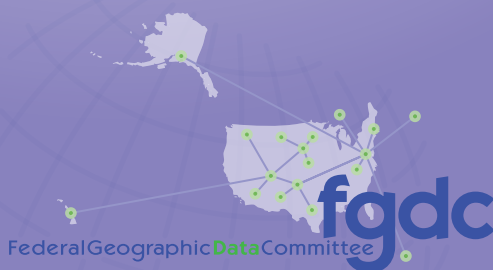


Federal Geographic Data Committee

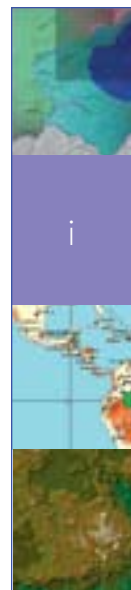


2005 Annual Report



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Highlights of Fiscal Year 2005

October 1, 2004—September 30, 2005

October 2004

Professional Surveyor Magazine says the FGDC's adoption of a national coordinate system, along with a widespread grassroots effort, made the U.S. National Grid a reality.

November 2004

The Census Bureau featured metropolitan and micropolitan statistical areas wall maps of the United States and Puerto Rico on its Web site with hot links to FGDC metadata.

December 2004

An ISO 19139 Draft Technical Specification Editing Committee convened to adjudicate comments submitted with ballots. ISO 19139, which provides a common XML specification for describing, validating, and exchanging geographic metadata and promotes interoperability, is scheduled for publication in March 2005.

January 2005

The Geospatial One-Stop project awarded ESRI of Redlands, CA, a contract to develop Version 2 of the www.geodata.gov portal—an online tool for combining and making available geospatial data and resources from government and private sources.

February 2005

In Phoenix, AZ, the FGDC and DHS/FEMA facilitated an emergency preparedness training course developed for tribal officials.

March 2005

The FGDC and GSA collaborated on a workshop to kick off the development of the geospatial profile for the FEA. The FGDC and DHS/FEMA facilitated another emergency preparedness training course for tribal officials in Emmitsburg, MD. The FGDC also supported the NSGIC Mid-year Meeting in Annapolis, MD.

April 2005

The NPS implemented a revised, server-based metadata management system—the Natural Resource and NPS-wide GIS Data Store. For the remainder of the fiscal year, the NPS populated metadata documents. URISA and NENA initiated a national effort to standardize street addresses across the country. The FGDC supported GSDI's 8th Global Spatial Data Infrastructure Conference in Cairo, Egypt.

May 2005

The FGDC and its members sponsored three workshops: (1) Urban Regional Geospatial Framework Workshop in Washington, DC; (2) GIS Introduction for Conservation Professionals in Shepherdstown, WV; and (3) Emergency Operations for Tribal Governments in Emmitsburg, MD.

June 2005

The FGDC and its members sponsored three workshops: (1) Emergency Preparedness for Tribal Officials in Rochester, WA; (2) Federal Geospatial Grants Workshop in Arlington, VA; and (3) Train the Trainer and Metadata in Denver, CO. At the FGDC Steering Committee meeting, the Governance Action Team presented its recommendations. The FGDC Homeland Security Working Group issued Guidelines for Providing Appropriate Access to Geospatial Data in Response to Security Concerns.

July 2005

The Wetlands Subcommittee, which coordinates geospatial wetlands data-related activities among Federal agencies and promotes standards of accuracy and consistency in geospatial wetlands data, was relaunched. The FGDC and its members sponsored two workshops: GIS Introduction for Conservation Professionals in Shepherdstown, WV, and Emergency Operations for Tribal Governments in Tulsa, OK. The FGDC also supported two events: the NACo Annual Conference in Honolulu, HI, and the 25th ESRI International Users Conference in San Diego, CA.

August 2005

Version 2 of the www.geodata.gov portal, the Geospatial One-Stop project developed by ESRI of Redlands, CA, was deployed. The FGDC and its members facilitated the GIS Introduction for Conservation Professionals training event in Shepherdstown, WV. The FGDC also supported three events: (1) URISA's 7th Annual GIS in Addressing Conference in Austin, TX; (2) CANUS/GeoWG's Military Cooperation Committee 58th Meeting; and (3) the Geo-Informatics Society of South Africa 7th Africa GIS Conference in Sandton, South Africa.

September 2005

The FGDC's Federal agencies responded to FEMA's call for assistance following the devastation that Hurricane Katrina brought to the Gulf Coast States. The FGDC and GSA released the first draft of the geospatial profile for the FEA for public comment on September 13. URISA and NENA released a first draft of the street address standard. The FGDC and its members facilitated two training events: (1) GPS Introduction for Natural Resource Field Personnel in Shepherdstown, WV, and (2) Emergency Preparedness for Tribal Officials in Emmitsburg, MD. The FGDC also supported several conferences: (1) the National Institute of Justice's 8th Annual Crime Mapping Research Conference in Savannah, GA; (2) the Iowa League of Cities Annual Conference in Des Moines, IA; (3) the 18th Annual GIS in the Rockies in Denver, CO; (4) the ICMA 91st Annual Conference in Minneapolis, MN; and (5) the NSGIC Annual Conference in Rochester, NY.



iii

Glossary of Abbreviations and Acronyms

AAG	Association of American Geographers	HUD	U.S. Department of Housing and Urban Development
ACSM	American Congress on Surveying and Mapping	ICMA	International City/County Management Association
ACWI	Advisory Committee on Water Information	IENC	Inland Electronic Navigation Chart
ANSI	American National Standards Institute	ISO	International Organization for Standardization
ASCII	American Standard Code for Information Exchange	IT	information technology
BLM	Bureau of Land Management	LoB	Line of Business
BTS	Bureau of Transportation Statistics	MMS	Minerals Management Service
BW	black and white	NACo	National Association of Counties
CANUS	Canada-United States	NAIP	National Agricultural Imagery Program
CAP	Cooperative Agreements Program	NASA	National Aeronautics and Space Administration
CIO	Chief Information Officer	NDOP	National Digital Orthophoto Program
CLR	color	NED	National Elevation Dataset
COIs	communities of interest	NENA	National Emergency Number Association
CORS	Continuously Operating Reference Station	NGA	National Geospatial-Intelligence Agency
DHS	U.S. Department of Homeland Security	NGO	nongovernmental organization
DOC	U.S. Department of Commerce	NGS	National Geodetic Survey
DoD	U.S. Department of Defense	NGPO	National Geospatial Program Office
DOI	U.S. Department of the Interior	NHD	National Hydrography Dataset
DOJ	U.S. Department of Justice	NILS	National Integrated Land System
DOQQ	digital orthophoto quarter-quadrangle	NOAA	National Oceanic and Atmospheric Administration
DOT	U.S. Department of Transportation	NPS	National Park Service
EO	Executive Order	NRCS	Natural Resources Conservation Service
EPA	U.S. Environmental Protection Agency	NSDI	National Spatial Data Infrastructure
FEA	Federal Enterprise Architecture	NSGIC	National States Geographic Information Council
FEMA	Federal Emergency Management Agency	OGC	Open Geospatial Consortium
FGDC	Federal Geographic Data Committee	OMB	Office of Management and Budget
GCDB	Geographic Coordinate Database	OPUS	Online Positioning User Service
GECCO	Geospatially Enabling Community Collaboration	RD	Rural Development
GIS	geographic information system	URISA	Urban and Regional Information Systems Association
GITA	Geospatial Information Technology Association	USACE	U.S. Army Corps of Engineers
GML	geographic markup language	USCB	U.S. Census Bureau
GOS	Geospatial One-Stop	USDA	U.S. Department of Agriculture
GPS	global positioning system	USFWS	U.S. Fish and Wildlife Service
GSA	U.S. General Services Administration	USGS	U.S. Geological Survey
GSDI	Global Spatial Data Infrastructure		
HDC	Historical Data Committee		

Lost in New Orleans While Mapping Hurricane Katrina

How do you find an address when there are no street signs to guide you and other buildings and house numbers are gone? How do you locate survivors and navigate to their location when you and other rescue workers are using different maps and systems?

Geospatial data standardization moved from the science lab to center stage when Hurricane Katrina slammed into the Gulf Coast on August 29, 2005. On that day, the powerful forces of nature left three States—Louisiana, Mississippi, and Alabama—with destroyed and damaged homes, flooded streets, and stranded residents. No street signs remained visible to guide rescuers to their doorsteps.

In the days and weeks of rescue and recovery that followed Hurricane Katrina (and the two storms that followed—Rita and Wilma), local governments and the general public came to understand the value of readily available geospatial data collected to national standards. They realized how standardized data would enable rescue workers from multiple agencies and various parts of the country to converge on the same place using the same mapping coordinates. They learned first hand how the rescue response depended extensively on sharing data from geographic information systems (GISs).

People from all levels of government witnessed the need for standard geospatial information. Emergency workers used many geographic coordinate systems, including addresses, linear referencing, latitude and longitude, the U.S. National Grid, and local coordinate systems to communicate location. During the rescue and relief efforts, they deployed technologies that had to support all those geographic referencing systems or face a confusing dilemma. Rescue workers also shared and created data sets in a number of formats. To coordinate information, computer models transformed digital geospatial data into graphics and charts, such as maps of hazard zones susceptible to flooding, calculations for debris removal, and demographic analysis of affected residents, available housing, and healthcare assets.

Behind the scenes, government agencies and geospatial partners supported hurricane relief and recovery efforts by helping to populate the Geospatial One-Stop (GOS) portal with existing and planned geospatial data. Significant enhancements to the portal allowed for public and first responder access to the GIS for the Gulf, an integrated Federal, State, and local database developed through a partnership of the Department of the Interior's (DOI's) U.S. Geological Survey (USGS), National Geospatial-Intelligence Agency (NGA), and Department of

Homeland Security (DHS). These efforts demonstrated the value of the GOS portal as a data discovery and decision-support tool in a time of tremendous national need. The Federal Emergency Management Agency (FEMA) worked with the U.S. Department of Agriculture (USDA) Aerial Photography Field Office to deliver National Aerial Imagery Program (NAIP) imagery to first responders, who needed a picture of their surroundings to identify their own location and that of other landmarks.

GOS developed a preliminary Hurricane Katrina Community (<http://gos2.geodata.gov>) where agencies provided policymakers, GIS users, and citizens with useful geospatial information and products. They provided live data and maps (dynamic Web mapping services), applications (data visualization and exploration sites), data download sites (download and ftp sites), clearinghouses (data and metadata catalogs), and general information Web sites.

Other examples of relief work supported by geospatial data and technologies were many. When Mississippi volunteer firefighter Talbot Brooks, who also ran a university GIS center, arrived on the Hurricane Katrina scene, he learned that no maps were available. He recruited 60 volunteers to make maps for emergency responders. Jon Campbell, a USGS volunteer performing relief work, said



Internet access was unavailable for the first 3 weeks his team was there, so they used local maps from gas stations, global positioning systems (GPSs) from rental cars (Neverlost), and mapping software (Streets and Trips) from Microsoft that enabled them to make route sequences so they could efficiently check 40 houses in one day. “We felt helpless—frustrated—we knew mapping assistance was available if we had had Internet access,” Campbell said. “It didn’t take too long to realize we were in the Third World.”

The Environmental Protection Agency (EPA) was one of many Federal Geographic Data Committee (FGDC) member agencies that depended on standardized, documented geospatial data to respond quickly to the aftermath of

the hurricane. The agency received data from field monitors and used it with data about chemical and fuel storage locations and other factors. With this information and GIS capability, they were able to analyze water quality and possible contaminant scenarios in the flooded areas of New Orleans. With GIS, the EPA’s efforts to protect human health benefited from increased communication, collaboration, efficiency, and accuracy.

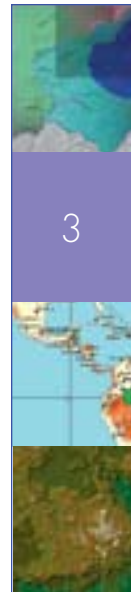
On another front, the Vicksburg office of the U.S. Army Corps of Engineers (USACE) produced daily maps of the water depth. Staff from the New Orleans office gave Vicksburg a link to the LIDAR (Light Detection and Ranging) data on the State site, and the Vicksburg office overlaid the water depth on aerial images and

street maps. The USACE first photographed the edge of the water to determine the water surface elevation and then figured out and plotted the water depths throughout the area to create maps. Military units used the maps in their search and rescue missions to determine if they could walk or drive into a particular area, or if they needed boats to access the area.

In Mississippi, Twyla McDermott, GIS Manager at the City of Charlotte, NC, Office of Strategic Technology Planning, volunteered for GISCorps. The Urban and Regional Information System Association (URISA), an FGDC collaborating partner, sponsors the GISCorps, a group of volunteers who extend geospatial knowledge and training across the globe. In support of Hurricane Katrina relief efforts, they engaged 33 volunteers on four

Example of the U.S. National Grid for New Orleans





missions. McDermott worked with a GISCorps team to provide services from within the Mississippi State Extension Service Global Education Mobile Lab. Dubbed the “Brain Bus,” the lab was equipped with a network of 12 workstations with a complement of laptops loaded with ESRI GIS software. Providing nonstop, 24-hour geospatial technology support services, the lab was powered by two generators that enabled Internet access to be established.

Members of the Geospatial Information and Technology Association (GITA)—another FGDC collaborating partner—were among the GISCorps volunteers who, as they began to use geospatial data for service delivery, quickly grasped three lessons about metadata: (1) metadata are essential, (2) metadata were missing, and (3) metadata documentation takes time. Metadata is analogous to a library card catalog or abstract about the data or product that provides critical facts regarding who, what, when, where, and why. Given the tight deadlines and urgency for services, the volunteers gave a low priority to creating metadata as new data were created and updated. Ultimately, volunteer Beni Patel assumed responsibility for documenting the metadata, a decision that paid off as teams deployed to the coastal counties needed to be equipped with a standardized set of documented geospatial data that they could quickly understand and use.

