

The Uses and Needs of Cadastral Data by Federal Agencies



**Prepared by the Subcommittee for Cadastral Data
for the
Federal Geographic Data Committee Steering Committee**

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The Uses and Needs of Cadastral Data by Federal Agencies

Original Charge and Process

At the June 2008 meeting the Federal Geographic Data Committee (FGDC) Steering Committee Chair, James Cason, asked the Subcommittee for Cadastral Data (Cadastral Subcommittee), Chaired by Bureau of Land Management (BLM) Cadastral Survey, to contact the members of the FGDC Steering Committee to identify the uses and needs for cadastral data in each of the represented agencies. By way of background, cadastral data is the information about the rights, interests and value of property, the owner and information describing the address, location and size of the property and information about structures on properties. Furthermore it includes federal and states boundaries as well as the information about rights and interests in marine waters.

All of the agencies on the Steering Committee were contacted by email the second week of June asking for a point of contact for a telephone interview. Interviews began as soon as responses were received. Appendix A summarizes the contacts and the follow up email status. One page summaries were developed (Appendix C) based on the telephone interviews with one or more contacts in each agency. The one page summaries were sent to the agencies for review. In some cases summaries were developed from existing information and known needs for cadastral information.

The Need for a National Cadastre

Most of the agencies contacted have a need for cadastral data and would use a national cadastre if it were available and contained current data. One of the strongest statements on the need for the National Cadastre came from the Federal Emergency Management Agency (FEMA) in the aftermath of Hurricane Katrina.

In an effort to expedite the release of funds to victims that lived in flooded areas that were inaccessible to inspectors, FEMA made the policy decision that remote sensing data could be used with parcel data to perform the required verification. A three step process was created to 1) use imagery to identify areas of extensive housing destruction, 2) determine the address to identify damaged property, and 3) match the property to the owner/resident. For every property for which a “desktop site visit”¹ was completed FEMA avoided an estimated \$120 in costs from inspectors and internal processing. It was estimated that approximately \$17 million in costs were avoided and that this automated process facilitated the release of \$ 2 billion to over 500,000 disaster victims.

¹ A desktop site visit is a process where the inspector views information on a computer screen rather than making an on the ground field inspection.

Unfortunately this effort was delayed for two months because the local parcel data were not readily available. The reasons for delay varied; in some parishes and counties digital parcel data did not exist, in others FEMA was not able to locate the data sets because the county staff was attending to their own families and properties and in still other cases there was reluctance by local governments to release the data. Without the parcel data FEMA and others had to rely on less accuracy methods such as zip code data that resulted in additional costs and inefficiency. (See Appendix B for complete description).

In 2007 major weather events in the United States conservatively affected 1,300 different counties or a little over a third of the counties in the United States and some counties were affected by more than one event. The cost of obtaining parcel data for these counties varies but a conservative estimate is \$800,000. Flooding and wildland fire in 2008 has already affected more counties than were affected in 2007. Obtaining parcel data for the counties affected by the 2008 Midwest Flooding provides an example of the problems that agencies face when gathering parcel data on an ad hoc basis. Acquiring parcels from the private sector was estimated to cost between \$300,000 and \$400,000. The weather and wildland fire events happen every year and the cost of obtaining the parcel data to support response to these events is repeated every year and potentially duplicated with different agencies collecting the same information.

The cost of obtaining the data is only a part of the story. The delay in obtaining parcel data in 2008 remains much as it was in the aftermath of Hurricane Katrina. It is this delay that slows response to people in need and adds cost to the agency relief efforts. The use of parcel data for disaster response dramatically and vividly demonstrates the value of having ready access to parcel data.

Overall Findings

Some of the general observations collected about the National Cadastre and federal agencies are as follows.

- Most of the agencies contacted have a need for cadastral data and would use a national cadastre if it were available and contained current data.
- Agencies that were asked supported the use of the Cooperative Agreement Program (CAP) for funding cadastral data standardization and publication because it would provide access to critically needed parcel data.
- There are needs for both Public Land Survey System (PLSS) and parcel data among most agencies.
- The Marine Cadastre is becoming more important to more agencies with the increased demands for energy from the coastal waters to the outer continental shelf.
- The data must be standardized at a minimum at the state level and preferably standardized across the states to be most useful to the federal agencies.

Federal agencies fall into three categories on how they use cadastral data: 1) ownership and management of lands by an agency; 2) the management of the land and property records; 3) use of cadastral data in response to programmatic and emergency activities. All federal agencies that use cadastral data would benefit from easy access to local, state and federal government parcel data, but they are unable to do so because of limited access and availability of that data and lack of standard data from local and state governments. Appendix B provides examples on specific uses of parcel data by federal agencies.

Actions Needed

Unlike other data layers that are part of the National Spatial Data Infrastructure (NSDI) there are over 4,000 entities that are responsible for the collection and maintenance of parcel data making the compilation and coordination of this data a monumental challenge. The vision of the Cadastral Subcommittee is that the states will compile and publish the data in a standard format for government to government data sharing and make it available to federal agencies. This has already occurred in some states. With national guidance and federal support, this could be achieved in all states in the next five to six years.

1. **Support for National Coordination:** The National Research Council Report National Land Parcel Data² recommends that there should be a federal and a national coordinator. The FGDC Steering Committee should officially recognize the Cadastral Subcommittee as these coordinators for a period of five to six years to review and carry out the business planning and implementation of the coordination activities identified in the report. The resources needed to support this activity are three full time positions and associated operational costs for the positions.
2. **FGDC CAP Grant Funding:** Funding should be provided to the states to create and implement a parcel data business plan resulting in a standard set of parcel data that is available to all federal agencies. Funding would be used for development of parcel data business plans, determining the extent of available parcel data, adopting standards for the publication of the data, developing data share arrangements with counties and incorporating the parcels into a state portal. This funding can come out of the existing CAP Grant allocation and should be \$600,000 annually for five to six years.
3. **Federal Grants to States:** Some federal agencies have grant programs for state and local governments to support agency programs. The FGDC Steering Committee should encourage agencies with a defined need for parcel data to include grant eligible activities for the implementation of state parcel management programs within their grant guidelines. This should broaden the base of available

² National Land Parcel Data A Vision for Future, 2007, National Research Council, National Academies Press, Washington DC, 158 pages.

funding to implement the National Cadastre. This activity should be coordinated with the Cadastral Subcommittee as the designated national lead.

4. **Federal Parcel Data Needs:** The FGDC Steering Committee should encourage federal agencies to work with the Cadastral Subcommittee to define their parcel data needs so their requirements can be considered as states develop their parcel data business plans. This should increase the level of coordination between states and federal agencies and reduce duplication of effort.

Appendix A: Agency Needs and Uses

Agency	Cadastral Data Producer	Use by Number of Agencies						
		Local Parcels	Federal Parcels	Derivative Products	Marine Cadastre	Archive	Provides Support Data	No Cadastral Data Needs
Department of Agriculture - Farm Service Agency - Aerial Photography Field Office	X	X						
Department of Agriculture - Forest Service Wildland Fire		X	X					
Department of Commerce - National Geodetic Survey	X				X		X	
Department of Commerce - NOAA National Ocean Services	X		X		X			
Department of Defense	X	X	X					
Department of Education - National Center for Education Statistics				X				
Department of Energy *								
Department of Homeland Security - FEMA		X	X					
Department of Interior - Bureau of Indian Affairs	X	X	X					
Department of Interior - Bureau of Reclamation	X	X	X					
Department of Interior - Fish and Wildlife Service	X	X	X					
Department of Interior - Minerals Management Service	X				X			
Department of Justice		X	X					
Department of Labor *								
Department of State	X		X					
Department of Transportation								X
Environmental Protection Agency		X	X					
Federal Communication Commission		X	X					
General Services Administration	X							
Health and Human Services *								
Housing and Urban Development		X		X				
Library of Congress						X		
Library of Congress - Congressional Research Service (CRS)		X	X					
NASA, Earth Science Administration							X	
National Archives and Records Administration (NARA)						X		
National Science Foundation				X				
Nuclear Regulatory Commission **				X				
Office of Management and Budget				X				
Office of Personnel Management								X
Small Business Administration		X						
Smithsonian *								
Tennessee Valley Authority (TVA)	X	X	X					
Treasury		X	X					
U.S. Agency for International Development *								
Veterans Administration		X	X					
Total Number of Interviews 30	11	16	14	4	3	2	2	5

* The agency did not respond to the email request for cadastral contact

** The agency provided contact information but we were unable to complete interviews

Archive: An archive is collection of historical cadastral records, and it also refers to the location in which these records are kept.

Cadastral Data Producer: An authoritative source or steward for cadastral data (parcels, boundaries, land and marine cadastre).

Derivative Products: Statistics and reports that are derived from parcel data bases (federal, state and local). Examples are sale values by Census block that is used by HUD.

Federal Parcels: Information about real property, buildings and leased property that is owned or managed by federal agencies.

Local Parcels: Parcels from local governments that are created and managed by local government agencies.

Marine Cadastre: The Marine Cadastre is a comprehensive register of the real property in coastal waters. This includes the reference system, boundaries, lease block boundaries with associated information about the rights and interest of the blocks.

No Cadastral Data Needs: The agency indicated that they do not use cadastral information.

Support Data: This is the provider of data that can be used in the creation and maintenance of any of the components of a cadastre

Appendix B: Examples

Katrina - Locating parcel data to facilitate the release of disaster assistance

In the aftermath of Hurricane Katrina the Federal Emergency Management Agency (FEMA) worked to expedite the process of releasing funds to the victims. Prior to the disbursement of relief funds, FEMA must verify that the victim lives in an area impacted by the storm and that their property suffered damages. This is done by sending inspectors to visit the homes of disasters victims to verify damages. However, many of the properties were inaccessible to inspectors due to standing flood waters and impassable roads. In addition, the sheer volumes of applicants for assistance threatened to overwhelm the inspector force. FEMA therefore made a policy decision that remote sensing data could be used with ownership information, such as with parcel data, to perform the required verification of damage to the properties of housing assistance applicants. In essence this created a three step process:

- Collect and analyze post disaster imagery to determine areas of extensive housing destruction;
- Determine the addresses, zip codes and other information required to identify the damaged property; and
- Match the property to the property owner and/or resident.

