



**United States
Department of
Agriculture**

Service Center
Modernization Initiative
(SCMI)

POLICY

Geospatial Metadata

DRAFT

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Introduction

As directed by the Secretary of Agriculture’s March 16, 1998 memorandum, the Natural Resources Conservation Service (NRCS), Farm Service Agency (FSA), and Rural Development (RD) agencies are co-locating offices, modernizing business processes, and partnering to achieve a “one-stop service” for United States Department of Agriculture (USDA) customers at their county-based field offices (Service Centers). One of the major components of the modernization initiative involves the implementation of a Geographic Information System (GIS) across each of the Partner Agencies and in all 2,550 Service Center offices. A Service Center Data Team has been chartered with the overall responsibility for implementing an infrastructure for management of data resources for the Partner Agencies. The GIS Standards Team 5 was formed to address specific data management issues regarding geospatial data.

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Figure 1 — Working group list

RECORD OF CHANGE

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Table of Contents

| | | |
|----|--|---|
| 1. | Purpose | 1 |
| 2. | Background..... | 1 |
| 3. | Authority..... | 1 |
| 4. | Scope | 2 |
| 5. | Policy | 2 |
| 6. | Responsibilities Pertaining to Geospatial Metadata | 2 |
| 7. | Definitions | 3 |
| 8. | Acronyms and abbreviations | 5 |
| | Appendix A – Bibliography | 6 |

Table of Figures and Tables

| | |
|-------------------------------------|---|
| Figure 1 — Working group list | i |
|-------------------------------------|---|

1

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POLICY FOR GEOSPATIAL METADATA

1. Purpose

The Service Center Agencies (SCA) in the United States Department of Agriculture (USDA), comprised of the Farm Service Agency, Natural Resources Conservation Service, and Rural Development, are quickly implementing geographic information systems (GIS) in all state and county offices. Many other offices throughout these agencies are also being equipped with GIS. Executive Orders, regulations, and laws require agencies to document geospatial data by creating metadata that meets Federal Geographic Data Committee (FGDC) Content Standard for Digital Geographic Metadata (CSDGM) standards.

Metadata includes information about the geospatial dataset such as:

- Identification information
- Contact information
- Details concerning the quality and spatial extent of the data
- Information concerning availability and distribution, spatial reference, data quality, and production rules.

This information lets users determine the fitness and use of datasets for their applications.

Documentation must adhere to approved standards to provide access to geospatial datasets for users within and outside of the SCA. A common set of elements permits inclusion of metadata in national programs that must track and maintain the advertisement of available geospatial datasets. Additionally, metadata augments the exchange of geospatial data between individuals and offices.

2. Background

The SCA Data Management Team (DMT) began developing a geospatial metadata standard in 1999. The standard established the minimum mandatory metadata elements that are to be collected for all geospatial datasets created by the SCA. The Geospatial Metadata Team, sponsored by the DMT, has recently revised this standard. This document defines two levels of metadata required for geospatial metadata. FGDC full compliance metadata are required for all national geospatial datasets. A paired-down version of the metadata, referred to Service Center Initiative (SCI) minimum compliance metadata, is required for locally derived datasets and to support the roll-up of county and state datasets into national datasets. The standard provides complete descriptions for each of the metadata elements, as well as example metadata.

3. Authority

President Clinton signed national Spatial Data Infrastructure," on April 11, 1994. Section 3, Development of a National Geospatial Data Clearinghouse, paragraph (b) states: "Standardized Documentation of Data, ... each agency shall document all new geospatial data it collects or produces, either directly or indirectly, using the standard under development by the FGDC, and make that standardized documentation electronically accessible to the Clearinghouse network."

OMB Circular A-130, Management of Federal Information Resources, establishes policy for the management of Federal information resources. "Information resources" includes both government information and information technology.

4. Scope

Service Center Agencies that create, modify, or deliver geospatial data are required to provide descriptive metadata that meet Agency and FGDC metadata standards.

Individuals engaged in these activities, whether as data stewards or individuals supporting the Acquisition, Integration, and Delivery (AID) process, have many roles and responsibilities, but the scope of this document is restricted to those roles and responsibilities related to creating and managing geospatial metadata.