During the aftermath of the hurricanes, Montanan Lance Clampitt was one of several USGS geospatial liaisons who provided support in the way of addressing, determining locations, and making maps. “After the hurricanes hit, the streets and buildings were either covered with

water or totally destroyed. As a result, the addresses were also gone, and producing maps or local positions using addresses was of little use,” Clampitt said. “Also, the fact that users of the latitude/longitude coordinate system can describe geographic coordinates in various formats makes it easy to transpose or read these coordinates incorrectly, putting hours between the responders and a potential rescue.” Conversion of street addresses and use of an FGDC standard, the U.S. National Grid, helped facilitate the accuracy and reliability of locations. Clampitt says the emergency responder community has embraced the U.S. National Grid reference system for emergency response. (See the comparison table below.)

Mapping System	Percentage of the attempts that correctly identified the location (point number)	Average time for locating a point
Latitude/Longitude	73%	37 seconds
U.S. National Grid	100%	32 seconds

Mike Sweet, University of Montana research specialist, reported these findings in a comparison of the U.S. National Grid to Latitude/Longitude.

U.S. Coast Guard helicopter pilots used GPS coordinates to help evacuate people from flooded neighborhoods. GIS volunteers provided useful data for locating hundreds of addresses after translating street addresses into GPS coordinates for the Coast Guard mission. Working with the Louisiana Department of Wildlife and Fisheries and the Louisiana Geological Survey, USGS experts used automated geographic coding programs to convert the street addresses to longitudinal and latitudinal coordinates. They sent the directional coordinates in a digital form directly to responders’ GPS equipment. They also produced maps

that overlay geographic coordinates on grids over street addresses for responders without GPS equipment. The Louisiana Geological Survey then distributed them to more than 20 government agencies that participated in search-and-recovery efforts. Thousands of maps were created and new products developed that expedited the delivery of blue plastic tarps, removal of debris, location of downed power lines, and of course, rescue of people.

Many Federal employees assisting in the disaster were also victims of the storm. Just 10 days after Hurricane Katrina came ashore, a New Orleans-based USACE employee, who was temporarily working from and living on a government barge tied up on the

Mississippi River across from Baton Rouge, sent friends and family an e-mail with National Oceanic and Atmospheric Administration (NOAA) map links. Although isolated from his property, he could virtually navigate his neighborhood and take others along for the ride. Many other citizens and news networks did the same.

In 2005, the FGDC, its member agencies, and its partners truly came to understand first hand the value of their common goal: to produce current and reliable geospatial data and services that are easy to access, use, and understand.

Real-Time Mapping Security for the 2005 Presidential Inauguration

If a chemical release had occurred during the 55th inauguration of the President of the United States, software models tied to biological and chemical sensors across the city would have alerted officials at a command post by projecting an image of its plume on a three-dimensional map of downtown Washington, DC. Digital maps and geointelligence played important roles in providing security for President George W. Bush's second inauguration in January 2005—the first presidential inauguration since the terrorist attacks of September 11, 2001. More than 50 law enforcement and security agencies used nearly 200 layers of GIS data sets as part of their integrated security toolset. Each data set layer provided different geographical information, such as street grids and the location of 22 security checkpoints. Together, these layers formed the foundation for mapping tools that helped Federal, State, and local agencies plan and track real-time security responses during the 4-day event.

Law enforcement officials used real-time GIS-based information, visible on geospatial displays, to monitor the event's activities as they happened. Such real-time data would not have been possible with standard text reporting and paper maps. The command staff used a map that displayed color icons depicting status information on activities throughout the inaugural events. When activities and incidents ended, they dropped off the map. When new incidents occurred, they appeared immediately on the map as it was updated to show the new occurrences and their locations. During the inauguration, an estimated 164 incidents were reported and mapped in real time.

The Story Behind the FGDC

The Federal Geographic Data Committee is the authorized interagency coordinating body of the National Spatial Data Infrastructure (NSDI). The NSDI, established by Executive Order (EO) 12906 in April 1994, provides a means for assembling technology, policies, standards, and human resources necessary to acquire, process, store, distribute, and improve utilization of geospatial data for a variety of users nationwide. It is an umbrella under which organizations and technology interact to foster activities for using, managing, and producing geographic data. The Office of Management and Budget (OMB) Circular A-16 (revised August 2002) incorporates the EO and authorizes the FGDC to govern the coordinated development, use, sharing, and dissemination of geospatial data nationally. (See FGDC Infrastructure: The People Who Make It Happen.)

A Steering Committee governs the FGDC and sets high-level strategic direction for the interagency organization. The FGDC is composed of Federal agencies and public interest organizations, whose participation ensures representation of their needs. Agency-led working groups and subcommittees provide the basic structure for institutions and individuals to interact regarding all aspects of NSDI implementation. Collectively, they establish and implement strategic

guidance and specific actions that support improved collection, sharing, dissemination, and use of geospatial data, thus contributing to the development of the NSDI. The FGDC's accomplishments are measured in its common agreements. Individually, the Federal agencies implement those common agreements. (See FY 2005: A Year of Growth for the FGDC.)

A Coordination Group advises on the day-to-day business of the FGDC, which is carried out by the FGDC Secretariat located at USGS. The FGDC is part of the USGS National Geospatial Program Office (NGPO). For 20 years, the staff and FGDC member agencies have been developing and implementing the programs, policies, standards, and technologies that help make the vision of the NSDI a reality. The FGDC, which focuses on policy, standards, and advocacy, is one of three initiatives under the NGPO umbrella. The other two are Geospatial One-Stop, which concentrates on discovery and access, and *The National Map*, which centers its efforts on integrated, certified base mapping content.

Through the committees, working groups, and coordinating partners, the FGDC initiates and supports activities, such as those in the following areas, which are crucial to developing the NSDI:

- Developing and establishing the National Geospatial Data Clearinghouse, a distributed system of servers located on the Internet that contains field-level descriptions of available digital spatial data and services known as metadata. Development of the Clearinghouse among Federal agencies has minimized the duplication of effort in collecting expensive digital spatial data and has fostered cooperative digital data collection activities.
- Developing and implementing standards for documenting, collecting, and sharing geospatial data.
- Creating a national digital geospatial data framework of basic, recurring data themes that support GIS applications of many different disciplines. The framework is a collaborative community-based effort in which commonly needed data themes are developed, maintained, and integrated by public and private organizations within a geographic area.
- Promoting collaborative relationships for geospatial data among partners outside the Federal sector.
- Developing policies and processes to better harmonize collective action.

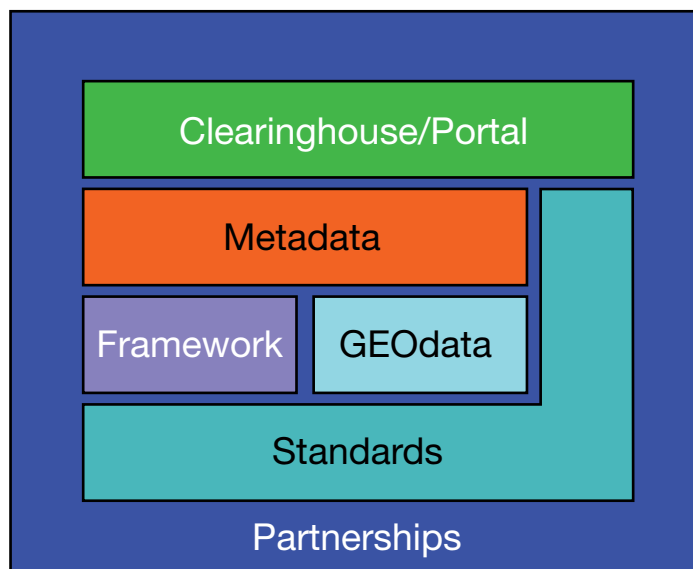
In Retrospect

During the past 15 years, since the OMB formally established the FGDC to coordinate geospatial data activities among Federal agencies and invest in common standards, data partnerships, and accessible data, the FGDC has accomplished the following:

- Grown into a multimember interagency committee that involves States and non-Federal organizations.
- Developed the vision of the NSDI into an increasingly integrated national resource for producers and users of geospatial data.
- Solidified the six basic building blocks of the NSDI: metadata, clearinghouse, standards, framework, geospatial data, and partnerships.
- Increased the number of geospatial data themes for which Federal agencies have stewardship responsibility to 34.
- Established a grant program—the NSDI Cooperative Agreements Program (CAP)—as a merit-based funding assistance instrument that provides seed money to encourage collaborative NSDI resource-sharing projects among public and private sector organizations.

- Launched Geospatial One-Stop to make it easier, faster, and less expensive for all national sectors to locate and access geospatial information.
- In collaboration with the international and national mapping agencies, established the Global Spatial Data Infrastructure (GSDI) to harmonize international development of spatial data infrastructures.
- Developed and endorsed 21 geospatial standards.

The Building Blocks of the NSDI



FY 2005: A Year of Growth for the FGDC

For the Federal Geographic Data Committee, accomplishments in fiscal year 2005 are best described in terms of growth. During this year, the organization grew in coordinated data, metadata, program, organization, and knowledge.

Growth in Support of Coordinated Spatial Data

At the Department of Defense (DoD), the Under Secretary of Defense for Acquisition, Technology and Logistics has sponsored the development of a robust spatial data infrastructure and mandated that all geospatial data must have metadata. The Defense Installation Spatial Data Infrastructure employs the FGDC metadata standard profile for all data used in decision support and has been leveraged to address DoD support for Homeland Security and recent strategic basing decisions worldwide, including military base realignment and closure.

To enhance the U.S. Department of Agriculture's (USDA's) contribution to homeland security, the Office of the Chief Information Officer (CIO) and the USDA Office of Homeland Security have created a mission-critical prototype application called ClearView. The USDA Forest Service is collaborating with the USGS to display Forest Service

data (boundaries, roads and trails data, and recreation sites) as part of *The National Map*. USDA's Natural Resources Conservation Service (NRCS), the Farm Service Agency, and Rural Development (RD) continue to coordinate geospatial data through distributed data warehouses and Web services, customized analytical tools, the National Agricultural Image Program, and RD address data quality improvements.

NOAA's U.S. Ocean Action Plan, in response to the U.S. Commission for Ocean Policy, called for improved coordination of Federal and federally supported coastal and ocean mapping activities, including an inventory of Federal, federally funded, and non-Federal governmental ocean and coastal mapping and charting programs, operations, and prioritized needs.

The DOI's Bureau of Land Management (BLM), through the North American Weeds Management Association, works collaboratively with Canada, Mexico, States, and local representatives to develop standards for weed treatment areas that will provide an integrated approach to weed control.

In another collaborative effort, the U.S. Department of Housing and Urban Development (HUD),

the USGS, and Mexican partners created a binational, Internet-based GIS application for four sister cities along the U.S.-Mexican border. For each of the urban areas, the Web mapping applications provide statistical and geospatial analysis tools to plan for future growth scenarios, estimate infrastructure development costs for the colonias, and supply binational demographic census data for economic growth models.^a

Growth in Metadata

Metadata are the who, what, where, when, why, and how of an information resource. Geospatial metadata document geographic digital resources such as GIS files, geospatial databases, and earth imagery. A geospatial metadata record includes core library catalog elements (title, abstract, publication data), geographic elements (geographic extent, projection information), and database elements (attribute label definitions, attribute domain values).

The FGDC advances metadata as a data management best practice in three ways: (1) through leadership in international metadata standards development, (2) by providing financial support for metadata training and implementation, and (3) through outreach to the general metadata community.

^a According to HUD, a colonia is any identifiable community in the U.S.-Mexico border regions of Arizona, California, New Mexico, and Texas that lacks a potable water supply, has inadequate sewage systems, and has a shortage of decent, safe, and sanitary housing.



1. International metadata standards development. The FGDC educates the metadata community regarding the standards, obtains recommendations for profiling to U.S. needs, and develops and edits U.S. content to create a new metadata workbook that implements the U.S. National Profile. The U.S. Profile team is working with Canadian standards representatives to arrive at identical national metadata content and adoption for the two countries, which will result in the North American Metadata Profile. (See Making the Framework Real in the Future Directions Initiatives sidebar.)

2. Financial support for metadata training and implementation. Through the CAP, notable project outcomes include the following:

- Metadata policy implementations.
- Development of standard operating procedures.
- Quality check and assurance procedures.
- Agency metadata coordination.
- Metadata tool assessments and reviews.
- Metadata instruction manuals.
- Improvements on vendor metadata tools.
- Statewide metadata implementation agreement.
- State clearinghouse designated as official repository.
- Establishment of a State-level metadata support resource.
- Train-the-(metadata)-trainer workshop.

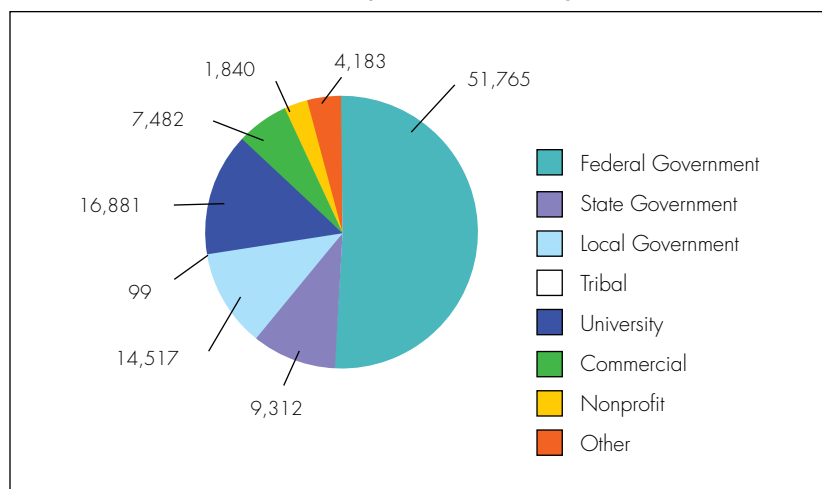
- State geospatial data infrastructure grant program supporting metadata creation.

3. Outreach. In FY 2005, FGDC metadata outreach included two train-the-trainer workshops hosted by the Texas A&M Gulf Coast Cooperative Ecosystem Study Unit and the USGS National Biological Information Infrastructure Program. The workshops trained 20 individuals to develop and use engaging training methods, evaluate and target training needs, and build networks and collaborations to support training.

