooperator contributions of expertise, equipment, facilities, and project funding, thereby enhancing the program's cost-effectiveness. Through university affiliations, CRU scientists train future natural resource professionals and provide opportunities through graduate education to diversify the Federal workforce.

Each CRU is directed by a Coordinating Committee of Federal, State, university, and a representative from the Wildlife Management Institute. Each Coordinating Committee establishes the goals and expectations for its unit within the program's mission of research, education, and technical assistance. The mix of priorities is established locally and is updated annually based on the needs of the cooperators and the available funding. Program accountability measures, performance standards, and oversight of Federal scientists are used to ensure that research and the resulting scientific information products support the goals of the USGS and Interior.

University and State agency contributions to the program remain strong, as does Federal, State, and local government reimbursable funding for research and technical assistance. Regular cooperator-focused satisfaction surveys continue to indicate a very high rate of satisfaction (greater than 95 percent) with the CRU program's execution of the education and science mission at local units. The program's appropriated dollars continue to be matched by State, university, and Federal partners, and other entities' contributions at a ratio of approximately three matching dollars to each appropriated dollar.

2011 Program Performance

To meet future natural resource management challenges, the program will continue to investigate new approaches to more effectively engage its cooperators in science-based decisionmaking. In addition, the program will seek to find new ways for the Units and their cooperators to work together across State and regional boundaries. The CRU program is recognized by Interior as one of the primary sources of technical expertise on structured decisionmaking and adaptive management. These processes provide systematic ways for resource management bureaus in Interior to include science in regulatory and management decisionmaking. More closely knitting science with management is critical for Interior bureaus faced with significant resource decisions and complexities in the face of unpredictable effects of climate change.

The CRU program has a strategic imperative to advance structured decisionmaking and adaptive management approaches with its State and Federal cooperators, including Interior bureaus managing trust resources. A significant effort will be required to coordinate, construct, and implement strategies with CRU partners to advance knowledge development and staff expertise in structured decisionmaking and adaptive management. Challenges include developing the next generation of structured decisionmaking and adaptive management practitioners through new approaches to graduate education and training.

In 2009, CRU identified strategic actions to expand the application of structured decisionmaking and adaptive management with program cooperators. Through 2010, CRU continued to provide training to CRU staff and State cooperators; develop pilot projects for collaborative decisionmaking with both State and Federal cooperators; provide technical assistance to

partners by leading resource problem-based workshops; and develop academic curricula for graduate programs in science-based decision support to train future natural resource professionals. Specifically, efforts to more closely knit science and management continued through 2010, with selected pilot projects with Federal partners in joint ventures and with State partners focused on State Wildlife Action Plan implementation. CRU will continue developing as a virtual Center of Excellence (a network of expertise) to support the use of decision-support systems within Interior, State agencies, and the conservation community.

Plans to develop new ways of working across State and regional boundaries have been incorporated as a key goal of this initiative. This transboundary collaboration is currently ongoing in 2010 to address climate change, the most pressing challenge natural resource managers are facing.

Through 2010, CRU supported the Nation's and Interior's interests in balanced energy development, climate change, and threatened fish and wildlife conservation. The continuing effort to restore science capacity in CRU will ultimately lead to the enhancement and expansion of graduate education and science training as mandated in the Cooperative Research Units Act, and, thereby contribute to the science expertise needed to meet future natural resources challenges. CRU cooperators continue to support broad-scale research projects aimed at understanding mechanisms affecting species and habitats at unprecedented scales. CRUs work in climate change research directly supports and is aligned with the Interior's and USGS's strategic science vision.

2009 in Review - Achieving the Unit Mission

In 2009, Unit scientists and their cooperators advanced the mission of the CRU Program through joint research, education, technical assistance, and science support. Unit scientists continued to be very productive in 2009, completing a number of projects for Federal and State partners. Unit scientists and their students remained actively engaged in service to professional societies delivering over 600 presentations. Many of these presentations were invited seminars (63), indicating that Unit scientists and their research are held in high regard by the scientific and management communities. CRU's service to university cooperators continued to be strong, with 68 academic classes taught in 2009, and an additional 36 workshops and short courses delivered to partners and cooperators.

Productivity Summary for 2009	Number
Peer reviewed publications	305
Invited Seminars	63
Workshops and Short Courses	36
Projects for Federal agencies	371
Projects for State agencies	489*
Papers Presented	639

Biological Research

Academic Courses Taught	68
Total number of students	522
Master's degrees awarded	80
Doctoral degrees awarded	30

*Number estimated from 2008 projections

Each year, over 500 students are actively engaged in graduate education and training in natural resources conservation in the CRU program. About 15 percent of these students matriculate each year and enter the natural resources management workforce as employees of State and Federal agencies, non-governmental organizations, and universities. In 2009, of the 522 students directly advised by Unit scientists, 80 were awarded master's degrees and 30 completed their doctoral program in 2009. The number of advanced graduate degrees awarded to Unit students in 2009 was consistent with the long-term trend.

In 2010, the CRU provided strong leadership in climate change research, particularly as it relates to supporting Interior's management bureaus in forecasting effects of climate change on trust species, such as migratory birds and threatened and endangered fish and wildlife. In 2010, CRU advanced the initiative to develop new collaborations in science-based decisionmaking. In 2010, the initiative focused on sponsoring training for CRU staff and State cooperators, delivering technical support on problem-based workshops, and developing pilot projects with States to implement Wildlife Action plan objectives. This focus on structured decisionmaking and adaptive management will poise CRU and its cooperators to put into action meaningful science-based management actions to deal with complex environmental changes brought by climate change.

CRU plans to restore science capacity in 2010 by rehiring research scientists using the program increase received in 2010. CRU has traditionally invested over 90 percent of program funding in scientists salaries, with all funding for research projects coming from program partners. Therefore, improvements in program performance in the form of increased publications, presentations, courses taught, and other product-oriented elements of scientific outreach will occur over the subsequent years after science staff are hired and initiate their research programs. Reinvesting in science capacity to fully staff vacant Unit positions will have a direct and near immediate benefit in improving the numbers of students the program can support, with an attendant 15 to 20 percent increase in numbers of M.S. and PhD students graduated within 5 to 7 years.

The CRU program will remain highly productive in science, education, and outreach, through the network of State, university, and Federal cooperators and partners associated with the CRUs. The program will continue to sponsor undergraduate and graduate education programs for minorities that are underrepresented in the Federal workforce.

The following table lists CRUs by State:

Cooperative Research Unit Locations

Alabama	Auburn University
Alaska	University of Alaska
Arizona	University of Arizona
Arkansas	University of Arkansas, Fayetteville
California	Humboldt State University
Colorado	Colorado State University
Florida	University of Florida
Georgia	University of Georgia
Hawaii	University of Hawaii
Idaho	University of Idaho
Iowa	Iowa State University
Kansas	Kansas State University
Louisiana	Louisiana State University
Maine	University of Maine
Maryland	University of Maryland, Eastern Shore
Massachusetts	University of Massachusetts
Minnesota	University of Minnesota
Mississippi	Mississippi State University
Missouri	University of Missouri
Montana	Montana State University (Fish Unit) University of Montana (Wildlife Unit)
Nebraska	University of Nebraska, Lincoln
New Mexico	New Mexico State University
New York	Cornell University
North Carolina	North Carolina University
Oklahoma	Okalahoma State University
Oregon	Oregon State University
Pennsylvania	Pennsylvania State University
South Carolina	Clemson University
South Dakota	South Dakota State University
Tennessee	Tennessee Tech University
Texas	Texas Tech University
Utah	Utah State University
Vermont	University of Vermont
Virginia	Virginia Polytechnic University
Washington	University of Washington
West Virginia	West Virginia University
Wisconsin	University of Wisconsin, Stevens Point (Fish Unit) University of Wisconsin, Madison (Wildlife Unit)
Wyoming	University of Wyoming

Biological Research

Program Performance Overview

The Cooperative Research Units addresses the Department of the Interior strategic goal of improving the understanding of national ecosystems and resources through integrated interdisciplinary assessment and by providing the science information that resource managers need. The following table highlights important performance measures for the Cooperative Research Units:

End Outcome Goal 1.4: Improving the understanding of national ecosystems and resources through integrated interdisciplinary assessment

End Outcome Measure / Intermediate Measure	Type	2006 Actual	2007 Actual	2008 Actual	2009 Plan	2009 Actual	2010 Plan	2011 Plan	Change from 2010 Plan to 2011	Long-term Target 2012
Intermediate Outcome Measures and Bureau and Outcome Measures										
Ensure availability of long-term environmental and natural resource information, data and systematic analyses needed by land and resource managers for informed decision making										
# of students complete degree requirements for MS, PhD, and post doctoral program under the direction and mentorship of Unit Scientists (CRU)	A	103	95	83	90	110	90	90	0	100
Intermediate Outcome Measures and Bureau and Outcome Measures										
Ensure the quality and relevance of science information and data to support decision making										
% of studies validated through appropriate peer review (SP)	A	100% (517/517)	100% (249/249)	100% (280/280)	100% (205/205)	100% (348/348)	100% (210/210)	100% (215/215)	0	100% (215/215)
Efficiency and Other Output Measures										
# of systematic analyses and investigations completed (CRU)	A	517	249	280	205	348	210	215	+5	215
Total projected cost (\$000)		103,400	49,800	56,000	43,050	73,080	44,100	45,150	+1,050	45,150
Actual cost per analysis (whole dollars)		200,000	200,000	200,000	210,000	210,000	210,000	210,000	210,000	210,000
# of formal workshops or training provided to customers (CRU)	A	41	25	31	13	18	20	20	0	20

Enterprise Information

	2009 Actual	2009 Recovery Act ³	2010 Enacted	2011			Change From 2010 (+/-)
				DOI-Wide Changes ^{1, 2} (+/-)	Program Changes (+/-)	Budget Request	
Enterprise Information Security and Technology (\$000)	25,176	0	26,263	-286	-2,500	23,477	-2,786
<i>FTE</i>	86	0	86	0	-28	58	-28
Enterprise Information Resources (\$000)	17,478	0	19,706	-182	-1,500	18,024	-1,682
<i>FTE</i>	113	0	139	0	-21	118	-21
National Geospatial Program (\$000) ⁴	69,816	14,625	0	0	0	0	0
<i>FTE</i>	332	0	0	0	0	0	0
Total Requirements (\$000)	112,470	14,625	45,969	-468	-4,000	41,501	-4,468
Total FTE	531	0	225	0	-49	176	-49

1) \$582 in fixed costs is absorbed (\$311 in Enterprise Information Security and Technology, \$271 in Enterprise Information Resources, \$0 in National Geospatial Program).
 2) See the General Statement and Section G for Details on DOI-wide Changes.
 3) A new treasury account was created for the Recovery Act appropriations; direct allocations to programs were not made.
 4) In 2010 the National Geospatial Program moved to Geography from Enterprise Information.

Activity Summary

The 2011 budget request for the Enterprise Information Activity is \$41,501,000 and 176 FTE, a net program change of -\$4,000,000 and -49 FTE from the 2010 Enacted level. Additional information on program changes is provided in each subactivity section and in the Secretarial Initiatives and Mission Increases section beginning on page E -1.

The USGS Geospatial Information Office (GIO) has a range of responsibilities making information available that is reliable, scalable, and can sustain growth in an environment that has data rich holdings. The GIO is a collection of science informatics activities. It is the focal point for the bureau's information-related resources and activities: information services (such as USGS natural science libraries, public science information centers, science publications, and fundamental science practices), information and communications policies and standards; peer review processes; and information technology infrastructures (networks, hardware and software). Diverse and distributed USGS databases and information are accessed and used seamlessly by scientists, collaborators, customers, and the public to address complex natural science issues.

The EI Activity fosters comprehensive and collaborative research by placing over 1,000 electronic scientific journals at the fingertips of scientists through the USGS Library. EI continues to demonstrate a high value for the USGS Library investment in electronic resources and scientific journals. In 2009, USGS staff downloaded on average 1,650 full-text journal articles every work day.

The label "enterprise" applied to the business activities of the GIO means that the USGS has consolidated its large information and Information Technology (IT) systems, applications, and core functions and designed them to enable best practices and services to support the entire bureau.

Enterprise Information

The GIO plans and monitors the bureau's investment in information science, IT, information policy and standards, and information security and management. The duties, functions, and responsibilities of a Chief Information Officer are fulfilled in USGS by the Geospatial Information Officer, who also serves administratively as the Associate Director for Geospatial Information. The GIO is responsible for overall policy direction, management, and oversight of natural science information, data integration coordination; computing systems acquisition, development, and integration; IT capital planning and investment management; information security; human capital for managing information resources; E-Government initiatives and innovation; strategic planning for information resources; enterprise architecture and advancing the Federal Enterprise Architecture; records management; privacy; enterprise science publishing; and information collection, dissemination, access, and delivery. This suite of responsibilities is consistent with those of other Federal government agencies and leading private-sector entities in its comprehensive approach to information assets and is in accord with recommendations of the Government Accountability Office (GAO).

The EI Activity supports and furthers the Secretary's goal of managing to be highly skilled, accountable, modern, functionally integrated, citizen-centered and result-oriented. To implement this goal, the USGS Enterprise Information Security and Technology efforts track intermediate outcomes to optimize efficient IT management (including maturation of capital asset planning and investment control as guided by the GAO's IT Investment Management Maturity Model), and ensure that the bureau follows best management practices for its science data and information records compliant with National Archives and Records Administration regulations. The USGS EI efforts ensure compliance with OMB's data quality guidelines and peer review requirements.

Use of Cost and Performance Information

Improving Technical Support for NatWeb:

NatWeb provides a secure environment and technical support for USGS web page development and maintenance. A random sample of users of the service are surveyed annually both for quality assurance purposes and also to identify potential areas for improvement. Results of the survey are used by the NatWeb team as major input to their annual service improvement plan, including the area of technical support. There has been an increase in user satisfaction with all aspects of NatWeb technical support between 2006 and 2009.

Integrated Information Environment (IIE) — The EI activity supports USGS strategic science objectives by establishing an integrated and accessible digital environment for vast resources of past and future science data. The IIE provides the overarching framework of infrastructure, standards, systems, and methodology needed to integrate metadata and data required by USGS scientists. To assist the bureau's scientists with the new and challenging scientific questions emerging from environmental and climate change issues facing the world, EI is implementing delivery and hosting technologies, developing data and metadata standards, collecting and organizing data stores, and designing application toolkits. Integrating data within the USGS is also a prerequisite for joining multi-scale worldwide science collaborations to address challenges at a global scale. The requirement of integrating data across traditional discipline boundaries, spanning decades of data collections at national or global scales presents significant challenges for the organization. By 2011, the USGS will have completed a full year of a new, fully collaborative approach to leading data integration with the Council for Data Integration (CDI) and its broader community of practice. A 2010 project led by the CDI with the Regions and Science Disciplines will have produced foundational data management, discovery, and access capabilities for USGS scientists and identified major needs and priorities in data hosting and accessibility for continued development by the multidisciplinary team in 2011.

EI Activity Contribution to Department Working Capital Fund Accounts — Each year the Department of the Interior (Interior) invests millions of dollars in enterprise IT initiatives that aim to improve network security and privacy and reduce costs. These initiatives are funded by a process in which Interior collects bureau appropriated funds through centralized and directly billed accounts to manage enterprise-wide activities at Interior’s level. The following table shows USGS appropriated funds sent to Department Working Capital Fund accounts to manage enterprise IT operations on behalf of the USGS:

(Dollars in Thousands)			
Department WCF IT- related Accts.	2009 actual	2010 est.	2011 est.
USGS Centralized Bill	6,428	6,627	6,580
USGS Direct Bill	6,723	6,788	6,911
Total	13,151	13,415	13,491

Subactivity Overview

The 2011 EI Activity comprises two subactivities:

Enterprise Information Security and Technology supports USGS information security and technology efforts. The Information Security component ensures compliance with all Federal information technology mandates and is responsible for the electronic security of and access to all USGS data and information assets. The Telecommunications and Computing Infrastructure components support enterprise services network, directory services, technical support, email, and e-authentication. The Information Management component supports executive management of USGS IT functions and federally mandated information activities such as Records Management, Capital Planning, and Privacy and Freedom of Information Act. The USGS DOI Enterprise Services component includes all USGS payments to the centralized departmental IT working capital funds.

Enterprise Information Resources guides and manages bureau-level systems and activities in information policy, information integration and delivery, and science education. The Information Integration and Delivery component provides direction, coordination, and strategic planning of scientific data integration, science publishing, USGS natural science libraries, public science information centers, information product delivery, and management of Web-Internet services. The Information Resource Management component coordinates geographic information system software use in the bureau and Interior, ensures compliance with the bureau's fundamental science practices, peer review and information quality requirements, and coordinates enterprise-level science educational activities.

In 2005-2006, the USGS began the process of restructuring its science publishing workforce and business processes into a national Enterprise Publishing Network. The number of primary publishing locations was 59 before the restructuring, 20 immediately after, and is now consolidated into 12 Publishing Service Centers. The publications staff was gradually reduced from 254 employees in 2004 to 145 in 2010. The long-term restructuring to streamline the publishing technical and business functions to improve operational efficiencies and right-size and right-skill staff the organization is on-going.

In 2010, the USGS moved the **National Geospatial Program** to the Geographic Research, Investigations, and Remote Sensing Activity.

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Activity: Enterprise Information

Subactivity: Enterprise Information Security and Technology

	2009 Actual	2009 Recovery Act ³	2010 Enacted	2011			Change from 2010 (+/-)
				DOI-Wide Changes ^{1, 2} (+/-)	Program Changes (+/-)	Budget Request	
Enterprise Information Security and Technology (\$000)	25,176	0	26,263	-286	-2,500	23,477	-2,786
<i>Total FTE</i>	86	0	86	0	-28	58	-28
1) \$311 in fixed costs is absorbed. 2) See the General Statement and Section G for Details on DOI-wide Changes. 3) A new treasury account was created for the Recovery Act appropriations; direct allocations to programs were not made.							

Summary of 2011 Program Changes for Enterprise Information Security and Technology

Request Component	(\$000)	FTE
IT Efficiencies	-2,500	-28
TOTAL Program Changes	-2,500	-28

Justification of 2011 Program Changes

The 2011 budget request for the Enterprise Information Security and Technology (EIS&T) Subactivity is \$23,477,000 and 58 FTE, a program change of -\$2,500,000 and -28 FTE from the 2010 Enacted level.

Enterprise Information Security and Technology IT Efficiencies (-\$2,500,000 / -28 FTE)

The requested reduction in 2011 is possible due to consolidation and optimization of technology, initiated in 2005, when technology and security services were consolidated into the Enterprise Information Activity. The reorganization created initial savings, improved operational services, and improved compliance with Federal laws and regulations.

As demands for USGS science have changed, technology costs have similarly fluctuated over the past six years. As a result, in 2011, the program will implement an assessment model related to science program utilization of national technology services such as email, web, storage, bandwidth, directory and IT security services. This new cost model will balance dispersion of cost with service utilization.

In support of this action the EIS&T program will restructure its workforce and services to create a flexible workforce and service offering that can be incrementally mobilized in support of science program needs. This action will result in a reduction-in-force of an estimated 28 Federal employees and reduced funding for contract and student positions.

Program Performance Change

	2007 Actual	2008 Actual	2009 Actual	2010 Plan	2011 Base Budget (2010 Plan + Fixed Costs)	2011 Plan	Program Change Accruing in 2011	Program Change Accruing in Out-years
					A	B=A+C	C	D
<i>Efficient IT Management.</i> Score achieved on the OMB Enterprise Architecture Framework (SP) (EIS&T)	Level 4 – complete Level 3 – Use and Results	Level 4 on “Completion” “Use,” and “Results” categories	Level 4 in all areas	Level 4 in all areas	Level 4 in all areas	Level 4 in all areas	–	–
Comment	Although Enterprise Architecture is expected to be at level 4 at the start of 2011 and as the USGS achieves efficiencies, there may be short-term decreases in performance.							
% of customers satisfied with service from USGS IT Service Desk (EIS&T)	95.9%	96.7%	96.64%	95%	96%	90% (4365/4850)	-6%	0
Comment	The reduction in computing infrastructure will impact customer satisfaction in 2011.							
<i>Efficient IT Management.</i> Stage achieved on the GAO IT Investment Management Framework (SP) (EIS&T)	70% stage 3	100% stage 3	100% stage 3	50% stage 3	45% stage 4	25% stage 4	-20% stage 4	0
<i>Efficient IT Management.</i> Score achieved on the NIST Federal IT Security Assessment Framework (SP) (EIS&T)	3.5	3.99	2.0	5.0	5.0	4.0	-1.0	0
<p>Note: Projected costs may not equal program change as these are full costs, which may include funds from other sources and (or) use averages.</p> <p>Column A: The level of performance and costs expected in 2011 at the 2010 level plus funded fixed costs. Reflects the impact of prior year funding changes, management efficiencies, absorption of prior year fixed costs, and trend impacts, but does not reflect the proposed program change.</p> <p>Column D: Outyear performance beyond 2011 addresses lagging performance—those changes occurring as a result of the program change (not total budget) requested in 2011. It does <u>not</u> include the impact of receiving the program change again in a subsequent out-year.</p>								

Program Overview

The EIS&T Subactivity supports the USGS and the Department of the Interior (Interior) information, security, and information technology (IT) efforts. EIS&T also supports USGS scientific instruments. The Information Security component ensures compliance with Federal IT mandates and is responsible for the electronic security of and access to all USGS data and information assets. The Telecommunications and Computing infrastructure components provide bureau level centralized management and operation of USGS telecommunications, including voice, data and radio telecommunications services and management and operation of the bureau's computing infrastructure (including electronic mail, computer help desks, directory services, e-authentication, data center management, collaborative tools, applications services.) The Information Management component supports federally mandated information activities such as Records Management, Capital Planning, and Privacy and Freedom of Information Act (FOIA). The USGS DOI Enterprise Services component includes all USGS contributions to the centralized departmental IT working capital funds.

The EIS&T efforts:

- Increase efficiency, consistency, and integration of IT infrastructure and operations across the bureau, including the use of "green" computing standards, products, and practices;
- Facilitate greater oversight, accountability, transparency, and performance measurement relating to the management of the bureau's information investments;
- Enhance data sharing and integration across USGS science disciplines and programs through greater reliance on common IT infrastructure and support services; and
- Increase USGS' ability to respond rapidly and comprehensively to new governmentwide information directives and mandates for information security.

The EIS&T supports the goal of advancing modernization and integration through improving information security, telecommunications, and information management.

Details on changes to performance measures are located at the end of this section.

2011 Program Performance

EIS&T includes the following components:

Information Security

(Estimates for 2009, \$6.0 million; 2010, \$6.1 million; 2011, \$4.2 million)

The Information Security component ensures compliance with all Federal information technology (IT) mandates and regulatory requirements. Staff in this area is responsible for the IT security of and access to all USGS data and information assets as well as the management and operation of the USGS IT Security program, including compliance with the Federal Information Security Management Act (FISMA) and other Federal laws directing IT security. This component is responsible for IT security policy, compliance, and operations to ensure the confidentiality, integrity, and availability of USGS data and information assets including USGS scientific instrumentation.

In 2011, to continue an effective and sound Information Technology Security program, the USGS will manage its program in accordance with departmental and Federal laws, policies, directives, standards, and guidelines. Policies, standards, and guidelines for controlling access

to USGS networks and systems and bureauwide guidance for addressing IT security requirements for USGS IT systems or resources will be developed, maintained, and verified. Periodic computer security reviews of USGS workstation and network environments will be coordinated, including reporting of control weaknesses, and recommendations for additional security measures. Work will continue to ensure compliance with the Federal Information Security Management Act (FISMA) guidance and departmental reporting requirements. A Science Advisory Council is formed to better align IT security requirements with science systems in the best balanced way. A comprehensive Information Security Strategic Plan is underway to create a road map for efficient execution of the IT security program. IT security control weaknesses will continue to be documented and managed in a Plan Of Action and Milestone (POA&M) process. Special emphasis will be applied in 2011 to accelerate the remediation of existing security control weaknesses. The USGS will ensure that these efforts will not impact its science mission.

Common Security Controls — In 2009, the USGS completed phase 1 of the Common Security Controls initiative geared towards enhancing both certification and accreditation processes and operational security. Common security controls are identified in the National Institute of Standards and Technology 800-53 managed by a single USGS program that are deployed and implemented by all USGS systems based on guidance and standard operating procedures. They apply to all organizational information systems, a group of information systems at a specific site, or common information systems, subsystems, or applications deployed at multiple operational sites. As a result, the USGS will enhance its performance by (1) assessing common security controls at the organization level, (2) enhancing the efficiency of the security C&A conducted by organizations and significantly reducing security program costs, (3) consistently applying security controls across the organization at large, and (4) realizing a significant savings in the security C&A process. Examples of the initial set of common security controls include incident response, improving patch compliance reporting, and enterprise anti-virus protection. In 2010, the USGS began implementing phase 2 of the Common Security Controls initiative to further enhance C&A processes and operational security.

IT Security Operations — In 2011, the IT Security Operations Team (ITSOT) will continue to expand technical and operational controls to include advanced vulnerability scanning techniques and tools, additional testing of security controls through penetration testing, reduction of Internet-facing systems through the deployment of advanced proxy services, and offering assistance to local sites on the correction of weaknesses and migration to USGS common security controls. Enterprise security tools will be established to provide enhanced management of common security controls resulting in additional cost efficiency through enterprise purchases.

In 2010, an enterprise technical solution and standard operating procedures for applying and tracking compliance with system patches and software updates is being developed and implemented. The Enterprise Patch Management Reporting project is a critical component of operational IT security and will be implemented for IT systems and platforms based on categories in OMB policies. Network Access Control equipment and processes will be deployed at major USGS offices to control and monitor systems allowed to connect to USGS resources. The Threat Management capability will be expanded to proactively monitor USGS networks for malicious activity and unauthorized access. A security architecture document will be created and used to both show the value of the proactive measures in place or under development and to be used by various IT groups within the USGS to better understand and utilize the common security controls and technical capabilities offered by the ITSOT. To assure technical controls are implemented and deployed correctly, the ITSOT will be performing technical reviews of

select locations throughout the USGS. This will aid the local site in correcting vulnerabilities and allow the ITSOT staff to better understand the complex nature of the USGS mission and supporting infrastructure.

In 2009, USGS continued to increase deployment of both common security controls to proactively address IT system vulnerabilities and threats throughout the USGS. Each USGS Security Point of Contact was given access to the centrally managed Enterprise Vulnerability Management System at no cost to the Science Centers. The Enterprise Symantec Antivirus infrastructure was upgraded to the next generation of malicious code protection (Symantec Endpoint Protection), providing protection against malware and spyware, and adding host based firewall and network access control capabilities. Other achievements accomplished during 2009 were the purchase and deployment of new firewalls throughout the USGS providing increased protection capabilities and easier management, web application firewall purchases and deployments, enhanced vulnerability scanning of Internet facing servers, and proactive monitoring of USGS networks by dedicated network traffic analysts.

IT Security Certification and Accreditation (C&A) — FISMA C&A requirements state that all production Federal IT systems must be reviewed for IT security compliance on a periodic basis. EIS&T provides for re-certification and accreditation of program specific IT systems. In addition to the required re-certification and accreditation of USGS systems (usually every three years), all USGS systems will continue to maintain C&A status as required by OMB to ensure ongoing compliance with FISMA mandates. Though no systems are scheduled for C&A in 2011, continuous monitoring activities will occur to provide oversight and monitoring of the security controls in each information system in order to inform the authorizing official when changes occur that may impact on the security of the system. Additionally in 2011, C&A efficiencies will be made where possible and annual security self-assessments will be performed for all C&A systems and security program in accordance with FISMA (3544(b) (5) (A)).

IT Strategic Plan — The USGS developed an Information Security Strategic Plan (ISSP) from various information sources using priority areas as prescribed in the National Institute of Standards and Technologies' Program Review for Information Security Management Assistance process. The goal of the ISSP is to improve the overall security posture of USGS. While the ISSP is a strategic plan, it contains dynamic tactical objectives for a changing environment in order to meet new imperatives.

Science Advisory Council — The USGS Science Advisory Council (SAC) for Information Security was established to facilitate communication, enhance collaboration and provide a risk-based approach for managing USGS information. In 2011, the SAC will work to ensure information technology solutions meet strategic and scientific instrumentation needs while providing the appropriate degree of information protection. As a result, the USGS maintains a secure computing environment within the bounds of Federal/Interior policies and guidance as well as industry best practices.

POAM Remediation — Over the years, USGS has traditionally maintained an approximate backlog of 450+ Plan of Actions & Milestones (POA&Ms). POA&Ms are a standard, governmentwide management tool identifying information security program and system weaknesses along with the tasks necessary to correct or mitigate them. POA&Ms are one of the key measures used by the Inspector General, OMB, and Congress to assess an agency's information security program, posture and progress. EIS&T will implement a POA&M remediation strategy that materially reduces the number of active POA&Ms within a managed-risk framework, thereby reducing USGS organizational risks while continuing to deliver scientific missions.

Telecommunications

(Estimates for 2009, \$7.9 million; 2010, \$8.0 million; 2011, \$2.7 million)

The USGS' telecommunications infrastructure requirements have evolved over time to a highly complex, interconnected, and distributed environment supported by diverse sets of support staff throughout multiple levels of the USGS and Interior. The Telecommunications program is responsible for the oversight of all bureau telecommunications activities. Oversight includes Service Level Agreements between the USGS and Interior's Enterprise Services Network and its associated vendors and carriers. The program ensures that all telecommunication services adhere to and comply with Federal and departmental, and bureau mandates. Tier-3 support is provided in the area of troubleshooting problems on both the Wide Area Network (WAN) as well as USGS remote field office Local Area Networks. The program is responsible for setting policy and guidance towards the acquisition, installation, and operation of telecommunications services and systems (voice/data/video) across the bureau. Telecommunications technology is rapidly converging that calls for a similarly integrated approach to telecommunications strategic planning for the USGS that addresses all Internet Protocol (IP) applications, spanning voice, video, radio, data and beyond.

Enterprise Services Network (ESN) — The majority of USGS offices connect into a single, flat Intranet that is owned, operated and managed by Verizon Business. The USGS uses five Internet gateways that are located on USGS premises in Reston, Denver, Sioux Falls, Menlo Park and Anchorage, and are managed by ESN. There is redundant, dynamic fail-over (automatic and immediate switch to back-up servers) if a gateway fails. The Internet gateways provide a secure path to and from the Internet.

In 2009 USGS completed the consolidation of its data networks into one fully integrated and managed service. Services offered under ESN will include a Network Operations Center (NOC) to serve as the single point of contact for WAN issues. The NOC provides a comprehensive electronic ticketing system and are the key portal for WAN problem resolution. The NOC is responsible for all USGS remote field office router maintenance and configuration as well as provisioning, operating and maintaining the security infrastructure at each of the Internet gateways. Verizon Business also serves as the primary WAN carrier via their high speed Very Broadband Network Services (VBNS) under the FTS2001 telecommunications contract, and provides the majority of WAN data services to USGS offices for Intranet connectivity.

In 2010, the USGS and Interior added a second Bureau Connector in Reston to complement the connector in Denver to provide more efficient access to and from the USGS Intranet and serve as a secure exchange point between other departmental bureaus. Also, Enterprise Remote Access Services (eRAS) were turned over and are now operated and maintained by ESN. All Virtual Private Network (VPN) USGS services have been decommissioned except for those VPN services that have an approved waiver to support cooperator based users to include Menlo Park, CA, Hawaii and Alaska. This activity is anticipated to be completed in 2010.

In 2011, key activities related to the ESN will be in the areas of Networx migration and Trusted Internet Connection (TIC) described below.

Video Communications — In 2011, an enterprise video communications initiative for the bureau is expected to expand, requiring both infrastructure and support investments. This will be based on the pilot begun in 2010 and anticipated to continue into the following year with the goal of improving transparency and improving communications. A video communication system

guidance document is under development and will be completed during 2010. The program also is developing an Enterprise platform during 2010 to facilitate live streaming video as a pilot for the USGS Office of Communications and other USGS programs. The plan entails leveraging existing video conference end points at various USGS locations while testing the transmission of live video down to the employee desktop level using both unicast and multicast routing. The ESN, in conjunction with Verizon Business, have developed a Department wide multicast routing plan. The USGS will be the pilot bureau for the deployment and testing of multicast routing. Eighteen USGS sites were initially selected to participate in the pilot and each have had their WAN routers configured to support multicast routing. A USGS team, in conjunction with Verizon Business, will assess each of the eighteen sites to determine the extent that multicast can be supported on each site's LAN infrastructure. Bandwidth constraints are also a concern when deploying any kind of video communication service or application and will have to be considered prior to any testing. New USGS sites will be added to the pilot during 2010 but only after careful consideration of each site's capabilities and ability to support video has been assessed. Video streaming may also be tested out to other departmental bureaus, but only after careful consideration of the impact that video has on each site and after an appropriate assessment has been conducted by the ESN.

Trusted Internet Connection — In 2011, the USGS will work toward ensuring compliance with OMB's TIC project. Based on the inventory compiled and being validated in 2010, POA&Ms requires remediation to ensure full compliance, and the ESN gateways will need to be used for all incoming and outgoing connections. This effort was initiated to respond to OMB and departmental mandates, specifically OMB M-08-05. It requires all Federal agencies to reduce Internet Points of Presence (PoPs) from over 4,000 to 50. Interior has been asked if they can reduce their specific Internet PoPs from existing USGS five gateways to two. Interior has been working with the Department of Homeland Security towards maintaining all five gateways. Additionally, TIC also requires a secure implementation of Domain Name Services in the Federal government, an effort that should be complete within USGS in 2010.

Networx — The General Services Administration's "Networx" contract is the FTS 2001 follow-on comprehensive telecommunications service contract for the Federal government. During 2011, a large number of circuit upgrades are expected since such upgrades were put on hold during the migration between contract vehicles. In 2009 and 2010, the focus has been on the transition from FTS2001 to Networx, an 18-month effort to be completed in 2010 for both data and voice services.

Radio — The USGS owns and operates an estimated 11 percent or more of all radio equipment within Interior. Seismic detection, water gaging, wildlife telemetry, satellite data relay and communications are only a few of the USGS radio uses. In 2010, USGS is required to establish a radio asset inventory and asset management system (RAIS). RAIS will be an interactive program designed for field staff input of radio equipment information. RAIS will provide 2 types of information for management; radio asset specific information (model, type, location, etc.) and contact information of the radio operators. Data input into RAIS will be screened, verified, and maintained by USGS Radio program personnel.

The Federal Communications Commission Advanced Wireless Services Auction 66 action was designed to relocate Federal operations in the 1710-1755 megahertz (MHz) band and provide the frequencies to the private sector. Sixteen of those radio frequency assignments were previously assigned to the USGS Earthquake Hazards Team from Menlo Park. Relocation meant replacement of most of the existing equipment. This required clearing the frequencies and relinquishing to T-Mobile by March 1, 2010. The USGS completed the replacement of the microwave systems and relocated to new frequencies in less than 18 months. On August 20,

2008, the USGS officially relinquished the old 1710-1755 MHz spectrum to T-Mobile. However, this did not complete the relocation. Some infrastructure changes still remain. The anticipated project completion date is March 1, 2011. This effort aligns with Interior/OMB Big 9 Initiative.

Voice Over Internet Protocol (VoIP) — VoIP is a group of transmission technologies for delivery of voice communications over IP networks such as the Internet or other packet-switched networks. The implementation of VoIP is continuing in 2010 and into 2011 and will likely reduce costs for voice and data telecommunication services. VoIP systems usually interface with traditional public switched (PBX) telephone network. In 2009, the USGS completed eight PBX and LAN upgrades, allowing it to move toward an infrastructure that would ultimately support a common PBX architecture and simplified management. The USGS is currently nine percent VoIP capable. In 2009, the USGS began moving toward regionalizing its phone system under a common ePBX architecture and simplified management.

Computing Infrastructure

(Estimates for 2009, \$11.3 million; 2010, \$12.2 million; 2011, \$6.1 million)

The Computing Infrastructure component provides the USGS with a uniform office automation infrastructure using such foundational components as Active Directory and the Lotus Notes Name and Address Book. Together, these directory services provide authoritative IT credentials for a growing number of USGS IT services and applications. Computing Infrastructure also provides end-user IT services including electronic mail, collaboration services, and desktop applications for all bureau employees.

Technical Support Teams — Computing Infrastructure also manages several technical support teams that facilitate the integration and implementation of standards for Microsoft Windows, Macintosh, and Unix operating system environments. In addition, these teams provide leadership for the implementation of IT configurations, security controls, applications, databases and Web services with a purpose to promote excellence in development, implementation, and continuous improvement by establishing "best practice" procedures for deployment.

Collaborative Communications Infrastructure (CCI) — CCI is a suite of software tools which facilitate collaboration and sharing knowledge and data within USGS and with USGS customers. In 2011, the CCI will continue to provide a set of integrated, secure and robust tools to help facilitate the USGS science and administrative users accomplish the mission of the bureau. The following activities will be the highest priority in 2011:

- Provide secure and reliable infrastructure for the support of the Geospatial Information Office (GIO), these include Enterprise Hosting Platform (EHP), The National Map, Geospatial Management Information System (GMIS), myUSGS, The Science Catalog, Data Modeling, Data Integration, and Professional Pages;
- Ensure secure, reliable email services to all USGS employees, contractors, etc are delivered;
- Continue to provide secure, reliable web conferencing, instant messaging, and online project management tools to all USGS employees, contractors, etc;
- Ensure spam and virus protection for the USGS is reliable;
- Seek integration with other USGS enterprise IT projects/programs to improve overall efficiency and enhanced customer service satisfaction;
- Provide technical assistance and guidance to USGS on new projects, initiatives, and platforms; and

- Continue to ensure that the CCI environment meets all current and future Department initiatives and requirements from OMB and other required sources.

DOI Messaging — In 2011, the USGS anticipates moving to a Department managed email solution. Thus, a major focus for 2011 and the latter part of 2010 would be the planning involved in the migration from Lotus Notes to Microsoft Exchange.

Enterprise Active Directory (EAD) — The EAD program provides operational support for Interior's integrated Active Directory Service (GS.DOI.NET) infrastructure on a 24x7 extended after hour basis. This active directory infrastructure provides a consistent technical architecture that is in alignment with the USGS vision for an integrated science agency by providing a common computing environment for scientists, managers, and researchers to work together in order to share ideas and accomplish the USGS vision for science excellence. The primary AD services include: Secure Authentication, Group Policy Management, Naming Services, and Continuous Security Monitoring. This active directory infrastructure also allows for compliance of Interior and OMB IT security policies, and regulations for desktops, servers, and USGS computer systems. The EAD program provides a secure and reliable infrastructure for support of the USGS and Department initiatives that include eRAS, Two-Factor Authentication, Financial and Business Management System (FBMS), Enterprise Patch Management Reporting (ePMR), and support of the Homeland Security Presidential Directive 12 (HSPD-12) initiative.

In 2011, efforts will continue to ensure that the EAD program and associated investments are properly maintained and that the environment meets current and future Department initiatives and requirements through established Department standardization efforts coordinated by the System Change Advisory Board (CAB), and the USGS EAD Change Advisory Board. In 2010, the major focus is on ensuring that all USGS science centers were migrated to EAD, an effort that was initiated in 2009.

USGS Service Desk — The USGS Service Desk serves as a single point of contact for support to USGS employees and continually adds services based on customer needs. The continuing consolidation of Service Desk services creates improvements and efficiencies in incident response time, incident resolution, and quality of support provided. Efficiencies and dollars are saved through increasing incident resolution during the initial contact using tools, such as the new remote desktop support, and by proactive support through online self-help tools and a searchable knowledge management system. The Service Desk operations, built upon specialized hardware and software (i.e., for incident tracking, automated call distribution, knowledge management, and configuration management), consists of support partners and staff from across the USGS landscape. Support partners and staff are formally linked together through organizational and matrix relationships to provide more consistent customer service. The Service Desk provides four roads to choose for support needs including online service request creation, chat online and remote support, telephone, and email. The Service Desk has primary responsibility for incident resolution, service request tracking, and customer satisfaction. In 2011, as a result of the proposed funding reduction, customer satisfaction is expected to decrease by six percent.

In 2009 and 2010, the Service Desk continued to expand in scope to cover additional aspects of USGS support and offerings for other bureaus and Interior making significant progress. In 2011, as a result of the proposed funding decrease, this effort is expected to continue but at a slower rate.