For every property for which a “desktop site visit” was completed FEMA avoided an estimated \$120 in costs for contract inspector services and internal processing. In total, it is estimated that approximately \$17 million in costs were avoided through this automation of the site visits. In total, the automated methods were used to release about \$2 billion in assistance to over 500,000 disaster victims. The assistance awards ranged from about \$2,000 to \$26,000. In addition, these processes saved weeks of time in getting needed funds to victims. The total cost of this effort was under \$500,000.

Unfortunately this effort was delayed for two months because the local government parcels were not readily available. The reasons varied; in some Parishes and Counties digital parcel data did not exist, in other they were not able to locate the “owner” because they were attending to their own families and properties and in some cases there was reluctance by some local governments to release the data. This resulted in many initial efforts being performed using less accurate methods relying on zip code data and other non-precise geographies.

Spring Floods 2008 – Still Searching for Parcels

Five states were severely affected by the floods in the spring of 2008. Residents within 144 counties in these five states could apply for individual assistance. FEMA was looking for sources of parcels to assess the impact by overlaying the parcels with the flood zones. The cost estimated by private vendors ranged from \$300,000 to \$400,000 which was unreasonable for the budget. FEMA began contacting the states and individual counties but the effort was halted because the threats receded as FEMA began to explore this avenue.

State	Number Counties eligible for individual assistance
Illinois	14
Indiana	39
Iowa	46
Nebraska	15
Wisconsin	30
Total	144

The following is a summary of the activities in Wisconsin from the 2008 flooding which further illustrates the critical need for local government parcel data prior to an event. Wisconsin residents recovering from the June 2008 severe storms and flooding received almost \$36 million in disaster assistance. FEMA distributed \$31.6 million in grants to individuals for housing and other disaster needs. The Small Business Agency (SBA) approved \$4.2 million in low interest disaster loans.

Wisconsin recovery summary as of close of business July 10, 2008

- **30,895** residents have registered for Individual Assistance in the 30 declared Wisconsin counties.
- **\$28 million** in Individual Assistance has been distributed for temporary housing and repair and replacement of storm-damaged housing.
- **\$3.6 million** has been provided for other disaster needs such as transportation, medical and dental expenses, moving and storage fees, and replacement or repair of personal property.
- **\$4.2 million** has been approved in low interest SBA disaster loans to homeowners, renters and business owners.
- **26,607** home inspections have been completed.
- **5,196** individuals have visited the 15 Wisconsin Disaster Recovery Centers.
- **2,739** residents have been advised by FEMA mitigation experts on flood insurance, rebuilding to reduce future disaster damage, health and safety issues and FEMA disaster assistance programs.

Regular Business Operations: Cost Savings Identified by Florida Department of Environmental Protection’s Cadastral Feasibility Study

There are considerable benefits to be acquired in the daily business operations. One has to look to the States to find organizations that have local government parcel data readily available to them and integrated into their daily business operations.

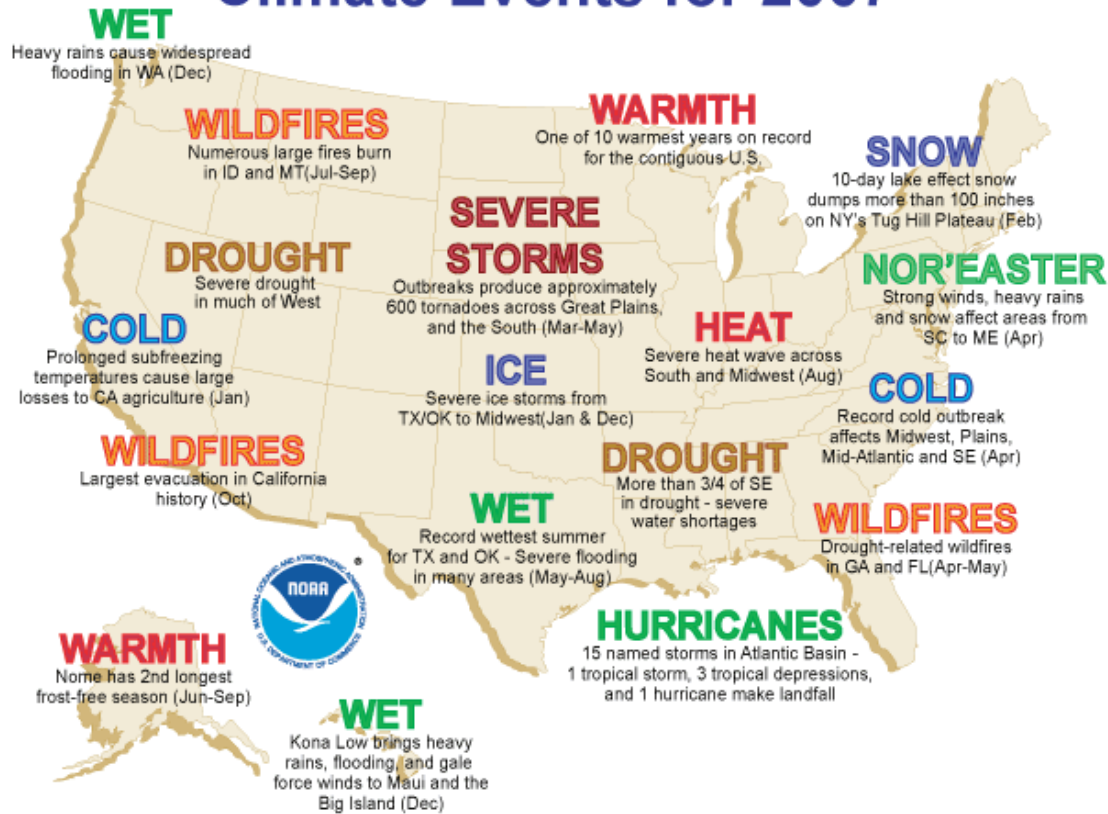
Agencies with needs to evaluate ground conditions and to contact owners can significantly reduce the time and costs in their daily business operations by using parcel data as demonstrated by the Florida Department of Environmental Protection (FLDEP) Cadastral Feasibility Study. The primary savings came in the form of reducing the number of site visits by staff and the ability to locate owners of impacted properties. The feasibility study estimated that with access to local government parcel data the agency could save approximately 15,070 man hours per year with its 350 staff members. The regulatory and permitting sections were the principle beneficiaries because they were able to address many of their daily review processes through “desktop site visits.”³

<i>Workgroup Type</i>	<i>Hrs/Year</i>
Regulatory and Permitting	9,116
Technical Support	4,050
Resource Management and Research	960
Parks	500
Law Enforcement	444
<i>Total</i>	<i>15,070</i>

³ FLDEP Cadastral Feasibility Study, Prepared by the Florida Department of Environmental Protection by David Stage, Florida Resources and Environmental Analysis Center, 2003.

Storm and Weather Events 2007

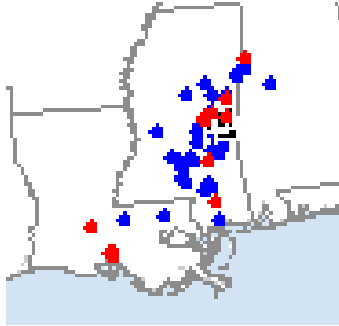
Significant U.S. Weather and Climate Events for 2007



In 2007 major weather events in the U.S. conservatively affected approximately 1,300 different counties or a little over a third of the counties in the United States. Some counties were affected by more than one event. Based on the Cadastral Subcommittee's experience with wildland fires it is estimated that it takes four to eight hours per county to find a contact and assemble parcel data if the data are not already assembled and deployed. If an average of six hours per county is used as an estimate that comes to 7,800 hours repeated by every agency that needs information. It is estimated that at least four agencies respond to every event in some capacity. Using an average employee cost of \$80 per hour this would mean that \$3 million is spent each year in collecting parcel level information just for major weather responses. This expenditure is repeated every year.

January 2007 Tornadoes and High Winds

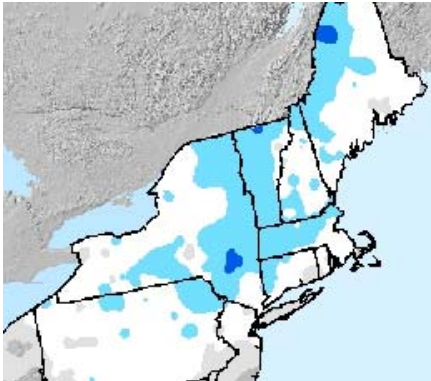
In the United States, severe thunderstorms generated tornadoes along the central Gulf Coast region on January 4.



Affected about 36 counties

February 2007 Snow Storms

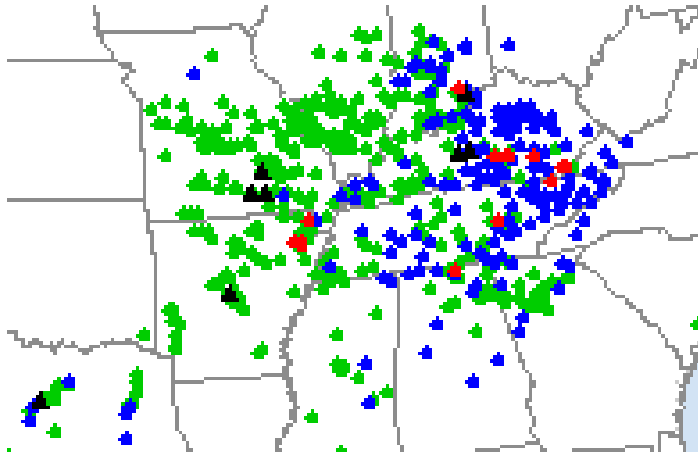
Intense lake-effect snowfall in the lee of Lake Ontario deposited phenomenal snowfall accumulations in areas downwind of the lake. A ten-day (February 3 - 12) storm total of 358 cm (141 inches) was reported in Redfield in New York's Oswego County. A major winter storm affected portions of the eastern United States during February 13-15, depositing significant accumulations of snow and ice from Illinois eastward into the Mid-Atlantic and Northeast. Snow accumulations in areas of upstate New York totaled in excess of 100 cm (39 inches). This storm ranked as a Category 3 event on the Northeast Snowfall Impact Scale (NESIS). The heaviest snow fell in interior regions of the Northeast where amounts over 20 inches were widespread. The winter storm was blamed for 13 deaths, and around 300,000 people lost power during the storm.