Metadata Publishers Within the FGDC Membership. As of August 5, 2005, 52 percent of Federal Government agencies were metadata publishers. Within the FGDC membership, several Federal agencies have successfully established metadata policies. For example, the BLM developed an FGDC metadata node on its external Web site with links to the other FGDC nodes

maintained by other agencies. The BLM has established a policy that its offices use that node to determine if certain data sets have been created and, if so, what metadata applies to those sets. In addition, the BLM has established its metadata policy as part of its Data Management Manual (Manual Number 1280) and its draft Data Management Handbook due to be published in FY 2006. As part of its land use planning guidance, the BLM provided instruction on coding metadata relating to planning activities and plan boundaries. The bureau is incorporating these instructions into a planning handbook that is being prepared and field tested. Also in FY 2005, the BLM initiated a formal course on data management designed for the resource specialist at all levels that included training on data standards development and metadata. During the year, 100 BLM employees participated in this course at the agency's National Training Center in Phoenix, AZ.

Metadata Records in Geospatial One-Stop as of 2005



Methodology: All metadata publications were extracted from the GOS database for a total of just over 100,000 records. Each metadata record consisted of a user name, an affiliation, the name of the organization, and a state identifier.

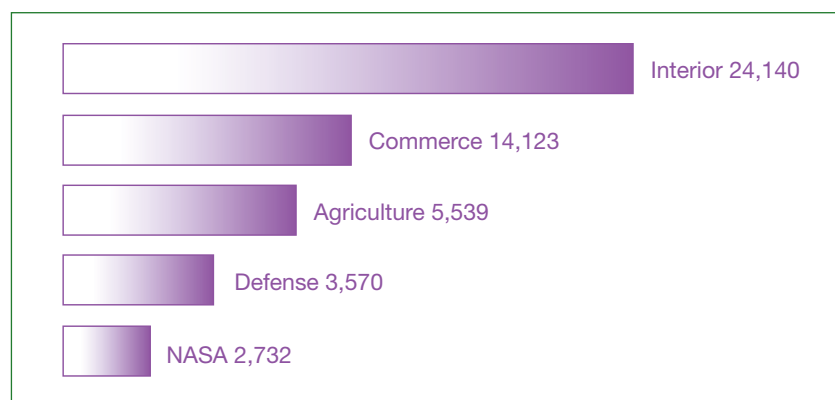
Note: At the time of this extraction the harvesting of the metadata was still a work in progress.

Another FGDC member, the U.S. Environmental Protection Agency, requires the creation of metadata as documented in the EPA National Geospatial Data Policy. In FY 2005, the EPA circulated among agency stakeholders a preliminary draft of specific policy implementation procedures and guidance for creating metadata, which profiles and expands the FGDC Content Standard for Geospatial Metadata.

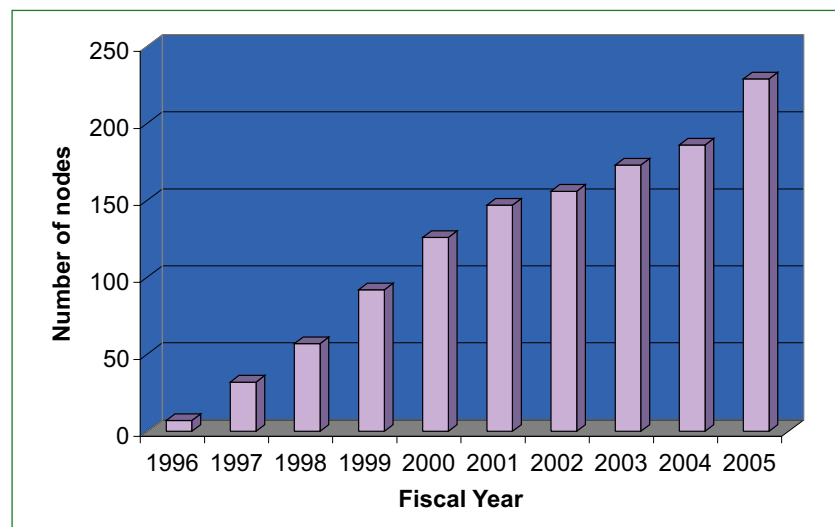
In April 2005, the National Park Service implemented a revised, server-based metadata management system—the Natural Resource and NPS-wide GIS Data Store—and, for the remainder of the fiscal year, populated metadata documents. The NPS Data Store includes the first version of a desktop metadata editor called the NPS Metadata Tools and Editor. Both subsystems are based on an NPS Metadata Profile that integrates the FGDC Content Standard for Digital Geospatial Metadata, the Biological Data Profile, ESRI Profile, and NPS-specific elements. The NPS estimated that by November 2005 it would have published about 15,000 metadata files from this internal metadata repository to GOS.

Another FGDC member, the Department of Commerce (DOC) National Geodetic Survey (NGS), works closely with representatives from several foreign countries to ensure that the geospatial reference system used in the United States is compatible with the International Terrestrial Reference System and the World Geodetic System of 1984. NGS also provides a global data processing service—the

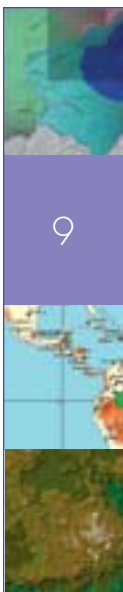
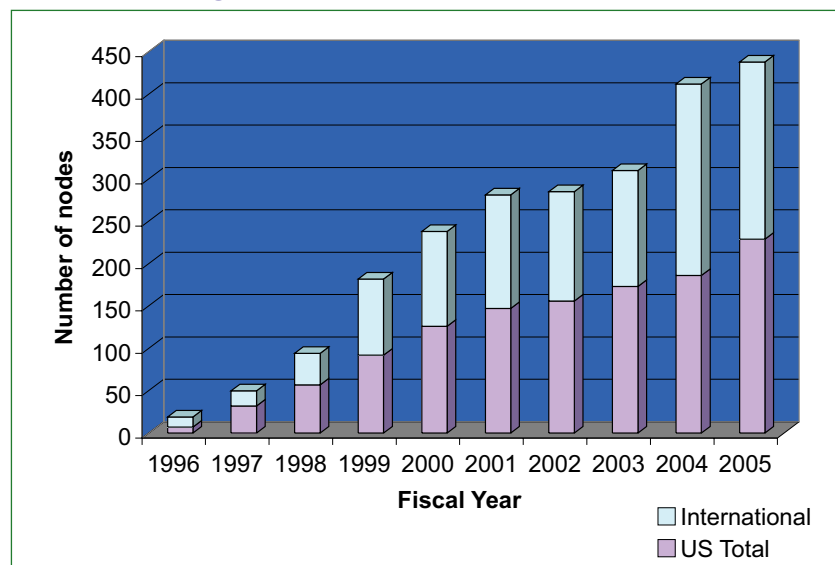
Metadata Records in Geospatial One-Stop by Federal Agency (as of 2005)



NSDI Clearinghouse Growth



Global Clearinghouse Growth



Online Positioning User Service (OPUS)—for the U.S. military, although civilians in countries that have officially requested the NGS service can also access the information. When OPUS users submit their GPS data to NGS via the Web, OPUS automatically computes accurate three-dimensional positional coordinates for the location where these data were collected. OPUS e-mails the results to a user-selected address within a few minutes after the data are submitted. Also within the DOC, the Census Bureau is working with Statistics Canada on a geographic markup language (GML) project.

As an active FGDC member, the DOC's NOAA also promotes metadata training. In 2005, NOAA facilitated five metadata classes in which the agency trained 75 people. NOAA offers metadata training to its internal employees; other Federal, State, local, and tribal governments; universities; and nongovernmental organizations (NGOs). Likewise, the EPA committed

resources to training on a one-on-one basis and to developing a Geospatial Metadata Workgroup, which resulted in hundreds of new metadata sets being created and posted to GOS in FY 2005.

Growth in Program

In the electronic age, geography and paper maps have transformed into spatial data in a digital environment. As a national capital asset, spatial data, through the National Spatial Data Infrastructure, facilitates the efficient collection, sharing, and dissemination of spatial data among all levels of government institutions and the public and private sectors to address issues of the Nation's physical, economic, and social well-being. The FGDC coordinates the sharing of geographic data, maps, and online services through an online portal—geodata.gov or GOS—that searches metadata held within the NSDI Clearinghouse Network.

The U.S. Fish and Wildlife Service (USFWS), through its National Wetlands Inventory Program, added wetlands data to the online wetlands layer of *The National Map*, increasing the cumulative total of landscape with digital wetlands data for the Nation. (See the related sidebar about the USFWS's success in this effort.)

In 2005, the Census Bureau continued enhancements to the TIGER database for building the NSDI. NOAA promoted and contributed to the NSDI through various projects and training classes. The National Aeronautics and Space Administration (NASA) continued to gather and disseminate Earth science geospatial data (with particular interest in wind, climate, and natural hazards) as a principal function. The datasets that NASA makes publicly available are published in Global Change Master Directory Clearinghouse node, harvested by GOS.

The Geospatial Interoperability Office of FGDC member agency NASA published the *Geospatial Interoperability Return on Investment Study* (<http://gio.gsfc.nasa.gov/docs/ROI%20Study.pdf>).

The FGDC moved forward in several program areas during 2005.

- The FGDC entered into a cooperative agreement with the National States Geographic Information Council (NSGIC) to advance the goals of the Fifty States Initiative.

Metadata Implementation Challenges

- Lack of managerial support to provide adequate resources.
- Lack of adequate promotion materials describing the features and benefits of metadata as a data management best practice.
- Lack of easy-to-use metadata authoring tools for the occasional metadata creator.
- Unclear FGDC metadata element definitions.

The FGDC-supported study, "Enabling FGDC Metadata Development in Biodiversity and Ecosystem Sciences" (March 2005), available at <http://fgdc.gov/metadata/whatsnew/whatsnew.html>, documents the challenges in more detail.

The FGDC addressed the many challenges by developing a comprehensive online NSDI training suite offering a curriculum suitable for managers as well as metadata creators. FGDC continues to encourage metadata tool developers to build easy-to-use metadata applications. In addition, the FGDC has translated recommendations from the study into goals for FY 2006. (See The FGDC's Goals for 2006.)

- The FGDC and URISA signed an agreement to work as strategic partners on an effort in which URISA will lead the development of the street addressing standard under the auspices of the Cultural and Demographic Subcommittee. The first draft of this standard was reviewed and approved by the FGDC Standards Working Group in April 2005.
- The Open Geospatial Consortium, Inc. (OGC)[®] worked on collaborative standards and specifications and continued to support FGDC's Geospatial Enterprise efforts.
- The Geospatial Information Technology Association, an FGDC collaborating partner, identified key issues using geospatial information for critical infrastructure protection. GITA

has been increasingly active in establishing dialogues with other associations and groups involved with the many facets of emergency management and protecting our critical infrastructure. The primary obstacle of data sharing emerged as a focal point of an approach that evolved into the concept of the Geospatially Enabling Community Collaboration (GECCO) Program.

USFWS Adds Digital Wetlands Data

In 2005, the U.S. Fish and Wildlife Service accepted the challenge to provide contemporary geospatial wetlands information. Resource managers increasingly need contemporary information on aquatic habitats to address increasingly complex issues. Analyzing such scientific information for other government agencies, industry, and the public requires the use of digital information to provide fast, efficient, and scientifically sound mechanisms for resolving resource management issues. Computer technologies now allow for integrating large relational databases with geospatial information and display, providing the USFWS with an opportunity to develop scientifically sound, technologically relevant tools for data analysis, distribution, archiving, and updating aquatic resource information. The common structures, methodology, and exchange formats provided by GIS technologies greatly facilitate this process and led to the development of a comprehensive Wetlands Geodatabase.

The USFWS's Division of Habitat and Resource Conservation partnered with USGS's Water Resource Discipline to design and implement new tools and techniques for creating, analyzing, and storing wetlands map data. The actions of this partnership have yielded tremendous benefits in ongoing efforts to configure, improve, and distribute the wetlands map information using newer technologies and Web-serving capabilities. All the USFWS digital wetlands map holdings are available through the Wetlands Mapper or as a catalog layer to *The National Map* and provide easy-to-use, maplike views of the Nation's wetland resources.

As a result of the partnership's action, the USFWS, through its National Wetlands Inventory Program, has added wetlands data for lands and waters totaling 11.3 million acres to the online wetlands layer of the NSDI via *The National Map*. This brings the cumulative total of landscape with digital wetlands data for the Nation to 48.9 percent.

The wetlands geospatial digital data are available through the Wetlands Mapper at http://wetlands.fws.gov/mapper_tool.htm and through *The National Map* at <http://nationalmap.gov/>. In addition, more than 28,000 quads can be downloaded as individual quads. The inventory wetlands maps are also part of the E-government's Geospatial One-Stop, geodata.gov, at <http://gos2.geodata.gov/wps/portal/gos>. In addition to providing digital wetlands data, the USFWS also publishes hardcopy maps for 90 percent of the nation. These maps can be ordered from cooperator-run distribution centers at http://wetlands.fws.gov/distribution_ctr.htm.

- In January 2005, the Geospatial One-Stop project awarded ESRI of Redlands, CA, a contract to develop Version 2 of the geodata.gov portal that combines and makes available geospatial data and resources from government and private sources. The new version was deployed in August 2005. The Census Bureau heavily supports the GOS E-Gov initiative with funding and data and NOAA supports it through in-kind support.
- The FGDC tested, improved, and promoted the framework concept of creating widely available sources of basic geographic data. The FGDC also continued to revise the draft of the Framework Data Content Standards, which will be delivered in early 2006 to the American National Standards Institute (ANSI) for approval.
- During 2005, the FGDC completed the Future Directions Initiative, a strategic planning activity. (See Future Directions Initiative sidebar.)
- The FGDC adjudicated all comments received in the public review of Framework Data Content Standards.

- In FY 2005, the FGDC awarded CAP grants for a total of \$1.5 million to support cooperative agreements for clearinghouse establishment, metadata training, framework development, and Web mapping services to participants from Federal, State, local, and tribal governments; academic institutions; and the private and not-for-profit sectors.
- The FGDC supported the continuing evolution of the National Geospatial Data Clearinghouse, which includes more than 200 interconnected data servers around the nation and the world and contains thousands of data sets.
- The FGDC participated in the emergence and evolution of the GSDI as a concept and as an organization promoting geospatial data infrastructure globally.