Information Management

(Estimates for 2009, \$0; 2010, \$0; 2011, \$1.0 million)

New in 2011, the Information Management component includes executive management of USGS IT/IRM activities and a suite of federally mandated activities such as Capital Planning, Project Management, Enterprise Architecture, Records Management, Privacy, and FOIA.

Capital Planning and Investment Control — In 2011, the USGS will continue to mature its IT investment management and related CPIC processes and procedures for planning and managing IT investments based on the General Accounting Office (GAO) IT Investment Management maturity model. These processes comply with the Clinger-Cohen Act of 1996 and OMB Circulars A-11 and A-130. The USGS Associate Director for Geospatial Information is responsible for developing bureauwide policies and procedures to continue to mature the CPIC process toward full compliance with Federal mandates and Department directives. The CPIC program ensures that the USGS Investment Review Board follows established processes for the selection, control and evaluation of the IT portfolio of investments. The control and evaluation activities include a regular cost, schedule and performance review of all major IT investments (defined as those investments with greater than \$5.0 million in planned annual spending or otherwise having far reaching program or policy significance) and annual reviews of all non-major projects and infrastructure investments. The estimated value of the USGS Exhibit 53 for 2011 is \$137,214,670.

In 2010, the USGS is continuing to mature its CPIC processes to support selection of IT investments that provide the best value to the USGS mission, to evaluate investment performance, and to ensure the application of best practices to the management of USGS IT resources. Work with the Enterprise Architecture program office to develop As-Is (current state) and To-Be (future state) infrastructure service cost models. These financial models are used to identify opportunities across the GIO to leverage best practices and optimize USGS investments in IT resources. In 2011, as a result of the proposed funding reduction, activities in this area will decrease resulting in a decrease of 20 percent to the performance goal of stage achieved on the GAO IT investment management framework.

Enterprise Architecture (EA) — The USGS, through its EA program office, continues to evaluate opportunities to achieve cost efficiencies across the organization while participating in Department activities to develop modernization blueprints for each of its defined business segments. The USGS EA program supports the development and implementation of modernization blueprints using the Federal Segment Architecture Methodology and development of As-Is and To-Be architectures with reference models conforming to those of the Federal Enterprise Architecture. As part of the modernization effort, the USGS EA program seeks to help the USGS become more flexible, drive down cost, reduce cycle time and improve services to citizens in the delivery of its mission.

Through these EA efforts, the USGS has initiated several critical, enterprisewide projects that will transform how USGS delivers information technology and mission support services across the bureau. Three of these enterprise projects are summarized below.

- Implementation of an Enterprise Hosting Platform. This initiative will optimize and consolidate information technology delivery functions into integrated environments that will lead to reduced operating costs while improving services to mission users;
- Development of a bureauwide information technology service catalog. This project will define services offered by the bureau's GIO. The *GIO Service Catalog* will be anchored in the best industry practices found in the Information Technology Infrastructure Library

(ITIL) and Carnegie Mellon's Software Engineering Institute's Capability Maturity Model Integration (CMMI); and

- Deployment of the Financial and Business Management System. This is a major enterprise management initiative that will integrate financial management, procurement, property management and other subsidiary systems. As part of this effort, the EA program office is supporting the identification of opportunities for process optimization and standardization to eliminate unnecessary burden on the citizen.

In 2011, the USGS will continue the integration of enterprise architecture with security, capital planning, and operation management to facilitate knowledge transfer and reuse between business, data, application, and technology components. Additionally, the USGS EA program will continue to provide enterprise architecture-based analytical and planning support services to the aforementioned projects as well as other new mission-critical initiatives that may be identified.

Electronic Records Management (ERM) and Unified Messaging —The USGS supports Interior's ERM initiative and Unified Messaging Project to move Interior and its bureaus and offices towards an enterprisewide centralized approach to ERM and messaging infrastructure. In 2010, the USGS is continuing its partnership with Interior by participating on teams created to develop requirements and strategies to analyze electronic records aligned to Department business lines and to provide employees with common email, calendaring, instant messaging, and collaboration tools. The USGS will continue to address the constantly changing demands of technology in order to continue to preserve, process, and provide access to USGS information and data.

In FY 2009, the E-Government Electronic Records Scheduling ERM Initiative, as required by Section 207(e)(2)(b) of the E-Government Act of 2002, required significant effort by agencies to develop agency records schedules by the end of 2009 to cover the official records contained in their electronic systems and databases identified as of December 17, 2005. The USGS met and achieved this goal and was also able to extend its search to systems created after December 2005. In 2010, the USGS is continuing to search and identify electronic systems and databases created after December 2005 for inclusion in bureau records schedules. Aligning with the scheduling of these systems, the USGS will work closely with the National Archives and Records Administration (NARA) to ensure compliance with current NARA acceptance requirements for the records of those systems with historical value to the Nation.

Document Production — The USGS will continue to address the challenges of determining the extent and scope of responding to searches, document productions, electronic discoveries, litigation hold requests, and other legal matters related to USGS records, information, and data. In 2010, the USGS is exploring new ways and tools to better streamline and manage these requests including working more closely with Interior Solicitors on issues related to the discovery, preservation, and potential access to electronically stored information.

Data Rescue —The USGS seeks to keep pace with identifying, assessing, preserving, and making accessible critical historical and legacy scientific information and data available long after the initial project has finished. Data rescue projects will not only make the data available to policy makers, resource managers, and researchers but will allow the data to be reanalyzed in the future. This helps ensure the sustained health, wealth, and prosperity of the Nation. In 2010, the USGS is working to align the data rescue program with the USGS Digital Library which will allow better access to USGS datasets. In addition, the USGS will begin leveraging data rescue project best practices and looking to build strong partnerships within the bureau's science programs.

Privacy and FOIA — In 2011, the USGS privacy program will continue to expand its capability to identify system privacy risks and ensure collections of personal information have been reduced, eliminated, or protected.

In 2009, the OMB directive to safeguard and reduce/eliminate collections of PII/SSN was implemented. With the advent of recent and increased attention regarding identity theft, personally identifiable information (PII) and system privacy risks, the USGS is strengthening its privacy program by creating a network of privacy liaisons to support the bureau's privacy responsibilities.

The USGS privacy program is fully integrated into the CPIC processes and the IT Security C&A activities. Privacy Impact Assessments for all USGS 2010 Capital Asset Plans (Exhibit 300's) were reviewed and completed. FISMA reports responding to privacy questions are submitted quarterly. System of Records Notices have been reviewed and created when required for systems handling privacy act information.

In 2011, the USGS FOIA program will continue to be administered per presidential and Department of Justice memorandums and guidelines thereby ensuring the improvement of information dissemination to the public. The USGS is administering the FOIA program per the new guidelines governing the FOIA as directed by the President in his memorandum dated January 21, 2009, reaffirming the commitment to accountability and transparency as the USGS disseminates information to the public. The USGS responded to 145 FOIA requests during 2009. Interior recognized the USGS as a FOIA best practice.

Project Management Office (PMO) — In 2011, the USGS PMO will continue to expand its services by providing collaborative forums for bureau project managers to share best practices, to peer-mentor and coach, and to exchange project and program tools and technologies. The PMO supports the GIO by facilitating priority project review meetings.

USGS DOI Enterprise Services

(Estimates for 2009, \$0; 2010, \$0; 2011, \$9.5 million)

New in 2011, the enterprise services component includes USGS contributions to Interior's centralized Working Capital Funds. The DOI enterprise services cost is the USGS contributions in support of the OCIO information and technology programs. The contributions include funding for program management (including FOIA, Records, Capital Planning, Architecture, Security and technology services) and project management for strategic projects, and centralized activities to enhance technology efficiencies; reduce overall costs; enhance the quality, and consistency of services in Interior.

Additionally, in support of new OMB requirements and emerging IT Security threats, Interior has established the "Big 9" projects, including: Network, Trusted Internet Connections, Logging Extracts of Data Bases, Encryption/Data At Rest, Two-Factor Authentication, Radio Program Infrastructure, Department Enterprise Infrastructure Project Management Office, IT Security Threat Management, and Active Directory Optimization that are funded by this activity.

In addition to the funds provided for consolidated enterprise services, the USGS leverages departmental enterprise contracts and services in support of telecommunications services, hardware purchases and enterprise licenses.

The departmental Management budget justification includes additional descriptions of this account.

Program Performance Overview

The following table highlights important performance measures for the Enterprise Information and Security Technology Subactivity.

End Outcome Goal 5.2: Advance Modernization/Integration

End Outcome Measure / Intermediate Measure	Type	2006 Actual	2007 Actual	2008 Actual	2009 Plan	2009 Actual	2010 Plan	2011 Plan	Change from 2010 Plan to 2011	Long-term Target 2012
End Outcome Measures										
Percent of IT systems that have Certification and Accreditation (C&A) and are maintaining C&A status (SP) (EIS&T)	A	100%	100%	100%	100%	100%	100%	100%	0	100%
Intermediate Outcome Measures and Bureau and Outcome Measures E-Government and Information Technology Management										
<i>Efficient IT Management</i> : Score achieved on the OMB Enterprise Architecture Framework (SP) (EIS&T)	A	Level 3	Level 4 – complete Level 3 – Use and Results	Level 4 on “Completion” “Use,” and “Results” categories	Level 4 in all areas	0	Level 4 in all areas			
<i>Efficient IT Management</i> : Stage achieved on the GAO IT Investment Management Framework (SP) (EIS&T)	A	63% stage 3	70% stage 3	100% stage 3	100% stage 3	100% stage 3	50% stage 3	25% stage 4	-25%	25% stage 4
Comment	Although USGS plans to achieve efficiencies in 2011, a reduction in program performance is expected.									
<i>Efficient IT Management</i> : Score achieved on the NIST Federal IT Security Assessment Framework (SP) (EIS&T)	A	3.37	3.5	3.99	5.0	2.0	5.0	4.0	-1.0	4.0
Comment	Although USGS plans to achieve efficiencies in 2011, a reduction in program performance is expected.									

End Outcome Measure / Intermediate Measure	Type	2006 Actual	2007 Actual	2008 Actual	2009 Plan	2009 Actual	2010 Plan	2011 Plan	Change from 2010 Plan to 2011	Long-term Target 2012
<i>IT Investment Management</i> Annual % of USGS IT investments reviewed, approved, and monitored through the CPIC process. (EIS&T)	A	100%	100%	100%	100%	100%	100%	100%	0	100%
% of customers satisfied with service from USGS IT Service Desk (EIS&T)	A	94%	95.9%	96.7%	94% (4559/ 4850)	96.64%	95%	90% (4365/ 4850)	-5%	90% (4365/ 4850)
Comment	Although USGS plans to achieve efficiencies in 2011, a reduction in program performance is expected.									
% of identified USGS security incidents that receive corrective action within timeframes required by the DOI Incident Response Policy (EIS&T)	A	75%	95%	86%	100%	90%	90%	100%	+10%	100%
Comment	With an increased emphasis on incident response and adhering to departmental policy, the USGS Computer Security Incident Response Team will be targeting 100% compliance with reporting requirements. With the increasing risk of unauthorized access to information technology systems and employee personal information, it is critical the USGS respond with established timeframes to further protect USGS data and systems.									

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Activity: Enterprise Information

Subactivity: Enterprise Information Resources

	2009 Actual	2009 Recovery Act ³	2010 Enacted	2011			Change From 2010 (+/-)
				DOI-Wide Changes (+/-)	Program Changes (+/-)	Budget Request	
Enterprise Information Resources (\$000)	17,478	0	19,706	-182	-1,500	18,024	-1,682
<i>Total FTE</i>	<i>113</i>	<i>0</i>	<i>139</i>	<i>0</i>	<i>-21</i>	<i>118</i>	<i>-21</i>
1) \$271 in fixed costs is absorbed. 2) See the General Statement and Section G for Details on DOI-wide Changes. 3) A new treasury account was created for the Recovery Act appropriations; direct allocations to programs were not made.							

Summary of 2011 Program Changes for Enterprise Information Resources

Request Component	(\$000)	FTE
• EIR Education and Information Dissemination	-1,500	-21
TOTAL Program Changes	-1,500	-21

Justification of 2011 Program Changes

The 2011 budget request for the Enterprise Information Resources (EIR) Subactivity is \$18,024,000 and 118 FTE, a program change of -\$1,500,000 and -21 FTE from the 2010 Enacted level.

EIR Education and Information Dissemination (-1,500,000 / -21 FTE)

The EIR includes the functions of science education, natural science library services, science information product distribution, public inquiry, and science quality oversight.

The proposed reduction of \$1.5 million to EIR would reduce science internships program within the Information Resource Management component.

The EIR science education and internship activity directly affects individuals seeking science careers in several ways including:

- Creating job opportunities for students seeking careers in science;
- Ensuring direct interaction between students and scientists working in the field;
- Developing jobs and career paths in natural resources to population segments under-represented in the sciences; and,
- Providing expanded scientific and technical training programs to Indian Tribes.

The proposed reduction would not eliminate 90 of 175 science education internships planned for 2011, but would not reduce Tribal training programs.

Program Performance Change

	2007 Actual	2008 Actual	2009 Actual	2010 Plan	2011 Base Budget (2010 Plan + Fixed Costs)	2011 Plan	Program Change Accruing in 2011	Program Change Accruing in Out-years
					A	B=A+C	C	D
Total # of internships and fellowships supported and/or facilitated by the USGS educational program (EIR)	70	55	42	175	175	85	-90	0
Comment	The proposed decrease results in reducing the number of student internships by 90.							
<p>Note: Projected costs may not equal program change as these are full costs, which may include funds from other sources and (or) use averages.</p> <p>Column A: The level of performance and costs expected in 2011 at the 2010 level plus funded fixed costs. Reflects the impact of prior year funding changes, management efficiencies, absorption of prior year fixed costs, and trend impacts, but does not reflect the proposed program change.</p> <p>Column D: Outyear performance beyond 2011 addresses lagging performance—those changes occurring as a result of the program change (not total budget) requested in 2011. It does <u>not</u> include the impact of receiving the program change again in a subsequent out-year.</p>								

Program Overview

The EIR Subactivity guides and manages bureau-level systems and activities in science information policy, science information integration and delivery, and science education. The Information Integration and Delivery component provides direction, coordination, and strategic planning of scientific data integration, science publishing, natural science libraries, public science information centers, information product delivery, and management of Web-Internet services. The Information Resource Management component coordinates geographic information system software use in the bureau and the Department of the Interior (Interior), ensures compliance with the bureau's fundamental science practices, peer review and information quality requirements, and coordinates enterprise-level science educational activities.

The USGS is increasing efficiency and effectiveness of its scientific information integration and dissemination services through the Natural Science Network of integrated information, science, and knowledge to ensure that the latest USGS science data are easily and quickly available to citizens, agencies, academia, and the private sector in accessible formats. The bureau is optimizing customers' ability to "find, get, and use" USGS information and products tailored to their specific requirements.

The EIR supports the goal of advancing modernization and integration through improving information integration and delivery and information resource management.

2011 Program Performance

EIR includes the following components:

Information Integration and Delivery

(Estimates for 2009, \$16.2 million; 2010, \$16.4 million; 2011, \$16.2 million)

Information Integration and Delivery activities transform existing functions and services to reflect the changing nature of USGS science and science products; achieve efficiencies in the accessibility, delivery, and integration of USGS information through enterprise-level approaches; employ innovative and cost-effective technologies; and use future skills planning and partnerships for a flexible and balanced workforce.

Information Services, Library, and Product Distribution — The USGS Library system is the world's largest earth science library. The bureau's information offices and library system provide scientific and product information and technical assistance to a wide range of internal and external customers and to the natural science community as a whole. These offices use a variety of tools and capabilities to provide access to USGS science and identify sources of scientific information outside of the bureau. They also are a conduit for feedback between customers of USGS data and information and the USGS scientific and technical community. Significant emphasis is placed on increasing digital library capabilities, including electronic library subscriptions and new technologies that enhance flexibility and accessibility to research information. A major component of product distribution activities is to access USGS map and book products through the USGS online store and the publications warehouse. Efforts will continue for converting hard copy products to a digital format in support of electronic distribution and print-on-demand.

In 2009, a Website for the USGS field records collection was established to enable users to research and reserve field records items for in-person viewing. USGS developed a public Website for a consortium group called Regional Interagency Mapping Coordination Working Group, and redesigned and relaunched the USGS Store with a more integrated Map Locator and Downloader. The myUSGS service was expanded significantly with a series of weekly virtual training sessions that introduced the toolset to users; expanded phone and email support; consulted with community managers; and developed metrics data for Websites in development and in operation.

In 2010, information management tools are being formalized under the myUSGS architecture into science team "commodities" that are now applied to over 300 communities throughout USGS and many thousands of USGS and partner users. New tools along with relevant training are being regularly added to the suite of capabilities in response to requests from users, including a commercial project tracking toolset, specialized implementations of document management capabilities for science and management teams, and a workshop registration and abstract submission tool. Agile project management and product planning methodologies have been established across the team to enable more rapid and flexible response to scientist needs and management priorities. Special collections from the USGS Library have been cataloged for online discovery alongside USGS publications and scientific data assets.

In 2011, the USGS Library system plans to develop an institutional repository that will be available to the bureau based on a pilot completed in 2010. The transition of the publications warehouse into the bureau's library system will be completed in 2011. The Library will also continue to expand its digital library services by working closely with the three regional and the national Library Advisory Boards and science programs to meet their needs. For example, instead of photo copying and printing, regional libraries will support patrons by scanning or saving to electronic formats. In 2010, retrospective cataloging is proceeding to make library holdings searchable and visible to others. Monthly virtual training classes on using library databases and library tools are held. The Library system is working to improve turnaround times

Enterprise Information

on services provided and periodic Library newsletters which keep science program staff informed about new services and resources. Support also continues for digitizing the USGS photographic collection as well as improving the “*find, get and use*” model for the geologic field records collection. In 2009, a new Electronic Resource Management System was implemented for the library, improving the federated search capability for 1000+ scientific journals, 1000 electronic books, and 30 databases available online for USGS staff.

The USGS will continue to make improvements in 2011 to the USGS Frequently Asked Question (FAQ)'s text available through the Web and to the telephone and email inquiry support. Enhancements to the USGS FAQ application will provide effective linkages to more USGS Science Program activities and FAQ contents are being thoroughly reviewed. Automated metrics and rule-based routing of phone calls will result in more effective matching of available staff resources and improved customer service. In 2010, Information Services is implementing a "unified telephone network" operating within the bureau's telecommunications infrastructure. Improved statistics will enable real-time management of incoming calls among Information Services offices, the USGS store, and partners providing natural science information among State earth science information groups, academic libraries, and the USGS Science Center Libraries. In 2009, the USGS FAQs surpassed the 4 millionth time the public accessed it allowing the public to obtain a wide range of USGS information and explanations on demand from anywhere.

The distribution activity efforts will continue to convert hard copy products to a digital format in support of electronic distribution. Additional partnerships will be established and business strategies will continue to be developed that streamline operations and increase efficiencies while reducing overhead costs.

In 2011, a strategy for science program support services will continue to facilitate both regional and national research initiatives. Data integration efforts will be advanced through the input and collaboration of the Council for Data Integration (CDI), an interdisciplinary advisory group and community of practice. The Integrated Information Environment, a collection of information management capabilities, will continue to be extended with technology and services for scientists and research projects throughout the USGS as a major component of the data integration mission under the USGS Science Strategy. These capabilities will include metadata harvesting from other catalogs, search optimization for Web applications, new metadata creation through online forms, metadata enhancements through a collaborative catalog, and data upload and documentation tools being added as part of a CDI-sponsored project. In addition, inventories of data and information products from the Natural Science Network, including the USGS Library, will be integrated with scientific data assets of the USGS to facilitate discovery and leverage established information delivery capabilities for the broader spectrum of USGS scientific data.

Enterprise Publishing — Accurate, efficient, effective, and timely reporting of reliable science information are key factors that assure the USGS role as a world leader in the natural sciences through scientific excellence and responsiveness to society's needs.

In 2009, the EPN in partnership with the science programs' authors received from the National Association of Government Communicators their Blue Pencil communications awards for Land Area Change in Coastal Louisiana: A Multidecadal Perspective, 1956 to 2006; for The Shakeout Earthquake Scenario; for Geology of the Southern Appalachian Mountains, and for The Coral Reef of South Molokai, Hawaii.

In 2011, the Enterprise Publishing Network (EPN) will continue to develop transparent policies, business practices, and procedures to maintain the USGS reputation for publishing high quality unbiased science. Many of the 8,700 USGS employees—scientists, managers, and others—use the professional publishing services of the EPN for editorial and visual information support. The EPN uses the latest publishing technology to support requests for information products and services that vary from USGS science publications and maps, to journal articles and external publications, to presentation and outreach materials, to Website design, creation, and content maintenance. Printing of all USGS publications is facilitated through the Government Printing Office.

The EPN also assists many partners, suppliers, and consumers of USGS data and information products and services. In 2011, the USGS will continue coordinating and maintaining an internal billing data tracking system, improving technical processes, providing publishing services guidance to authors and managers, and, when requested, providing support for cooperative publishing activities with other agencies. The EPN manager provides bureau publishing leadership and management oversight. Three regional publishing managers coordinate production support through publishing service centers across the USGS.

Enterprise Web (EWeb) — In 2011, the EWeb program will transition to a service organization to support the long-term goals of data integration and other bureau Science Strategy goals and to meet emerging bureau need. EWeb will continue to provide support to over 700 USGS Websites for delivering, managing, and integrating online USGS science information and applications. For 200 of those Websites, it will continue to provide a secure hosting infrastructure with an overall USGS Web manager satisfaction rate of 99 percent. The security and support of the EWeb program will continue to assure the delivery of uninterrupted content during disasters and other critical peak periods. The USGS Web presence will continue to serve millions of U.S. visitors per month.

In 2010, EWeb is continuing to proactively address and reduce enterprise web Certification & Accreditation enclave Plans of Action & Milestones and transition to the enterprise common services enclave, consistent with the USGS IT security strategy. The program continues to maintain the USGS Web inventory and provide regular monitoring of Websites in the Web Inventory for compliance with Federal and USGS requirements, such as Section 508, and continue to support the customer satisfaction survey. EWeb meets OMB requirements for completion of a 3-Year Recertification and Accreditation ensuring that all EWeb assets are recertified. EWeb is partnered with the USGS Office of Communications to manage and improve the public USGS homepage environment and the Geospatial Information Office Intranet and to encourage the USGS web community to follow Federal regulations and best practices in order to deliver content more effectively. The program is managing the development of the USGS Web Handbook based on Interior's and USGS' policies, and Fundamental Science Practices.

In 2009, EWeb implemented the USGS Professional Pages and will continue in 2010 and 2011 to provide timely, high quality science information and web services based on customer requirements and consistent with a service organization, leveraging the "enterprise distributed service model." EWeb will continue to support open and transparent government with data.gov, recovery.doi.gov, doi.gov, by partnering with internal and external stakeholders. This USGS strives to improve existing technologies and processes; identify and apply emerging technologies to support science communities of practice, collaborative research; allow efficient discovery and delivery of USGS data and information. A plan will be developed in 2011 to establish and document USGS' data publishing process for data.gov, including dataset selection, review and approval, and submission workflow.

Enterprise Information

EWeb will continue to provide leadership and support to Interior for recovery.doi.gov, redesign of doi.gov and design of Interior's Intranet Website.

Information Resource Management

(Estimates for 2009, \$1.3 million; 2010, \$3.3 million; 2011 \$1.8 million)

Information Resource Management focuses on establishing, monitoring, and guiding the efficient use of GIS applications ensuring compliance with the bureau's fundamental science practices, peer review and information quality requirements, and coordinating enterprise-level science educational activities.

Enterprise Geographic Information Systems and Enterprise Applications — The USGS will continue to lead Interior in administrative and technical management of geospatial technology acquisition in 2011. Bureauwide training and technical support will continue to be provided. When appropriate and possible, web-based training will be emphasized to reduce travel requirements and to provide efficient training. Guidance and administrative policy will be developed for working with external web services and internet based geospatial technologies.

In 2009, the USGS awarded, administered and provided implementation outreach to Interior's bureaus on the third Departmentwide Enterprise License Agreement with Environmental Systems Research Institute. Bureauwide training and technical support continues to be provided in 2010. Web-based training will be emphasized to reduce travel requirements and to provide efficient training.

Science Quality — The scientific reputation for excellence, reliability, integrity, and objectivity is one of USGS' most important assets. This reputation brings authority to data and findings, creates and protects long-term credibility, and ensures that the public trust is met. The Science Quality activities reinforce this reputation for science excellence and objectivity. In 2011, the Science Quality activities of the USGS will continue to steward USGS compliance with existing OMB, Department, and Bureau Information Quality Act requirements for information quality and peer review; maintain the policy documents and related internal procedures which govern how scientific investigations, research, and activities are planned and conducted and how information products are reviewed and approved for release and dissemination (Fundamental Science Practices); and through the USGS Information Product Data System, continue to track the metadata, documents, and review and approval workflow processes for USGS science information products prior to their release.

During 2010, Science Quality is providing coordination of USGS activities related to Information Quality Act requests for information correction and peer review requirements for influential scientific information; maintain the policy and procedures documents related to review, approval, and release of USGS policies and procedures (Fundamental Science Practices); and will provide oversight of the maintenance and operations and manage the documents in the Information Product Data System. In 2010, the Science Quality activities is also managing the content of the bureau's public information quality and peer review agenda Websites, the internal Fundamental Science Practices, and the Information Product Data System Websites; collaborate with discipline Chief Scientists, bureau approving officials, Enterprise publishing managers, and other bureau management; and provide support to the Fundamental Science Practices Advisory Committee and Information Product Data System Advisory Team who are tasked to monitor the effectiveness of these Science Quality components. In 2009, the Fundamental Science Practices Advisory Committee began regularly scheduled meetings.

Science Education — The USGS is engaged in a variety of science educational activities over a range of instructional levels, in both formal and informal settings. This is accomplished by coordinating student internships, conducting workshops and presentations at national science and science education meetings, coordinating national earth science events, maintaining and expanding the USGS' principal educational Website, and responding to the science education requests of USGS partners in professional science societies.

In 2009, the USGS education Website received “highest satisfaction” scores from the American Customer Survey Index nationwide survey on customer services. In 2011, the USGS Education program is enhancing and improving its education Website by providing complete text search functionality to the entire holdings of the bureau's fact sheets and general information publications, revising and updating all instructional materials relating to Geographic Information Systems, and introducing a number of “Geo-webinars” on instructional standards that were recently introduced for the earth sciences.

In 2010, the USGS Education program continues to take a major bureau lead in contributing to Interior's Youth initiative through expansion of student internships. As a result of the proposed decrease in 2011, the USGS activities in this area will be delayed. During 2011, in response to a number of legislative and executive initiatives to enhance science education, the USGS will continue to work closely with other Federal science agencies to maintain national science preeminence and workforce requirements in science and technology.

The Education program will represent the bureau on The National Research Council's new Roundtable on Climate Change Education to foster ongoing discussion of the challenges to and strategies for improving public understanding of climate science and climate change among Federal agencies, the business community, nonprofit, and academic sectors. The Education program will manage all contract and instructional material development for the bureau's contribution to Earth Science Week 2011 and its theme of Energy. Continuing the practice of recent years, the USGS Education program is organizing and managing an exhibit and workshop presence at the 2011 National Science Teacher's Association Conference.

Enterprise Information

Program Performance Overview

The following table highlights important performance measures for the Enterprise Information Resources Subactivity.

End Outcome Goal 5.2: Advance Modernization/Integration

End Outcome Measure / Intermediate Measure	Type	2006 Actual	2007 Actual	2008 Actual	2009 Plan	2009 Actual	2010 Plan	2011 Plan	Change from 2010 Plan to 2011	Long-term Target 2012
Intermediate Outcome Measures and Bureau and Outcome Measures E-Government and Information Technology Management										
% of earth science instructors in the U.S., K-16, using USGS educational materials (EIR)	A	UNK	UNK	Baseline	K-12 = 32%; Levels 13-16 = 78%	K-12 = 55% Levels 13-16 = 45%	K-12 = 32%; Levels 13-16 = 78%	K-12 = 32%; Levels 13-16 = 78%	0	K-12 = 32%; Levels 13-16 = 78%
Total USGS public web content managed by the enterprise web infrastructure (EIR)	A	UNK	UNK	UNK	Baseline	197 public web sites hosted by Enterprise Web infrastructure, with a total of 1130.3 Gb of storage provided for those sites on NatWeb servers.	TBD	TBD	0	TBD
Comment	In 2009, the USGS is working on a methodology for a baseline for this measure.									
Total # of internships and fellowships supported and/or facilitated by the USGS educational program (EIR)	A	55	70	55	55	42	175	85	-90	75
Comment	The proposed reduction in 2011 results in a decrease in program performance.									
Efficiency and Other Output Measures										
# of new and legacy information products added to the USGS publications database (EIR)	C	70,351	71,717	44,502	67,500	73,806	75,000	76,000	+1,000	76,000
Comment	New publications are released annually and therefore an increase in performance is expected.									
# of online bibliographic records (EIR)	A	6,381	4,992	2,444	6,381	4,569	4,500	4,500	0	4,500
Comment	The USGS does not expect an increase in this measure as a result of staff changes.									

Global Change

	2009 Actual	2009 Recovery Act ³	2010 Enacted	2011			Change From 2010 (+/-)
				DOI-Wide Changes ^{1,2} (+/-)	Program Changes (+/-)	Budget Request	
Global Change (\$000)	40,628	0	58,177	-692	+14,614	72,099	+13,922
<i>Total FTE</i>	152	0	189	-1	+26	214	+25

1) \$353 in fixed costs is absorbed.
2) See the General Statement and Section G for Details on DOI-wide Changes.
3) A new treasury account was created for the Recovery Act appropriations; direct allocations to programs were not made.

Summary of 2011 Program Changes for the Global Change Activity

Request Component	(\$000)	FTE
Climate Change Adaption initiative		
• DOI Climate Science Centers	+8,000	+8
• Carbon Sequestration Assessment	+2,000	+2
• Science Applications & Decision Support	+1,000	+2
Treasured Landscapes initiative	+3,614	+14
TOTAL Program Changes	+14,614	+26

Justification of 2011 Program Changes

The 2011 budget request for Global Change is \$72,099,000 and 214 FTE, a net program change of +\$14,614,000 and +26 FTE from the 2010 Enacted level. Additional information on program changes is in the Secretarial Initiatives and Mission Increases section beginning on page E-1.

The USGS contribution to the U.S. Climate Change Science Program (CCSP) in 2010 is \$68.0 million and \$81.4 million in 2011.

Climate Change Adaptation Initiative

NCCWSC and the DOI Climate Science Centers (+\$8,000,000/ +8 FTE)

Part of the increase to USGS of \$8.0 million for the DOI Climate Science Centers (DOI CSCs) which are being established under the authority of the National Climate Change Wildlife Science Center (NCCWSC), will be used to create and staff two new centers, adding to the three centers to be established in 2011. The remainder will enable the centers to provide direct contact between scientists and natural and cultural resource managers to develop and evaluate models and tools for implementation in iterative adaptive management approaches based on sound science. National coordination of research and modeling at the regional centers will ensure uniformity of downscaling and forecasting models and standardized information to support

management for fish and wildlife, land, water, and cultural resource managers for regional partnership collaborations including the Department of the Interior Landscape Conservation Cooperatives (DOI LCCs). Work at the regional centers is critical to successfully accomplishing the mission of the NCCWSC, which is to provide the science and technical support needed to help natural and cultural resource managers

anticipate climate change impacts and evaluate options that will facilitate adaptation to changing landscapes. A major partner of the DOI CSCs is the DOI Landscape Conservation Cooperatives, the Department's science application centers, which will provide a collaborative environment for bureaus and other partners to utilize DOI CSC science in their monitoring and adaptation activities and provide feedback to the regional centers for future research needs.

In 2011, funds for the DOI CSCs will be used to: (1) work in close partnership with the natural resource management communities to understand high priority science needs, and what is needed to fill those knowledge gaps; (2) work with the scientific community to develop science information and tools that can inform management strategies for responding to climate change; (3) deliver these relevant tools and information timely and directly to resource managers. Partnership efforts are integral to activities and outcomes at the DOI CSCs and include the USDA-Forest Service Climate Change Resource Center, Climate Change Impacts on Tribal Trust Species and Resources, NASA, NOAA and EPA among others.

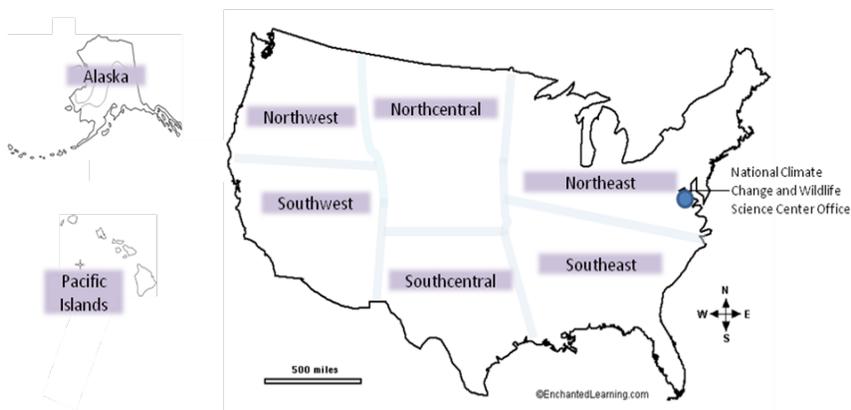
Carbon Sequestration Assessment

(+\$2,000,000/ + 2 FTE)

An increase of \$2.0 million in the Climate initiative is provided to USGS to continue the implementation of the methodology for the national assessment of biological carbon sequestration developed in previous years. These activities were authorized in the Energy Independence and Security Act of 2007 (EISA, P.L. 110-140), which calls for comprehensive assessment of geologic and biologic carbon sequestration to enable decisionmakers to evaluate the full range of sequestration options. The 2010 budget for sequestration activities is \$10.0 million, which includes \$5.0 million for geologic carbon sequestration assessment and \$5.0 million for biological carbon sequestration assessment. The 2011 increase of \$2.0 million specifically supplements the \$5.0 million received in 2010 for ongoing and increased activities in biological carbon sequestration.

In 2011, funds for biologic carbon sequestration will be used to (1) implement the methodology for assessment of the Nation's resources for biological carbon sequestration developed in 2009 and 2010; (2) continue to utilize mechanisms for consultation concerning biological carbon sequestration resource assessment with Interior resource managers and stakeholders from other Federal and State agencies and from the private sector, including consultations with stakeholders and the interagency science advisory panel that was initiated at the end of 2009

DOI Climate Science Centers



and continued into 2010 and onward; and (3) address technical issues and data gaps identified in 2010 that impact uncertainties and risks in the ability to assess biological carbon sequestration.

Science Applications & Decision Support

(+\$1,000,000/ +2 FTE)

In 2011, the Science Applications and Decision Support element of the USGS Global Change program will continue its efforts to develop decision-support tools that enable resource managers and policymakers to cope with and adapt to a changing climate. Collaborations with a number of academic institutions including Cornell University, Colorado State University, the Massachusetts Institute of Technology (MIT), and Montana State University has been established and spans the fields of social science, natural resources, artificial intelligence, statistics, and earth sciences. Decision-support will be developed through new partnerships, enhancement of existing collaborations, and in training the next generation of applications scientists.

Funding in 2011 will also focus on the continued development and expansion of a comprehensive interdisciplinary capacity for addressing climate impacts and policy issues for multiple resource management in the Northern Rocky Mountain Landscape and in the Columbia River Basin. The DOI CSCs have a focused mission of climate change effects on wildlife, ecosystems, and natural resources including water and the DOI Land Conservation Cooperatives (LCC) are similarly focused on building collaborations among fish and wildlife managers for application of adaptation strategies through adaptive management practices. This interdisciplinary approach will encourage collaboration among these programs to provide applications and decision support for fish and wildlife issues, and will also allow partnerships with other Federal agencies, including NOAA and NASA, regional USGS biology and water discipline centers, and local resource managers to address multiple management issues of concern in the Northern Rockies ecoregion and in the Columbia River Basin (water resource management, carbon sequestration, human infrastructure stability, etc.). These efforts will provide a science and applications framework within which the DOI CSCs, the DOI LCCs, and other programs can learn from and leverage the information and capacities developed by the others. The first of a series of these collaborations will begin in Bozeman, Montana in 2010, will continue into 2011 and will focus on the Northern Rockies landscape and is the pilot for demonstrating and delivering regional climate impact services in the Northern Rockies, across the Department of the Interior, and throughout the Nation. The work conducted by the Northern Rockies Center in 2010 and in 2011 will include collaborative work with several universities across the nation including Colorado State University, Cornell University, and MIT in developing decision support tools geared to natural resource management in a changing climate. The experiences of the scientists and managers working in this pilot in the Northern Rockies will be drawn upon for establishing similar efforts in other regions of the Nation in 2011 (for example the Columbia River Basin).

Global Change

Treasured Landscapes Initiative (+\$3,614,000/+14 FTE)

President Obama issued an Executive Order (E.O.) on May 12, 2009 to have the Federal government lead the restoration of the Chesapeake Bay, the Nation's largest estuary. The E.O. directs the U.S. Environmental Protection Agency, and the Departments of the Interior, Commerce (NOAA), Agriculture, Defense, and Homeland Security to use their expertise and resources, working with partners, to protect and restore the Chesapeake Bay and its watershed. The Department of the Interior, through FWS, NPS, and USGS, has been directed in the E.O. and the supporting restoration strategy to provide leadership, and contribute expertise and resources, for:

- Coordinating tools and science for decision making (USGS and NOAA lead);
- Assessing the impacts and adapting for climate change (USGS and NOAA lead);
- Expanding public access to the Bay and conserving landscapes (NPS lead); and
- Restoring habitats, fish, and wildlife (FWS and NOAA lead).

The proposed activities address the USGS Science Strategy themes (USGS Circular 1316) for (1) understanding ecosystems and predicting ecosystem change; and (2) climate variability and change. The proposed activities would include completing three systematic analyses and two workshops in 2011.

Program changes described above are associated with the Treasured Landscapes initiative and are described in greater details in Section E, Secretarial Initiatives and Mission Increases.

Program Performance Change

	2007 Actual	2008 Actual	2009 Actual	2010 Plan	2011 Base Budget (2010 Plan + Fixed Costs)	2011 Plan	Program Change Accruing in 2011	Program Change Accruing in Out-years
					A	B=A+C	C	D
1.4 Improve the understanding of National Ecosystems and Resources through interdisciplinary assessments								
# of systematic analyses and investigations completed	UNK	5	91	106	106	124	+18	+26
Total actual/ projected cost (\$000)	UNK	\$1,250	\$22,750	\$26,500	\$26,500	\$31,000	+\$4,500	+\$6,500
Actual/projected cost per scientific report or other product (whole dollars)	UNK	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000
# of workshops or training provided to customers (annual)	UNK	1	15	25	25	32	+7	+8
Total Projected Cost (\$000)	UNK	\$25	\$375	\$675	\$675	\$800	+\$175	\$200
Projected Cost per Workshop (whole dollars)	UNK	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	+\$25,000	+\$25,000

	2007 Actual	2008 Actual	2009 Actual	2010 Plan	2011 Base Budget (2010 Plan + Fixed Costs)	2011 Plan	Program Change Accruing in 2011	Program Change Accruing in Out-years
					A	B=A+C	C	D
# of gigabytes collected annually	UNK	UNK	UNK	2.8	2.8	2.8	0	+8.4
# of gigabytes managed and distributed cumulatively	UNK	UNK	UNK	22.2	22.2	22.2	0	30.6
% of targeted geographic areas with temporal and spatial research, assessment and modeling of fish, wildlife and their habitats response to climate change to meet identified climate change adaptation planning and management needs (NCCWSC)	UNK	60% (3/5)	60% (6/10)	83% (25/30)	83% (25/30)	88% (35/40)	+5%	95% (38/40)
Comments	<p>This measure has been reworded and has a new baseline. A single year authorization in 2008 funded the inaugural workshop and five demonstration projects with 3/5 completed in 2008. Funding in 2009 allowed for three regional workshops, a final NCCWSC national workshop to finalize the CSC concept, two additional 2008 projects completed, and establishment of the national center for a total of 6 of 10 planned accomplishments (6/10). Three CSCs were established in 2010, twenty-two multi-year projects developed with stake-holder/ partner input to achieve almost full geographic coverage of the U.S. (25/30) with the denominator reflecting the anticipated additional five regional CSCs for full national coverage. The transition from regional CSC development to research activities continues in 2011 with establishment of two more regional CSCs, completion of the 2009 projects (22), 2010 projects (9), and two climate change science workshops (2) in 2010. The denominator (40) is estimated from anticipated funding levels and research outcomes of approximately five major partnership outcomes per each CSC. The 2012 38/40 reflects establishment of the final three CSC and completion of all ongoing projects. During development, establishment of the partnerships and collaboration to develop the geographic focus for project was the intermediate outcome. Out year performance will be based on research in the targeted geographic areas identified by regional management partners and conservation cooperatives and prioritized at the national level and estimated to be five major efforts per CSC.</p>							
% of targeted land cover trends national assessment syntheses, research plans, or science strategies that are published (Global Change)	UNK	UNK	20% (1/5)	40% (2/5)	40% (2/5)	60% (3/5)	+20%	80% (4/5)

Global Change

	2007 Actual	2008 Actual	2009 Actual	2010 Plan	2011 Base Budget (2010 Plan + Fixed Costs)	2011 Plan	Program Change Accruing in 2011	Program Change Accruing in Out-years
					A	B=A+C	C	D
% of surface area with temporal and spatial monitoring, research, and assessment/data coverage to meet land use planning and monitoring requirements (Global Change) (Number of completed eco-region assessments out of a total of 84 eco-regions).	UNK	78% (66/84)	87% (73/84)	100% (84/84)	100% (84/84)	100% (84/84)	+0%	100% Plan completion 2010

Workforce Planning

Although Global Change is identified as an activity in the budget with 189 FTE, the Global Change staff are located throughout the four different science disciplines in the bureau. USGS has worked to identify and evaluate personnel associated with global change activities as well as their skill mix. USGS has reviewed and revised work plans where necessary and developed an integrative bureau planning model to manage cross-disciplinary efforts of which Global Change is one.