Affected about 150 counties

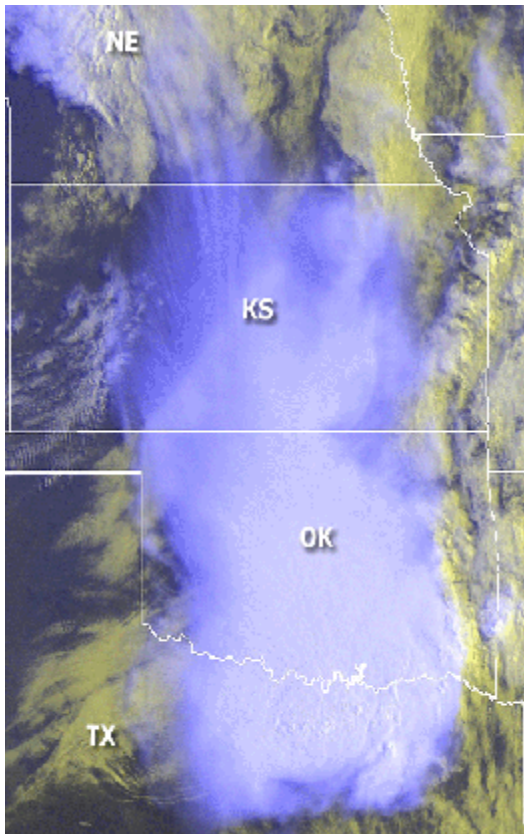
April 2007 – Tornadoes, High Wind and Hail

An outbreak of severe thunderstorms including 14 reported tornadoes occurred on the April 3 in parts of the Mississippi and Tennessee River Valley region.



Affected about 300 counties

May 2007 – Wildland Fires in Florida and Georgia, Flooding Kansas, Oklahoma and Texas



In the United States, heavy rainfall in parts of Oklahoma and Texas during May 26-27 triggered flash floods which affected more than 1,000 people and were blamed for at least 4 deaths with 2 others missing. Areas in northern Oklahoma experienced the worst flooding in over 50 years, reporting rainfall totals of 76 mm (3 inches) in a 24-hour period.

Flooding affected about 130 counties

Wildland Fire affected about 30 counties

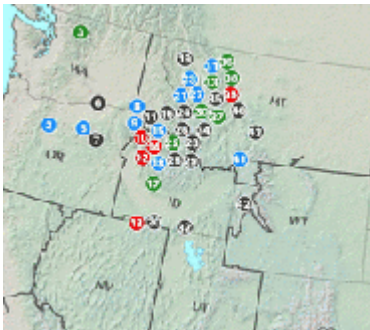
June 2007 – Drought, Thunderstorms, Tornadoes, and Wind

Across the United States, extreme drought conditions persisted in areas of Wyoming and throughout much of the Desert Southwest. Although Tropical Storm Barry brought much needed precipitation over parts of the Southeast during the first week of June, extreme to exceptional drought persisted in parts of Alabama, Tennessee, Mississippi, Georgia, North Carolina, and Florida. On June 26, 49% of the western U.S. was in moderate to exceptional drought, 68% in the Southeast, and 34% for the contiguous U.S., according to the Federal U.S. Drought Monitor. Across the Upper Midwest of the contiguous U.S., severe thunderstorms produced damaging winds, more than 152 mm (6 inches) of rain, tornadoes, and in some areas up to 4 inch hail on June 7.

Affected about 150 counties

July 2007 – Wildland Fire

Fire activity spread dramatically across the West this past month. During mid-July, wildfires were burning across northern Nevada, eastern Oregon, and southern and central Idaho, and during the latter-half of July activity was focused across the Northern Rockies.



As of July 31st, 46 large fires were actively burning, with fire activity in late July focused on central Idaho and northwest Montana. Wildfires were also quite active across parts of the Northwest Territories and north-central Canada in July 2007.

According to estimates from the National Interagency Fire center (NIFC), as of August 7th over 58,300 wildland fires were reported across the U.S. through July 2007, with approximately 5.39 million acres burned.

Affected about 100 counties

August 2007 – Record High Temperatures, Flooding, Tropical Storm Erin

In the United States, thunderstorms on August 19-27 brought heavy rain across parts of the Midwest prompting widespread flooding which forced hundreds of people to evacuate their homes. There were 18 reported deaths across the Midwest due to flooding. The American Red Cross said in a preliminary report that in Wisconsin and Minnesota there were approximately 4,200 affected homes. Damages in Wisconsin were estimated to be about \$38 million.

Affected about 50 counties

September 2007 - Hurricane

Hurricane Humberto became the first storm on record to intensify from a tropical depression to a category one hurricane within 16 hours (BBC News). Humberto was classified as a depression in the Gulf of Mexico on September 11, reaching tropical

storm intensity on the 12th. Humberto made landfall just east of Galveston, TX on the 13th as a category one hurricane with maximum sustained winds of 85 mph and was the first hurricane to make landfall in the U.S. since 2005 (Associated Press). This hurricane brought heavy rain to the Texas-Louisiana coastline, left about 100,000 residents without power.

Affected about 55 counties

October and November 2007 – Drought and Wildland Fire

In the state of Georgia, the exceptional drought has taken a toll on the state's water supplies, forcing the governor to declare a state of emergency across the northern half of the state. Lake Lanier, a 15,380 hectares (38,000 acres) reservoir in the northern part of the state, serves more than 3 million residents with water and it is feared that it might be in total depletion in 3 more months.

Affected about 98 counties

Severe wildfires in southern California, which started on October 21, forced 950,000 residents to evacuate the area, resulting in the biggest evacuation in Californian history (BBC News). The fires charred 517,000 acres, destroyed more than 2,000 homes, killed 7 people and injured 40 others. Seven of southern California's counties were declared in a state of emergency by President Bush.

Affected about 7 counties

New wildland fires, which began November 24, charred over 4,600 acres of land in southern California. More than 14,000 residents evacuated their homes and more than 50 homes were destroyed.

Affected about 3 counties

December 2007 – Storms

A Kona Low (a strong extra-tropical storm in the central Pacific) brought heavy rains, flooding, and gale force winds to Maui and the Big Island of Hawaii the first week of December. Heavy rains caused widespread flooding in Washington and Oregon during the first week of December. As much as 13 inches of rain fell on areas of the Pacific Coast Range, leading to the closing of Interstate 5 between Portland and Vancouver. In Washington, 30 to 40 percent of residential neighborhoods in Centralia and Chehalis flooded. Record flood levels were reached on the Chehalis, Skokomish, and Elwha rivers. In Vernonia, Oregon some areas outside the FEMA 500-year flood plain were inundated.

Affected about 90 counties

Appendix C: Interview Summaries

The agency profiles provide a review of the uses of cadastral data (common reference system, boundaries, parcels and property descriptions) by the agencies

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Agency Profiles

The agency profiles provide a review of the uses of cadastral data (common reference system, boundaries, parcels and property descriptions) by the agencies.

Department of Agriculture - Farm Service Agency - Aerial Photography Field Office

Collected from telephone interview and content validated by interviewees

Mission: The Aerial Photography Field Office (APFO) is the primary source of aerial imagery for the United States Department of Agriculture. Over 10,000,000 images are held here. The imagery dates begin with 1955 to the present.

Jurisdiction: US – primarily rural areas, sometimes have an interest in the urban/rural interface

Cadastral Users: consumers

Description of Activity: Cadastral data would have two potential uses. The first is as control for NAIP imagery if it met the needs of the control stations as defined in the NAIP program. The second use would be to use geospatial information (parcels and common land units) to validate the accuracy of attribute information (land owner and value perhaps). A third use would be at local offices which would be to support the collection and edit of CLU boundaries.

Cadastral Data Needs/Uses: Parcel data – would have to be seamless and easy to incorporate into an application. The CLU data is not publicly available and so the parcel data would need to be able to be incorporated into an agency based application. Control points for aerial imagery need to be visible in one meter imagery and have a clear definition of their location and preferable a ground level photo of the station for image correlation.

Benefits: The benefits of using the parcels as a base to support mapping the CLU is increased efficiency in identifying parcel boundaries, finding corner locations and verifying owner information. The benefits of using PLSS points as control for the NAIP are to increase the vertical integration between these two themes so that the PLSS is registered visually correctly with the NAIP.

Grants, Funding and CAP Support: The FSA APFO routine partners with states and others to do cooperative imagery collection.

Other Notes: USDA currently hosts 30 to 50 million individual CLU's along with NAIP imagery out of the Salt Lake City Office. This information can be accessed by any local office and aggregated in any way needed. This is an excellent model and proof of concept that the technology does exist for states to robustly host state wide parcel data and serve it to local jurisdictions and others. The fact that the CLU data is held in confidence is further demonstration of the level of security that can be applied to a centrally managed data resource.

Department of Agriculture - Forest Service Wildland Fire

Mission: The protection of human life is the single, overriding suppression priority. Setting priorities among protecting human communities and community infrastructure, other property and improvements, and natural and cultural resources will be done based on the values to be protected, human health and safety, and the costs of protection.

Jurisdiction: US

Cadastral Users: Consumers

Description of Activity: The questions that wildland fire managers must answer as they approach any wildland fire event are: Which wildland fires should be attacked first and what resources should be allocated? What resources should be allocated to protect public and private assets? Where is it not necessary to suppress wildland fires so resources can be preserved for priority areas? Addressing these questions requires the use of sophisticated technology with information to determine fire spread (vegetation, topography and weather) along with information that describes the land use and values-at-risk in the path of expected fire spread. With this information in place the firefighters can rapidly identify what needs protection allowing them to get firefighters in the right place for the right reasons.