Growth in Organization

In 2005, the FGDC welcomed one new Federal member to the FGDC—the Federal Communications Commission—and four new collaborating partners—the American Congress on Surveying and Mapping (ACSM), the Association of American Geographers (AAG), GITA, and URISA. ACSM, a membership organization of surveyors, cartographers, geodesists, and other geospatial data information professionals, continually seeks to respond to the challenges presented by new geospatial data technologies. AAG, a scientific and educational society, focuses on the theory, methods, and practice of geography and geography education. GITA, a nonprofit educational association serving the global geospatial community, is addressing the use of geospatial information for critical infrastructure protection. URISA, an international nonprofit group of geographic information systems professionals, is leading address standard development under the auspices of the Cultural and Demographic Statistics thematic subcommittee.

A new FGDC working group, the Geospatial Enterprise Architecture Community of Practice has been chartered to support an enterprise architecture initiative to align common business areas and relative investments. FGDC, in collaboration with the Architecture and Infrastructure Committee of the Federal CIO Council, is providing the leadership in developing a Federal Enterprise Architecture (FEA) Geospatial Profile. (See Geospatial Profile sidebar.)

Many committees and groups within the FGDC drafted new charters in 2005. Developing new charters helped raise awareness of the interconnections among the committees and groups and served to re-energize a few committees to begin anew. Some committees that had completed their work elected to disband or become inactive.

Future Directions Initiative

In 2005, the FGDC took action on its previous year's strategic planning and began actively focusing on three areas: communicating the message, making the framework real, and partnerships with purpose.

Communicating the Message. The FGDC focused on business cases by facilitating presentations to agencies, conducting case studies, and developing a *Return on Investment Workbook* and template. In recognizing the importance of training, the FGDC developed the *Metadata Core Curriculum*, published on line to complement other agency resources for training. Metadata training is a difficult issue to address; a recent survey shows that only 70 percent of the agencies have implemented metadata—through creation, metadata training, or metadata train-the-trainer workshops.

Making the Framework Real. Activities in 2005 in support of making the framework a reality included various data standards activities. The data standards process is modeled after those of ANSI and the International Standards Organization. FGDC data standards are structured, well documented, and include a taxonomy, data dictionary, and model using Unified Modeling Language. The final review of the Framework Data Content Standards was scheduled to culminate in December 2005. The FGDC also emphasized that compliance with appropriate data standards should be required in all grants and contracts.

Partnerships With Purpose. Four teams developed—

- A governance model for the NSDI.
- The 50 States Initiative.
- A model for engaging nongeospatial organizations.
- Training curricula for tribal governments.

NPS Implements Mobile Data Initiative

In 2005, the DOI's National Park Service (NPS) successfully implemented the Mobile Data Initiative, which investigated a wireless link to transmit textual data from a field unit to either another field unit or a base unit. This effort will benefit users in a variety of ways from situational awareness for law enforcement and real-time positioning for back-country rangers to real-time situation awareness for search and rescue personnel and animal tracking for natural resource monitoring. Data, in the form of a simple latitude/longitude location of the field unit, form-captured data, or text messaging, is used either on a handheld, laptop, workstation, or tablet device in conjunction with geospatial data. In a crisis situation, digital data is transmitted and received more easily and efficiently than voice communications, and it provides a means for easy recordkeeping during an incident. Given the proper tools, a dispatcher could handle hundreds of communications with facilities if he or she interfaced with digital data coming from those facilities; it would be impossible for the dispatcher to handle hundreds of facilities-related calls communicating by voice.

Growth in Knowledge

In 2005, as in previous years, the FGDC focused much of its effort on training and education. NSDI training and education strategy promotes further development of the building of the NSDI, specifically with Federal, State, local, and tribal governments; academia; and professional organizations. The strategy includes developing goals and plans for long-range implementation and administration of the NSDI educational training programs. Topics include NSDI overview, metadata, creation of data sets, framework, standards, and clearinghouse/GOS portal, while opportunities include train-the-trainer events. Memorandums of agreement with multiorganizational partnerships nationwide offer expanded training and education on the NSDI. The training program includes an online metadata training resource and an active network of trainers.

The FGDC also developed, facilitated, sponsored, supported, promoted, and/or participated in several national forums, conferences, workshops, and training events. (See Highlights of Fiscal Year 2005 on page iii.)

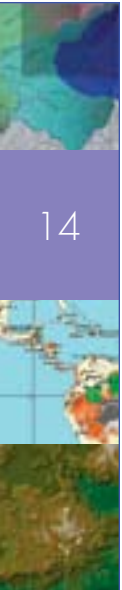
Growth. What Does It Signify?

How does FGDC's growth translate into everyday benefits for the American people? The use of standardized geospatial data enables agencies to share information that results in taking action to address challenges such as the following:

- Reducing traffic congestion.
- Assessing the economic impact of wildfires.
- Mapping critical infrastructure to ensure public safety.
- Providing clean, safe water.
- Coordinating environmental data.
- Saving lives and protecting property in post-September 11th America.
- Enhancing economic development.
- Improving social service delivery.

Geospatial Profile

On March 15, 2005, the FGDC, in collaboration with the U.S. General Services Administration (GSA), kicked off development of the geospatial profile for the FEA with a workshop. The FGDC and the Federal CIO Council released the first draft of the profile for public comment on September 13, 2005. The profile will provide guidance for inclusion of geospatial information in agency information architectures. FGDC's approach is to examine and document current business, performance, and service models; extract best practices; and then design a transition plan that is aligned with the new FEA vision. The third version of the profile is planned for release in 2006.



FGDC Infrastructure: The People Who Make It Happen

The Secretary of the Department of the Interior serves as chair of the Federal Geographic Data Committee, which comprises multiple Federal organizations including the Executive Office of the President, Cabinet-level agencies, and independent Federal agencies. The Deputy Director for Management, OMB, serves as vice-chair, while numerous collaborating partners represent the interests of State, tribal, and local governments; industry; universities; and professional organizations. The FGDC's Steering Committee, Coordination Group, Secretariat Staff, thematic subcommittees,

and working groups provide the basic structure for individuals and institutions to interact regarding all aspects of National Spatial Data Infrastructure implementation. Collectively they establish and implement strategic guidance and specific actions that support improved collection, sharing, dissemination, and use of geospatial data—all of which contributes to the development of the NDSI.

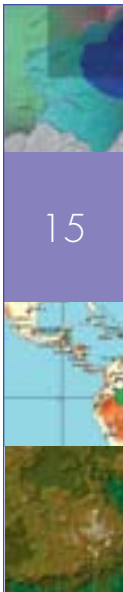
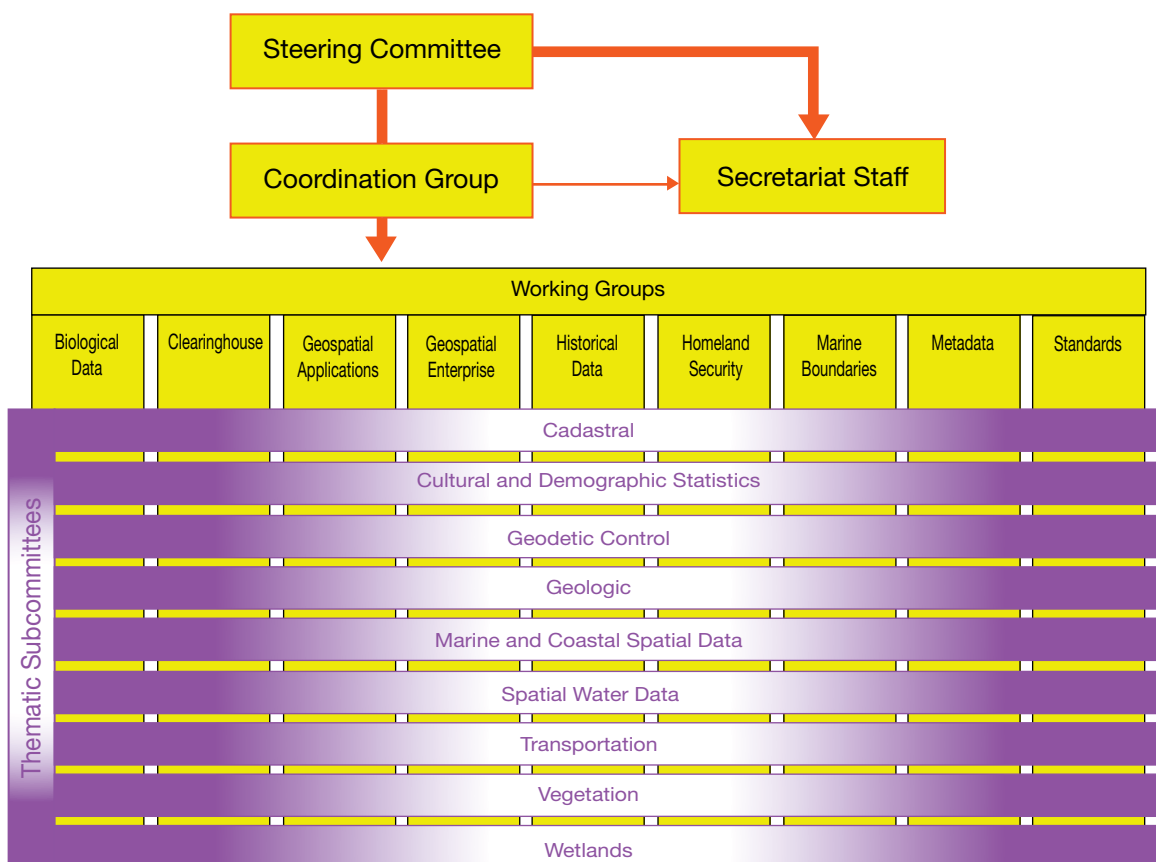
Steering Committee

The FGDC Steering Committee provides executive leadership for the coordination of Federal geospatial activities by establishing

policy and providing guidance and direction. The committee, which is composed of high-level representatives from the Federal agencies and collaborating partners, meets quarterly to set high-level strategic direction for the FGDC as a whole. (See Exhibit 1 for a list of Steering Committee members and their associated organizations.)

Coordination Group

The FGDC Coordination Group advises on the day-to-day business of the FGDC. The group carries out interagency coordination and implementation of the NSDI at the operational level. It also facilitates and oversees the work



of the FGDC subcommittees and working groups. The Coordination Group, which is composed of representatives from Federal agencies and stakeholder groups, meets once a month in the Washington, DC, area.

Secretariat Staff

The FGDC Secretariat Staff provides staff support for the FGDC subcommittees and performs the following tasks:

- Administers the FGDC standards program.
- Initiates and participates in FGDC subcommittees and working groups.

- Drafts policies and procedures for approval by the Steering Committee.
- Administers the NSDI CAP.
- Administers the FGDC International Spatial Data Infrastructure program.
- Manages the NSDI training and outreach program, which includes conducting workshops, delivering presentations, exhibiting at conferences, and publishing the FGDC newsletter.
- Maintains the FGDC Web site.

(See Exhibit 2 for a list of Secretariat staff members.)

OGC Participates in Consensus Process

Open Geospatial Consortium, an international voluntary consensus standards organization of more than 295 companies, government agencies, research organizations, and universities, participates in a consensus process to develop publicly available interface and encoding specifications. In 2005, OGC staff made 30 presentations about open standards and the foundation they offer for the NSDI and GSDI use of geospatial information and services in the world.

NSGIC—Advocates for Change

The National States Geographic Information Council, an advocacy organization for States in national geospatial policy initiatives, is engaged in Federal committees and with other stakeholder groups as effective advocates for change. In 2005, NSGIC members participated in eight Federal committees, managed the development and implementation of the Fifty States Initiative, co-chaired and participated on the Governance Team as part of the FGDC Future Directions Initiative, hosted two geospatial conferences dedicated to improving NSDI coordination and communication with all stakeholder groups, hosted a national workshop on the Map Modernization Program with FEMA, built the RAMONA System (using a NOAA grant), developed and generated advocacy for the Imagery for the Nation proposal to spur improvements in the national program for producing orthoimagery, chaired *The National Map Partnership Project*, co-chaired the Partnership Team at USGS to evaluate how to more effectively share development of the NSDI with State and local governments, and participated in six work groups of the NGPO regarding coordination of efforts among GOS, *The National Map*, and the FGDC.

Thematic Subcommittees

Circular A-16 enumerates 34 data themes of national significance and assigned leadership of each of the themes to one or more Federal agencies. Formal thematic subcommittees have been established for 9 of the data themes.

Federal agencies lead the thematic subcommittees, each of which focuses on a particular NSDI spatial data theme. Lead agency responsibilities and new data themes may be added or altered by recommendation of the FGDC and concurrence by the OMB.

The Wetlands Subcommittee, for example, was relaunched in July 2005. This subcommittee (1) coordinates geospatial wetlands data-related activities among Federal agencies, (2) promotes standards of accuracy and consistency in geospatial wetlands data (lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is covered by shallow water part of the year), (3) exchanges information on technological improvements for collecting geospatial wetlands data, (4) encourages Federal and non-Federal communities to identify and adopt standards and specifications for geospatial wetlands data, and (5) collects and processes the requirements of Federal and non-Federal organizations for geospatial wetlands data. In 2005, the re-established subcommittee revised its charter, submitted its FY 2006 annual work plan, and identified areas of concern of the members. The Wetlands Subcommittee also launched

the Standards Working Group; the Strategy, Ranking, and Funding Working Group; and one ad hoc group to address some of the highest priorities.

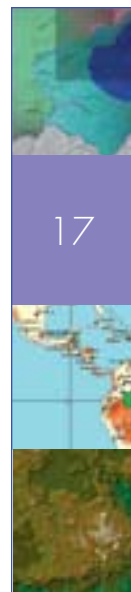
Likewise, the Historical Data Committee (HDC), which facilitates the long-term retention, storage, and accessibility of selected historically valuable geospatial data, re-examined the committee's charter during recent FGDC reorganization efforts and received approval to maintain

the charter in its current status. In FY 2005, the HDC created greater awareness of issues involved in archiving data through a presentation to the FGD representatives from nonprofits (San Diego Supercomputing Center), academia (the University of Santa Barbara, Stanford University), and contracting firms (Booz Allen Hamilton).