Program Overview

Climate change is one of the biggest challenges the world faces and is a top priority for the Administration and the Department of the Interior. Climate change and its impacts on natural resources are a key concern for resource managers in the Department of the Interior and for many external partners at State, Federal, and local levels. In 2010 and beyond, key components of the program include the continued development of a Climate Effects Network effort; the continuation of the DOI Climate Science Centers (DOI CSCs); activities in applications, partnerships and decision support; data management; and continuation of the rigorous scientific research that provides the data, new knowledge, inputs to modeling and other outcomes that are required to understand, assess, adapt and mitigate climate change. USGS has aligned the majority of its existing global change work under a single budget activity. The fusion of existing USGS global change research with the integrative elements of the Climate Effects Network effort and other components funded in 2009 provide a key opportunity to reinforce and build upon existing capabilities and to leverage new ones to help the Nation manage the challenge of understanding climate change and its effect on the environment.

Global Change supports the Department's goal to improve the understanding of national ecosystems and resources through integrated interdisciplinary assessment. The goal of Global Change is to be the primary provider of scientific information on climate change impacts on Earth and human systems. Understanding of climate change impacts is used to provide

perspectives for policymakers and to support land and resource managers in their decisionmaking.

On September 14, 2009, Interior Secretary Salazar issued Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources". The order "establishes a Department-wide approach for applying scientific tools to increase understanding of climate change and to coordinate an effective response to its impacts on tribes and on the land, water, ocean, fish and wildlife, and cultural heritage resources that the Department manages." The Order emphasized that management decisions made in response to climate change impacts must be informed by science and requires that scientists work in tandem with natural resource managers who are confronting climate change impacts and evaluating options to respond to such impacts.

Global Change projects support the goals of CCSP to (1) improve knowledge of the Earth's past and present climate and environment, including its natural variability; (2) improve quantification of the forces bringing about changes in the Earth's climate and related systems; (3) reduce uncertainty in projections of how the Earth's climate and related systems may change in the future; (4) understand the sensitivity and adaptability of different natural and managed ecosystems and human systems to climate and related global changes; and (5) explore the uses and identify the limits of evolving knowledge to manage risks and opportunities related to climate variability and change.

Results of scientific activities are communicated to customers in academia, resource management agencies, and the general public through project reports and peer-reviewed scientific papers, Websites, databases, and meetings with stakeholders. Metrics of program success in past years have included the number of reports and publications, number of people accessing Websites, and the frequency of meetings with stakeholders. In past years, outputs for which targets are set relate to the number of gigabytes, number of systematic analyses and investigations, and number of formal workshops or training. These outputs support the intermediate outcome goal of ensuring availability of long-term environmental and natural resource information, data, and systematic analyses needed by land and resource managers for informed decisionmaking.

Global Change Program Areas (\$000)			
	2009 Estimate	2010 Estimate	2011 Request
Climate Effects Network	4,000	9,086	8,978
DOI CSCs	10,000	15,143	22,963
Science Application	1,500	1,514	2,496
Research & Development	22,128	22,339	22,073
Carbon Sequestration	3,000	10,095	11,975
<i>Biological</i>	<i>[1,500]</i>	<i>[5,047]</i>	<i>[6,987]</i>
<i>Geological</i>	<i>[1,500]</i>	<i>[5,048]</i>	<i>[4,988]</i>
Chesapeake Bay E.O.	0	0	3,614
Total Global Change Activity	40,628	58,177	72,099

DOI Climate Effects Network

(Estimates for 2009, \$4.0 million; 2010, \$9.1 million; 2011, \$9.0 million)

The science needed for understanding and responding to climate change will not be generated by a single science discipline or program. More than any environmental issue society has faced to date, scientifically-grounded decisionmaking for addressing climate change will require unprecedented integration of data representing whole systems, and the interactions of multiple ecological, physical, and biogeochemical processes that together define an ecosystem. Further, the rapid retreat of Arctic sea-ice in 2007 relative to model projections clearly showed that ground-truthing of climate and ecosystem models (ie, the testing of model outputs against real measurements) is critical to assuring that the science driving decisions can be trusted. In 2010, the Climate Effects Network (CEN) continued development of the data integration concepts and capabilities required to deliver that whole-system information to resource managers, with a regional focus on landscapes of rapid change and a national focus on currently active national assessments of carbon sequestration and water.



Three oblique aerial photographs that show changes in the terminus of Bear Glacier, Kenai Mountains, Kenai Fjords National Park, Alaska, during the five year period between 2002 and 2007.

The USGS is in a unique position in the climate change research and applications community because of its ability to leverage and integrate research results across the Earth-system science disciplines with in-situ data, space-based and airborne observational data, high-end computing capabilities, data and information management systems, and decision-support tool development

Studies scheduled for future years in the pilot of

the CEN in the Yukon River Basin were accelerated and expanded geographically to allow the preliminary assessments needed for decision support in a region of rapidly changing permafrost. New tools for interpreting remotely-sensed data were tested and refined using the ground-based information, and collaborations with the Canadian Center for Remote Sensing yielded ecosystem “performance” maps for the Yukon basin. Additional field crews were established and experiments undertaken that provided critical information on the rapidly changing hydrology, and carbon release to the river and atmosphere from thawing soils.

Nationally, collaborations on a survey of soil carbon were enhanced with new soil sample collection and compilation of existing data in GIS coverages. Further development of the SPARROW (SPATIally Referenced Regression On Watershed attributes) carbon flux model allowed greatly refined estimates of carbon export to the coastal ocean, and new technology for monitoring carbon export to the coastal ocean was tested and initial data collection at selected major rivers completed. This linked model and monitoring capacity will allow continuously improved forecasts of carbon and nitrogen export to the coastal ocean, information needed to assess coastal nutrient imbalances and productivity disruption. Contributions from CEN to the National Phenology Network budget were used to link the data management and field designs of the two programs into a coherent strategy. CEN also supported the continuation of long-term river water quality records in the Hydrologic Benchmark Network, a program of data collection developed in the 1950s and the only extended record of chemical change in medium-scale, non-developed watersheds in the world. Supplemental funds from CEN were provided to the National Climate Change and Wildlife Science Center pilot in the southeastern U.S. to integrate terrestrial and coastal data collection programs. Research projects in the Global Change R&D program received \$1.0 million in enhancement funds from CEN to allow better integration of data across research projects and improvements in measurement and analysis capacity.

A data management and dissemination system for compiling and easing access to interdisciplinary climate effects data was designed and tested as part of the CEN pilot. Collaborations with the NSF National Ecological Observing Network (NEON) were further developed and data management strategies aligned to allow USGS to provide support services and data beginning in 2011 to this NSF-sponsored corporation. Development of science plans and initiation of field implementation of the CEN in watersheds beyond the pilot were redirected toward issue-focused assessments and potential network design should funding become available. Data collection in support of optimizing collaborative observation design with NSF was initiated in the USGS Central Region, with the goal of establishing a long-term science support role for USGS in NFS’s development of a comprehensive climate effects network through NEON Incorporated.

DOI Regional Climate Science Centers

(Estimates for 2009, \$10.0 million; 2010 \$15.1 million; 2011, \$23.0 million)

Under the direction of P. L. 110-161, the National Climate Change and Wildlife Science Center (NCCWSC) had begun establishing regional offices in close collaboration with Interior agencies and other Federal, State, university, and non-governmental partners. The Secretary broadened the scope of the regional offices to encompass other climate-change related impacts on Departmental resources, and created DOI Climate Science Centers (DOI CSCs). In 2010, USGS worked with other Department bureaus to establish the Regional Climate Science Centers. These Centers will synthesize and integrate climate change impact data and develop tools that the Department’s managers and partners can use when managing the Department’s land, water, fish and wildlife, and cultural heritage resources.

Global Change

The Secretarial Order recognized that, because of the broad impacts of climate change, management responses must be coordinated on a landscape scale. Because of the unprecedented scope of affected landscapes, the Executive Order directs Interior bureaus to work together, with other Federal, State, tribal and local governments, including private landowners, to develop landscape-level strategies for understanding and responding to climate change impacts. The Department established a network of Landscape Conservation Cooperatives (LCCs) to work

cooperatively with the DOI Regional Climate Science Centers to coordinate natural resource adaption efforts across the Nation.

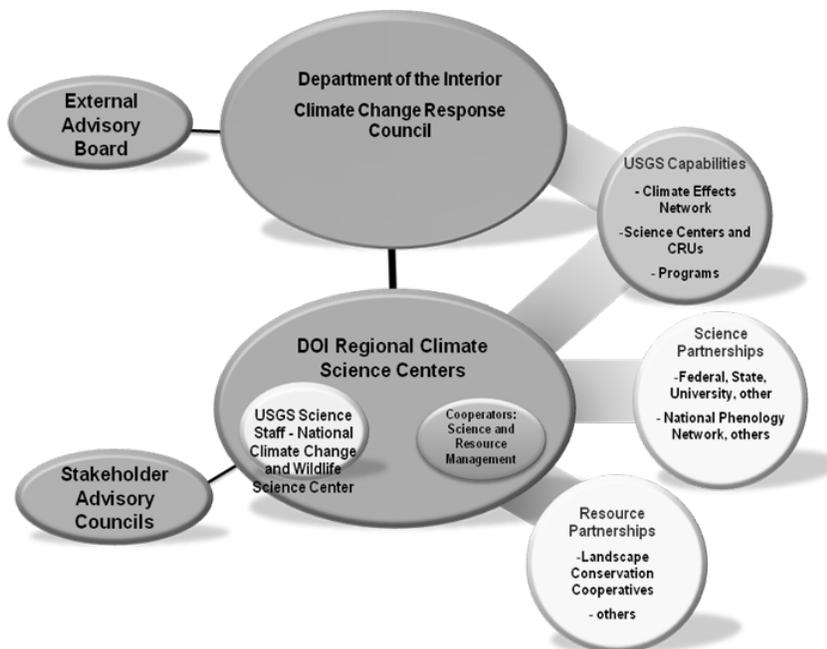


Chart illustrating all climate related functions within DOI in accordance to Secretarial Order 3289

The National Climate Change and Wildlife Science Center (NCCWSC) and its regional entities, the DOI Climate Science Centers, supports research, assessment and synthesis of global change data for use at regional levels. The DOI CSCs adapt and evaluate global climate change models to scales that are appropriate for resource managers of species and habitats, and facilitate data integration and outreach to collaborators and stake holders.

As part of the broader climate change science and adaptation community, the overall mission of the DOI CSCs is to provide natural and cultural resource managers with the tools and information they need to develop and execute strategies for successfully adapting to and mitigating the impacts of climate change. Based on consistent partner feedback from national and regional workshops, the DOI CSCs will fulfill this mission with the accomplishment of three basic goals: (1) work in close partnership with the natural resource management community to understand their highest science needs regarding climate change impacts, and determine what is needed to fill those knowledge gaps; (2) work with the scientific community to develop the science information and tools in such a way that they can be readily used to generate management strategies for responding to climate change; and (3) deliver these relevant tools and information in a timely and useful way directly to resource managers. The DOI CSCs will work closely with fish and wildlife managers and natural resource partners within an adaptive management framework, in which science informs strategies and management, and the results of that management inform future science.

Science Applications and Decision Support

(Estimates for 2009, \$1.5 million; 2010, \$1.5 million; 2011, \$2.5 million)

USGS scientists work directly with resource managers in the field, understand their perspective, and are experienced in delivering decision support to them. In 2011, the Science Applications and Decision Support element of the USGS Global Change program will continue its efforts to develop decision-support tools that enable resource managers and policymakers to cope with and adapt to a changing climate. Collaboration with a number of universities including Cornell, Colorado State, the Massachusetts Institute of Technology (MIT), and Montana State has been established and spans the fields of social science, natural resources, artificial intelligence, statistics, and earth sciences. Decision-support will be developed through new partnerships, enhancement of existing collaborations, and in training the next generation of applications scientists. In the 2010-2011 academic year, the USGS is supporting a number of graduate students through the MIT/USGS Science Impact Collaborative working on climate change impacts and adaptation studies in Florida's Everglades National Park, in the southwestern United States and internationally on the European continent training the next generation of applications scientists for the Nation. Additionally, the USGS is transitioning Earth-science research results to the operational missions of partnering agencies through the Science Applications and Decision Support element of the Global Change program's Climate Effects Network (CEN).

Global Change Research & Development: Strong Science in Support of Land and Resource Management

(Estimates for 2009, \$22.1million; 2010, \$22.3 million; 2011, \$22.1 million)

USGS's long and distinguished history in the field of global change science provides the secure foundation that is needed to improve and expand understanding of current climate variability, climate change and its influence on other Earth processes, and their collective impacts on the Nation's resources and economy. The impacts of climate change and variability on natural resources are a growing concern for resource managers in the Department and for many of its external partners at State, Federal, and local levels. In order to continue to meet the science needs of the Department and the larger community in 2011, the Global Change program will continue, strengthen, and integrate the existing USGS portfolio of rigorous research, emphasizing existing, new or expanded work that 1) fosters a multidisciplinary approach to global change science and impacts; 2) aligns with USGS strategic goals; and 3) supports the management and policy decisionmaking needs of the Department and external partners and customers. Since 2009, Global Change Research and Development has included the existing projects and FTE from the four science disciplines that were reprogrammed into the single Global Change budget activity. The key focus for 2010 was continuing alignment of the R&D project portfolio with Interior and CEN goals and other components of the Global Change program, including identification of key gaps in needed science to support management and the development of projects to address those gaps. In 2010, projects to close gaps were added as follows: 1) to understand coastal vulnerability and change under conditions of increased storm intensity and rising sea level; 2) to improve our understanding of the conditions and potential thresholds leading to abrupt change in climate and ecosystems; and 3) to provide global paleoclimate data from a significant warm period in Earth's history for use in testing, validating and improving climate models worldwide, to support improved forecasting of future conditions.

Carbon Sequestration

(Estimates for 2009, \$3.0 million; 2010, \$10.1 million; 2011, \$12.0 million)

Geological Carbon Sequestration

Geological storage of carbon dioxide in porous and permeable rocks involves injection of CO₂ into a subsurface rock unit and displacement of the fluid that initially occupied the pore space. This principle operates in all types of potential geological storage formations such as oil and gas fields and deep saline aquifers. Because the density of CO₂ is less than formation water, it will be buoyant in pore space filled with water and rise vertically until it is retained beneath a permeability barrier (seal). If the structure of the seal forms a trap with vertical and horizontal closure, CO₂ will accumulate in the same manner that buoyant fluids like crude oil and natural gas accumulate in nature. In addition to identification of adequate pore volume for CO₂ storage, a critical issue for evaluation of storage resources is the integrity and effectiveness of the seal that will retain the CO₂.

In 2009, in accordance with the Energy Independence and Security Act of 2007, the USGS developed a methodology to assess the Nation's resources for geologic carbon sequestration in oil and gas reservoirs and saline formations. This methodology has been designed to estimate storage resource potential that can be applied uniformly to geologic formations across the United States. The resource that is assessed is the volume of pore space into which CO₂ can be injected and retained. The methodology uses probabilistic methods to incorporate uncertainty and natural variability in volumetric parameters. This assessment methodology focuses on the technically accessible resource, not a total in-place resource volume. This is a resource that may be available using present day geological and engineering knowledge and technology for CO₂ injection into geologic formations. This methodology was published (Burruss, Brennan, and others, 2009, Development of probabilistic methods for assessment of CO₂ storage resources, USGS Open-file report, 2009, 125 p.) and made available for comment by the public and an independent review panel was convened of individuals with expertise in these issues. Application of the new geological sequestration assessment methodology to evaluate the Nation's potential resource of geological storage began in 2010 after revision of the methodology following the external review.

Biological Carbon Sequestration

Biological carbon sequestration refers to both natural and deliberate processes by which CO₂ is removed from the atmosphere and stored in vegetation, soils, and sediments. Biological carbon storage is susceptible to disturbances such as fire, disease, and changes in climate and land use. Deliberate biological sequestration can be accomplished through forest and soil conservation practices that enhance the storage of carbon (such as restoring or establishing forests, wetlands, and grasslands) or reduce CO₂ emissions (such as reducing agricultural tillage and managing wildfires strategically). The capacity of ecosystems to sequester additional carbon is uncertain, and the potential future vulnerability of biological carbon storage is difficult to predict. Decisions about biological carbon sequestration require careful

The term “carbon sequestration” is used to describe both natural and deliberate processes by which CO₂ is either removed from the atmosphere or diverted from emission sources and stored in the ocean, terrestrial environments (vegetation, soils, and sediments), and geologic formations.

consideration of priorities and tradeoffs among multiple resources. Assessment of biological carbon sequestration resources will require quantifying the factors that control potential capacities of sequestration, and providing information that can be used in complex resource management decisions and policies.

USGS historical datasets provide information needed to test and update time-dependent models that are used to estimate potential future carbon sequestration and greenhouse gas fluxes. The extensive land and resource management experience of the Interior provides an essential practical context for applying information about potential rates and capacities of carbon storage in ecosystems.

USGS is leading a Department process to develop a methodology for a National Assessment of Biological Carbon Sequestration Resources. This activity, authorized by the Energy Independence and Security Act of 2007 (EISA), was initiated in 2009. The assessment methodology was completed in 2010.

Chesapeake Bay Executive Order — Treasured Landscapes Initiative

(Estimates for 2009, \$0 million; 2010, \$0 million; 2011, \$3.6 million)

The USGS is working with Federal agencies (NOAA, EPA, FWS, NPS, and USACE) to address the highest priorities of the Chesapeake Bay Executive Order, with a focus on addressing the impacts of climate change and providing science to improve decisionmaking. As described in the November 9, 2009 Draft Strategy, USGS and NOAA will increase efforts to provide science to and engage State, local and private partners in a collective effort to improve water quality; conserve and restore habitats, fish, and wildlife; and plan for climate change in the Chesapeake Bay and watershed. For 2011, the President's budget calls for the USGS, working with NOAA and other Federal partners to build from their current activities to support the Executive Order.

2011 Program Performance

Climate Effects Network — The goal of the DOI Climate Effects Network (CEN) has been to “provide earth system information for understanding, tracking, and forecasting the effects of climate change on ecosystems, natural resources, and society; and to empower and assess adaptation or mitigation responses to those changes in the most cost effective, timely, and scientifically-rigorous manner possible” (DOI Climate Impacts Task Force, 2009). In 2011, the CEN will continue ecosystem response research and assessment in the Yukon River Basin, further integrate the CEN program with the wildlife and climate change initiatives of the Alaska Science Center, and will complete assessment products associated with the network pilot in the Yukon River Basin. CEN will further develop collaborations with NSF's National Ecological Observing Network (NEON) to leverage the rapid increase in observational capability being initiated in 2011 by that program in the USGS Central Region. This collaboration will enable the most rapid introduction of science information into the decision support structure being developed through the DOI Climate Science Centers. CEN will also continue collaborative funding of data collection that is national in scope and supports the USGS carbon sequestration assessment and Water Census, including the national soil carbon inventory, carbon and nitrogen export to the coastal ocean, and carbon export models. Science plans for CEN development in the continental U.S. that were written for specific watersheds in 2010 will be compiled and published for potential use in future network development efforts. Specific studies started in 2010 outside of Alaska will continue for addressing critical ecosystem change issues, providing short-term decision support science, and illustrating the effective integration of

observations, research, and decision support for long-term tracking of climate change impacts. Research enhancements allocated in 2010 for specific projects in the Global Change Research and Development program will be continued in 2011, and additional funds for integrating datasets among the research projects will be applied.

Responses of Wildlife and Vegetation to Climate Change — In 2009, the National Climate Change and Wildlife Science Center supported 22 new climate change research projects that were led by USGS scientists, at a cost of approximately \$7.0 million annually from 2009 until 2011. The funded research focuses on down-scaling and derivative products of coupled Atmosphere-Ocean General Circulation Models specifically for fish and wildlife management applications at a regional and or local scale, and national and or regional projects that assess the responses of aquatic or coastal and terrestrial plants and animals to climate change. With this funding, USGS scientists and collaborators are studying the vulnerability of species and ecosystems to projected future climate change in the Pacific Northwest, and the impacts of climate change and melting glaciers on coastal ecosystems in the nearshore waters of the Gulf of Alaska. They are assessing climate-induced changes in plant phenology on the migration, breeding, and distribution of birds in the Arctic, and assess the vulnerability of quaking aspen woodlands and associated bird communities to climate change in the Great Basin. The results of studying the management of the Nation's fish habitat at multiple spatial scaled in a rapidly changing climate will provide useful information to Interior's land managing bureaus. In addition, studies as diverse as the effects of climate change on San Francisco Bay marshes, and the changes in Hawaiian seabird populations were initiated in 2009. Throughout the duration of these three-year studies, USGS researchers and partners will provide interim research results that can be applied at regional and local levels.



In addition, the Center's Southeast Regional Assessment science partnership undertook research in designing sustainable landscapes, determining water availability for ecological needs, and studying the impact of climate change on bird distributions in the Southeast. These three projects will be merged at a landscape scale and subjected to more rigorous downscaled climate data.

The National Climate Change and Wildlife Science Center completed an intensive round of consultations with partners in the Department of the Interior, other Federal agencies, States, nongovernmental organizations and others. These included five formal workshops involving over 300 individuals and organizations, in both the Washington, DC headquarters area and around the country. The information gathered at these consultations provided the basic information around which the new Center's five year strategic plan was developed.

Global Change Research & Development — In 2011, research and development will continue across the full range of USGS capabilities and in partnership with other Federal agencies. Particular areas of focus will include:

Coastal Vulnerability Forecasting – In order to help coastal communities and coastal resource managers anticipate and respond to changes in the vulnerability of the coastal zone from persistent processes, extreme events and climate change; USGS will invest in geospatial data, in the development of assessment and forecast modeling tools, and will further cement a partnership with NOAA to develop decision-support tools for changing coastal conditions and vulnerability. This project activity complements the priorities and directions of the USGS Coastal and Marine Geology Program and will be implemented collaboratively with that program. In order to assess key needs, gaps and resources, a scoping study was conducted for this project in 2010, and several workshops were held with partners and stakeholders. In 2011, the initial phase of the project will continue with refinements of experimental design and substantial efforts in data collection, process analyses and data management and delivery. It is anticipated that this project will, with contributions from other USGS programs and in partnership with other Federal agencies, be enhanced over future years leading to improved and more widely available products to assist coastal managers in anticipating and responding to coastal change due to storms, erosion, and sea-level rise.



Late winter snow and ice on the Sheepscot River in coastal Maine. USGS scientists are studying 20th century trends in river flows, river ice, and lake ice in New England to analyze hydrologic effects of observed climate variability. Significantly earlier spring snowmelt runoff, river-ice breakups, and lake-ice breakups have occurred in the last 30 years.

The goal of this partnership is to provide decisionmakers in the coastal region with high quality science-based information that enables them to understand, anticipate, and adapt to a changing climate, including sea level rise. USGS and NOAA are ideally suited to lead a U.S. coastal climate activity with their complementary missions to conduct research, monitor, and perform assessments of hazards and resources, and to conserve and manage coastal and marine resources. Through research, observations, and sharing of ongoing agency programs, the two science agencies will address the needs of national, regional, and local coastal decisionmakers for tools and information to anticipate and adapt to climate change.

Climate Variability and Abrupt Change – In 2010, USGS continued and augmented its long-term work conducted in USGS Global Change Research & Development (R&D) on climate variability and abrupt climate change. Work in 2010 built upon assessment activities conducted in 2009 as well as ongoing R&D leadership in the use of paleoclimate proxy data collection and analyses to improve understanding of abrupt climate change and its potential consequences and to test and validate climate models, and produced new datasets and results that are being used by stakeholders and climate modeling groups in the U.S. and Europe. Activities in 2011 will focus on areas including the following:

- Improved understanding of past Earth climates to inform modeling and forecasting of current and future climates in the Arctic, Pacific Coast, Gulf Coast and Atlantic Coastal Margin, including studies of sea-ice history and Earth's history of abrupt climate change;
- Improved understanding of landscape and vegetation responses to climate change including responses to aridification, sea level rise, changes in land cover and land use patterns, and temperature and precipitation changes; and
- Implications of climate change and variability for future habitats and biological diversity as well as impacts on human communities and resources.

Complete Documentation of Land Cover Trends for the Lower 48 – In 1999, USGS began a comprehensive analysis of trends in land cover across the United States using the entire available satellite record. Satellite images from multiple time slices from 1973 through 2000 are being used together with statistical sampling and field verification to characterize the spatial and temporal characteristics of land cover change across the conterminous United States, and to document the regional driving forces and consequences of change. In 2010 this analysis was completed for the lower 48 states, providing the foundational data for the first ever national assessment of trends in land cover and the impacts of those trends on land management practices, economic health and sustainability, and social processes. In 2011, this effort will transition to the development of a protocol for periodic updates of the dataset, and planning for a set of syntheses that will use this groundbreaking dataset to understand the drivers and consequences of land use change. In turn, these data and the resulting analyses will be used in 2011 and beyond to help improve prediction of future changes in support of local and regional decisionmaking.

Global Change Applications & Decision Support – In 2010, the Science Applications and Decision Support element of the USGS Global Change program will continue its efforts to develop decision-support tools that enable resource managers and policymakers to cope with and adapt to a changing climate. Decision-support will be developed through new partnerships, enhancement of existing collaborations, and in training the next generation of applications scientists.

In the 2009-2010 academic year, the USGS supported a number of graduate students at the Massachusetts Institute of Technology (MIT) through the MIT/USGS Science Impact Collaborative working on climate change impacts and adaptation studies in Florida's Everglades National Park with resource managers from the FWS training the next generation of applications scientists for the Nation. Additionally, the USGS transitioned Earth-science research results to the operational missions of partnering agencies through the Science Applications and Decision Support element of the Global Change program's Climate Effects Network (CEN).

Geological Carbon Sequestration Methodology for National Assessment — In accordance with the Energy Independence and Security Act of 2007, USGS has developed a methodology to assess the Nation's resources for geologic carbon sequestration in oil and gas reservoirs and saline formations. This methodology has been designed to estimate storage resource potential that can be applied uniformly to geologic formations across the United States. The resource that is assessed is the volume of pore space into which CO₂ can be injected and retained. The methodology uses probabilistic methods to incorporate uncertainty and natural variability in volumetric parameters. This assessment methodology focuses on the technically accessible resource, not a total in-place resource volume. This is a resource that may be available using present day geological and engineering knowledge and technology for CO₂ injection into geologic formations. This methodology was made available for comment by the public and an

independent review panel was convened of individuals with expertise in these issues. Application of the new geological sequestration assessment methodology to evaluate the Nation's potential resource of geological storage began in 2010 after revision of the methodology based upon the external review.

Biological Carbon Sequestration — USGS is leading a Department of the Interior task to develop a methodology for a *National Assessment of Biological Carbon Sequestration Resources*. This activity, authorized by the EISA, was initiated in 2009. In order to complete the assessment methodology in 2010, the following activities were conducted:

- USGS scientists met with natural resource managers and other stakeholders from Interior (BLM, NPS, FWS, BIA, MMS), USDA, DOE, EPA, State agencies, and private industry to identify key questions and concerns about a national assessment of biological carbon sequestration resources. This was an integral part of the process of developing the assessment methodology.
- USGS geospatial data experts compiled and integrated existing spatial datasets and inventories related to current and recent historical ecosystem carbon storage, greenhouse gas fluxes, and controlling processes (e.g. land use change and wildland fires). This activity utilized existing USGS and Interior land cover and remote sensing applications, such as Land Cover Trends and LANDFIRE, and built on existing cooperation with USDA, EPA, and others. The resulting integrated geospatial database was used to estimate current and recent historical ecosystem carbon storage and greenhouse gas fluxes, and to spin up modeling runs to forecast future sequestration potentials.
- USGS scientists compiled spatially scenarios for potential future management decisions and policies relevant to carbon sequestration and greenhouse gas fluxes. The methodology enabled evaluations of effectiveness of these potential management actions or policies to optimize carbon sequestration. The timescale of these scenarios was limited by the timescale of available projections, typically on the order of a few decades. Uncertainties were estimated to the extent possible based on quantitative analysis and expert judgment.
- Teams of USGS and Interior experts, working in cooperation with stakeholders, developed methods for assessment of carbon sequestration and greenhouse gas fluxes in specific ecosystems and regions. These methods were consistent with current and recent historical trends, and quantified uncertainties including the risk of rapid carbon loss via processes such as wildfire, permafrost melt, and loss of estuarine sediments that may be exacerbated by climate change. Specific methods were reviewed by a national team of experts and stakeholders to assure that they will support a consistent and comprehensive national assessment methodology.
- USGS scientists, using expertise in working with geospatial data, remote sensing applications, and ecosystem modeling, developed a data/model system to describe storage and fluxes of carbon in relationship to climate change and land use for broad-scale landscapes. This system was refined in prototype applications using the scenarios and assessment methods described above. The system will be potentially capable of providing a framework for national assessment of biological carbon storage and

greenhouse gas fluxes. Initial work included the validation of prototype local to regional simulations for scientific quality and for usefulness in carbon management.

- Concurrent with the development of the assessment methodology, there was a research task to identify key technical issues and data gaps. This activity drew on lessons learned from all of the above activities.

The USGS will continue to work with partners to prioritize areas and ecosystems most promising for managed sequestration or most at risk for rapid loss of carbon. These areas and ecosystems will have highest priority for initial implementation of the national assessment. During the first stages of the assessment, particular emphasis will be placed on evaluating the effectiveness of potential biological sequestration management and policy scenarios.

Environmental Restoration in the Chesapeake Bay — President Obama issued an Executive Order (E.O.) in May, 2009 to have the Federal Government lead the effort to restore and protect the Chesapeake Bay, the Nation's largest estuary. The E.O. calls for a new restoration strategy by May, 2010 and for the USGS and NOAA to co-lead Federal activities to "Coordinate Tools and Science for Strategic Decision Making" that would support the major goals of the draft E.O. strategy:

- Restore Clean Water;
- Conserve Treasured Places and Restore Habitats, Fish, and Wildlife; and
- Adapt for the Impacts of Climate Change.

In 2009, the USGS lead the development, working with NOAA, of new approaches to address adapting to climate change and coordinating tools and science for decisionmaking for Federal activities in the draft E.O. strategy. The draft E.O. strategy was under review and released in 2010. As described in the draft strategy, USGS and NOAA will engage and assist State, local and private partners in a collective effort to respond to the impacts of a changing climate in the Chesapeake Bay and watershed and provide enhanced tools and science for ecosystem management. During 2010, the USGS also realigned its science efforts to address the highest needs of the draft strategy and updated its science plan for 2011-2016. Also in 2010, new agricultural watersheds will be selected to support new USDA "showcase" watersheds that are part of the draft EO strategy.



Skipjacks on the Chesapeake Bay harvesting oysters

Program Performance Overview

The Global Change activity supports the Department’s goal of improving the understanding of national ecosystems and resources through integrated interdisciplinary assessment. To measure progress in achieving the intermediate outcome goal of ensuring the quality and relevance of science information and data to support decisionmaking, USGS tracks the following Performance Improvement measures: number of gigabytes collected annually, number of gigabytes managed and distributed cumulatively, number of systematic analyses and investigations completed, and number of formal workshops or training provided to customers.

End Outcome Goal 1.4: Improve the understanding of National Ecosystems and Resources through Integrated Interdisciplinary assessment.

End Outcome Measure / Intermediate Measure /	Type	2006 Actual	2007 Actual	2008 Actual	2009 Plan	2009 Actual	2010 Plan	2011 Plan	Change from 2010 Plan to 2011	Long-term Target 2012
Intermediate Outcome Measures and Bureau and Outcome Measures										
Ensure availability of long-term environment and natural resource information, data and systematic analyses needed by land and resource managers for informed decisionmaking										
% of targeted land cover trends national assessment syntheses, research plans, or science strategies that are published (Global Change)	C	UNK	UNK	UNK	20% (1/5)	20% (1/5)	40% (2/5)	60% (3/5)	+20%	80% (4/5)
% of surface area with temporal and spatial monitoring, research, and assessment/data coverage to meet land use planning and monitoring requirements (Number of completed eco-region assessments out of a total of 84 eco-regions).	C	48%	61% (51/84)	71% (60/84)	86% (72/84)	86% (72/84)	100% (84/84)	Completed in 2010	--	NA
% of targeted geographic areas with temporal and spatial research, assessment and modeling of fish, wildlife and their habitats response to climate change to meet identified climate change adaptation planning and management needs (NCCWSC)	C	UNK	UNK	60% (3/5)	60% (6/10)	60% (6/10)	83% (25/30)	88% (35/40)	+5%	95% (38/40)

Global Change

End Outcome Measure / Intermediate Measure /	Type	2006 Actual	2007 Actual	2008 Actual	2009 Plan	2009 Actual	2010 Plan	2011 Plan	Change from 2010 Plan to 2011	Long-term Target 2012
Comments	This measure has been reworded and has a new baseline. A single year authorization in 2008 funded the inaugural workshop and five demonstration projects with 3/5 completed in 2008. Funding in 2009 allowed for three regional workshops, a final NCCWSC national workshop to finalize the CSC concept, two additional 2008 projects completed, and establishment of the national center for a total of 6 of 10 planned accomplishments (6/10). Three CSCs were established in 2010, twenty-two multi-year projects developed with stake-holder/ partner input to achieve almost full geographic coverage of the U.S. (25/30) with the denominator reflecting the anticipated additional five regional CSCs for full national coverage. The transition from regional CSC development to research activities continues in 2011 with establishment of two more regional CSCs, completion of the 2009 projects (22), 2010 projects (9), and two climate change science workshops (2) in 2010. The denominator (40) is estimated from anticipated funding levels and research outcomes of approximately five major partnership outcomes per each CSC. The 2012 38/40 reflects establishment of the final three CSC and completion of all ongoing projects. During development, establishment of the partnerships and collaboration to develop the geographic focus for project was the intermediate outcome. Out year performance will be based on research in the targeted geographic areas identified by regional management partners and conservation cooperatives and prioritized at the national level and estimated to be five major efforts per CSC.									
Intermediate Outcome Measures and Bureau and Outcome Measures										
Ensure the quality and relevance of science information and data to support decision making										
% of studies validated through appropriate peer review (SP)	A	100%	100%	100% (7/7)	100% (91/91)	-	100% (121/121)	100% (153/153)	0%	100% (150/150)
Efficiency and Other Output Measures										
# of gigabytes collected annually (Global Change)	C	2.8	2.8	2.8	2.8	2.9	2.8	2.8	0	2.8
# of gigabytes managed and distributed cumulatively (Global Change)	C	13.8	16.6	19.4	22.2	22.3	25	27	+2	29
# of systematic analyses & investigations completed (Global Change)	A	UNK	UNK	7	91	93	121	153	+32	150
Total actual/ projected cost (\$000)		--	--	\$1,750	22750	\$23,250	\$30,250	\$38,250	+\$8,000	+\$37,500
Actual/projected cost per scientific report or other product (whole dollars)		--	--	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	0	\$250,000
# of formal workshops or training provided to customers (Global Change)	A	UNK	UNK	3	15	15	30	42	+12	40
Total Projected Cost (\$000)		--	--	\$75	\$375	\$375	\$750	\$1,050	+\$300	\$1,000
Projected Cost per Workshop (whole dollars)		--	--	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	0	+\$25,000
% of CEN established relative to current target (Global Change)	C	UNK	UNK	1% (0.2/20)	5% (1/20)	3% (0.6/20)	5% (1/20)	7.5% (1.5/ 20)	+2.5%	10% (2/20)
Comment	This measure has been reworded and has a new baseline. Optimal network includes planning, negotiated collaborations, development and execution of pilot programs, regional stakeholder workshops, topical science workshops, regional topical assessments and uncertainty analyses, determination of data gaps for optimized network, and filling of gaps in infrastructure or capacity. Support services include oversight, data management, quality control, synthesis, and decision support. The 2012 network represents Phase 1 of a multi-year plan and only completes a portion of the optimized national network (roughly 5-10%)									

End Outcome Measure / Intermediate Measure /	Type	2006 Actual	2007 Actual	2008 Actual	2009 Plan	2009 Actual	2010 Plan	2011 Plan	Change from 2010 Plan to 2011	Long-term Target 2012
# of Regional DOI CSCs established		UNK	UNK	UNK	UNK	UNK	3	6	+3	2

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Science Support

	2009 Actual	2009 Recovery Act ³	2010 Enacted	2011			Change From 2010 (+/-)
				DOI-Wide Changes ^{1, 2} (+/-)	Program Changes (+/-)	Budget Request	
Science Support (\$000)	67,430	3,788	69,225	+8,159	0	77,384	+8,159
<i>Total FTE</i>	376	9	375	+56	0	431	+56

1) \$1,100 in fixed costs is absorbed.
 2) See the General Statement and Section G for Details on DOI-wide Changes.
 3) A new treasury account was created for the Recovery Act appropriations; direct allocations to programs were not made.

Justification of 2011 Program Changes

The 2011 budget request for the Science Support Activity is \$77,384,000 and 431 FTE. There are no program changes proposed in Science Support in 2011.

Technical Adjustments

Regional Executive Staff

A technical adjustment is proposed that would move \$8,470,000 and 51 FTE from the Biology, Geography, Geology, Water and Global Change Activities to the Science Support Activity (salary, benefits and operating cost for the nine Regional Executives' staffs). Effective October 1, 2007, the USGS transitioned to an organizational structure in which the Regional Executives shifted from a single disciplinary focus in each region to a multidisciplinary focus in a geographic area. Regional Executives were realigned in order to provide oversight for all USGS organizations located within a geographic area of responsibility. This change was to encourage and facilitate integrated science within the bureau and foster partnerships to better accomplish our mission. The regional realignment also affected the reporting of Regional Safety Officer positions and assigned roles and responsibilities. To sustain and continue to meet and exceed safety and healthy working conditions and promote a culture that recognizes and prevents workplace hazards, the adjustment is proposed to realign funds to better fit the new realignment model. Effective 2008, the Regional Executive staffs and Safety staff were no longer funded by a single discipline, instead funded by shared support from all USGS disciplines. This adjustment is proposed to realign the funds into one activity. For details, see Section G, Surveys, Investigations, and Research.

There is no performance change as a result of this proposed technical adjustment.