Cadastral Data Needs/Uses: The parcel level polygon or point information coupled with information on the values of structures on the parcel is used to identify the location and clusters of values at risk of being harm's way. In the initial phases of the analysis the parcel data with the value of structures is sufficient. However in other phases of fire management more extensive information on the parcel extent and parcel owners is needed.

Benefits: Parcel data are incorporated into a state-of-the-art decision support system which helps agency administrators, incident managers, and fire planners develop wildland fire suppression strategies by rapidly mapping and quantifying the significant resource values most likely to be threatened by an ongoing fire event. With this technology and information, incident command teams can rapidly identify strategic protection needs and help assure that firefighters are most safely deployed to the right locations for the right reasons. This innovative application of parcel data in wildland fire emergency response may provide a useful example for efforts to build all-hazards decision support systems.

Grants, Funding and CAP Support: Yes

Department of Commerce - National Geodetic Survey

Mission: Define, maintain and provide access to the **National Spatial Reference System** to meet the nation's economic, social, and environmental needs

Jurisdiction: US and its Territories

Cadastral Category: Authoritative source for the National Spatial Reference System which is foundational element for the cadastre.

Description of Activity: The National Geodetic Survey (NGS) defines and manages the National Spatial Reference System (NSRS)) which is a consistent national coordinate system that specifies latitude, longitude, height, scale, gravity, and orientation throughout the Nation, as well as how these values change with time.

NSRS consists of the following components:

- A consistent, accurate, and up-to-date National Shoreline;
- the National CORS, a set of Global Positioning System Continuously Operating Reference Stations meeting NOAA geodetic standards for installation, operation, and data distribution;
- a network of permanently marked points including the Federal Base Network (FBN), the Cooperative Base Network (CBN), and the User Densification Network(UDN); and
- a set of accurate models describing dynamic geophysical processes affecting spatial measurements.

Cadastral Data Needs/Uses: The NGS is not a user of the cadastre but the NSRS provides the foundation on which an accurate cadastre is built. The shore lines is the bases on which off shore boundaries are established.

Benefits: NGS activities improve the accuracy of the cadastre through the creation of foundational data (orthoimagery and LiDAR).

- NSRS is the highly accurate reference system on which an accurate cadastre is built.
- Height Modernization Program - funding deriving more accurate elevation data. LiDAR technology <http://www.ngs.noaa.gov/heightmod/>
- State Ortho Programs: Provided technical assistance for the control network and field verification to do quality control for the digital terrain data. Provide data and assistance and standards in terms of the control network.
- Provide data and assistance and standards in terms of the control network.
- In-house for - coastal control. LiDAR
- Half states have a State Advisor – half of the states.

Grants and Funding and CAP Support: Support to the States is provided by the State Advisors and the role that they can play in building the foundation for the Cadastre which includes its promotion and publication.. Half of the States in the US have a State Geodetic Advisor.

Department of Commerce - NOAA National Ocean Services

Mission: From daily weather forecasts, severe storm warnings and climate monitoring to fisheries management, coastal restoration and supporting marine commerce NOAA's products and services support economic vitality and affect more than one-third of America's gross domestic product.

Jurisdiction: Outer Continental Shelf of the US and its Territories to Global

Cadastral Category: User, producer and authoritative source about boundaries and the rights and interests of federal and state lands in the marine environment.

Description of Activity: NOAA is a managing agency that is concerned with rights and interest of State and Federal ownership and stewardship in coastal areas. They are concerned with the area within the Outer Continental Shelf, Aquatic Preserves, Maritime Boundaries, the State Submerged Lands Act Boundary and the corresponding rights and responsibilities of the various organizations, persons and activities within those areas. NOAA co-chairs the FGDC Marine Boundary Working Group. As a result of the Energy Policy Act of 2005, (Public Law 109-58) Sec 388 – *Alternative Energy – Related Uses on the Outer Continental Shelf* the Minerals Management Service is working through the FGDC Marine Boundary Workgroup to develop a Multipurpose Marine Cadastre to provide a comprehensive spatial data infrastructure whereby rights and interests, restrictions and responsibilities in the marine environments can be assessed, administered and managed.

Cadastral Data Needs/Uses: The marine cadastre was established by MMS in the 1950's for the management of oil rights in coastal areas but this cadastre has not been used as extensively or consistently as the land cadastre for the establishment of boundaries and land management. As a result NOAA's responsibilities for the rights and interests in the marine environment has prompted them to work in partnership with the Minerals Management Service to develop best practices for the location boundaries and to promote the definition and use a common multi-purpose marine cadastre.

Benefits: A multi-purpose marine cadastre will greatly facilitate the management of rights and interest in coastal areas. This will be essential as energy businesses such as wind, wave and tidal energy producers open up in coastal areas. The cadastre will better define the boundaries and provide a common reference system for locating rights and interest and compiling information about state and federal off shore lands into a common spatial infrastructure.

Grants and Funding and CAP support: NOAA supports assistance to state agencies for improvement and publication of the marine and land cadastral data. The creation and extension of well defined boundary files and the use of a common reference system in coastal waters is a critical for emerging ocean management issues such as alternative energy development, global climate change, marine protected areas, and fisheries management necessitates easily accessible, standardized ocean and coastal framework data.

Department of Defense

Mission: The mission of the Department of Defense is to provide the military forces needed to deter war and to protect the security of our country.

Jurisdiction: The United States and International theaters as established by the President

Cadastral Users: producers, consumers, international

Description of Activity: The Department of Defense has increasing needs to understand the full extent of the rights and interests in the lands it uses and manages, as well as contiguous lands, in the U.S. and abroad. The interdependency of local, state, private and federal land holdings around military installations is apparent in base realignments, base closures, and in a renewed emphasis in the Department on the range of activities necessary to sustain military readiness through land use planning and encroachment avoidance.

Cadastral Data Needs/Uses: At the Department level, the Deputy Under Secretary of Defense for Installations & Environment (DUSD(I&E)) is the proponent for policy, oversight, and guidance for the DoD Real Property Inventory. DUSD(I&E) recommends strong support for the FGDC to pursue developing an implementation strategy for the recommendations outlined in the study "National Land Parcel Data - A Vision for the Future." Cadastral data is the foundation of the Real Property Inventory. DUSD(I&E) strongly desires an active role in such a coordination effort, in order to ensure the Department's current and planned investments in parcel data are aligned with emerging federal requirements. Although DoD is not the largest federal land holder, it is the holder of the largest inventory of facilities. The accurate accounting of these facilities relies upon an accurate cadastral database.

Benefits: The Department's Real Property Inventory initiative would greatly benefit from a coordinated national approach to land parcel data. The sustainment of our domestic military readiness capabilities relies more and more on land use planning and coordination between DoD, federal, state and local partners. Furthermore, DUSD(I&E) requests that industry representation be given, in particular to the Open Standards Consortium for Real Estate, Americas (OSCRE). OSCRE is poised to implement several of the recommendations outlined in the National Land Parcel report. It appears necessary that a broad coalition will be essential to the success of an FGDC effort. OSCRE may be ideally suited to facilitate the involvement of private commercial interests in a way that will help federal, state, and local government interests.

Grants, Funding and CAP Support: The Department of Defense response indicates a strong support for a CAP grant category to support the development and implementation of standardized data sets for cadastral information at the State level. DoD provides annual support for community and regional projects in the U.S. known as Joint Land Use Studies which include development, use and refinement of land parcel data. In other cases, the Department has partnered with a variety of local, state, and non-government organizations to ensure the continued military readiness uses of land, air, and sea space while also preserving the rights and interests of adjacent land owners. DoD is also a major contributor of aerial imagery to support emergency response activities, damage assessment, and other national priorities.

Department of Education - National Center for Education Statistics

Mission: "The National Center for Education Statistics (NCES) is the primary federal entity for collecting and analyzing data related to education in the U.S. and other nations."

Jurisdiction: US and its Territories

Cadastral Category: Indirect user of cadastral data. Utilize Census Bureaus School district boundaries which are provided to by local governments. Parcels are frequently used to determine School District Boundaries or Service Areas.

Description of Activity: The local governments determine the school district boundaries using cadastral data and then provide it to the Census Bureau. This in turn is acquired and used by NCES to provide an official listing of public school districts in the nation, which can be used to select samples for other NCES surveys. And second, to provide basic information and descriptive statistics on public elementary and secondary schools and schooling in general.

Cadastral Data Needs/Uses: As an indirect user DOE is dependent of the Census Bureau and local governments to provide accurate data.

Benefits: School district boundaries are based on legal descriptions many of which utilize cadastral data to define those boundaries. Typical the lowest level of granularity is the parcel that determines which school district an owner/occupant belongs to. The boundaries are then used to determine the demographics of that boundary.

Grants and Funding: Not Applicable

Department of Homeland Security - FEMA

Mission: The FEMA/GIS Solutions Office of CIO provides situational awareness and impact analysis for the disaster. There are many other sections within FEMA that use parcel data to meet specific business purposes.

Jurisdiction: US and its Territories

Cadastral Category: User of trusted and authoritative sources of local government parcel data.

Description of Activity: The FEMA/GIS Solutions Office of CIO provides situational awareness and impact analysis for the disaster. There are many other sections within FEMA that use parcel data to meet specific business purposes.

Cadastral Data Needs/Uses: Parcel data is initially used to identify the types of properties (residential, commercial, agriculture) that have sustained damage which is then combined with additional information (value) that is used as a component for developing a cost estimate for the response. FEMA submits a request to President and Congress for funding which is determined by the extent and value of the impacted properties as established in the Robert T, Stafford Act. This act defines the roles of FEMA and other for determining the process for to acquire funding for a response and recovery operation. The categorization of property types is important because the funding comes from different sources.

Currency is a critical component for making an accurate cost estimate in high growth areas for response and recovery operations. Mechanisms to provide a refresh to the parcel data within twenty-four hours would do a great deal to provide an accurate estimate of the damage and subsequently a better cost estimate for funding requirements.