Definitions of the nine active thematic subcommittees appear in the following chart.

Thematic Subcommittee	Lead Agency/ Agencies	Definition of Spatial Data Theme
*Cadastral	DOI BLM	The geographic extent of past, current, and future right, title, and interest in real property; the framework to support the description of that geographic extent. Geographic extent includes survey and description frameworks; e.g., Public Land Survey System, parcel-by-parcel surveys and descriptions.
Cultural and Demographic Statistics	DOC USCB	Geospatially referenced data that describe characteristics of people: nature of structures in which they live, work; economic, other activities they pursue; facilities they use to support their health, recreational, other needs; environmental consequences of their presence; boundaries, names, numeric codes of geographic entities used to report information collected.
*Geodetic Control	DOC NOAA	Common reference system for establishing coordinates for all geographic data. All NSDI framework data and users' applications data require geodetic control to accurately register spatial data. The National Spatial Reference System is the fundamental geodetic control for the United States.
Geologic	DOI USGS	Geologic mapping information and related geoscience spatial data (associated geophysical, geochemical, geochronologic, paleontologic data) that can contribute to National Geologic Map Database as pursuant to Public Law 106-148.
Marine & Coastal Spatial Data	Co-leaders: DOC NOAA and DOI MMS	Promotes standards of accuracy and currentness in marine and coastal spatial data financed in whole or part by Federal funds; exchanges information on technological improvements for collecting marine and coastal spatial data; encourages the Federal and non-Federal community to identify and adopt standards and specifications for marine and coastal spatial data; and collects and processes the requirements for Federal and non-Federal organizations for marine and coastal spatial data.
*Transportation	DOT BTS	Used to model geographic locations, interconnectedness, and characteristics of transportation system in the United States; includes physical and nonphysical components representing all modes of travel that enable movement of goods and people between locations.
Vegetation	USDA Forest Service	Collection of plants or plant communities with distinguishable characteristics that occupy an area of interest. Existing vegetation covers or is visible at or above land or water surface and does not include abiotic factors that tend to describe potential vegetation.
Spatial Water Data (Advisory Committee on Water Information)	Co-leaders: DOI USGS and USDA NRCS	The Advisory Committee on Water Information (ACWI) advises the Federal Government, through DOI USGS, on the coordination of Federal water information programs. The purpose of ACWI is to represent the interests of water-information users and professionals in advising the Federal Government on activities and plans related to Federal water-information programs and the effectiveness of those programs in meeting the Nation's water-information needs. ACWI members foster better communication between the Federal and non-Federal sectors on water-information acquisition, information sharing, and related technology transfer.
Wetlands	DOI USFWS	Provides classification, location, and extent of wetlands and deepwater habitats; no attempt to define the proprietary limits or jurisdictional wetland boundaries of any Federal, State, or local agencies.

* Indicates framework theme.



Working Groups

Working groups crosscut the subcommittees by dealing with infrastructure issues that span many subcommittees.

The Clearinghouse Working Group, for example, which operates through an electronic e-mail list and teleconferences to reach its 400 government, academic, and commercial members, provided clearinghouse metadata providers with information on how to make their metadata visible through the GOS portal.

During FY 2005, the Homeland Security Working Group forwarded its Emergency Management Map Symbolology work for approval through the ANSI standards process. The working group also completed "Guidelines for Providing Appropriate Access to Geospatial Data in Response to Security Concerns."

The working groups are as follows:

- Biological Data
- Clearinghouse
- Geospatial Applications and Interoperability
- Geospatial Enterprise Architecture Community of Practice
- Historical Data
- Homeland Security
- Marine Boundaries
- Metadata
- Standards

Collaborating Partners

To meet the nationwide data needs of end users, the FGDC involves public interest groups who participate within the committee structure to ensure that their needs are included in developing the NSDI. These coordinating partners include State, local, and tribal governments; academic institutions; and a broad array of private sector geographic, statistical, demographic, and other business information providers and users.

New partnerships are forming with tribal entities to further the success in building the NSDI. These partnerships will help reduce data duplication and promote stewardship of the national landscape with the input of current and accurate local geospatial data. Over the last few years, several tribes have begun to participate in the NSDI by recognizing the need to be self-sufficient and in building their own communities around geospatial data. Partnerships with the FGDC and the tribes are in place with the USFWS and FEMA. Negotiations are under way with the USDA Forest Service and NSGIC to further expand these partnership efforts. Partnering with the tribal liaisons in many Federal agencies has strengthened tribal awareness of the NSDI, has leveraged agency training opportunities, and has increased tribal awareness of and funding from the FGDC CAP.

Collaborating partnerships are open to public, private, and nonprofit organizations with missions complementary to the FGDC. Organizations interested in becoming partners are invited to send a request to the Secretariat. For a complete roster of FGDC collaborating partners, see Exhibit 1 or visit the FGDC Web site at www.fgdc.gov.

GITA Fosters Collaboration

The Geospatial Information Technology Association, which promotes the awareness and use of geospatial information and technology to individuals and organizations of all types worldwide, contributed to the objectives of the NSDI through a research project to demonstrate and document a method for

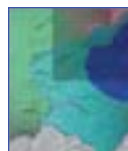
assessing an organization's return on investment for implementing and sharing geospatial information and technology and through an initiative to foster increased collaboration and cooperation among entities in a defined geographic area that are responsible for protecting that community's critical infrastructure.

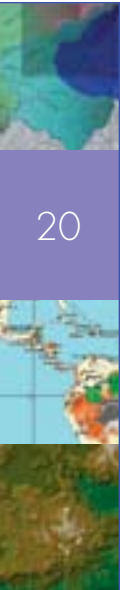
URISA Builds Street Address Standards

The Urban and Regional Information Systems Association facilitates the use and integration of information technologies to improve the quality of life in urban and regional environments. In 2005, URISA contributed to the building of the NSDI through its efforts to develop a street address standard. URISA presented the first draft of the standard for review in late September.

NACo Focuses on Communication

The National Association of Counties (NACo), the only national organization that represents county governments and an FGDC collaborating partner, faces the challenge of developing an intergovernmental partnership strategy for sharing geospatial data and resources that is mutually beneficial to all involved parties. In 2005, NACo focused on the communication aspect of intergovernmental partnerships through the creation of forums designed to bring county officials together with key State and Federal geospatial technology leaders. Honest and open discussions aimed at developing partnership strategies to help organizations achieve their stated missions brought county government leaders into the FGDC's future planning processes and provided the opportunity for them to play an active role in the evolution of a national geospatial strategy and a buildout of the NSDI.





The FGDC's Goals for FY 2006

For fiscal year 2006, the Federal Geographic Data Committee is striving to reach the following goals.

Geospatial Line of Business

The Office of Management and Budget and the General Services Administration are set to launch the Geospatial Line of Business in March 2006. The managing partner is Ivan DeLoatch, Staff Director of the FGDC. The vision of the Geospatial Line of Business is as follows:

The Nation's interests are served, and the core missions of Federal agencies and their partners are met, through the effective and efficient development, provision, and interoperability of geospatial data and services.

The goals of the Geospatial Line of Business follow:

- Productive intergovernmental collaboration for geospatial-related activities and investments across all sectors and levels of government.
- Optimized and standardized common geospatial functions, services, and processes that are responsive to customers.
- Cost-efficient acquisition, processing, and access to geospatial data and information.

The Geospatial Line of Business goals for FY 2006 are as follows:

- Form a Geospatial Line of Business Task Force.
- Issue and process a data call to determine current investment in geospatial data and services.
- Draft a Common Solutions and Technical Architecture document.
- Draft a Joint Business Case.

Geospatial Enterprise Architecture Profile Pilot

Version 3.0 of the Geospatial Profile of the FEA will be published in FY 2006 to address comments and experiences from prototyping projects. The Geospatial Profile will assure the emerging FEA takes advantage of the benefits of geospatial information. The profile helps agency architects identify and promote consistent geospatial patterns in their organizational designs. Consistency across organizational boundaries makes it easier for government and business to work together to serve the needs of citizens and customers.

Imagery for the Nation

The FGDC will continue working with the NSGIC and the National Digital Orthophoto Program (NDOP) Committee in their Digital Imagery for the Nation effort to create a new nationwide aerial imagery program that will collect and disseminate standardized

multiresolution products on "set" schedules. NSGIC estimates a cost savings of \$159,641,000 over 3 years through coordination and adherence to national standards.

Metadata Challenges

Focusing on the FGDC-supported study, "Enabling FGDC Metadata Development in Biodiversity and Ecosystem Sciences," the FGDC is seeking to overcome several challenges by considering several recommendations: (1) focusing on education and promotion of metadata and providing implementation support; (2) establishing metadata promotion campaigns for a broad, multilevel community from data owners to agency administrators; (3) establishing educational programs for nonmetadata developers, including managers, administrators, and agency heads; (4) facilitating the development of easy-to-use, interactive metadata-authoring tools for occasional and beginning metadata developers; (5) clarifying, with real-world examples, the content standard for digital geospatial metadata element definitions; and (6) providing support for metadata implementation activities, including the development of generic business and management plans for metadata development and of sample data management policies and templates.

In addition, NOAA plans to conduct at least 10 metadata

training classes in FY 2006, which is twice the number of classes the agency taught in FY 2005.

Emergency Response

Regarding pre-event preparedness, the FGDC continues to advocate and work toward a fully integrated, deployable GIS infrastructure to improve many different emergency response capabilities and processes. This effort involves reaching out to local organizations and coordinating with statewide GIS leaders to make sure partnerships and data sharing agreements are in place. One idea being explored is the use of intelligent transportation systems with cameras at major intersections and on interstate highways to help first responders and motorists better monitor and navigate traffic. Another is to employ handheld devices used by law enforcement officers to receive information about traffic conditions or relay new information to emergency operations center officials for dissemination to other emergency responders and the public. DHS has provided funds to USGS to acquire high-resolution orthophotography for large portions of the Gulf and Southern Atlantic coasts to support GIS for the Gulf and to provide an accurate depiction of conditions before the onset of a major storm.

GIS for the Gulf

Efforts for improving GIS for the Gulf as a hands-on tool for first responders during hurricanes will continue, will include Florida as part of GIS for the Gulf, and will extend the database to serve as a foundation for long-term recovery efforts, such as planning new communities and new

schools. Future efforts will include building new digital data sets and adding them to the integrated base.

Geospatial One-Stop

Geospatial One-Stop will continue to increase the inventory of Federal, State, local, and tribal data sets and acquisition plans published to the portal and to further build out its COIs. In addition, major efforts will include further refining the alignment and integration of the portal with the NSGIC State GIS inventory tool (RAMONA), *The National Map*, The National Atlas, and the Implementation of E-Authentication. GOS will continue its partnership with DHS, NGA, and coastal States to develop an integrated database in preparation for the 2006 hurricane season and will develop new partnerships with other Federal agencies that play a major role in disaster preparation, response, recovery, and mitigation as part of the hurricane preparations.

Project Homeland

The GOS partnership with DHS, NGA, and USGS on Project Homeland will continue its pilot with the State of Colorado and seek opportunities for additional pilot projects and intergovernmental partnerships. Specific goals for 2006 include (1) refining the USGS Best Practices Data Model (the preliminary model served as the basis for the GIS for the Gulf database modeling activity in FY 2005) and (2) developing a geospatially enabled Web-based event logging and tracking application to be piloted by the Colorado Emergency Operations Center.

Street Address Standard

To benefit community infrastructure and governments, from paramedics to tax assessors and the U.S. Postal Service, the FGDC will work with collaborating partner URISA and the National Emergency Number Association (NENA) to standardize street addresses across the country. In 2006, after incorporating public comment on the latest draft of this national standard, the groups will present a final draft to FGDC for formal approval and acceptance. Under the terms of the proposal, if the FGDC representatives accept the URISA/NENA draft, they will put the draft through their public review process, which could lead to formal adoption. If adopted, the new street address standard would be mandatory where applicable for most Federal agencies but voluntary for State and local governments and others. The street address standard builds on previous addressing standards work by creating a standard that focuses on addressing, quality, and transfer of data.

Data Standards for Coal Mining

The DOI's Office of Surface Mining plans to work with the State coal mining regulatory authorities in the 24 approved State programs during FY 2006 to develop a data standard for two initial geospatial data sets—surface coal mining extents and underground coal mining extents.

International Collaborative Efforts

HUD's Office of International Affairs will conduct a GIS workshop in Amman, Jordan, in May 2006.

Intergovernmental Collaborative Efforts

NDOP is planning to implement a model for orthoimagery archives and public access that satisfies the requirements of *The National Map* and GOS.

Data Preservation

In FY 2006, the FGDC Historical Data Committee plans to establish a wiki (server software that enables users to create and edit Web page content using any Web browser) site to facilitate communication among its members and establish a central repository for documents related to the preservation of geospatial data. The HDC will meet at the ESRI Federal Users Conference in January 2006 to discuss issues related to archiving geospatial data, particularly the viability of the most recent versions of geographic markup language (GML v.3 and GML Simple Features) as a format.



Profiles



Gale A. Norton, Secretary
U.S. Department of the Interior

Gale A. Norton, a lifelong conservationist, public servant, and advocate for bringing common sense solutions to environmental policy, was sworn in as the 48th Secretary of the Department of the Interior in January 2001. The first woman to head the 156-year-old department, Norton believes that for conservation to be successful, the government must involve the people who live and work on the land. Previously, Ms. Norton served as Attorney General of Colorado, Associate Solicitor of the Interior Department, Assistant to the Deputy Secretary of Agriculture, and a Senior Attorney for the Mountain States Legal Foundation. She graduated magna cum laude from the University of Denver and earned her law degree with honors from the same university.



Lynn Scarlett, Deputy Secretary
U.S. Department of the Interior
Chair, FGDC Steering Committee

Lynn Scarlett is the Assistant Secretary for Policy, Management and Budget at the Department of the Interior. Previously, she chaired the Federal Wild-land Fire Leadership Council, an interagency and intergovernmental forum for implementing the National Fire Plan and 10-Year Implementation Plan. Previously, she was president of the Los Angeles-based Reason Foundation, a nonprofit current affairs research and communications organization. She is author of numerous publications on incentive-based environmental policies. Ms. Scarlett earned Bachelor of Arts and Master of Arts degrees in political science from the University of California, Santa Barbara, where she also completed her doctoral coursework and exams in political science and political economy.