Earth Resources and Observation Center Technical Adjustment

Geography (-\$284,000 / -5 FTE)

Science Support (+ \$284,000 / +5 FTE)

A technical adjustment is proposed to move \$284,000 and five FTE from Geography to Science Support related to contract support provided to the Earth Resources and Observation Center. Effective fiscal year 2008, five contracting support personnel were realigned to the Office of

Science Support

Administrative Policy and Service. This action resulted from departmental requirements to have all contracting staff with increased warrant authority report directly to an individual in the GS-1102 contracting series. For details, see Section G, Surveys, Investigations, and Research.

There is no change to performance as a result of this proposed technical adjustment.

Program Overview

Science Support funds the executive and managerial direction of the USGS, as well as bureau sustaining support services. Science Support has four components: leadership activities, the Office of Administrative Policy and Services, the Office of Human Capital, and bureauwide costs.

Key indications of USGS performance are reflected in its goals for increasing accountability, and advancing modernization and integration.

For details on changes to performance measures, see the table at the end of this section.

Leadership Activities

The Director serves as Chief Executive Officer of the USGS with ultimate authority for all strategy, policy, and program decisions. This includes direct involvement in program, budget, finance, and communications development. The Deputy Director serves as Chief Operating Officer supporting the Director in implementing policy decisions, with a focus on operational issues.

The Executive Leadership Team is composed of fifteen senior policy-level leaders of the USGS including the Director and Deputy Director. It identifies issues of interest and concern to the USGS enterprise and functions as a senior advisory body to the Director and as the principal mechanism for building an interdisciplinary culture.

Associate Directors have oversight of national programs, establish program direction and goals, and serve as science advisors to the Director in their respective program areas. Regional Directors are responsible for implementing USGS goals while meeting regional science and operational needs. The USGS uses regional science programs and integrated science centers as tools to effectively coordinate program activities in addressing regional and multi-disciplinary science issues.

The Office of Budget and Performance (OBP) reports to the Director and provides bureau-level advice and staff assistance to the Director and executive leadership. This advice includes bureauwide policy, guidance, and direction for:

- Budget formulation, execution, presentation, and advocacy with the Department of the Interior (Interior), Office of Management and Budget, and Congressional Appropriations Committees; and,
- Strategic planning and performance management.

Comprising two teams, the Budget Formulation and Execution (BF&E) Team and the Planning Performance Management (PPM) Team, the OBP integrates budget and performance to help the USGS perform at a high standard. The BF&E Team provides guidance to senior managers

in formulating annual budget requests, integrates budget and performance metrics, and communicates proposals to Interior, OMB, and the Congress. The PPM Team develops awareness and understanding and recommends strategy to ensure USGS compliance with Executive and Legislative Branch mandates for budget and performance integration and program performance accountability to preserve the public trust.

The Office of Communications (OC) reports to the Director and communicates information about USGS research, programs, activities and products, and liaison and close coordination between the USGS and the Congress, Interior, and other bureaus for congressional and public affairs matters.

The OC provides the bureau with proactive, targeted communication guidance and support to keep all audiences, from USGS employees to the White House, informed about USGS activities, programs, and research.

Office of Administrative Policy and Services (APS) provides bureau-level policy, program direction, and leadership for science support. These support services include accounting and fiscal management; general services and office support; security; safety and occupational health; contract negotiation and administration; grant administration; technology transfer; facilities and property management; environmental protection; and business information systems management. The Associate Director for APS also serves as the USGS Chief Financial Officer and USGS Designated Agency Safety and Health Official.

Office of Accounting and Financial Management (OAFM) — OAFM consists of the branches of Accounting Operations, Systems Coordination and Fiscal Services. The Accounting Operations Branch provides bureauwide financial management and administrative support for payments, collections, and travel. The Systems Coordination Branch provides technical support, training and management control for the users of the Federal Financial System. The Branch of Fiscal Services provides bureau oversight and monitoring of fiscal programs, financial operating procedures, and allocation management in coordination with the Regional Fiscal Services staffs. Together they provide advice, formulation, and direction of bureauwide accounting and financial management designed to meet the needs of management in achieving overall program objectives and to ensure full compliance with applicable laws and regulations.

Office of Management Services (OMS) — OMS is responsible for providing staff advice, direction, and guidance in the areas of space and facilities management, security, property management, environmental protection, supply management, and other administrative services programs. This office formulates policies and procedures within these areas to be implemented on a bureauwide basis, and provides general staff advice and assistance to the Associate Director, APS. The Chief, OMS serves as the bureau facilities program coordinator.

Office of Policy and Analysis (OPA) — The Office of Policy and Analysis is responsible for management of the USGS's directives system including the Survey Manual, Handbooks, and Instructional Memoranda. The Office manages the USGS Technology Transfer Program, including the preparation, review, and approval of Cooperative Research and Development Agreements and Technology Assistance Agreements; evaluation of USGS inventions for patentability and commerciality and preparation of patent applications and non-disclosure agreements; and execution of non-exclusive, exclusive, and partially exclusive licenses to companies interested in

Science Support

marketing, manufacturing, or using USGS developed technology. OPA also reviews non-standard cooperative and reimbursable agreements for compliance with statutory and regulatory requirements.

Office Acquisition and Grants (OAG) — OAG has primary responsibility for the effectiveness and integrity of the USGS acquisition and financial assistance functions as well as management of the operational acquisition and financial assistance support to Headquarters and national programs. Included among its responsibilities are the following: promulgation of acquisition and financial assistance related directives, including relevant Survey Manual Chapters and internal policy development; appointment of Contracting Officers and Contracting Officers Representatives; performance measurement and evaluation of the bureau acquisition and financial assistance functions; advancement, management and reporting on the Business Economic Develop Program, including socio-economic goals; management of the bureau Charge Card Program, including administration of the purchase business line; and management and operational support of the acquisition and financial assistance automated systems, including Interior's Electronic Acquisition System.

Office of Internal Controls and Reporting (OICR) — The OICR is responsible for evaluating the adequacy of the internal control environment within the USGS, including the effectiveness of existing policies and procedures and operational activities, in addition to performing internal and external financial reporting for the bureau. OICR develops procedures to ensure USGS compliance with OMB Circular A-123, and provides assistance in evaluating internal practices and policy changes on topics relevant to all USGS operations. OICR is also responsible for maintaining the integrity of the general ledger of the USGS, developing reports using cost accounting models, reporting to Treasury and Interior, and producing the USGS contribution to Interior's Agency Financial Report (AFR). OICR works closely with OBP-PPM in implementing A-123 and contributing the AFR.

Office of Business Information Systems (OBIS) — OBIS administers a comprehensive program in support of Interior and the USGS corporate information technology, information management and information resource management activities and requirements for administrative policy and services. Support is provided in the areas of centralized and distributed computing, FISMA related application security testing and evaluations, value added applications, as well as leadership, technical direction, coordination and policy support to the Office of the Director, APS, and other USGS programs as needed.

Office of Human Capital (OHC)

OHC provides bureau-level leadership, program direction, and staff support for human capital programs, including equal employment opportunity, diversity and affirmative employment programs, personnel management policy and operations; employee development, competency management and technical, managerial and leadership training and development.

Bureauwide Costs

Bureau sustaining costs are budgeted centrally. The budget for these costs is formulated annually based on past actual expenses and an estimate of future need. Certain essential program support costs are relatively uncontrollable by the USGS and, because of the nature of

organization and billing arrangements, are more effectively and efficiently managed centrally (e.g., payments to Interior for services provided through Interior's Working Capital Fund for departmentwide centralized services, payments to Interior's National Business Center (NBC) for administrative systems and automated data processing services provided through the NBC Working Capital Fund). Other bureau-level costs include: 1) payments to Interior of Labor for unemployment compensation and ongoing injury compensation; and, 2) USGS administration of six specialized safety (aviation, diving, firearms, large vessel, radiation, watercraft) programs including enhancements to DOI Learn online safety and health training, holding regional collateral duty workshops, and joint DOI/USGS implementation of exposure monitoring and medical surveillance programs.

2011 Program Performance

Highlights of USGS efforts, including initiatives, bureau-level policy, program direction, and leadership activities, in 2009 and 2010 and how these efforts relate to planned program performance in 2011 follow:

Financial Management — The USGS created exception reports that identify the problem areas that management needs to focus on. These financial management tools give front line, cost center, regional, and headquarters managers the ability to quickly and accurately track and forecast the financial status of individual projects, cost centers, and the programs. This information has proven to be essential in conducting quarterly project and annual cost center management reviews. Effective with the audit cycle for 2009, the USGS was included in Interior's consolidated audit process and thus did not receive a bureau-level independent auditor's report and did not produce a bureau Performance and Accountability Report. During 2009 the independent auditors identified weaknesses with information technology (IT) controls which were included in Interior's overall significant deficiency relating to IT controls over financial management systems. In 2010 and 2011, the USGS will continue to focus on improving financial management activities.

Real Property — The improvement of policy, guidance, and facility planning is the primary focus in 2011 for establishing management processes, tools, concepts, and context for continuing the pursuit of effective and economic real property asset management. The USGS updated the bureau Asset Management Plan in 2010 to align it with current regional and science center Site-Specific Asset Business Plans and with the most recent departmental guidance. To assist managers in making informed investment decisions, the USGS has established targets for improving our asset management performance and will incorporate these into the USGS's Asset Management Plan in 2011. With progress already made in reducing the number of unutilized and underutilized assets, the USGS will continue emphasis in 2011 on its performance regarding elimination of unneeded assets.

Transportation Management — In 2011, the USGS will continue to work towards meeting its transportation management goals. Information obtained from the 2010 Fleet Inventory and Utilization Data Validation effort will be analyzed to form recommendations to Cost Center Managers optimizing the placement of vehicles to increase vehicle sharing and the use of alternative fuels. The USGS will work to implement the long term goals of the Fleet Management Strategic Plan. A Fleet Acquisition and Replacement Plan was implemented in 2010 and will be expanded in 2011 as a strategy for acquiring higher fuel economy vehicles and eliminating growth in the USGS Fleet.

Energy Efficiency and Environmental Management

— In 2011, the USGS will continue to work to achieve the goals of the Energy Independence and Security Act of 2007 and Executive Order No. 13514 of October 5, 2009, *Federal Leadership In Environmental, Energy, and Economic Performance*. The USGS will sustain the current reduction of 26 percent in energy intensity at all facilities compared with the 2003 baseline. This reduction exceeds the percent reduction target established for 2010. Also, the USGS reduced water intensity by 10 percent compared with the 2007 baseline, exceeding the goal of 6 percent for 2010. To the extent practical and technically feasible, the USGS will seek to obtain a minimum of 5 percent of our electricity from renewable sources, with 2.5 percent from new renewable sources. In 2011, the USGS will continue work related to goals established in 2003 using the Environmental Management System. The USGS will continue implementation of mission-focused environmental management systems at appropriate organizational levels and use these tools to become fully operational by the end of 2011. The USGS will make every effort to meet the goals outlined in Executive Order No. 13514 of October 5, 2009, *Federal Leadership In Environmental, Energy, and Economic Performance*, including reduction of greenhouse gas emissions associated with USGS activities. The USGS will systematically manage environmental risks while minimizing cost, improve performance and enhance cooperation with our many stakeholders, partners and the public. Best business practices will be shared across Interior.

National Center Receives Water Award -

In 2009, a small group of USGS employees won a prestigious Department of Energy Federal Energy and Water Management Award in the water conservation category. The group implemented projects and measures that achieved dramatic water savings at the USGS National Center in Reston, Virginia. The total 2008 savings were 2.9 million gallons of water, or 14.4 percent below 2007 consumption levels. The savings would be more than enough water to supply 25 typical households for a full year. The corresponding cost savings were \$21,700 or 25 percent of annual water costs. Savings stemmed from 5 primary projects: a closed-loop cooling water retrofit for laboratory test equipment; low-flow plumbing fixture replacements; landscape irrigation modifications; cooling tower process improvements; and cafeteria sustainability measures.

Safety and Health — The Occupational Safety and Health Act of 1970 requires establishment of a safety and health program to reduce work related personnel injuries, illnesses and associated lost production, wages, medical expenses and disability compensation payments. The USGS national program administration for this function is housed in APS with staff providing oversight of the specialized safety program, the bureau and regional based policy development, program assessment, compliance inspections, industrial hygiene guidance, training and educational support services.

In 2011, the USGS will focus resources toward conducting regional and field program assessment and compliance inspections in accordance with OMB Circular A-123; abating significant safety and health findings and deficiencies defined by new DOI Risk Assessment System Risk Assessment Codes and linked to the Five-Year Deferred Maintenance and Capital Improvement Plan; implementing Radiation Safety program enhancements; conducting joint DOI/USGS implementation of exposure monitoring and medical surveillance programs; enhancing DOI Learn online safety and health training, and holding regional collateral duty workshops.

Technology Transfer — The Federal Technology Transfer Act, 15 USC 3710 as amended, requires each Federal laboratory having 200 or more full-time scientific, engineering and related technical positions to establish a research and technology application function. Within the USGS this function is housed in the OPA where two FTEs service USGS Science Centers and offices throughout the country.

In 2011, the USGS will continue negotiating and drafting Cooperative Research and Development Agreements (CRADAs), Technical Assistance Agreements, Facility Use Agreements, Material Transfer Agreements, and Patent Licenses. This office also manages the USGS intellectual property and inventions program; markets USGS technology opportunities and assistance to industry, non-profits, academic institutions, and State agencies; and provides training to USGS personnel on technology transfer and intellectual property protection. At the end of 2009, the USGS had a total of 52 current patents. During 2009, the U.S. Patent and Trademark Office accepted filings for three new USGS patent applications and issued four patents to the USGS. The table below summarizes the number of projects in 2009.

Technology Transfer 2009	Total Number	Private	Non-Profits/ Academic Institutions	Gov't/ International Entities	Partner Contributions (\$000)	USGS In-Kind Contribution (\$000)
CRADAS	10	9	0/0	0/1	\$2,536	\$ 2,100
Other Technology Agreements	89	42	16/15	8/8	\$3,733	\$ 1,250
Patent Licenses	19	15	0/4	0/0	\$ 79	\$ 0

USGS science and research contributes to a broad range of valuable collaborative projects in the private and academic sector. With the expansion of its facility use program, the USGS has increased to 27 the number of specialty analytical laboratory services providing unique capabilities to U.S., foreign partners and academia.

Financial and Business Management System (FBMS) — Having begun implementation activities in the spring of 2009, the USGS will deploy the FBMS effective with 2011 business. As the cornerstone to Interior’s future financial and business management, the FBMS functionality spans budgeting, project management, acquisitions, financial assistance, core finance, real and personal property and reporting including activity based-costing. Deployment of the FBMS will support and foster Interior-wide common business practices.

Human Capital — In 2011, the OHC will continue to focus on Workforce Planning and Succession Planning.

The USGS uses a systematic workforce planning approach as the foundation for the development of more detailed workforce plans at the science center and office level. The USGS will continue to work with managers in offices, science centers, and regions to conduct workforce analysis and planning. Additionally, the USGS will implement a succession planning strategy to complement the workforce planning model to take a more holistic, strategic approach to human capital management and planning.

In 2009, the USGS finished developing standardized queries, published them on the USGS Intranet, along with summary workforce data and Interior data, each spanning 10 years. These data allow managers to use standard queries to pull data at their organizational level and conduct workforce planning analyses. Additionally, a set of standardized definitions and formulas were developed to create a glossary of terms, metrics and measures.

In 2009, the OHC began working with managers to identify procedures that incorporate workforce planning into an integrated program review process. This effort continued into 2010

and a strategy was developed that incorporated structured decisionmaking into the business practices at the science center and regional levels and allowed for adaptive management to occur. This is not a single occurring event; it is a continuous process.

Leadership Development — The USGS will continue to develop leadership skills and behaviors at all levels of the organization in 2010 and 2011. A survey was conducted in early 2009 to determine areas for improvement in the leadership development nomination process, to focus attention on increasing diversity, and to improve the USGS's internal leadership development training program. In 2010, the program expanded to include a fresh new cadre of leadership instructors, comprised of USGS leadership 101 and 201 graduates. Participation by graduates becomes their USGS 301 learning experience. In addition to internal training focused on leadership skills, the USGS is expanding its internal supervisory development program. This program is shepherded by a Human Capital Joint Planning Team in partnership with a Supervisory Development Review Team (SDRT). The SDRT is comprised of exemplary managers and supervisors from across the USGS who truth-test ideas and provide field input. A supervisory mentoring component was piloted in 2009 and in 2010 and 2011 the USGS will continue to offer each new supervisor a seasoned mentor who can help support them through their first year of supervision. Additionally, work is being done, collaboratively, among Employee Development and Human Resources Offices within Interior to design a supervision course for probationary supervisors which could be utilized by any bureau within Interior. This course was piloted in August 2010.

Competency Management — In 2009 and 2010, the USGS worked with Interior to develop methodology for conducting competency studies that build models and inform decisionmaking within human resource systems. The USGS initiated the development of competency models and conducted baseline assessments on modeled occupations and roles. The USGS will continue to work with Interior to identify system requirements to embed competencies in talent management and Human Resources (HR) systems. The USGS will continue placing major emphasis on ensuring that the USGS is using competencies in the management of human capital operations in 2011.

- **Mission Critical Competency Management** — The USGS will continue to work with Interior toward developing and implementing competency models for mission critical occupations through 2011. In addition, the USGS will conduct a second assessment and gap analysis on occupations modeled in 2010 to identify progress. The USGS will work with Interior to refine information reporting capabilities, link identified skill needs to course listings, and other developmental opportunities, and help managers use this information to strategically plan for the use of training and development dollars for high priority skill development needs through the use of a learning management system.
- **Core Competencies for Managers** — In 2010, the USGS continued to use the Core Competencies for Managers Model; develop structured interview questions and input to the online USA JOBS for hiring into supervisory and managerial positions. The USGS will assess supervisory and managerial competencies to set priorities for training and development to increase supervisory and managerial performance at all levels. In 2011, the USGS will continue to implement core competencies for managers and supervisors, placing additional emphasis on the performance management and partnership and collaboration skills.
- **Partnership and Collaboration Competencies** — In 2010, the USGS continued to support a community of practice on partnering and collaboration competencies

providing ongoing development of partnerships and collaboration. In 2011, the USGS will continue to build on these competencies by incorporating the topic into future training courses. In addition, the USGS will be focusing on partnership and collaboration competencies during the development of mission critical occupation competency models. The Human Capital Office will continue to identify the competencies, conduct gap analysis, develop and implement a plan to close the gaps, and measure the results.

- **Tools for Managers** — During 2011, the USGS will continue to support managers in the use of online tools provided through Interior’s learning management system to assess skills and workforce competencies; to develop succession strategies, to prioritize and deliver training, and development; and to develop technology enabled learning to meet high priority dispersed training needs.

Workforce Diversity — Improving workforce diversity is a priority for the USGS and a significant workforce planning issue. The USGS continues to implement strategies to comply with the requirements of the Equal Employment Opportunity Commission's Management Directive (MD)–715, particularly with respect to the identification of barriers that prevent the accomplishment of diversity and affirmative employment goals. At the close of 2009, the USGS MD-715 self-assessment identified three deficiencies, which was an increase of one from the previous fiscal year. Although the bureau increased by one deficiency in 2009, the three remaining deficiencies are a marked improvement from the 22 deficiencies identified in 2004, the first year of the MD-715 report. During 2010 and 2011, the USGS will continue to implement strategies to comply with the requirements of MD-715.

The USGS Office of Equal Opportunity will continue posting workforce demographic information that assists HR and line managers with identifying trends and recruitment opportunities. The USGS will use its Diversity Council to help identify barriers to diversity and recommend solutions to management. The USGS will direct its recruitment efforts to provide additional fiscal resources to establish relationships with local colleges and universities with majors in the USGS programs and with high enrollments of minority students. The USGS will continue to focus on goals measured by outcomes in recruitment, retention, zero tolerance for illegal discrimination and accountability.

Science Support

Program Performance Overview

The Science Support Activity promotes the orderly and efficient conduct of USGS programs through organizational leadership, shared administrative support services, and promotion of common business practices. Key indications of USGS performance are reflected in the end outcome goals for increasing accountability, and advancing modernization/integration. To measure progress in achieving the intermediate outcome goals of improving financial management, human capital management, organizational reviews and acquisition, the USGS tracks intermediate measures such as obtain unqualified audit, percent of material weaknesses and material non-compliance issues that are corrected on schedule, number of MD-715 identified deficiencies that have been corrected, and the number of employees trained in collaboration and partnering competencies.

End Outcome Goal 5.1: Increase Accountability

End Outcome Measure / Intermediate Measure	Type	2006 Actual	2007 Actual	2008 Actual	2009 Plan	2009 Actual	2010 Plan	2011 Plan	Change from 2010 Plan to 2011	Long-term Target 2012
End Outcome Measures										
Obtain unqualified audit (SP)	A	Unqualified Opinion	-	Unqualified Opinion						
Establish and maintain an effective, risk-based internal control environment as defined by the Federal Manager's Financial Integrity Act (FMFIA) and revised OMB Circular A-123 (SP)	A	100%	100%	100%	100%	100%	100%	100%	0	100%
Intermediate Outcome Measures and Bureau and Outcome Measures Improved Financial Management										
<i>Corrective actions:</i> Percent of material weaknesses, and material non-compliance issues that are corrected on schedule (SP)	A	UNK	UNK	UNK	100%	100%	100%	100%	0	100%
<i>Corrective Actions:</i> Percent of established targets in Financial Performance Metrics met as defined in FAM No. 2003-015. (SP)	A	100%	100%	100%	100%	100%	100%	100%	0	100%

End Outcome Goal 5.2: Advance Modernization/Integration

End Outcome Measure / Intermediate Measure	Type	2006 Actual	2007 Actual	2008 Actual	2009 Plan	2009 Actual	2010 Plan	2011 Plan	Change from 2010 Plan to 2011	Long-term Target 2012
Intermediate Outcome Measures and Bureau and Outcome Measures Human Capital Management										
<i>Worker Competency:</i> % of employees who have resolved competency gaps in specified occupational groups identified as critical occupations in the Department (SP)	C	77%	77%	75%	75%	76.1%	76%	76%	0	76%
<i>Diversity:</i> The % of managers who have completed the 4-hour required minimum annual diversity/EEO training	A	UNK	39.2%	78%	30%	>33.59%	85%	85%	0	85%
<i>Diversity:</i> The # of MD-715 identified deficiencies that have been corrected	A	UNK	3	3	1	0	1	1	0	1
<i>Safe Workplace:</i> 3% annual reduction in the total injury incidence rate (SP)	A	2.838 injuries per 100 employees	2.586 injuries per 100 employees	3.086 injuries per 100 employees	(-3%) 2.993 injuries per 100 employees	2.599	2.904	(-3%) 2.817 injuries per 100 employees	(-3%) -.087 injuries per 100 employees	(-9%) 2.724 injuries per 100 employees
<i>Safe Workplace:</i> 3% annual reduction in the lost time injury incidence rate (SP)	A	.788 injuries per 100 employees	.669 injuries per 100 employees	.786 injuries per 100 employees	(-3%) .762 injuries per 100 employees	.491	.739	(-3%) .717 injuries per 100 employees	(-3%) -.022 injuries per 100 employees	(-9%) .693 injuries per 100 employees
<i>Collaboration Capacity:</i> # of volunteer hours per year supporting DOI mission activities (SP)	A	UNK	138,761	143,792	144,000	221,394	221,500	TBD	--	TBD
Comment	The USGS is currently rebaselining this measure based on new reporting capabilities being put in place.									

Science Support

End Outcome Measure / Intermediate Measure	Type	2006 Actual	2007 Actual	2008 Actual	2009 Plan	2009 Actual	2010 Plan	2011 Plan	Change from 2010 Plan to 2011	Long-term Target 2012
<i>Cooperative Conservation Internal Capacity: # of employees trained in collaboration and partnering competencies</i>	C	UNK	150 FTE	4,106 FTE	4,500 FTE	4,424 FTE	4,000 FTE	4,000 FTE	0	4,000 FTE
<i>Cooperative Conservation Internal Capacity: % of organizations that have trained and developed employees in collaboration and partnering competencies (SP)</i>	C	UNK	41%	46%	60%	48%	11%	45%	+34%	60%
<i>Cooperative Conservation External Capacity: # of conservation projects that actively involve the use of knowledge and skills of people in the area, and local resources in priority setting, planning, and implementation processes (SP)</i>	A	UNK	90	91	92	92	96	100	+4	100
<i>Museum Property: Percent total reduction of cataloguing and accessioning time (SS)</i>	A	UNK	UNK	UNK	25%	25%	25%	25%	0	25%
Intermediate Outcome Measures and Bureau and Outcome Measures Organizational Reviews and Acquisitions										
<i>Increase Competition: Percentage of eligible service contract actions over \$25,000 awarded as performance-based acquisitions (SP)</i>	A	25%	50%	57.1%	50%	52.8% of actions 66.9% of dollars	50%	50%	0	50%
Intermediate Outcome Measures and Bureau and Outcome Measures Performance-Budget Information										

Activity Summary

End Outcome Measure / Intermediate Measure	Type	2006 Actual	2007 Actual	2008 Actual	2009 Plan	2009 Actual	2010 Plan	2011 Plan	Change from 2010 Plan to 2011	Long-term Target 2012
% of programs with demonstrated use of performance measures in budget justifications and decisions (SP)	A	UNK	100%	100%	100%	100%	100%	100%	0	100%
% of programs that can estimate marginal cost of changing of performance (SP)	A	UNK	100%	100%	100%	100%	100%	100%	0	100%

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Facilities

	2009 Actual	2009 Recovery Act ³	2010 Enacted	2011			Change From 2010 (+/-)
				DOI-Wide Changes ^{1,2} (+/-)	Program Changes (+/-)	Budget Request	
Rental Payments and Operations and Maintenance (\$000)	94,802	0	99,076	-1,454	0	97,622	-1,454
<i>FTE</i>	54	0	54	0	0	54	0
Deferred Maintenance Capital Improvements (\$000)	7,321	62,307	7,321	-2,514	0	4,807	-2,514
<i>FTE</i>	0	0	0	0	0	0	0
Construction (\$000)	0	0	0	+2,500	0	2,500	+2,500
<i>FTE</i>	0	0	0	0	0	0	0
Maintaining America's Heritage ⁴ (\$000)	[37,455]	0	[30,989]	0	0	[30,429]	[-560]
<i>FTE</i>	0	0	0	0	0	0	0
Total Requirements (\$000)	102,123	62,307	106,397	-1,468	0	104,929	-1,468
Total FTE	54	0	54	0	0	54	0

1) \$1,169 in fixed costs is absorbed in the Rental Payments and Operations and Maintenance subactivity.

2) See the General Statement and Section G for Details on DOI-wide Changes.

3) A new treasury account was created for the Recovery Act appropriations; direct allocations to programs were not made.

4) Maintaining America's Heritage includes \$4,807 for Deferred Maintenance and Capital Improvements, including Facilities, Equipment, Maintenance Management System, Condition Assessment, and Project Planning; \$4,000 is the estimated amount spent from program dollars for facilities equipment maintenance needed for Hazards Network; \$2,500 for Construction; and \$19,122 for Operations and Maintenance.

Activity Summary

The 2011 budget request for the Facilities Activity is \$104,929,000 and 54 FTE. There are no program changes proposed in Facilities in 2011.

Assets are property consisting of lands, buildings, or other improvements attached to or within the land improvements, including fixtures permanently attached to the land or a structure on it. The Department of the Interior defines a facility as an individual building or structure. The U. S. Geological Survey (USGS) defines facilities to include all sites where USGS activities are housed in the performance of mission-related work. Facilities typically provide space for offices, laboratories, storage, parking, and shared support for cafeteria, conference rooms, and similar uses. The USGS also classifies its eight large (greater than 45 feet in length) research vessels as laboratory facilities. Owned facilities are usually part of an installation, for example, the Leetown Science Center, which includes all of the associated land, facilities, and structures.

Funds for this activity provide safe, functional workspace and facilities for accomplishing the Bureau's scientific mission. The appropriated funds included in this activity cover approximately 73 percent of recurring USGS facilities costs. Customers, through reimbursable funding provide approximately 24 percent, and USGS science programs provide the remaining 3 percent.

This activity supports the Department's goal of facilities improvement tracking outcomes such as; overall condition of building and structures; percent change in the operating costs per square foot of buildings that are "not-mission dependent" as reported in Federal Real Property Profile (FRPP) in the current fiscal year compared to the previous fiscal year; percent change in the total number of buildings reported as "under utilized" or "not utilized" in the Federal Real Property Profile, and the percent of assets targeted for disposal that were disposed. This activity also tracks outputs including "number of bureau condition assessments completed" (within a 5-year cycle), and "number of deferred maintenance and capital improvements."

Energy Management

In 2009, The Department of Energy awarded a group of USGS employees, The Department of Energy, Federal Energy and Water Management Award, in the Water Conservation category. The group led the implementation of water saving projects and measures that achieved dramatic water savings in 2008 at the J.W. Powell Building (National Center), in Reston, Va. The total savings were 2.9 million gallons of water, or 14.4 percent, as compared to 2007. The savings is more than enough water to supply 25 typical households for a full year. The corresponding cost savings was \$21,700 or 25 percent of annual water costs. To achieve these savings, 5 primary projects were implemented:

- a closed-loop cooling water retrofit for laboratory test equipment;
- a low-flow plumbing fixture replacement;
- a landscape irrigation modification;
- cooling tower process improvements; and
- cafeteria sustainability measures.

The goal for the facilities program is to meet Bureau science needs while optimizing facilities location, distribution, and use to control or reduce costs. Objectives for meeting this goal include:

- Coordinate facility planning with science planning to provide safe, high-quality workspace aligned with science needs;
- Development of Asset Business Plans to meet asset management goals, continue annual surveys and cyclic condition assessments;
- Meet performance targets by improving space utilization, controlling rent and operating costs, and releasing unneeded space;
- Reduce deferred maintenance by renovating and constructing buildings and other facilities to replace assets that are otherwise no longer cost-effective to operate;
- Establish an effective maintenance program at each owned facility to meet industry best practices;
- Increase co-location consistent with science program objectives; and
- Achieve energy performance goals.

Facility Planning — The Bureau updated its Site-Specific Asset Business Plans (ABP) to further support the bureau's Asset Management Plan (AMP). The ABPs are 5-to-10 year plans addressing specific needs of a field unit, campus, or region covering all assets reported in the FRPP. The USGS ABPs effectively address and articulate the life cycle issues and characteristics of a site's real property assets. These plans, prepared by local managers, provide facility and regional managers throughout the organization a micro-level view of these assets. The performance metrics and substantial inventory data included in ABPs are used by local

managers to aid daily decision-making. They are also used as annual action plans to direct bureau and regional resources where they are most needed in support of the USGS mission.

Bureau Systems — In 2011, USGS will deploy the Department-wide Financial and Business Management System (FBMS) which will include a real property functionality. FBMS will streamline the budget data collection process for facilities and increase the availability of much-needed management information on bureau real property holdings. FBMS will also interface with the existing facilities maintenance management system that is used to report operations and maintenance costs consistently across the Bureau.

Maintaining America's Heritage — DOI is committed to preserving and maintaining operational facilities and major equipment investments, as well as responsible stewardship of Interior's managed natural and cultural treasures. Maintaining America's Heritage is the funding used to maintain DOI's assets. The 2011 USGS budget request includes an estimated \$30 million for facilities and equipment maintenance and deferred maintenance under the "Maintaining America's Heritage". "Maintaining America's Heritage" is the Operations and Maintenance component and the Deferred Maintenance and Capital Improvements subactivity descriptions provide details on the immediate and long-term maintenance projects underway. The Deferred Maintenance and Capital Improvement five year plan ensures that facilities and equipment are functional, safe, and useful to the fullest extent of their lifecycle per departmental guidance.

Subactivity Overview

The Facilities Activity comprises three subactivities with the approval of the Construction subactivity.

The **Rental Payments and Operations and Maintenance** component provides for rental payments to the General Services Administration (GSA), to other Federal agencies, to private lessors, and to cooperators for space holdings nationwide and includes the recurring costs of providing for the basic operations and maintenance, security costs, and upkeep of facilities to ensure that they are maintained in compliance with applicable safety and other standards. The USGS occupies a total of 4.2 million square feet of rentable space in about 173 GSA buildings nationwide, making USGS one of the largest users of GSA space within the Department. The USGS acquires space directly at 98 other sites. The USGS has 34 installations with 280 buildings on approximately 2,187 acres.

The **Deferred Maintenance and Capital Improvement** subactivity funds are used to address the highest priority USGS facility and equipment needs per departmental guidance. The current funding level provides for approximately 15 percent of the facilities deferred maintenance backlog of \$32.4 million. The condition assessment program includes annual surveys and a cyclic process for comprehensive onsite inspections to document deferred maintenance.

Construction, a subactivity within facilities is new in 2011. A technical adjustment is proposed to establish a bureau-wide Construction subactivity providing the USGS with a mechanism for budgeting and planning for needed facility construction. Funds for this subactivity will be transferred from the Deferred Maintenance and Capital Improvement subactivity.

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Activity: Facilities

Subactivity: Rental Payments and Operations and Maintenance

	2009 Actual	2009 Recovery Act ³	2010 Enacted	2011			Change From 2010 (+/-)
				DOI-Wide Changes ^{1,2} (+/-)	Program Changes (+/-)	Budget Request	
Rental Payments and Operations and Maintenance (\$000)	94,802	0	99,076	-1,454	0	97,622	-1,454
FTE	54	0	54	0	0	54	0
1) \$1,169 in fixed costs is absorbed. 2) See the General Statement and Section G for Details on DOI-wide Changes. 3) A new treasury account was created for the Recovery Act appropriations; direct allocations to programs were not made.							

Justification of 2011 Program Changes for Rental Payments and Operations and Maintenance Subactivity

The 2011 budget request for the Rental Payments and Operations and Maintenance subactivity is \$97,622,000 and 54 FTE. There are no program changes proposed in the Rental Payments and Operations and Maintenance Program in 2011.

Program Overview

The Rental Payments and Operations and Maintenance subactivity provides the USGS with the funding needed to meet asset management goals and carry out Executive Order (EO) 13327: Federal Real Property Asset Management, dated February 6, 2004. The Operations and Maintenance (O&M) cost component provides for the reoccurring and basic facility operations, upkeep of facilities ensuring they are maintained in compliance with Federal, State, and local standards, and to ensure that facilities remain safe for USGS employees working at the facilities, as well as visiting partners and customers.

The Rental Payments cost component funds payments to GSA, other Federal sources, private lessors, and cooperators for space occupied by the USGS nationwide. The USGS has unique facility requirement for supporting science functions and relies heavily on GSA to meet needs such as providing modern laboratory space. The USGS occupies a total of 4.2 million square feet of rentable space in about 173 GSA buildings nationwide, making the USGS one of the largest users of GSA space within the Department. The USGS has 34 owned installations with 280 owned buildings on approximately 2,187 acres. This includes 11 biological science centers, five biological field and research stations, [the National Center for Earth Resources Observation Science] (EROS), 10 geomagnetic, seismic and volcano observatories, and seven miscellaneous owned properties, such as gauging stations, warehouses and a storage annex. The USGS also owns eight large research vessels having characteristics, costs, and operations and maintenance features that comport with the definition of a USGS facility. These vessels are considered to be laboratory facilities and meet the criteria for the Comprehensive Condition Assessment. These vessels exceed 45 feet in length and perform overnight research and support biology research, water resources investigations, and marine geology research vessels work; five on the Great Lakes, two in California, and one in Alaska.

Rental Payments and Operations Maintenance

The goal for the subactivity is to meet Bureau science needs while optimizing facilities location, distribution, and use to control or reduce costs. Objectives for meeting this goal include:

- Coordinate facility planning with science planning to provide safe, high-quality workspace aligned with science needs,
- Develop Asset Business Plans to meet assessment management goals,
- Meet performance targets by improving space utilization, controlling rent and operating costs, and releasing unneeded space, and
- Increase co-location consistent with science program objectives.

Approximately 84 percent of USGS rental costs for space holdings are provided through GSA, 10 percent through cooperative space arrangements, and the remaining rental costs are provided through other Federal agencies and private lessors.

Funds for this activity provide safe, functional workspace and facilities for accomplishing the Bureau's scientific mission. In 2009, the USGS spent \$129.0 million on Rent and O&M. Of these costs, 73 percent (\$94.8 million in 2009) are funded through the subactivity. The remaining costs are funded by reimbursable partners (24 percent) and science programs (3 percent). In 2009, the total facilities rent alone was \$101.2 million.

Although approximately 13 percent of Rent and O&M funds are spent on owned properties, these assets are the most unique and mission critical in the USGS portfolio. As part of the Strategic Facilities Master Plan, USGS facilities were ranked in terms of their mission dependency using a tool called the Asset Priority Index. Despite the fact that the largest concentrations of employees are in GSA-leased space in Reston, VA; Denver, CO; and Menlo Park, CA; 15 of the top 20 mission critical assets are owned assets in other locations. These owned assets have unique capabilities or are uniquely positioned on the landscape to address specific science issues.

The USGS key asset management goal is to improve the condition of owned facilities. Operations and maintenance functions include ongoing facility support that sustains day-to-day USGS scientific activities at owned installations ranging from major science centers with complex facilities such as laboratories and chemical storage to offices, garages, residences, research vessels, and other buildings.

Maintenance of facilities involves the upkeep of constructed USGS-owned facilities and structures and capitalized equipment necessary to maintain the useful life of the asset. This includes preventive maintenance; cyclic maintenance; repairs; rehabilitation; replacement of parts, components, or items of equipment associated with the facility; adjustment, lubrication, and cleaning (non-janitorial) of equipment associated with the facility; periodic inspection; painting; re-roofing; resurfacing. Also included are special safety inspections and other actions to ensure continuing service and to prevent breakdown; scheduled servicing of equipment (such as heating, ventilation, and air conditioning equipment); and maintenance for owned facility-related vehicles such as snowplows, and landscaping equipment vehicles.

Operational costs at the USGS owned and some leased facilities include:

- Electricity, water, and sewage;
- Gasoline, propane, natural gas, diesel, and oil;
- Janitorial services;
- Groundskeeping;

- Waste management and disposal;
- Vehicles solely operated in direct support of operating the facility;
- Annual certification for facility systems, such as fire systems, fire extinguishers, back flow preventers, and fume hoods; and
- Vessels - operations and maintenance, upkeep standards necessary to realize the anticipated useful life of the fixed asset, salaries and benefits of marine professionals operating the vessel, fuel, docking fees, inspections, minor repairs, cyclic maintenance, and at least one vessel haul out a year.

In addition to maintenance cost, salary costs associated with staff performing operations and maintenance activities are also included in the subactivity. Staff located at the facilities are responsible for the day-to-day operations of the facility and for maintaining it in operating order, including such operations as janitorial services, landscaping, snow removal, operation of the heating and air conditioning system, plumbing, electrical, elevator operations, fire alarm systems, fume hood operations, storage, and removal of hazardous materials, etc. These functions are carried out by government employees and service contracts.

Staff associated with operations and maintenance program management at the regions and headquarters are funded by the Science Support Activity as well as the Facilities Activity. Bureau policy for facilities operation and maintenance is established at headquarters in consultation with region staff. Headquarters staff establish standards for operations and maintenance, develop and implement plans for the bureau-wide systems (e.g., MAXIMO), develop deferred maintenance plans, develop contracts for operation and maintenance services and cost modeling, formulate regional and bureau-wide operation and maintenance budgets, and respond to departmental and OMB reporting requirements.

The Rental Payments and Operations and Maintenance includes the following components:

USGS Investment Review Board (IRB) — The USGS IRB makes recommendations to the USGS Director on new and ongoing information technology and major facilities capital investments in order to create and maintain a Bureau investment portfolio that best supports USGS and Interior mission and strategic goals. IRB membership includes the Deputy Director (who chairs the body), Chief Financial Officer, Chief Information Officer, Director of the Office of Budget and Performance, the Associate Director for Human Capital, and executives representing the science disciplines, the regions, the field, and key USGS business activities. For facility investments, the IRB reviews proposed construction projects with a life cycle cost of \$2.0 million or more, and all space transactions (occupancy agreements, leases, etc.) with a life cycle cost of \$5.0 million or more. Regional boards review proposed investments below this threshold.

2011 Program Performance

Space Savings — Space savings is integral to Rent and Operations management. The USGS realizes its space savings when locations are able to consolidate space or relocate to reduced space at a reduced rate.