Benefits: FEMA Disaster Response:

- Improved disaster assistance and response.
- Different sections use parcel data for a variety of applications (see *Parcel Data and Hurricane Isabel: A Case Study*)
- Funding: The Stafford Act formulas are used to determine the assistance needs and funding provided to communities in the event of a disaster. The FEMA GIS Solutions office can use parcel data to provide an assessment of the data. The following is a description of the resources provided by Congress for the 2005 hurricanes in the Gulf Coast.

Parcel data greatly facilitates the assessment of damage which is used by Congress to determine how much funding is needed for Response and Recovery operations. As previously mentioned the GIS Solutions office is one of many divisions that can use parcel data. The FGDC Cadastral Data Subcommittee conducted a case study on Hurricane Isabel that struck North Carolina in 2003. The report on the workshop provides many

examples of how parcel data was used by the other divisions and is included as a separate document.¹

- 1) Pre-Event
 - a) Identifying properties at risk
 - b) News Media Communication
 - c) Hazardous material sites
 - d) Temporary housing locations
 - e) Re-entry Permits
- 2) Responses
 - a) Debris Removal
 - b) Debris Accumulation Modeling
 - c) Mobile homes and Facilities at Risk
- 3) Recovery
 - a) Insect control and Aerial Spraying
 - b) Aid Requests for Affected Areas
 - c) Debris Removal Staging Areas
 - d) Shelter Availability

Grants and Funding:

The Department of Homeland Security enhances the ability of states, local and tribal jurisdictions, and other regional authorities in the preparation, prevention, and response to terrorist attacks and other disasters, by distributing grant funds. Localities can use grants for planning, equipment, training and exercise needs. These grants include, but are not limited to areas of

- Port Security
- Critical Infrastructure Protection
- Regional and Local Mass Transit Systems
- Equipment and Training for First Responders

[Homeland Security Grants](#)

¹ Parcel Data and Hurricane Isabel: A Case Study, FGDC Cadastral Data Subcommittee, 2004, Internet, http://www.nationalcad.org/data/documents/Hurricane_Isabel_Final.pdf

Department of Interior – Bureau of Indian Affairs

This information was collected from presentations, prior interviews and web resources.

Mission: The Bureau of Indian Affairs is responsible for administering Federal Indian policy; fulfilling its Federal trust responsibilities to American Indians, Tribal Governments, and Alaska Natives; and promoting tribal self-determination and self-governance.

Jurisdiction: United States Tribal Lands

Cadastral Users: producer and consumer

Description of Activity: The Indian Trust is the most important activity in BIA that will benefit from a National Cadastre. By providing an accurate and complete PLSS framework BIA can automate the text records in the Trust Asset and Accounting Management System (TAAMS) to produce maps on Indian ownership. The work on Yakima Reservation along with numerous other Reservations has established the benefits of a complete cadastre for Indian lands.

Cadastral Data Needs/Uses: Parcel data in Indian lands is presently inconsistent across the nation. The Tribes and BIA need both an accurate PLSS and accurate parcels data of lands in and around reservations. A complete cadastre for the nation would assist tribes and BIA in finding, identifying and managing lands owned by individual Indians, Alaska Natives and tribal governments. The establishment of an Indian Lands Parcel Coordinator to coordinate the development and maintenance of a database for Indian trust parcels is needed.

Benefits: With the integration of a National Cadastre the BIA will be able to better manage lands in and around Indian Country. This information should help reduce the numbers of trespasses and improve the management of the Indian Trust land and those of adjoining land owners.

Grants and Funding: Not applicable

Department of Interior – Bureau of Reclamation

This information was collected from presentations, prior interviews and web resources.

Mission: The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.



Jurisdiction: Western United States

Cadastral Users: producers and consumers

Description of Activity: BOR has become the nation's largest wholesale water supplier, operating 348 reservoirs with a total storage capacity of 245 million acre-feet. An acre-foot is 325,851 gallons of water and supplies enough water for a family of four for one year. This water capacity provides 1 out of 5 Western farmers with irrigation water for 10 million farmland acres that produce 60 percent of the nation's vegetables and one quarter of its fresh fruit and nut crops. In addition to providing irrigation water, the BOR is the second largest producer of hydropower in the United States and operates 58 hydroelectric power plants that annually produced, on average, 44 billion kilowatt-hours for the last 10 years. BOR lands also have recreational uses. The BOR manages and partners with agencies and organizations that provide 308 recreation sites with 90 million visits annually.

Cadastral Data Needs/Uses: It is essential for BOR realty specialists to have a current and accurate understanding of real property management, regulations, procedures, concepts and BOR reporting requirements. Additionally, real property specialists must have tools that assist in the determination of the rights and interests that the BOR has in land as well as the status of pending land transactions to support ongoing activities.

Benefits: A National Cadastre would increase the accuracy of determining the rights and interests and increase the efficiency of the land records automation projects.

Grants: No specific grants were identified.

Department of Interior – Fish and Wildlife Service

This information was collected from presentations, prior interviews and web resources.

Mission: The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people

Jurisdiction: The United States

Cadastral Users: producers and consumers

Description of Activity: The Fish and Wildlife Service creates and maintains Digital Boundaries for the National Wildlife Refuge System. This data has been collected into a database designed to be consistent with the FGDC Cadastral Data Content Standard and includes information on the rights and interests in land.

Cadastral Data Needs/Uses: Parcel level information is important for supporting the resource management and inventory activities. The National Wildlife Refuge System has been built over time through a series of acquisitions. Knowing the exact boundaries of the lands they manage, lands they have partial interest in and lands they have the authority to purchase if it becomes available is essential to good wildlife and fish management. There are a number of refuges that are offshore so marine cadastral information is also needed by the Fish and Wildlife Service

Benefits: A National Cadastre would increase the accuracy of National Refuge System boundaries and allow for vertical integration of the federal records with the local records.

Grants: The Fish and Wildlife Service administers a variety of natural resource assistance grants to governmental, public and private organizations, groups and individuals. Following, are links to information about and applications for available grants. <http://www.fws.gov/grants/>

Department of Interior – Minerals Management Service

Mission: MMS is responsible for the Federal government's program for managing mineral and energy resources in over 1.76 billion acres on the Outer Continental Shelf (OCS). MMS also has been granted authority by the Energy Policy Act of 2005 responsibilities over Federal offshore alternate energy and related-uses of America's offshore public lands.

Jurisdiction: Offshore Federal waters of the United States and its possessions.

Cadastral Users: producer – authoritative source

Description of Activity: MMS manages the Federal government's program for managing mineral and alternative energy resources on the Outer Continental Shelf (OCS). Since its beginning in 1982, MMS has collected and distributed more than \$176 billion in bonuses, rents, and royalties from companies that lease and produce minerals from offshore Federal submerged lands, and from American Indian lands. To manage the leases and the resources MMS has developed and maintains an outer continental shelf cadastral system.

Cadastral Data Needs/Uses: Cadastral data are used to legally describe leasing blocks, protraction diagrams, and sale areas and to manage the lease sale of these blocks and collection and distribution of bonuses, rents, and royalties.

Benefits: MMS produces and manages the offshore cadastre that describes, defines and manages energy resources as well as protecting sensitive environmental areas. They are a major contributor to the National Cadastre and National Spatial Data Infrastructure (NSDI) and would extend the usability of the national cadastre to off shore areas.

Grants: The funds collected by MMS are the largest Federal revenue source outside the U.S. Treasury Department and in turn are distributed to Indian Tribes and allocated States, the Land and Water Conservation Fund, the Historic Preservation Fund, and the general U.S. Treasury. Since it was founded in 1982, the MMS has funded over \$800 million in environmental studies and about \$20 million in studies evaluating offshore operations and safety technology.

Department of Interior – National Park Service

This information was provided by Roger Johnson, Chief Cartographer National Park Service (NPS) Land Resources Division (LRD).

Mission: The National Park Service Organic Act, 16 U.S.C.1. clearly defines the NPS mission "...to promote and regulate the use of the...national parks...which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

Jurisdiction: National Park System of the United States comprises 391 areas covering more than 83 million acres in 49 States, the District of Columbia, American Samoa, Guam, Puerto Rico, Saipan, and the Virgin Islands.

Cadastral Users: Producers and Consumers

Description of Activity: The National Park Service (NPS) is guided by the Organic Act of 1916, to protect and preserve resources within units of the National Park System. A number of NPS units contain nonfederal lands. Depending on the use of these lands, it is often necessary for the NPS to seek to acquire them, or interests in them, or conduct land exchanges in order to protect resources and visitor use and enjoyment. The Land Resource Division (LRD) coordinates the exchange and acquisition of lands for the National Park Service. As a result of this activity LRD is the official repository of all NPS land record data and continually maintains dynamic land ownership, parcel, and boundary datasets in support of the NPS mission. Land use adjacent to NPS units often affects use and resource management planning. Therefore working with neighboring communities is an important part of the agencies overall management. NPS also maintains registries of historical and cultural places.

Cadastral Data Needs/Uses: Parcel level information is important for supporting the resource management and inventory activities. NPS land management requires parcel level mapping of acquisitions, exchanges, and designations of federal and non-federal lands both internal and external of the legislated boundary for each NPS unit.

Benefits: A National Cadastre would increase the efficiency of land acquisition and resource management activities as well as improve the accuracy of the historical and cultural resource registries.

Grants, Funding and CAP Support: NPS awards a variety of grants to Federal and non-Federal entities to promote preservation, recreation, and conservation. The Historic Preservation Fund promotes preservation through heritage tourism, education and preservation planning. State Conservation Grants provide matching grants to States and local units of government for the acquisition and development of public outdoor recreation areas and facilities that provide public access to lands, waters, and other recreation resources. The Save America's Treasures program provides grants to preserve nationally significant heritage resources. These activities would benefit from digital parcel data.

Department of Justice

Mission: To enforce the law and defend the interests of the United States according to the law; to ensure public safety against threats foreign and domestic; to provide federal leadership in preventing and controlling crime; to seek just punishment for those guilty of unlawful behavior; and to ensure fair and impartial administration of justice for all Americans.

Jurisdiction: US and its Territories

Cadastral Category: User of authoritative and trusted sources for parcel data.

