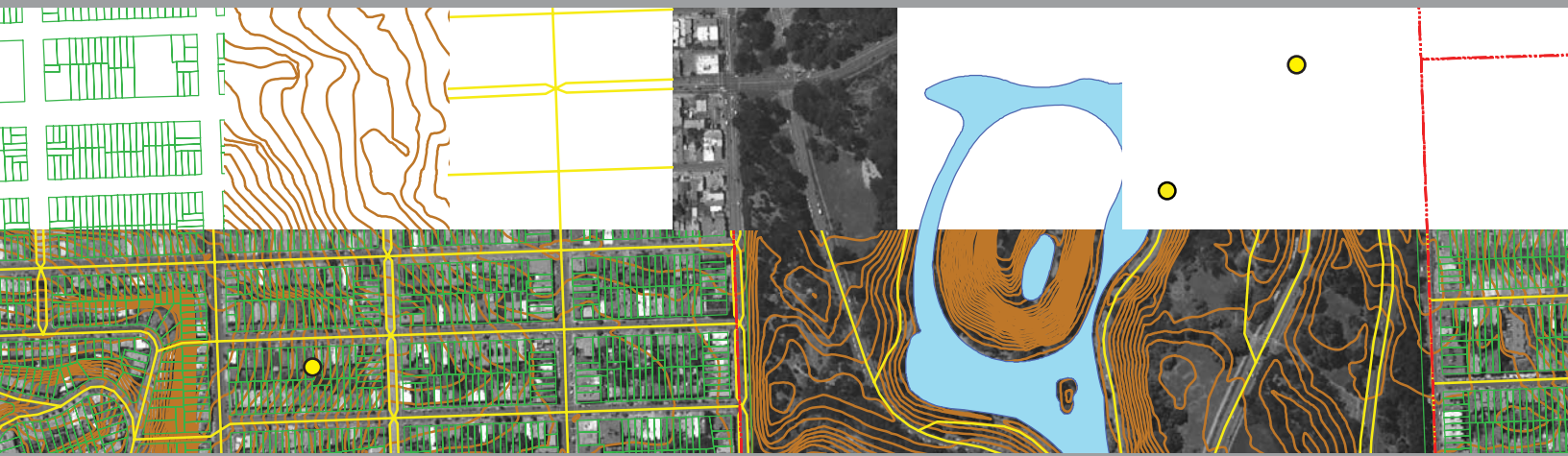# California Geospatial Framework Draft Data Plan

September 2006

Prepared for

California Geographic Information Association

Prepared by

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California Geospatial Framework Draft Data Plan

Project Consultant
Outreach workshops, electronic survey, industry research, and draft data plan by
Michael Baker Jr., Inc.

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[1] Executive Summary

California faces significant challenges in a number of important areas that require the marshalling of quality geospatial information and services. These include:

Guarding against terrorism and criminal activities
Emergency preparedness and response
Planning strategic growth (e.g., San Joaquin Partnership)
Mitigating the affects of global warming (e.g., Delta Vision)
Sustainable management of our natural resources
Restoring and ensuring environmental quality
Pandemic detection and response

The California Geographic Information Association (CGIA) partnered with the US Geological Survey, the California Resources Agency and the California GIS Council (with funding from the USGS and Federal Geographic Data Committee (FGDC)) to develop a Draft Geospatial Framework Data Plan for California. This report will provide the foundation for a California GIS Council data plan.

The project goal was to foster organizational and institutional capacity by developing and sharing an integrated set of digital geospatial framework data resources by conducting interagency and public outreach and developing this Draft Plan. Included are the National Spatial Data Infrastructure (NSDI) framework data and the other datasets most critical to priority regional application development efforts within California.

Six workshops were conducted throughout California between April and July 2006 supplemented by a web-based survey was distributed to the California GIS community in mid-August 2006. The online survey resulted in the final prioritization of the seven core and eleven California-centric data themes.

Core Framework Theme Results

The NSDI's seven core framework themes of geographic data are those that are produced and used by most organizations. National and state surveys indicate that the data themes are required by a majority of users, form a critical foundation for the NSDI, and have widespread usefulness. The seven core framework data themes were prioritized by California survey participants as:

1. Cadastral
2. Ortho Imagery
3. Transportation
4. Elevation
5. Hydrography
6. Geodetic Control
7. Governmental Units

The project workshops and research indicate that there are statewide public domain coverage's for six of the seven core data themes. In most cases the public domain source data would only be considered by State, regional, local, and private organizations when no funds were available to obtain more current, substantial, or accurate data. The public domain data would perhaps meet some cursory statewide analysis. However, it is considered insufficient by most for regional or local geospatial analysis to make informed business decisions

CALIFORNIA-CENTRIC FRAMEWORK THEME RESULTS

Workshop participants had the choice of 27 NSDI data themes (Appendix A – NSDI Framework Data Themes) to prioritize as California-centric themes. At the first workshop participants felt that the NSDI themes were missing two crucial themes: Street Addressing and Critical Infrastructure. This was consistent with the November 2005 California Geospatial Framework Survey (http://gis.ca.gov/council/docs/GIS_Framework_Data_Survey_Results.pdf) conducted by the California Resources Agency and California GIS Council. The NSDI Buildings and Facilities theme partially captured critical infrastructure, but lacked information on utilities. Along the same lines, the NSDI Transportation theme could potentially include address ranges for street addressing, but would not provide the accuracy needed for participants' business needs. Thus, the Street Addressing and Utilities themes were offered for voting at the first and subsequent workshops and the post-workshop survey. Participants were asked to choose their most crucial aspect of critical infrastructure, Utilities or Buildings and Facilities, and vote accordingly. They prioritized California-centric framework data themes as:

1. Street Addressing
2. Utilities
3. Public Land Conveyance Records
4. Buildings and Facilities
5. Flood Hazards
6. Vegetation
7. Biological Resources
8. Cultural and Demographic Statistics
9. Soils
10. Wetlands
11. Earth Cover

The availability of statewide public domain data coverage of the eleven California-centric themes is much lower than the preceding core framework themes. These themes also exhibit the same content, currency, and accuracy constraints as noted for the seven core themes above.

The seven core data themes (Section 7) and eleven California-centric data themes (Section 8) are highlighted in more detail later in the report. These sections include an analysis of each data theme to identify the current state and use of data within California.

The generally recognized public data sources identified in this report do not typically meet business needs across most levels of government or private industry. In addition, the discovery of data sets is still challenged by the lack of comprehensive metadata and the lack of awareness

of where to find data even with tools such as Geospatial One-Stop (GOS) and the California Environmental Information Catalog (CEIC).

The Draft Report project budget did not allow for cross correlation of data availability to different types of business needs or for analysis of the data accuracy or data currency requirements of those business needs. This report does not attempt to capture the complexities of the many components of each theme, nor does it try to illustrate the adequacy of these datasets for each level of government or organization, let alone the many business needs of government or private industry, or the broader GIS Community.

This report has served its intended function to introduce the California geospatial community to framework-relevant national and California initiatives, to filter the NSDI data themes, and identify new critical data themes. The project has also reinforced the original concept that this Draft Data Plan will need to be a "living document". It was anticipated that more investigation into specific theme-by-theme business needs would be required and that attention would first be paid to the highest priority data themes. The seven core and eleven California-centric data themes could now be considered as the basis of the California Spatial Data Infrastructure (CSDI).

Implementation Strategy

Within the next year the California Geospatial Framework Draft Data Plan will be used extensively as the California GIS Council develops the California Strategic GIS plan and supporting data theme business cases including the existing cadastral and imagery working groups. The report will also be the basis of a continued outreach to the California geospatial community to report findings, capture more detailed data theme information, and set the stage for operational collaboration and cost sharing.

It is also planned that the Draft Data Plan will evolve as a 'living document' and support longer term needs. Anticipated needs within two to four years could include USGS and other Federal Agency partnerships funding statewide and regional business plans and implementation efforts in support of framework data acquisition. CGIA and CGC will advocate state and regional funding approaches to build the prioritized data themes and regional collaboratives will seek grant and operational funding to build or host framework data layers.

The implementation strategy is to foster education, creation, and dissemination of core and California-centric data framework layers through partnerships, teamwork, and sustainable funding. To that end, a series of short- and long-term goals have been identified:

Short-term goals to be implemented within one year include:

- California GIS Council (CGC) adopt the Geospatial Framework Draft Data Plan as statewide strategic direction on framework data.
- CGC include framework data strategy in the California Strategic Planning effort.

- CGC establish a working group to continue the framework data development strategy effort, including identification of primary stewards and multi-year funding approaches.

- CGIA communicate with the regional collaboratives about the Geospatial Framework Data Plan to obtain support for development of framework data, identify stewards/data hosts, and develop synergistic GIS application projects.

- CGIA identify regional collaboratives that will work to support building framework data layers.

- CGIA provide a presentation with Baker at 2007 CalGIS Conference in Oakland

- CGC send Draft Data Plan to National States Geographic Information Council (NSGIC) as sample of framework data planning and make presentation at next NSGIC conference.

Long-term goals to be implemented within two to four years include:

- USGS build partnerships to fund statewide and regional business plans and implementation efforts in support of framework data acquisition.

- Regional collaboratives seek grant and operational funding to build or host framework data layers.

- CGC request Federal agencies to provide sustainable funding in support of core seven framework data layers that support their organization mission and strategic directions.

- CGIA establish a working group to facilitate partnerships between Federal agencies with data that could support regional GIS applications.

- CGIA and CGC advocate state and regional funding approaches to build California-centric framework data layers.

- CGC engage NSGIC and Federal agencies on developing funding formulas that support "Imagery for the Nation" funding implementation within California that will help develop local and regional geospatial business applications.

[2] NSDI Framework

The National Spatial Data Infrastructure (NSDI) is a means to assemble geographic data nationwide to serve a variety of users. GIS users of many different disciplines have a recurring need for a few data themes. The framework is a collaborative community-based effort in which these commonly needed data themes are developed, maintained, and integrated by public and private organizations within a geographic area. The framework is one of the key building blocks and forms the data backbone of the NSDI. The framework concept was developed by representatives of county, regional, State, Federal, and other organizations under the auspices of the Federal Geographic Data Committee (FGDC). Local, regional, State and Federal government organizations and private companies see the framework as a way to share resources, improve communication, and increase efficiency.
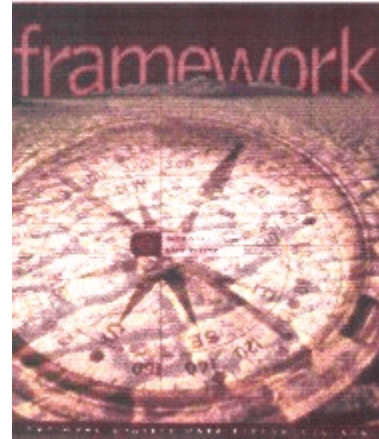
What are the NSDI and the framework?
The NSDI is a means to assemble geographic data nationwide to serve a variety of users. The NSDI provides an environment within which organizations and technology interact to foster activities for using, managing, and producing geographic data.

The framework forms the data backbone of the NSDI. It has three aspects: data, procedures and technology for building and using the data, and institutional relationships and business practices that support the environment. The framework is designed to facilitate production and use of geographic data, to reduce operating costs, and to improve service and decision making.

Why is the framework needed?
Geographic data are essential to many operations, yet they are expensive and time-consuming to produce. Many organizations need the same basic geographic data for their applications and spend precious resources duplicating existing data sets. Others go without data because they cannot afford the production costs. Furthermore, when an application or problem covers more than one jurisdiction, it is often difficult to find and combine existing data. The framework meets these needs by providing a reliable, standardized source for commonly needed and used geographic data themes.

What are the framework data themes?
The framework's seven core geographic data themes are geodetic control, ortho imagery, elevation, transportation, hydrography, governmental units, and cadastral information.

Why were these specific themes selected?
The seven themes of geographic data are those that are produced and used by most organizations. Various surveys indicate that they are required by a majority of users, form a critical foundation for the NSDI, and have widespread usefulness. A cooperative approach to producing and sharing these common data benefits most organizations that use geographic data.

[3] PROJECT INTRODUCTION

The California Geographic Information Association (CGIA) partnered with the USGS, the California Resources Agency and the California GIS Council (with funding from the USGS and FGDC) to develop a Draft Geospatial Framework Data Plan for California. CGIA works with the partners and the larger California GIS community to develop geospatial framework data plans that support the National Spatial Data Infrastructure.

The goal for this project was to enhance organizational and institutional capacity to develop and share an integrated set of digital geospatial data resources that includes FGDC framework data and the other datasets most critical to priority regional application development efforts within California by conducting interagency and public outreach and developing a California Geospatial Framework Data Draft Report for the State. The product of these collaborations is this initial "living" document that will evolve over time. This project has developed a comprehensive list of critical geospatial framework data, stakeholders, and sponsoring agencies; and dialog forums will be conducted on the report that will set the stage for operational collaboration and cost sharing.

[4] Project Background

The following is an overview of the organizations noted in the previous section who sponsored the California Geospatial Framework Draft Data Plan.

The CGIA (http://www.cgia.org) is a non-governmental organization of California professional GIS practitioners that has provided a forum for GIS professional collaboration for over 10 years.

The current California GIS Council (http://gis.ca.gov/counci) was formed in 2003 and is comprised of 26 organizations including eight State and eight Federal agency representatives, as well as regional GIS councils and collaboratives. Since its inception, the Council has engaged in activities that promote cooperation and coordination among different sectors and levels of government.

The Council identified a need for regional outreach for the development of a draft geospatial framework data plan that could create action strategies for integrating high resolution imagery with a statewide parcel dataset and other framework datasets. These tasks support the Council's "next steps," which include developing strategic plans for integrative geospatial framework data development, cataloging, and web mapping services and support developing enterprise GIS architecture for the State of California.

The California GIS Council provides an existing forum and highly relevant pool of knowledgeable participants to help craft a geospatial data plan for California. Many of the GIS collaboratives are active participants in the GIS Council.

Additional project participants represent the following organizations and programs:

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

> The California Environmental Resources Evaluation System (CERES) is an information system developed by the California Resources Agency to facilitate access to a variety of electronic data describing California's rich and diverse environments. The goal of CERES is to improve environmental analysis and planning by integrating natural and cultural resource information from multiple contributors and by making it available and useful to a wide variety of users.

> The California Spatial Information Library is an online source for California's physical and cultural geospatial information hosted by servers at CERES and National Aeronautics and Space Administration (NASA) Ames Research Center.

> The California Environmental Information Catalog (CEIC) is an online directory for reporting and discovery of information resources for California. Participants include cities, counties, utilities, State and Federal agencies, private businesses and academic institutions that have spatial and other types of data resources.

[5] Approach

Six workshops were conducted throughout the State between April and July 2006. See Table 1 below for a list of workshop locations, dates, and attendance. The charts in Appendix C – Results Workshop and Survey Participants by Interest show the number of attendees at each workshop representing local/regional, State, and Federal government, and private interests. The CalGIS, Bakersfield, and Redding workshops were dominated by local and regional interests, while Sacramento had mostly State representation. The large urban areas, Oakland (SF Bay Area) and Los Angeles, had the greatest number of participants from the private sector.

Each workshop began with a presentation introducing the California Geospatial Framework Project, the project team, relevant national and State GIS data sharing initiatives, the core framework data themes, and the potential California-centric data themes. See Appendix B – Relevant Links for a listing of links to relevant national and State GIS data sharing resources and initiatives.

Participants were provided a handout listing all of the NSDI data theme descriptions (Appendix A – NSDI Framework Data Themes), with the core framework data themes highlighted at the top. This handout served as a guide

Table 1. Workshop locations, dates, and number of attendees		
2006 CalGIS Conference; Santa Barbara	April 5	32
USGS Offices; Sacramento	May 10	20
City Offices; Bakersfield	June 1	21
State Building; Oakland	June 29	12
SCAG Offices; Los Angeles	July 13	13
City Council Chamber Building; Redding	July 19	18

for voting in the second portion of the workshop. Six funding dots were distributed to each participant with color coding for the sector represented: Federal, State, or local/regional government, or private. They were asked to allocate five of their funding dots among their top choices for California-centric themes. Voting posters hung on the walls around the workshop room listed a data theme, its description, and included a grid for the funding dots. Participants could put as many of the five dots as they wished on one or several themes. These voting results were used to select the top California-centric themes. The final dot was saved for voting on the core framework themes. The posters for the core framework themes were hung on a separate wall to distinguish them from the other themes.

In the third portion of the workshop, business uses and existing sources of the data themes with the most votes were solicited from participants. Participant input was captured in the workshop summary written for each workshop. The focus was on statewide and large regional data sources. The six statewide workshop summaries can be found on the CGIA website at http://www.cgia.org/geospatial-draftplan.htm.

Following the final workshop, an online survey was published and distributed to the California GIS community in mid-August. The recipient list included approximately 2200 email addresses of California GIS Council, CGIA, and all members of the four California URISA Chapters. The electronic web-based survey asked participants to rank the core framework and top California-

centric data themes in an attempt to prioritize all the themes. In addition, it sought additional data sources of themes that were not discovered in the workshops. The survey is included at the end of this document in Appendix D – California Geospatial Framework Community Survey.

[6] Project Findings

Workshop

The Cadastral data theme received by far the most votes among core framework themes, with more than twice the number of the next highest ranked theme, elevation. Federal government representatives were the only interests who did not give Cadastral the most votes. Federal representatives ranked Transportation and Ortho Imagery as their most popular core framework themes, while Governmental Units received the fewest votes with just one from a State representative. See Appendix C for charts showing the distribution of votes by interest.

Participants had the choice of 27 NSDI data themes among which to allocate five funding dots for the California-centric themes. However, at the first workshop participants felt that the NSDI themes were missing two crucial themes, street addressing and critical infrastructure. The NSDI Buildings and Facilities theme partially captured critical infrastructure, but lacked information on utilities. Along the same lines, the NSDI Transportation theme could potentially include address ranges for street addressing, but would not provide the accuracy need for participants' business needs. Thus, the Street Addressing and Utilities themes were offered for voting at the first and subsequent workshops.