Space Management — The USGS 5-Year Space Management Plan supports the bureau's Asset Management Plan and Site Specific Asset Business Plans and provides a framework, strategic vision, and plan of action for effective bureau space management of GSA-provided space, USGS direct leases, and owned property. It is used by USGS management to

Rental Payments and Operations Maintenance

implement Bureau space goals, including consolidation, collocation, and disposal. Information contained in the Asset Management Plan is focused on mission dependency and program requirements for space.

In 2011, the USGS will continue developing planning requirements outlined in the Department's Asset Management rolling 3-year timeline. These include establishing targets for meeting performance metrics identified by the Federal Real Property Council; reporting accomplishments in asset performance; and implementing a standardized practice for calculating the current replacement value of facilities and repair projects.

Facility Maintenance Management System (FMMS) — The FMMS is the USGS implementation of the commercial maintenance management software application Maximo™. The Department has mandated use of Maximo™ within all bureaus as the standard maintenance management solution.

The FMMS is used primarily for recording day-to-maintenance activities and establishing preventive maintenance schedules. It supports the efficient operation and maintenance of USGS facilities by providing accurate maintenance information to local, regional, and national facility managers. It includes a mobile work order solution used by maintenance technicians in the field to document maintenance activities on-site. Use of the FMMS supports the USGS' Asset Management Plan (AMP) by establishing an inventory and maintenance history on all constructed assets and associated equipment, standardizing maintenance business practices, facilitating maintenance reporting and data analysis, and supporting budgeting and the 5-year deferred maintenance capital improvement planning process.

In 2011, the FMMS will produce the USGS' 5-Year Deferred Maintenance and Capital Improvement Plan. Additionally, FMMS will be enhanced to support the bureau comprehensive condition assessment program through the use of work orders to schedule condition assessment inspections, document findings, and facilitate deferred maintenance accomplishment reporting. Other planned enhancements include deploying FMMS to additional sites to expand use of the system within USGS, adding new functionality to improve equipment inventory management, and expanding reporting capabilities. Lastly, starting in FY 2011 an interface between FMMS and the Department's Financial and Business Management System will be implemented to provide an automated link between the two (2) systems. The interface will be initially focused on reconciling real property information, but will later be expanded to include work order cost data.

Operations and Maintenance Cost Modeling — Operations and maintenance cost modeling is the use of a representative amount of data to predict the outcome for a large amount of data. O&M models in conjunction with Asset Priority Index (API), Facility Condition Index (FCI), and utilization provide a basis for managers to reallocate existing O&M funds. Facility managers now have the opportunity to use O&M models based on industry standards to predict the cost of operating and maintaining an asset. Properly funding O&M is the first line of defense in preventing increases in deferred maintenance. In 2011, the additional cost models being developed in 2010 will be used for the allocation of operation and maintenance funding that is based on the cost modeling assigned to the assets.

Energy Management — The USGS is dedicated to achieving the energy and water reduction and renewable energy consumption goals set forth in the Energy Independence and Security Act of 2007 and EO 13514, "Federal Leadership in Environmental, Energy, and Economic

Performance”, and has implemented an energy management plan to guide programs toward meeting the mandated goals.

The USGS utilizes a contract for a Web-based system to assist in capturing, storing, and analyzing utility cost and consumption data. The contractor collects required energy data for USGS facilities that pay utility providers directly. Currently, 250 invoices are processed monthly through this system. This contract benefits USGS by providing electronic bill consolidation and processing into an Internet-accessible database; utility bill auditing; collection of current and historical energy data; utility bill discrepancy flagging; payment tracking; and generation of charts and reports. The ability to analyze energy cost and consumption patterns and identify opportunities is now available.

In 2010, USGS completed construction of an Energy Savings Performance Contract (ESPC) at the Great Lakes Science Center (GLSC) in Ann Arbor, MI. The major energy conservation measures (ECMs) for the project included: installing a geothermal heat pump system for heating and cooling; installing a building automation system to ensure efficient building operation; and lighting retrofits. The ECMs are projected to reduce the GLSC’s energy consumption by 30 to 35 percent. The total estimated project cost is \$1.5 million. The USGS avoided \$400 in emergency repairs for the old cooling towers and an additional \$2.3 million in deferred maintenance and capital improvement project costs.

The USGS will continue to work toward a targeted reduction (set by the Energy Independence and Security Act of 2007, the reduction is required by 2015) of 30 percent in energy intensity at all facilities from the 2003 baseline. By the end of 2010, USGS will exceed the target reduction of 15 percent. USGS will work to obtain a minimum of 5 percent of our energy from renewable sources in 2010. USGS continues to work to reduce water consumption by 2 percent annually as compared to the 2007 baseline established in EO 13423.

In 2010 and 2011, the USGS will continue energy conservation efforts begun in 2009. In 2011, energy funding will be used for energy audits and to initiate work on new ECMs. Planned ECMs include energy efficient lighting retrofits, heating, ventilation, and air conditioning improvements and replacements, and building envelope enhancements. This funding will support additional improvements in the overall energy management program and will help further reduce the bureau’s energy consumption and help maintain green on the scorecard.

This subactivity supports the Department goal of facilities improvement tracking outcomes such as; percent change in the operating cost per square foot of buildings that are “not-mission dependent” as reported in the Federal Real Property Profile (FRPP) in the current fiscal year compared to the previous fiscal year; percent change in the total number of buildings reported as “under utilized” or “not utilized” in the Federal Real Property Profile; and the percent of assets targeted for disposal that were disposed.

Rental Payments and Operations Maintenance

Program Performance Overview

Advance Modernization/Integration

End Outcome Measure / Intermediate Measure	Type	2006 Actual	2007 Actual	2008 Actual	2009 Plan	2009 Actual	2010 Plan	2011 Plan	Change from 2010 Plan to 2011	Long-term Target 2012
Intermediate Outcome Measures and Bureau and Outcome Measures										
Facilities Improvement										
Percent change in the Operating Costs (operations and maintenance costs) per square foot of buildings that are "Not-Mission Dependent" (NMD) as reported in the Federal Real Property Profile (FRPP) in the current fiscal year compared to the previous fiscal year. (SP)	A	\$3.15/sf 0%	\$3.03/sf -1.6%	\$ 2.38/sf - 1%	\$2.33/sf - 3%	\$1.11/sf -53%	\$1.08/sf -3%	\$1.04/sf -3%	\$0.04/sf -3%	\$2.07/sf -3%
Total Operations and Maintenance cost of Not-Mission Dependent Building	A	159	149	\$24	\$23	\$19.6	\$19.1	\$18.5	-\$0.6	\$19
Total Square Footage of buildings that are "Not-Mission Dependent" as reported in the FRPP	A	51	49	8.7	8.4	17.7	17.7	17.7	0	7.7
Comment	In 09 multiple assets were reclassified as Mission Dependand-Not Critical. This reduced the square footage of the Not-Mission Dependand assets.									
Percent change in the total number of buildings (office, warehouse, laboratory, and housing) reported as "Under Utilized" or "Not Utilized" in the Federal Real Property Profile (FRPP) in the current fiscal year compared to the previous fiscal year.	A	UNK	83%	-5%	-7.9%	-63%	-5%	-5%	0%	-5%
Number of buildings (office, warehouse, laboratory, and housing) reported as "Under /Not Utilized" USGS owned and direct lease.	A	13	21	20	15	7	6	5	-1	4

Activity: Facilities

Subactivity: Deferred Maintenance and Capital Improvement

	2009 Actual	2009 Recovery Act ³	2010 Enacted	2011			Change From 2010 (+/-)
				DOI-Wide Changes (+/-) ^{1,2}	Program Changes (+/-) ³	Budget Request	
Deferred Maintenance and Capital Improvement (\$000)	7,321	62,307	7,321	-2,514	0	4,807	-2,514
<i>FTE</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
1) \$0 in fixed costs is absorbed. 2) See the General Statement and Section G for Details on DOI-wide Changes. 3) A new treasury account was created for the Recovery Act appropriations; direct allocations to programs were not made.							

Justification of 2011 Program Changes for Deferred Maintenance and Capital Improvements

The 2011 budget request for the Deferred Maintenance and Capital Improvement subactivity is \$4,807,000 and 0 FTE. There are no program changes proposed in the Deferred Maintenance and Capital Improvement Program in 2011.

Program Overview

Deferred maintenance is operating or cyclic maintenance that was not performed when it should have been or when it was scheduled, and, which therefore, was put off or delayed for a future period. The Deferred Maintenance and Capital Improvements (DMCI) subactivity funds are used to address the highest priority USGS facility and equipment needs to conform to safety and environmental standards. At the requested funding level of \$4.8 million, approximately 15 percent of the facilities deferred maintenance backlog will be addressed. The condition assessment program for facilities includes annual surveys and a cyclic process for comprehensive onsite inspections to document deferred maintenance.

The current USGS deferred maintenance backlog was reduced by \$19 million in 2009 as a result of funding received through the American Recovery and Reinvestment Act (ARRA). Approximately \$30 million was allocated for deferred maintenance projects and an additional \$18 million for construction.

Through the asset management planning processing, the USGS is able to identify real property assets that are candidates for disposition. Any asset that is no longer critical to the mission, or that is in such poor condition, or that is no longer cost effective to maintain, will be identified for possible disposal.

The USGS is committed to the continual improvement of the stewardship of its assets. The primary goal is to provide a safe, comfortable, environment for the employee, visitors and contractors at USGS facilities. Improving the maintenance of existing facilities and equipment ensures the health and safety of the public and employees, protects the asset, and ensures compliance with building codes and standards. This program tracks the Facilities Condition, as measured by the Facilities Condition Index (FCI).

Deferred Maintenance and Capital Improvement

Facilities projects reflect the results of comprehensive evaluations conducted by independent architect and engineer firms. These installation-wide assessments are key to establishing core data on the condition of the USGS constructed assets.

The USGS has stewardship responsibility for unique mission equipment assets such as hazard-warning networks, river cableways, and stream gaging stations, requiring effective maintenance and capital investments to preserve functionality. Projects addressing these assets are included under the Equipment Section of the 5-Year DMCI Plan and are evaluated using the same safety criteria as constructed real property assets.

For 2011, remediation of the most critical health, safety, and resource-protection deficiencies continues to be the focus of the priority facility projects. In 2011, twenty-one facility deferred maintenance projects are proposed to be funded. The activity's goal is to reduce the deferred maintenance and capital improvement at facilities and establish an effective maintenance program at each owned facility to meet industry's best practices.

The USGS addresses the most critical deferred maintenance and capital improvement needs prioritized according to Department's guidelines. The 5-Year Plans are developed and updated on an annual basis at the bureau level using the uniform, Department-wide process for ranking both deferred maintenance and capital improvement projects needed to accomplish management objectives. This plan is subject to adjustments in out-years due to funding changes and revised priorities based on comprehensive facility condition assessments, annual condition surveys, and emergency needs. The goal of the 5-Year planning process is to focus its limited resources on projects that are both mission critical and in the most need of repair or replacement.

The condition assessment process identifies deferred maintenance needs and determines the current replacement value of constructed assets. Knowing the estimated cost of deferred maintenance and the replacement value of constructed assets allow the USGS to use the industry standard FCI as a method of measuring the condition and change of condition of facilities.). It is an indicator of the depleted value of capital assets.

When routine and cyclic maintenance is completed on schedule, the routine and cyclic maintenance projects do not become deferred maintenance. USGS has started modeling exercises to project the appropriate sustainment level of operations and maintenance funding that will allow identification of critical cyclical and preventive maintenance that is currently not being done.

This activity supports the Department's goal of facilities improvement tracking outcomes such as overall condition of buildings and structures. It also tracks outputs including number of bureau condition assessments completed (within a 5-year cycle).

2011 Deferred Maintenance and Capital Improvement Plan

The following table lists, in priority order, the proposed projects and equipment to be addressed by DMCI in 2011.

2011 Facility Projects (\$000)

<p>Newport Geophysical Observatory Newport, WA</p> <p>\$309</p>	<p>Replace and Extend Site-Wide Water System (G2009CAF100): Demo and replace the existing fire pump and engine. Remove existing fuel tank. Extend the fire water main to Fire Station C and install new fire hydrant. Add a ladder cage safety device per National Fire Protection Agency (NFPA)-22 to both the interior and exterior ladder on water storage tank. The water system includes a natural spring; hydraulically operated ram pump; leveling tank; 3,450 foot buried pipe line; 30,000 gallon above-ground steel water storage tank; gasoline driven fire pump; well pressure tanks and water booster pump. Most of the water system components were constructed in 1966, making them 42 years old. During the past two years, the ram pump has not operated consistently. The pump periodically leaves the site with only the water that is already in storage, which is estimated at 50-75% of its full capacity. The fire water system is unreliable and not operational. This site is very remote and is surrounded by a tremendous amount of natural fuels. This project will design and replace all components of the water system and extend the fire water main to Fire Station C on site. Demolish and replace existing ram pump and refinish balancing (leveling) tank. Demo and replace existing relief air valve. Repair and refinish the interior of the water storage tank. Demolish existing components to include spring concrete vault and rebuild. Upgrading the protection of the facility is also dependent on a working water system and operational fire suppression system.</p>
<p>Great Lakes Science Center, Research and Development Building Ann Arbor, MI</p> <p>\$300</p>	<p>Correct Fire-Safety Deficiencies (B20090001G): Condition assessment revealed fire-safety code violations at the Research Laboratory, which houses all of the Center's science operations. This project installs fire rated doors to separate corridors from lobby and lunch area; replaces the door in room 141 with fire rated door; changes door swing at North staircase; installs panic hardware to all exit doors; installs fire stopping to all conduit, pipe and cable openings; replaces handrails on all stairs; removes and disposes existing roof ladders and replaces with new flat rung step ladders; installs safety cage to penthouse ladder; removes fume hood from loading dock area and add additional exit to electric room. Installs safety cage surrounding the roof access ladder at south end of the main roof. It installs rated door assemblies separating corridors from main lobby and lunch room/vending area. Blocks openings between floors in Room #131, and provides fire safety insulation as required in all wall penetrations.</p>
<p>Western Fisheries Research Center (WFRC), Wet Laboratory Building #414, Seattle, WA</p> <p>\$35</p>	<p>Chiller Room Emergency Ventilation Systems (B20091001): The chiller room does not have the required refrigerant detector system with interlocked normal exhaust fan and emergency exhaust fan. The chiller room has not been designed to meet the ASHRAE refrigeration room ventilation code. There is not any refrigerant or oxygen depletion sensor to ventilate room when a leak is detected. This is a UMC code violation. Corrective action: Install an emergency ventilation system in refrigeration machinery rooms including intake air, exhaust air and refrigerant gas monitoring. This project will protect workers and provide the necessary alarm notification to meet UMC code.</p>
<p>Western Fisheries Research Center (WFRC), Wet Laboratory Building #415, Seattle, WA</p> <p>\$54</p>	<p>HVAC Systems testing and balancing (B2009E003): A complete air and water-side testing, adjusting & balancing procedure has not been completed on the air handling systems including air handlers, coils, fans, controls, inlets and outlets and terminals since originally installed. Corrective action: A total rebalancing of the mechanical systems including supply air, return air, exhaust air (fume hood and general exhaust) and water is needed. A comprehensive review of all area usage needs to be completed prior to a rebalance effort. The building use and occupancy has not changed much from the original design, so a rebalance to original design documents should provide adequate results. Rebalancing the mechanical systems can potentially achieve a reduction in overall energy use. Test and balancing of the systems should be completed after temperature control system modifications have been completed. Provide testing and balancing of the fish process water and waste water system in addition to the building HVAC systems. Reference: ANSI / AIHA: Z9.2-2001 Fundamentals Governing the Design and Operation of Local Exhaust Ventilation Systems, ANSI/AIHA:Z 9.5-2003 Laboratory Ventilation, NAIMA (2002a), American Industrial Hygiene Association (AIHA) Guideline 2 entitled: Recommendations for the Management, Operation, Testing, and Maintenance of HVAC Systems: Maintaining Acceptable Indoor Air Quality in Nonindustrial Employee Occupancies Through Dilution Ventilation Section 8.</p>

Deferred Maintenance and Capital Improvement

<p>Research Vessel Grayling MI</p> <p>\$640</p>	<p>Replace Engines and Generators on Research Vessel (B2007GLRV02): Replace all of the engines on the R/V Grayling including 2 propulsion engines (each engine is 270 horse power), 2 ship service generators (each engine size 20 KW), and 1 import generator. This work will need to take place at a shipyard facility. Currently the vessel (183 gross tons, 79 feet long) is experiencing intermittent failures that require remediation prior to the vessel being put into operation. This creates operational delays. Contract award will ensure all materials are disposed of or recycled in a proper manner consistent with Federal and State guidelines.</p>
<p>Patuxent Wildlife Research Center (PWRC), Gabrielson Building Patuxent, MD</p> <p>\$482</p>	<p>Replace HVAC, repair and modify duct work in Gabrielson Building (B20010005PW): In Gabrielson, HVAC needs are met by the existing HOT/COLD Deck System, which is antiquated and an extremely poor performer and very inefficient. Aging equipment, which is well maintained, is still prone to numerous outages, which are costly. This leads to numerous building shutdowns during the year which causes work disruptions, employee complaints and discomfort. A large energy savings could be realized by replacing and upgrading the HVAC System in Gabrielson with a modern and efficient system. Existing system and all its components is to be removed and disposed or recycled in accordance with Federal and state guidelines. Minor modification to duct work will be required.</p>
<p>Tunison Lab Generator and Electrical Distribution System Cortland, NY</p> <p>\$80</p>	<p>Replace main electrical cable for the site (B2008TL002G): Power to the site was completely out for 7 days in Feb 2008. When the electric company came to the site to fix the problem, it was stated that the electric cable is beyond its life cycle and needs to be replaced. The main electrical feeders from the power company pole to our building need to be replaced. Contract award will ensure all materials and debris are disposed of in a proper manner consistent with Federal and State guidelines. Replacing these cables will improve our electrical system, making it safer and less prone to failures. Power failure/surge could damage equipment at the facility, or cause an electrical explosion in the transformer. Mission critical to allow the site to operate safely without power outages. The above stated condition could pose a serious threat to the labs ability to care out its mission.</p>
<p>Cheboygan Vessel Base Land Cheboygan, MI</p> <p>\$85</p>	<p>Repair Bulkhead – extend dock to match existing vessel dock space (200600007G): Repair unsafe steel bulkhead and extend the dock paver to match existing vessel dock pier surface. All materials removed will be disposed of in a proper manner consistent with Federal and State guidelines. Shoring up the bulkhead and extending the waterfront concrete paver surface along the entire length of the land, including conveyed right-of-way space will allow operating of heavy machinery next to the vessels for loading and unloading of science equipment and supplies. Machinery currently operates on a muddy surface next to the water raising safety issues and avoids the weak bulkhead area of the pier. The repairs to the bulkhead hole will allow heavy weight equipment and vehicles to have safe access via the right of way roadway to the Cheboygan Vessel Base and vessels. USGS has negotiated and finalized the use of the roadway at the CVB.</p>
<p>Sitka Magnetic Observatory Sitka, AK</p> <p>\$46</p>	<p>Replace Earthen Dam Steel Culvert (C2009CAF107): A 7' wide gravel roadway leads from the main office/quarters area back towards the rear portion of the observatory. The gravel roadway continues to an earthen dam, which contains a pond. A 36" diameter steel culvert conveys the water in the pond beneath the gravel roadway and through the dam to a small creek. The culvert is rusting away on the outlet side and as it erodes back it continues to wash away the dam. This project will replace 30 LF steel culvert. A 400 SF coffer dam will be constructed to hold back the pond water while the old culvert is removed and the new culvert is installed. Related excavation, piping, geotech fabric installation, and site repairs will also be performed. The old steel culvert will be demolished and removed from the site.</p>

<p>Research Vessel Musky II Ohio \$34</p>	<p>Replace hydraulic pump diesel engine (B2008GLSCRV0001): The Research Vessel (R/V) MUSKY II Isuzu diesel engine for the hydraulic pump is approximately 18 years old and currently is hard to start and is running rough with noticeable unburned diesel fuel in the exhaust overboard into the water. Not only is it an environmental problem, but the engine could become a safety issue if the engine should fail. This engine needs to be replaced. The R/V MUSKY II only has one hydraulic engine that serves all deck hydraulic equipment. The estimate for reconditioning this older engine is very costly and it would be more economical and practicable to replace. Contract award will ensure all materials are disposed of in a proper manner consistent with Federal guidelines.</p>
<p>Northern Appalachian Research Center (NARC) Wellsboro, PA \$95</p>	<p>Upgrade Alarm Systems (B2009NARNA0002): The Northern Appalachian Research Laboratory in Wellsboro, PA is protected by two alarms systems. The first, manufactured by GE, monitors fire and intrusion systems for protection of staff and property. The second, manufactured by Honeywell, monitors life support systems for protection of research animals. Both systems are aged and failing, with numerous missed alarms or false alarms. This project will upgrade and improve NARL security monitoring systems by modernizing all smoke detectors and security devices throughout the building, and replacing computer control and relay stations for the GE system, and 3) upgrading the Honeywell system to allow integration of property protection with life support monitoring systems</p>
<p>San Juan Observatory, All Buildings San Juan, PR \$25</p>	<p>Install water main to serve fire hydrants (G2009CAF102): The site includes two fire hydrants, one north of the Office and one north of the Quarters Building. A flow test performed by the local fire department indicated no water flow from either hydrant with both shut-off valve or hydrant in the fully open position. No working fire hydrants leave the site vulnerable to fire. The fire department ordered the fire hydrants to be painted black or removed until they are connected to a working water main. This project will ensure proper connection to water main with flow capacity and pressure to serve the fire hydrants and thus restore fire protection to the site buildings. In addition, install piping and valves for connection to the municipal water supply.</p>
<p>Tunison Lab Entrance Road and Parking Lot Tunison, NY \$385</p>	<p>Regrade and resurface road and parking lot (B20020018G): The road will be removed in the worst areas so the sub structure can be repaired then have the appropriate layers of foundation and asphalt put down afterwards. The entrance is extremely hazardous in the winter. The road receives heavy traffic to include three area school buses who bring high school students to the nature center and to their environmental careers classes housed at Tunison. The surface of the road has degraded and is crumbling, making maintenance and safe passage in the winter a major problem. The parking lot is approximately 880 square yards and needs to be resurfaced. The road also needs to be resurfaced; it is about 500 feet long and approximately 18 feet wide. Repair pot holes, pave road and parking lot, overlay asphalt surfaces, and inspect and install (if needed) new drain piping. There is currently a drainage system along the road that will be cleaned out and then lined with rock. The road drainage pipes will also be checked for issues and replacing if needed. Contract award will ensure all materials are disposed of in a proper manner consistent with Federal and State guidelines.</p>

Deferred Maintenance and Capital Improvement

<p>Upper Midwest Environmental Science Center (UMESC), Storage Building LaCrosse, WI</p> <p>\$101</p>	<p>Upgrade and insulate storage building roofing to eliminate ice buildup hazard (B200600001B): Add insulation and a membrane roof to the steel frame building. The building is 2,700 sf. Install gutters with heat tape on the North and South ends of the building after installation of the insulation and roof membrane. Extend storm drains to receive gutter discharge (grade around building will not carry away gutter discharge resulting in hazardous ice formations in the winter months). The heated storage building was originally designed and constructed as a cold (unheated) steel frame building and heat was added after initial building construction. Consequently, there is no thermal break between the steel structure and the standing seam metal roof. As a result, during the winter there is repeated melting then refreezing causing significant ice formation on the minimally pitched roof until large sheets (up to 1 foot thick) of ice crash down on the North and South sides of the building where overhead doors for vehicle entry and personnel doors for personnel entry and egress are located. Also, the melting action on the roof falls on the North side of the building where it once again freezes (no sun exposure) causing significant ice slip hazards. Adding insulation will solve the problem of no thermal break from the heated metal building frame and result in little or no ice formation on the roof. Adding a membrane roof system will prevent damage to a standing seam metal roof that the freeze/thaw action of built up ice and snow and gutters cause. Eliminating the ice build up on the roof allows the installation of gutters to prevent ice formation on the North side of the building and stop water from splashing at the building base and washing inside the building. Extending storm drains to receive the gutter discharge will prevent any ice hazards as there is little slope at the building base. This project also includes removal and disposal of all materials and debris from site in accordance with federal and state regulations.</p>
<p>Great Lakes Science Center (GLSC) An Arbor, MI</p> <p>\$52</p>	<p>Install Sidewalk in main parking lot area (B20010002G): The entire east side of the Center's main parking lot located on the west side of the building has no sidewalk. Therefore it is unsafe for people walking in the parking lot area where there is vehicular traffic. A sidewalk needs to be installed next to the building along the entire length of the building and parking lot. This will require a retaining wall be built at the northeast corner of the parking lot. This will provide better access to Center facility. Contract award will ensure all materials are disposed of in a proper manner consistent with Federal guidelines.</p>
<p>Great Lakes Science Center (GLSC) An Arbor, MI</p> <p>\$234</p>	<p>Replace process distribution lines (B19920013G): Remove and replace old, leaking, and corroded piping throughout the building for cold/hot water, compressed air, Reverse Osmosis (R/O) water, vacuum, and natural gas. The replacement of the piping will ensure proper distribution of water, air, and natural gas for research studies and overall operation of the facility. The hard municipal water has caused corrosion and mineral deposits throughout the domestic water system. In addition, the piping for the R/O water, the lab compressed air, the lab vacuum system and the lab natural gas piping is deteriorating and should be replaced. Many shut-off valves for the branches in this system were installed in inaccessible areas and need to be moved to accessible areas. Ensure shut-off valves are installed in accessible locations. The domestic water distribution system throughout the Center was poorly designed and is badly deteriorated. Valves do not close properly, the stem packing's leak, and fittings have broken off and caused many water problems. When repairs have been made, the extensive corrosion of pipes, fittings, and valves has been noticeable. Some parts of the system are almost completely plugged shut due to lime and rust build-up. The natural gas piping throughout the building should be replaced. New piping should be installed to comply with National Fire protection Association (NFPA) 54 National Fuel Gas Code. The present piping does not have shut off valves at any takeoffs or where gas lines enter laboratories and mechanical rooms. On two occasions piping broke apart where it passes through floors, due to age, improper pipe fitting's, and water leakage causing corrosion in the area. Compressed air supply to laboratories and more importantly fish holding facilities is deteriorated to the point where valves no longer work. The valves either won't open or close and due to poor workmanship, when original piping was installed in 1964, fittings come apart and need to be continually replaced or repaired. Adequate shutoff and control valves need to be added for greater flexibility in research studies. A larger distribution pipe needs to be installed to provide a greater volume of air distribution along with pressure valves to control the flow of air.</p>

<p>Leetown Science Center (LSC) Office and Visitor Center Kearneysville, WV</p> <p>\$138</p>	<p>Repairs to roof and building exterior of Administration building (B20010006): This project provides for replacing shingles on the pitched roof of the Administration Building and general repairs to the exterior of the building. Repairs include: installing metal flashing over top of dryvit to improve waterproofing and eliminate the leaking problem. Replace gutters and down spouts, repair roof flashing, install gravel ballast, repair crack in dryvit. Caulk windows and other exterior sealing measures as required. The roof has deteriorated over time and water is leaking into light fixtures and other electrical systems in the building. The roof size is approximately 6,000 SF and has leaks. Replaced roofing will be removed and disposed of. Associated other materials will also be disposed of.</p>
<p>Florida Integrated Science Center, (FISC) Pond Filtration Building St. Petersburg, FL</p> <p>\$97</p>	<p>Rehab barrier pond filtration system (B20080003F): All of our wet lab waste water drains to a central location (Barrier Pond). This water is then pumped off station through a series of pressurized sand filters. The entire filter mechanism is now 23 years old and has completely failed. Filter mechanism needs to be replaced to make operational. To be able to pump water off station we have had to completely bypass the filter system with new piping. The replacement of this filter mechanism will completely resolve this problem.</p>
<p>Florida Integrated Science Center (FISC) Main Research and Development Building St. Petersburg, FL</p> <p>\$60</p>	<p>Replace acoustical ceiling tiles in main building (B20090005F): This project involves the replacement of acoustical ceiling tiles though-out the main research and development building. Due to numerous roof leaks many tiles have begun to sag are stained and show signs of mold growth. This results in inefficient energy use and also is a health concern to employees. This project also includes removal and disposal of all materials and debris from site in accordance with federal and state regulations.</p>
<p>National Wildlife Health Center (NWHC) Land Madison, WI</p> <p>\$150</p>	<p>Development of Master Plan (B2006NWHC01): This project proposes to fund the development of a Master Plan for the 26-acre, USGS-owned campus of the National Wildlife Health Center (NWHC) in Madison, WI. USGS has six science centers located in the Madison metropolitan area. A recent Business Case Analysis (BCA) consolidates all science centers on the NWHC owned campus to greatly improve the overall science, mission, cost effectiveness, and sustainability of all cost centers. The scope of the BCA was limited to estimating the cost of design, the construction, and operation of co-locating the Science Centers and did not address the condition of the existing NWHC facilities. The objective of the Master Plan is to develop a strategy to renovate and/or construct new office, laboratory and animal facilities in conjunction with the co-location of other USGS Science Centers to the NWHC Campus and will reduce FCI. The Master Plan will also consider disposal of assets with replacement options. The Master Plan will provide the conceptual design while applying and considering the needs that were documented in the Business Case Analysis. The development of a Master Plan for collocation will help eliminate GSA leases for approximately 39,000 sq ft of offices, laboratories, data centers, warehouses, and shops. The Master Plan will also provide a revised Business Case Analysis that addresses all the needs of the effected Science Centers. The Master Plan will consider existing NWHC needs of significant renovation and expansion to meet current and future mission requirements. The Master Plan must address three important areas: 1. Current and future program mission and regulatory requirements for the NWHC biomedical containment facility, as well as co-locating the other USGS cost centers. 2. Current facility condition assessments, including deferred maintenance projects, energy costs and operational costs. 3. Staff safety and comfort.</p>

Deferred Maintenance and Capital Improvement

<p>Upper Midwest Environmental Science Center (UMESC) Lacrosse, WI</p> <p>\$55</p>	<p>Replace Failing Concrete in Fish Holding Tank (B20090003B): The floor and trench system in the fish holding that supports the tanks, water supply, and waste water collection is failing, jeopardizing personnel safety and the mission requirement for aquatic organisms in support of research. The concrete is failing (cracking, spalling, breaking away) that supports the grated walkways above the water supply and waste water collection trenches surrounding the fish tanks in the fish holding area. This project will require replacement of the concrete floor and trench system along with the water supply piping contained within the trenches so that the grated walkways can be used without risk to personnel or the fish tanks. This project also includes removal and disposal of all materials and debris from site in accordance with federal and state regulations.</p>
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2011 Equipment Projects

<p>600 SITES NATIONWIDE</p> <p>\$240</p>	<p>Repair OR Replace Cablecars (W1998A10000): Revised load test reveal that the 600 cablecars in active use nationwide could fail under adverse field conditions such as snagged cables during flood conditions. Depending on their design and condition, cablecars will be repaired or replaced. Interim actions have begun where risk is the highest, but all 600 cars will require either retrofit or replacement.</p>
<p>NORTHERN CALIFORNIA SEISMIC NETWORK</p> <p>\$200</p>	<p>Replace Network Analog and Microwave Stations (G987160001): Replace earthquake network stations that provide seismic monitoring and (or) warning for large metropolitan areas. The requested funds would be used to replace existing equipment that has exceeded its expected life and that cannot be expected to operate continuously without increased failure rates. The current equipment, which supports the network, may fail during an emergency, which would limit or possibly prevent adequate response to other Federal agencies, local governments, the private sector, and public needs.</p>
<p>CONDITION ASSESSMENTS</p> <p>\$210</p>	<p>Condition Assessments/Engineering Support: Funding is proposed to complete condition assessments for the identification of maintenance and capital improvement needs and to provide engineering services support for funded facility projects.</p>
<p>MAINTENANCE MANAGEMENT SYSTEM</p> <p>\$500</p>	<p>Maintenance Management System: Funding is proposed to implement and maintain a maintenance management system that meets bureau reporting and oversight requirements.</p>
<p>PROJECT PLANNING</p> <p>\$200</p>	<p>Project Planning: Funding will be applied toward contract architectural, engineering and design services for complex projects particularly for developing project requirements and budget estimates.</p>

Program Performance Overview

End Outcome Goal 5.2: Advance Modernization/Integration

End Outcome Measure / Intermediate Measure	Type	2006 Actual	2007 Actual	2008 Actual	2009 Plan	2009 Actual	2010 Plan	2011 Plan	Change from 2010 Plan to 2011	Long-term Target 2012
Intermediate Outcome Measures and Bureau and Outcome Measures										
Facilities Improvement										
Overall condition of owned buildings and structures (as measured by the FCI) that are mission critical and mission dependent (as measured by the API), with emphasis on improving the condition of assets with critical health and safety needs (SP)	A	0.150	0.124	0.134 68,4004/ 510,141	0.133 (67,247/ 509,616)	0.134 (71,543/ 532,365)	0.098 (52,289/ 532,365)	0.078 (41,515/ 532,365)	-0.020	0.072 (38,342/ 532,365)
Percent of assets targeted for disposal that were disposed (SP)	A	26%	100%	11.7% (17/2)	24% (25/6)	48% (25/12)	17% (23/4)	42% (19/8)	+25%	27% (11/3)
Efficiency and Other Output Measures										
# of bureau condition assessments in progress or completed (within a 5-year cycle) (Facilities)	C	+5 Cum 14	+9 Cum 23	+10 Cum 33	+9 Cum 42	+4 Cum 37	+10 Cum 10	+10 Cum 20	+10	+10 Cum 30
Comment:	Of the nine (9) assessments planned in 2009 four (4) were completed. The remaining five (5) assessments were delayed for a year due to ARRA projects being started under the current A&E contract. These five (5) assessments are part of the ten (1) assessments scheduled in 2010. A new 5-year cycle begins in 2010.									
Improvement in Bureau Facilities Condition Index (FCI)* (ARRA)	A	UNK	UNK	UNK	0.134	0.134	0.124	0.120	-0.004	NA
Comment:	*FCI is determined by combining funding for Deferred Maintenance – Facilities (\$29.4M) and Construction (\$18.3M)									

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Activity: Facilities

Subactivity: Construction

	2009 Actual	2009 Recovery Act ³	2010 Enacted	2011			Change From 2010 (+/-)
				DOI-Wide Changes ^{1,2} (+/-)	Program Changes (+/-) ³	Budget Request	
Construction (\$000)	0	0	0	+2,500	0	2,500	+2,500
FTE	0	0	0	0	0	0	0
1) \$0 in fixed costs is absorbed. 2) See the General Statement and Section G for Details on DOI-wide Changes. 3) A new treasury account was created for the Recovery Act appropriations; direct allocations to programs were not made.							

Justification of 2011 Program Changes

The 2011 budget request for the Construction subactivity is \$2,500,000 and 0 FTE. There are no program changes proposed in the Construction Program in 2011.

Program Overview

The Construction subactivity is being established with funds from the Deferred Maintenance and Capital Improvements subactivity. The Construction subactivity provides the USGS with a mechanism for budgeting and planning for needed facility construction to adequately meet science needs.

Following the Department of the Interior guidance, the USGS employs Architect/Engineer firms to conduct comprehensive condition assessments for about 20 percent of its owned installations each year. The USGS relies on the assessments to identify deficiencies that warrant remediation in three time lines; as high-priority requirements (immediate needs over the next five years), longer-term needs (approximately 10 years out), or other requirements (not essential but deserving consideration in 10 years or more).

The Construction subactivity provides USGS with a mechanism for budgeting and planning to modernize its real property assets and replace those that are in state of disrepair, beyond their useful life, or otherwise no longer cost-effective to retain. The subactivity provides for asset replacement, including building design and construction, and capital improvements such as major building system replacements. The Construction subactivity will allow the development of the Capital Improvement portion of the Five-Year Deferred Maintenance and Capital Improvement Plan and will follow the Department of the Interior's Annual Budget Guidance, Attachment G. This plan will include much-needed improvements in building envelope integrity (foundation, roof system, facades, etc.); as well as planning and replacement of entire facilities where extensive deficiencies warrant replacement instead of repair.

The USGS 2011-2015 Construction Fund plan includes building replacement projects and a series of sustainable roof upgrade projects. The most notable building replacement project is at the Columbia River Research Laboratory in Cook, WA. This new LEED Silver laboratory building will replace an over-utilized facility constructed in 1953 that has a deferred maintenance

backlog exceeding the current replacement value. Five buildings at Geomagnetic Observatories across the country will be replaced in accordance with the guidelines established in DOI's and USGS Sustainable Buildings Implementation Plans.

The roofing projects will replace aging roofs in poor condition with energy efficient roofs incorporating newer technologies. The sustainable roofing project schedule is reflected in the project rankings and is based on the age and condition of the existing roof, the building's condition, and the building's mission dependency. The science operations within the asset determine mission dependency and, as a consequence for this program, indicate the risk to these operations in the event of a failure. An administrative office building is as likely as a laboratory or research and development facility to house mission-critical activities and collections.

Building Envelope Integrity

Construction of replacement buildings for existing science operations, new buildings for expanding activities, and investment in capital improvements extending an asset's useful life is the objective of the construction subactivity. These investments typically reduce O&M costs and provide opportunities to include requirements mandated through Executive Orders such as E.O. 13514 and E.O. 13423. Recognizing these dual objectives, the 2011 Construction Plan embraces roof replacement projects that warrant much-needed investments under the banner of the bureau wide Building Envelope Integrity Program (BEIP). Upgrades have high long-term payoff potential not only in reducing future costs but also in protecting building contents and extending the asset's life.

In assuring building envelope integrity, sustainable roofs are a priority. USGS-owned buildings typically house science activities that conduct laboratory and special-purpose operations such as wildlife health research (studies of avian influenza, salmonellas in wild birds, West Nile virus, chronic wasting disease, and bat white-nose syndrome) and wetlands research (studies of ecosystems, hurricane damage to flora and fauna, invasive species, marsh management, submerged aquatic vegetation, and nutrient dynamics). For these and other science activities, roofs in particular and building envelope integrity in general are critical in two respects. First, for laboratories, water intrusion stemming from a deficient roof can destroy multi-million dollar scientific instrumentation or can destroy literally years of research if the water contaminates a long-term experiment that measures time-dependent variables. There are similar adverse consequences where air intrusions alter temperature and humidity beyond prescribed experimentation and analysis ranges. Second, water intrusion can destroy flora, fauna and mineral specimens that took years to collect. Data collections, whether on paper or electronic media, are also especially vulnerable to water damage. For the USGS, the laboratory operations and associated instrumentation, long-term research, large and unique specimen holdings, and extensive data collections are critical resources that warrant protection from the elements.

This program aligns with, and reinforces the USGS commitment to, established energy policy, high performance, and sustainability objectives for buildings. Proactive building envelope integrity projects featuring roof replacements not only protect housed science and support operations but also have the potential to reduce utility costs and carbon footprints. To maximize savings, sustainability and life-cycle-cost concepts will be applied. Through typically having higher initial installation costs, sustainable roofs have useful lives twice those of traditional asphalt roofs with much longer product and labor warranties. One manufacturer, for example, cites studies that conclude synthetic rubber (EPDM) roofing materials can perform dependably for as long as 50 years.

Investment Review Board (IRB) Oversight

An important feature of USGS Construction Fund processes is IRB oversight. The IRB follows Department of the Interior Capital Planning and Investment Control Guide instructions, which establish two thresholds. The IRB reviews all construction projects with a life cycle cost of \$2 million or more, applying capital investment review principles and employing business case analyses. Major construction projects, which include rehabilitation, remodeling, expansion, or new construction with a cost of \$10 million or more for any building or other constructed asset, require departmental and Office of Management and Budget approval. The IRB reviews them as part of the annual facility budget initiative process.

Building Envelope Project Selection

Project selection is based on a review of the Comprehensive Condition Assessments reports, which revealed, for those assets with roofs of 10,000 square feet or more, 16 roofs require replacement now or soon.

The following table lists, in priority order, the proposed projects to be addressed by the Construction subactivity in 2011.