Description of Activity: Data use in DOJ supports two types of activities: the prosecution of cases and intelligence. Prosecution only uses data directly related to a case and that data must be specifically related to person(s) or organization(s) that is relevant to that case. Intelligence uses data for more general purposes to investigate activities to assist in the combating of crime.

Cadastral Data Needs/Uses: User of authoritative source of parcels and boundary files related to specific cases and trusted sources by the intelligence communities for research..

Prosecutors are concerned with highly accurate information that comes from an authoritative source that can be verified because the data must stand up to the scrutiny of the courts. The data they use is restricted to persons or organizations that are related to a specific case.

Intelligence is more research oriented and uses data for strategic purposes and should be able to use trusted sources of data. . Intelligence Program mission is to optimally position the FBI to meet current and emerging national security and criminal threats by:

- Aiming core investigative work proactively against threats to U.S. interests;
- Building and sustaining enterprise-wide intelligence policies and capabilities; and
- Providing useful, appropriate, and timely information and analysis to the national security, homeland security, and law enforcement communities.

Benefits: An authoritative source of local government data that would link a person or organization related to a case to a property would expedite the assessment of appropriate records. It would also be valuable for the identification of ownership where a criminal is caught or may be hiding.

Grants and Funding:

The Department offers funding opportunities to conduct research, to support law enforcement activities in state and local jurisdictions, to provide training and technical assistance, and to implement programs that improve the criminal justice system. There are a number of grant opportunities. The ***State Justice Statistics (SJS) Program for Statistical Analysis Centers*** is a program that might be appropriate for facilitating the compilation and publication of an authoritative source of parcel data. The grant offers technical and financial support to States to establish and maintain a State-level capacity to collect, analyze and report statistics on crime and justice in order to contribute to effective State policies and programs and to participate in national data series. Through the creation of Statistical Analysis Centers, or SAC's, BJS encourages analyses of evolving criminal justice topics of interest within the State using data gathered from State and local agencies and promotes statistical inquiries into improved measures of crime incidence and prevalence.

Department of State – Bureau of Oceans, Environment and Science

Mission: The Bureau of Oceans, Environment, and Science (OES) promotes transformational diplomacy through advancing environmental stewardship, encouraging economic growth, and promoting social development around the globe to foster a safer, more secure and hopeful world.

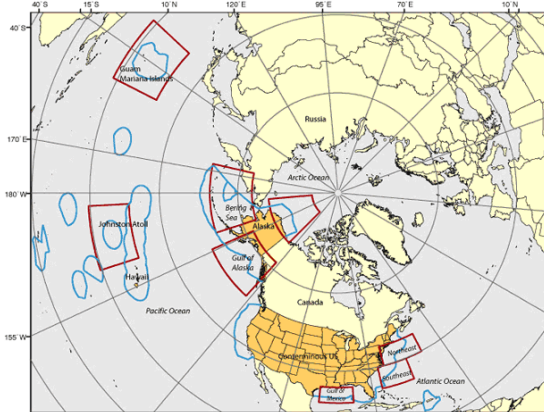
Jurisdiction: US and its Territories

Cadastral Category: User and producer

Description of Activity: Use and create boundaries. Ocean and Environmental Services

Cadastral Data Needs/Uses: Coordinate policy on Maritime limits which are based on boundaries. Define the coordinates for the Extended Continental Shelf.

Benefits: Under UNCLOS countries are entitled to an Exclusive Economic Zone (EEZ) extending 200 nautical miles from the coastline. Nations may also exercise sovereign rights over the physical continental shelf in areas beyond the EEZ. There are as many as 80 countries whose borders have the potential to be expanded under [Article 76 of the United Nations Convention on the Law of the Sea](#). By definition, borders can be expanded based on a complex set of criteria that define the water depth, including the 2,500 meter contour, seafloor geology and sediment thickness, as well as distance from the coastline.



The United States is in the process of implementing a program in order to confirm our exclusive sovereign rights over the continental shelf to manage its natural resources on and under an area of at least one million square kilometers-more than twice the size of California. The worth of the resources on the U.S. ECS is estimated to be at least \$1 trillion. The Department of State leads an Interagency Task Force that includes the National

Oceanic and Atmospheric Administration (NOAA), U.S. Geological Survey (USGS), Minerals Management Service (MMS), U.S. Navy (USN), Arctic Research Commission (ARC), and others.

Grants and Funding: Not Applicable

Environmental Protection Agency

Mission: EPA leads the nation's environmental science, research, education and assessment efforts.

Jurisdiction: US and its Territories

Cadastral Category: Direct user of trusted and authoritative source of local government cadastral data for strategic planning, regulation and emergency response.

Description of Activity: EPA works to develop and enforce regulations that implement environmental laws enacted by Congress. EPA is responsible for researching and setting national standards for a variety of environmental programs, and it delegates to states and tribes the responsibility for issuing permits and for monitoring and enforcing compliance. EPA is involved with emergency response operations including hurricanes, flooding, wildland fire, toxic spills, hazardous waste, etc.

Cadastral Data Needs/Uses: EPA needs access to local government private parcel data at a regional level to determine property boundaries, ownership, use and jurisdictions.

Benefits: Parcel data from local governments provide detailed description and land use. Areas where EPA would directly benefit are:

- Superfund Fund Enforcement: Current and past ownership of superfund sites.
- Inform regulatory decisions: Research to develop an understanding the matrix of land ownership to determine how regulations might impact communities.
- Identify jurisdictional boundaries of federally owned and Tribal lands.
- Permit enforcement on unfamiliar lands can be made much more efficient by having fingertip access to land ownership information. Desktop visits have been found to save thousands of man hours per year in State Environmental Agencies by reducing the number of field visits.
- Disaster Response: Identification, notification and inventory of impacted homes and properties for the affect of hazardous materials release and the control and containment of home hazardous materials. This is a significant problem in flooded areas.

Grants and Funding and CAP Grant support: EPA has a well defined need for parcel data and supports programs that would facilitate the publication of trusted sources of local government data by the states. Financial assistance from EPA is between 40 and 50 percent of EPA's enacted budgets. These programs provided direct support through grants to State environmental programs. EPA grants to States, non-profits and educational institutions support high-quality research that will improve the scientific basis for decisions on national environmental issues and help EPA achieve its goals.

Federal Communication Commission

Mission: To promote robust competition and innovation in the telecommunications marketplace by strictly enforcing the Communications Act and the FCC's rules

Jurisdiction: US and its Territories

Cadastral Category: User of boundary and individual parcel data to verify locations and to address conflicts between licensees. The license applicants are direct users could use trusted data sources since their applications must consider boundaries and the location, size and height of structures.

Description of Activity: The Federal Communications Commission (FCC) is an independent United States government agency. The FCC issues market based and site specific licenses to public entities. There are approximately 100 million frequencies managed by the FCC and approximately 750K are included in the radio structures database which are towers over 200 ft or in the glide path of an airport. The applications for the latter include requirement for site address and the coordinate location of the structures. Structures that are less than 200 ft or not in the flight path are not required to provide location information. The FCC requires that these structures are reported the Federal Aeronautics Administration (FAA).

Cadastral Data Needs/Uses: The FCC is an indirect user of the cadastral data in the sense that the information comes from the license applicants although access to a trusted source of parcel data would facilitate the verification process and settling disputes and discrepancies in the application. Applicants have an interest in cadastral data in order to accurately complete their applications.

Benefits: Examples of FCC or the license applicants use cadastral data.

- ***Verification of license applications:*** The FCC must verify the location of structures, access parcel data can facilitate the process by determining if the structure location is within the parcel boundary.
- ***Location:*** The location of structures that are not in the radio structures database would be valuable
- ***Boundaries:*** State and county boundary locations serve as the borders for service areas, having accurate boundary files can facilitate the identification of transition zones.
- ***Enhanced 911:*** State and county boundaries are not well defined in coastal waters which cause jurisdictional confusion for 911 agencies. Many distress calls in coastal waters come from cell phones. Even if GPS is on the phone not knowing where the boundaries are located can prove problematic for determining the jurisdiction and who should be dispatched.
- ***Disaster Response:*** Accurate locations of transmission and communication towers within a flood zone to determine how to access and service these facilities is critical to maintaining communication during a disaster. If a tower has an emergency generator it is necessary to determine how to best get fuel to the generator to keep it operational.
- ***Point to point radio transmissions*** have a need to know what is in the path of the transmission and if there will be future building projects that will block that transmission. Permit and parcel data could provide that information.
- ***International Boundaries:*** FCC negotiates service areas with foreign governments
- ***Core Data Enhancement:*** Publication of a parcel data layer that included height parameters and building perimeters could reduce the cost to applicants.

Grants and Funding: Not Applicable

General Services Administration

Mission: GSA helps federal agencies better serve the public by offering, at best value, superior workplaces, expert solutions, acquisition services, and management policies.

Jurisdiction: US and its Territories

Cadastral Category: Authoritative and trusted source of federal real properties. This inventory is overseen by the Federal Real Property Council and managed by GSA. It receives real property data from 32 agencies in 2007.

Description of Activity: The General Services Administration (GSA) is a central management agency that sets Federal policy in such areas as federal procurement, real property management, and information resources management. GSA provides space for over on million workstations for Federal employees in approximately 1,800 government-owned and 6,400 leased buildings. GSA spends about \$4.4 billion a year for real estate management activities including acquisition of sites and buildings, construction, leasing, repairs, alterations, maintenance, and protection.

Cadastral Data Needs/Uses: GSA manages the Federal Real Property Inventory which is a data base that consists of records on approximately 446 thousand buildings, 476 thousand structures and 42 million acres of land. The authority for the inventory comes from **Executive Order 13327**: "The policy of the United States is to promote efficient and economical use of America's real property assets and to assure management accountability for implementing federal real property **management reforms.**"

EO 13327 requires agencies to report all owned, leased, and otherwise managed² Federal real property assets within and outside the United States, including improvements on Federal land. The agency responsible for reporting the constructed asset-level data is defined by the following:

- For owned real property (for which the United States holds title), the Federal agency that exercises real property accountability is responsible for reporting the asset.
- For leased real property, the Federal agency that signed the lease is responsible for reporting the asset.
- For otherwise managed real property, the Federal agency that entered into the agreement with the state or foreign government is responsible for reporting the asset.

