

Part 617 – Soil Survey Interpretations

Subpart A – General Information

617.0 Purpose

A. Soil survey interpretations predict soil behavior for specified soil uses and under specified soil management practices. They can be used for establishing criteria for laws, programs, and regulations at local, State, and national levels. They assist the planning of broad categories of land use, such as cropland, rangeland, pastureland, forestland, or urban development. They are used to assist in preplanning and postplanning activities for national emergencies. Soil survey interpretations also help plan specific management practices that are applied to soils, such as irrigation of cropland or equipment use. Soil interpretations provide users of soil survey information with predictions of soil behavior to help in the development of reasonable and effective alternatives for the use and management of soil, water, air, plant, and animal resources. Prediction of soil behavior results from the observation and record of soil responses to specific uses and management practices, such as seasonal wet soil moisture status and the resultant effect in a basement. Recorded observations validate predictive models. The models project the expected behavior of similar soils from the behavior of observed soils.

B. Soil interpretations use soil properties or qualities that directly influence a specified use or management of the soil. Soil properties and qualities that characterize the soil are criteria for interpretation models. These properties and qualities include site features, such as slope gradient; individual horizon features, such as particle size; and characteristics that pertain to soil as a whole, such as depth to a restrictive layer. Soil interpretation criteria may change with technology.

C. Laboratory and field measurements, models and inferences from soil properties, morphology, and geomorphic characteristics provide the values used for estimating soil properties. Sources of laboratory data commonly are the NSSC Kellogg Soil Survey Laboratory, agricultural experiment station laboratories, and State highway department testing laboratories. Pedon descriptions record field measurements, field observations, and descriptions of soil morphology. Develop lab sampling plans to fill data gaps. Changes to soil features in the database change soil interpretive results. Soil scientists prepare entries and change entries with interdisciplinary assistance of engineers, agronomists, foresters, biologists, resource conservationists, range conservationists, and others.

D. Interpretations are categorized as national, standard, and regional, State or local:

- (1) National Interpretations.—National soil survey interpretations are nationwide in scope and application, and are mandated by Federal legislation, policy, or regulation. National interpretations may not be modified for State or regional uses because they are designed exclusively for national use across all political boundaries by NRCS and other agencies. Federal programs use national soil interpretations. Examples of national soil survey interpretations are highly erodible land, prime farmland, “T” and “I” factors, hydric soils, and the entire suites of interpretations designated with “MIL” (military) and “DHS” (Department of Homeland Security) as part of their name. The Federal agency that is responsible for the mandated program provides the leadership to develop the criteria and documentation cooperatively with the national leader for soil survey interpretations.
- (2) Standard Interpretations.—Standard soil survey interpretations and their related criteria that are nationwide in scope and application but are not mandated by Federal legislation, policy, or regulation. These interpretations and their criteria are the national standard. The soil survey interpretations generated by these criteria and templates are provided in soil survey publications,

data downloads from the Web Soil Survey, and other soil reports. Most surveys use standard interpretations.

- (3) Regional, State, or Local Interpretations.—Regional, State, or local soil survey interpretations are local or regional in scope and application. These interpretations and their related criteria support interpretations within a local area or region.

E. The cooperators in the National Cooperative Soil Survey develop soil interpretations to support user needs. NRCS maintains them. Published soil surveys include soil interpretations. Thematic maps produced from geographical information systems (GISs) provide an alternate interpretation format.

F. A geographic area may have a wide range of land uses for which soil interpretations are developed, maintained, and published. Local, State, and soil survey regional offices (SSRs) along with National Cooperative Soil Survey participants select the land uses and primary interpretations to be published.

G. National technology support centers, States, and cooperators develop additional interpretations after publication for users requesting assistance. Interpretation developers must appropriately label and date these interpretations. They must provide metadata such as the discipline specialists that developed the interpretation, the status of testing, validation and certification, and the intended extent of the soil interpretation's applicability.