2011 Construction Projects (\$000)

<p>Tunison Laboratory of Aquatic Science, Cortland, NY \$277</p>	<p>Sustainable Roof Upgrade Project: Replace Roof Installing a Sustainable Roof on the Research/Development Building. The roof is 27 years old and measures approximately 12,360 sf.</p>
<p>Great Lakes Science Center, Ann Arbor, MI \$923</p>	<p>Sustainable Roof Upgrade Project: Replace Roof Installing a Sustainable Roof on the Research/Development Building. This roof is 17 years old and measures approximately 45,118 sf.</p>
<p>Upper Midwest Environmental Science Center, Lacrosse, WI \$480</p>	<p>Sustainable Roof Upgrade Project: Replace Roof Installing a Sustainable Roof on the Laboratory/Office Bldg. #1. The roof is 18 years old and measures approximately 21,000 sf.</p>
<p>Leetown Science Center, Kearneysville, WV \$437</p>	<p>Sustainable Roof Upgrade Project: Replace Roof Installing a Sustainable Roof on the Administration Bldg. The roof is 26 years old and measures approximately 19,606 sf.</p>
<p>Geomagnetic Observatories Guam \$296</p>	<p>Construct an Instrumentation Building: Design and Construct New Instrument Building. Demo and dispose of the two existing buildings constructed in the 50's and 60's.</p>
<p>Instrument Buildings (3) Tucson, AZ Boulder, CO Newport, WA \$87</p>	<p>Upgrade Heating Ventilation Air Conditioning Systems: Upgrade Heating, Ventilation Air Conditioning Systems located at three Geomagnetic Observatories.</p>

For the 2011 Construction Plan, Project Data Sheets are provided for planned projects over \$100,000.00.

CONSTRUCTION PLAN FY 2011 - 2015					
U.S. Geological Survey PROJECT DATA SHEET			Project Score/Ranking:	602/1	
			Planned Funding FY:	2011	
			Funding Source:	Construction	
Project Identification					
Project Title: Sustainable Roof Upgrade Project					
Project No.: Not Established		Unit/Facility Name: Tunison Laboratory of Aquatic Science			
Region/Area/District: Eastern		Congressional District: 25		State: NY	
Project Justification					
DOI Asset Code:	Real Property Unique Identifier	API:	FCI-Before:	FCI-Projected:	
35740100	7000037	76	0.98	0.84	
Project Description: This project is the first phase of the on going USGS Construction Fund program to improve building envelope integrity at owned installations nationwide. The first priority is for the construction of energy efficient sustainable roofs that meet the Department/Bureau Sustainable Building Implementation Plan (SBIP). The SBIP will include roof removal, recycling of existing materials and disposal of materials not recycled. A sustainable roof will be constructed in FY 2011 accordingly at the Tunison Laboratory of Aquatic Science. This roof is 27 years old and measures approximately 12,360 square feet.					
Project Need/Benefit: The replacement of roofs before they leak, damage building contents, and disrupt mission operations is a much needed proactive measure that assures effective asset management. Timely roof replacement reduces a common and avoidable risk to real property assets; risk management is a central feature of the Department of the Interior Capitol Investment and Control Oversight. These sustainable roof projects have four common features: (1) with reflective materials and additional insulation, they will reduce energy consumption and costs; (2) they meet sustainability standards; (3) they incorporate the recycling of existing roofing materials; and (4) they reduce liabilities through the environmentally safe removal of any asbestos-laden materials (if present) in the existing roof. The implementation of the construction program will further accomplish risk management. 50% CRPci Improving building envelope integrity protects critical research activities, specimen and data collections. This work is under Mission Goal "Management Excellence" and supports facilities improvements. 50% EPHPSBci Replacement of existing roofs with energy-efficient, sustainable roofs will reduce energy consumption and carbon footprints. This work is under Mission Goal "Management Excellence" and supports facilities improvements.					
Revision Statement: (provided when submitting changed project data sheet) N/A					
Ranking Categories: Identify the percent of the project that is in the following categories of need.					
0% Critical Health or Safety Deferred Maintenance (10)		50% Energy Policy, High Performance Sustain Bldg CI (5)			
0% Critical Health or Safety Capital Improvement (9)		0% Critical Mission Deferred Maintenance (4)			
0% Critical Resource Protection Deferred Maintenance (7)		0% Code Compliance Capital Improvement (4)			
50% Critical Resource Protection Capital Improvement (6)		0% Other Deferred Maintenance (3)			
		0% Other Capital Improvement (1)			
Capital Asset Planning 300 Analysis Required: N			Total Project Score: 550		
VE Required: N Type: Scheduled (YY): Completed (YY):					
Project Costs and Status					
Project Cost Estimate (this PDS):		\$'s	%	Project Funding History (Entire Project):	\$'s
Deferred Maintenance Work:		\$ -	0%	Appropriated to Date:	\$ -
Capital Improvement Work:		\$ 277,000	100%	Requested in FY 11 Budget:	\$ 277,000
Total:		\$ 277,000	100%	Future Funding to Complete Project:	\$ -
				Total:	\$ 277,000
Class of Estimate: D		Planning and Design Funds			
Estimate Escalated to FY: (yy): 2011		Planning Funds Received in FY		NA	
		Design Funds Received in FY		NA	
Dates:		Project Data Sheet		DOI Approved:	
Construction Start/Award: (QTR/YY) 04/11		Prepared/Last Updated: 05 09			
Project Complete: (qtr/yy) 04/12		(mm/yy)		NO	
Annual Operation & Maintenance Costs (\$s)					
Current:	\$ 49,924	Projected:	# \$ 49,924	Net Change:	\$ -

CONSTRUCTION PLAN FY 2011 - 2015				
<i>U.S. Geological Survey</i> PROJECT DATA SHEET			Project Score/Ranking:	602/2
			Planned Funding FY:	2011
			Funding Source:	Construction
Project Identification				
Project Title: Sustainable Roof Upgrade Project				
Project No.:	Not Established	Unit/Facility Name:	Great Lakes Science Center	
Region/Area/District:	Eastern	Congressional District:	13	State: MI
Project Justification				
DOI Asset Code:	Real Property Unique Identifier	API:	FCI-Before:	FCI-Projected:
35740100	7000015	76	0.79	0.65
Project Description: This project is the first phase of the on going USGS Construction Fund program to improve building envelope integrity at owned installations nationwide. The first priority is for the construction of energy efficient sustainable roofs that meet the Department/Bureau Sustainable Building Implementation Plan (SBIP). The SBIP will include roof removal, recycling of existing materials and disposal of materials not recycled. A sustainable roof will be constructed in FY 2011 accordingly at the Great Lakes Science Center. This roof is 17 years old and measures approximately 45,118 square feet.				
Project Need/Benefit: The replacement of roofs before they leak, damage building contents, and disrupt mission operations is a much needed proactive measure that assures effective asset management. Timely roof replacement reduces a common and avoidable risk to real property assets; risk management is a central feature of the Department of the Interior Capitol Investment and Control Oversight. These sustainable roof projects have four common features: (1) with reflective materials and additional insulation, they will reduce energy consumption and costs; (2) they meet sustainability standards; (3) they incorporate the recycling of existing roofing materials; and (4) they reduce liabilities through the environmentally safe removal of any asbestos-laden materials in the existing roof. 50% CRPci Improving building envelope integrity protects critical research activities, specimen and data collections. This work is under Mission Goal "Management Excellence" and supports facilities improvements. 50% EPHPSBci Replacement of existing roofs with energy-efficient, sustainable roofs will reduce energy consumption and carbon footprints. This work is under Mission Goal "Management Excellence" and supports facilities improvements.				
Revision Statement: (provided when submitting changed project data sheet) N/A				
Ranking Categories: Identify the percent of the project that is in the following categories of need.				
0 % Critical Health or Safety Deferred Maintenance (10)		50 % Energy Policy, High Performance Sustain Bldg CI (5)		
0 % Critical Health or Safety Capital Improvement (9)		0 % Critical Mission Deferred Maintenance (4)		
0 % Critical Resource Protection Deferred Maintenance (7)		0 % Code Compliance Capital Improvement (4)		
50 % Critical Resource Protection Capital Improvement (6)		0 % Other Deferred Maintenance (3)		
		0 % Other Capital Improvement (1)		
Capital Asset Planning 300 Analysis Required: N			Total Project Score: 550	
VE Required: N Type: Scheduled (YY): Completed (YY):				
Project Costs and Status				
Project Cost Estimate (this PDS):		Project Funding History (Entire Project):		
	\$'s	%		\$'s
Deferred Maintenance Work:	\$ -	0%	Appropriated to Date:	\$ -
Capital Improvement Work:	\$ 923,000	100%	Requested in FY 11 Budget:	\$ 923,000
Total:	\$ 923,000	100%	Future Funding to Complete Project:	\$ -
			Total:	\$ 923,000
Class of Estimate: D		Planning and Design Funds		
Estimate Escalated to FY: (yy):	2011	Planning Funds Received in FY:	NA	
		Design Funds Received in FY:	NA	
Dates:		Project Data Sheet		DOI Approved:
Construction Start/Award: (QTR/YY)	Sch'd 04/11	Prepared/Last Updated:	05 09	NO
Project Complete: (qtr/yy)	04/12	(mm/yy)		
Annual Operation & Maintenance Costs (\$s)				
Current:	\$ 1,600,000	Projected:	\$ 1,600,000	Net Change: \$ -

Construction

CONSTRUCTION PLAN FY 2011 - 2015				
<i>U.S. Geological Survey</i> PROJECT DATA SHEET			Project Score/Ranking:	603/3
			Planned Funding FY:	2011
			Funding Source:	Construction
Project Identification				
Project Title: Sustainable Roof Upgrade Project				
Project No.: Not Established		Unit/Facility Name: Upper Midwest Environmental Science Center		
Region/Area/District: Eastern		Congressional District: 3		State: WI
Project Justification				
DOI Asset Code:	Real Property Unique Identifier	API:	FCI-Before:	FCI-Projected:
35740100	7000092	76	0.2	0.18
Project Description: This project is the first phase of the on going USGS Construction Fund program to improve building envelope integrity at owned installations nationwide. The first priority is for the construction of energy efficient sustainable roofs that meet the Department/Bureau Sustainable Building Implementation Plan (SBIP). The SBIP will include roof removal, recycling of existing materials and disposal of materials not recycled. A sustainable roof will be constructed in 2011 accordingly at the Upper Midwest Environmental Science Center. The roof is 18 years old and measures approximately 21,000 square feet.				
Project Need/Benefit: The replacement of roofs before they leak, damage building contents, and disrupt mission operations is a much needed proactive measure that assures effective asset management. Timely roof replacement reduces a common and avoidable risk to real property assets; risk management is a central feature of the Department of the Interior Capitol Investment and Control Oversight. These sustainable roof projects have four common features: (1) with reflective materials and additional insulation, they will reduce energy consumption and costs; (2) they meet sustainability standards; (3) they incorporate the recycling of existing roofing materials; and (4) they reduce liabilities through the environmentally safe removal of any asbestos-laden materials in the existing roof. 50% CRPci Improving building envelope integrity protects critical research activities, specimen and data collections. This work is under Mission Goal "Management Excellence" and supports facilities improvements. 50% EPHPSBci Replacement of existing roofs with energy-efficient, sustainable roofs will reduce energy consumption and carbon footprints. This work is under Mission Goal "Management Excellence" and supports facilities improvements.				
Revision Statement: (provided when submitting changed project data sheet)				
N/A				
Ranking Categories: Identify the percent of the project that is in the following categories of need.				
0% Critical Health or Safety Deferred Maintenance (10)		50% Energy Policy, High Performance Sustain Bldg CI (5)		
0% Critical Health or Safety Capital Improvement (9)		0% Critical Mission Deferred Maintenance (4)		
0% Critical Resource Protection Deferred Maintenance (7)		0% Code Compliance Capital Improvement (4)		
50% Critical Resource Protection Capital Improvement (6)		0% Other Deferred Maintenance (3)		
		0% Other Capital Improvement (1)		
Capital Asset Planning 300 Analysis Required: N			Total Project Score: 550	
VE Required: N Type: Scheduled (YY): Completed (YY):				
Project Costs and Status				
Project Cost Estimate (this PDS):		\$'s	%	Project Funding History (Entire Project):
Deferred Maintenance Work:	\$	-	0%	Appropriated to Date:
Capital Improvement Work:	\$	480,000	100%	Requested in FY 11 Budget:
Total:	\$	480,000	100%	Future Funding to Complete Project:
				Total:
				\$
				480,000
Class of Estimate: D		Planning and Design Funds		
Estimate Escalated to FY: (yy): 2011		Planning Funds Received in	FY	NA
		Design Funds Received in	FY	NA
Dates:		Project Data Sheet		DOI Approved:
Construction Start/Award: (QTR/YY)	Sch'd	Prepared/Last Updated: 05 09		NO
Project Complete: (qtr/yy)	04/11	(mm/yy)		
Annual Operation & Maintenance Costs (\$)				
Current:	\$	537,403	Projected:	\$
				537,403
				Net Change:
				\$
				-

CONSTRUCTION PLAN FY 2011 - 2015				
U.S. Geological Survey PROJECT DATA SHEET		Project Score/Ranking:	593/4	
		Planned Funding FY:	2011	
		Funding Source:	Construction	
Project Identification				
Project Title: Sustainable Roof Upgrade Project				
Project No.: Not Established		Unit/Facility Name: Leetown Science Center		
Region/Area/District: Eastern		Congressional District: 2	State: WV	
Project Justification				
DOI Asset Code:	Real Property Unique Identifier	API:	FCI-Before:	FCI-Projected:
35100000	7000105	72	0.15	0.08
Project Description: This project is the first phase of the on going USGS Construction Fund program to improve building envelope integrity at owned installations nationwide. The first priority is for the construction of energy efficient sustainable roofs that meet the Department/Bureau Sustainable Building Implementation Plan (SBIP). The SBIP will include roof removal, recycling of existing materials and disposal of materials not recycled. A sustainable roof will be constructed in 2011 accordingly at the Leetown Science Center. The roof is 26 years old (built in 1983) and measures approximately 19,606 square feet.				
Project Need/Benefit: The replacement of roofs before they leak, damage building contents, and disrupt mission operations is a much needed proactive measure that assures effective asset management. Timely roof replacement reduces a common and avoidable risk to real property assets; risk management is a central feature of the Department of the Interior Capitol Investment and Control Oversight. These sustainable roof projects have four common features: (1) with reflective materials and additional insulation, they will reduce energy consumption and costs; (2) they meet sustainability standards; (3) they incorporate the recycling of existing roofing materials; and (4) they reduce liabilities through the environmentally safe removal of any asbestos-laden materials in the existing roof. 50% CRPci Improving building envelope integrity protects critical research activities, specimen and data collections. This work is under Mission Goal "Management Excellence" and supports facilities improvement. 50% EPHPSBci Replacement of existing roofs with energy-efficient, sustainable roofs will reduce energy consumption and carbon footprints. This work is under Mission Goal "Management Excellence" and supports facilities improvements.				
Revision Statement: (provided when submitting changed project data sheet) N/A				
Ranking Categories: Identify the percent of the project that is in the following categories of need.				
0 % Critical Health or Safety Deferred Maintenance (10)		50 % Energy Policy, High Performance Sustain Bldg CI (5)		
0 % Critical Health or Safety Capital Improvement (9)		0 % Critical Mission Deferred Maintenance (4)		
0 % Critical Resource Protection Deferred Maintenance (7)		0 % Code Compliance Capital Improvement (4)		
50 % Critical Resource Protection Capital Improvement (6)		0 % Other Deferred Maintenance (3)		
		0 % Other Capital Improvement (1)		
Capital Asset Planning 300 Analysis Required: N		Total Project Score: 550		
VE Required: N Type: Scheduled (YY): Completed (YY):				
Project Costs and Status				
Project Cost Estimate (this PDS):		\$'s	%	Project Funding History (Entire Project):
Deferred Maintenance Work:	\$ -	0%	Appropriated to Date:	\$ -
Capital Improvement Work:	\$ 437,000	100%	Requested in FY 11 Budget:	\$ 437,000
Total:	\$ 437,000	100%	Future Funding to Complete Project:	\$ -
		Total:		
		\$ 437,000		
Class of Estimate: D		Planning and Design Funds		
Estimate Escalated to FY: (yy): 2011		Planning Funds Received in FY	NA	
		Design Funds Received in FY	NA	
Dates:		Project Data Sheet		DOI Approved:
Construction Start/Award: (QTR/YY)	Sch'd 04/11	Prepared/Last Updated: 05 09		
Project Complete: (qtr/yy)	04/12	(mm/yy)	NO	
Annual Operation & Maintenance Costs (\$s)				
Current:	\$ 49,383	Projected:	\$ 49,383	Net Change: \$ -

CONSTRUCTION PLAN FY 2011 - 2015					
<i>U.S. Geological Survey</i> PROJECT DATA SHEET			Project Score/Ranking:	480/5	
			Planned Funding FY:	2011	
			Funding Source:	Construction	
Project Identification					
Project Title: Construct Instrumentation Building					
Project No.: Not Established		Unit/Facility Name: Guam			
Region/Area/District: Western		Congressional District: 1	State: Guam (Territory)		
Project Justification					
DOI Asset Code:	Real Property Unique Identifier	API:	FCI-Before:	FCI-Projected:	
35740100	7000440	57	0.07	0.02	
35740100	7001025	57	0.14	0.01	
Project Description:					
Two existing critical data acquisition/sensor buildings will be replaced with one new building. The existing data acquisition/sensor buildings no longer support current USGS critical mission requirements at the site. Sensitive magnetic instruments housed in these buildings require a temperature/humidity, controlled environment to ensure reliable scientific information is provided. Because conditions are not adequate, data quality is compromised and the USGS mission is at risk. This project will restore critical USGS mission capability at the site to meet international geomagnetic data standards and customer requirements. The variation building is approximately 880 square feet while the instrument building is approximately 1,056 square feet. This is a 3 phase project. Phase 1 is to Design, Phase 2 is to Build and Phase 3 will be the demolition and disposal of the old buildings. The size of the new building will be determined during the design phase. The new building will meet guidelines identified in the Department/Bureau Sustainable Building Implementation Plan (SBIP).					
Project Need/Benefit:					
Two instrument facilities have been in use since the 1950s and 1960s and no longer provide adequate support for the geomagnetism instrumentation that they house. Each building has deteriorated to the point that the accuracy of geomagnetic readings is increasingly compromised due to the resulting unstable control of humidity and temperature within each building. As newer more sophisticated instrumentation is installed, the accuracy of the data provided by these instruments is dependent upon a stable environment, constant humidity and temperature set-points must be maintained. It is critical that a new building be constructed to efficiently provide an environment to meet current and future science program requirements. Because the instruments must remain operational, the current structures have to remain in place/operational while the new building is constructed. Disposal action is part of the project and will be pursued after the new building is constructed. The work is under Mission Goal "Management Excellence" and supports facilities improvements.					
10% CHSci While on-site staff are present in the buildings only for instrument calibration and readings, there are structural and other deficiencies that pose a risk to their health and safety. This project will restore critical USGS mission capability at the site to meet international geomagnetic data standards and customer requirements.					
30% CRPci The risk of damage to these unique geomagnetic instruments, which have long acquisition lead times, is unacceptably high due to deteriorating building conditions. As newer more sophisticated instrumentation is installed, accuracy of the data provided by these instruments will be achieved through a stable environment, constant humidity, and temperature set-points.					
60% CCCi The buildings no longer meet code requirements. The new building will meet the guidelines of USGS's Sustainable Building Implementation Plan (SBIP).					
Revision Statement: (provided when submitting changed project data sheet)					
N/A					
Ranking Categories: Identify the percent of the project that is in the following categories of need.					
0% Critical Health or Safety Deferred Maintenance (10)		0% Energy Policy, High Performance Sustain Bldg CI (5)			
10% Critical Health or Safety Capital Improvement (9)		0% Critical Mission Deferred Maintenance (4)			
0% Critical Resource Protection Deferred Maintenance (7)		60% Code Compliance Capital Improvement (4)			
30% Critical Resource Protection Capital Improvement (6)		0% Other Deferred Maintenance (3)			
		0% Other Capital Improvement (1)			
Capital Asset Planning 300 Analysis Required: N			Total Project Score: 450		
VE Required: N Type: Scheduled (YY): Completed (YY):					
Project Costs and Status					
Project Cost Estimate (this PDS):		\$'s	%	Project Funding History (Entire Project):	\$'s
Deferred Maintenance Work:	\$	-	0%	Appropriated to Date:	\$
Capital Improvement Work:	\$	296,000	100%	Requested in FY 11 Budget:	\$
Total:	\$	296,000	100%	Future Funding to Complete Project:	\$
				Total:	\$
					296,000
Class of Estimate: D			Planning and Design Funds		
Estimate Escalated to FY:	(yy):	2011	Planning Funds Received in	FY	NA
			Design Funds Received in	FY	NA
Dates:			Project Data Sheet		DOI Approved:
Construction Start/Award: (QTR/YY)	Sch'd	02/11	Prepared/Last Updated:	05 09	
Project Complete: (qtr/yy)		04/12		(mm/yy)	NO
Annual Operation & Maintenance Costs (\$s)					
Current:	na	Projected:	na	Net Change:	na

Program Performance Overview

End Outcome Goal 5.2: Advance Modernization/Integration

End Outcome Measure / Intermediate Measure	Type	2006 Actual	2007 Actual	2008 Actual	2009 Plan	2009 Actual	2010 Plan	2011 Plan	Change from 2010 Plan to 2011	Long-term Target 2012
Intermediate Outcome Measures and Bureau and Outcome Measures Facilities Improvement										
Overall condition of owned buildings and of structures (as measured by the FCI) that are mission critical and mission dependent (as measured by the API), with emphasis on improving the condition of assets with critical health and safety needs (SP)	A	UNK	UNK	UNK	UNK	UNK	UNK	0.076 (40,265/ 532,365)	UNK	0.070 (37,092/ 532,365)

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Working Capital Fund Overview

The USGS Working Capital Fund (WCF) was established to allow for the efficient financial management of the components listed below. The WCF was made available for expenses necessary for furnishing materials, supplies, equipment, work, and services in support of USGS programs, and as authorized by law, to agencies of the Federal Government and others. The WCF consists of four components:

1. Investment Component

- **Telecommunications Investments** are used for telecommunication hardware, software, facilities, and services. Examples include replacement or expansion of automatic exchange systems and computerized network equipment such as switches, routers, and monitoring systems.
- **Equipment Investments** are used for the acquisition, replacement, and expansion of equipment for USGS programs. Equipment may include, but is not limited to, hydrologic, geologic, and cartographic instruments; laboratory equipment; and computer hardware and software.
- **Facilities Investments** support facility and space management investment expenses for USGS real property, including owned and leased space. Authorized investment expenses include nonrecurring and emergency repair, relocation of a facility, and facility modernization. The component does not include annual expenses such as rent, day-to-day operating expenses, recurring maintenance, or utilities. The investment component is not used to fund construction of buildings.
- **Publications Investments** are used for the preparation and production of technical publications reporting on the results of scientific data and research. Research projects typically are 3 to 5 years in duration, and planning the medium in which to report results occurs over the life of the project. The Publications Investment Component provides a mechanism for establishing an efficient, effective, and economical means of funding publications costs over the long term.

2. Fee-for-Service Component

- **The National Water Quality Laboratory (NWQL)** conducts chemical analyses of water, sediments, and aquatic tissue for all USGS water district offices and other customers, including other USGS disciplines, other Interior bureaus, and government agencies. The NWQL also does biological classification for these customers. NWQL analysis services are provided on a reimbursable basis, with the price of services calculated to cover direct and indirect costs.
- **The USGS Hydrologic Instrumentation Facility (HIF)** provides hydrologic instrumentation on a fee-for-service basis. The facility provides its customers with hydrologic instruments that can be rented or purchased, maintains a technical expertise on instrumentation, and tests and evaluates instruments as they become available in the marketplace.

Working Capital Fund

- **Bureau Laboratories** — There are currently three laboratories in Eastern Region Water Research that perform gaseous dissolved chlorofluorocarbon measurements, environmental microbiology analyses and isotope-ratio measurements of water, sediments, rocks, and gases for all Water Resources Discipline (WRD) district offices, other USGS disciplines, and other Federal agencies.
- **The National Training Center** conducts USGS training programs. These programs include, but are not limited to, specialized training for USGS employees, cooperators, and international participants in many facets of hydrology, hydraulics, and water resources investigations, as well as computer applications, management and leadership seminars, and various workshops.
- **Drilling** — There are currently two drilling units, based in Lakewood, CO and Henderson, NV. The drilling units provide drilling services to conduct exploratory drilling for obtaining geologic samples and cores in difficult hydrogeologic environments and the emplacement of sampling devices and sub-surface sensors for hydrologic investigations.
- **The Reston Supply Service Center (RSSC)** is a nationwide supply support activity which provides the National Center and USGS field offices with a variety of supplies and specialty items on a fee-for-service basis. The activity provides administrative supplies, USGS Visual Identity products, USGS stationery and forms, and other materials determined to be best obtained centrally.

3. GSA Building Delegations Component

- The GSA buildings delegation component is used to manage funds received under the delegated authority for the J.W. Powell Building and Advanced Systems Center in Reston, VA, as provided by 40 U.S.C. 121 (d) and (e) (formerly subsections 205 (d) and (e) of the Federal Property and Administrative Services Act of 1949, as amended, and 40 U.S.C. 486 (d) and (e), respectively). Delegated functions include building operations, maintenance, cleaning, overseeing fire and life safety, maintaining high voltage switchgear and fire alarms, recurring repairs, minor alterations, historic preservation, concessions, and energy management. Because of the size of the Reston buildings and the need to expend the facility funds in a manner corresponding to GSA's no-year funding (Federal Buildings Fund) mechanisms and the GSA National Capital Region long-range capital improvement plan, no-year funding is a prerequisite to administering the delegation. Public Law 104–208, Section 611, provides that, for the fiscal year ending September 30, 1997, and thereafter, any department or agency that has delegated authority shall retain that portion of the GSA rental payment available for operation, maintenance, and repair of the building and the funds shall remain available until expended. This WCF component was established to provide USGS with this no-year flexibility.

4. Enterprise Services Component

- The Enterprise Publishing Network (EPN) operates within the Enterprise Services Component. The EPN provides high quality publishing support for science information products while improving operational effectiveness and efficiencies. The EPN offers a complete range of publishing services to authors of USGS information products and others. Services include consultation, technical editing, illustrating, layout and design,

Web services, printing management/distribution, electronic publishing as well as other publishing needs.

The WCF Investment Component provides a mechanism to assist USGS managers in planning for and acquiring goods and services that are too costly to acquire in a single fiscal year or that, due to the nature of services provided must operate in a multi- as opposed to a single-year basis of funding. Investments are supported by documented investment plans that include estimated acquisition/replacement costs, a schedule of deposits, and approval of the plans, deposits and expenditures by designated USGS officials. The WCF Fee-for-Service Component provides a continuous cycle of client services for fees established in a rate-setting process and, in some cases, with funding provided by appropriated funds. Fees are predicated upon both direct and indirect costs associated with providing the services, including amortization of equipment required to provide the services. The GSA buildings delegation component is used to manage funds received under the delegated authority for the J.W. Powell Building and Advanced Systems Center in Reston, VA, as provided by 40 U.S.C. 121 (d) and (e) (formerly subsections 205 (d) and (e) of the Federal Property and Administrative Services Act of 1949, as amended, and 40 U.S.C. 486 (d) and (e), respectively). Delegated functions include building operations, maintenance, cleaning, overseeing fire and life safety, maintaining high voltage switchgear and fire alarms, recurring repairs, minor alterations, historic preservation, concessions, and energy management. The Enterprise Services component operates in a businesslike manner, recovering fees for various consolidated services provided to USGS disciplines and other Federal agencies. By leveraging these services through a unified effort, USGS achieves cost and business efficiencies that would otherwise be lost.

Appropriation Language and Citations

Permanent authority:

1. Provided further, That, in fiscal year 1986, and thereafter, all amortization fees resulting from the Geological Survey providing telecommunications services shall be deposited in a special fund to be established on the books of the Treasury and be immediately available for payment of replacement or expansion of telecommunications services, to remain available until expended.
 - **43 U.S.C.50a** established the Telecommunications Amortization Fund, which was displayed as part of the Surveys, Investigations and Research appropriation from 1986 through 1990. Beginning in 1991, the Telecommunications Amortization Fund was merged into the WCF described in the next citation.
2. There is hereby established in the Treasury of the United States a working capital fund to assist in the management of certain support activities of the United States Geological Survey (hereafter referred to as the "Survey"), Department of the Interior. The fund shall be available on and after November 5, 1990, without fiscal year limitation for expenses necessary for furnishing materials, supplies, equipment, work, facilities, and services in support of Survey programs, and, as authorized by law, to agencies of the Federal Government and others. Such expenses may include laboratory modernization and equipment replacement, computer operations, maintenance, and telecommunications services; requirements definition, systems analysis, and design services; acquisition or development of software; systems support services such as implementation assistance, training, and maintenance; acquisition and replacement of computer, publications and scientific instrumentation, telecommunications, and related automatic data processing equipment; and, such other activities as may be approved by the Secretary of the Interior.

There are authorized to be transferred to the fund, at fair and reasonable values at the time of transfer, inventories, equipment, receivables, and other assets, less liabilities, related to the functions to be financed by the fund as determined by the Secretary of the Interior. Provided, That the fund shall be credited with appropriations and other funds of the Survey, and other agencies of the Department of the Interior, other Federal agencies, and other sources, for providing materials, supplies, equipment, work, and other services as authorized by law and such payments may be made in advance or upon performance: Provided further, That charges to users will be at rates approximately equal to the costs of furnishing the materials, supplies, equipment, facilities, and services, including such items as depreciation of equipment and facilities, and accrued annual leave: Provided further, That all existing balances as of November 5, 1990, from amortization fees resulting from the Survey providing telecommunications services and deposited in a special fund established on the books of the Treasury and available for payment of replacement or expansion of telecommunications services as authorized by Public Law 99-190, are hereby transferred to and merged with the working capital fund, to be used for the same purposes as originally authorized. Provided further, That funds that are not necessary to carry out the activities to be financed by the fund, as determined by the Secretary, shall be covered into miscellaneous receipts of the Treasury.

P.L. 101-512 Department of the Interior and Related Agencies Appropriations Act, 1991 This authority established a Working Capital Fund account in 1991. The Telecommunications Amortization Fund was included as part of the WCF and all balances of the Telecommunications Amortization Fund existing at the end of 1990 were transferred to the WCF. These balances were to be used for the same purposes as originally authorized.

P.L. 103-332 Department of the Interior and Related Agencies Appropriations Act, 1995 The amendments that were made in this appropriations act are shown in underline in the second citation shown above. This authority expanded the use of the Working Capital Fund to partially fund laboratory operations and facilities improvements and to acquire and replace publication and scientific instrumentation and laboratory equipment.

Working Capital Fund

United States Geological Survey

Federal Funds

General and special funds:

WORKING CAPITAL FUND

Program and Financing

(In millions of dollars)

Identification Code 14-4556-0-4-306		2009 Actual	2010 Estimate	2011 Estimate
	Obligations by program activity:			
09.01	Working Capital Fund	78	97	93
10.00	Total new obligations	78	97	93
	Budgetary resources available for obligation:			
21.40	Unobligated balance carried forward, start of year	88	95	82
22.00	New budget authority (gross)	84	84	74
22.10	Resources available from recoveries of prior year			
	Obligations	1	0	0
23.90	Total budgetary resources available for obligation	173	179	156
23.95	Total new obligations	-78	-97	-93
24.40	Unobligated balance carried forward, end of year	95	82	63
	New budget authority (gross), detail			
	Mandatory:			
69.00	Offsetting collections (cash)	84	84	74
	Change in obligated balances:			
72.40	Obligated balance, start of year	17	20	32
73.10	Total new obligations	78	97	93
73.20	Total outlays (gross)	-74	-85	-78
73.45	Recoveries of prior year obligations	-1	0	0
74.40	Obligated balance, end of year	20	32	47
	Outlays (gross), detail:			
86.97	Outlays from new mandatory authority	44	38	33
86.98	Outlays from mandatory balances	30	47	45
87.00	Total outlays (gross)	74	85	78
	Offsets:			
	Against gross budget authority and outlays:			
88.00	Offsetting collections (cash) from:			
	Federal sources	84	84	74
	Net budget authority and outlays:			
89.00	Budget authority	0	0	0
90.00	Outlays	-10	1	4

WORKING CAPITAL FUND

Balance Sheet

(In millions of dollars)

Identification Code		2008	2009
14-4556-0-4-306		Actual	Actual
ASSETS:			
	Federal assets:		
1101	Fund balances with Treasury	105	115
	Investments in U.S. securities:		
1106	Receivables, net		
1803	Other Federal assets: Property, plant and equipment, net	16	14
1999	Total assets	<u>121</u>	<u>129</u>
LIABILITIES:			
2101	Federal liabilities: Accounts payable		
2201	Non-Federal liabilities: Accounts payable	3	6
2999	Total liabilities	<u>3</u>	<u>6</u>
NET POSITION:			
3300	Cumulative results of operations	118	123
3999	Total net position	<u>118</u>	<u>123</u>
4999	Total liabilities and net position	<u>121</u>	<u>129</u>

Working Capital Fund

WORKING CAPITAL FUND

Object Classification

(In millions of dollars)

Identification Code		2009	2010	2011
14-4556-0-4-306		Actual	Estimate	Estimate
Reimbursable obligations:				
Personnel compensation:				
11.1	Full-time permanent	20	20	21
11.3	Other than full-time permanent	1	1	1
11.5	Other personnel compensation	1	1	1
11.9	Total personnel compensation	22	22	23
12.1	Civilian personnel benefits	6	6	6
21.0	Travel and transportation of persons	1	1	1
22.0	Transportation of things	1	1	1
23.1	Rental payments to GSA	1	2	2
23.2	Rental payments to others	1	1	1
23.3	Communications, utilities, and miscellaneous charges	1	2	2
24.0	Printing and reproduction	1	2	1
25.1	Advisory and Assistance Services	1	3	2
25.2	Other services	7	13	8
25.3	Other purchases of goods and services from Government			
	Accounts	5	5	4
25.4	Operation and maintenance of facilities	5	6	6
25.7	Operation and maintenance of equipment	2	1	4
26.0	Supplies and materials	3	4	4
31.0	Equipment	21	28	28
99.0	Reimbursable obligations	78	97	93
99.9	Total new obligations	78	97	93

WORKING CAPITAL FUND

Employment Summary

Identification Code		2009	2010	2011
14-4556-0-4-306		Actual	Estimate	Estimate
Reimbursable:				
2001	Civilian full-time equivalent employment	285	284	282

Summary of Requirements by Object Class

SURVEYS, INVESTIGATIONS, AND RESEARCH

Summary of Requirements by Object Class

(Millions of Dollars)

Appropriation: Surveys, Investigations, and Research		2010 Estimate		DOI-Wide Changes		Program Changes		2011 Request	
Object Class		FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Personnel compensation									
11.1	Full-time permanent		436		0		6		442
11.3	Other than full-time permanent		39		0		0		39
11.5	Other personnel compensation		13		0		0		13
	Total personnel compensation	5,445	488	-14	0	3	6	5,434	494
12.1	Civilian personnel benefits		133		0		1		134
21.0	Travel and transportation of persons		26		-3		0		23
22.0	Transportation of things		6		0		0		6
23.1	Rental payment to GSA		57		-1		1		57
23.2	Rental payments to others		4		0		0		4
23.3	Comm., utilities and misc. charges		14		-2		0		12
24.0	Printing and reproduction		1		0		0		1
25.1	Advisory and assistance services		11		-1		0		10
25.2	Other services		139		0		23		162
25.3	Other purchases of goods and services from Government accounts		70		-1		0		69
25.4	Operation and maintenance of Facilities		6		0		0		6
25.7	Operation and maintenance of Equipment		8		0		0		8
26.0	Supplies and materials		22		-2		2		22
31.0	Equipment		51		-2		0		49
41.0	Grants, subsidies, and contributions		76		0		0		76
	Total requirements		1,112		-12		33		1,133

This information is displayed in budget authority (not obligations) by object class.

Surveys, Investigations, and Research — Exhibits

SURVEYS, INVESTIGATIONS, AND RESEARCH

Summary of Requirements by Object Class cont'd

(Millions of Dollars)

Appropriation: Surveys, Investigations, and Research							
Reimbursable Obligations		2010 Estimate		2011 Request		Increase or Decrease	
		FTE	Amount	FTE	Amount	FTE	Amount
	Personnel compensation						
11.1	Full-time permanent		166		167		1
11.3	Other than full-time permanent		26		27		1
11.5	Other personnel compensation		5		5		0
	Total personnel compensation	2,812	197	-14	199	2,798	2
12.1	Civilian personnel benefits		52		52		0
21.0	Travel and transportation of persons		12		12		0
22.0	Transportation of things		5		5		0
23.1	Rental payments to GSA		17		17		0
23.2	Rental payments to others		1		1		0
23.3	Communications, utilities and miscellaneous charges		4		4		0
24.0	Printing and reproduction		1		1		0
25.1	Advisory and assistance services		1		1		0
25.2	Other services		63		62		-1
25.3	Other purchases of goods and services from Government accounts		38		38		0
25.4	Operation and maintenance of facilities		2		2		0
25.7	Operation and maintenance of equipment		3		3		0
26.0	Supplies and materials		12		12		0
31.0	Equipment		12		12		0
41.0	Grants, subsidies, and contributions		29		29		0
	Total requirements		449		450		1

United States Geological Survey

Federal Funds

General and special funds:

SURVEYS, INVESTIGATIONS, AND RESEARCH

Program and Financing

(Millions of Dollars)

Identification Code		2009	2010	2011
14-0804-0-1-306		Actual	Estimate	Estimate
Obligations by program activity:				
Direct program:				
00.01	Geographic research, investigations, and remote sensing	69	141	153
00.02	Geologic hazards, resources, and processes	238	250	253
00.03	Water resources investigations	218	228	229
00.04	Biological research	182	204	202
00.05	Enterprise information	109	50	42
00.06	Global change	33	65	71
00.07	Science support	65	74	77
00.08	Facilities	95	109	108
00.09	Recovery Act activities	26	114	0
09.01	Reimbursable program	435	433	434
09.02	Reimbursable program – EPA Great Lakes	0	16	16
10.00	Total new obligations	1,470	1,684	1,585
Budgetary resources available for obligation:				
21.40	Unobligated balance carried forward, start of year	467	473	333
22.00	New budget authority (gross)	1,477	1,544	1,567
22.10	Resources available from recoveries of prior year obligations	1	0	0
23.90	Total budgetary resources available for obligation	1,945	2,017	1,900
23.95	Total new obligations	-1,470	-1,684	-1,585
23.98	Unobligated balance expiring or withdrawn	-2	0	0
24.40	Unobligated balance carried forward, end of year	473	333	315
New budget authority (gross), detail:				
Discretionary:				
40.00	Appropriation	1,184	1,112	1,133
Spending authority from offsetting collections:				
58.00	Offsetting collections (cash)	441	432	434
58.10	Change in uncollected customer payments from Federal sources (unexpired)	-148	0	0
58.90	Spending authority from offsetting collections (total discretionary)	293	432	434
70.00	Total new budget authority (gross)	1,477	1,544	1,567

Surveys, Investigations, and Research — Exhibits

SURVEYS, INVESTIGATIONS, AND RESEARCH

Program and Financing cont'd

(Millions of Dollars)

Identification Code 14-0804-0-1-306		2009 Actual	2010 Estimate	2011 Estimate
	Change in obligated balances:			
72.40	Obligated balance, start of year	-386	-117	18
73.10	Total new obligations	1,470	1,684	1,585
73.20	Total outlays (gross)	-1,462	-1,549	-1,551
73.40	Adjustments in expired accounts (net)	-3	0	0
73.45	Recoveries of prior year obligations	-1	0	0
74.00	Change in uncollected customer payments from Federal sources (unexpired)	148	0	0
74.10	Change in uncollected customer payments from Federal Sources (expired)	117	0	0
74.40	Obligated balance, end of year	-117	18	52
	Outlays (gross), detail:			
86.90	Outlays from new discretionary authority	1,084	1,359	1,379
86.93	Outlays from discretionary balances	378	190	172
87.00	Total outlays (gross)	1,462	1,549	1,551
	Offsets:			
	Against gross budget authority and outlays:			
	Offsetting collections (cash) from:			
88.00	Federal sources	-234	-225	-226
88.40	Non-Federal sources	-220	-207	-208
88.90	Total, offsetting collections (cash)	-454	-432	-434
	Against gross budget authority only:			
88.95	Change in uncollected customer payments from Federal sources (unexpired)	148	0	0
88.96	Portion of offsetting collections (cash) credited to expired account	13	0	0
	Net budget authority and outlays:			
89.00	Budget authority	1,184	1,112	1,133
90.00	Outlays	1,008	1,117	1,117
95.02	Unpaid obligation, end of year	310		

SURVEYS, INVESTIGATIONS, AND RESEARCH

Object Classification

(Millions of Dollars)

Identification Code		2009 Actual	2010 Estimate	2011 Estimate
14-0804-0-1-306				
Direct obligations:				
	Personnel compensation:			
11.1	Full-time permanent	417	436	442
11.3	Other than full-time permanent	36	42	39
11.5	Other personnel compensation	13	13	13
11.9	Total personnel compensation	466	491	494
12.1	Civilian personnel benefits	124	134	134
21.0	Travel and transportation of persons	25	26	23
22.0	Transportation of things	5	6	6
23.1	Rental payments to GSA	53	57	57
23.2	Rental payment to others	4	4	4
23.3	Comm., utilities, and miscellaneous charges	13	14	12
24.0	Printing and reproduction	1	1	1
25.1	Advisory and assistance services	11	11	10
25.2	Other services	120	174	164
25.3	Other purchases of goods and services from Government Accounts	65	70	69
25.4	Operation and maintenance of facilities	6	6	6
25.7	Operation and maintenance of equipment	8	8	8
26.0	Supplies and materials	17	32	22
31.0	Equipment	46	85	49
32.0	Land and structures	0	25	0
41.0	Grants, subsidies, and contributions	71	91	76
99.0	Direct obligations	1,035	1,235	1,135

Surveys, Investigations, and Research — Exhibits

SURVEYS, INVESTIGATIONS, AND RESEARCH

Object Classification cont'd

(Millions of Dollars)

Identification Code		2009	2010	2011
14-0804-0-1-306		Actual	Estimate	Estimate
Reimbursable obligations:				
Personnel compensation:				
11.1	Full-time permanent	162	166	167
11.3	Other than full-time permanent	26	26	27
11.5	Other personnel compensation	5	5	5
11.9	Total personnel compensation	193	197	199
12.1	Civilian personnel benefits	50	52	52
21.0	Travel and transportation of persons	12	12	12
22.0	Transportation of things	5	5	5
23.1	Rental payments to GSA	17	17	17
23.2	Rental payments to others	1	1	1
23.3	Comm., utilities, and miscellaneous charges	4	4	4
24.0	Printing and reproduction	1	1	1
25.1	Advisory and assistance services	1	1	1
25.2	Other services	50	63	62
25.3	Other purchases of goods and services from Government accounts	43	38	38
25.4	Operation and maintenance of facilities	2	2	2
25.7	Operation and maintenance of equipment	3	3	3
26.0	Supplies and materials	12	12	12
31.0	Equipment	12	12	12
41.0	Grants, subsidies, and contributions	29	29	29
99.0	Reimbursable obligations	435	449	450
99.9	Total new obligations	1,470	1,684	1,585

SURVEYS, INVESTIGATIONS, AND RESEARCH

Employment Summary

Identification Code		2009	2010	2011
14-0804-0-1-306		Actual	Estimate	Estimate
	Direct:			
1001	Civilian full-time equivalent employment	5,352	5,475	5,434
	Reimbursable:			
2001	Civilian full-time equivalent employment	2,821	2,813	2,798
	Allocation account:			
3001	Civilian full-time equivalent employment	17	17	17

Note: The FY 2009 FTEs depicted above are a replication of the FTEs shown in the FY 2011 President's Budget Appendix. After the development of the account level FTEs for FY 2009 for the President's Budget Appendix, further refinements to the estimates were made. As a result, the FY 2009 direct and reimbursable FTE levels that appear in other portions of this presentation do not match the FTE levels in the Budget Appendix.