Benefits: Uniform real property system provides a single inventory of federal real property assets for those agencies that submit data to inventory. This can facilitate the sharing of information between agencies that have an interest in the location of federal properties which are categorized by use.

Grants and Funding: NA

Housing and Urban Development

Mission: HUD's mission is to increase homeownership, support community development and increase access to affordable housing free from discrimination. To fulfill this mission, HUD will embrace high standards of ethics, management and accountability and forge new partnerships--particularly with faith-based and community organizations--that leverage resources and improve HUD's ability to be effective on the community level.

Jurisdiction: US and its Territories

Cadastral Category: User of trusted source of parcel data and derivative products.

Description of Activity: “HUD’s database maintains geographic data on homeownership rates, including many attributes such as HUD revitalization zones, location of various forms of housing assistance, first-time homebuyers, underserved areas, and race” (OMB, 2002). HUD has recognized that parcel data are critical to tracking information about housing units. HUD has numerous grant programs (as described in *Benefits to Local Communities*) for housing development and compliance issues that relate to specific land parcels, their owners, and their value.

The Program of Evaluation and Research GIS section is project oriented and is currently supporting a Congressional task to provide assistance for long-term housing in Gulf Coast communities attempting to rebuild after Hurricanes Katrina, Rita, and Wilma. The program areas use derivative products that use parcel data to provide quarterly status reports of areas

Cadastral Data Needs/Uses: Census data provides a generalized view of the geography but parcel data provides detailed information to:

- Supporting HUD’s policy and decision.
- To assure the accuracy of information
- Support loans and grants for community development
- Provide a way of integrating the other sources of data such as
 - Damage inspection (FEMA)
 - Loans and grants from other federal agencies
 - State Community Development Block Grants
 - City Building Permits
 - Etcetera

Parcel data and situs address can be used to link the data.

Benefits: The 1983 National Academies National Research Council’s (NRC) report² suggested that a major benefit from a national partnership for assembling parcel data would derive from having a standardized set of records for managing federal

² National Research Council, National Land Parcel Data, A Vision for the Future, The National Academy Press, Washington, D.C., 2007, p 46

assistance to local programs. The most direct and long-standing regulations and assistance requirements are related to HUD. A NRC report, GIS for Housing and Urban Development, recommended that HUD create an urban spatial data infrastructure that includes parcel-level data. Parcel-level reporting would help HUD meet many of its strategic goals, such as increasing home ownership opportunities, promoting decent affordable housing, and ensuring equal opportunities in housing. These goals are accomplished through an extensive range of grant programs that are organized into the following categories.

- Community Planning and Development (21 programs)
- Housing – Federal Housing Administration
- Single-Family Housing Programs (17 programs)
- Regulatory Affairs and Manufactured Housing (3 programs)
- Multifamily Housing Programs (17 programs)
- Public and Indian Housing (15 programs)
- Fair Housing and Equal Opportunity (7 programs)
- Policy Development and Research (3 programs)
- Government National Mortgage Association (Ginnie Mae) (4 Programs)
- Health Homes and Lead Hazard Control

HUD also operates an Office of Federal Housing Enterprise Oversight that has the specific mission to promote housing and strong national housing finance system by ensuring the safety and soundness of Fannie Mae (Federal National Mortgage Association) and Freddie Mac (Federal Home Loan Mortgage

Grants and Funding: HUD provides about \$1 billion in grants through 35 programs.

Library of Congress

Mission: The Library's mission is to make its resources available and useful to the Congress and the American people and to sustain and preserve a universal collection of knowledge and creativity for future generations.

Jurisdiction: Global

Cadastral Category: Archivist of hard copy maps and private publications of county parcels and a potential user of electronic parcels

Description of Activity: The Library of Congress collects mostly printed material and maps (Acquire by law Title 44 – Section 17181) although they are moving towards the publication and use of some electronic records. They have an extensive collection of historic publications of land ownership mostly in agriculture areas and in some urban areas. These maps are published by private companies and the LOC is still collecting some maps in the rural parts of the North East and Midwest. Their collections also consist of soil, mineral rights and railroad rights of way. Although there is some overlap with the National Archives and Records Administration (NARA) the difference between the two is that NARA archives information produced and used by Federal Agencies to make decisions while the LOC collects information from private and international sources.

Cadastral Data Needs/Uses: Provide an archive or historic publications of land ownership that can be used for research for Congress and the Public.

Benefits: The Library of Congress provides an archive of some cadastral data that are not included in the National Archives.

Grants and Funding: Not applicable

Library of Congress - Congressional Research Service (CRS)

Mission: CRS is committed to supporting an informed national legislature — by developing creative approaches to policy analysis, anticipating legislative needs and responding to specific requests from legislators in a timely manner. With a rigorous adherence to our key values, CRS provides analysis that is authoritative, confidential, objective and nonpartisan.

Jurisdiction: Global

Cadastral Category: User of trusted and authoritative sources for digital cadastral data.

Description of Activity: The Congressional Research Service (CRS) serves shared staff to congressional committees and Members of Congress. CRS experts assist at every stage of the legislative process — from the early considerations that precede bill drafting, through committee hearings and floor debate, to the oversight of enacted laws and various agency activities.

CRS's analytic capabilities integrate multiple disciplines and research methodologies. In a fast-paced, ever-changing environment, CRS provides Congress with the vital, analytical support it needs to address the most complex public policy issues facing the nation. Its work incorporates program and legislative expertise, quantitative methodologies, and legal and economic analysis.

All services and products are authoritative and accurate. Analysts demonstrate rigorous research methodologies, free of built-in bias. They present, explain and justify any critical assumptions; investigate and recheck data anomalies; use primary resources whenever available; double-check all statements of fact; and document and vet all sources. This assures Members, as they engage in debate, that the analysis they rely on is as accurate as it is current.

Cadastral Data Needs/Uses: Authoritative source of digital private and public lands information. This data would be used to conduct analysis of policy impact on different communities.

Benefits: Parcels provide a higher degree of granularity for assessing policy impact. The following are some example of research. Collections of public and private cadastral information would be useful for assessing the “ripple affect” of proposed policies.

- Water Resource Planning: Find implications of different policy on natural resources and the impact of property values and that in turn impact resources for education.
- Show implications of impact within a buffered zone of a proposed project to impacted properties.
- Determination of ownership and land use (residential, commercial, agriculture, public lands) in buffer zones to assess impacts

Grants and Funding: NA

NASA, Earth Science Administration: Applied Sciences Program

Mission: NASA's mission is to pioneer the future in space exploration, scientific discovery and aeronautics research.

Jurisdiction: Global

Cadastral Category: Producer of support data

Description of Activity: NASA works with other federal agencies to improve their capabilities for disaster response, mitigation and preparedness by providing remote sensing data and scientific research to improve these decision support capabilities. The principle recipients are DHS, (FEMA), EPA, NOAA, USGS, U. S. Forest Service, and States, Locals and Tribal. NASA provides imagery and analysis from satellites and low level unmanned aircraft for thermal imagery. NASA also works in partnerships with federal, state and local agencies to acquire LiDAR and many other types of spacecraft and airborne remote sensing in support of decisions support for societal benefit.

Cadastral Data Needs/Uses: None

Benefits: Provides imagery that can support of the development of cadastral data.

Grants and Funding: Grant funding goes to researchers that may be potential users of cadastral data.

National Archives and Records Administration

Mission: Safe guarding and preserving Federal Records to ensure that the people can discover, use, and learn from this documentary heritage.

Jurisdiction: US and its Territories

Cadastral Category

Use: Archive

Publisher: Trusted Source

Description of Activity: The National Archives is concerned with electronic records that are created by Federal Agencies or used by Federal Agencies to make decisions. Their procedures are to take a snapshot of the data based upon the capacity of NARA and meaningful intervals for the creators and users of the data. This would include cadastral records of federally owned lands and on private property assessment data that federal agencies use to make decisions.

Cadastral Data Needs/Uses: NARA needs to be able to identify the authoritative sources for Federal Cadastral data, to determine the core data elements that would be included and a schedule for updates. If it is determined that local government parcel data it is being used to make decisions by federal agencies then a trusted source will need to be identified for that data. At this time federal agencies are acquiring and using private sector data on an ad hoc basis and although the sources the federal agencies are using may be trusted sources in the states and local government it makes it very difficult for NARA to archive that data.

There are approximately 150 million private parcels in the United States and although this appears to be a daunting number of records a GIS data file that included the FGDC Cadastral Data Subcommittee's recommended core data would require only 225 GB which is currently the standard disk size for most desk top computers.

Benefits: Federal and State Agencies regulatory, policy and emergency response decisions are being made using cadastral data from federal, state and local governments. At this time archives of this data does not exist particularly for local governments that dispose of their records on two to ten year cycles. A national archive of this data would have extraordinary value for assessing the decisions making process at all levels of government.

Grants and Funding: The NARA is not a grant funding agency.

National Science Foundation

Mission: *To promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense....*

Jurisdiction: Global

Cadastral Category: Indirect – Award recipients may be users of cadastral data

Description of Activity: NSF provides grant awards for research in a wide variety of fields.

Cadastral Data Needs/Uses: Access to parcel data.

Benefits: NSF recipients are a varied group with a wide variety of needs. Field work is an area where access to cadastral data can have value. The following are anecdotal but the National Center for Atmospheric Research serve as examples of the different ways that researches can use the cadastre for research.

- Identification of land owners for the placement of instruments.
- Weather predictions: As weather modeling becomes more accurate the level of predictive granularity could get to the parcel level.
- Assessment of damage studies in disaster events.
- The marine cadastre can provide an equal area common grid for data management and sharing.

Grants and Funding: Grants are directed towards research. The purpose of the grants are to initiate and support, through grants and contracts, scientific and engineering research and programs to strengthen scientific and engineering research potential, and education programs at all levels, and appraise the impact of research upon industrial development and the general welfare.