5. Policy

- Data Centers will provide FGDC full compliance metadata for agency owned or created geospatial data.
- Data Centers performing AID functions on agency or externally developed geospatial data, e.g., United State Geological Survey (USGS) National Elevation Data, will deliver available metadata to state and county offices and the general public. Additional process steps will be added to these metadata when permitted by the format of the metadata. If process steps cannot be added to the original metadata, SCI minimum compliance metadata will be generated to reflect any changes made to the data, e.g., spatial re-projection
- Digitizing Centers developing datasets for delivery or archival will provide FGDC full compliance metadata for any geospatial data they create.
- State Offices performing AID functions on data obtained from State GIS or cooperative organizations will deliver available metadata to county offices. Additional process steps will be added to these metadata when permitted by the format of the metadata. If process steps cannot be added to the original metadata, SCI minimum compliance metadata will be generated to reflect changes made to the data, e.g., spatial re-projection.
- State Offices will create SCI minimum compliance metadata for all county or regional geospatial data that are rolled-up into a national dataset, e.g., Environmental Quality Incentives Program (EQIP). In addition to information on spatial projections, datum, and process steps, these metadata must also include entity and attribution descriptions.
- County Field Offices will create SCI minimum compliance metadata for all locally developed geospatial data that is rolled-up into a county or regional dataset. Metadata are not required for farm-based working files.
- Geospatial data gateways will deliver all available metadata with the geospatial data. Modification of the data being delivered through the gateways will be reflected in SCI minimum compliance metadata generated by the gateways.

6. Responsibilities Pertaining to Geospatial Metadata

- **Data Stewards**
 - Ensure that metadata, formatted correctly and free of errors, are created according to Agency and FGDC standards.

- Develop and provide metadata templates for creating and managing metadata.
- Ensure that approved metadata are available for delivery with all geospatial data for which they are responsible.
- Ensure that metadata are obtained when establishing cooperative agreements with outside sources of data.

- **Data Center Directors**
 - Ensure geospatial data created or modified in their facilities are documented according to Agency and FGDC metadata standards.
 - Ensure metadata are delivered for all geospatial data acquired, integrated, delivered through the center, including data from geospatial data warehouses delivered through geospatial gateways and clearinghouses.
 - Employ current technology, e.g., ArcIMS, ArcSDE, or Database Management System (DBMS), for managing metadata in support of SCA, National Spatial Data Infrastructure (NSDI), and Geospatial One-Stop (GOS) initiatives.
 - Ensure that staff is trained to use standard or approved metadata tools, such as Environmental Systems Research Institute's (ESRI) ArcCatalog.

- **State Leaders (State Food and Agriculture Council)**
 - Ensure that State Geodata Teams and GIS Coordinators deliver available metadata with geospatial data to county field offices in support of GIS initiatives.
 - Ensure that State Geodata Teams and GIS Coordinators who acquire, integrate, and deliver external geospatial data, e.g., State GIS or cooperative organizations, properly modify or create new metadata to document changes to the data.
 - Ensure that State GIS Coordinators provide SCI minimum compliance metadata for all county or regional geospatial data that are rolled-up into a national dataset, e.g., EQIP.
 - Ensure that staff is trained to use standard or approved metadata tools, such as ESRI's ArcCatalog and QuickEdit.

- **County Leaders (County Food and Agriculture Council)**
 - Ensure that county GIS users document locally derived geospatial data with SCI minimum compliance metadata, as it pertains to rolled-up county or regional datasets. Metadata are not required for local, farm-based working files.
 - As required, ensure that updates to county datasets, such as common land units (CLU), are reflected in related geospatial metadata.
 - Ensure that staff is trained to use standard or approved metadata tools, such as ESRI's QuickEdit.

7. Definitions

- Attribute - A defined characteristic of an entity type (e.g. acres).
- Clearinghouse - A facility for advertising and distributing datasets. Metadata describing available datasets is made available to a chosen audience (i.e., the general public, partner agencies, etc.). Packaged datasets (i.e., diskettes, CDs, etc.) or online retrieval of selected subsets of data are distributed within security guidelines. There may be a charge for obtaining datasets.
- Data - A discrete fact or value. Data is the raw material, which through its use and interpretation can provide valuable information. Data is the content of datasets or databases.

- Data Center – SCA facilities that acquire, integrate, and delivery geospatial data to national, state, and county office. The Aerial Photography Field Office in Salt Lake City, and the National Cartography and Geospatial Center in Fort Worth are identified as data centers to support SCA GIS.
- Data Distributor – Individuals and organizations that acquire and deliver data to end-users. Distributors may integrate or add value to the data to better meet user needs.
- Data Management - Data Management is the managerial function of taking responsibility for data and the processes that support it. It focuses the strategic planning and data methodologies for meeting program delivery goals. In particular, data management aims at managing data as a corporate asset
- Data Mart - A type of data warehouse that contains smaller subsets of data and focuses on a particular business discipline or organizational component.
- Dataset - A collection of related data, e.g., polygons, lines, and attributes.
- Data Steward - A business area expert who is assigned responsibility for the data content of a database or dataset. The data steward establishes business rules, defines data elements, identifies valid data values, establishes certification standards, and ensures the completeness and availability of the data. The steward ensures that geospatial data are documented according to agency and federal metadata standards.
- Data Warehouse - An informational database, or collection of databases or datasets, used to store shareable data. The warehouse is usually created through data extracts from operational databases. The warehouse adheres to a single enterprise data model to ensure consistency of decision-support data across the enterprise.
- Datum - Defines the size and shape of the earth and the origin and orientation of the coordinate systems used to map the earth.
- Entity - The definition and description of a set into which similar entity instances are classified (e.g., farm).
- FGDC Full Compliance Metadata – Metadata containing all mandatory, mandatory-if-applicable, and optional elements that may apply to a dataset. Optional metadata elements are to be determined by the data steward or data producer and included if the element is recognized as applicable.
- Gateway - A gateway is a network point that acts as an entrance to another network. Among other things, gateways can provide Internet access to discovering and obtaining geospatial data, e.g., NRCS Geospatial Data Gateway.
- Geospatial Data - Information that identifies the geographic location and characteristics of natural or constructed features and boundaries on the earth. This information may be derived from sources such as remote sensing, mapping and surveying technologies. It includes both spatial (map) data and attribute (text) information.
- Geospatial Metadata - Metadata that describes geospatial features. Points, lines, and polygons are created in a GIS tool and have little meaning if they are not described in detail. These descriptions can include such items as a name for the feature, category (i.e. farm, field, water, wetland), creation date, crop cover, ownership, bounding coordinates, scale, etc.
- Local Geospatial Dataset – Geospatial data generated or obtained from local county or city sources. Local datasets do not generally leave local or county offices.
- Mandatory if Applicable Metadata Element - Descriptive information that must be provided if the dataset exhibits characteristics defined by the element.
- Mandatory Metadata Element – Descriptive information that must be provided.
- Metadata - Information about data. Metadata describes how, when, and by whom a particular set of data were collected, and how the data are formatted. Metadata includes attributes such as data name, length, domain of valid values, and definition. Metadata can also identify and describe a set of data or a complex data type such as a map, photograph, spatial dataset, etc.

- National Geospatial Dataset – Geospatial data of a national scope, e.g., common land units or soils. National data may be developed at the local level, but rolled-up into a national dataset or layer.
- Optional Metadata Element – Descriptive information provided at the discretion of the dataset producer.
- SCA Minimum Compliance Metadata – Metadata containing a few required metadata elements for all types of locally derived geospatial data produced in field offices. SCA minimum metadata is required as a supplemental product for building national layers and to augment third-party metadata.

8. Acronyms and Abbreviations

| | |
|--------|--|
| BPR | Business Process Reengineering |
| AID | Acquisition, Integration, and Delivery |
| APFO | Aerial Photography Field Office |
| ArcIMS | ESRI Internet Map Server |
| ArcSDE | ESRI Spatial Database Engine |
| CLU | Common Land Units |
| CSDGM | Content Standard for Digital Geographic Metadata |
| DMT | Data Management Team |
| DBMS | Database Management System |
| ESRI | Environmental Systems Research Institute, Inc. |
| FSA | Farm Service Agency |
| FGDC | Federal Geographic Data Committee |
| GIS | Geographic Information System |
| GOS | Geospatial One Stop |
| NRCS | Natural Resources Conservation Service |
| NSDI | National Spatial Data Infrastructure |
| RD | Rural Development |
| SCA | Service Center Agencies |
| SCI | Service Center Initiative |
| USDA | United States Department of Agriculture |
| USGS | United State Geological Survey |

Appendix A – Bibliography

When the following standards are superseded by an approved revision, the revision shall apply.

- ❑ Content Standard for Digital Geospatial Metadata Workbook, (For use with FGDC-STD-001-1998), Version 2.0, Federal Geographic Data Committee, April 21, 2000
- ❑ Executive Order 12906, "Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure," April 11, 1994
- ❑ Guide for Describing and Managing Data for Agency Business Systems, SCMI Gd 006-02, February 27, 2001
- ❑ Management of Federal Information Resources, Circular No. A-130, February 8, 1996
- ❑ Manual for Managing Geospatial Data Sets in Service Centers, AFY00.60000-00.UA0-SCM, February 28, 2003
- ❑ Standard for Geospatial Data Set Metadata, SCI Std 003-02, October 15, 2003 (Draft)
- ❑ Standard for Geospatial File Naming, SCMI Std 004-03, October 15, 2003