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Funding of U.S. Geological Survey Programs (Obligations)

**Funding of U.S. Geological Survey Programs
(Obligations)**
(Thousands of Dollars)

	2009 Actual	2010 Estimate	2011 Estimate
Surveys, Investigations, and Research (SIR)			
Geographic Research, Investigations, and Remote Sensing			
Multi-Year appropriation	32,092	99,882	100,327
No-Year appropriation	37,221	40,788	52,500
Total (appropriation)	69,313	140,670	152,827
<i>Non-Federal (Domestic) sources</i>			
Optical calibration	554	450	450
Technology transfer	23	45	45
Miscellaneous	150	68	68
Subtotal (non-Federal domestic sources)	727	563	563
<i>Non-Federal (Foreign) sources</i>			
Landsat International Ground Station Fees	1,149	1,362	1,362
Miscellaneous	842	975	975
Subtotal (non-Federal foreign sources)	1,991	2,337	2,337
<i>State and local sources</i>			
Matched	44	44	44
Unmatched	218	105	105
Subtotal (State and local sources)	262	149	149
<i>Federal sources</i>			
Agency for International Development	2,759	3,207	3,207
Central Intelligence Agency	2,111	1,250	1,250
Department of Agriculture	242	637	641
Department of Commerce			
National Oceanic and Atmospheric Administration	20	382	382
Other	0	81	81
Department of Defense			
Corps of Engineers	54	172	172
National Geospatial-Intelligence Agency	291	150	150
Other	313	265	265
Department of Education	0	30	30
Department of Energy	25	109	109
Department of Homeland Security			
Federal Emergency Management Agency	84	208	208
Other	132	0	0
Department of the Interior			
Bureau of Land Management	547	380	380
Bureau of Reclamation	302	212	212
Fish and Wildlife Service	1,122	1,007	1,009
National Park Service	815	1,464	1,464
Office of Secretary	2,003	5,182	5,117
Department of Justice	0	124	124

Sundry Exhibits

	2009 Actual	2010 Estimate	2011 Estimate
Department of Labor	0	30	30
Department of State	0	70	70
Department of Transportation	0	124	124
Department of Treasury	0	30	30
Department of Veterans Affairs	0	30	30
Environmental Protection Agency	1,351	1,754	1,765
Federal Aviation Administration	16	14	14
General Services Administration	0	70	70
Health and Human Services	148	156	156
Housing and Urban Development	0	70	70
National Aeronautics and Space Administration	7,889	8,578	8,578
National Science Foundation	0	30	30
Sale of maps, photos, reproductions, and digital products	2,831	0	0
Miscellaneous	298	444	444
Subtotal (Federal sources)	23,353	26,260	26,212
Total (reimbursable)	26,333	29,309	29,261
Total: Geographic Research, Investigations, and Remote Sensing	95,646	169,979	182,088

Funding of U.S. Geological Survey Programs (Obligations)

	2009 Actual	2010 Estimate	2011 Estimate
Surveys, Investigations, and Research (SIR)			
Geologic Hazards, Resources, and Processes:			
Multi-Year appropriation	237,019	245,739	253,504
No-Year appropriation	515	1,699	0
Total (appropriation) *	237,534	247,438	253,504
<i>Non-Federal (Domestic) sources</i>			
Permittees & licensees of the Fed Energy Regulatory Commission	96	99	102
Technology transfer	983	1,009	1,036
Miscellaneous	1,466	1,528	1,535
Subtotal (non-Federal domestic sources)	2,545	2,636	2,673
<i>Non-Federal (Foreign) sources</i>			
Miscellaneous	482	478	478
Subtotal (non-Federal foreign sources)	482	478	478
<i>State and local sources</i>			
Matched	623	623	623
Unmatched	5,411	5,532	5,657
Subtotal (State and local sources)	6,034	6,155	6,280
<i>Federal sources</i>			
Agency for International Development	224	225	225
Central Intelligence Agency	25	25	25
Department of Agriculture	391	393	394
Department of Commerce			
National Oceanic and Atmospheric Administration	269	274	279
Other	366	379	390
Department of Defense			
Corps of Engineers	830	842	851
National Geospatial-Intelligence Agency	114	114	114
Other	3,146	3,165	3,171
Department of Education	1,374	0	0
Department of Energy	1,343	1,361	1,374
Department of Homeland Security	50	50	0
Department of the Interior			
Bureau of Indian Affairs	6	6	6
Bureau of Land Management	394	405	415
Bureau of Reclamation	551	562	571
Fish and Wildlife Service	282	284	286
Minerals Management Service	59	60	62
National Park Service	976	991	1,002
Office of Secretary			
National Business Center	3	3	3
Other	122	122	122
Department of Justice	36	36	37
Department of State	1,097	1,418	851
Department of Veterans Affairs	1,885	1,949	2,008
Environmental Protection Agency	773	780	774
Federal Aviation Administration	10	10	0

Sundry Exhibits

	2009 Actual	2010 Estimate	2011 Estimate
General Services Administration	6	7	8
National Aeronautics and Space Administration	8,487	8,752	8,850
National Science Foundation	960	1,124	1,076
Nuclear Regulatory Commission	2,409	2,447	2,357
Miscellaneous agencies	919	939	945
Subtotal (Federal sources)	27,107	26,723	26,196
Total (reimbursable)	36,168	35,992	35,627
Total: Geologic Hazards, Resources, and Processes	273,702	283,430	289,131

* This table does not include obligations for the Spectrum Relocation Fund, since it is a mandatory fund. MAX obligations do include the Spectrum Relocation Fund. The amounts included in MAX are: FY 2009 \$759; and FY 2010 \$2,784.

Funding of U.S. Geological Survey Programs (Obligations)

	2009 Actual	2010 Estimate	2011 Estimate
Surveys, Investigations, and Research (SIR)			
Water Resources Investigations:			
Multi-Year appropriation	218,019	227,493	229,070
No-Year appropriation	247	36	0
Total (appropriation)	218,266	227,529	229,070
<i>Non-Federal (Domestic) sources</i>			
Permittees & licensees of the Federal Energy Regulatory Commission	4,549	4,614	4,681
Technology Transfer	763	770	778
Miscellaneous	1,411	1,531	1,531
Subtotal (non-Federal domestic sources)	6,723	6,915	6,990
<i>Non-Federal (Foreign) sources</i>			
Miscellaneous	1,077	1,077	1,078
Subtotal (non-Federal foreign sources)	1,077	1,077	1,078
<i>State and local sources</i>			
Matched	64,078	65,561	63,598
Matched (In-Kind Services – NON ADD)	498	498	498
Unmatched	101,932	101,580	104,709
Subtotal (State and local sources)	166,010	167,141	168,307
<i>Federal sources</i>			
Department of Agriculture	1,732	1,776	1,810
Department of Commerce			
National Oceanic and Atmospheric Administration	142	143	144
Department of Defense			
Corps of Engineers	34,118	34,512	34,743
National Geospatial-Intelligence Agency	262	262	262
Other	12,836	12,968	13,039
Department of Energy			
Bonneville Power Administration	681	705	724
Other	11,855	10,151	10,301
Department of Homeland Security			
Federal Emergency Management Agency	918	937	952
Department of the Interior			
Bureau of Indian Affairs	442	448	455
Bureau of Land Management	3,703	3,796	3,871
Bureau of Reclamation	12,362	12,675	12,932
Fish and Wildlife Service	994	1,004	1,008
National Park Service	3,534	3,618	3,685
Office of Secretary	119	120	122
Department of Justice	11	11	11
Department of State	625	554	563
Department of Transportation	443	526	526
Environmental Protection Agency	9,361	9,436	9,462
Health and Human Services	80	80	80
National Aeronautics and Space Administration	751	757	758

Sundry Exhibits

	2009 Actual	2010 Estimate	2011 Estimate
National Science Foundation	120	0	0
National Regulatory Commission	304	304	304
Miscellaneous agencies	1,706	1,716	1,716
Subtotal (Federal sources)	97,099	96,499	97,468
Total (reimbursable)	270,909	271,632	273,843
Total: Water Resources Investigations	489,175	499,161	502,913

Funding of U.S. Geological Survey Programs (Obligations)

	2009 Actual	2010 Estimate	2011 Estimate
Surveys, Investigations, and Research (SIR)			
Biological Research:			
Multi-Year appropriation	181,558	204,046	201,596
No-Year appropriation	130	38	0
Total (appropriation)	181,688	204,084	201,596
<i>Non-Federal (Domestic) sources</i>			
Technology Transfer	2,453	2,526	2,602
Miscellaneous	1,121	1,121	1,121
Subtotal (non-Federal domestic sources)	3,574	3,647	3,723
<i>Non-Federal (Foreign) sources</i>			
Miscellaneous	79	81	83
Subtotal (non-Federal foreign sources)	79	81	83
<i>State and local sources</i>			
Matched	56	56	56
Unmatched	7,265	7,386	7,511
Subtotal (State and local sources)	7,321	7,442	7,567
<i>Federal sources</i>			
Department of Agriculture	1,606	1,590	1,599
Department of Commerce			
National Oceanic and Atmospheric Administration	879	869	872
Department of Defense			
Corps of Engineers	17,379	17,183	17,325
Other	11,620	11,570	11,734
Department of Energy			
Bonneville Power Administration	1,522	1,542	1,588
Other	280	288	297
Department of the Interior			
Bureau of Land Management	6,126	6,173	6,336
Bureau of Reclamation	13,469	13,588	13,964
Fish & Wildlife Service	8,504	8,437	8,533
Minerals Management Service	617	617	630
National Park Service	2,845	2,819	2,846
Office of the Secretary	498	486	486
Department of Transportation	112	115	119
Environmental Protection Agency			
Great Lakes	0	16,492	16,492
Other	1,078	1,054	1,054
Health and Human Services	395	383	383
National Aeronautics and Space Administration	145	145	145
Miscellaneous	15	15	15
Subtotal (Federal sources)	67,090	83,366	84,418

Sundry Exhibits

	2009 Actual	2010 Estimate	2011 Estimate
Total (reimbursable)	78,064	94,536	95,791
Total: Biological Research	259,752	298,620	297,387

Funding of U.S. Geological Survey Programs (Obligations)

	2009 Actual	2010 Estimate	2011 Estimate
Surveys, Investigations, and Research (SIR)			
Enterprise Information:			
Multi-Year appropriation	109,290	49,893	41,857
Total (appropriation)	109,290	49,893	41,857
<i>Non-Federal (Domestic) sources</i>			
Map receipts	2,560	2,560	2,560
Subtotal (non-Federal domestic sources)	2,560	2,560	2,560
<i>State and local sources</i>			
Unmatched	1,586	6	6
Subtotal (State and local sources)	1,586	6	6
<i>Federal sources</i>			
Department of Agriculture	288	3	3
Department of Commerce			
National Oceanic and Atmospheric Administration	77	0	0
Department of Defense			
Corps of Engineers	46	46	46
National Geospatial-Intelligence Agency	5,009	1,730	1,730
Other	50	0	0
Department of Education	15	0	0
Department of Energy	42	0	0
Department of Homeland Security			
Federal Emergency Management Agency	162	0	0
Other	62	0	0
Department of the Interior			
Bureau of Indian Affairs	1,231	0	0
Bureau of Land Management	1,739	139	139
Bureau of Reclamation	239	0	0
Fish and Wildlife Service	831	0	0
Minerals Management Service	260	3	3
National Park Service	1,353	0	0
Office of Secretary	530	148	53
Office of Surface Mining	2	2	2
Department of Justice	62	0	0
Department of Labor	1	1	1
Department of State	35	0	0
Department of Treasury	15	0	0
Department of Veterans Affairs	15	0	0
Environmental Protection Agency	166	127	127
General Services Administration	37	2	2
Health and Human Services	35	0	0
Housing and Urban Development	35	0	0
National Aeronautics and Space Administration	636	321	321
National Science Foundation	15	0	0
Sale of maps, photos, reproductions, and digital products	966	995	995
Miscellaneous agencies	207	70	50
Subtotal (Federal sources)	14,161	3,587	3,472

Sundry Exhibits

	2009 Actual	2010 Estimate	2011 Estimate
Total (reimbursable)	18,307	6,153	6,038
Total: Enterprise Information	127,597	56,046	47,895

Funding of U.S. Geological Survey Programs (Obligations)

	2009 Actual	2010 Estimate	2011 Estimate
Surveys, Investigations, and Research (SIR)			
Global Change:			
Multi-Year appropriation	32,573	65,043	71,124
Total (appropriation)	32,573	65,043	71,124
<i>Non-Federal (Foreign) sources</i>			
Miscellaneous	5	0	0
Subtotal (non-Federal foreign sources)	5	0	0
<i>Federal sources</i>			
Department of Defense	13	0	0
Subtotal (Federal sources)	13	0	0
Total (reimbursable)	18	0	0
Total: Global Change	32,591	65,043	71,124

Sundry Exhibits

	2009 Actual	2010 Estimate	2011 Estimate
Surveys, Investigations, and Research (SIR)			
Science Support:			
Multi-Year appropriation	64,842	73,651	77,248
Total (appropriation)	64,842	73,651	77,248
<i>Non-Federal (Foreign) sources</i>			
Miscellaneous	25	25	25
Subtotal (non-Federal foreign sources)	25	25	25
<i>Federal sources</i>			
Department of Commerce			
National Oceanic and Atmospheric Administration	24	25	25
Department of Defense			
Corps of Engineers	140	143	143
Other	83	85	85
Department of Homeland Security			
Federal Emergency Management Agency	41	43	45
Other	341	0	0
Department of the Interior			
Bureau of Indian Affairs	129	113	79
Bureau of Land Management	67	69	69
Bureau of Reclamation	404	426	439
Minerals Management Service	75	77	77
National Park Service			
Office of Secretary			
National Business Center	75	77	77
Other	2,628	8,672	7,057
Environmental Protection Agency	186	190	190
National Science Foundation	6	6	6
Miscellaneous	286	255	255
Subtotal (Federal sources)	4,485	10,181	8,547
Total (reimbursable)	4,510	10,206	8,572
Total: Science Support	69,352	83,857	85,820

Funding of U.S. Geological Survey Programs (Obligations)

	2009 Actual	2010 Estimate	2011 Estimate
Surveys, Investigations, and Research (SIR)			
Facilities:			
Multi-Year appropriation	93,390	99,920	97,652
No-Year appropriation	1,437	9,543	10,307
Total (appropriation)	94,827	109,463	107,959
<i>Federal sources</i>			
Central Intelligence Agency	317	321	330
Department of the Interior			
Office of Secretary	650	677	690
Miscellaneous	108	0	0
Subtotal (Federal sources)	1,075	998	1,020
Total (reimbursable)	1,075	998	1,020
Total: Facilities	95,902	110,461	108,979
Surveys, Investigations, and Research (SIR), Recovery Act			
Recovery Act Activities:			
Multi-Year appropriation	25,846	114,154	0
Total (appropriation)	25,846	114,184	0
Total: Recovery Act Activities	25,846	114,154	0
SIR Summary:			
Multi-Year appropriation	994,629	1,179,821	1,072,378
No-Year appropriation	39,550	52,104	62,807
Subtotal (appropriation)	1,034,179	1,231,925	1,135,185
Non-Federal sources			
Map receipts	2,560	2,560	2,560
Domestic	13,574	13,761	13,949
Foreign	3,654	3,998	4,001
State and local sources	181,213	180,893	182,309
Federal sources	234,383	247,614	247,333
Subtotal (reimbursable)	435,384	448,826	450,152
Total: SIR *	1,469,563	1,680,751	1,585,337

* This table does not include obligations for the Spectrum Relocation Fund, since it is a mandatory fund. MAX obligations do include the Spectrum Relocation Fund. The amounts included in MAX are: FY 2009 \$759; and FY 2010 \$2,784.

Sundry Exhibits

	2009 Actual	2010 Estimate	2011 Estimate
Surveys, Investigations, and Research (SIR)			
Contributed Funds:			
Permanent, indefinite appropriation:			
Geographic Research, Investigations, and Remote Sensing	6	3	3
Geologic Hazards, Resources, and Processes	146	13	19
Water Resources Investigations	164	113	156
Biological Research	1,302	676	717
Science Support	0	12	12
Total: Contributed Funds	1,618	817	907
Operation and Maintenance of Quarters:			
Permanent, indefinite appropriation:			
Geologic Hazards, Resources, and Processes	38	35	36
Biological Research	47	59	26
Total: Operation and Maintenance of Quarters	85	94	62
Working Capital Fund:			
National Water Quality Lab	12,177	12,370	13,528
Hydrologic Instrumentation Facility	19,399	17,695	18,346
Other	46,707	67,085	61,357
Total: Working Capital Fund	78,283	97,150	93,231
Allocations from other Federal Agencies: *			
Department of the Interior: Departmental Offices			
Natural Resource Damage Assessment	1,746	1,700	1,700
Central Hazardous Materials Fund	75	75	75
Total: Allocations	1,821	1,775	1,775

* Allocations are shown in the year they are received, not when they are obligated.

United States Geological Survey

Trust Funds

CONTRIBUTED FUNDS

Special and Trust Fund Receipts

(Millions of Dollars)

Identification Code		2009	2010	2011
14-8562-0-7-306		Actual	Estimate	Estimate
01.00	Balance, start of year	0	0	0
01.99	Balance, start of year	0	0	0
Receipts:				
02.20	Contributed Funds, Geological Survey	2	1	1
02.99	Total receipts and collections	2	1	1
04.00	Total: Balances and collections	2	1	1
Appropriations:				
05.00	Contributed Funds	-2	-1	-1
05.99	Total appropriations	-2	-1	-1
07.99	Balance, end of year	0	0	0

Program and Financing

(Millions of Dollars)

Identification Code		2009	2010	2011
14-8562-0-7-306		Actual	Estimate	Estimate
Obligations by program activity:				
09.01	Donations and contributed funds	2	1	1
10.00	Total new obligations	2	1	1
Budgetary resources available for obligation:				
21.40	Unobligated balance carried forward, start of year	1	1	1
22.00	New budget authority (gross)	2	1	1
23.90	Total budgetary resources available for obligation	3	2	2
23.95	Total new obligations	-2	-1	-1
24.40	Unobligated balance carried forward, end of year	1	1	1
New budget authority (gross), detail:				
Mandatory:				
60.26	Appropriation (trust fund)	2	1	1

Sundry Exhibits

CONTRIBUTED FUNDS

Program and Financing cont'd
(Millions of Dollars)

Identification Code		2009 Actual	2010 Estimate	2011 Estimate
14-8562-0-7-306				
	Change in obligated balances:			
72.40	Obligated balance, start of year	1	1	1
73.10	Total new obligations	2	1	1
73.20	Total outlays (gross)	-2	-1	-1
74.40	Obligated balance, end of year	1	1	1
	Outlays (gross), detail:			
86.97	Outlays from new mandatory authority	1	1	1
86.98	Outlays from mandatory balances	1	0	0
87.00	Total outlays (gross)	2	1	1
	Net budget authority and outlays:			
89.00	Budget authority	2	1	1
90.00	Outlays	2	1	1
95.02	Unpaid obligation, end of year	0		

Object Classification
(Millions of Dollars)

Identification Code		2009 Actual	2010 Estimate	2011 Estimate
14-8562-0-7-306				
	Direct obligations:			
99.5	Below reporting threshold	2	1	1
99.9	Total new obligations	2	1	1

CONTRIBUTED FUNDS
Employment Summary

Identification Code		2009 Actual	2010 Estimate	2011 Estimate
14-8562-0-7-306				
	Direct:			
1001	Civilian full-time equivalent employment	7	7	7

Employee Count by Grade
(Total Employment)

	2009 Actual	2010 Estimate	2011 Estimate
Executive Level V.....	1	1	1
SES.....	26	27	27
Subtotal.....	27	28	28
SL - 00.....	9	10	10
ST - 00.....	37	40	40
Subtotal.....	46	50	50
GS/GM -15.....	571	564	560
GS/GM -14.....	797	787	782
GS/GM -13.....	1,277	1,261	1,252
GS -12.....	1,612	1,592	1,581
GS -11.....	1,332	1,284	1,306
GS -10.....	19	18	18
GS - 9.....	975	996	957
GS - 8.....	247	244	243
GS -7.....	655	647	643
GS - 6.....	260	257	255
GS - 5.....	405	400	397
GS - 4.....	265	262	260
GS - 3.....	158	156	155
GS - 2.....	58	57	57
GS -1.....	28	27	27
Subtotal.....	8,659	8,553	8,493
Other Pay Schedule Systems.....	233	233	233
Total employment (actual/estimate).....	8,955	8,854	8,794

Mandatory Budget and Offsetting Collection Proposals

The USGS does not have any legislative proposals in the 2011 President's budget that impact receipts or mandatory spending levels.

Program/Project Support of Bureau, Department, and Governmentwide Costs

External Administrative Costs

The Department's Working Capital Fund was established pursuant to 43 U.S.C. 1467, to provide common administrative and support services efficiently and economically at cost. The Fund is a revolving fund, whereby capital is expended to provide services for customers who pay for the services. Customers consist of the Department's bureaus and offices, as well as other Federal agencies. Through the use of centrally provided services, the Department standardized key administrative areas, such as commonly used administrative systems, support services for those located in and around the Main and South Interior building complex, and centrally managed departmental operations that are beneficial to the bureaus and offices.

Centralized billing is used whenever the product or service being provided is not severable or it is inefficient to bill for the exact amount of product or service being procured. Customers are billed each year using a pre-established basis that is adjusted annually to reflect change over time. The following table provides the actual centralized billing to the USGS for 2009 and estimates for 2010 and 2011.

Program/Project Support of Bureau, Department, and Governmentwide Costs

**Working Capital Fund Revenue
Centralized Billing
Geological Survey
(\$ in thousands)**

Activity/Office	2009 Actual	2010 Estimate	2011 Estimate
Other OS Activities			
Invasive Species Council	218.9	226.7	226.7
<u>Invasive Species Coordinator</u>	<u>35.6</u>	<u>38.5</u>	<u>38.5</u>
Secretary's Immediate Office	254.6	265.2	265.2
<u>Document Management Unit</u>	<u>8.1</u>	<u>6.5</u>	<u>6.5</u>
Office of the Executive Secretariat	8.1	6.5	6.5
Alaska Field Office	13.3	12.4	12.4
<u>Alaska Resources Library and Information Services</u>	<u>166.4</u>	<u>166.4</u>	<u>166.4</u>
Secretary's Immediate Office	179.7	178.8	178.8
<u>Departmental Communications Office</u>	<u>92.1</u>	<u>97.9</u>	<u>97.9</u>
Office of Communications	92.1	97.9	97.9
<u>Departmental Museum</u>	<u>0.0</u>	<u>216.8</u>	<u>216.8</u>
Secretary's Immediate Office	0.0	216.8	216.8
Southern Nevada Water Coordinator	39.9	32.9	0.0
<u>Conservation Partnerships and Management Policy</u>	<u>30.3</u>	<u>31.5</u>	<u>31.5</u>
Policy, Management and Budget	70.2	64.3	31.5
Environmental and Disposal Liabilities	0.0	0.4	0.4
<u>FedCenter</u>	<u>2.7</u>	<u>2.7</u>	<u>2.7</u>
Office of Environmental Policy and Compliance	2.7	3.1	3.1
<u>CPIC</u>	<u>19.5</u>	<u>22.4</u>	<u>22.4</u>
Office of Budget	19.5	22.4	22.4
Activity Based Costing/Management	123.0	122.1	122.1
Travel Management Center	51.0	25.7	25.7
<u>e-Gov Travel</u>	<u>364.3</u>	<u>110.3</u>	<u>110.3</u>
Office of Financial Management	538.3	258.1	258.1
Interior Collections Management System	2.5	2.5	2.5
Space Management Initiative	37.3	40.2	40.2
Renewable Energy Certificates	22.9	11.4	11.4
<u>Facility Maintenance Management System</u>	<u>2.4</u>	<u>0.6</u>	<u>0.6</u>
Office of Property and Acquisition Management	65.2	54.7	54.7
<u>SBA Certifications</u>	<u>0.9</u>	<u>0.9</u>	<u>0.9</u>
Small and Disadvantage Business Utilization	0.9	0.9	0.9
<u>Planning and Performance Management</u>	<u>137.4</u>	<u>150.9</u>	<u>150.9</u>
Office of Planning and Performance Management	137.4	150.9	150.9
<u>Alternative Dispute Resolution Training</u>	<u>12.0</u>	<u>6.0</u>	<u>6.0</u>
Office of Collaborative Action and Dispute Resolution	12.0	6.0	6.0
<u>Center for Competition, Efficiency, and Analysis</u>	<u>79.7</u>	<u>0.0</u>	<u>0.0</u>
Center for Competition, Efficiency, and Analysis	79.7	0.0	0.0
HSPD-12	107.4	87.7	87.7
Department-wide OWCP Coordination	28.4	29.7	29.7
Accountability Team	52.0	59.7	59.7
Labor Relations Tracking System	0.0	3.3	3.3
DOI LEARN	97.0	126.7	240.6

Sundry Exhibits

**Working Capital Fund Revenue
Centralized Billing
Geological Survey
(\$ in thousands)**

Activity/Office	2009 Actual	2010 Estimate	2011 Estimate
Other OS Activities – con't			
OPM Federal Employment Services	68.4	61.6	61.6
Office of Human Resources	353.2	368.6	482.5
DOI Executive Forum	0.0	14.4	14.4
Financial Management Training	0.0	33.9	33.9
SESCDP & Other Leadership Programs	0.0	23.5	23.5
Online Learning	0.0	63.7	63.7
Learning and Performance Center Management	0.0	81.7	81.7
Albuquerque Learning & Performance Center	0.0	10.8	10.8
Anchorage Learning & Performance Center	0.0	13.4	13.4
Denver Learning & Performance Center	0.0	45.2	45.2
Washington Learning & Performance Center	0.0	91.0	91.0
DOI University	0.0	377.4	377.4
EEO Complaints Tracking System	3.5	4.2	4.2
Special Emphasis Program	5.9	5.9	5.9
<u>Accessible Technology Center</u>	<u>36.4</u>	<u>38.0</u>	<u>38.0</u>
Office of Civil Rights	45.8	48.0	48.0
Occupational Health and Safety	107.5	180.4	183.9
Health and Safety Training Initiatives	23.8	20.7	17.2
<u>Safety Management Information System</u>	<u>75.2</u>	<u>0.0</u>	<u>0.0</u>
Office of Occupational Health and Safety	206.5	201.1	201.1
Security (Classified Information Facility)	40.0	40.0	54.0
Law Enforcement Coordination and Training	68.1	68.1	103.9
Security (MIB/SIB Complex)	0.0	0.0	128.8
Victim Witness	0.0	0.0	19.2
Office of Law Enforcement and Security	108.2	186.7	205.9
Interior Operations Center (Watch Office)	186.3	232.1	241.5
Emergency Preparedness	69.0	82.8	92.7
<u>Emergency Response</u>	<u>90.4</u>	<u>104.0</u>	<u>132.4</u>
Law Enforcement and Security	345.7	418.8	466.6
Enterprise Services Network	3251.3	3166.3	3474.9
Web & Internal/External Comm	70.5	54.0	54.0
Enterprise Architecture	569.2	522.6	550.3
FOIA Tracking & Reporting System	15.6	24.4	27.8
Threat Management	0.0	119.9	119.9
Frequency Management Support	111.4	105.9	105.9
IT Security	312.2	319.4	360.9
Capital Planning	348.5	265.9	265.9
Information Management Support	32.4	33.3	92.8
Data Resource Management Program	27.8	27.7	0.0
IT Security Certification & Accreditation	430.6	430.6	430.6
Electronic Records Management	162.0	165.2	165.2
Active Directory	150.3	175.5	240.3
Enterprise Resource Management	52.0	61.3	61.3

Program/Project Support of Bureau, Department, and Governmentwide Costs

**Working Capital Fund Revenue
Centralized Billing
Geological Survey
(\$ in thousands)**

Activity/Office	2009 Actual	2010 Estimate	2011 Estimate
Other OS Activities – con't			
e-Authentication	39.0	41.5	0.0
NTIA Spectrum Management	164.7	152.0	152.0
IOS Collaboration	0.0	119.3	119.3
Network	212.0	228.3	228.3
Trusted Internet Connection	68.5	187.7	0.0
Data-at-Rest	55.8	5.0	5.0
Logging Extracts	21.3	44.1	44.1
OCIO Project Management Office	32.2	127.0	127.0
Radio Program Management Office	75.6	106.2	145.0
IT Asset Management	0.0	21.8	43.5
Continuous Monitoring	0.0	0.0	0.0
Two-Factor Authentication	74.0	8.6	0.0
<u>Active Directory Optimization</u>	<u>104.8</u>	<u>93.2</u>	<u>0.0</u>
Office of the Chief Information Officer	6,381.7	6,628.7	6,586.1
Contingency Reserve	18.1	18.1	18.1
Cooperative Ecosystem Study Units	75.2	75.2	75.2
CFO Financial Statement Audit	565.6	548.9	548.9
Glen Canyon Adaptive Management	95.5	95.5	95.5
<u>Enterprise Geospatial Information Management</u>	<u>224.0</u>	<u>187.7</u>	<u>187.7</u>
Departmentwide Activities	978.4	925.4	925.4
e-Government Initiatives (WCF Contributions Only)	531.2	532.1	532.1
<u>Volunteer.gov</u>	<u>13.1</u>	<u>15.1</u>	<u>15.1</u>
Office of Planning and Performance Management	544.3	547.2	547.2
Ethics Training	29.4	71.5	71.5
ALLEX Database	3.0	3.0	3.0
<u>FOIA Appeals</u>	<u>8.1</u>	<u>15.3</u>	<u>15.3</u>
Office of the Solicitor	40.5	89.7	89.7
Subtotal Other OS Activities	10,464.6	11,117.3	11,222.6

Sundry Exhibits

**Working Capital Fund Revenue
Centralized Billing
Geological Survey
(\$ in thousands)**

Activity/Office	2009 Actual	2010 Estimate	2011 Estimate
National Business Center			
FPPS/Employee Express - O&M	2,001.8	2,031.1	2,069.6
HR LoB W-2 Surcharge	126.3	83.2	83.5
DOI Executive Forums	14.0	0.0	0.0
Financial Management Training	33.2	0.0	0.0
Learning and Performance Center Management	80.2	0.0	0.0
SESCDP & Other Leadership Programs	23.5	0.0	0.0
DOI LEARN	0.0	0.0	0.0
Albuquerque Learning & Performance Center	7.4	0.0	0.0
Anchorage Learning & Performance Center	11.8	0.0	0.0
Denver Learning & Performance Center	57.9	0.0	0.0
Online Learning	62.1	0.0	0.0
<u>Washington Learning & Performance Center</u>	<u>77.2</u>	<u>0.0</u>	<u>0.0</u>
NBC Human Resources Directorate	2,495.3	2,114.2	2,153.1
EEO Complaints Tracking System	4.2	0.0	0.0
NBC 106 Mainframe Replacement	116.7	0.0	0.0
Safety Management Information System	0.0	189.0	188.7
Labor Relations/OWCP Tracking System	6.9	0.0	0.0
NBC IT Security Improvement Plan	311.2	438.5	438.5
Voice/data Switching	2.2	2.2	2.2
Information Mgmt. - FOIA and Records Management	1.4	1.4	1.4
Telecommunication Services	9.2	9.5	9.5
Audio Visual Services	1.7	1.5	1.5
Integrated Digital Voice Communications System	4.9	5.0	5.0
SIB Cabling	2.4	0.3	0.3
<u>Desktop Services</u>	<u>0.0</u>	<u>23.7</u>	<u>23.8</u>
NBC Information Technology Directorate	449.8	670.0	671.0
Interior Complex Management & Services	3.9	5.3	4.5
Family Support Room	0.1	0.1	0.1
Property Accountability Services	0.0	3.0	3.1
Moving Services	0.9	0.9	1.1
Shipping and Receiving	2.0	1.6	1.6
Safety and Environmental Services	0.0	2.3	2.3
Space Management	1.3	1.3	1.3
Drug Testing	8.8	9.4	9.4
Security (MIB Complex)	27.7	0.0	0.0
Federal Executive Board	32.8	34.1	34.3
Health Unit	1.3	1.4	1.4
Mail and Messenger Services	15.6	16.9	17.0
Blue Pages	104.7	0.0	0.0
Mail Policy	41.5	42.4	42.6
Special Events Services	7.4	7.6	7.6
Cultural Resources & Events Management	43.6	44.2	37.2

Program/Project Support of Bureau, Department, and Governmentwide Costs

**Working Capital Fund Revenue
Centralized Billing
Geological Survey
(\$ in thousands)**

Activity/Office	2009 Actual	2010 Estimate	2011 Estimate
National Business Center – con't			
Partnership Schools & Commemorative Programs	3.9	3.9	3.9
Departmental Museum	184.8	0.0	0.0
Departmental Library	<u>354.8</u>	<u>366.0</u>	<u>380.0</u>
NBC Administrative Operations Directorate	835.0	540.8	547.5
FBMS Hosting	0.0	0.0	693.0
FBMS Master Data Management	0.0	208.3	208.3
Financial Systems (including Hyperion)	2,655.6	2,650.7	2,662.1
IDEAS	384.8	386.5	388.2
Quarters Program	1.1	1.3	1.0
NBC FBMS Conversion	<u>0.0</u>	<u>27.4</u>	<u>27.4</u>
NBC Financial Management Directorate	3,041.6	3,274.2	3,980.1
Aviation Management	<u>270.0</u>	<u>338.8</u>	<u>335.1</u>
NBC – Aviation Management	270.0	338.8	335.1
Subtotal National Business Center	7,091.6	6,938.1	7,686.8
Total	17,556.2	18,055.4	18,909.4

Sundry Exhibits

Direct billing is used whenever the product or service provided is again severable, but is sold through a time and materials reimbursable support agreement or similar contractual arrangement. The following tables provide the actual direct and reimbursable collections from USGS for 2009, and estimated billings and collections for 2010 and 2011.

Working Capital Fund Revenue Direct Billing Geological Survey (\$ in thousands)

Activity/ Office	2009 ¹ Actual	2010 PY Collections	2010 Estimate	2011 Estimate
Other OS Activities				
<u>Preserve America</u>	0.0	20.0	0.0	0.0
Secretary's Immediate Office	0.0	20.0	0.0	0.0
Single Audit Clearinghouse	0.5	0.2	0.5	0.5
<u>E-Gov Travel</u>	0.0	0.0	0.0	72.0
Office of Financial Management	0.5	0.2	0.5	0.5
<u>FBMS Change Orders</u>	180.0	0.0	180.0	180.0
Financial and Business Management System	180.0	0.0	180.0	180.0
Maximo Consulting Services	0.3	28.5	0.0	0.0
<u>Federal Assistance Award Data System</u>	7.8	0.0	3.9	3.9
Office of Acquisition and Property Management	8.1	28.5	3.9	3.9
DOI LEARN	0.0	0.0	0.0	0.0
DOI Access (HSPD-12)	641.8	0.0	342.7	635.6
<u>Labor and Employee Relations</u>	14.6	0.0	14.6	14.6
Office of Human Resources	656.3	0.0	357.3	650.2
Anchorage Learning & Performance Center	0.0	0.0	4.2	4.3
On-Line Learning	0.0	0.0	14.2	16.9
<u>Washington Leadership & Performance Center</u>	0.0	0.0	2.8	2.9
DOI University	0.0	0.0	21.1	24.1
EEO Training	0.3	0.0	1.2	1.2
<u>EEO Investigations</u>	0.0	0.0	7.9	7.9
Office of Civil Rights	0.3	0.0	9.0	9.0
Safety Projects	0.0	308.5	0.0	0.0
<u>Occupational Health and Safety - Travel</u>	0.0	1.3	0.0	0.0
Office of Occupational Health and Safety	0.0	309.8	0.0	0.0
Oracle Licenses and Support	769.1	1,088.2	1,131.5	1,357.8
Enterprise Architecture Services	991.8	0.0	453.3	453.3
Microsoft Enterprise Licenses	1,487.1	366.6	1,486.1	1,486.1
Anti-Virus Software Licenses	140.6	105.5	168.7	202.5
IT Security Certification & Accreditation	0.0	75.2	0.0	0.0
IT Security	0.0	0.2	0.0	0.0
Enterprise Services Network	2,128.7	0.0	2,459.6	2,558.0
Federal Relay Service	0.0	0.0	15.5	16.1
Office of the Chief Information Officer - Travel	0.0	2.2	0.0	0.0
EID Rack Space	0.0	0.0	9.2	9.6
<u>Active Directory Optimization</u>	0.0	90.0	0.0	0.0

^{1/} 2009 actual column reflects collections from 2009 and any prior years.

Program/Project Support of Bureau, Department, and Governmentwide Costs

**Working Capital Fund Revenue
Direct Billing
Geological Survey
(\$ in thousands)**

Activity/ Office	2009 ^{1/} Actual	2010 PY Collections	2010 Estimate	2011 Estimate
Other OS Activities con't				
Office of the Chief Information Officer	5,517.3	2,157.9	5,723.9	6,083.4
FY 2008 CFO Audit	81.9	0.0	0.0	0.0
FY 2009 CFO Audit	0.0	0.0	0.0	0.0
FY 2010 CFO Audit	0.0	0.0	22.6	0.0
<u>FY 2011 CFO Audit</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>251.6</u>
Central Services	81.9	0.0	22.6	251.6
Federal FSA Program	226.3	433.0	248.9	271.6
Colorado School of Mines	15.2	0.0	15.2	15.2
<u>Imagery for the Nation</u>	<u>975.0</u>	<u>0.0</u>	<u>1,064.5</u>	<u>827.5</u>
Central Services	1,216.4	433.0	1,328.6	1,114.2
Subtotal Other OS Activities	7,660.9	2,949.4	7,646.8	8,388.9

^{1/} 2009 actual column reflects collections from 2009 and any prior years.

Sundry Exhibits

Working Capital Fund Revenue Direct Billing Geological Survey (\$ in thousands)

Activity/ Office	2009 ^{1/} Actual	2010 PY Collections	2010 Estimate	2011 Estimate
National Business Center				
<u>Acquisition Services – DC</u>	70.0	0.0	0.0	0.0
NBC Acquisition Services Directorate	70.0	0.0	0.0	0.0
Creative Communications	20.6	0.0	21.3	21.6
Facilities Reimbursable Services	0.1	0.0	0.0	0.0
<u>Reimbursable Mail Services</u>	9.6	0.0	6.2	6.6
NBC Administrative Operations Directorate	30.3	0.0	27.6	28.3
Financial Systems	72.0	0.0	44.2	45.7
<u>IDEAS</u>	148.1	0.0	158.0	164.8
NBC Financial Management Directorate	220.1	0.0	202.2	210.4
Client Liaison and Product Development Division	7.6	0.0	5.9	6.3
Personnel & Payroll Systems Division	372.1	0.0	15.7	15.7
HR Management Systems Division	66.9	0.0	172.7	109.3
Quicktime Services	0.0	0.0	391.9	402.2
<u>Human Resources Operations</u>	938.3	0.0	0.0	0.0
NBC Human Resources Directorate	1,384.8	0.0	586.3	533.6
Enterprise Infrastructure Division	618.9	0.0	631.1	652.6
Customer Support Services	0.7	0.0	0.7	0.7
<u>Customer Support Center</u>	0.0	0.0	34.3	35.5
NBC Information Technology Directorate	619.6	0.0	666.1	688.7
Government-Wide Forums	3.8	0.0	0.0	0.0
Financial Management Intern Program VI	12.0	0.0	0.0	0.0
Washington Leadership & Performance Center	49.1	0.0	0.0	0.0
Albuquerque Learning & Performance Center	3.1	0.0	0.0	0.0
Denver Learning & Performance Center	20.8	0.0	0.0	0.0
National Indian Programs Training Center	1.1	0.0	0.0	0.0
<u>On-Line Learning</u>	59.2	0.0	0.0	0.0
NBC Human Resources Directorate	149.1	0.0	0.0	0.0
Subtotal National Business Center	2,473.9	0.0	1,482.1	1,461.0
Total	10,134.8	2,949.4	9,128.9	9,849.9

^{1/} 2009 actual column reflects collections from 2009 and any prior years.

Program/Project Support of Bureau, Department, and Governmentwide Costs

Payments to other Federal agencies include the following:

	2010 Budget	2010 Revised	2011 Fixed Costs And Related Changes
Worker's Compensation Payments	\$3,010	\$3,010	NA
<i>Amount of worker's compensation payments absorbed</i>	[\$0]	[\$0]	[+\$90]
The adjustment is for actual charges through June 2009, in the costs of compensating injured employees and dependents of employees who suffer accidental deaths while on duty. Costs for 2011 will reimburse the Department of Labor, Federal Employees Compensation Fund, pursuant to 5 U.S.C. 8147(b) as amended by Public Law 94-273. The estimated cost increase will be absorbed.			
Unemployment Compensation Payments	\$668	\$668	NA
<i>Amount of unemployment compensation payments absorbed</i>	[\$0]	[\$0]	[+\$43]
The adjustment is for estimated changes in the costs of unemployment compensation claims to be paid to the Department of Labor, Unemployment Trust Fund, pursuant to Public Law 96-499. The estimated cost increase will be absorbed.			
Rental Payments	\$68,478	\$68,478	NA
<i>Amount of rental payments absorbed</i>	[\$0]	[\$0]	[+\$1,080]
The adjustment is for changes in the costs payable to General Service Administration (GSA) and others resulting from changes in rates for office and non-office space as estimated by GSA, as well as the rental costs of other currently occupied space. These costs include building security; in the case of GSA space, these are paid to DHS. Costs of mandatory office relocations, i.e., relocations in cases where due to external events there is no alternative but to vacate the currently occupied space, are also included. The estimated cost increase will be absorbed.			

Internal Bureau Overhead/Cost Allocation Methodology

The USGS manages overhead/administrative costs at two levels—the bureau and science center. Bureau-level costs include headquarters and regional support for executive, managerial, supervisory, administrative, and financial functions and related bureauwide systems. At the bureau level, funding appropriated to the Science Support and Enterprise Information budget activities pays the bureauwide overhead costs in the same proportion as appropriated funding is to total funding. For this reason, bureauwide overhead costs collected on reimbursable support agreements are deposited within the Science Support and Enterprise Information program areas, as well.

The USGS charges a bureau overhead rate (12 percent in 2009 and 2010) on reimbursable work from non-Interior customers to cover their share of bureau-level costs. In some cases, the USGS does apply reduced or special rates when it can be demonstrated that indirect costs are substantially and consistently less than the norm and the amount collected covers the full costs, such as with pass-through funding where the Survey does not perform any of the actual work. The following table shows the funding available to the Science Support and Enterprise Information programs, including the anticipated overhead collections to pay for bureauwide costs.

Sundry Exhibits

(Dollars in Thousands)

Source of Funding	2011 Appropriation	2011 Bureau Overhead Distribution	2011 Total
Science Support Budget Activity	69,225	29,350	98,575
Enterprise Information Budget Activity	45,969	8,278	53,674
Total Funding	115,194	37,629	150,216

At the science center level, because there generally is not an appropriated funding source to pay the local overhead (common services) costs, both the appropriated and reimbursable funding are assessed a percentage to cover their share of science center level costs. Science center common services costs include center costs that are not directly attributable to a specific activity or project, such as managerial, supervisory, administrative, and financial functions and related systems, as well as costs incidental to providing services and products, such as postage, training, miscellaneous supplies and materials. The cost during 2009, for the local overhead, totaled \$165.8 million from both appropriated and reimbursable funds.

In recognition of the USGS role as the science bureau for the Department of the Interior, the USGS is continuing to give Department bureaus and offices a "preferred" customer rate on overhead charges for a significant portion of reimbursable work, to the extent that matching funds are available within the USGS budget. The maximum rate that cost centers may charge other Department bureaus for common services and bureau costs combined remains 15 percent net. In 2011, of the 15 percent, 7.5 percent is applied to bureau costs, and the remaining 7.5 percent is applied to common services costs. Cost centers must fund the common services costs not recovered (e.g., the difference between the cost center's standard common services costs and the 7.5 percent) from USGS appropriated funds. In this way, the USGS is partnering on the science needs of Interior from both the bureau and cost centers.

- The Chief Financial Officer establishes the USGS bureau special rate for each fiscal year. The special rate for 2010 is 3 percent. Cost centers do not charge more than the bureau special rate for facilities-related costs or their standard common services rate when funding is approved for a bureau-level special rate. Special rates are applied under the following circumstances.
- A bureau special rate of 3 percent net is applied to cover reduced administrative costs when the USGS receives funds from a non-USGS organization and awards a grant to a third-party entity.
- A bureau special rate of 3 percent net is applied to cover reduced administrative costs when the USGS receives funds from one or more non-USGS organizations to support, under USGS leadership, a strategic science objective which includes the USGS passing through funds to one or more third party entities.
- A bureau special rate of 3 percent net is applied to cover reduced administrative costs when the USGS receives funds from a non-USGS organization for the purpose of the customer acquiring services through the Cartographic Services or the Remotely Sensed Data Contracts. The special rate helps encourage other Federal agencies to use these contracts for cartographic services and remotely sensed data, rather than establishing

Program/Project Support of Bureau, Department, and Governmentwide Costs

and managing their own contracts, and ensures greater data consistency through the use of common service providers.

- A bureau special rate of 3 percent net is applied to cover reduced administrative costs when the USGS receives funds from a non-USGS organization for the purpose of passing through the customer's funds to State and local governments for the direct purchase of geospatial data.
- Biology Cooperative Research Units (CRUs) are supported by a three-way partnership including the USGS, a State, and a university. The academic institutions where CRUs are collocated provide significant administrative support. In recognition of the direct services support received from the non-USGS partners, CRUs only recover one-half of the bureau rate (6 percent) normally recovered from reimbursable customers or partners.

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Authorizations

43 U.S.C. 31 et seq. Organic Act of March 3, 1879, as amended, establishes the United States Geological Survey. Provides, among other matters, that the USGS is directed to classify the public lands and examine the geological structure, mineral resources, and products within and outside the national domain. Establishes the Office of the Director of the United States Geological Survey under the Department of the Interior. The Director is appointed by the President by and with the advice and consent of the Senate. P.L. 102–285, Sec. 10(a) establishes the official name as United States Geological Survey.

Title 15 – Commerce and Trade

15 U.S.C. 2901–2908 The National Climate Program Act of 1978. Establishes a national climate program to assist the Nation and the world in understanding and responding to natural and human-induced climate processes and their known and potential effects. The Department of the Interior has a mandated role in this Program.

15 U.S.C. 2921 et seq. The Global Change Research Act of 1990. Establishes the United States Global Change Research Program aimed at understanding and responding to global change, including the cumulative effects of human activities and natural processes on the environment, to promote discussions toward international protocols in global change research, and for other purposes.

15 U.S.C. 5631 et seq. Land Remote Sensing Policy Act of 1992. Enables the United States to maintain leadership in land remote sensing by providing data continuity for the Landsat program. Assigns responsibility for the "National Satellite Land Remote Sensing Data Archive" to the Department of the Interior. Authorizes and encourages the Department of the Interior and other Federal agencies to carry out research and development programs in applications of these data and makes Landsat data available to the public.

Title 16 – Conservation

16 U.S.C. 17 et seq. National Park Service Organic Act of 1916. Parts of Title 16, Conservation, as amended and supplemented, apply to the USGS. Notably, the Outdoor Recreation Act of 1936 authorizes the Secretary of the Interior to sponsor, engage in, and assist in research relating to outdoor recreation, directly or by contract or cooperative agreements, and make payments for such purposes; undertake studies and assemble information concerning outdoor recreation; and cooperate with educational institutions and others to assist in establishing education programs and activities and to encourage public use and benefits from outdoor recreation.

16 U.S.C. 661 et seq. Fish and Wildlife Coordination Act of 1934. Authorizes the Secretary of the Interior to prepare plans to protect wildlife resources, to conduct surveys on public lands, and to accept funds or lands for related purposes; authorizes the investigation and reporting of proposed Federal actions that affect the development, protection, rearing, and stocking of all species of wildlife and their habitat in controlling losses, minimizing damages, and providing recommendations to minimize impacts on fish and wildlife resources. National Wildlife Refuge System Improvement Act of 1997 (P.L. 105–57) amends the National Wildlife Refuge System

Authorizations

Administration Act of 1966 to improve the management of the National Wildlife Refuge System, and for other purposes.

16 U.S.C. 703–712 Migratory Bird Treaty Act of 1918, as amended. Implements four international treaties that individually affect migratory birds common to the United States, Canada, Mexico, Japan, and the former Soviet Union. Establishes Federal responsibility for protection and management of migratory and nongame birds, including the establishment of season length based on scientific information relative to zones of temperature, distribution, abundance, breeding habits and times and lines of migratory flight of migratory birds. Establishes the Secretary of the Interior's responsibility for bag limits and other hunting regulations and issuance of permits to band, possess, or otherwise make use of migratory birds.

16 U.S.C. 715 Migratory Bird Conservation Act of 1900. Establishes the Migratory Bird Conservation Commission; authorizes the Secretary of the Interior to conduct investigations and publish documents related to North American birds.

16 U.S.C. 742(a) et seq. Fish and Wildlife Act of 1956. Authorizes the Secretary of the Interior to conduct investigations, prepare and disseminate information, and make periodic reports to the public regarding the availability and abundance and the biological requirements of fish and wildlife resources; provides a comprehensive national fish and wildlife policy and authorizes the Secretary of the Interior to take steps required for the development, management, advancement, conservation, and protection of fisheries and wildlife resources through research, acquisition of refuge lands, development of existing facilities, and other means.

16 U.S.C. 742(l) Fish and Wildlife Improvement Act of 1978, as amended by P.L. 95–616. Authorizes the Secretary of the Interior to enter into cooperative agreements with colleges and universities, State fish and game agencies, and nonprofit organizations for the purpose of developing adequate, coordinated, cooperative research and training programs for fish and wildlife resources.

16 U.S.C. 797(c) Following language supports Appropriations language "and Federal Energy Regulatory Commission licensees." States that, "To cooperate with the executive departments and other agencies of States or National Governments in such investigations; and for such purposes the several departments and agencies of the National Government are authorized and directed upon the request of the commission, to furnish such records, papers and information in their possession as may be requested by the commission, and temporarily to detail to the commission such officers or experts as may be necessary in such investigations."

16 U.S.C. 931–939 Great Lakes Fishery Act of 1956. Implements the Convention on Great Lakes Fisheries between the United States and Canada; authorizes construction, operation, and maintenance of sea lamprey control works; sets forth procedures for coordination and consultation with States and other Federal agencies; and establishes the Great Lakes Fisheries Commission.

16 U.S.C. 1131 and 1133 Wilderness Act of 1964, as amended. Requires the USGS to assess the mineral resources of each area proposed or established as wilderness. The studies are to be on a planned and recurring basis. The original series of studies has been completed, and no recurring studies have been requested or funded.

16 U.S.C. 1361 et seq. Marine Mammal Protection Act of 1972, as amended. Establishes a responsibility to conserve marine mammals with management authority vested in the Department of the Interior for the sea otter, walrus, polar bear, dugong, and manatee.

16 U.S.C. 1531 et seq. Endangered Species Act of 1973, as amended. Provides for the conservation of threatened and endangered species of fish, wildlife, and plants, and authorizes establishment of cooperative agreements and grants-in-aid to States that establish and maintain active and adequate programs for endangered and threatened wildlife and plants.

16 U.S.C. 1604. Forest and Rangeland Renewable Resources Planning Act of 1974, as amended by the National Forest Management Act of 1976. The USGS is a party in an interagency agreement with the Forest Service to assess the mineral resources of National Forests.

16 U.S.C. 2801 et seq. National Aquaculture Act of 1980. Directs the Secretary of the Interior to participate in the development of a National Aquaculture Development Plan and authorizes research, development, and other activities to encourage the development of aquaculture in the United States.

16 U.S.C. 3141 et seq. Alaska National Interest Lands Conservation Act of 1980. Designates certain public lands in Alaska as units of the National Park, National Wildlife Refuge, Wild and Scenic Rivers, National Wilderness Preservation and National Forest Systems, resulting in general expansion of all systems and provided comprehensive management guidance for all public lands in Alaska.

16 U.S.C. 3501 et seq. Coastal Barrier Resources Act of 1982. Designates various underdeveloped coastal barrier islands depicted by specific maps for inclusions in the Coastal Barrier Resource System. **P.L. 106–514** Coastal Barrier Resources Reauthorization Act of 2000. Reauthorizes and amends the Coastal Barrier Resources Act of 1999.

16 U.S.C. 4701 et seq. Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990. Establishes a Federal program to prevent introduction and control the spread of introduced aquatic nuisance species.

Title 25 – Indians

25 U.S.C. 450 et seq. Tribal Self-Governance Act of 1994. The USGS participates in the Tribal Self-Governance Program by identifying USGS activities that may be available for tribal operation under the Self-Governance Act. The USGS discusses programs and activities with interested tribal governments.

Title 30 – Mineral Lands and Mining

30 U.S.C. 21(a) Mining and Minerals Policy Act of 1970. Emphasizes Department of the Interior responsibility for assessing the mineral resources of the Nation.

30 U.S.C. 201 Federal Coal Leasing Amendments Act of 1976. Provides that no lease sale may be held on Federal lands unless the lands containing the coal deposits have been included in a comprehensive land-use plan. Provides that the Secretary is authorized and directed to conduct a comprehensive exploratory program designed to obtain sufficient data and information to evaluate the extent, location, and potential for developing the known recoverable

Authorizations

coal resources within the coal lands. The USGS provides data and information from coal research and field investigations, which are useful to the BLM to meet the requirements of the coal leasing program. Further, the Secretary, (**Sec. 208–1(b)**) through the USGS, "... is authorized to conduct seismic, geophysical, geochemical, or stratigraphic drilling, or to contract for or purchase the results of such exploratory activities from commercial or other sources which may be needed to implement the ..." exploratory program.

30 U.S.C. 641 Following language supports Appropriations language "administer the minerals exploration program." Provides that, "The Secretary of the Interior is hereby authorized and directed, in order to provide for discovery of additional domestic mineral reserves, to establish and maintain a program for exploration by private industry within the United States, territories and possessions for such minerals, excluding organic fuels, as he shall from time to time designate, and to provide Federal financial assistance on a participating basis for that purpose." (P.L. 85–701.)

30 U.S.C. 1026 Section 6 of the Geothermal Steam Act Amendments of 1988. Requires the Secretary of the Interior to (1) maintain a monitoring program for significant thermal features within units of the National Park System and (2) establish a research program to collect and assess data on the geothermal resources within units of the National Park System with significant thermal features in cooperation with the USGS. Section 8 requires the USGS to conduct a study of the impact of present geothermal development in the vicinity of Yellowstone National Park on the thermal features within the park.

30 U.S.C. 1028 Energy Policy Act of 1992. Directs the Secretary of the Interior, through the USGS and in consultation with the Secretary of Energy, to establish a cooperative government-private sector program with respect to hot dry rock geothermal energy resources on public lands. Supports recurring assessments of the undiscovered oil and gas resources of the United States.

30 U.S.C. 1101, 1121, 1123 Geothermal Energy Research, Development, and Demonstration Act of 1974. Provides that the Department of the Interior is responsible for the evaluation and assessment of the geothermal resource base and the development of exploration technologies. The Chairman, acting through the USGS and other appropriate agencies, shall develop and carry out a plan for the inventoring of all forms of geothermal resources of Federal lands; conduct regional surveys; publish and make available maps, reports, and other documents developed from the surveys; and participate with non-Federal entities in research to develop, improve, and test technologies for the discovery and evaluation of geothermal resources.

30 U.S.C. 1201–1202, 1211 Surface Mining Control and Reclamation Act of 1977, as amended. Establishes the Office of Surface Mining Reclamation and Enforcement (OSM). OSM depends in part upon the USGS for a determination of the probable hydrologic consequences of mining and reclamation operations.

30 U.S.C. 1419 et seq. Deep Seabed Hard Mineral Resources Act of 1980. Provides authorization for conducting a continuing program of ocean research that "shall include the development, acceleration, and expansion, as appropriate, of the studies of the ecological, geological, and physical aspects of the deep seabed in general areas of the ocean where exploration and commercial development are likely to occur" The USGS, based on expertise developed in regional offshore geologic investigations, provides geological and mineral resource expertise in responding to the requirements of the Act.

30 U.S.C 1601 et seq. National Materials and Minerals Policy, Research and Development Act of 1980. Reemphasizes the responsibility of the Department of the Interior to assess the mineral resources of the Nation.

30 U.S.C. 1901–1902 Methane Hydrate Research and Development Act of 2000. Authorizes appropriations for the establishment of a methane hydrate research and development program within the DOE. The DOE is directed to carry out this program in consultation with the U.S. Navy, USGS, Minerals Management Service, and NSF, through grants, contracts, and cooperative agreements with universities and industrial enterprises. Provides for the study of the use of methane hydrate as a source of energy. Sunsets the methane hydrate research and development program at the end of FY 2005.

Title 33 – Navigation and Navigable Waters

33 U.S.C. 883(a) Great Lakes Shoreline Mapping Act of 1987. Section **3202(a)** requires that the Director of the National Oceanic and Atmospheric Administration "... in consultation with the Director of the United States Geological Survey, shall submit to the Congress a plan for preparing maps of the shoreline of the Great Lakes under section 3203." Section **3203** requires that "... subject to authorization and appropriation of funds, the Director, in consultation with the Director of the United States Geological Survey, shall prepare maps of the shoreline areas of the Great Lakes."

33 U.S.C. 1251–1274, 2901 Federal Water Pollution Control Act Amendments of 1972, Clean Water Act of 1977, and Water Quality Act of 1987, authorize extensive water quality planning, studies, and monitoring under the direction primarily of the EPA.

33 U.S.C. 1271 Water Resources Development Act of 1992. Establishes a National Contaminated Sediment Task Force, with USGS as a member, to conduct a comprehensive national survey of aquatic sediment quality.

33 U.S.C. 2201 et seq. Water Resources Development Act of 1990. Authorizes a program for planning, construction, and evaluation of measures for fish and wildlife habitat rehabilitation and enhancement; cooperative effort and mutual assistance for use, protection, growth, and development of the Upper Mississippi River system; implementation of a long-term resource monitoring program; and implementation of a computerized inventory and analysis systems.

33 U.S.C. 2701, 2761 Oil Pollution Act of 1990. Section **2761** authorizes the establishment of an Interagency Coordinating Committee on Oil Pollution Research, of which the Department of the Interior is a member, to develop a plan for the implementation of the oil pollution research, development, and demonstration program.

Title 42 – The Public Health and Welfare

42 U.S.C. 300(f) et seq. Safe Drinking Water Act Amendments of 1996. Authorizes research "... relating to the causes, ... treatment, ... prevention of ... impairments of man resulting directly or indirectly from contaminants in water, or to the provision of a dependably safe supply of drinking water" The USGS and EPA have an interagency agreement covering aquifer studies conducted by the USGS relating to sole source aquifers.

42 U.S.C. 2021(b) et seq. Low-Level Radioactive Waste Policy Act of 1980. Requires intra-State or regional arrangements for disposal of low-level radioactive waste by July 1986.

Authorizations

The USGS provides geohydrologic research and technology to Federal and State agencies developing plans for low-level waste management. The amending Act of 1985 included approval of seven interstate compacts.

42 U.S.C. 2210(b), 2231 Nuclear Regulatory Commission Authorization Act. Requires the Secretary of Energy to monitor and report to the President and Congress on the viability of the domestic uranium industry. Under a Memorandum of Understanding between the Department of Energy and the Department of the Interior, the USGS provides information on domestic uranium resources to the Energy Information Agency.

42 U.S.C. 4321 et seq. National Environmental Policy Act of 1969, as amended. Requires prior-to-action determination that any major Federal action will not have a significantly adverse effect upon the environment. The USGS is called upon to provide technical review or inputs to resource-related actions proposed by other Federal agencies.

42 U.S.C. 5121, 5132 Disaster Relief Act of 1974, Section **202(a)**. States that "The President shall ensure that all appropriate Federal agencies are prepared to issue warnings of disasters to State and local officials." In addition, Section **202(b)** states that "The President shall direct appropriate Federal agencies to provide technical assistance to State and local governments to insure that timely and effective disaster warning is provided."

42 U.S.C. 5845(c) Energy Reorganization Act of 1974. Directs all other Federal agencies to "... (2) ... furnish to the (Nuclear Regulatory) Commission ... such research services ... for the performance of its functions; and (3) consult and cooperate with the Commission on research development matters of mutual interest and provide such information and physical access to its facilities as will assist the Commission in acquiring the expertise necessary to perform its licensing and related regulatory functions." The USGS conducts geological mapping in areas where nuclear reactor construction is anticipated and conducts investigations of geologic processes that could imperil the safe operation of the reactors or other critical energy facilities.

42 U.S.C. 6217 Energy Act of 2000. Extends energy conservation programs under the Energy Policy and Conservation Act through FY 2003. Specifically for the USGS, Section **604**, "Scientific Inventory of Oil and Gas Reserves," instructs the Secretary of the Interior, in consultation with the Secretaries of Agriculture and Energy, to conduct and update regularly an inventory of all onshore Federal lands. The inventory will identify (1) USGS reserve estimates of the oil and gas resources underlying these lands, (2) restrictions or impediments to development of such resources, and (3) furnish such inventory data to the House Committee on Resources and the Senate Committee on Energy and Natural Resources. Authorizes appropriations as necessary for implementation.

42 U.S.C. 6901 et seq. Resource Conservation and Recovery Act of 1976 and Hazardous and Solid Waste Amendments of 1984. Requires the EPA to promulgate guidelines and regulations for identification and management of solid waste, including disposal. The expertise of the USGS is a present and potential source of assistance to the EPA in defining and predicting the hydrologic effects of waste disposal.

42 U.S.C. 7418, 7401, 7470. Clean Air Act of 1977, as amended. Requires Federal facilities to comply with air quality standards to the same extent as non-governmental entities. Establishes requirements to prevent significant deterioration of air quality and to preserve air quality in national parks, national wilderness areas, national monuments and national seashores.

42 U.S.C. 7701 et seq. Earthquake Hazards Reduction Act of 1977. Sets as a national goal the reduction in the risks of life and property from future earthquakes in the United States through the establishment and maintenance of a balanced earthquake program encompassing prediction and hazard assessment research, seismic monitoring and information dissemination. Subsequent public laws established a National Earthquake Hazards Reduction Program, of which the USGS is a part. P.L. 96–472 authorizes the establishment of a National Earthquake Prediction Evaluation Council. P.L. 101–614 (National Earthquake Hazards Reduction Program Reauthorization Act), P.L. 105–47, and P.L. 106–503 (Earthquake Hazards Reduction Authorization Act of 2000) reauthorize the 1977 Act, repeal some sections, and add new language in some sections including the establishment of an Advanced National Seismic Research and Monitoring System.

42 U.S.C. 8901 et seq. Acid Precipitation Act of 1980. Authorizes an "Acid Precipitation Program and Carbon Dioxide Study," including the establishment of an Acid Precipitation Task Force (of which the Department of the Interior is a member) and a comprehensive 10-year research program. Title IX of the Clean Air Act Amendments of 1990 (P.L. 101–549) calls for continuation of the National Acid Precipitation Assessment Program (NAPAP) established under the Acid Precipitation Act of 1980. The USGS is an active participant in the research program and coordinates interagency monitoring of precipitation chemistry. The USGS National Coal Resources Data System was named by the EPA as the official database for information on coal quality. The EPA, utility companies, and coal mining industries use the database to estimate the amount of air pollution derived from coal combustion. The USGS is a participant in studies of acid precipitation as a result of prior work in this field.

42 U.S.C. 9601 et seq. Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). Establishes a Hazardous Substance Superfund (26 U.S.C. 9507) to help finance the massive cleanup programs needed at sites that are heavily contaminated with toxic wastes. The USGS is called upon by the EPA and State agencies to investigate and determine the extent of contamination and remedial measures at some of these sites.

42 U.S.C. 10101 et seq. Nuclear Waste Policy Act of 1982. Defines the DOE as lead agency with responsibility for siting, building, and operating high-level radioactive waste repositories. Requires participation by the USGS in a consultative and review role to the DOE. The Nuclear Waste Policy Amendments Act of 1987 (Title V of the Omnibus Budget Reconciliation Act of 1987) identifies Yucca Mountain, NV, as the first site to be studied to ascertain suitability for disposal of high level nuclear waste. The 1987 Act provides that the DOE conduct a survey of potentially suitable sites for a monitored retrievable storage facility.

42 U.S.C. 10301 et seq. Water Resources Development Act of 1986. Amends the Water Resources Research Act of 1984 (P.L. 98–242) by adding a new Title III, "Ogallala Aquifer Research and Development." P.L. 109–471 amends the act to extend authorization of appropriations through FY 2010. The Water Resources Research Act of 1984, as amended, provides for water resources research, information transfer, and student training in grants and contract programs that will assist the Nation and the States in augmenting their science and technology to discover practical solutions to water shortage and quality deterioration problems. Establishes a Federal-State partnership in water resources research, education, and information transfer through a matching grant program that authorizes State Water Resources Research Institutes at land grant universities across the Nation.

Title 43 – Public Lands

43 U.S.C. 31 et seq. Organic Act of March 3, 1879, as amended, establishes the United States Geological Survey. Provides, among other matters, that the USGS is directed to classify the public lands and examine the geological structure, mineral resources, and products within and outside the national domain. Establishes the Office of the Director of the United States Geological Survey under the Department of the Interior. The Director is appointed by the President by and with the advice and consent of the Senate. P.L. 102–285, Sec. 10(a) establishes the official name as the United States Geological Survey.

Particularly: Section 4 of the Continental Scientific Drilling and Exploration Act of 1988. Requires that "The Secretary of the Department of Energy, the Secretary of the Department of the Interior through the United States Geological Survey, and the Director of the National Science Foundation assure an effective, cooperative effort in furtherance of the Continental Scientific Drilling Program of the United States."

And: 43 U.S.C. **31(a–h)**. National Geologic Mapping Act of 1992. Establishes in the USGS a National Cooperative Geologic Mapping Program. States "The objectives of the geologic mapping program shall include (1) determining the Nation's geologic framework through systematic development of geologic maps at scales appropriate to the geologic setting and the perceived applications, such maps to be contributed to the national geologic map database; (2) development of a complementary national geophysical-map database, geochemical-map database, and a geochronologic and paleontologic database that provide value-added descriptive and interpretive information to the geologic-map database; (3) application of cost-effective mapping techniques that assemble, produce, translate and disseminate geologic-map information and that render such information of greater application and benefit to the public; and (4) development of public awareness for the role and application of geologic-map information to the resolution of national issues of land use management." Section **31(g)** requires the Secretary of the Interior to provide biennial reports on the status of the program, progress in developing the national geologic map database, and any recommendations the Secretary may have for legislative or other action to achieve the purposes of the Act to the Committee on Resources of the House of Representatives and the Committee on Energy and Natural Resources of the Senate. The Act was reauthorized in 1997 (P.L. 105–36) and 1999 (P.L. 106–148). **31(i)** Requires the National Academy of Sciences to review and report on the resource research activities of the USGS. **31(j)** FY 1997 Omnibus Appropriations Act. Requires that, beginning in FY 1998 and once every five years thereafter, the National Academy of Sciences shall review and report on the biological research activity of the USGS.

43 U.S.C. 32 Authorizes the Secretary of the Interior to authorize one of the geologists to act as Director of the USGS in his/her absence.

43 U.S.C. 34 States that the scientific employees of the USGS shall be selected by the Director, subject to the approval of the Secretary of the Interior exclusively for their qualifications as professional experts.

43 U.S.C. 36 Authorizes the purchase of professional and scientific books and periodicals needed for statistical purposes by the scientific divisions of the USGS and that the purchases may be paid for out of appropriations made for the USGS. **36(a)** The Director of the USGS is authorized "... to acquire for the United States, by gift or devise, scientific or technical books, manuscripts, maps, and related materials, and to deposit the same in the library of the United States Geological Survey for reference and use as authorized by law." **36(b)** "The

Secretary of the Interior may, on behalf of the United States and for the use by the United States Geological Survey in gaging streams and underground water resources, acquire lands by donation or when funds have been appropriated by Congress by purchase or condemnation" Following language supports Administrative Provisions language "acquisition of lands for gauging stations and observation wells;": Provides that, "The Secretary of the Interior may, on behalf of the United States and for the use by the Geological Survey in gaging streams and underground water resources, acquire lands by donation or when funds have been appropriated by Congress by purchase or condemnation" **36(c)** Acceptance of contributions from public and private sources; cooperation with other agencies in prosecution of projects. States that "In fiscal year 1987 and thereafter the United States Geological Survey is authorized to accept lands, buildings, equipment, and other contributions from public and private sources and to prosecute projects in cooperation with other agencies, Federal, State, or private."

43 U.S.C. 38 Topographic surveys; marking elevations. Provides for the establishment and location of permanent benchmarks used in the making of topographic surveys.

43 U.S.C. 41 Publications and reports; preparation and sale. Provides for the publication of geological and economic maps, illustrating the resources and classification of the lands, and reports upon general and economic geology and paleontology. Provides for the scientific exchange and sale of such published material.

43 U.S.C. 42 et seq. Distribution of maps and atlases, etc. Authorizes and directs the Director, USGS, upon the approval of the Secretary of the Interior, to distribute topographic and geologic maps and atlases of the United States. The prices and regulations are to be fixed by the Director with the approval of the Secretary. Provides that copies of each map or atlas, not to exceed five hundred, shall be distributed gratuitously among foreign governments, departments of our own Government, literary and scientific associations, and to educational institutions or libraries. States that "In fiscal year 1984 and thereafter, all receipts from the sale of maps sold or stored by the United States Geological Survey shall be available for map printing and distribution to supplement funds otherwise available, to remain available until expended."

43 U.S.C. 43 Copies to Senators, Representatives and Delegates. Provides that one copy of each map and atlas shall be sent to each Senator, Representative, and Delegate in Congress, if published within his term, and that a second copy be placed at the disposal of each.

43 U.S.C. 44 Sale of transfers or copies of data. Provides that the USGS may furnish copies of maps to any person, concern, institution, State, or foreign government.

43 U.S.C. 45 Production and sale of copies of photographs and records; disposition of receipts. Authorizes the USGS to produce and sell on a reimbursable basis, copies of aerial or other photographs, mosaics, and other official records. Discusses disposition of receipts from sales.

43 U.S.C. 49 Extension of cooperative work to Puerto Rico. Authorizes the making of topographic and geological surveys and conducting investigations relating to mineral and water resources in Puerto Rico by the USGS.

43 U.S.C. 50 Provides that the share of the USGS in any topographic mapping or water resources investigations carried on in cooperation with any State or municipality shall not exceed 50 percent of the cost thereof. **50(b)** Recording of obligations against accounts receivable and crediting of amounts received; work involving cooperation with State, Territory, etc. "Before, on, and after October 18, 1986, in carrying out work involving cooperation with any

Authorizations

State, Territory, possession, or political subdivision thereof, the United States Geological Survey may, notwithstanding any other provision of law, record obligations against accounts receivable from any such entities and shall credit amounts received from such entities to this appropriation." (Note U.S.C. states that "this appropriation" refers to USGS annual appropriation as contained in the Department of the Interior and Related Agencies Appropriations Act.) Following language supports Appropriations language "Provided further, that, heretofore and hereafter, in carrying out work involving cooperation with any State, Territory, possession, or political subdivision thereof, the Geological Survey may, notwithstanding any other provisions of law, record obligations against accounts receivable from any such entities and shall credit amounts received from such entities to this appropriation."

50(c) Payment of costs incidental to utilization of services of volunteers. "Appropriations herein and on and after December 22, 1987, made shall be available for paying costs incidental to the utilization of services contributed by individuals who serve without compensation as volunteers in aid of work of the United States Geological Survey, and ... Survey officials may authorize either direct procurement of or reimbursement for expenses incidental to the effective use of volunteers such as, but not limited to, training, transportation, lodging, subsistence, equipment, and supplies: Provided further, That provision for such expenses or services is in accord with volunteer or cooperative agreements made with such individuals, private organizations, educational institutions, or State or local government." **50(d)** Services of students or recent graduates. "The United States Geological Survey may on and after November 19, 1999, contract directly with individuals or indirectly with institutions or nonprofit organizations, without regard to section 5 of title 41, for the temporary or intermittent services of students or recent graduates, who shall be considered employees for the purposes of chapters 57 and 81 of title 5, relating to compensation for travel and work injuries, and chapter 171 of title 28, relating to tort claims, but shall not be considered to be Federal employees for any other purposes."

43 U.S.C. 51 Funds for mapping and investigations considered intragovernmental funds. "Beginning October 1, 1990, and thereafter, funds received from any State, territory, possession, country, international organization, or political subdivision thereof, for topographic, geologic, or water resources mapping or investigations involving cooperation with such an entity shall be considered as intragovernmental funds as defined in the publication titled 'A Glossary of Terms Used in the Federal Budget Process.'"

43 U.S.C. 364 et seq. Board on Geographic Names, 1947. Establishes the Board on Geographic Names to provide for uniformity in geographic nomenclature and orthography throughout the Federal Government and to promulgate in the name of the Board decisions with respect to geographic names and principles of geographic nomenclature and orthography.

43 U.S.C. 371 Reclamation Projects Authorization and Adjustment Act of 1992. Public Law 104-46 amends the 1992 law to add Section **3001**, "Western Water Policy Review Act of 1992." Directs the President to undertake a comprehensive review of Federal activities in the 19 western States that directly or indirectly affect the allocation and use of resources, whether surface or subsurface. The Secretary of the Interior, "... given ... responsibilities for ... investigations and reviews into ground water resources through the Geologic Survey (now United States Geological Survey) ..." and the Secretary of the Army "have the resources to assist in a comprehensive review"

43 U.S.C. 1334 et seq. Outer Continental Shelf (OCS) Lands Act. Authorizes the Secretary of the Interior to prescribe rules and regulations to provide for the prevention of waste and conservation of the natural resources of the OCS; to conduct geological and geophysical explorations of the OCS; directs the Secretary of the Interior to conduct a study of any region in

any gas and oil lease sale to obtain information necessary for assessment and management of environmental impacts on human, marine and coastal areas which may be affected by oil and gas development on such areas.

43 U.S.C. 1801 et seq. OCS Lands Act Amendments of 1978. Provides for management of oil and natural gas in the Outer Continental Shelf and for other purposes. The Minerals Management Service is responsible for carrying out all functions in direct support of management of the OCS program. The USGS provides indirect support to the Department's management activities through the basic mission to examine the geological structure, mineral resources, and products of the national domain, which, offshore, includes the EEZ.

Title 50, Appendix – War and National Defense

50 U.S.C. 98 Strategic and Critical Materials Stock Piling Act of 1946 as amended by the Revision Act of 1979. Supports the USGS programs for assessment of domestic minerals, especially for strategic and critical minerals, to complement the Federal mineral stockpile program. Section **98(g)** following language supports Appropriations language "and to conduct inquiries into the economic conditions affecting mining and materials processing industries ... and related purposes as authorized by law and to publish and disseminate data" Provides for scientific, technologic, and economic investigations concerning the development, mining, preparation, treatment, and utilization of ore and other mineral substances.

Public Laws

P.L. 81–82, P.L. 82–231 Arkansas River Compact and Yellowstone River Compact, respectively.

P.L. 93–322 Special Energy Research and Development Appropriation Act of 1975

P.L. 106–291 FY 2001 Interior and Related Agencies Appropriations Act.

P.L. 106–498 Klamath Basin Water Supply Enhancement Act of 2000.

P.L. 106–541 Water Resources Development Act of 2000.

P.L. 107–63 FY 2002 Interior and Related Agencies Appropriations Act.

P.L. 108–7 FY 2003 Interior and Related Agencies Appropriations Act. Consolidated Appropriations Resolution, 2003.

P.L. 108–108 FY 2004 Interior and Related Agencies Appropriations Act.

P.L. 108–360 Earthquake Hazards Reduction Authorization Act of 2004.

P.L. 108–447 FY 2005 Consolidated Appropriations Act. Division E

P.L. 109–54 Department of the Interior, Environment, and Related Agencies Appropriations Act, 2006.

P.L. 109-58 Energy Policy Act of 2005.

Authorizations

P.L. 109-471 Water Resources Research Act Amendments of 2006.

P.L. 110-114 Water Resources Development Act of 2007.

P.L. 110-140 Renewable Fuels, Consumer Protection, and Energy Efficiency Act of 2007 – Title I: Biofuels for Energy Security and Transportation - Biofuels for Energy Security and Transportation Act of 2007 - Subtitle A: Renewable Fuel Standard - (Sec. 111)

P.L. 111-11, 123 Stat. 991 Omnibus Public Land Management Act of 2009.

Additional information related to authorizations of the U. S. Geological Survey can be found at the following website: http://www.usgs.gov/budget/resources_tools.asp