Participants were asked to choose the most crucial aspect of critical infrastructure, Utilities or Buildings and Facilities, and vote accordingly. Street Addressing, Buildings and Facilities, and Utilities were the three top vote getters in final results. See Appendix C for charts of the voting results. Table 2 shows the top 11 vote-getters for the California-centric themes in alphabetical order.

Local and regional governments exercised the greatest voting power as the most represented interest at the workshops; approximately forty percent of the participants came from local or regional governments. The voting pattern for the final survey results generally paralleled that of local and regional participants. The Vegetation theme stands out as one that did not follow rank for local/regional and the totals. There was a close correlation of private and local votes, while State and Federal votes did not follow the same pattern.

Figure 1. Workshop Locations

Table 2. Top 11 California-Centric Themes[1]

  Biological Resources
  Buildings and Facilities
  Cultural and Demographic Statistics
  Earth Cover
  Flood Hazards
  Public Land Conveyance Records
  Soils
  Street Addressing
  Utilities
  Vegetation
  Wetlands

1. Land Use was another data theme that participants felt was not covered by the NSDI themes. However, it was not included in the voting until Los Angeles, the fifth workshop. It was a popular theme in the last two workshops, which suggests it may have been a top theme for the final results if it had been offered up at the other workshops. Participants did not articulate a detailed description of how they envisioned a Land Use theme, so it is unclear whether the information they desired might be captured in the Cadastral or Public Land Conveyance Records themes.

10

Survey

The California Geospatial Framework Community Feedback Survey had a response rate of approximately 6.2%, with 137 total respondents. As shown in the charts in Appendix C, the number of respondents and workshop attendees were almost exactly the same for State, Federal, and private interests. Survey respondents from local government were more numerous than local government workshop participants.

California Geospatial Framework Community Feedback Survey

Questions marked with an asterisk (*) are mandatory.

BASIC INDENTIFYING INFORMATION

1   *Organization Type:
- Local/Regional
- State
- Federal
- Private
- Other, please specify

The final ranking results were determined by averaging the ranks (1-7 for core or 1-11 for California-centric) for each data theme. The theme with the lowest average was ranked number 1 and the theme with the highest average was ranked 7 for the core themes or 11 for the California-centric themes. See Table 3 for the final rankings of core framework themes and Table 4 for the final rankings for the California-centric data themes.

Table 3. Final Rankings of Core Framework Themes
1   Cadastral
2   Ortho Imagery
3   Transportation
4   Elevation
5   Hydrography
6   Geodetic Control
7   Governmental Units

Table 4. Final Rankings of California-Centric Themes
1   Street Addressing
2   Utilities
3   Public Land Conveyance Records
4   Buildings and Facilities
5   Flood Hazards
6   Vegetation
7   Biological Resources
8   Cultural and Demographic Statistics
9   Soils
10   Wetlands
11   Earth Cover

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[7] Core Framework Themes

This section provides an outline of the information discovered about each of the core framework data themes in the order they were ranked. Three levels of information are provided, 1) Federal, 2) State, and 3) general. Federal topics include the NSDI data theme description, themes uses, and relationships to other themes. State topics include existing statewide sources, if any, and description and status of those sources. General topics include available data content standards. This information was collected during the workshops and further project research and can become a useful basis for further research.

CADASTRAL
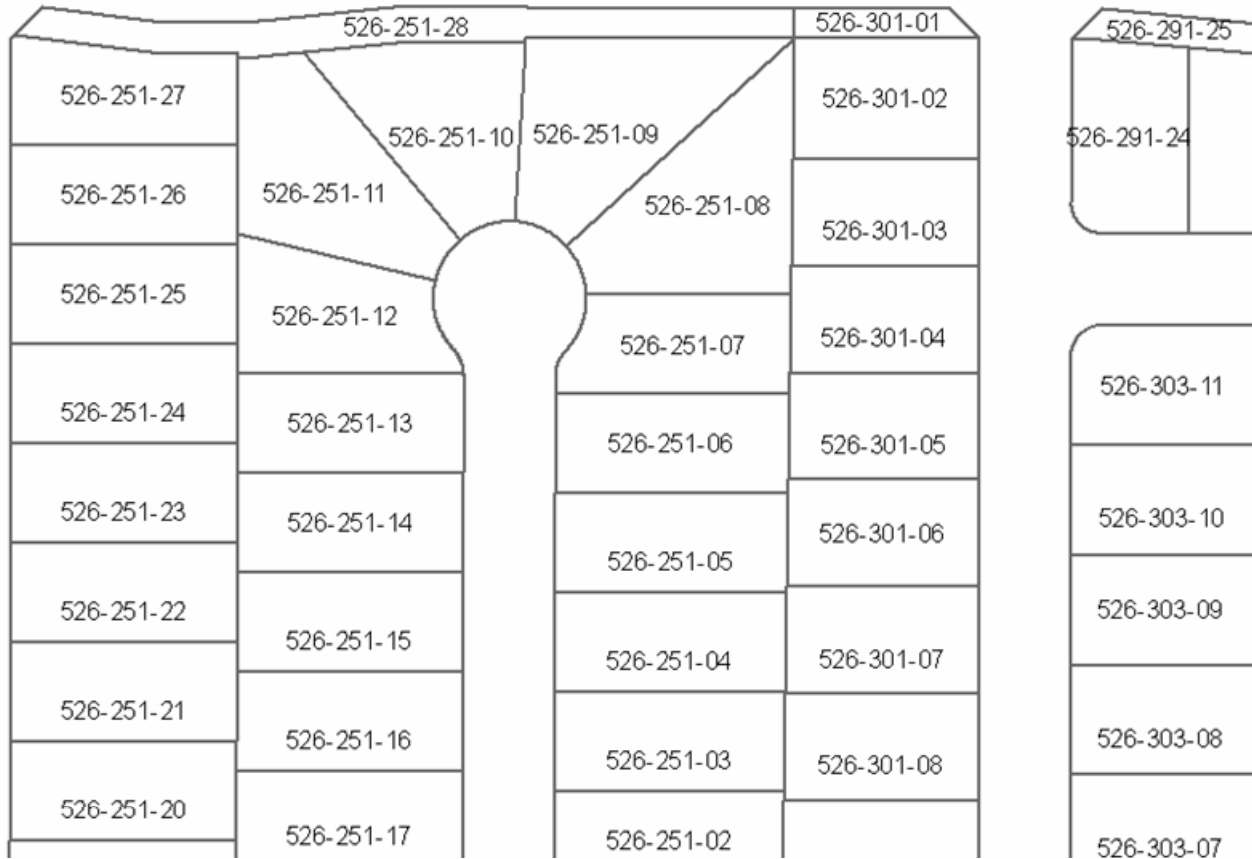
Kern County parcels with APNs

| NSDI DESCRIPTION | Cadastral data describe the geographic extent of past, current, and future right, title, and interest in real property, and the framework to support the description of that geographic extent. The geographic extent includes survey and description frameworks such as the Public Land Survey System, as well as parcel-by-parcel surveys and descriptions. |

THEME USES

Boundaries of ownership, water district boundaries, property valuation for taxation and infrastructure, permission to access land, timber ownership, and notification or projects.

RELATIONSHIP TO OTHER THEMES

Geodetic Control and Ortho Imagery are useful themes for producing parcel data. The Street Addressing, Cadastral, and Transportation themes are closely related in that they contain different ways of representing addresses.

STATEWIDE DATA

Cadastral data are maintained by city and county governments. Geographic Coordinate Database (GCDB) maintains the Public Land

CADASTRAL

SOURCE   Survey System, which is available through the Bureau of Land
                        Management's (BLM) GeoCommunicator.

SOURCE   This data[set] is intended to provide a reasonable representation of
DESCRIPTION   parcels that can be used easily in a computerized geographic information
                        system, primarily for assessment purposes, including the inventory,
                        location and assessment of all real property in the county.

                                    (http://www.co.kern.ca.us/gis/Files/kernparcels2006_nad83_metadata.htm)

STATUS   There is currently no complete and publicly-available cadastral data set
                        for California. GCDB data does not cover any of California's urban
                        areas. The GeoCommunicator can be found at:
                        http://www.geocommunicator.gov/

ANALYSIS   The Public Land Survey system data are available at a scale of 1:24,000,
                        which is typically used for local analysis and has a horizontal accuracy of
                        +/- 40 feet.

                        The California GIS Council approved formation of the Digital Land
                        Records Information (DLRI) working group to evaluate approaches to
                        make a statewide cadastre available. There are redundant efforts within
                        the private sector to compile a statewide parcel base. The State and
                        Federal governments have credited cadastre data for some geographic
                        areas to meet specific business needs.

                        The November 2005 California Geospatial Framework Survey identified
                        that private and tribal lands along with building footprints were of
                        highest interest (ranked A) to respondents. Public lands and tax roles data
                        were also of interest (ranked B).

                        The Cadastral National Spatial Data Infrastructure (Cadastral NSDI) has
                        been defined by the FGDC Cadastral Subcommittee as a minimum set of
                        attributes about land parcels that is used for publication and distribution
                        of cadastral information by cadastral data producers for use by
                        applications and business processes. The reference document can be
                        found at:

                        http://www.nationalcad.org/data/documents/Cadastral NSDI Reference Document
                        v10.pdf

STANDARDS   Information on the FGDC-endorsed Cadastral Data Content Standard can
                        be found at:
                        http://www.fgdc.gov/standards/projects/FGDC-standards-

CADASTRAL

projects/cadastral/index_html

POTENTIAL DATA HOSTS   These data are currently hosted by city and county governments. A potential host for a seamless statewide data set has not been identified.

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ORTHO IMAGERY

2005 NAIP Imagery of Downtown Oakland

NSDI DESCRIPTION

This data set contains georeferenced images of the Earth's surface, collected by a sensor in which image object displacement has been removed for sensor distortions and orientation, and terrain relief. For very large surface areas, an Earth curvature correction may be applied. Digital orthoimages encode the optical electromagnetic spectrum as discrete values modeled in an array of georeferenced pixels. Digital orthoimages have the geometric characteristics of a map, and image qualities of a photograph.

THEME USES

Land reference image coverage of geographic areas, ecosystem restoration, verifying data accuracy, classification, emergency management, and identifying permeable surfaces.

RELATIONSHIP TO

This theme is used as a reference source for several other themes,

ORTHO IMAGERY

OTHER THEMES including Transportation, Cadastral, and Hydrography.

STATEWIDE DATA SOURCE The US Department of Agriculture's (USDA) National Agriculture Imagery Program (NAIP) has one-meter true color imagery captured in mid-2005. The USGS is in the process of collecting high resolution imagery for its 133 Cities Project. Most other ortho imagery sources are captured commercially and are unavailable for general public distribution.

SOURCE DESCRIPTION NAIP acquires imagery during the agricultural growing seasons in the continental U.S. A primary goal of the NAIP program is to enable availability of digital ortho photography within a year of acquisition.

NAIP imagery can be acquired under two sets of specifications: A one meter ground sample distance (GSD) with a horizontal accuracy that matches within five meters of a reference ortho image, and a two meter GSD image that matches within 10 meters of reference ortho imagery. The reference ortho imagery is mosaiced digital ortho quarter quads (DOQQs) that were used to digitize USDA FSA common land unit boundaries. (http://www.apfo.usda.gov/NAIP.html)

As part of the 133 Cities Project, the USGS is acquiring high resolution color orthoimagery for 133 most populated metropolitan areas of the United States. As an essential element of The National Map, (http://nationalmap.usgs.gov) the need for up-to-date imagery is critical for Homeland Security, and Emergency Response. The goal is to collect imagery over the metropolitan areas with a resolution of approximately 1/3 meter or about 1 foot.

STATUS In progress. MrSID-compressed versions of the NAIP imagery by county are available now, while DOQQ tiled imagery will be available in Fall 2006. Currently available data can be downloaded from: http://new.casil.ucdavis.edu/casil/remote_sensing/naip_2005/

or purchased from the USDA at:
http://www.fsa.usda.gov/FSA

Other imagery can be found at:
http://terraserver-usa.com/ and http://seamless.usgs.gov/

ANALYSIS NAIP imagery should meet the needs of users requiring a statewide or multi-regional extent. However, four-inch to six-inch resolution is

ORTHO IMAGERY

normally required for local government uses. Those requiring higher resolution or more current data rely on commercial fixed-wing and satellite imagery capture firms to meet their data needs. Some data are purchased through multi-organization collaboration, while many data acquisitions are redundant because of lack of collaboration. These data are not usually made available in the public domain.

The California GIS Council approved formation of the Imagery working group to evaluate approaches to make a statewide imagery dataset available.

The National States Geographic Information Council (NSGIC) is currently promoting an initiative called Imagery for the Nation (see the link in Appendix B for more information).

The November 2005 California Geospatial Framework Survey respondents identified that they had a need for high resolution (0.1 – 1.9 m) imagery with a currency of months.

The 2005 survey also identified that demand for other sensors (e.g., LIDAR, CIR) is emerging, demonstrating increased sophistication in the application of imagery. Collaboration in the procurement and licensing of imagery is seen as important. There is a strong desire and expectation that imagery acquired using public funds is put in the public domain. More information on the CaSIL imagery acquisition project catalog can be found at:
http://gis.ca.gov/planned/

STANDARDS

Information on the FGDC Content Standard for Digital Orthoimagery can be found at:
http://www.fgdc.gov/standards/projects/FGDC-standards-projects/orthoimagery/index_html

POTENTIAL DATA HOSTS

The California Spatial Information Library (CaSIL) is currently hosting available NAIP imagery for California, and USDA's Aerial Photography Field Office also sells the imagery for public use.

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TRANSPORTATION

Realigned TIGER/Line street centerline data for San Francisco

NSDI DESCRIPTION

Transportation data are used to model the geographic locations, interconnectedness, and characteristics of the transportation system within the United States. The transportation system includes both physical and non-physical components representing all modes of travel that allow the movement of goods and people between locations.

THEME USES

Emergency response, travel demand modeling, land use planning, service delivery, and general map reference.

RELATIONSHIP TO OTHER THEMES

The Transportation theme is frequently created using Ortho Imagery. It is also closely related to the Street Addressing and Cadastral themes.

STATEWIDE DATA SOURCE

US Census Topologically Integrated Geographic Encoding and Referencing (TIGER)/Line files are the only publicly-available source of a seamless road network for all of California. Several higher-quality commercial sources exist. The California Department of Transportation

TRANSPORTATION

(Caltrans) has licensed commercial data, which is only available to Caltrans staff.

SOURCE DESCRIPTION

The US Census TIGER/Line files are a digital database of geographic features, such as roads, railroads, rivers, lakes, legal boundaries, census statistical boundaries, etc. covering the entire United States. The data base contains information about these features such as their location in latitude and longitude, the name, the type of feature, address ranges for most streets, the geographic relationship to other features, and other related information. They are the public product created from the Census Bureau's TIGER database.
(http://www.census.gov/geo/www/tiger/overview.html)

STATUS

Existing. The US Census is in the process of realigning TIGER/Line files to improve positional accuracy. New data are published every six months. Beginning in 2007 or 2008, the Census will introduce the Master Address File (MAF)/TIGER system, which will incorporate an Oracle relational database. The most current data (as of September 2006) can be downloaded at:
http://www.census.gov/geo/www/tiger/tiger2005se/tgr2005se.html

ANALYSIS

TIGER/Line data are available at a scale of 1:100,000, which is typically used for regional analysis and has a horizontal accuracy of +/-167 feet. The poor accuracy of much of the currently available TIGER/Line data make it insufficient for local or regional application.

Many public and private organizations have either developed datasets to meet their specific business needs or licensed data from commercial sources that keep the data current. There is significant redundancy in building and sustaining transportation data sets throughout California at statewide, regional, and local geographic extents.

The November 2005 California Geospatial Framework Survey found that there is a desire for attribution related to traffic volumes, speeds, etc., presumably for use in traffic modeling.

STANDARDS

Information on the NSDI Framework Transportation Identification Standard, which is currently in draft form, can be found at:
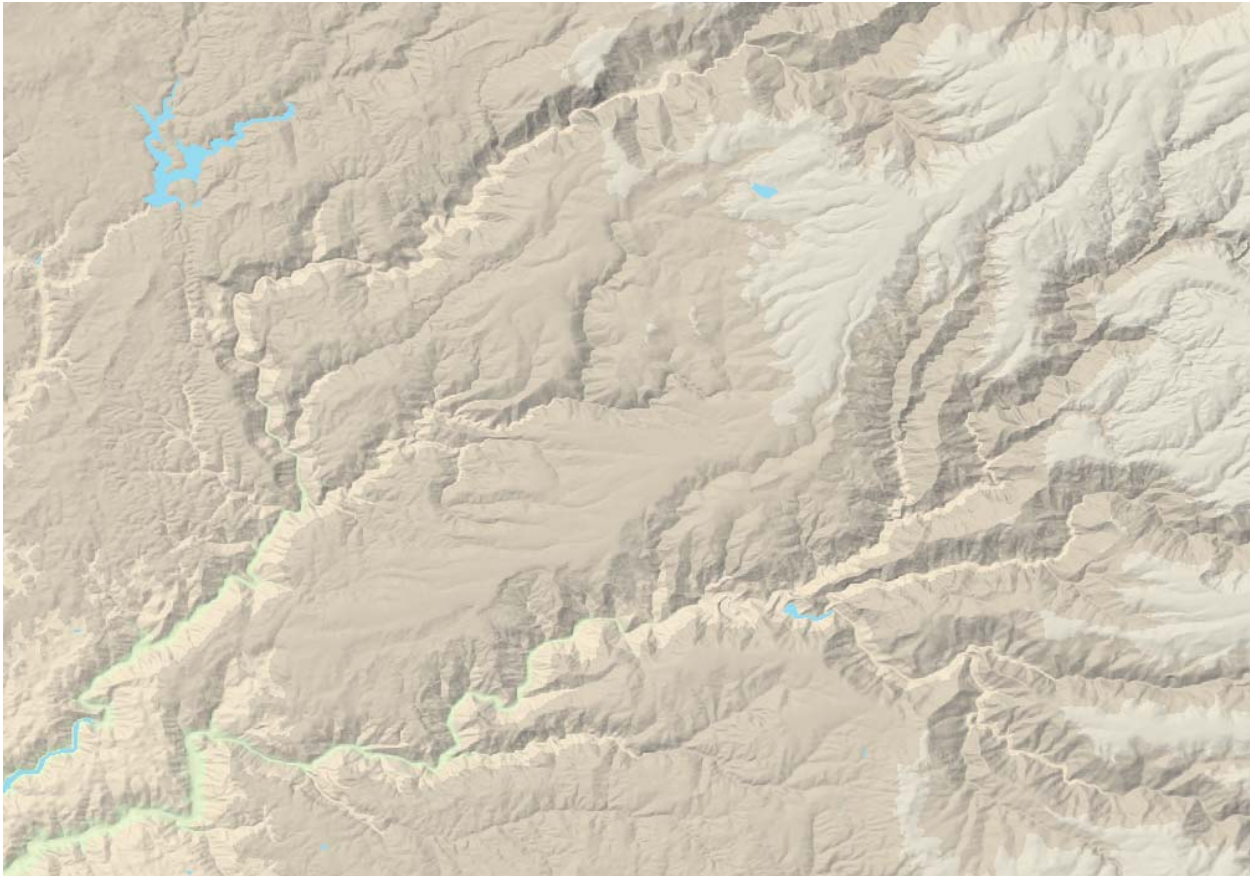http://www.fgdc.gov/standards/projects/FGDC-standards-projects/trans-id-standard/index_html

TRANSPORTATION

**POTENTIAL DATA
HOSTS**
Caltrans.

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ELEVATION

Hillshade of Sierra Nevada foothills derived from USGS 30-meter Digital Elevation Model

**NSDI
DESCRIPTION**

These data contain georeferenced digital representations of terrestrial surfaces, natural or manmade, which describe vertical position above or below a datum surface. Data may be encapsulated in an evenly spaced grid (raster form) or randomly spaced (triangular irregular network, hypsography, single points). The elevation points can have varying horizontal and vertical resolution and accuracy.

THEME USES

Floodplain mapping, site suitability, habitat modeling, forest management, and fire management.

**RELATIONSHIP TO
OTHER THEMES**

The Elevation theme is used in conjunction with the Hydrography theme to produce the Flood Hazards theme. It is also used in the creation of the Soils, Watershed Boundaries, Earth Cover, and Geologic themes.

**STATEWIDE DATA
SOURCE**

USGS Digital Elevation Models (DEM) are the only seamless elevation data covering all of California available in public domain. Many cities and counties have LiDAR or other higher-quality data for specific areas,

Elevation

but these data are not all produced with consistent standards or made publicly available.

The new USGS virtual Center for LIDAR Information Coordination and Knowledge (CLICK) was designed to assist users in accessing LIDAR remote sensing data and provide information to help facilitate LIDAR innovation in the scientific community. By having access to data and information that was traditionally cost prohibitive, scientists have the opportunity to incorporate LIDAR data into their applications, thus adding the vertical component to their research. CLICK's mission is to facilitate data access, user coordination, and educate the science community about LIDAR's value to their projects.

The CLICK web portal (http://lidar.cr.usgs.gov) is a place for all LIDAR users—inside and outside the USGS—to visit, ask and answer questions, and coordinate with others who are looking for or have data in their study area. The main mission of this virtual center is to invite people in the LIDAR community to come to exchange ideas, information, and even raw point cloud data for scientific (e.g., non-mapping) needs.

Source Description

A DEM is a digital file consisting of terrain elevations for ground positions at regularly spaced horizontal intervals. The US Geologic Survey (USGS) produces five different digital elevation products. Although all are identical in the manner the data are structured, each varies in sampling interval, geographic reference system, areas of coverage, and accuracy; with the primary differing characteristic being the spacing, or sampling interval, of the data.
(http://rmmcweb.cr.usgs.gov/elevation/dpi_dem.html)

Status

Existing. The highest available resolution for USGS DEMs is at a 10-meter sampling interval. However, a 3-meter resolution dataset is in development. DEMs are distributed through:
http://data.geocomm.com/dem/demdownload.html

Analysis

The USGS DEMs source data in the public domain is useful to support statewide and regional elevation analysis. As with imagery, there are a number of commercial sources of elevation data that better meet the needs of public and private elevation needs.

The trend is for ever increasing levels of accuracy and currency. New data capture techniques such as LiDAR and IFSAR are commercially available for entire statewide geographic coverage.

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ELEVATION

The November 2005 California Geospatial Framework Survey found that there is a strong interest in high accuracy elevation data for use in hydrologic modeling in flood-prone areas.

STANDARDS

Information on the FGDC Content Standard for Framework Land Elevation Data can be found at:
http://www.fgdc.gov/standards/projects/FGDC-standards-projects/elevation/index_html
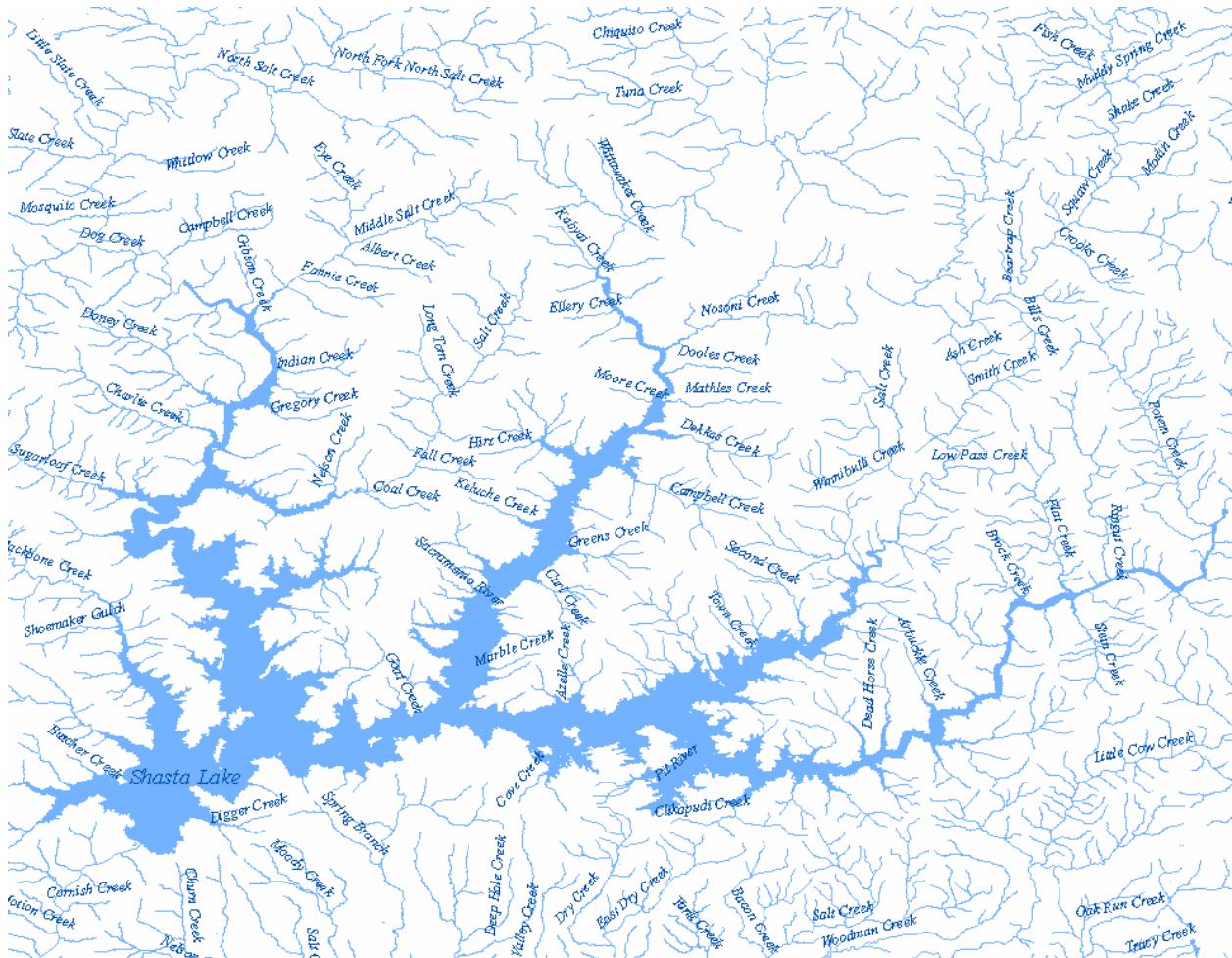Information on the USGS Digital Elevation Model Standards can be found at:
http://rockyweb.cr.usgs.gov/nmpstds/demstds.html

POTENTIAL DATA HOSTS

A potential host for a seamless statewide data set has not been identified.

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HYDROGRAPHY

National Hydrography Data set 1:24,000 scale streams and waterbodies near Shasta Lake

**NSDI
DESCRIPTION**

This data theme includes surface water features such as lakes, ponds, streams and rivers, canals, oceans, and coastlines. Each hydrography feature is assigned a permanent feature identification code (Environmental Protection Agency Reach Code) and may also be identified by a feature name. Spatial positions of features are encoded as centerlines and polygons. Also encoded is network connectivity and direction of flow.

THEME USES

Floodplain delineation, habitat restoration, and studying endangered species.

**RELATIONSHIP TO
OTHER THEMES**

Hydrography data are often created from the Ortho Imagery theme. They are used with Elevation data to create the Flood Hazards theme.

HYDROGRAPHY

STATEWIDE DATA SOURCE

The USGS maintains the National Hydrography Data set (NHD) which contains 1:24,000-scale hydrography data for all of California.

SOURCE DESCRIPTION

The NHD is a comprehensive set of digital spatial data that contains information about surface water features such as lakes, ponds, streams, rivers, springs and wells. Within the NHD, surface water features are combined to form "reaches," which provide the framework for linking water-related data to the NHD surface water drainage network. These linkages enable the analysis and display of these water-related data in upstream and downstream order. (http://nhd.usgs.gov/)

STATUS

Existing. NHD data can be downloaded from:
http://nhd.usgs.gov/

ANALYSIS

The scale of NHD data is appropriate for regional and statewide business uses. However, the accuracy of +/-40 feet may insufficient for local applications.

The November 2005 California Geospatial Framework Survey found that there is a local need for higher accuracy hydrography data than is available through in the NHD.

STANDARDS

Information on the FGDC Hydrographic Data Content Standard for Coastal and Inland Waterways can be found here:
http://www.fgdc.gov/standards/projects/FGDC-standards-projects/coastal-and-inland-waterways/index_html

U.S. Geological Survey standards for the NHD can be found at:
http://rmmcweb.cr.usgs.gov/public/nmpstds/nhdstds.html.

POTENTIAL DATA HOSTS

USGS is the defacto host but a state agency host would be optimal. To date, no state agency has stepped up to host this important data set.

GEODETIC CONTROL
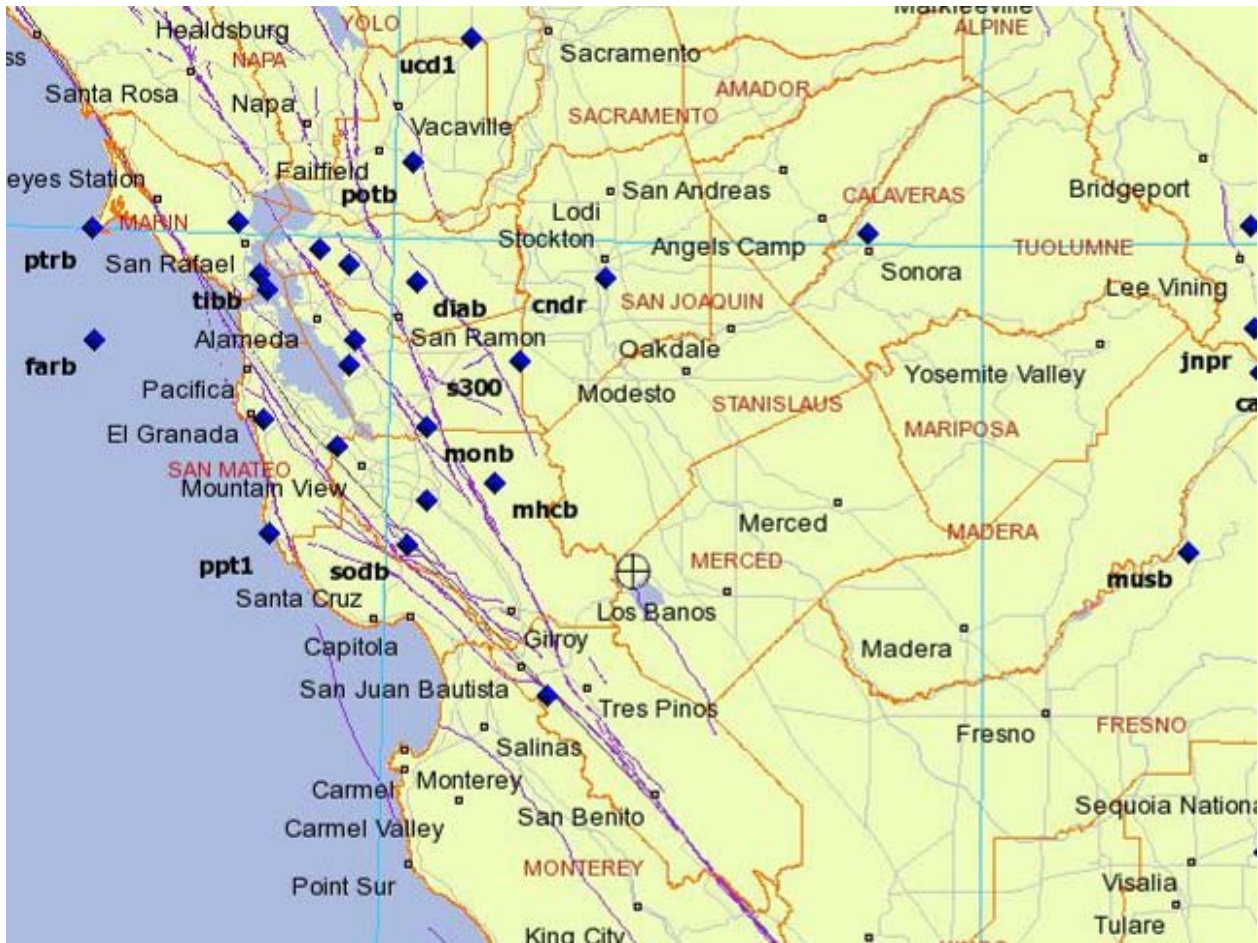
California Spatial Reference Center geodetic control points for Central California

**NSDI
DESCRIPTION**

Geodetic control provides a common reference system for establishing coordinates for all geographic data. All NSDI framework data and users' applications data require geodetic control to accurately register spatial data. The National Spatial Reference System is the fundamental geodetic control for the United States.

THEME USES

Georeferencing raster data, surveying

**RELATIONSHIP TO
OTHER THEMES**

The Geodetic Control theme is used in conjunction with Ortho Imagery to improve accuracy of many data themes.

SOURCE OF DATA

National Oceanic and Atmospheric Administration's (NOAA) National Geodetic Survey (NGS) defines and manages a national coordinate system. The California Spatial Reference Center (CSRC) has developed a plan to establish and maintain an accurate state-of-the-art network of GPS

GEODETIC CONTROL

control stations necessary to meet the demands of government and private businesses for a reliable spatial reference system in California.

SOURCE DESCRIPTION

The NGS defines and manages the National Spatial Reference System (NSRS) – a consistent coordinate system that defines latitude, longitude, height, scale, gravity, and orientation throughout the United States. NSRS comprises a consistent, accurate, and up-to-date national shoreline; a network of continuously operating reference stations (CORS) which supports 3-dimensional positioning activities; a network of permanently marked points; and a set of accurate models describing dynamic, geophysical processes that affect spatial measurements.

STATUS

In Progress. NGS data can be found at:
http://www.ngs.noaa.gov/

CSRC data can be found at:
http://csrc.ucsd.edu/

ANALYSIS

The November 2005 California Geospatial Framework Survey found that there appears to be a clear appreciation for the importance of geodetic control in support of survey level work.

STANDARDS

Information on the FGDC-endorsed Standards for Geodetic Networks can be found at:
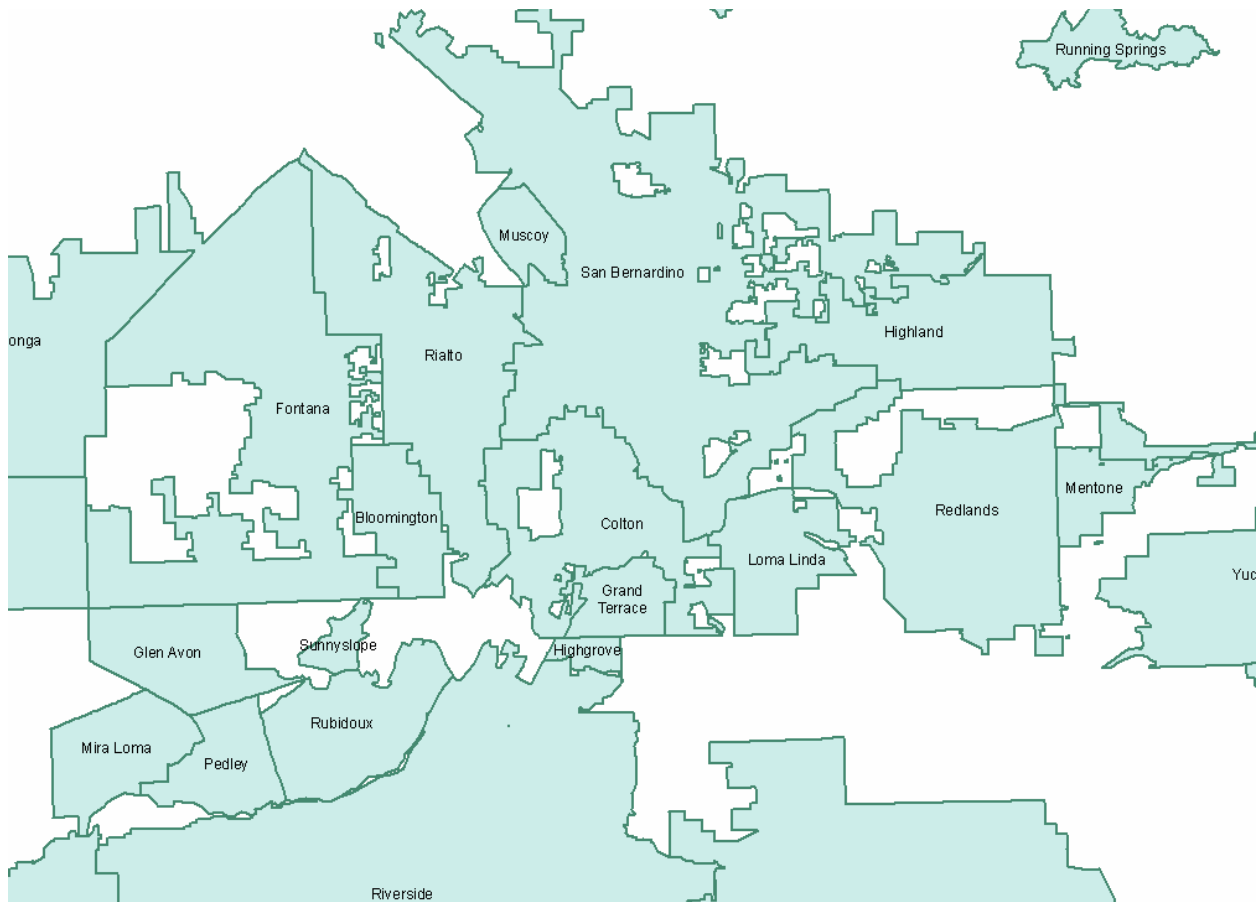http://www.fgdc.gov/standards/projects/FGDC-standards-projects/accuracy/part2/index_html

The National Geodetic Survey has information about control points, datums, available data, and accuracy at:
http://www.ngs.noaa.gov/faq.shtml

POTENTIAL DATA HOSTS

California Spatial Reference Center (CSRC)

GOVERNMENTAL UNITS

TIGER city boundaries in the Inland Empire

NSDI DESCRIPTION	These data describe, by a consistent set of rules and semantic definitions, the official boundary of Federal, State, local, and tribal governments as reported/certified to the U.S. Census Bureau by responsible officials of each government for purposes of reporting the Nation's official statistics.
THEME USES	Urban and regional planning, resource allocation, and determining election districts.
RELATIONSHIP TO OTHER THEMES	The use of Earth Cover and Public Land Conveyance Records is enhanced by Governmental Units.
SOURCE OF DATA	US Census Tiger/Line files and CaSIL.
SOURCE DESCRIPTION	Census boundaries include congressional districts, consolidated cities, counties, county subdivisions, incorporated places, Metropolitan and Metropolitan Statistical Areas, school districts, states, state legislative

GOVERNMENTAL UNITS

districts, urban areas, voting districts, and 3 and 5-digit ZIP code tabulation areas.

STATUS

Incomplete. TIGER/Line files include some boundary data, while other governmental units produced by State agencies can be found on CaSIL.

ANALYSIS

The low accuracy of TIGER/Line data, 1:100,000 at +/-167, makes it unsuitable for most local and regional uses. These data are generally maintained by local and regional governments at a scale that meets local business needs.

The November 2005 California Geospatial Framework Survey found a high demand for ZIP code data, which is already available. State and regional agencies and jurisdiction boundaries were identified and most important (ranked A).

STANDARDS

Information about the proposed FGDC Governmental Unit Boundary Content Standard can be found at: http://www.fgdc.gov/standards/projects/FGDC-standards-projects/govt-units/index_html

POTENTIAL DATA HOSTS

California Spatial Information Library (CaSIL)

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[8] California-Centric Themes

This section provides an outline of the known information about each of the California-centric data themes in the order they were ranked. Three levels of information are provided, Federal, State, and general. Federal topics include the NSDI data theme description, themes uses, and relationships to other themes. State topics include existing statewide sources, if any, and description and status of those sources. General topics include available data content standards. This information was collected during the workshops and further project research and can become a useful basis for further research.

STREET ADDRESSING
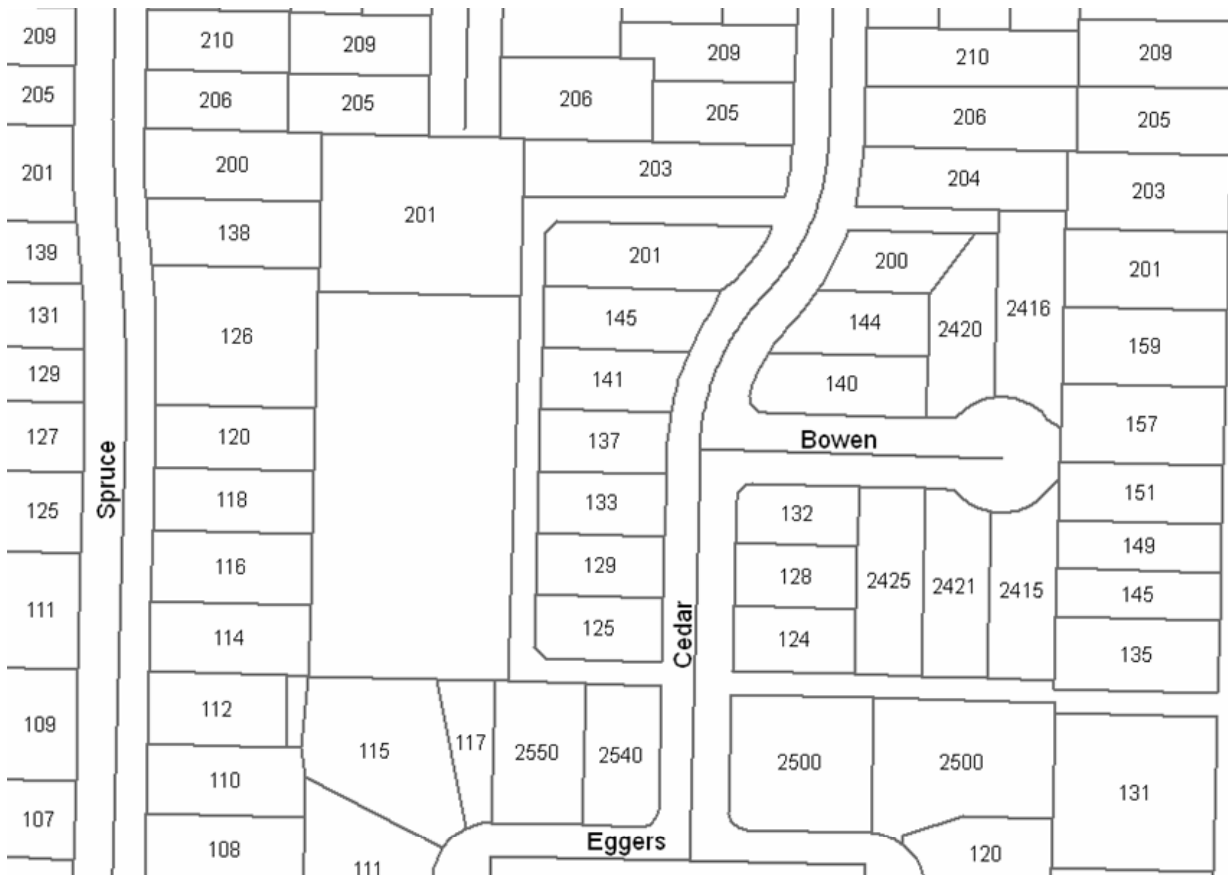
Street addresses with parcel boundaries in Bakersfield

NSDI DESCRIPTION	This theme was not defined by the NSDI.
THEME USES	Accurate geocoding, permit issuance, emergency response, new service orders, crime mapping, and route mapping/deliveries, E-911, Reverse 911, dissemination of information, emergency preparation, rights of entry, notification, delivery of services and private business uses.
RELATIONSHIP TO OTHER THEMES	This data theme is closely related to the Cadastral and Transportation data themes. Many transportation layers include address ranges, which are not accurate enough for some uses.
STATEWIDE DATA SOURCE	Census TIGER/Line street center lines with address ranges are the most comprehensive public source of street addressing data for the entire State. Higher quality center line and point address data are available from some commercial and local resources.

STREET ADDRESSING

SOURCE DESCRIPTION

Street addresses are the location identifiers most widely used by State and local government and the public. Street addresses are critical information for administrative, emergency response, research, marketing, mapping, GIS, routing and navigation, and many other purposes.

The street addressing theme can include address ranges on street center lines, point data for representation of parcel centroids, building locations within parcels, building points of entry, or points of entry onto properties.

STATUS

Existing. TIGER/Line data provides a complete network of street center lines with address ranges. The most current data (as of September 2006) can be downloaded at:
http://www.census.gov/geo/www/tiger/tiger2005se/tgr2005se.html

ANALYSIS

The 1:100,000 scale of TIGER/Line data makes the accuracy of geocoding based on its street center lines insufficient for meeting business needs. Improved accuracy is needed, especially for emergency services.

We need a liaison between local and State government to collect more accurate data. Many public agencies use third party data and they are obligated to remove accuracy to make it public domain. There is a balance between privacy and public access. Commercial data may prove to be better than would be available by public agencies.

The November 2005 California Geospatial Framework Survey found a high demand for a publicly-accessible batch geocoding service.

STANDARDS

Information on the Street Address Data Standard, currently in draft form by the National Emergency Number Association (NENA) and the Urban and Regional Information Systems Association (URISA), can be found at:
http://www.fgdc.gov/standards/projects/FGDC-standards-projects/street-address/index_html

POTENTIAL DATA HOSTS

Caltrans, California Department of Health and Human Services (HHS)

UTILITIES
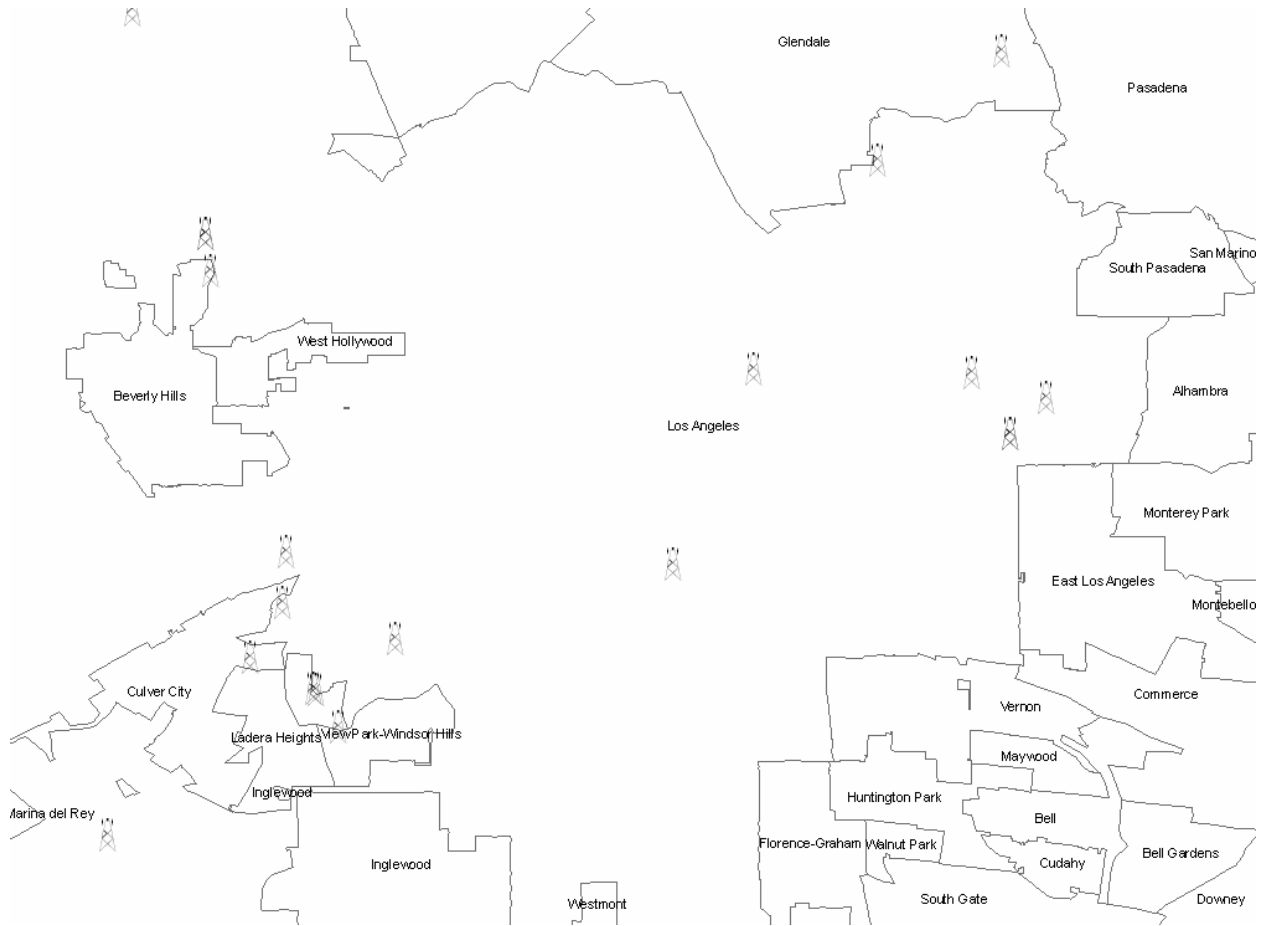
Communication facilities in Los Angeles County

NSDI Description	This data theme was not defined by the NSDI.
Theme Uses	Dig alerts, new construction, water, telecommunications, electric, telephone, oil, gas, waste water, coordination of activities to avoid digging up new streets, emergency management, homeland security, critical infrastructure protection, delivery of service, and management of sewage and storm drains.
Relationship to Other Themes	This data theme and the Buildings and Facilities theme are the main components of critical infrastructure.
Statewide Data Source	FEMA HAZUS CDs include locations of some communication, electric, natural gas, potable water, and waste water facilities. The US Department of Transportation has the National Pipeline Mapping System which is not public domain information. The Federal Communications

UTILITIES

Commission (FCC) has downloadable data on cell phone towers, which is incomplete.

SOURCE DESCRIPTION

"This proposed theme would serve to improve access to critical infrastructure and facilities for use in statewide emergency response and homeland security efforts. This will be a GIS-compatible inventory of" utilities throughout the State, including natural gas, oil, electric, water, waste water, and telephone. (*Source: Texas Base Map Plan*)

STATUS

Incomplete. Although several sources exist for statewide Utilities data, they do not include important elements, such as transmission lines. Utilities companies are unlikely to share their data. The HAZUS-MH data and software can be ordered for free from: http://www.fema.gov/plan/prevent/hazus/

ANALYSIS

There are significant data holes resulting in spotty coverage from all the potential data sources noted above. This can be attributed to lack of a standards and the specific business needs of each entity who do develop utility data.

Where data do exist, the data are generally shared by the data stewards with government agencies on an as-needed basis by formal request.

There are examples of efforts to consolidate utility information. For example, Caltrans requires an encroachment process for utilities placed in Caltrans rights-of-way, including location data.
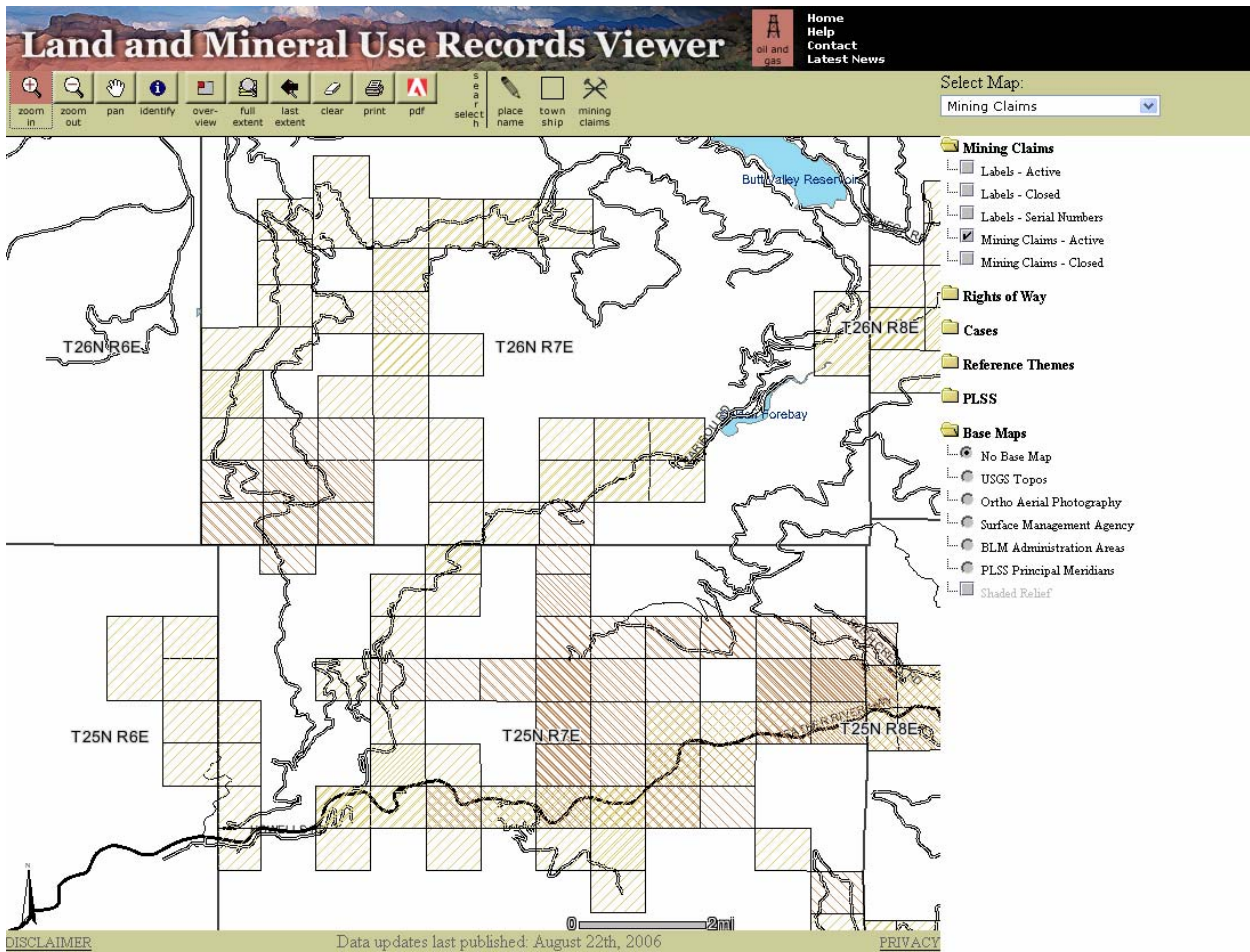
STANDARDS

Information on the FGDC Utilities Data Content Standard, which is currently in draft form, can be found at: http://www.fgdc.gov/standards/projects/FGDC-standards-projects/utilities/index_html

POTENTIAL DATA HOSTS

FEMA, California Department of Energy, and Office of Emergency Services.

PUBLIC LAND CONVEYANCE RECORDS

Screenshot of the BLM's GeoCommunicator Land and Mineral Use Records Viewer

NSDI Description

Public land conveyance data are the records that describe all past, current, and future, right, title, and interest in real property. This is a system of storage, retrieval and dissemination of documents describing the right, title, and interest of a parcel.

Theme Uses

Historical parcel information, easements, accuracy of past development patterns, and predict future development. Transfer of water rights and removing all rights for acquisition of public rights-of-way. Growth modeling, easements, monitoring that regional plans are being implemented.

Relationship to Other Themes

Related to cadastral, boundaries, and vegetation. Related to transportation, cadastral, and hydrography. Cadastral, Federal Land Ownership Status, Ortho Imagery, Transportation

PUBLIC LAND CONVEYANCE RECORDS

STATEWIDE DATA SOURCE

The BLM maintains the GeoCommunicator, which contains historical information on Federal land stewardship, and land and mineral use records. This data set is largely populated for California federal lands and is continually being improved.

SOURCE DESCRIPTION

GeoCommunicator is the publication site for the BLM's National Integrated Land System (NILS) transaction applications (Survey Management, Measurement Management, and Parcel Management). GeoCommunicator provides searching, accessing and dynamic mapping of data for federal land stewardship, land and mineral use records from BLM's LR2000, and land survey information. (http://www.geocommunicator.gov/GeoComm/index.shtm)

STATUS

The GeoComunicator resource can be found online at: http://www.geocommunicator.gov/

ANALYSIS

The only public domain statewide Public Land Conveyance Records data source discovered in the workshops is the afore-mentioned BLM GeoCommunicator. This has a focus on federal lands which therefore has limited use by State, Federal, and local government or by private industry.

The workshops also identified that some counties and cities across California do track land conveyance at a regional or local level.

Commercial sources that consolidate tax rolls have some level of historical transactions at the parcel level.

STANDARDS

BLM's standards can be found online at: http://www.geocommunicator.gov/GeoComm/resource/help_pdf/gcdb_cover_format.pdf

POTENTIAL DATA HOSTS

Bureau of Land Management (BLM)

Buildings and Facilities
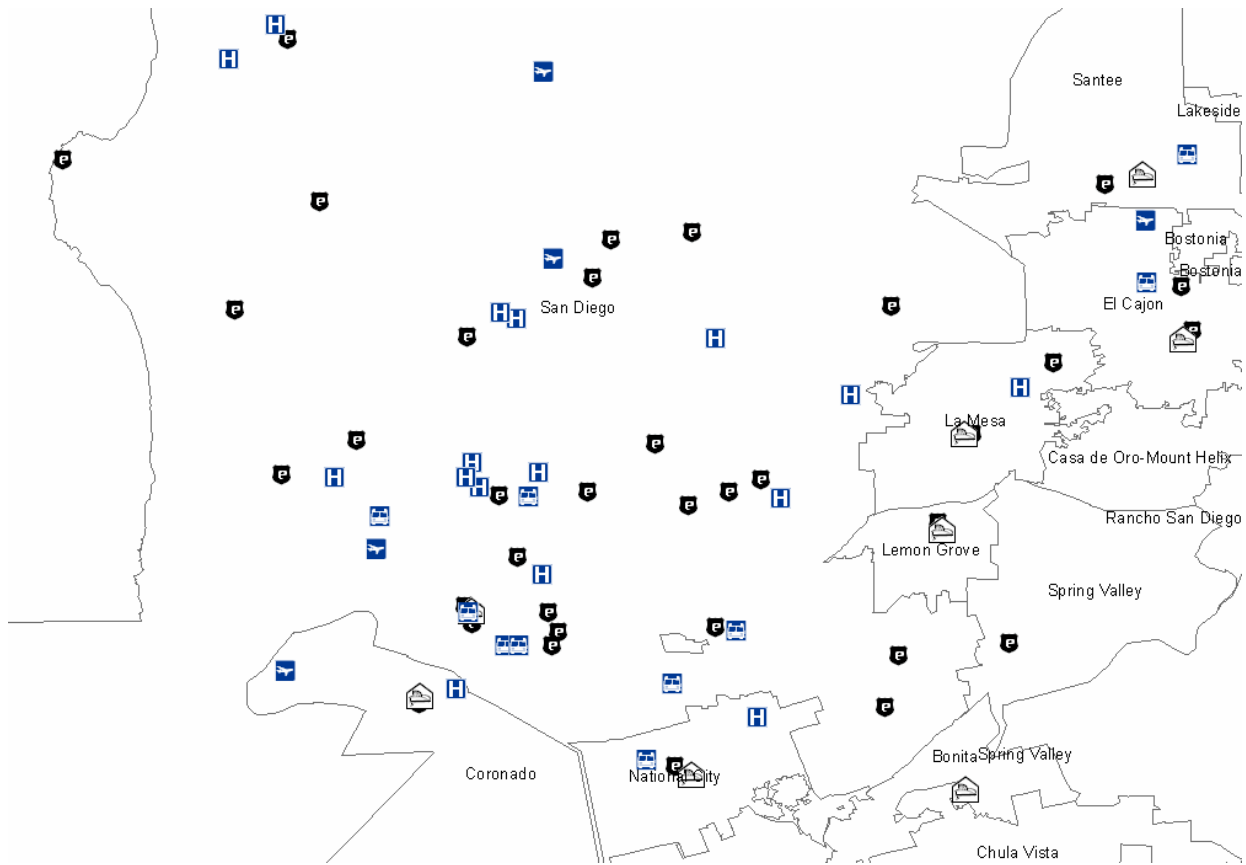
Various facilities in San Diego

**NSDI
Description**

The facility theme includes federal sites or entities with a geospatial location deliberately established for designated activities; a facility database might describe a factory, military base, college, hospital, power plant, fishery, national park, office building, space command center, or prison. Facility data is submitted from several agencies, since there is no one party responsible for all the facilities in the Nation, and facilities encompass a broad spectrum of activities. The FGDC promotes standardizing on database structures and schemas to the extent practical.

Theme Uses

20-year plans, estimating potential damage, emergency response planning, multi-hazard planning, damage assessment, identifying low density areas for urban infill, collateral information for land use interpretation, input for transportation modeling, facility maintenance, and 3D modeling.

BUILDINGS AND FACILITIES

RELATIONSHIP TO OTHER THEMES	This data theme and the Utilities theme are the key components of critical infrastructure. These themes can be used in conjunction with Street Addressing, Cadastral, Transportation, and Ortho Imagery to improve emergency management and hazard mitigation.
STATEWIDE DATA SOURCE	These data are generally collected at the county and local level. However, federal sources include FEMA's HAZUS-MH and Census TIGER/Line files. CaSIL has data for airport locations from 1997 and licensed hospital facilities from 2006.
SOURCE DESCRIPTION	"This proposed theme would serve to improve access to critical infrastructure and facilities for use in statewide emergency response and homeland security efforts. This will be a GIS-compatible inventory of" buildings and facilities, except for Utilities. (*Source: Texas Base Map Plan*)
STATUS	Incomplete. The HAZUS and TIGER/Line facilities data may be incomplete, inaccurate, or out of date. The HAZUS-MH data and software can be ordered for free from: http://www.fema.gov/plan/prevent/hazus/ The most current TIGER/Line data (as of September 2006) can be downloaded at: http://www.census.gov/geo/www/tiger/tiger2005se/tgr2005se.html
ANALYSIS	Workshop participants noted that Buildings and Facilities are often requested by municipal governments. The 1:100,000 scale, and resulting +/-167 foot accuracy, of TIGER/Line data may be insufficient for local business needs. Some participants preferred building footprints, while TIGER only provides point locations of facilities. The November 2005 California Geospatial Framework Survey identified a need to find a way to fund data collection at the local-level in a standardized form for use in regional emergency planning efforts. Contemporary, high resolution imagery shows the "as built" for buildings and facilities. A point representation of facilities with rich attribution when combined with up to date, high resolution imagery may be a practical answer to this need.
STANDARDS	A set of standards for this data theme has not been identified

BUILDINGS AND FACILITIES

POTENTIAL DATA
HOSTS

FEMA, US Census Bureau, California Department of General Services,
Office of Emergency Services

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FLOOD HAZARDS

DFIRM data for the City of Goleta, Santa Barbara County

NSDI DESCRIPTION

National Flood Insurance Program has prepared flood hazard data for approximately 20,000 communities. The primary information prepared for these communities is for the 1 percent annual chance (100-year) flood, and includes documentation of the boundaries and elevations of that flood.

THEME USES

Risk analysis, land use planning, emergency evacuation, determining erodability of soils and levees, flood insurance, conservation reserve program, construction, dam inundation areas, and mitigation.

RELATIONSHIP TO OTHER THEMES

This data theme is related to the Elevation, Ortho Imagery, Cadastral, and Hydrography themes, which are used to estimate flood hazards.

STATEWIDE DATA

The Federal Emergency Management Agency's (FEMA) Digital Flood

FLOOD HAZARDS

SOURCE

Insurance Rate Maps (DFIRMs) are the main source for flood hazard data. The State has levee risk maps with large regional coverage, maintained by the Department of Water Resources.

The California Geologic Survey (CGS) may be funded to produce data on earthquake hazards to levees. Counties have separate assessments. The US Army Corps of Engineers (USACE) has a levee inventory program which involves a levee database and levee assessment. FEMA has also developed a dataset called Q3, which is an interim product until DFIRMs are developed.

SOURCE DESCRIPTION

A DFIRM includes all digital data required to create the hardcopy Flood Insurance Rate Map (FIRM) (see FIA-21, "Standards for Digital Flood Insurance Rate Maps" October 1993). It includes base map information, graphics, text, shading, and other geographic and graphic data. DFIRM specifications are consistent with those required for mapping at a scale of 1:24,000, or larger.

DFIRMs generally are produced in a countywide format. They include information from the unincorporated areas of a county and all the incorporated communities within that county.

ANALYSIS

DFIRM data are generally produced at a scale appropriate for the location. Areas with greater concentrations of development have larger scale data. The DFIRM flood hazard data is public domain and served up by the FEMA Mapping Information Platform (MIP) when the maps are deemed "effective".

STATUS

In progress. As part of FEMA's Flood Map Modernization Program, DFIRMs are being created for most of California. By 2010, there will be effective DFIRMs covering nearly 90% of California's population. Flood hazard DFIRMS are available from two sources:
https://hazards.fema.gov/femaportal/wps/portal
https://store.msc.fema.gov

STANDARDS

Information on the content standards for DFIRM data can be found in Appendices L and N of the FEMA Guidelines and Specifications for Flood Hazard Mapping Partners at:
http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm

POTENTIAL DATA HOSTS

FEMA Mapping Information Platform (MIP)

Vegetation
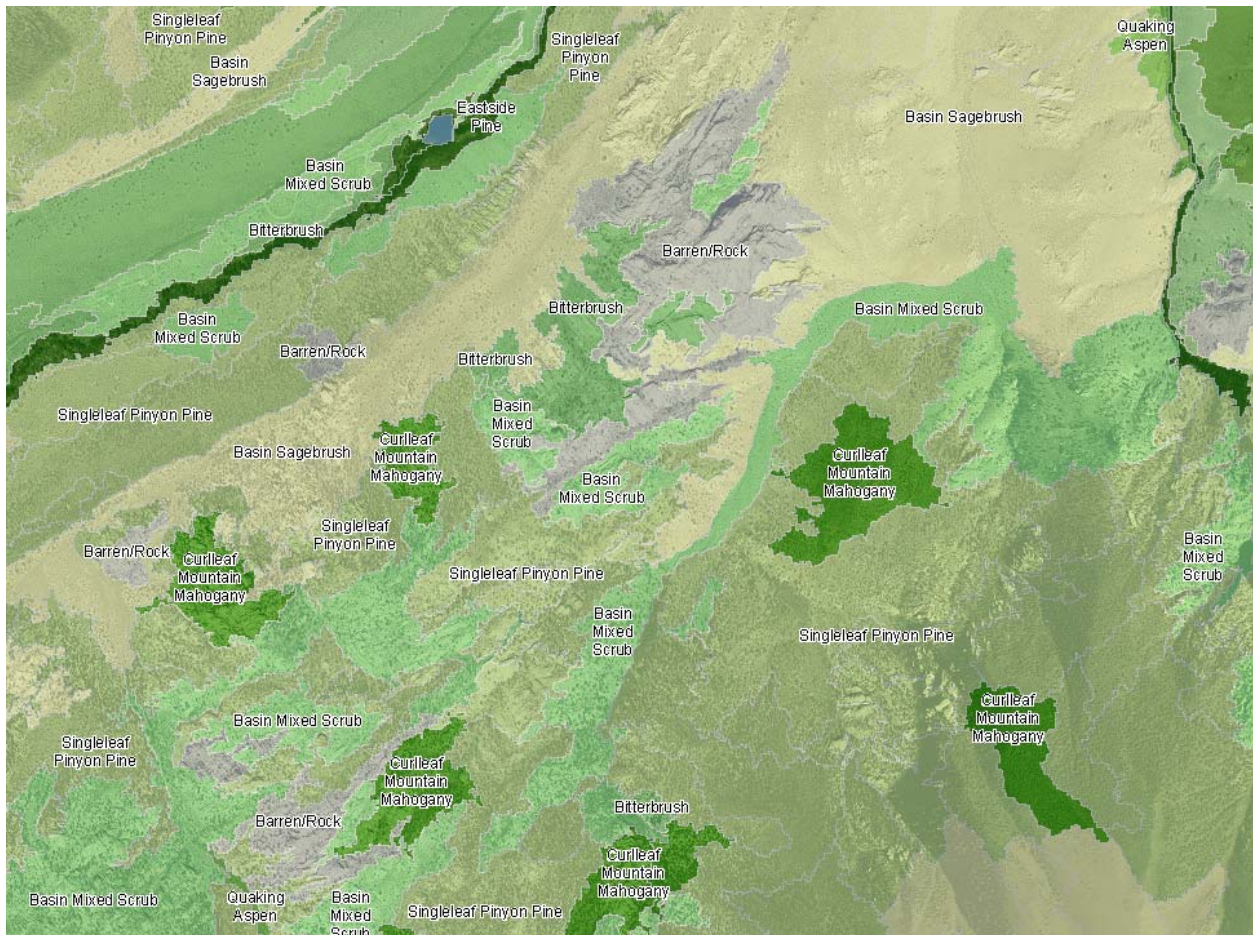
FRAP LCMMP vegetation data showing a portion of Inyo County

NSDI Description	Vegetation data describe a collection of plants or plant communities with distinguishable characteristics that occupy an area of interest. Existing vegetation covers or is visible at or above the land or water surface and does not include abiotic factors that tend to describe potential vegetation.
Theme Uses	Habitat planning, growth management, wildfire hazard mitigation, revenue forecasting for agriculture, environmental analysis, conservation planning, endangered species, impact analysis, land use planning, regulatory permits, environmental permits for construction, pervious surfaces, constraints of housing, manage water usage, water budget, and slope stability.
Relationship to Other Themes	Vegetation data are derived from Ortho Imagery.
Statewide Data	The California Department of Forestry and Fire Protection (CDF) Fire

VEGETATION

SOURCE

and Resource Assessment Program (FRAP) has downloadable vegetation data derived from LANDSAT imagery by the Land Cover Mapping and Monitoring Program. The minimum mapping unit is 2.5 acres.

SOURCE DESCRIPTION

Vegetation data consistent across all ownerships is critical for assessing current conditions, monitoring over time, and determining management options. The USDA Forest Service Region 5 Remote Sensing Lab the California Department of Forestry and Fire Protection's Fire and Resource Assessment Program (FRAP) conduct cooperative vegetation mapping and monitoring in order to address these issues. This project has not only created vegetation and change detection data for much of California's forest and range lands, but has facilitated the establishment of protocols for joint data collection, common mapping standards, and basic interpretations across classification systems. Please visit our website for more details at http://frap.cdf.ca.gov/projects/land_cover/index.html.

STATUS

Existing. FRAP data can be found at: *http://frap.cdf.ca.gov*.

ANALYSIS

FRAP data have a minimum mapping unit of 2.5 acres, which is suitable for multi-region or statewide uses. However, local and regional agencies may need greater accuracy. Many organizations collect these data as needed, but often data are not collected consistently or shared.

There is a State vegetation workgroup which is determining needs. The State is interested in vegetation as part of intelligent planning. The size of California and the and nature of vegetation makes the vector data model inadequate for capturing its distribution statewide. Hyperspectral imagery might allow for more automated vegetation mapping and may provide more useful representation of this data theme, but is very expensive to capture.

Vegetation or land cover offers a much needed compliment to observation-based data sets like the Natural Diversity Data Base. A good vegetation layer for California (e.g., high resolution, realistic classification) would enable the modeling of habitat values that are often missed with observational databases. This way we can fully consider the potential of a site for land use planning and environmental review rather than relying only on wildlife observations which can be very hit or miss.

STANDARDS

Information on the FGDC-endorsed National Vegetation Classification
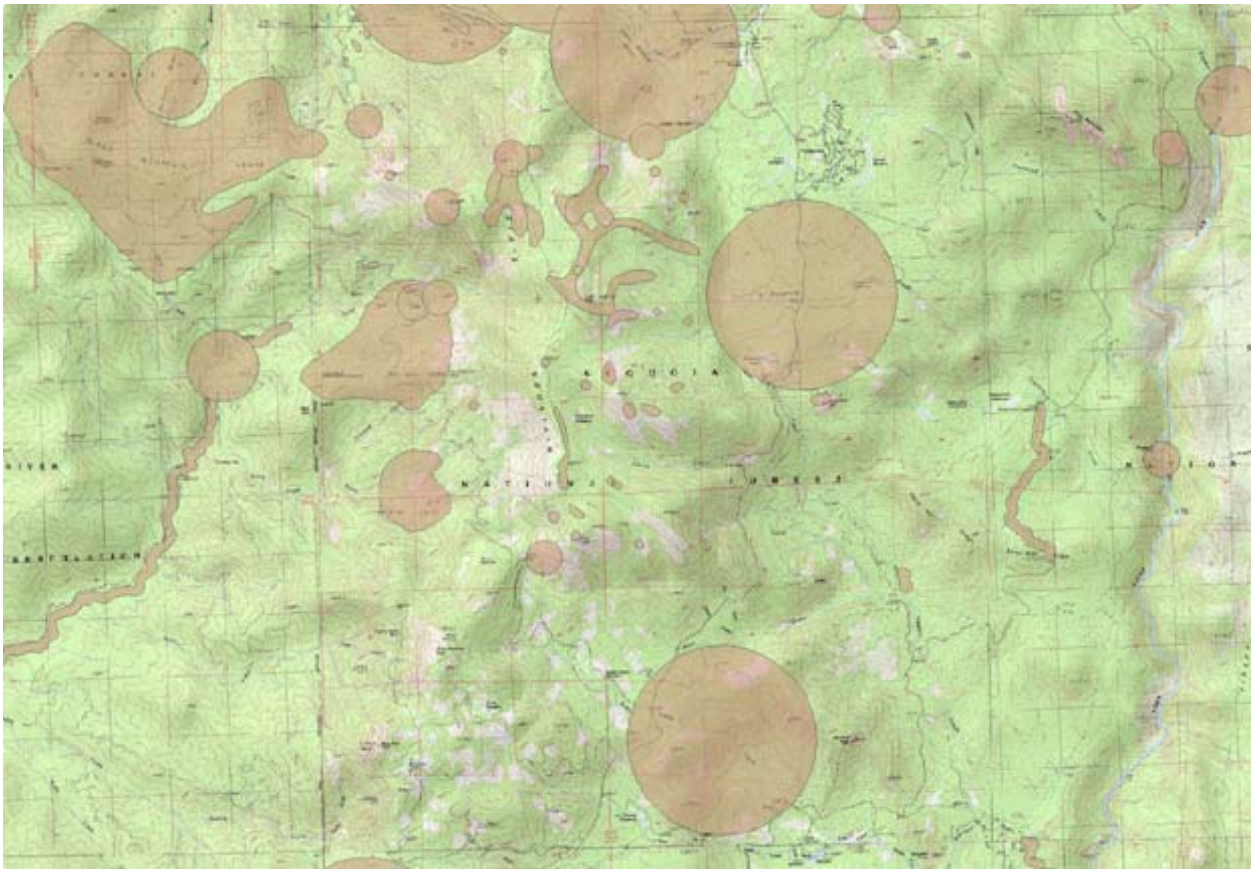
VEGETATION

Standard can be found at:
http://www.fgdc.gov/standards/projects/FGDC-standards-projects/vegetation/index_html

POTENTIAL DATA HOSTS

California Department of Forestry and Fire Protection (CDF)

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BIOLOGICAL RESOURCES

Screenshot of CNDDB Quick Viewer

NSDI DESCRIPTION

This data set includes data pertaining to or descriptive of (nonhuman) biological resources and their distributions and habitats, including data at the suborganismal (genetics, physiology, anatomy, etc.), organismal (subspecies, species, systematics), and ecological (populations, communities, ecosystems, biomes, etc.) levels.

THEME USES

Environmental permits, EIRs for regional transportation and comprehensive plans, vegetation management, environmental constraints, and timber harvest review.

RELATIONSHIP TO OTHER THEMES

Vegetation, Ortho Imagery, Soils, and Elevation. Land Use, Vegetation, and Soils.

STATEWIDE DATA SOURCE

The California Natural Diversity Database (CNDDB) is updated twice per year and includes GIS data. The Biogeographic Information and Observation System (BIOS) is an additional source of biogeographic data.

BIOLOGICAL RESOURCES

SOURCE DESCRIPTION

The California Natural Diversity Database (CNDDB) is a program that inventories the status and locations of rare plants and animals in California. CNDDB staff work with partners to maintain current lists of rare species as well as maintain an ever-growing database of GIS-mapped locations for these species.

BIOS is a system designed to enable the management, visualization, and analysis of biogeographic data collected by the Department of Fish and Game and its Partner Organizations. In addition, BIOS facilitates the sharing of those data within the BIOS community. BIOS integrates GIS, relational database management, and ESRI's ArcIMS technology to create a statewide, integrated information management tool that can be used on any computer with access to the Internet.

STATUS

Incomplete. CNDDB data can be found at:
http://www.dfg.ca.gov/whdab/html/cnddb.html

Information about BIOS data can be found at:
http://bios.dfg.ca.gov/

ANALYSIS

Many government agencies collect this type of data for specific projects. However, they are often not produced to a common standard or shared. CNNDB data are at a scale appropriate for local and regional use, 1:24,000; however, the data do not contain all relevant species.

The November 2005 California Geospatial Framework Survey found a need to generate interpreted data sets for use in local planning and development permitting (see analysis on vegetation above).

STANDARDS

Information on the proposed FGDC Biological Nomenclature and Taxonomy Data Standard can be found at:
http://www.fgdc.gov/standards/projects/FGDC-standards-projects/biological/index_html

BIOS standards can be found at:
http://bios.dfg.ca.gov/biosstandards/default.asp

POTENTIAL DATA HOSTS

California Department of Fish and Game

CULTURAL AND DEMOGRAPHIC STATISTICS
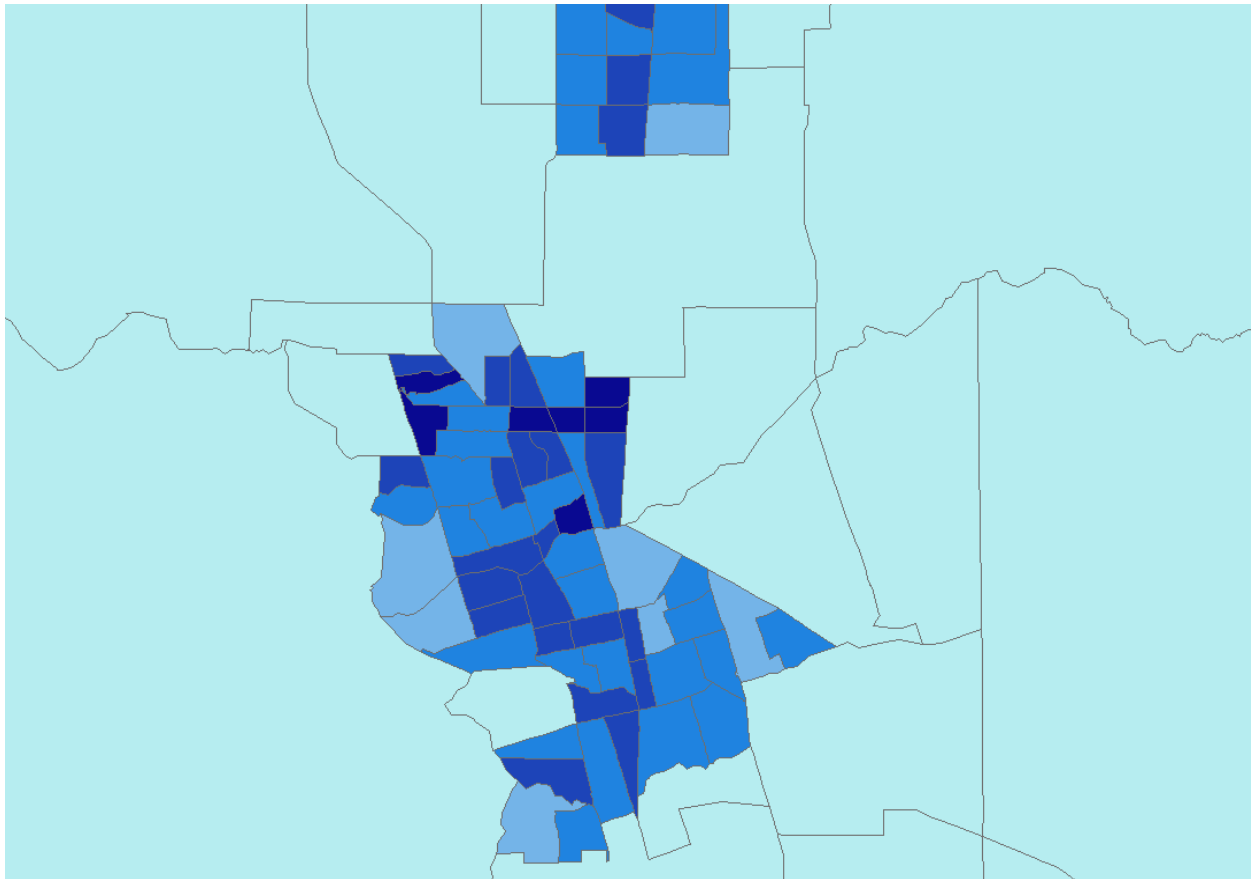
Census Tract-level population density in San Joaquin County

NSDI DESCRIPTION

These geospatially referenced data describe the characteristics of people, the nature of the structures in which they live and work, the economic and other activities they pursue, the facilities they use to support their health, recreational and other needs, the environmental consequences of their presence, and the boundaries, names and numeric codes of geographic entities used to report the information collected.

THEME USES

Forecasting, transportation modeling, distribution of population, public health, allocating resources, rehabilitation and restoration of communities, and redefining special district boundaries.

RELATIONSHIP TO OTHER THEMES

The units of analysis for Cultural and Demographic Statistics are generally derived from Governmental Units and Transportation.

STATEWIDE DATA SOURCE

The US Census, DHS, Department of Real Estate, Employment Development Department (EDD), and private vendors. The Census

CULTURAL AND DEMOGRAPHIC STATISTICS

maintains the American FactFinder website with data from the Decennial Census and the American Community Survey.

SOURCE DESCRIPTION

The Census Bureau conducts many censuses and surveys. The most well-known is the official population census of the United States, called the decennial census. It is conducted every ten years, most recently in April 2000. During each decennial census, the Census Bureau collects data from every household in the U.S. and its territories.

Besides the decennial census, the Census Bureau conducts nearly one hundred other surveys and censuses every year. By law, no one is permitted to reveal information from these censuses and surveys that could identify any person, household, or business. Individual records from each decennial census are made public 72 years after the census has been taken. (http://factfinder.census.gov/jsp/saff/SAFFInfo.jsp?_submenuId=aboutdata_0&_pageId=censuses_surveys)

STATUS

Existing. Non-spatial Census demographic data can be downloaded from American FactFinder:
http://factfinder.census.gov

ANALYSIS

Precision or aggregation of these data is a balance between public right-to-know versus privacy. These data are a source for second tier analysis. Census boundaries often do not match up with other special boundaries.

The November 2005 California Geospatial Framework Survey found that detailed, comprehensive, up-to-date and diverse demographic data clearly important to many. While the data is generally available the sources may be poorly known.
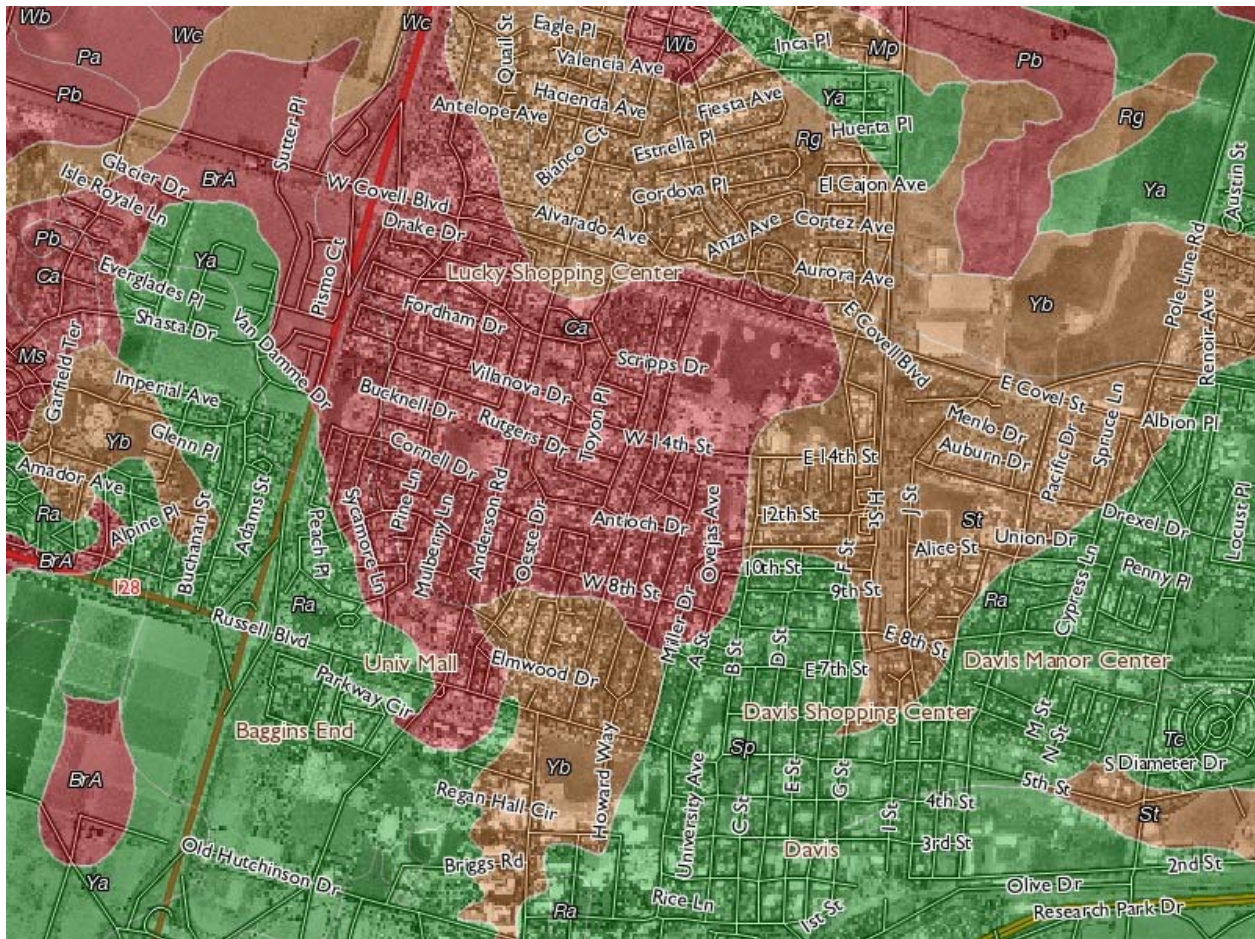
STANDARDS

The standards for Census Boundary files can be found at:
http://www.census.gov/geo/www/cob/tech_info.html

POTENTIAL DATA HOSTS

US Census Bureau

Soils

Soil Survey Geographic (SSURGO) data for Davis in a graphic from the California Soil Resource Lab

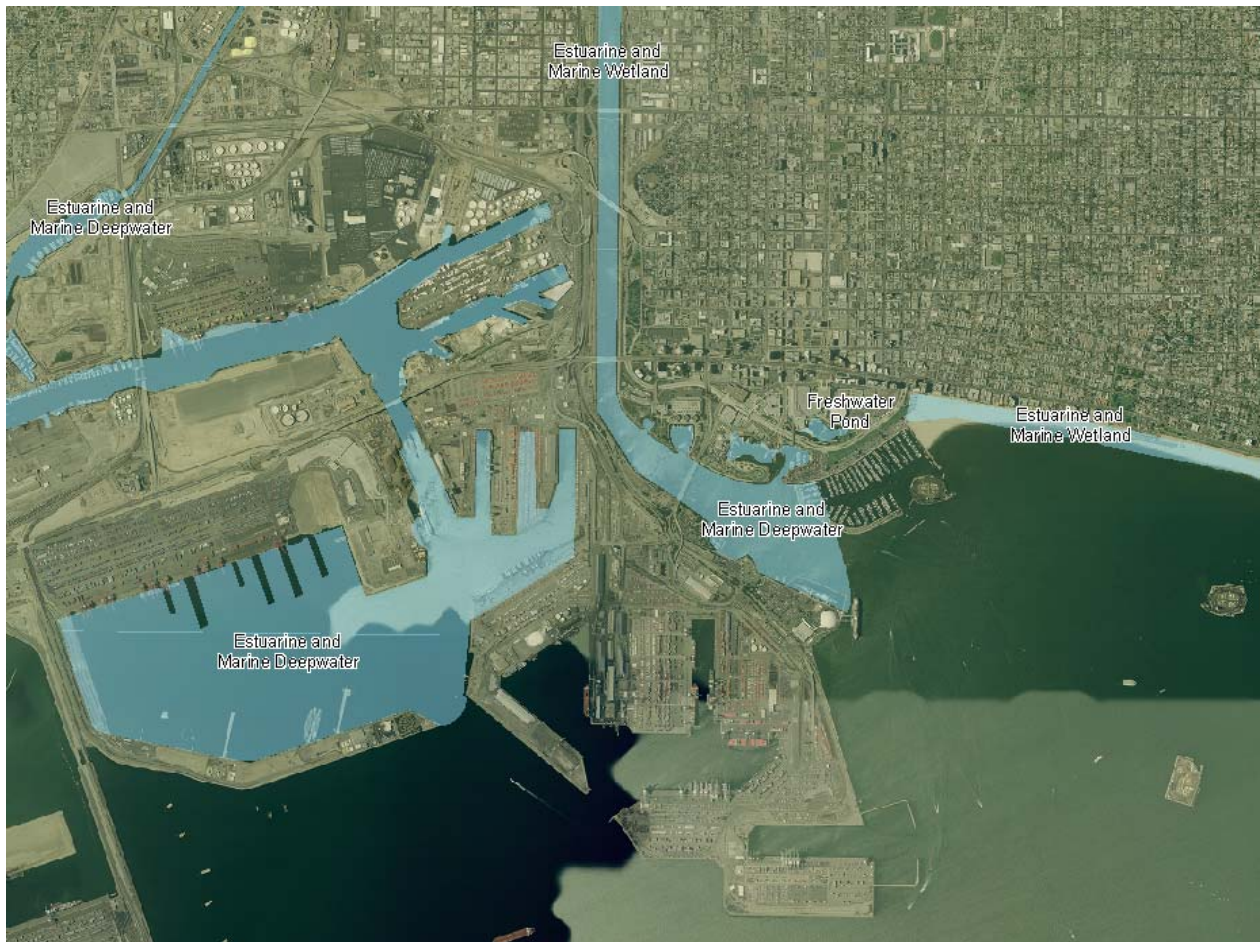| NSDI Description	Soil data consist of georeferenced digital map data and associated tabular attribute data. The map data describe the spatial distribution of the various soils that cover the Earth's surface. The attribute data describe the proportionate extent of the various soils as well as the physical and chemical characteristics of those soils. The physical and chemical properties are based on observed and measured values, as well as model-generated values. Also included are model-generated assessments of the suitability or limitations of the soils to various land uses.
Theme Uses	Land development, environmental remediation, watershed protection, groundwater management, pest control, spray permitting, development approval, and terrain modeling.
Relationship to Other Themes	Soils data can be derived from Ortho Imagery data.

Soils

Statewide Data Source	State Soil Geographic (STATSGO) Database and Soil Survey Geographic (SSURGO) Database are low-resolution and high-resolution soil data sources, respectively, produced by the Natural Resources Conservation Service (NRCS).
Source Description	This data set (SSURGO) consists of georeferenced digital map data and computerized attribute data. The map data are in a soil survey area extent format and include a detailed, field verified inventory of soils and miscellaneous areas that normally occur in a repeatable pattern on the landscape and that can be cartographically shown at the scale mapped. A special soil features layer (point and line features) is optional. This layer displays the location of features too small to delineate at the mapping scale, but they are large enough and contrasting enough to significantly influence use and management. The soil map units are linked to attributes in the National Soil Information System relational database, which gives the proportionate extent of the component soils and their properties. (SSURGO Metadata)
Status	Incomplete. The State coverage for SSURGO data is approximately 70%. STATSGO and SSURGO data can be downloaded from the NRCS Soil Data Mart: http://soildatamart.nrcs.usda.gov/
Analysis	SSURGO data are produced at 1:24,000 scale, which makes it appropriate for local or regional uses. However, the accuracy, +/-40 feet, may be inappropriate for some spatial analysis and business purposes. The STATSGO database is being updated and renamed to the Digital General Soil Map of the United States. The update is scheduled to be completed by the end of summer 2006.
Standards	Information on the FGDC-endorsed Soil Geographic Data Standard can be found at: http://www.fgdc.gov/standards/projects/FGDC-standards-projects/soils/index_html
Potential Data Hosts	USDA

WETLANDS

National Wetlands Inventory data showing the Port of Long Beach

NSDI Description

The wetlands data layer provides the classification, location, and extent of wetlands and deepwater habitats. There is no attempt to define the proprietary limits or jurisdictional wetland boundaries of any Federal, State, or local agencies.

Theme Uses

Regulatory permitting, flood control, easements, site suitability, development, change detection, similar to vegetation uses noted above. Water usage, mitigation for developments, and site assessment.

Relationship to Other Themes

This data set is derived from Ortho Imagery.

Statewide Data Source

The U.S. Fish and Wildlife Service's National Wetlands Inventory (NWI) covers parts of California at a large scale. The San Francisco Estuary Institute has wetlands data at wetlandstracker.org. The

WETLANDS

California Resources Agency and Fish and Game also collect wetlands data.

SOURCE DESCRIPTION

NWI digital data files are records of wetlands location and classification as developed by the U.S. Fish & Wildlife Service. This dataset is one of a series available in 7.5 minute by 7.5 minute blocks containing ground planimetric coordinates of wetlands point, line, and polygon features and wetlands attributes.
(http://www.fws.gov/nwi/downloads/metadata/nwi_meta.txt)

STATUS

In progress. NWI is nearly complete and data can be downloaded from:
http://www.fws.gov/nwi/

ANALYSIS

NWI data have a target mapping unit between 1 and 5 acres, depending on the quality of the imagery from which it is digitized. This level of accuracy may be insufficient for local applications. Some local and regional agencies commission data collection from private firms. Data standards are inconsistent so local or regional data cannot be easily compiled.
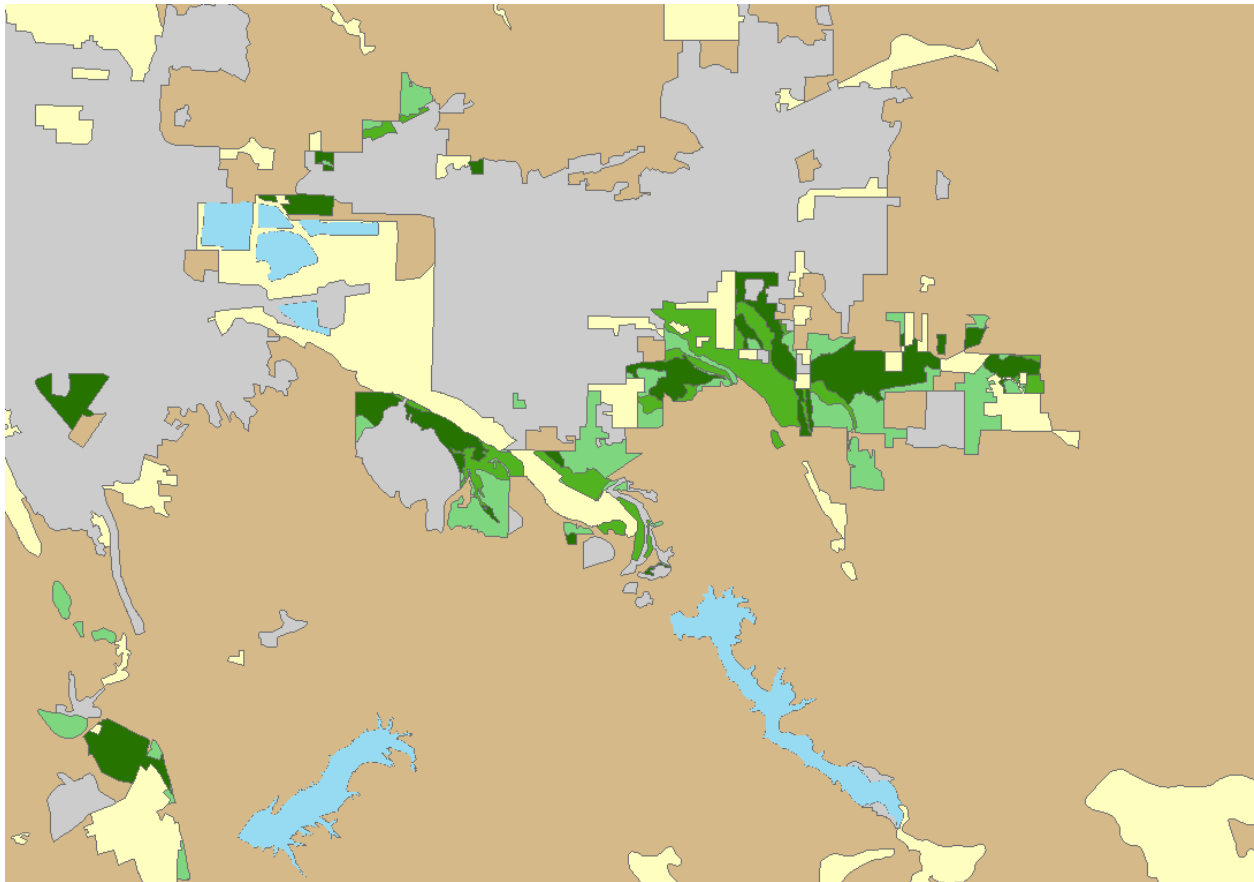
STANDARDS

NWI uses *Classification of Wetlands and Deepwater Habitats of the United States* as its classification standard:
http://www.fws.gov/nwi/Pubs_Reports/Class_Manual/class_titlepg.htm

POTENTIAL DATA HOSTS

U.S. Fish and Wildlife Service

EARTH COVER

FMMP data showing earth cover in eastern Alameda County

NSDI DESCRIPTION

The Earth Cover theme uses a hierarchical classification system based on observable form and structure, as opposed to function or use. This system transitions from generalized to more specific and detailed class divisions, and provides a framework within which multiple land cover and land use classification systems can be cross-referenced. This system is applicable everywhere on the surface of the Earth. This theme differs from the Vegetation and Wetlands themes, which provide additional detail.

THEME USES

Habitat suitability analysis and areas of endoism.

RELATIONSHIP TO OTHER THEMES

Earth Cover data are generally derived from LANDSAT imagery.

STATEWIDE DATA SOURCE

The California Department of Conservation has a Farm Mapping and Monitoring Program (FMMP) that includes earth cover for a large portion of the State among its data layers. The FMMP tries to track how agricultural land is being taken up by other uses.

EARTH COVER

SOURCE DESCRIPTION

The Farmland Mapping and Monitoring Program (FMMP) produces maps and statistical data used for analyzing impacts on California's agricultural resources. Agricultural land is rated according to soil quality and irrigation status; the best quality land is called Prime Farmland. The maps are updated every two years with the use of aerial photographs, a computer mapping system, public review, and field reconnaissance. (*http://www.consrv.ca.gov/DLRP/fmmp/index.htm*)

STATUS

FMMP data can be found at:
http://www.consrv.ca.gov/DLRP/fmmp/index.htm

ANALYSIS

FMMP data are available with a 10-acre minimum mapping unit, making it suitable for statewide applications, but potentially inadequate for regional and local needs.

STANDARDS

Information about the FGDC proposal for an Earth Cover Classification Standard can be found at:
http://www.fgdc.gov/standards/projects/FGDC-standards-projects/earth-cover/index_html

POTENTIAL DATA HOSTS

California Department of Conservation

[9] Next Steps

The implementation strategy is to foster education, creation, and dissemination of core and California-centric data framework layers through partnerships, teamwork, and sustainable funding.

Short-term goals to be implemented within one year include:

California GIS Council (CGC) adopt the Geospatial Framework Draft Data Plan as statewide strategic direction on framework data.

CGC include framework data strategy in the California Strategic Planning effort.

CGC establish a working group to continue the framework data development strategy effort, including identification of primary stewards and multi-year funding approaches.

CGIA communicate with the regional collaboratives about the Geospatial Framework Data Plan to obtain support for development of framework data, identify stewards/data hosts, and develop synergistic GIS application projects.

CGIA identify regional collaboratives that will work to support building framework data layers.

CGIA provide a presentation with Baker at 2007 CalGIS Conference in Oakland

CGC send Draft Data Plan to National States Geographic Information Council (NSGIC) as sample of framework data planning and make presentation at next NSGIC conference.

Long-term goals to be implemented within two to four years include:

USGS build partnerships to fund statewide and regional business plans and implementation efforts in support of framework data acquisition.

Regional collaboratives seek grant and operational funding to build or host framework data layers.

CGC request Federal agencies to provide sustainable funding in support of core seven framework data layers that support their organization mission and strategic directions.

CGIA establish a working group to facilitate partnerships between Federal agencies with data that could support regional GIS applications.

CGIA and CGC advocate state and regional funding approaches to build California-centric framework data layers.

CGC engage NSGIC and Federal agencies on developing funding formulas that support "Imagery for the Nation" funding implementation within California that will help develop local and regional geospatial business applications.

Appendix A – NSDI Framework Data Themes

Core Framework Themes

Cadastral – ISO Planning, Cadastre – DOI, Bureau of Land Management (BLM) **–** Cadastral data describe the geographic extent of past, current, and future right, title, and interest in real property, and the framework to support the description of that geographic extent. The geographic extent includes survey and description frameworks such as the Public Land Survey System, as well as parcel-by-parcel surveys and descriptions.

Elevation Terrestrial – ISO Elevation – DOI, USGS – This data contains georeferenced digital representations of terrestrial surfaces, natural or manmade, which describe vertical position above or below a datum surface. Data may be encapsulated in an evenly spaced grid (raster form) or randomly spaced (triangular irregular network, hypsography, single points). The elevation points can have varying horizontal and vertical resolution and accuracy.

Geodetic Control – ISO Location – DOC, NOAA – Geodetic control provides a common reference system for establishing coordinates for all geographic data. All NSDI framework data and users' applications data require geodetic control to accurately register spatial data. The National Spatial Reference System is the fundamental geodetic control for the United States.

Governmental Units – ISO Boundaries – DOC, USCB – These data describe, by a consistent set of rules and semantic definitions, the official boundary of federal, state, local, and tribal governments as reported/certified to the U.S. Census Bureau by responsible officials of each government for purposes of reporting the Nation's official statistics.

Hydrography – ISO Inland Waters – DOI, USGS – This data theme includes surface water features such as lakes, ponds, streams and rivers, canals, oceans, and coastlines. Each hydrography feature is assigned a permanent feature identification code (Environmental Protection Agency Reach Code) and may also be identified by a feature name. Spatial positions of features are encoded as centerlines and polygons. Also encoded is network connectivity and direction of flow.

Ortho Imagery – ISO Imagery, Base Maps, Earth Cover – DOI, USGS – This dataset contains georeferenced images of the Earth's surface, collected by a sensor in which image object displacement has been removed for sensor distortions and orientation, and terrain relief. For very large surface areas, an Earth curvature correction may be applied. Digital orthoimages encode the optical electromagnetic spectrum as discrete values modeled in an array of georeferenced pixels. Digital orthoimages have the geometric characteristics of a map, and image qualities of a photograph.

Transportation – ISO Transportation – Department of Transportation, Bureau of Transportation Statistics – Transportation data are used to model the geographic locations, interconnectedness, and characteristics of the transportation system within the United States. The transportation system includes both physical and non-physical components representing all modes of travel that allow the movement of goods and people between locations.

Supplemental Data Themes

Baseline (Maritime) – ISO Oceans – Co-leaders – DOC, NOAA and DOI, Minerals Management Service (MMS) **–** Baseline represents the line from which maritime zones and limits are measured. Examples of these limits include the territorial sea, contiguous zone, and exclusive economic zone. The spatial extent of the baseline is defined as "ordinary low water," interpreted as mean lower low water, as depicted on National Ocean Service nautical charts and/or appropriate supplemental information.

Biological Resources – ISO Biota – DOI, U.S. Geological Survey (USGS) – This dataset includes data pertaining to or descriptive of (nonhuman) biological resources and their distributions and habitats, including data at the suborganismal (genetics, physiology, anatomy, etc.), organismal (subspecies, species, systematics), and ecological (populations, communities, ecosystems, biomes, etc.) levels.

Buildings and Facilities – ISO Structure – General Services Administration – The facility theme includes federal sites or entities with a geospatial location deliberately established for designated activities; a facility database might describe a factory, military base, college, hospital, power plant, fishery, national park, office building, space command center, or prison. Facility data is submitted from several agencies, since there is no one party responsible for all the facilities in the Nation, and facilities encompass a broad spectrum of activities. The FGDC promotes standardizing on database structures and schemas to the extent practical.

Cadastral (Offshore) – ISO Planning, Cadastre – DOI, MMS – Offshore Cadastre is the land management system used on the Outer Continental Shelf. It extends from the baseline to the extent of United States jurisdiction. Existing coverage is currently limited to the conterminous United States and portions of Alaska. Maximum extent of United States jurisdiction is not yet mathematically calculated.

Climate – ISO Climatology, Meteorology, Atmosphere – Co-leaders, Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) and DOC, NOAA – Climate data describe the spatial and temporal characteristics of the Earth's atmosphere/hydrosphere/land surface system. These data represent both model-generated and observed (either in situ or remotely sensed) environmental information, which can be summarized to describe surface, near surface and atmospheric conditions over a range of scales.

Cultural and Demographic Statistics – ISO Society – DOC, U.S. Census Bureau (USCB) – These geospatially referenced data describe the characteristics of people, the nature of the structures in which they live and work, the economic and other activities they pursue, the facilities they use to support their health, recreational and other needs, the environmental consequences of their presence, and the boundaries, names and numeric codes of geographic entities used to report the information collected.

Cultural Resources – ISO Society – DOI, National Park Service – The cultural resources theme includes historic places such as districts, sites, buildings, and structures of significance in history, architecture, engineering, or culture. Cultural resources also encompass prehistoric features as well as historic landscapes.

Earth Cover – ISO Imagery, Base Maps, Earth Cover – DOI, USGS – The Earth Cover theme uses a hierarchical classification system based on observable form and structure, as opposed to function or use. This system transitions from generalized to more specific and detailed class divisions, and provides a framework within which multiple land cover and land use classification systems can be cross-referenced. This system is applicable everywhere on the surface of the Earth. This theme differs from the Vegetation and Wetlands themes, which provide additional detail.

Elevation Bathymetric – ISO Elevation – Co-leaders – DOC, NOAA (U.S. waters outside channels) and US Army Corps of Engineers (USACE) (inland waterways) – The bathymetric data for Inland and Intercoastal waterways is highly accurate bathymetric sounding information collected to ensure that federal navigation channels are maintained to their authorized depths. Bathymetric survey activities support the Nation's critical nautical charting program. This data is also used to create Electronic Navigational Charts. The bathymetric sounding data supports the elevation layer of the geospatial data framework.

Federal Land Ownership Status – ISO Planning, Cadastre – DOI, BLM – Federal land ownership status includes the establishment and maintenance of a system for the storage and dissemination of information describing all title, estate or interest of the federal government in a parcel of real and mineral property. The ownership status system is the portrayal of title for all such federal estates or interests in land.

Flood Hazards – ISO Environment – Federal Emergency Management Agency – National Flood Insurance Program has prepared flood hazard data for approximately 18,000 communities. The primary information prepared for these communities is for the 1 percent annual chance (100-year) flood, and includes documentation of the boundaries and elevations of that flood.

Geographic Names – ISO Location – DOI, USGS – This dataset contains data or information on geographic place names deemed official for federal use by the U.S. Board on Geographic Names as pursuant to Public Law 80-242. Geographic Names information includes both the official place name (current, historical, and aliases) and locative direct (i.e., geographic coordinates) and indirect (i.e., State and County where place is

located) geospatial identifiers and categorized as populated places, schools, reservoirs, parks, streams, valleys, and ridges.

Geologic – ISO Geoscientific Information – DOI, USGS – The geologic spatial data theme includes all geologic mapping information and related geoscience spatial data (including associated geophysical, geochemical, geochronologic, and paleontologic data) that can contribute to the National Geologic Map Database as pursuant to Public Law 106-148.

Housing – ISO Society – Department of Housing and Urban Development (HUD) – 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. Data standards have not yet been formalized.

International Boundaries – ISO Boundaries – Department of State – International boundary data include both textual information to describe, and GIS digital cartographic data to depict, both land and maritime international boundaries, other lines of separation, limits, zones, enclaves/exclaves and special areas between States and dependencies.

Law Enforcement Statistics – ISO Society – Department of Justice – Law enforcement statistics describe the occurrence of events (including incidences, offenses and arrests) geospatially located, related to ordinance and statutory violations and the individuals involved in those occurrences. Also included are data related to deployment of law enforcement resources and performance measures.

Marine Boundaries – ISO Boundaries – Co-leaders – DOC, NOAA and DOI, MMS – Marine boundaries depict offshore waters and seabeds over which the United States has sovereignty and jurisdiction.

Offshore Minerals – ISO Economy – DOI, MMS – Offshore minerals include minerals occurring in submerged lands. Examples of marine minerals include oil, gas, sulfur, gold, sand and gravel, and manganese.

Outer Continental Shelf Submerged Lands – ISO Oceans – DOI, MMS – This data includes lands covered by water at any stage of the tide, as distinguished from tidelands, which are attached to the mainland or an island and cover and uncover with the tide. Tidelands presuppose a high-water line as the upper boundary; whereas submerged lands do not.

Public Health – ISO Health – Department of Health and Human Services – Public health themes relate to the protection, improvement and promotion of the health and safety of all people. For example, public health databases include spatial data on mortality and natality events, infectious and notifiable diseases, incident cancer cases, behavioral risk factor and tuberculosis surveillance, hazardous substance releases and health effects, hospital statistics and other similar data.

Public Land Conveyance (patent) Records – ISO Planning, Cadastre – DOI, BLM – Public land conveyance data are the records that describe all past, current, and future, right, title, and interest in real property. This is a system of storage, retrieval and dissemination of documents describing the right, title, and interest of a parcel.

Shoreline – ISO Oceans – DOC, NOAA – Shorelines represent the intersection of the land with the water surface. The shoreline shown on NOAA Charts represents the line of contact between the land and a selected water elevation. In areas affected by tidal fluctuations, this line of contact is the mean high water line.

Soils – ISO Geoscientific Information – USDA, NRCS – Soil data consist of georeferenced digital map data and associated tabular attribute data. The map data describe the spatial distribution of the various soils that cover the Earth's surface. The attribute data describe the proportionate extent of the various soils as well as the physical and chemical characteristics of those soils. The physical and chemical properties are based on observed and measured values, as well as model-generated values. Also included are model-generated assessments of the suitability or limitations of the soils to various land uses.

Transportation (Marine) – ISO Transportation – USACE – The Navigation Channel Framework consists of highly accurate dimensions (geographic coordinates for channel sides, centerlines, wideners, turning basins,

and River Mile Markers) for every federal navigation channel maintained by USACE. The Navigation Framework will provide the basis for the marine transportation theme of the geospatial data framework.

Vegetation – ISO Biota – USDA, U.S. Forest Service – Vegetation data describe a collection of plants or plant communities with distinguishable characteristics that occupy an area of interest. Existing vegetation covers or is visible at or above the land or water surface and does not include abiotic factors that tend to describe potential vegetation.

Watershed Boundaries – ISO Inland Waters – Co-leaders: DOI, USGS and USDA, NRCS – This data theme encodes hydrologic, watershed boundaries into topographically defined sets of drainage areas, organized in a nested hierarchy by size, and based on a standard hydrologic unit coding system.

Wetlands – ISO Inland Waters – DOI, Fish and Wildlife Service – The wetlands data layer provides the classification, location, and extent of wetlands and deepwater habitats. There is no attempt to define the proprietary limits or jurisdictional wetland boundaries of any federal, state, or local agencies.

Source: FGDC Circular No. A-16, Appendix E

Appendix B – Relevant Links

Program Sponsors

The California Geographic Information Association (CGIA)	http://www.cgia.org http://www.cgia.org/geospatial-draftplan.htm
US Geological Survey (USGS)	http://www.usgs.gov
California Resources Agency	http://resources.ca.gov/
California GIS Council	http://gis.ca.gov/council/

National GIS Resources and Initiatives

Federal Geographic Data Committee (FGDC)	http://www.fgdc.gov/ http://www.fgdc.gov/framework
National Spatial Data Infrastructure (NSDI)	http://www.fgdc.gov/nsdi/nsdi.html
Geospatial One-Stop (GOSII)	http://www.geodata.gov
National Digital Elevation Program (NDEP)	http://hazards.fema.gov/metadata/NDEP/
National Digital Orthophoto Program	http://hazards.fema.gov/metadata/NDOP/
50 States Initiative	http://www.fgdc.gov/policyandplanning/50states
Imagery for the Nation	http://www.nsgic.org/hottopics/imageryofnation.cfm
National States Geographic Information Council (NSGIC)	http://www.nsgic.org/index.cfm
Ramona GIS Inventory	http://www.gisinventory.net/
The National Map	http://nationalmap.gov/
US Office of Management and Budget	http://www.whitehouse.gov/omb/circulars/a016/a016_rev.html

California GIS Resources and Initiatives

California Spatial Information Library (CaSIL)	http://gis.ca.gov/
California Environmental Information Catalog (CEIC)	http://gis.ca.gov/catalog/
California Environmental Resources Evaluation System (CERES)	http://ceres.ca.gov

APPENDIX C – RESULTS
WORKSHOP AND SURVEY
PARTICIPANTS BY INTEREST

All Workshops

Survey Respondents

First Workshop - CalGIS

Second Workshop - Sacramento

Third Workshop - Bakersfield

Fourth Workshop - Oakland

Fifth Workshop - Los Angeles

Sixth Workshop - Redding

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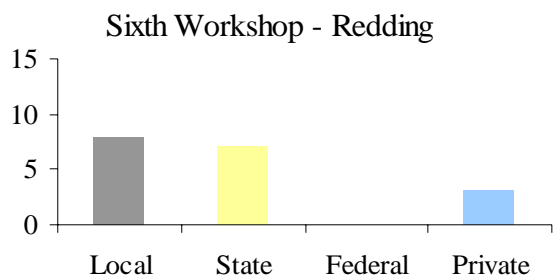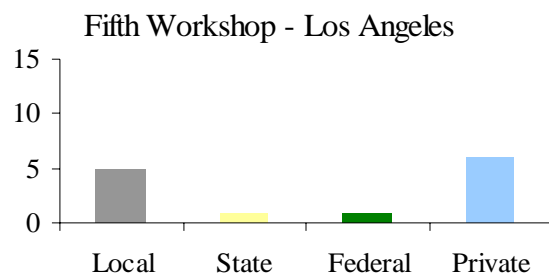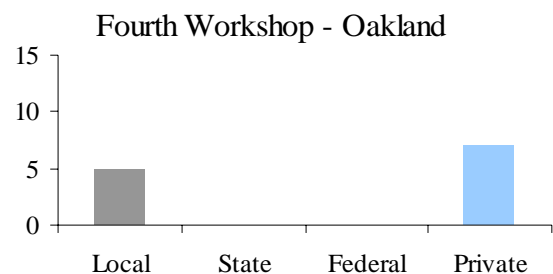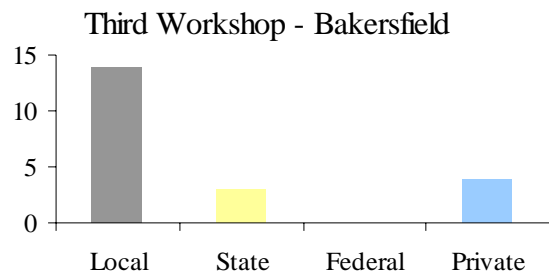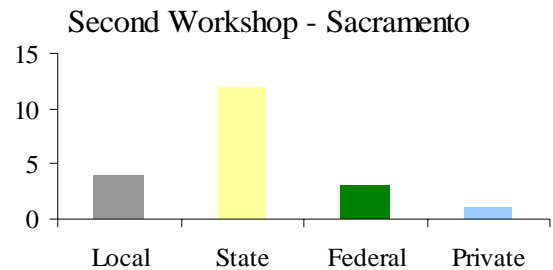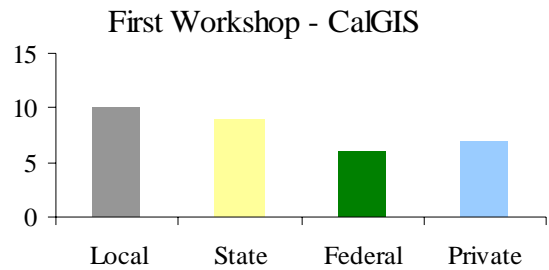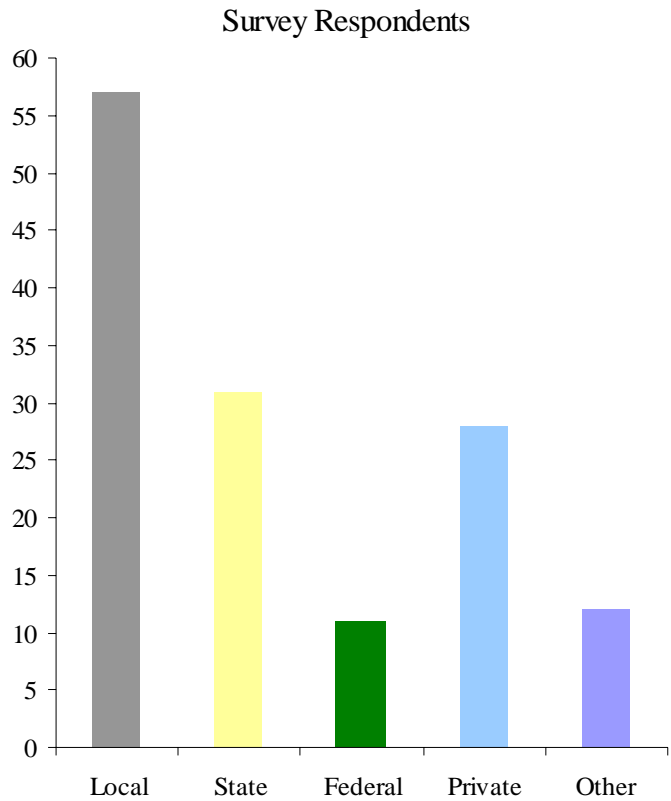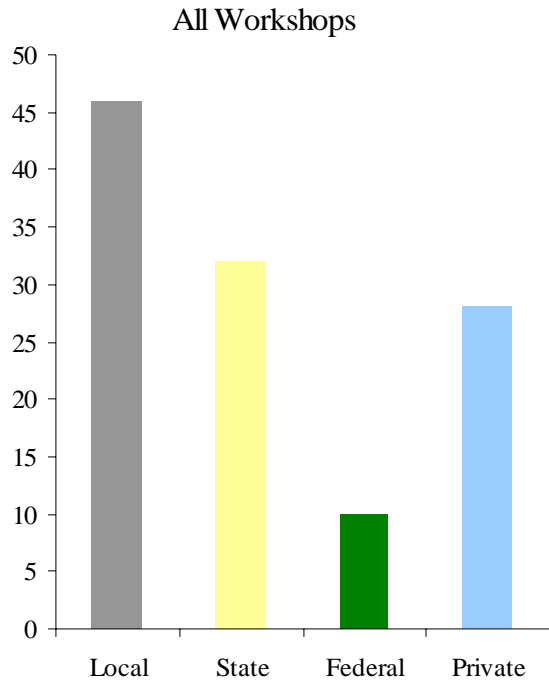
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WORKSHOP VOTING RESULTS BY INTEREST

	TOTAL VOTES	LOCAL / REGIONAL	STATE	FEDERAL	PRIVATE

Core Framework Themes
- Cadastral
- Elevation Terrestrial
- Transportation
- Ortho Imagery
- Hydrography
- Geodectic Control
- Governmental Units

Potential California-Centric Themes
- Street Addressing
- Buildings and Facilities
- Utilities
- Vegetation
- Cultural and Demographic Statistics
- Flood Hazards
- Soils
- Public Land Conveyance Records
- Biological Resources
- Wetlands
- Earth Cover
- Watershed Boundaries
- Public Health
- Federal Land Ownership Status
- Housing
- Geologic
- Land Use
- Climate
- Geographic Names
- Cultural Resources
- Transportation - Marine
- Law Enforcement Statistics
- Elevation Bathymetric
- Shoreline
- Marine Boundaries
- Accessibility
- Outer Continental Shelf Submerged Lands
- Offshore Minerals
- Cadastral - Offshore
- International Boundaries
- Baseline - Marine

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Appendix D – California Geospatial Framework Community Survey

California Geospatial Framework Community Feedback Survey

Questions marked with an asterisk (*) are mandatory.

BASIC INDENTIFYING INFORMATION

1   *Organization Type:

- ⦿ Local/Regional
- ⦿ State
- ⦿ Federal
- ⦿ Private
- ⦿ Other, please specify

  [   ]

2   *ZIP Code:

  [   ]

3   Organization (optional):

  [   ]

4   Email (optional):

  [   ]

5   Name (optional):

  [   ]

RANK CORE FRAMEWORK DATA THEMES

6   Please rank the Core Framework Data Themes according to which will best meet the needs of your organization:

	1	2	3	4	5	6	7
Cadastral	⦿	⦿	⦿	⦿	⦿	⦿	⦿
Elevation	⦿	⦿	⦿	⦿	⦿	⦿	⦿
Geodetic Control	⦿	⦿	⦿	⦿	⦿	⦿	⦿
Governmental Units	⦿	⦿	⦿	⦿	⦿	⦿	⦿

Hydrography

Ortho Imagery

Transportation

7 As a point of reference the rankings of the core framework data themes from the six workshops and the statewide sources identified in the workshops follow. If you know of a statewide or multi-regional public data source for any of these themes please advise us in the comments box below.

1. Cadastral
2. Elevation
3. Transportation
4. Ortho Imagery - National Agriculture Imagery Program (NAIP)
5. Hydrography - National Hydrography Dataset (NHD)
6. Geodetic Control - California Spatial Reference Center (CSRC)
7. Governmental Units

RANK CALIFORNIA-CENTRIC DATA THEMES

As we launched the first workshop two new data sets were identified and subsequently garnered two of the highest California-centric rankings. Brief descriptions of the two data sets are presented here:

1. Street Addressing: Point data representing point of entry to a property.

2. Utilities: Energy, water & waste systems & communications infrastructure & services.

8 The following data themes received the most votes at the six workshops. Please rank them according to which will best meet the needs of your organization:

	1	2	3	4	5	6	7	8	9	10	11

Biological Resources

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

Buildings and Facilities

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

Cultural and Demographic Statistics

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

Earth Cover

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

Flood Hazards

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

Public Land Conveyance Records

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

Soils

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

Street Addressing

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Utilities

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Vegetation

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Wetlands

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9 As a point of reference the rankings of the California-centric data themes from the six workshops and the statewide sources identified in the workshops follow. If you know of a statewide or multi-regional public data source for any of these themes please advise us in the comments box below.

1. Street Addressing
2. Buildings and Facilities
3. Utilities
4. Vegetation
5. Cultural and Demographic Statistics - US Census
6. Flood Hazards - FEMA DFIRMs
7. Soils
8. Public Land Conveyance Records - BLM GeoCommunicator
9. Biological Resources
10. Earth Cover
11. Wetlands

INDENTIFY REGIONAL COLLABRATIVE INITIATIVES

**10** California has a number of Regional Collaboratives who are active in data development, data sharing, and policy development. Click [here](#) for a regional map.

If you are a representative of a regional collaborative, please let us know of any multi-regional activities that are planned relative to large scale data development or data sharing initiatives:

BACKGROUND
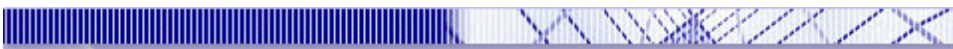
The workshop goals were to:

1) Collect and document input from regional GIS collaboratives/councils and the public on geospatial framework datasets for California, including regional priorities;

2) Summarize existing geospatial initiatives such as Framework data definitions, Geospatial One-Stop, NSDI, Imagery for the Nation, NDEP & NDOP, California Spatial Information Library (CaSIL), and discuss regional GIS collaborative activities;

3) Identify and prioritize data themes based on statewide/regional/local use potential, availability relative to existing geographic coverage and distribution rights, estimated timeline to serve data; and

4) Capture knowledge on availability, custodians, maintenance, costs, and future hosting options of existing data sources. Your input will be captured in workshop summaries and rolled-up into the Draft Data Plan, a living document for subsequent Geospatial Framework development and implementation in California.

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Conducted by: Michael Baker Jr., Inc.

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SUBMIT