617.1 Responsibilities

Soil survey interpretations are generated within the National Soil Information System (NASIS) using the soil properties that are stored in the Soil Data Warehouse. Exact joins across county and State lines ensure consistency of soil interpretations in Web Soil Survey across these boundaries. Soil survey products use generated interpretations. Do not adjust the ratings. Ratings that are contrary to the experience of those persons familiar with the soil and other performance standards of users should be evaluated. If the performance of the soil is not consistent with the computer estimates, review the soil properties and selected criteria. Also review the assumptions and definition of the practice being rated. A new interpretation with new criteria may be needed.

- (1) Null Values and Consistency of Entries.—Completely populate all data elements that are used as criteria in an interpretation in order to generate reliable interpretations. Data fields with null values or missing data cause the soil interpretation to fail and tables will carry the phrase “not rated” for these components. To ensure consistency of data entry for soil properties and qualities, use the procedures in part 618 of this handbook. Because many entries are subjective and up to interpretation by the soil scientist, training within major land resource areas is encouraged.
- (2) Populating Major and Minor Components.—Completely populate the data elements for major and minor components including map unit components that are entered as series, taxadjunct, family, taxon above family, and miscellaneous area except as noted below in section 617.1(4) Policy guidance related to major and minor components of map units is contained in part 627 of this handbook and in chapter 2 of the Soil Survey Manual. Important points as they relate to database population are summarized here.
 - (i) The number of components listed for any map unit is kept to a minimum. Only those major and minor components required to understand and interpret the map unit should be entered in the database. Components used to describe a map unit should meet the following criteria. Each component—
 - Commonly exists in most delineations of the map unit (except for undifferentiated groups).
 - Contributes to the understanding of the map unit.
 - Contrasts with other major and minor components listed for the map unit.
 - Provides useful data and interpretations.

- (ii) Each major component is correlated to a series, taxadjunct, family, taxon above family, or miscellaneous area and is named accordingly. Similar soils, unless needed for the understanding of the map unit, are not listed as additional components. Rather they may be selectively incorporated into the data ranges populated for the properties and qualities of the named component (see part 618 of this handbook).
- (iii) Minor components occupy a relatively small percentage of the map unit. To be included in the database they should meet the four criteria listed in item 1 above. They are correlated to series, taxadjunct, family, taxon above family, or miscellaneous area as the kind of component. Two or more minor components that are contrasting with a named major component, but that are similar to one another, should be correlated to one minor soil component. The data ranges populated for the properties and qualities for this single component are reflective of the combined similar soils in the same way as is done for major components.
- (iv) Each component entered into the database is populated as fully as possible to maximize the understanding and interpretive value of the map unit.
- (3) Application of National Interpretations.—National program applications use national interpretations and deviations by States or other offices are not allowed.
- (4) Deviation From Standard Interpretations.—Deviations from the nationally supported standard interpretations and their related criteria are documented and renamed by the State. Interpretation development follows the procedure in section 617.10.
- (5) Retention of Criteria and Documentation.—Offices creating local, State, or regional interpretations retain the criteria and performance documentation.
- (6) Responsibilities
 - (i) The national technology support centers are responsible for regional multidisciplinary coordination and quality assurance for the development and maintenance of regional interpretive criteria and information for private and State lands.
 - (ii) The SSR is responsible for—
 - Ensuring that data entries for map unit components meet national standards for data population (refer to parts 618 and 627 of this handbook) and that data are joined and correlated within a major land resource area (MLRA).
 - Reviewing interpretations to assure correlation, technical accuracy, and consistency of the soil data and interpretations across MLRA boundaries.
 - Ensuring that soil performance is correlated to soils according to current policy and guidelines.
 - Maintaining the criteria and templates for regional interpretations within NASIS.
 - (iii) The State soil scientist is responsible for—
 - Coordinating with the responsible soil survey office to ensure the accuracy, consistency, currency, and completeness of all soil data in the NASIS database and the field office technical guides.
 - Assisting soil survey users in understanding and applying soil survey information.
 - Maintaining the criteria and templates for State and local interpretations within NASIS.
 - Coordinating the development of State or local soil interpretations as needed.
 - Fully documenting State and local interpretations as outlined in section 617.10.
 - Maintaining the criteria and templates for State and local interpretations.
 - Ensuring the technical content, coordination, and quality of soil information in the field office technical guides.
 - Providing soils input to all NRCS program activities.
 - Migrating NASIS data to the Soil Data Warehouse.
 - (iv) Federal agencies are responsible for soil interpretations on federally administered lands that are developed in addition to the standard or national soil interpretations.
 - (v) The National Soil Survey Center (NSSC) is responsible for—
 - Developing standards, guidelines, and procedures for making soil interpretations.