Karen S. Evans, Administrator of E-Government and
Information Technology
Office of Management and Budget
Vice Chair, FGDC Steering Committee

Karen S. Evans, Administrator of E-Government and Information Technology (IT) at the Office of Management and Budget, oversees implementation of IT throughout the Federal government, including advising the Director on the performance of IT investments, overseeing the development of enterprise architectures within and across agencies, directing the activities of the Chief Information Officer Council, and overseeing usage of the E-Government Fund to support interagency partnerships and innovation. Previously, Ms. Evans was CIO for the Department of Energy; Director, Information Resources

Management Division, Office of Justice Programs, Department of Justice (DOJ); Assistant Director for Information Services at DOJ headquarters, and the Farmers Home Administration of the Department of Agriculture. She earned a bachelor's degree in chemistry and a Master of Business Administration degree from West Virginia University.

Karen C. Siderelis, Associate Director for Geospatial Information and Chief Information Officer
U.S. Geological Survey

Karen C. Siderelis, Associate Director for Geospatial Information and Chief Information Officer, USGS, formulates agency information strategies and policies, ensures the integrity and availability of USGS scientific information, and oversees the information technology infrastructure. She provides leadership for the National Spatial Data Infrastructure and the coordination of national geospatial data activities among government agencies. Previously, Ms. Siderelis served as director of the Center for Geographic Information and Analysis for the State of North Carolina. Ms. Siderelis earned a Bachelor of Science degree in education and a master's degree in parks and natural resource management from the University of Georgia.



Ivan B. DeLoatch, Staff Director
Federal Geographic Data Committee

Ivan B. DeLoatch, Staff Director of the Federal Geographic Data Committee, provides leadership and management for FGDC operations and activities and pursues the vision to build an effective and efficient National Spatial Data Infrastructure. He uses his past experience in the Federal, State, and private sectors, as well as his insight in environmental, technical, and policy arenas, to bring Federal, State, and local government and industry officials together to build alliances necessary to effect the development of a coordinated NSDI that supports the broad geospatial community. Previously, Mr. DeLoatch was chief of the Data Acquisition Branch in the EPA's Office of Environmental Information. Mr. DeLoatch earned a Bachelor of Science degree with a major in biology and a minor in chemistry from Bowie State University, University of Maryland University System.



Exhibits

Exhibit 1. Steering Committee Members

Note: Membership on the Steering Committee changes periodically. For the latest membership list and contact information, visit the FGDC Web site, www.fgdc.gov.

Chair: Lynn Scarlett, Deputy Secretary, DOI.

Vice Chair: Karen S. Evans, Administrator, Electronic Government and Information Technology, OMB.

Federal Members		
Department of Agriculture	www.usda.gov	Chris Niedermayer
Department of Commerce	www.commerce.gov	Margaret Davidson
Department of Defense	www.defenselink.mil	Donald Basham, H. Gregory Smith
Department of Energy	www.doe.gov	Tom Pyke
Department of Health and Human Services	www.dhhs.gov	Chuck Croner
Department of Housing and Urban Development	www.hud.gov	Jon Sperling
Department of Homeland Security	www.dhs.gov	Daniel Cotter
Department of the Interior	www.doi.gov	Tom Weimer
Department of Justice	www.usdoj.gov	Ronald E. Wilson, Bill Burdett
Department of State	www.state.gov	Lee R. Schwartz
Department of Transportation	www.dot.gov	Mary Hutzler
Environmental Protection Agency	www.epa.gov	Brenda J. Smith
Federal Communications Commission	www.fcc.gov	Julius Knapp
General Services Administration	www.gsa.gov	Stan Kaczmarczyk
Library of Congress	www.loc.gov	John Hebert
National Archives and Records Administration	www.archives.gov	Nancy Allard
National Aeronautics and Space Administration	www.nasa.gov	Ronald Birk
National Capital Planning Commission	www.ncpc.gov	Michael Sherman
National Science Foundation	www.nsf.gov	Margaret Leinen
Tennessee Valley Authority	www.tva.gov	Alan Voss

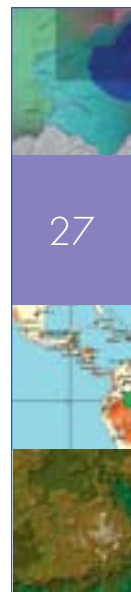
Exhibit 1. Steering Committee Members—continued

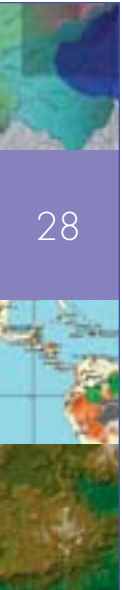
Non-Federal Collaborating Partners		
American Congress on Surveying and Mapping	www.acsm.net	Rebecca Somers
Association of American Geographers	www.aag.org	Douglas Richardson
Cartographic Users Advisory Council	www.cuac.wustl.edu	Linda Zellmer
Geospatial Information & Technology Association	www.gita.org	Bob Samborski
International City/County Management Association	www.icma.org	Eric Anderson
National Association of State Chief Information Officers	www.nascio.org	Tom Jarrett
National Association of Counties	www.naco.org	Randy Johnson
National League of Cities	www.nlc.org	Donald Borut
National States Geographic Information Council	www.nsgic.org	Tony Spicci, Bill Burgess
Open Geospatial Consortium, Inc.	www.opengeospatial.org	Mark E. Reichardt
University Consortium for Geographic Information Science	www.ucgis.org	Allan Falconer
Urban and Regional Information Systems Association	www.urisa.org	Wendy Francis
Western Governors' Association	www.westgov.org	Dennis Goreham

Secretariat Staff	
Position	Name
Staff Director	Ivan DeLoatch
Deputy Staff Director	Leslie Armstrong
Program Assistant	Carol Petr Greenough
Clearinghouse Coordinator	Doug Nebert
FGDC Interagency Liaison	Alison Dishman
FGDC & GSDI International Program Coordinator	Alan Stevens
Framework & Cooperating States Coordinator	Milo Robinson
Associate Strategist	Kathy Covert
Metadata Coordinator	Sharon Shin
Standards Program Manager	Billy Tolar
Standards Coordinator	Julie Binder Maitra
Training & Education/Tribal Liaison Coordinator	Bonnie Gallahan
IT Specialist	Elliot Christian
NSDI CAP Coordinator	David Painter
GSDI Associate	Oh-Sung Kwon
Program Manager	Donna Scholz
Webmaster	Vaishal Sheth
Program Assistant	Arista Salimi

Exhibit 2. Secretariat Staff Members

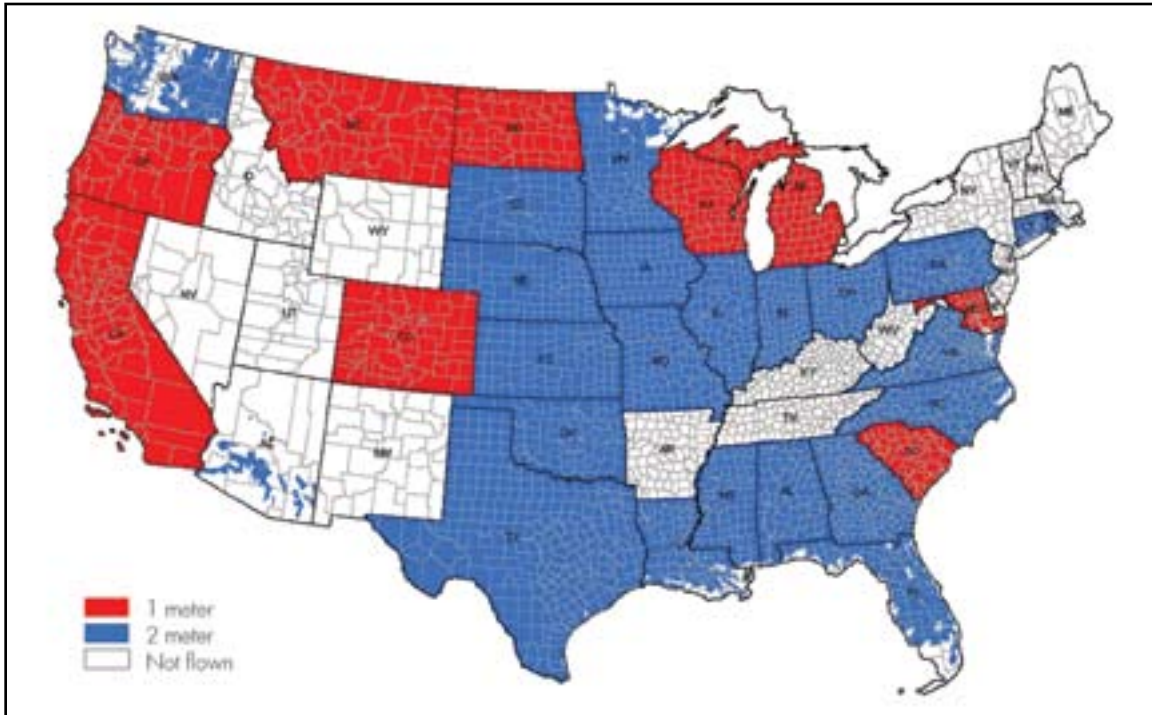
Note: Secretariat staff membership changes periodically. For the latest staff information, visit www.fgdc.gov.



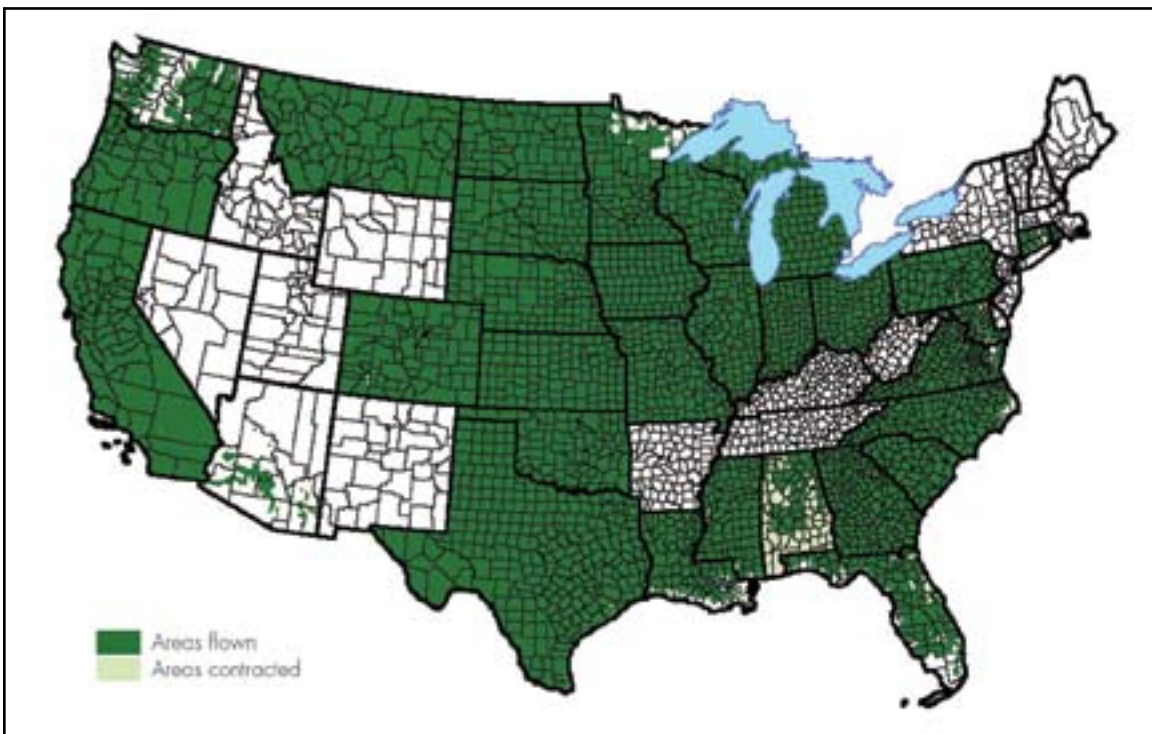


Appendix

Map 1. 2005 National Agricultural Imagery Program (NAIP)