Office of Management and Budget

Mission: OMB's predominant mission is to assist the President in overseeing the preparation of the federal budget and to supervise its administration in Executive Branch agencies. In helping to formulate the President's spending plans, OMB evaluates the effectiveness of agency programs, policies, and procedures, assesses competing funding demands among agencies, and sets funding priorities. OMB ensures that agency reports, rules, testimony, and proposed legislation are consistent with the President's Budget and with Administration policies.

In addition, OMB oversees and coordinates the Administration's procurement, financial management, information, and regulatory policies. In each of these areas, OMB's role is to help improve administrative management, to develop better performance measures and coordinating mechanisms, and to reduce any unnecessary burdens on the public.

Jurisdiction: Global

Cadastral Category: User of derivative products and Chair of the Federal Real Property Council.

Description of Activity:

Executive Order 13327: Sec. 4. Establishment of a Federal Real Property Council. (a) A Federal Real Property Council (Council) is established, within the Office of Management and Budget for administrative purposes, to develop guidance for, and facilitate the success of, each agency's asset management plan. The Council shall be composed exclusively of all agency Senior Real Property Officers, the Controller of the Office of Management and Budget, the Administrator of General Services, and any other full-time or permanent part-time Federal officials or employees as deemed necessary by the Chairman of the Council. The Deputy Director for Management of the Office of Management and Budget shall also be a member and shall chair the Council. The Office of Management and Budget shall provide funding and administrative support for the Council, as appropriate.

(b) The Council shall provide a venue for assisting the Senior Real Property Officers in the development and implementation of the agency asset management plans. The Council shall work with the Administrator of General Services to establish appropriate performance measures to determine the effectiveness of Federal real property management. Such performance measures shall include, but are not limited to, evaluating the costs and benefits involved with acquiring, repairing, maintaining, operating, managing, and disposing of Federal real properties at particular agencies.

Cadastral Data Needs/Uses: Federal Real Property Inventory

Benefits: Identification of trends and improvement in the management of Federal Property Management in accord with the President's Budget

Grants and Funding: Not Applicable

Small Business Administration - Low Interest Disaster Loans

General Information Disaster Loans: *Physical Disaster Loans* are a primary source of funding for permanent rebuilding and replacement of uninsured or underinsured disaster damages to privately-owned real and/or personal property. SBA's physical disaster loans are available to homeowners, renters, businesses of all sizes and nonprofit organizations. **Economic Injury Disaster Loans** provide necessary working capital until normal operations resume after a physical disaster. The law restricts economic injury disaster loans to small businesses only.

Jurisdiction: US and its Territories

Cadastral Category: User

Description of Activity: SBA provides long term low interest loans in the event of a disaster to home owners and businesses. The largest number of loans goes to home owners.

Cadastral Data Needs/Uses: SBA needs parcel data to meet their stated objective of processing claims within 21 days of receipt of the application. During the fall of 2005, Hurricanes Katrina, Rita, and Wilma destroyed portions of Florida, Alabama, Louisiana, Mississippi and Texas. These hurricanes wreaked devastation on home and business owners and collectively represent the worst natural disasters in the history of the United States of America. The magnitude of these disasters caused more home and business owners to apply for disaster loans from SBA's Office of Disaster Assistance (ODA) than any previous disaster. Over 420,000 home and business owners applied for assistance. Due to the unprecedented nature of these disasters, the average time to process 85% of all applications (the current SBA performance output measure) exceeded the averages of previous years.

Benefits: Pre-populate applications before applicants do it themselves. Reduces error and expedites the processing of loan applications.

- Incomplete applications hold up processing. Applicants may not understand the question or not know where to get the information.
- The Assessor's office should service as a liaison to the other communities data.
- Parcel data provides base information for:
 - Proof that taxes are paid
 - Verification of ownership
 - Accurate information about residences
 - Spelling of owner name
 - Loss verification
 - Acquiring information from an authoritative source helps prevent fraud.

Grants and Funding: SBA is in the process of issuing grants to evaluate ways of utilizing parcel data to proactively complete the majority of a loan application before someone applies: This should greatly expedite the processing of an application by reducing errors in the completion of the form while verifying the authenticity of the information being provided.

Small Business Administration - HUBZones

Mission: The HUBZone Empowerment Contracting program was enacted into law as part of the Small Business Reauthorization Act of 1997. The program encourages economic development in historically underutilized business zones - "HUBZones" - through the establishment of preferences.

Jurisdiction: US and its Territories

Cadastral Category: Potential user of parcel data for application verification.

Description of Activity: SBA's Hubzone program is in line with the efforts of both the Administration and Congress to promote economic development and employment growth in distressed areas by providing access to more Federal contracting opportunities. There are 11,000 participants in the program.

A small business meets **all** of the following criteria to qualify for the Hubzone program:

- it **must** be located in a "historically underutilized business zone,"
- it **must** be owned and controlled by one or more U.S. Citizens, and
- at least 35% of its employees **must** reside in a HUB Zone.

Cadastral Data Needs/Uses: Access to parcel data would facilitate their ability to verify that the applicant and the minimum number of employees are located in a HUBZone.

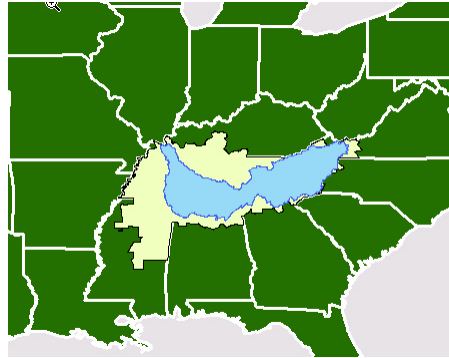
Benefits: There is a limited amount of funds available for site visits; "desktop visits" would greatly facilitate the SBA's ability to verify the validity of the participants.

Grants and Funding: Not applicable

Tennessee Valley Authority (TVA)

Mission: Serving the Valley through Energy, Environment, and Economic Development.

Jurisdiction: TVA spans across seven states in the south eastern United States encompassing the waters of the Tennessee River Watershed and the TVA Power Service Area.



Cadastral Users: Producers and Consumers

Description of Activity: Parcel data adjoining the TVA lands is an important component of planning and land use decisions at TVA. Significant effort is applied to manage TVA's land interests and identify current ownership of its neighbors. With 17,000 miles of transmission line rights-of-way, 293,000 acres of public land, and 11,000 miles of shoreline TVA is a significant influence in numerous activities in the region.

- Non-TVA owned commercial industrial properties for development are made available through their web site (www.TVA sites.com).
- TVA develops reservoir land management plans for its reservoir properties including the entire 11,000 miles of shoreline with substantial public input. Several thousand individual requests for shoreline development are reviewed each year.
- As energy demands continue to grow, TVA is always building new transmission lines. Parcel data are a key component in determining potential alternative routes. Current transmission line projects can be reviewed at:
<http://www.tva.com/power/projects/index.htm>

Cadastral Data Needs/Uses: Current cadastral information is often at the foundation of Economic Development, Land Management and Environmental Stewardship activities at TVA. It is used to support activities such as economic growth, transmission, emergency preparedness, water quality and management practices, among others.

An example relating to power activities is the fact that county geographic information systems do not typically account for easement rights. Therefore the public has little

information about TVA's vacant transmission line corridors. This has led to encroachments upon the transmission system and created difficulties for transmission line development. TVA maintains records of these land assets and is providing it to local communities to use in their GIS for public awareness.

Benefits: TVA would benefit from a national cadastre on many levels including

- Improved communications with Valley land owners
 - Transmission line ROW acquisition and maintenance
 - Reservoir Land Management Planning, development, and related issues
 - Emergency operation planning and response
- Increased efficiency for land transaction processes
 - Parcel maps for planning land acquisition
 - Title search and appraisal information
 - Surveying and engineering activities

Grants, Funding and CAP Support: Special Opportunities Counties Fund - A \$16 million revolving loan fund to assist the Valley's most economically distressed counties. Loans are available for buildings, equipment, real estate, industrial parks, and building development. TVA Community Development offers resources to local Tennessee Valley governments to improve their competitiveness in economic development efforts. TVA helps communities take advantage of opportunities for business and industrial development by designing an approach that addresses their specific needs.

Treasury

Mission: Treasury manages the financial assets of the Nation.

Jurisdiction: United States and its possessions and territories

Cadastral Users: consumers

Description of Activity: Treasury conducts auctions of seized Real Property (real estate) for sale throughout the United States and Puerto Rico and includes homes, commercial buildings, vacant land, and multi-family residences. These properties have been seized through IRS-Criminal Investigation, Immigration and Customs Enforcement, and the U.S. Secret Service. All proceeds from the sale of property are deposited in the U.S. Treasury Asset Forfeiture Fund. This fund helps support continued law enforcement efforts and provide restitution to crime victims.

Cadastral Data Needs/Uses: Cadastral information, if it was available on a nationwide basis in a standard format could be used to verify auction properties, would support advertising the auction and collecting information about the property for sale and properties adjoining the auction properties.

Benefits: This would provide verification about real properties for sale and could enhance the information related to the real estate auctions.

Grants, Funding and CAP Support:

Veterans Administration

Mission: *"To care for him who shall have borne the battle and for his widow and his orphan." Abraham Lincoln*

Jurisdiction: US and its Territories

Cadastral Category: Direct user for the federal real property inventory facilities management data and for the location of veterans.

Description of Activity: The VA is the second largest federal agency. The objective is to provide access to care through its 153 medical centers, 732 outpatient clinics, 209 VA center, 57 regional offices. In addition to facilities the VA also manages 125 national cemeteries. Where veterans are not located near an appropriate facility private facilities may be used.

Cadastral Data Needs/Uses: Authoritative source of medical facilities. The VA needs access to the names, location and capabilities of medical treatment facilities on military properties and tribal lands. Private facilities would also have great value and the parcels with situs address could provide specific demographic information about the location and distribution of veterans.

Benefits: Cadastral data is needed for facilities management and expansion of properties although this may happen on occasion it is probably more important to understand the distribution of Veterans and their proximity to both VA and private facilities. With

Grants and Funding: