Part 639 – National Soil Information System (NASIS)

Subpart A – General Information

639.0 Definition and Purpose

A. Definition.—The National Soil Information System (NASIS) application and database is one component of the overall National Soil Information System of the National Cooperative Soil Survey (NCSS). The application is used for the entry, storage, maintenance, interpretation, and publication of data pertaining to all aspects of the soil survey program.

B. Purpose.—NASIS is designed as a client-server software application that accesses a national database to retrieve and build a local database. Edits are made to the local copy of the data and then uploaded back to the servers that store the national database. A soil scientist collects documentation during the course of a soil survey, and this documentation is compiled, analyzed, and aggregated to build information on soil properties, qualities, and interpretations for components within a map unit.

C. Database Structure.—NASIS organizes soil survey data into major categories which are further defined by database objects and their underlying parent tables and child tables. The following are the major categories of the NASIS application:

1. Database security system
2. Point data records
3. Geographic area records
4. Map unit records
5. Standards, criteria, and guidelines
6. Spatial database

639.1 Policy and Responsibilities

A. Policy.—NASIS is the transactional database containing all soil survey attribute information. The data is maintained by the soil survey office staff following the guidelines set forth in this handbook, the NASIS online help feature, and other guidance documentation. The technical review and quality assurance of this information is completed by the soil survey regional offices (SSRs) as listed below. Distribution and public release of information is completed by the State soil scientist. The NASIS database is housed at the USDA Enterprise Data Center in Kansas City, MO.

B. Responsibilities

1. The soil survey office (SSO) is responsible for the following:
   (i) Collecting soil pedon descriptions used to document the soil properties for a map unit component and entering the pedon data into NASIS.
   (ii) Collecting samples to be analyzed for soil physical and chemical properties.
   (iii) Aggregating or summarizing the pedon descriptive information and laboratory characterization data to build the soil component property ranges and representative values.
   (iv) Creating and maintaining map unit information and component properties used to generate manuscript reports for soil surveys in its assigned area.
   (v) Developing the accompanying spatial databases.
(vi) Ensuring the quality control of all data entered into NASIS within its area of responsibility.

(2) The SSR is responsible for the following:
   (i) Creating and managing NASIS ownership groups and assigning members to each group as needed to manage edit permissions of the data.
   (ii) Ensuring that soil property data conform to NCSS standards
   (iii) Providing support, training, and leadership to SSO in describing soil properties and in making estimations of map unit component data.
   (iv) Recommending actions needed to correct errors and inconsistencies in NASIS.
   (v) Populating and maintaining general soil map data in the NASIS database and submitting it to the national coordinator for the U.S. General Soil Map.
   (vi) Monitoring soil survey update projects in NASIS and assisting the soil survey offices in keeping the soil survey projects on schedule.
   (vii) Completing the technical review and the quality assurance of the data entered into NASIS for its area of responsibility.
   (viii) Ensuring that all soil survey office staff in their area of responsibility receive proper and adequate training in the use of NASIS software.

(3) The State office (SO) is responsible for the following:
   (i) Managing the legends and publication map unit symbols within its State of responsibility.
   (ii) Certifying and exporting correlated NASIS data to the Soil Data Warehouse and Web Soil Survey for geographic areas within its State.
   (iii) Developing criteria for local or State interpretations in NASIS, as needed.

(4) The National Soil Survey Center (NSSC) is responsible for the following:
   (i) Coordinating with the Information Technology Center to ensure that NASIS-related software is developed and operational.
   (ii) Developing and implementing NASIS software training materials.
   (iii) Developing national standards and procedures for population and management of soil data in NASIS.
   (iv) Developing national interpretations using detailed and general soil survey information.
   (v) Managing certain data tables (e.g., “Area” and “Geomorphic Feature” tables) in NASIS that serve as lookup lists.
   (vi) Maintaining the general soil information data set.
   (vii) Creating and maintaining NASIS user accounts.
   (viii) Granting and revoking access through eAuthentication.

639.2 Soil Survey Application Security Policy

A. NASIS Accounts.—The NRCS is the lead agency for the NCSS (7 CFR Sec. 2.61). In its leadership role, NRCS maintains NASIS for the collection, management, and distribution of NCSS information. Access to NASIS is granted to NCSS partners and authorized agents for the purpose of creating, maintaining, or interpreting NCSS information. NASIS is a U.S. Government computing system. Only official NCSS activities are authorized on this system.

B. Requests for a NASIS User Account.—Requests to become a NASIS user are submitted to SoilsHotline@lin.usda.gov. They must include the user’s full name, eAuthentication identification (not the password, just the user name), phone number, city, and State.

C. NASIS User Requirements.—The NASIS user must obtain a level-2 eAuthentication account through the eAuthentication website at the following address: https://www.eauth.usda.gov.

639.3 NASIS Organization and Database Objects

A. NASIS Organization.—The NASIS database is organized into separate database business objects that each contain data of a particular type.

(1) Each record in the tables of a business object is owned by a specific NASIS site and group. Authority to edit a particular object is limited to users who are members of the responsible group and have the edit privileges for that object. Items within an object are owned by the creating group.

(2) The user who creates or last edits a data record is recorded in each table along with the date and time of the edit. In addition, the user who last edited any data record in any table in the data object is listed in the object root table as the last person to edit the object along with the date of that edit.

(3) Users who do not belong to a group are read-only users and cannot edit any data.

(4) Frequently asked questions on NASIS and contact information is available at https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/tools/?cid=nrcs142p2_053551 for NASIS assistance if a user record needs to be created, deleted, or modified in a way that cannot be accomplished by the individual user.

B. Database Objects.—Detailed descriptions of each data business object and data element in NASIS are available in the NASIS online help system. Some data elements are restricted to specific entries, while others allow any appropriate entry. Detailed metadata reports for NASIS are accessible through the following address: https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/soils/survey/tools/?cid=nrcs142p2_053548. Follow the link to the “NASIS Version 7.x” index web site.

C. Database Security System.—The security and communication of soil survey data housed in business objects in NASIS is maintained through the tables contained within the NASIS “Site” object and the NASIS “User” object. The tables constitute parts of the database security system.

(1) NASIS “Site” Object.—This business object contains the “NASIS Site” table, “NASIS Group” table, and “NASIS Group Member” table.

(i) The “NASIS Site” table contains all of the NASIS sites in the database. Parts of this table can be edited, but only by a user with NASIS administration privileges (i.e., the DSM flag is set to “yes”).

(ii) The “NASIS Group” table lists the groups established for the NASIS site shown in the “NASIS Site” table. For example, a NASIS database at an SSR may have one group for the SSR staff and another group for the SSO staff working on the same data. The table can be edited, but only by a user with NASIS administration privileges.

(iii) The “NASIS Group Member” table lists the users who are members of the group shown in the “NASIS Group” table. Users in the “NASIS Group Member” table can edit data owned by the group. The table can be edited but only by a user who has NASIS administration privileges.

(2) NASIS “User” Object.—This business object contains the “NASIS User” table. The “NASIS User” table lists the users authorized to use NASIS. This table can be edited by users for applicable data such as email address, phone number, and description. Users with NASIS administration privileges can also edit this table.

D. Point Data Records.—Point data records include soil profile descriptions, laboratory characterization data, field measurements, transect observations, site associations, and other soil survey data collected at individual sites. Point data records concern the composition, physical, chemical, morphological, and interpretation properties and performance for a specific point on the landscape at which data is collected. These data records are recorded in the NASIS database in the

“Site” object, “Pedon” object, “Transect” object, “Site Association” object, and “Vegetation Data” object, which are defined below. These objects are created as needed and retained as part of the historical records. Guidance on population of the various data tables and data elements is available in the NASIS Pedon Data Entry Guide, which is available on the NASIS downloads web site. (https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_053329.pdf).

1. “Site” Object
   (i) This business object contains a set of data tables designed to identify a specific geographic location and its characteristics. The spatial area of a particular site record may be a specific point where a pedon is described or may be a determined spatial area. The “Site” object allows for recording various kinds of data including soil profile descriptions, laboratory data, vegetative data, or specific soil property studies. Descriptions for the “Site” object tables and their data elements are available in the NASIS online help. The parent table in the “Site” object is the “Site” table. The “Site” table has several underlying child tables that contain detailed information on various features of a specific site. Sites are identified in the field labeled “User Site ID.” This field records a unique concatenated number assigned to identify a specific record. Historically, it has been assigned a 10- to 15-character field using the protocol shown here:
   - A letter identifying the type of sample or description
   - The four-digit calendar year (previously a two-digit year)
   - The two-character FIPS State code
   - The three-digit FIPS county code
   - A three- or four-digit consecutive pedon number for the calendar year (e.g., S2010NE097001).

   (ii) Further guidance on the population of this field can be found in section 1.1.3 of Soil Survey Investigations Report No. 45, Soil Survey Laboratory Information Manual, Version 2.0, February 2011, USDA, NRCS. Specific sampling projects (e.g., the Rapid Carbon Assessment project) may provide specialized guidance for populating data.

2. “Pedon” Object.—This business object is designed to record the morphology, field measured properties, estimated or observed features, and taxonomic classification of a pedon. Each record in the “Pedon” object is linked to a corresponding record in the “Site” object using the “User Site ID” and the “Site Observation Date” columns. The parent table in the “Pedon” object is the “Pedon” table. The “Pedon” table has many underlying child tables that contain detailed information on various morphological features of a specific pedon. Within the “Pedon” table is the field labeled “User Pedon ID.” This field is a duplicate of the User Site ID, unless multiple pedons are linked to one site. It is a unique concatenated number assigned to identify the specific record. It is historically a 10- to 15-character field beginning with the type of sample, the four-digit (or older two-digit) calendar year, the two-character FIPS State code, the three-digit FIPS county code, a three- or four-digit consecutive pedon number for the calendar year (e.g., S2010NE097001-1), and if necessary a dash and number is allowed to identify multiple pedons linked to one site. Further guidance on the population of this field can be found in the Soil Survey Laboratory Information Manual, as cited above. Specific sampling projects (e.g., the Rapid Carbon Assessment project) may provide specialized guidance for populating data.

3. “Transect” Object
   (i) This business object is designed to group individual pedons that are the stops along a specific transect. The object table in the “Transect” object is the “Transect” table. The “Transect” table records the “User Transect ID” that is used in the “Pedon” table to link pedons to the appropriate transect. The “User Transect ID” is a unique set of characters.

used to identify the transect name. A suggested naming convention is the concatenation of the following:

- The letter “T”
- The calendar year (e.g., “2010”)
- The MLRA symbol (e.g., “74”)
- The map unit symbol (e.g., “AbA”)
- A sequential transect number for that survey for the given year (e.g., “001”)

(ii) An example of this identifier is “T201074AbA001.” The “Transect Estimated Composition” table is a child table beneath the “Transect” table that stores the transect composition percentage by component name and local phase.

(4) “Site Association” Object.—This business object is designed to record and manage groups of sites. The parent table in the “Site Association” object is the “Site Association” table. A record is created in this table to group various site records for a specific sampling study or for a particular update project.

(5) “Vegetation Plot” Object.—This business object is designed to group and summarize vegetation data and analysis from plots and transects. It records metadata associated with vegetative plots and transects including inventory protocols, data summaries, and analysis details and observations regarding disturbances and grazing. The “Vegetation Plot” object includes data drawn from the “Plant” and the “Site Observation” parent tables.

E. Geographic Area Records.—Geographic area records include symbols, names, and acreages for soil survey areas as well other political and physiographic areas. Geographic area records are maintained in the Area Type object.

(1) “Area Type” Object.—This business object provides a means to organize the various types of geographic areas and to provide a complete list of approved soil survey areas and standard acreages for official soil survey areas, States, counties, and MLRAs used in soil survey operations management. Other types of areas are also recorded. The “Area Type” object includes the “Area Type,” “Area,” and “Area Text” tables.

(i) The “Area Type” table lists the types of areas and the owners of each area. In NASIS, different kinds of areas are organized by area type. For example, traditional soil survey areas are listed in the “Area” table under the “Non-MLRA Soil Survey Area” type. Users may create their own area types.

(ii) A record in the “Area Type” table is created as necessary and retained as part of the historical records for a soil survey area.

(iii) Records recorded in the “Area Type” and “Area” tables serve as lookup tables for other data elements in NASIS.

(iv) Nationally coordinated area type objects owned by NSSC Pangaea must not be duplicated.

(v) The “Non-MLRA Soil Survey Area” and “MLRA Soil Survey Area” are the official area types for soil survey areas. Record maintenance for these official area types is the responsibility of the National Soil Survey Center.

(vi) The “area symbol” is a unique label within a particular area type that is used to identify the soil survey area. Typically, symbols for political areas such as States and counties use Federal Information Processing Standards (FIPS) codes (e.g., Lancaster County, Nebraska = NE109). A survey area and a county may have the same area symbol because each is recorded under a different area type.

(vii) The “area name” is the name given to the specific area. Although a soil survey area may be named for a county, the soil survey area name is recorded under the “soil survey area” area type and the county name is recorded under the “county” area type, even if the names are the same.
(viii) The “area acres” are the total acreage of all land and water areas in a specified geographic area as identified by the 1992 National Resources Inventory (NRI) data. For example, the total acreage of a multicounty soil survey area is recorded in this table, as well as the total acreage for each of the counties. Parts of the soil survey area that occur in each county are recorded in the “Legend Area Overlap” table. Acreages are not recorded for some area types.

F. Map Unit Records.—Map unit records include soil survey area legends, map units, and the soil properties and interpretations for map units and their components. Map unit records are maintained in the “Legend” object, “Mapunit” object, “Data Mapunit” object, and “Project” object.

(1) “Legend” Object.—This business object is designed for publishing soil survey information. The “Project” object, discussed later, was added with NASIS version 6.0 for the management of soil surveys. The “Legend” object links the survey area to its associated set of map units. These records are used to create the map unit identification legend, conversion legends, and correlation status reports for the survey area. The “Legend” object is created at the beginning of the survey, maintained throughout the course of the survey, and retained as part of the historical records. The “Legend” object includes several tables including the main “Legend” table. Generally, the legend in an initial survey is the responsibility of the soil survey office during the course of the initial soil survey. Responsibility is transferred to the SSR at completion of the survey.

(i) In the “Legend” table, some columns are available for viewing but are restricted for editing. For example, the “survey status” column (which identifies the archived entries as belonging to nonproject, initial, published, update needed, update, out-of-date, or extensive revision surveys) and “correlation date” column (which records the historical correlation date for the survey) cannot be edited. Other data columns are not restricted for editing and allow any appropriate entry (e.g., “Legend Text”).

(ii) In the “Legend Mapunit” a link is recorded between the “Legend” table and individual map unit records in the “Mapunit” table. The “Legend Mapunit” table identifies the publication map unit symbol, map unit status, and map unit acres for map units in the given survey area. The publication map unit symbol is assigned by the State soil scientist.

(iii) The combination of map unit symbols and their status in the survey area legend are unique.

(iv) The “Legend Area Overlap” table is required to contain at least the appropriate valid “State or Territory” area type overlap record, the appropriate “MLRA” area type, and the valid “County or Parish” area type overlap record within the legend survey area.

(v) Each “County or Parish” area type listed in the “Legend Area Overlap” table has its corresponding “State or Territory” area type overlap.

(vi) Project scale in the “Legend” table must be populated.

(vii) Each map unit within the “Legend Mapunit” table has a unique publication symbol, name, and status combination (see part 627, section 627.5, of this handbook for guidance). The map unit name is maintained in the “Mapunit” object, defined below.

(viii) Once created, map unit records are never deleted. During the correlation process, the status of map units migrates from “provisional” to “approved” to “correlated.” If a map unit is correlated to a new symbol, its status is changed to “additional.”

(2) “Mapunit” Object.—This independent object is designed to facilitate sharing map units across soil survey area and political boundaries. The “Mapunit” object maintains the map unit name, its national map unit symbol, and the link to its associated data mapunits. It documents a continuous record of map unit development and correlation decisions made for the map unit, independent of the legend to which it is linked. These records are used to create the map unit identification legend, conversion legends, and correlation status reports for the

survey area where the map unit is linked. A map unit is related to a geographic area when linked to a soil survey area legend by the “Legend Mapunit” table. The Mapunit object includes several tables, including the “Mapunit,” “Correlation,” “Mapunit History,” and “Mapunit Text” tables.

(i) The “Mapunit” table lists mapunit name, kind, national mapunit symbol, and linear and point feature characteristics. This information is relative to the specific map unit and must be considered when the map unit is linked to multiple legends.

(ii) The “Correlation” table records all instances of data mapunits used to support correlation of the map unit. The “Mapunit History” table is populated when a new map unit is created and populated at each correlation event that affects the map unit.

(iii) The “National Mapunit Symbol” is a computer-assigned conversion of the internal map unit record identification number to a base-31 alphanumerical character. This field is generated as new rows are created in the “Mapunit” table, and it is protected from editing. It was designed to facilitate the concept of soil survey update on an MLRA basis by providing a unique symbol to a map unit regardless of the soil survey areas to which the map unit is linked.

(iv) Responsibility and ownership of a specific map unit is indicated by the “Mapunit NASIS Site” and “NASIS Group” columns in the “Mapunit” table. Map unit management in an ongoing survey or update project is the responsibility of the soil survey office.

(3) “Data Mapunit” Object.—This business object is a record or a collection of records identifying percentage of its components (i.e., composition), physical and chemical properties, morphological attributes, interpretations, and performance for a map unit. A “Data Mapunit” object is a set of data records and as such is not related to any geographic area or map unit delineation unless linked to a specific map unit. These records are used to document map unit concept characteristics and create reports of soil properties and interpretations. “Data Mapunit” objects are created as needed and retained as part of the historical records. The “Data Mapunit” object includes the parent “Data Mapunit” table and many other tables. The underlying “Component” and “Horizon” tables are child tables of the “Data Mapunit” table. The “Component” and “Horizon” tables each have many underlying child tables.

(i) “Data Mapunit” Table.—The “Data Mapunit” table lists data mapunits by using the “DMU Description” field as well as the “DMU NASIS Site,” and “NASIS Group” fields to identify ownership. It also contains information such as the order of survey for which the data mapunit was developed and State-specific soil potential and interpretive class ratings.

(ii) “Component” Table.—The “Component” table lists the named soils, miscellaneous areas, or both for each map unit. Soils and miscellaneous areas populated in the “Component” table are the components identified in the map unit name along with those components that are strongly contrasting to the named components. Components are designated as either “major” or “minor” components depending on their percentage in the composition of the map unit. This table provides information pertinent to the component as a whole (e.g., slope, drainage class, taxonomic classification, etc.).

(iii) Important Guidance on Populating Component Data

- If the component percentage is greater than zero (e.g., Low=65, RV=75, High=90) for a component, that component exists in every delineation of that map unit. If the component percentage includes zero (e.g., Low=0, RV=50, High=90), the component may exist in some delineations but not in others.
- Total representative component percentage should equal 100 percent; it cannot exceed 100 percent.

The component name field must be populated using sentence case with a series name or an appropriate higher taxon name (e.g., Udorthents). Phase criteria, commas, spaces, or extraneous soil criteria information is not allowed in the component name field. Extra information is recorded in the “Local Phase” column.

The entry in the “Taxon Kind” column must agree with the component name. For example, if the name “Rock Outcrop,” is used then “miscellaneous area” must be selected as the taxon kind.

If the component kind is designated as a miscellaneous area, then the component name must exactly match one of the approved types that are defined in part 627 of this handbook.

Major components must be designated as such. Major components are generally those that are identified in the map unit name.

The “Hydric Rating” column must be populated for each component.

Pedons used to support development of the component must be identified with a record (i.e., row) in the “Component Pedon” table. This record links the “Data Mapunit” and “Pedon” objects. Only one pedon record is assigned as the “representative” pedon.

If a soil floods, or ponds, or contains moisture, then all 12 months are populated in the “Component Month” table and the months in which the annual event most commonly occurs are populated. Remaining months are left NULL.

In the “Component Crop Yield” table, only one unit of measure (UOM) is assigned for the unique crop name (e.g., a data entry showing two records of alfalfa, one with tons and one with AUM, is incorrect).

All root-limiting layers must be populated in the “Component Restriction” table. Depth to the restrictive layer matches the depth to the corresponding horizon in the “Component Horizon” table.

(iv) “Horizon” Table.—The “Horizon” table presents the various horizons that have been aggregated from the genetic soil horizons described in the various documented pedons. These horizon data are aggregated for ease in generating interpretations and presenting soil survey information to users. Each horizon recorded in this table identifies the range of properties and interpretations for the given horizon. The horizons and their range of properties are aggregated from the observed population of point descriptions collected for the given component within the given map unit. Horizon properties are assigned three values: Low (L), Representative (RV), and High (H).

(v) Important Guidance on Populating Horizon Data

- Refer to part 618 of this handbook for detailed information on soil properties.
- If the horizon thickness is greater than zero (e.g., Low=5, RV=8, High=12), the horizon exists everywhere this component occurs in this map unit. If the horizon thickness includes zero (e.g., Low=0, RV=1, High=3), the horizon may exist in some places where this component occurs but may not exist in other places.
- “Top (Low, RV, High)” is the distance from the top of the soil to the upper boundary of the soil horizon. “Bottom Depth (Low, RV, High)” is the distance from the top of the soil to the lower boundary of the soil horizon.
- No gaps or overlaps are allowed in horizon depths. Depths must join exactly between adjacent horizons.
- “Master” is one of three kinds of symbols that, when concatenated, are used to distinguish different kinds of layers in soils. Master horizons and layers are the base symbols to which other characters are added to complete the designations. Capital letters, carets (^), and virgules (/) are the symbols used to choose the “Master”
Master horizons “O” and “R” must have the “Master” and “Designation” columns properly populated.

Combination horizons, such as “E/Bt” or “E and Bt,” are recorded twice: once for the characteristics of the first part and again on another row for the characteristics of the second part. The RV depths for each characteristic horizon should reflect the best estimate of depths for the recorded part. The RV values assigned for horizon top and bottom depths must be continuous (e.g., 20 to 35 cm for one record and 35 to 50 cm for the other record) and should not be duplicated or overlapping. The range of depths should be populated in the “Low” and “High” columns to identify the overlapping nature of the horizon.

“Designation” is the concatenation of five kinds of symbols that are separate data elements in NASIS and must be populated individually. These symbols are discontinuities (“Disc”), master horizons and layers (“Master”), prime symbols (“Prime”), suffix symbols (“Suffix”), and vertical subdivisions (“Sub”). These symbols are used in various combinations to designate layers within the soil. The full horizon designation, such as “Btk2” or “2^Cg1,” is written in the “Designation” column. Default designations were set as: generic “H” horizons, such as H1, H2, etc., during conversion from a prior database into NASIS. These generic designations may continue to be used. The “Designation” column may be calculated, based on data in other columns. The status indicator in the rightmost part of the “Designation” column indicates whether a value in this column has been manually entered (M), calculated (C), or neither (a null entry in the status block).

All “Low,” “Representative,” and “High” value fields are populated for soil properties.

Tenth-bar, third-bar, and 15-bar water contents are populated with values less than 100.

Populate CEC-7 if pH is greater than or equal to 5.5; otherwise populate ECEC.

Only one “Representative” texture is assigned for each horizon in the “Horizon Texture Group” table.

Avoid the use of stratified textures (e.g., SR-S-L) if possible by separating and populating horizons based on different soil properties.

Horizon structure must be populated.

Populate all fields in the “Horizon Fragments” table for soils with fragments.

The sum of the values in the “Vol % RV” column of the Horizon Fragments table should match the value in the “Total Fragment Volume RV” column in the “Horizon” table.

The sum of fragment volumes must agree with the texture modifier chosen for the RV texture modifier and class in the “Horizon Texture Group” table.

(4) “Project” Object.—This business object is the soil survey program management tool designed for the management of all soil survey operations, including planning, managing, and tracking the status, milestone events, and progress of NCSS. The “Project” object is used to record staff, goals, progress, and survey management considerations. A record in the “Project” object is created as needed and retained as part of the historical records. The “Project” object includes the parent “Project” table and several other tables. Generally, responsibility for project data is created by the soil survey office.

(i) For outmoded surveys, the project name will use the non-MLRA soil survey area name identified in the MOU (e.g., Saline County, Kansas – Published).
(ii) For updating soil surveys, the project name will use the MLRA symbol and the project name (e.g., MLRA 73 – Harney Silt Loam Ksat Study). The “Non-MLRA soil survey area” fields are not populated for update surveys.

(iii) For the Soil Data Join Recorrelation projects, the project name will use the “SDJR” prefix, followed by the MLRA symbol and the project name (e.g., SDJR – MLRA 133B – Bowie fine sandy loam, 1 to 3 percent slopes).

(iv) The “Soil Survey Office Area Symbol” and “Name” data elements must be populated.

G. Standards, Criteria, and Guidelines.—Standards, criteria, and guidelines include taxonomic class limits, series ranges in characteristics, interpretation criteria, and other data and documents used to establish concepts, assist aggregation, and communicate policy in soil survey. Most standards, criteria, and guidelines, such as this handbook and the Soil Survey Manual, are managed as online documents. Some standards, criteria, and guidelines, such as queries, reports, and interpretation criteria, are managed as data in NASIS. These NASIS data records are recorded in the “Query” object, “Report” object, and business objects described for “Properties, Evaluations, and Rules,” defined below.

1. “Query” Object.—This business object is designed to maintain the name, selection criteria, description, and default target table developed for individual queries. The “Query” object contains the “Query” table and “Query Text” table. Queries are created as needed and retained at the discretion of the owner of the query. Ownership of a specific query is indicated by the site and group fields on the “General” tab for the particular query in NASIS. Authority to edit the “Query” object is limited to users who are members of the group that owns the query. Descriptions for data elements in the “Query” object and instructions for use of the editor are in the NASIS online documentation.

Queries.—Specific naming convention is requested to facilitate consistency and avoid duplication of queries within the NASIS application. Queries are used to retrieve specific soil data records from the national NASIS database to populate the local NASIS database and also to bring soil data from the local database into a current NASIS session (selected set) for viewing, editing, or reporting. Note the following guidance on queries:

- The query name should begin with a key word that either targets the table or data being queried (e.g., Component or Area/Mapunit/Component).
- The key word is followed by concise terms that specify the criteria and parameters by which the query selects the data. The suggested syntax is: “[keyword] by [criteria] where [parameters].” Examples include:
  - “Area/Mapunit/Datamapunit by Area ID”
  - “Area/Mapunit/Component by component name, SSA symbol where major = yes”
  - “Pedon/Site/Transect by Soil Name As Sampled”
- The “Query Description” must be populated by describing the appropriate target tables, the purpose of the query, the query author, and the date the query was created.
- User names, numbers, and office locations are not acceptable for query names.
- Key words are not to be prefixed with numbers or symbols with the intent to override sorting.
- Duplicate queries among the various NASIS sites are avoided. A list of “Favorites” is a feature of NASIS that is available to manage the individual user’s queries.
- The “Query Text” table is used to document edits made to each query.
- Further details describing the process of writing queries can be found in the in the NASIS online documentation.

2. “Report” Object.—This business object is designed to maintain the style, format, content, and layout specifications developed for individual reports. Reports are created as needed and
retained at the discretion of the owner of the report. Ownership of a specific record in the “Report” object is indicated by the site and group fields on the “General” tab for the particular report in NASIS. The “Report” object contains the “Report” and “Report Text” tables. Authority to edit the “Report” object is limited to users who are members of the group that owns the report. Descriptions for data elements in the “Report” object and instructions for creating reports are in the NASIS online documentation.

Reports.—A specific naming convention is necessary to facilitate consistency and avoid duplication of reports within the NASIS application. Reports are used to view data and generate output and can be run against the national NASIS database or against the local database. Note the following guidance on queries:

- The report name should begin with a key word, in uppercase, that groups the report for a specific use. Examples include the following:
  - “CORR” for correlation reports
  - “MANU” for manuscript reports
  - “PEDON” for pedon reports
  - “SSS” for soil survey schedule reports
- The key word is followed by a space, en dash, space. This is followed by concise terms that specify the purpose of the report. For example, the syntax should be “[keyword] – [criteria].” Examples include:
  - “CORR – Legend Field Review”
  - “MANU – Soil Features”
- The “Report Description” field must be populated, and it must describe the purpose of the report, the report author, and the date the report was created.
- Do not use user names or locations for report names.
- Key words are not prefixed with numbers or symbols with the intent of overriding the default sorting.
- Avoid duplicating reports, since reports are available on all NASIS sites.
- Notes are entered into the “Report Text” table to document edits made to each report.
- Further details describing the process of writing reports can be found in the NASIS online documentation.

(3) Properties, Evaluations, and Rules.—The criteria for soil interpretations are comprised of “properties,” “evaluations,” and “rules.” These three elements are designed to maintain a list of soil properties, class limits, ranking terms, and restriction terms for each soil survey interpretation. The data for these elements is recorded in the “Property” object, “Evaluation” object, and “Rule” object. Records in each object are used to predict behavior from the physical, chemical, and morphological properties of individual components of map units. Interpretive results are reported and maintained independently from the criteria.

Interpretation Criteria.—Interpretation criteria include official criteria as well as regionally or locally developed criteria. They are created as needed and retained as part of the historical records. Interpretation criteria are housed in several tables in the NASIS application. Further details describing the process of writing interpretations can be found in part 617 of this handbook and in the NASIS online documentation. Detailed guidance on developing interpretations is available from the NSSC soil survey interpretations staff.

H. Spatial Database.—The spatial database is not yet integrated into the NASIS application. It is maintained as a separate standalone database.
639.4 Guidelines for Changing, Adding, or Deleting Soil Property Data Elements

A. Data Dictionary.—The NRCS Soil Science Division maintains a soil data dictionary, which contains the national list of approved soil attributes and the standards for naming, defining, and implementing attributes in soil databases.

B. Maintenance.—NSSC is responsible for maintaining the soil data dictionary and for integrating soil data within soil information systems as well as within other NRCS information systems.

C. Modification.—Changes, additions, or deletions to the soil data dictionary are proposed by any participant in the National Cooperative Soil Survey. Those suggestions are transmitted to the NSSC.

D. Definition.—Changes, additions, or deletions to the soil data dictionary are defined as—

1. Adding or removing attributes from the approved list of soil attributes.
2. Changing the definition of an existing attribute, including adding to, removing from, or redefining abbreviations or codes used to describe soil properties.
3. Adding to, removing from, changing, or redefining the methods used to obtain data for an attribute or changing the methods used for the derivation of data values for the attribute.

E. Proposal Process.—The following steps are used to propose or revise soil property data elements for the NASIS application:

1. Formulate the need for a new element or a revision of an existing data element.
2. Record the necessary descriptive information for the data element using the exhibit found in part 639, subpart B, section 639.10, of this handbook.
3. Solicit comments from other soil scientists to refine proposals. Standing committees of regional NCSS conferences are appropriate venues. Refer to part 602 of this handbook for information.
4. Forward proposals for changes, additions, or deletions of data elements to the director of the NSSC for coordination of review and update of the soil data dictionary.