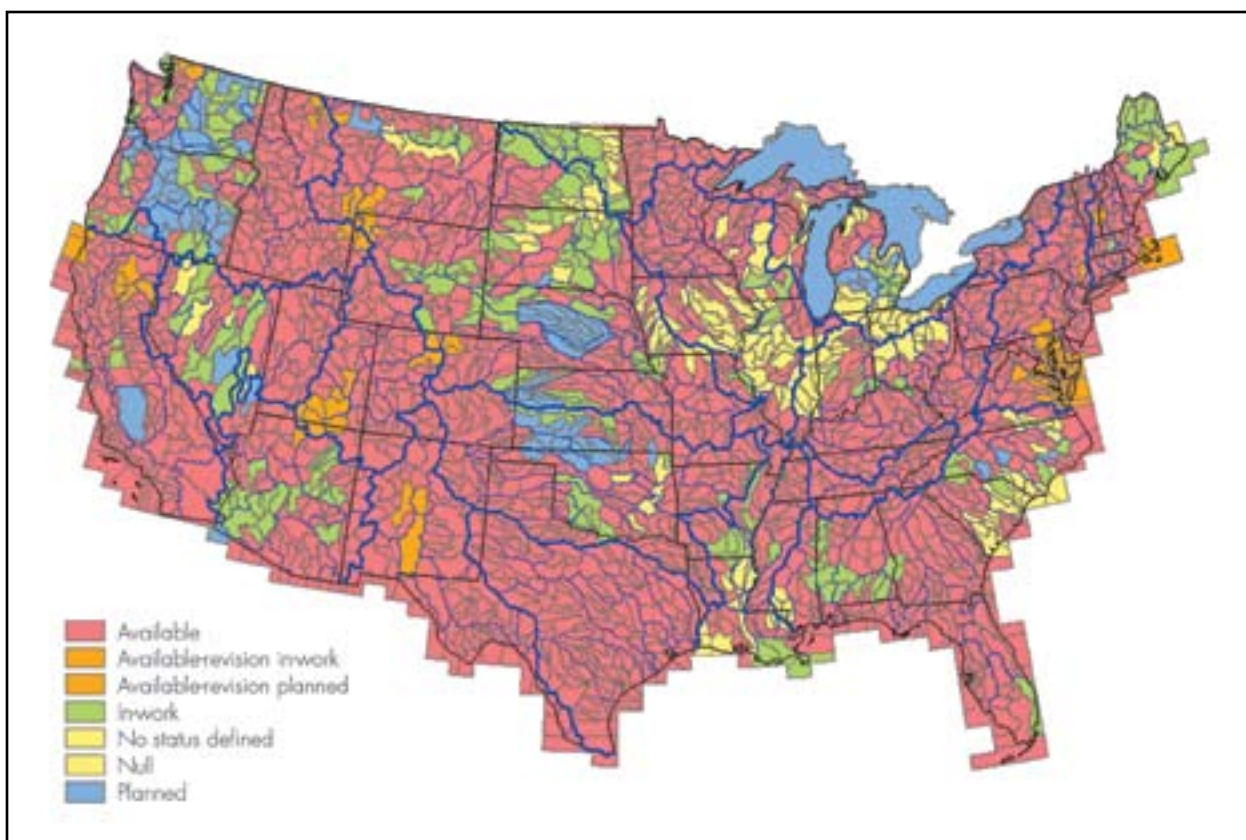


Map 2. 2005 NAIP Imagery Status



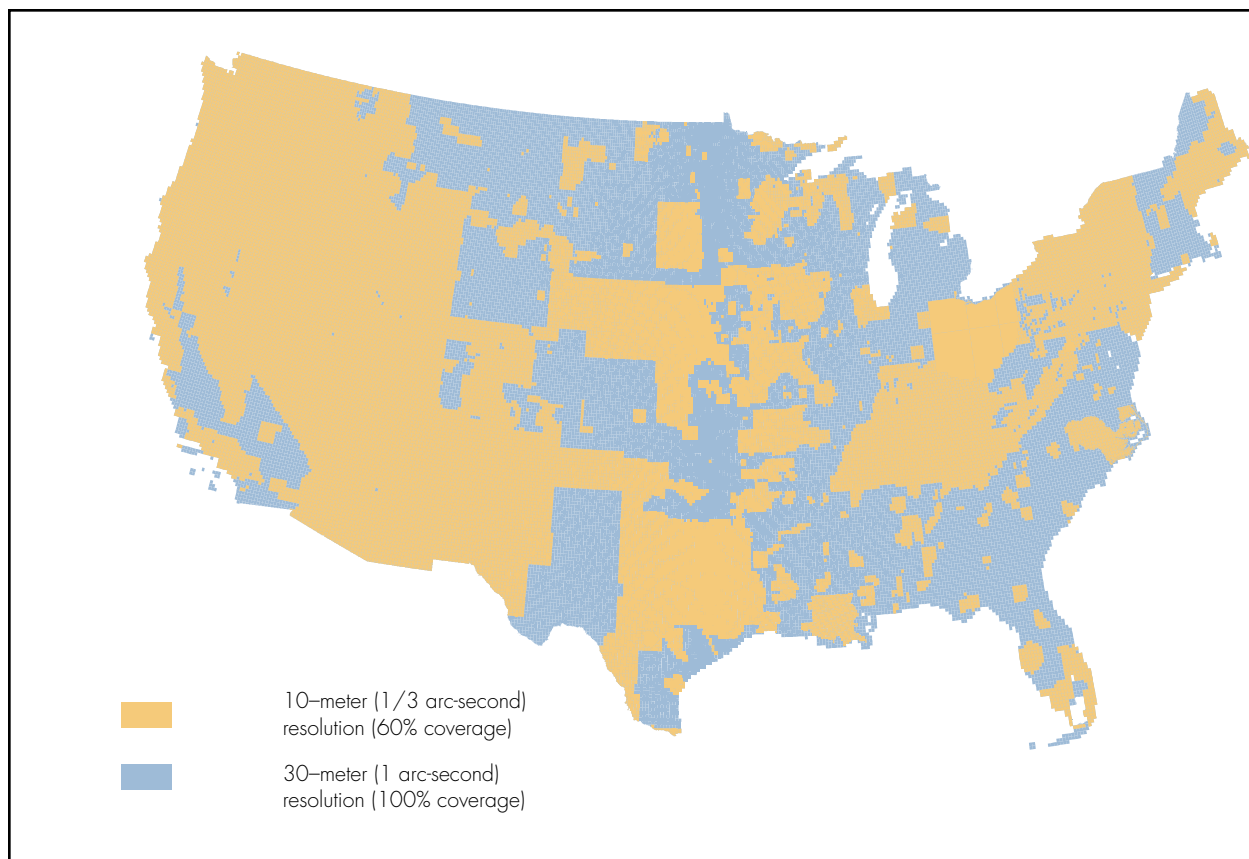
Map 3. 2005 National Hydrography Dataset Status

In 2005, the National Hydrography Dataset (NHD), which is used for mapping the hydrological environment in the United States, continued to increase and improve coverage of hydrography data through the efforts of the USGS, in partnership with the USDA Forest Service, NPS, BLM, EPA, and more than 30 State agencies. These Federal and State agencies completed mapping for an additional 17 States for a total of 25 States completed and performed mapping work in all 50 States. Forest Service projects to link habitat data included the Colorado River Cutthroat Trout Assessment Project, involving nine agencies in five States. Work commenced for linking other national databases to the NHD, including the National Inventory of Dams, the USGS National Water Information System Stream Gages, and Wild and Scenic Rivers. States also linked data, such as water rights information, water quality observations, diversion gates and other structures such as levees, and species habitat, to the NHD.



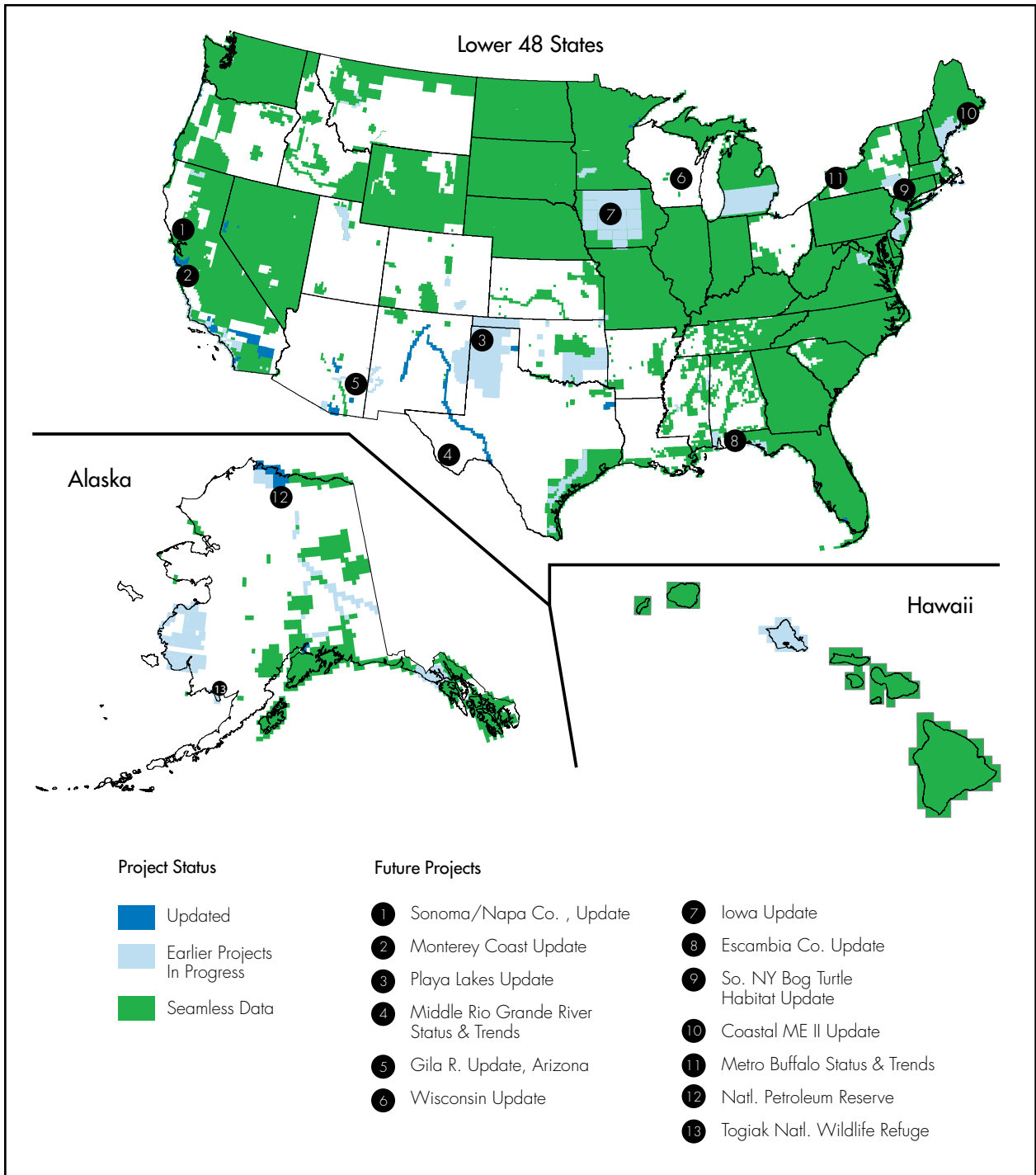
Map 4. 2005 National Elevation Dataset Elevation Data

In 2005, partnerships with FEMA, USDA Forest Service, NPS, and several State agencies enabled USGS to increase and improve coverage of elevation data in the National Elevation Dataset (NED), which provides nationally consistent, integrated elevation coverage for *The National Map*. Evolving applications, such as a point extraction service, custom topographic profiles generation, and high-resolution custom contour information derivations from the best available NED elevation data, enable customers to better utilize NED data.



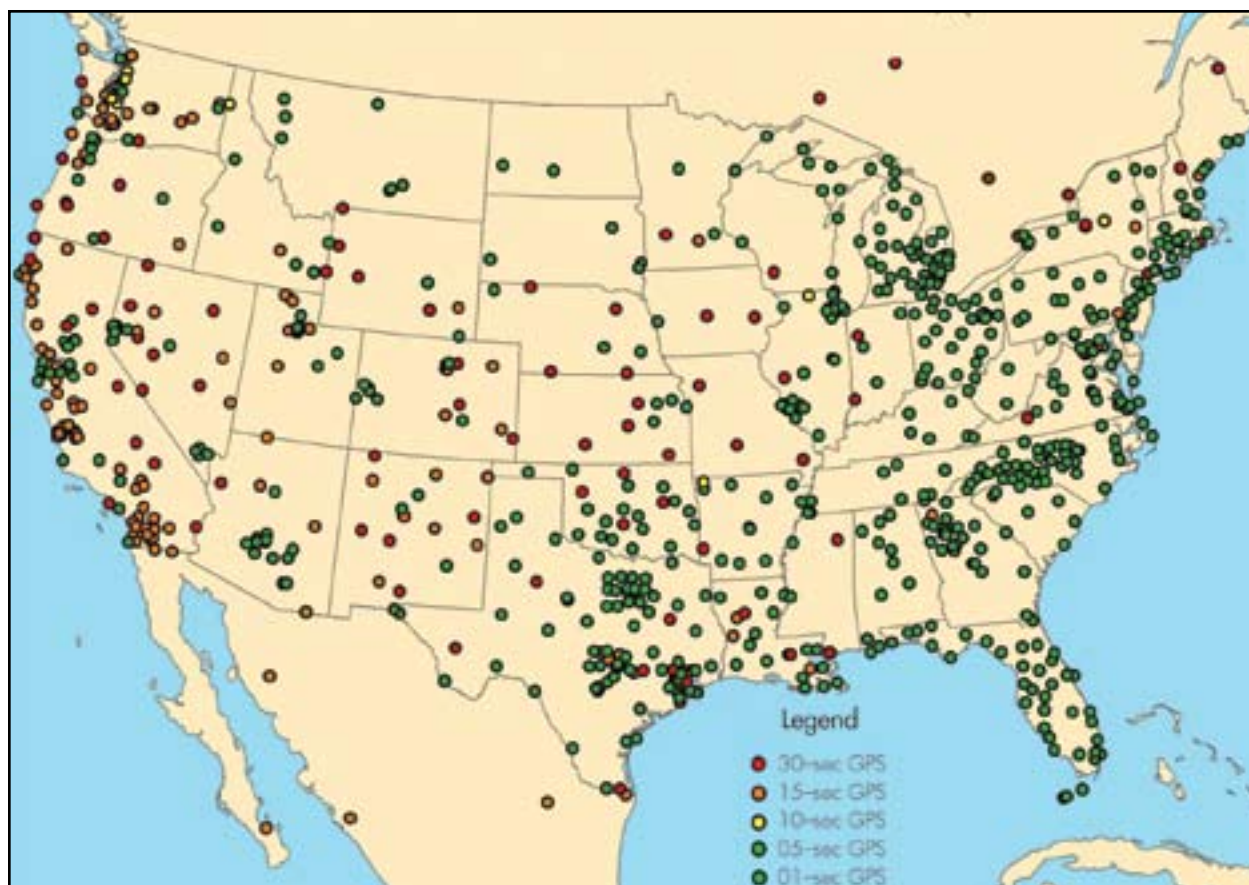
Map 5. 2005 Wetlands Layer of the National Spatial Data Infrastructure

The U.S. Fish and Wildlife Service, the lead Federal agency responsible for building the wetlands layer of the NSDI, has worked in partnership with nearly 100 organizations to develop wetlands geospatial digital data for more than 1.9 billion acres of the United States, 49 percent of the total area of the Nation. The USFWS continues to modernize the National Wetlands Inventory Program to achieve operational efficiencies and enhance service to customers over the Internet. In partnership with USGS, the National Wetlands Inventory implemented a national wetlands geodatabase to manage and provide via the Internet all available digital wetlands data in seamless format for the conterminous United States, Alaska, and Hawaii. This data provides resource managers and the public with contemporary digital wetland information to be used in geographic information systems and in key assessment reports to address complex conservation issues.



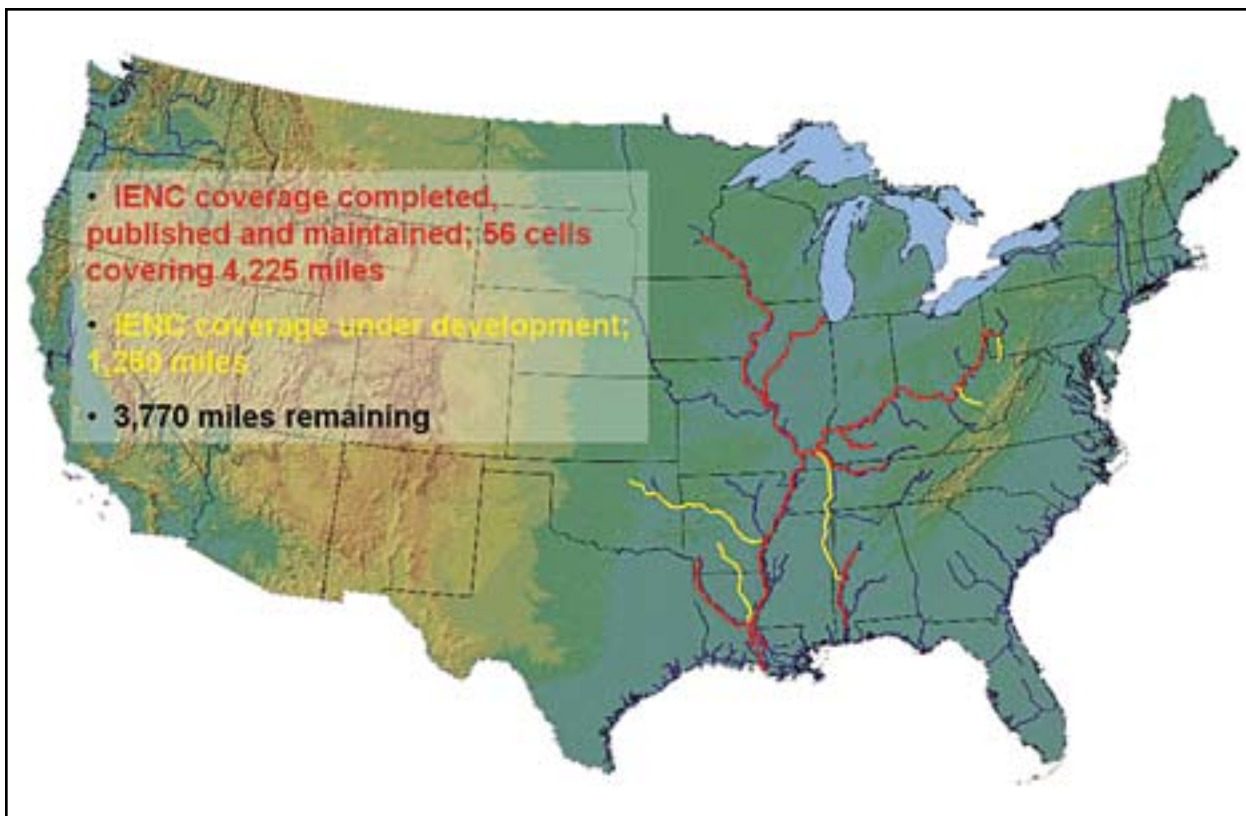
Map 6. 2005 Continuously Operating Reference Stations

The National Geodetic Survey works in partnership with 83 Federal, State, and local agencies, as well as academic and private organizations, to provide GPS data from Continuously Operating Reference Stations (CORS) to the NGS-managed National CORS network. CORS are GPS base stations that support high-accuracy positioning activities and form the backbone of the National Spatial Reference System. NGS distributes data from National CORS over the Internet to aid GPS users in accurate positioning activities.



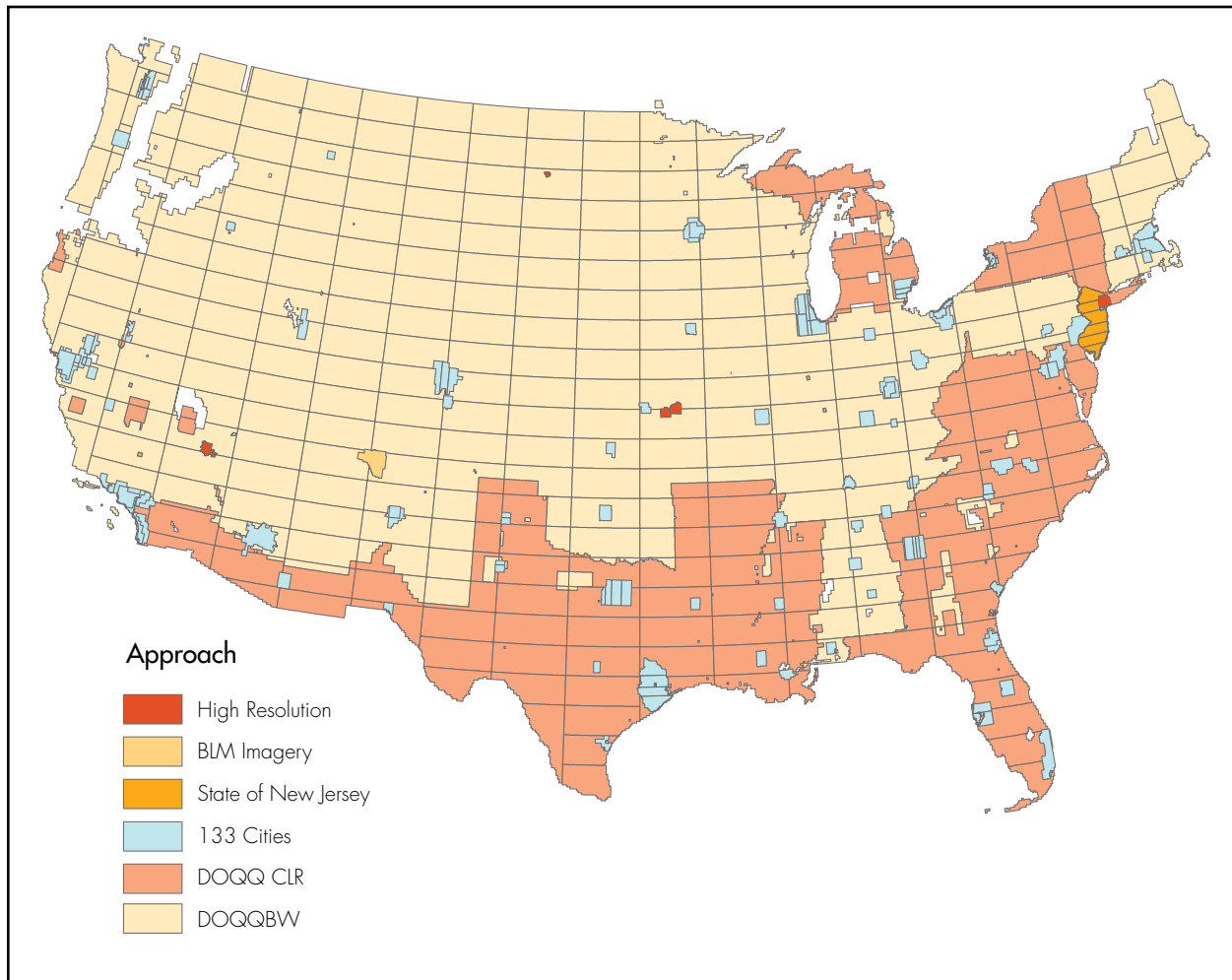
Map 7. 2005 Status of Inland Electronic Navigation Charts

In 2005 the Inland Electronic Navigation Charts (IENCs) coverage completed, published, and maintained 56 cells covering 4,225 miles, with 1,250 miles under development, and 3,770 miles remaining to be developed. The U.S. inland navigation system, consisting of 8,200 miles of rivers maintained by the USACE in 22 States, includes 276 lock chambers with a total lift of 6,100 feet. Each year the highly adaptable and effective system of barge navigation moves more than 625 million tons of commodities, including coal, petroleum products, various other raw materials, food and farm products, chemicals, and manufactured goods. The shallow draft waterways have many unique characteristics and difficulties over coastal harbor and ocean navigation; river levels can change by more than 30 feet in a seasonal cycle; the navigation channel can shift significantly within the river banks; and shifting, yet ever-present, river currents pose constant challenges in these confined waterways. Shipping vessels using electronic chart systems realize significant benefits, including accurate and real-time display of vessel position relative to waterway features, voyage planning and monitoring, training tools for new personnel, and integrated display of river charts, radar, and automatic identification systems.



Map 8. 2005 National Orthoimagery Dataset

In 2005, Federal agencies and other public safety and security organizations used high-resolution imagery data to plan public security measures for large sporting events, rallies, and demonstrations in major cities and to provide current prehurricane imagery for Hurricanes Katrina and Rita that was critical for search and rescue operations. During responses to such emergencies, difficult-to-access, incompatible, and out-of-date base geospatial data hamper and degrade communications among organizations that respond to emergencies. Ineffective means of communication endanger lives and property. To help ensure that Federal responders and support personnel have quick and easy access to the same detailed and current data as do local first responders, USGS is working with State and local governments and other Federal agencies to integrate data for America's urban areas into *The National Map*.



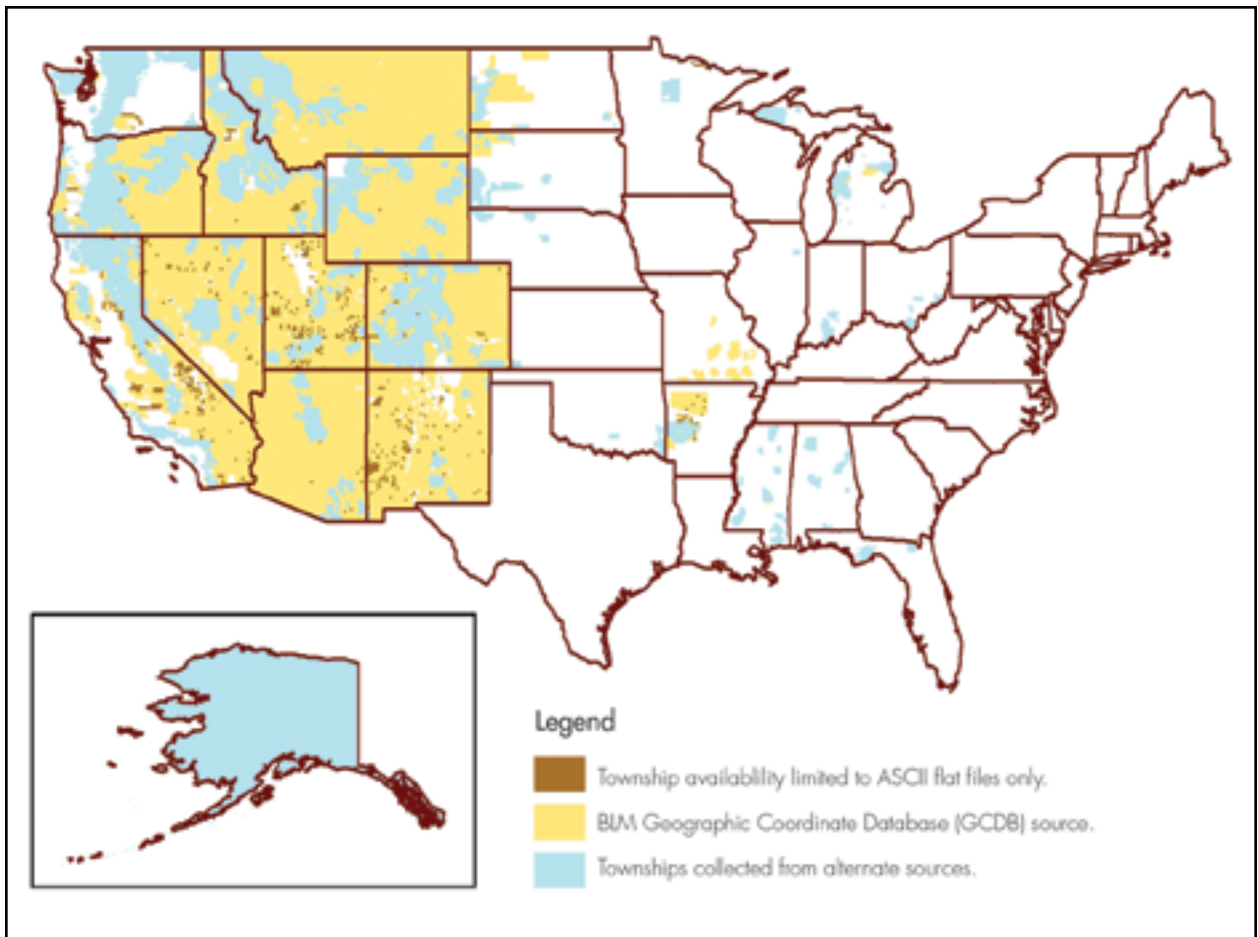
DOQQ CLR = Digital orthophoto quarter-quadrangle color.

DOQQBW = Digital orthophoto quarter-quadrangle black and white.

Map 9. 2005 BLM Cadastral Data Availability Index

The National Integrated Land System (NILS) automates the BLM cadastral surveying and land records management business rules in a GIS environment. The cadastral data is stored in the NILS—a joint project between BLM, USDA Forest Service, State and county agencies, and private organizations—which provides a business solution to land managers who face an increasingly complex environment of complicated transactions, legal challenges, and deteriorating and difficult-to-access records.

The NILS publication piece for cadastral data is the Land Survey Information System (LSIS) Web site at (http://www.geocommunicator.gov/GeoComm/lsis_home/home/index.html). In 2005, Public Land Survey System data from GCDB and alternate source data from the USDA Forest Service were distributed to the public via the LSIS Web site. As of September 2005, 29,668 GCDB townships were submitted to the NILS Project by the BLM State offices, 28,054 townships were imported into the NILS database, and 21,671 townships are verified to be correct as imported.



ASCII = American Standard Code for Information Exchange.

BLM's cadastral data is available for download from <http://www.geocommunicator.gov>.

