



Soil Geographic Data Standard

Soil Data Subcommittee
Federal Geographic Data Committee

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Federal Geographic Data Committee

Department of Agriculture - Department of Commerce - Department of Defense - Department of Energy
Department of Housing and Urban Development - Department of Interior - Department of State
Department of Transportation - Environmental Protection Agency
Federal Emergency Management Agency - Library of Congress
National Aeronautics and Space Administration - National Archives and Records Administration
Tennessee Valley Authority

Federal Geographic Data Committee

Established by Office of Management and Budget Circular A-16, the Federal Geographic Data Committee (FGDC) promotes the coordinated development, use, sharing, and dissemination of geographic data.

The FGDC is composed of representatives from the Departments of Agriculture, Commerce, Defense, Energy, Housing and Urban Development, the Interior, State, and Transportation; the Environmental Protection Agency; the Federal Emergency Management Agency; the Library of Congress; the National Aeronautics and Space Administration; the National Archives and Records Administration; and the Tennessee Valley Authority. Additional Federal agencies participate on FGDC subcommittees and working groups. The Department of the Interior chairs the committee.

FGDC subcommittees work on issues related to data categories coordinated under the circular. Subcommittees establish and implement standards for data content, quality, and transfer; encourage the exchange of information and the transfer of data; and organize the collection of geographic data to reduce duplication of effort. Working groups are established for issues that transcend data categories.

For more information about the committee, or to be added to the committee's newsletter mailing list, please contact:

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SOIL GEOGRAPHIC DATA STANDARD

1. Introduction

The Soil Geographic Data Standard is composed of several components that describe a data content standard.

1.1 Purpose

The purpose of this standard is to standardize the names, definitions, ranges of values, and other characteristics of soil survey map attribute data developed by the National Cooperative Soil Survey (NCSS). The NCSS is the body composed of the various federal, state, and local units of government who work cooperatively to develop the soil survey of all lands in the United States.

The soil attribute data associated with soil maps include the physical and chemical properties of the various soils being described, interpretative information, the arrangement of these soils into the soil map units identified on the soil maps, and information about the soil map units themselves. The attribute data have no spatial relationship until they are linked to the maps via the map unit symbol and other unique identifiers. However, there is information included linking the soil data to geographical areas such as counties, states, major land resource areas, and soil survey areas.

The USDA-Natural Resources Conservation Service (former Soil Conservation Service) has been identified by the Federal Geographic Data Committee to coordinate the development of standards for the transfer of soil data. A representative of this agency serves as chairman of the FGDC Soil Data Subcommittee.

When adopted, this standard should facilitate the transfer and use of soil data. It will allow users of such data to receive data in a common format, no matter who the developer of the data is. It will allow much more data to be available to a more diverse group of users.

1.2 Scope

This standard applies to the tabular data associated with the soil survey maps developed by the National Cooperative Soil Survey at scales of about 1:12,000 to 1:30,000. It contains data of and about soil map units and map unit components.

The standard does not pertain to data gathered at a specific location -- point or site data. Standards for point/site data will likely be developed at a future time. Point data are used to develop the ranges for map unit components. As data is gathered while conducting a soil survey, the data from individual points are classified using accepted procedures and grouped or aggregated into similar soil types. The various soil types become components of map units.

The standard references and builds on some long established standards including SOIL TAXONOMY, THE SOIL SURVEY MANUAL, and THE SOIL SURVEY LABORATORY METHODS MANUAL. Soil Taxonomy is the comprehensive classification system by which soils are classified based on their physical and chemical properties. It is used throughout the US and several foreign countries. Other classification systems, such as the American Association of State Highway and Transportation Officials (AASHTO), and the Unified Soil Classification System (USCS) are also used. The AASHTO and Unified systems are based more on engineering related properties. Data elements are included to identify the AASHTO and USCS classification for each soil horizon included in the data base. The two manuals contain procedures to be used in the field and lab to develop standard soil information. The NRCS National Soil Survey Handbook provides additional guidance.

These existing standards have been accepted by the National Cooperative Soil Survey as the standards by which soil survey work will be done. The procedures contained in these standards have been used in excess of 30 years, and have been modified and improved during this time period as the need was identified.

1.3 Limits

This standard is limited to data associated with soil maps and associated attribute data (aggregated data), generally at scales of about 1:12,000 to 1:30,000. As presented at this time, the standard does not contain information dealing with the description of landforms and landscapes, or vegetation related to soil map units. This information will be added at a future time once the respective interagency groups complete work on these subjects. The standard classification of vegetation types developed by the FGDC Vegetation Subcommittee will likely be incorporated also.

It should be understood that the list of data elements included in the standard will likely be modified and/or added to as new or additional data are identified as being needed for various uses. These modifications will be submitted for acceptance when necessary, and advertised to known users of the standard.

An additional part of the standard will likely be developed to deal with point or site data (pedon descriptions and laboratory analyses). Other additions may also be developed for data to accompany soil maps at other scales.

1.4 Development Process

This standard is the result of a cooperative effort. Initial meetings were held in the Fall of 1992 with progress being made since that time. A work group under of the FGDC Soils Subcommittee composed of representatives of several federal agencies and universities developed much of the proposed standard. Agencies involved include the Natural Resources Conservation Service, Forest Service, Bureau of Land Management, Environmental Protection Agency, Agricultural Research Service, and the Agricultural Experiment Stations. The proposed standard was then reviewed and accepted by the NCSS Standards Committee and the FGDC Soils Subcommittee.

1.5 Maintenance

A team has been approved and members appointed by the FGDC Soils Subcommittee to maintain and enhance this standard. The Natural Resources Conservation Service is the lead agency responsible for maintenance.

Membership is as follows:

- Jim Fortner, NRCS, Lincoln, NE, (team leader)
- Russ Kelsea, NRCS, Lincoln, NE
- Jim Keys, USFS, Atlanta, GA
- Scott Davis, BLM, Denver, CO
- Wayne Hudnall, LSU, Baton Rouge, LA
- John Doran, ARS, Lincoln, NE
- William McMahan, DMA-DOD, Fairfax, VA
- Craig Palmer, EPA, Las Vegas, NV

Other agencies/entities such as the U.S. Fish and Wildlife Service, Bureau of Indian Affairs, Bureau of Reclamation, Bureau of Mines, Biological Survey, and U.S. Park Service will be contacted for input related to data relative to their specialty, on an as-needed basis. The existing NCSS work planning processes and state contacts will be utilized to allow for input from other concerned parties.

This team will use the following procedures to process proposals to modify or add to the standard:

- Each team member will receive, review and organize proposals originating within their respective agency/entity. They will then forward a recommendation for action to the team leader.
- The existing NCSS Work Planning Conference structure, and state contacts, will be used to allow for input from industry, non-industrial landowners, and non-traditional users to the team.
- The team leader will route the proposal along with the originating agency's recommendation to team members for review and recommendation.
- The team will make the final decision. Each represented agency will have equal voting rights -- one vote per agency/entity.
- An appeal procedure will be established to allow for direct presentation of proposals to the team leader.
- A feedback and tracking mechanism will be established to ensure that originators of proposals are informed of actions taken on their proposals.
- A minimum standard for documentation to accompany all proposals will be established.
- A mechanism to get input and/or review of proposals from agencies not represented on the team will be established.
- A scheme to ensure timely review and processing of proposals will be established.
- The data set will be maintained by the Natural Resources Conservation Service staff.

2. Content of the Standard

The standard contains a listing of data elements used to store the various physical, chemical, and interpretive data associated with soils described in a soil survey. Soil surveys are structured to cover a specific geographic portion of the United States. This geographic area is portrayed by the area object in the database.

A printout of the data dictionary of the data elements is included which contains the name, definition, field length, data type, precision, allowable ranges or entries as is appropriate, and whether or not it is reported with a High, Low, and Representative Value (RV) for each data element.

Included in the list of data elements are various pairs that end with "iid" and "iid_ref" which have the same definition. The definitions are generic in nature explaining what the "iid" and "iid_ref" numbers represent. The definitions are not specific to the particular data elements listed. These elements serve as links between the various tables to maintain referential integrity among the data.

The following documents are provided to detail the content of the standard and to show the relationships among the data:

- An Entity Relationship Model which lists the various tables in the database, and their relationship to one another. The purpose of the model is only to demonstrate the relationships between the data, not to specify any particular structure of the database. The relationships within the data is very important in order to properly utilize the data as it is intended.
- A listing of the table names in the data base with data elements contained in each.

- A listing of the soil property and interpretative data elements included in the data base. This list matches those contained in the data dictionary printout (Item 5 below).
- A listing of descriptions/definitions for some of the choices listed for various data elements. This is not a complete list at this time as all definitions have not been entered into the data dictionary data base. Other definitions may also be found in the Soil Survey Manual or the National Soil Survey Handbook references.
- A computer printout of the data dictionary

(See http://www.fgdc.gov/standards/status/sub2_2.html for remainder of Soil Standard document)