- Approving and maintaining the criteria, templates, and documentation for all national interpretations in cooperation with specific disciplines at the national level.
 - Coordinating with other disciplines and program managers in the development of soil interpretations with national application.
 - Initiating regional soil interpretation reviews for standard interpretations through the national technology support centers.
 - Sharing and providing guidance on soil interpretations that are used in soil survey publications, reports, and databases.
 - Providing training in developing, maintaining, storing, and retrieving soil interpretations.
- (vi) Program areas and various disciplines determine the policy for acceptance or application of interpretation criteria for specific uses.
- Responsibilities for engineering interpretations are in Title 210, National Engineering Manual, Part 533, Subpart C, Section 533.22. Soil-related fish and wildlife interpretations and responsibilities are provided in Title 190, National Biology Manual, Part 512, and Part 513, Section 513.15.
 - Soil-related forestry and agroforestry interpretations are provided in Title 190, National Forestry Manual.
 - Soil-related range and pasture land interpretations responsibilities are described in Title 190, National Range and Pasture Handbook, Part 600, Chapter 3, Section 600.0305, and other parts of chapter 3.

617.2 Interpretations for Map Unit Components and Map Units

A. Interpretations. Soil interpretations support detailed soil survey maps, such as from the Soil Survey Geographic (SSURGO) database, general soil association maps, such as from the General Soil Map of U.S. (STATSGO2) database; and the more general soil maps, such as from the national major land resource area map.

(1) Map Unit Components

- (i) Soil survey interpretations primarily address map unit components. Most map unit components have a complete set of data elements sufficient for making interpretations, but some components (e.g., miscellaneous areas) lack needed data. The completeness and accuracy of data and information that are used as soil interpretation criteria determine the accuracy of interpretations. Components lacking necessary data for any interpretation will receive a “not rated” result. Soil scientists review the completeness and accuracy of the database prior to release of interpretations to users. The reports from the NASIS interpretation generator show where data are missing.
- (ii) Map unit components that are miscellaneous areas may have adequate data available to generate some standard interpretations, and may be listed in interpretive tables. Otherwise, suitabilities and limitations can be developed by onsite investigation.

(2) Map Units

- (i) Soil survey interpretations can represent the map unit as a whole. Performance statements which apply to soil map units as a whole use one of two methods for presentation:
 - As percentages of the unit with a specific rating, such as “map unit Alpha-Beta complex, 0 to 3 percent slopes is 60 percent well suited and 40 percent poorly suited for the specified use”
 - As a single rating that was averaged from values or determined from preset percentages, for example, a single yield of crops is given, which may have been calculated on a weighted average based on the percent composition of the map unit.
- (ii) Generally, map unit interpretations are the result of queries from users, who may need information on the major components of a map unit or information on the minor components if the minor components are important to a specific use.

B. Generalized Applications.—Interpretations for map units displayed on smaller scale maps (e.g., 1:250,000), such as the U.S. General Soil Map (STATSGO2), the major land resource area database, or from other general soil maps, are more general than the interpretations displayed on larger scale maps (e.g., 1:12,000), such as the Soil Survey Geographic (SSURGO) database and other detailed soil survey maps of the U.S. General soil map units of the STATSGO2 database commonly contain more map unit components or more broadly defined soil property ranges in characteristics than the map units of the more detailed soil survey maps of the SSURGO database. Performance statements for general soil map units apply to the map unit as a whole and express the percentage of the map unit that meets the performance criteria. For example, “the Alpha-Beta-Gamma map unit is 60 percent well suited, 25 percent poorly suited, and 15 percent unsuited for the specified use.”

617.3 Developing and Maintaining Interpretation Guides and Ratings

A. Standard Interpretative Group Guides.—Standard interpretative groups rely on criteria and information for interpreting soils as referenced in part 622 of this handbook or as approved separately by the national leader for soil survey interpretations and other national disciplines.

B. Responsibilities.—The national leader for soil survey interpretations leads the development, maintenance, and revision of soil interpretive technology and develops policy relating to the application of soil data for standard and national interpretations. Discipline specialists, such as agronomists, foresters, and range conservationists, are essential to the development of soil interpretation guides and standards and in the technical transfer of the resultant interpretations and information to users.

C. Level of Development.—State, regional, or national offices develop soil interpretations and related guides. Interdisciplinary teams develop soil interpretations and related guides for specific soil interpretations. Specialists concerned with a given land use or resource work together in developing the initial criteria, field-testing the criteria, and developing the final guide for interpreting soils for a specified use. The procedure outlined in section 617.10 governs the development and documentation of the proposal.

617.4 Reviewing and Implementing Soil Interpretative Technologies

A. Proposed Changes to Standard Interpretations.—A project soil survey office staff, State office staff, advisory group, conference committee, National Cooperative Soil Survey participant, NSSC personnel, or other discipline specialist may propose soil interpretative guides and criteria changes. The national leader for soil survey interpretations will ensure that all soil interpretations criteria will be reviewed on a regular basis. These proposed changes to standard soil interpretative criteria and guides are submitted to the NSSC’s national leader for soil survey interpretations for distribution for peer review.

- (1) The national leader for soil survey interpretations assigns a sponsor for each interpretation. For criteria changes initiated at the NSSC, the national leader for soil survey interpretations is the sponsor.
- (2) National technology support center representatives are the review coordinators for the national leader for soil survey interpretations. The review coordinators summarize all regional feedback and provide information to the national leader for soil survey interpretations for action.
- (3) The sponsor prepares a “full description” as described in section 617.10 and assembles documentation and copies of technical references supporting the current and proposed criteria for any NSSC, State, or regional variation to the interpretation. The sponsor prepares a list of contacts that support the variations to the standard interpretation and works with regional soil interpretations coordinating team that consists of soil scientists and other disciplines from NRCS

and other agencies. These teams are standing or ad hoc committees within the regional conference committee structure.

- (4) The regional teams—
 - (i) Review the purpose and the scope of the interpretation.
 - (ii) Compare the standard template to the locally tailored interpretations with attention to the documentation provided for the local interpretation.
 - (iii) Determine if any current soil properties used in the standard interpretation are repetitive, should be dropped or rewritten, or if additional properties should be added based on local criteria.
 - (iv) Evaluate technical references or documentation that must accompany suggested changes.
 - (v) Determine if criteria used in local variations warrant using them in standard criteria.
 - (vi) Determine research needs to support criteria changes.
 - (vii) Identify problems or questionable areas with the current or proposed criteria.
 - (viii) Develop documentation for recommended changes in properties or criteria.
 - (ix) Provide a recommendation to the interpretation sponsor.
- (5) The interpretation sponsor monitors and assists each regional team's activities and progress and with their input consolidates the recommendations of each into one recommendation to the national leader for soil survey interpretations.
- (6) The national leader for soil survey interpretations provides a cooperator comment period before the standard interpretation is finalized in concert with other national discipline specialists and before it is implemented in NASIS.
- (7) The national leader for soil survey interpretations arranges for all NCSS cooperators to be notified of changes that have been made to an interpretation.

B. Regional, State, or local interpretation submissions. Submission of regional, State, or local interpretations to the national leader for soil survey interpretations will ensure these developments are shared with potential users. Soil interpretations must meet the requirements outlined in section 617.10. Field observations, research (laboratory and field), and other documentation should support them.

617.5 The National Soil Information System

A. NASIS stores soil survey data, soil performance, and interpretation criteria. Soil interpretations attach to map unit components. Part 618 of this handbook discusses specific data entry for components of detailed map units. NASIS stores all necessary criteria for computer-generated interpretations. Changes to soil properties made in NASIS do not generate new interpretations in the Soil Data Warehouse until they are exported from NASIS to the warehouse.

B. NASIS depends on adherence to National Cooperative Soil Survey policy and procedures and consistent and complete entry of specific soil properties.

617.6 Presenting Soil Interpretations

The method by which soil interpretations are presented, such as tables, databases, interpretative sheets, thematic maps, and special reports provides easily understood soil limitations, suitabilities, or potentials for a specific use. Thematic maps effectively present soil limitations and potentials. A series of thematic maps, each focusing on a single soil attribute, or interpretation, helps many users. For more general use, tables or narrative forms of soil interpretations and potentials are the more common technique.

617.7 Updating Soil Interpretations

A. Changes in Application.—The evaluation and maintenance of soil interpretations is a dynamic process. Changes in soil use or land management practices may require new, revised, or updated interpretations. Soil use changes initiate the revision of soil interpretations. Soil interpretations are updated periodically as more information is gained about a soil and its behavior or as soil properties change due to activities by human activity or nature. Interpretations may change due to changed entries for soil or landscape features or from changes in interpretive criteria. The change is applied when the NASIS data is exported to the Soil Data Warehouse or downloaded directly from NASIS reports.

B. Changes in Soil Information.—Soil maps contained in published soil surveys generally remain valid for many years. However, the information about the soils that are delineated on the maps is continually updated and enhanced as research is conducted or as new kinds of data are collected and entered into the information system.

C. New Uses.—New uses for a soil or new practices that have no existing soil interpretations may become important in an area and thus require the development of new interpretations or the modification of an existing interpretation for a similar use or practice.

617.8 Coordinating Soil Survey Interpretations

A. Similar Soils.—For the major land resource area, specific interpretations for similar phases of a named kind of soil are identical except for minor differences that can be justified by local variations, such as in climate or topography. Similar soils by definition have similar interpretations. In order to generate similar interpretations, soil landscape and soil features and properties must be the same or utilize the same data map unit and interpretation criteria. Interpretations in field office technical guides and soil handbooks are generated from properties and interpretation criteria.

B. Coordinating Soil Properties and Features Used in Soil Interpretations.—Soil data entries and joining are the basis for coordinated soil survey interpretations. Responsibility also consists of coordinating with the adjoining regions and reviewing measured and observed data from all areas in which similar map units occur. State and local program-specific interpretive groups and special interpretative criteria are the responsibility of the State soil scientist.

617.9 Writing Soil Interpretation Criteria

Developing interpretations criteria involves the user. Interdisciplinary involvement is required in developing criteria for interpretations in order to assure that the needs of potential users are addressed. Also consider the clarity, accuracy, and the ability of the criteria to be easily created and modified. Local, State, regional, and national offices develop criteria to represent user needs. They follow a consistent procedure and firmly establish principles for documentation. Consider the ease of development and the stability of the interpretation. Use the expert judgment of specialists and the scientific literature as resources. People who work with the intended use and application know more than what can be speculated by those people with less experience. The following steps lead to the goals for interpretation criteria.

- (1) Define the Activity.—Clearly and very specifically define the activity or use to be interpreted. Cite references that help to define the activity. Literature citations, such as information from the State Health Department, bulletins, or soil performance research, support the decision made and help track the procedure. When defining the activity—
 - (i) Describe the activity or use.

- (ii) Identify the purpose or purposes of the activity or use.
- (iii) Define the desired performance of the activity or use.
- (iv) Specify the soil depths that are affected.
- (v) Identify the type of equipment for installation.
- (vi) Mention resource conditions that indicate a different activity or use or the misuse of this practice.
- (vii) Define the needed specific geographic detail, including the length and width and the direction of application if important.
- (viii) Define the needed map and interpretation reliability and uniformity.
- (2) **Separate Aspects.**—Separate different aspects of the activity for separate interpretations. Aspects of interpretations are planning elements that require different criteria, such as installation, performance, maintenance, and effect. Proceed through the steps to develop criteria for each aspect. Each aspect is a unique interpretation that has separate criteria and users. Mention other aspects that may need interpretation but are not addressed.
- (3) **Identify Site Features.**—Identify site features significant for the interpretation and any assumptions about them. Site features are not soil properties, but are instead features such as climate factors, landscape stability hazard, vegetation, and surface characteristics. Identify and record site features and their relevance to interpretations. Although site features are not soil properties, they are commonly recorded on soil databases and are valuable for developing interpretations because they are geographically specific to soils.
- (4) **List Soil Properties.**—Identify and list all specific soil properties that are significant to the interpretation. Use only basic properties, qualities, or observed properties. Do not make interpretations from previous interpretations or models. Generally, terms that refer to classes fit in this category. Only use derived soil qualities when they are derived within the criteria to ensure the integrity of the data and the resultant interpretation. Terms used as properties or qualities that have inconsistent entries or derivation pathways result in inconsistent interpretations. Concentrating on the basic influencing property that has the most consistent database entries provides for more consistent interpretations. For example, consider the soil moisture status during a construction period and not the drainage class. Minimize the list of properties by identifying only the basic properties. Review the list to ensure that the same property is not implied several times. For example, USDA texture, clay, and AASHTO do not need to appear on the same list.
- (5) **Select the Number of Separations.**—Select the number of interpretative separations, and define the intent of the separation or classification. Each separation should have a purpose, which normally represents a significant management grouping and a need for separate treatment. Commonly used terms in separations are slight, moderate, and severe or good, fair, and poor. User needs dictate the number of separations. The levels of user needs may vary. Some users do not use groupings.
- (6) **Document Assumptions.**—Document assumptions about the significance of the property and established values for separating criteria.
 - (i) A record of the significance of the property helps to define the property and allows for future understanding and modification. It provides a basis for the criteria so that changes can be made if different equipment is used.
 - (ii) Indicate why the feature is important and why the specific break was chosen, such as why a 6-percent slope was used instead of 10-percent slope. If the limit is arbitrary or speculated, state that it is but also indicate the intent of the separation. The new interpretation generator recognizes the progressive effect of a property on the interpretation. The curve for approximate reasoning (fuzzy logic) reflects the increasing, decreasing, or constant effect that varying degrees of a property have on the interpretation. The evaluation phase of the interpretation generator uses the curve.

- (iii) Establish values that are significant to the interpretation and not to the mapping. The values should represent the significance to an activity. Do not consider how soils were grouped in mapping since these groupings may have been made for other interpretations.
- (7) Develop the Criteria Table.—Assign feature and impact terms, and develop the criteria table. The following categories of column headings are recommended for use in the criteria table. Information in the feature and impact columns is helpful in designing ways to overcome the limitation. Ensure that all terms are added to data dictionary.
 - (i) Factor (this is the soil property)
 - (ii) Degree of Limitation (such as slight, moderate, severe)
 - (iii) Feature (the term to be displayed for soil property)
 - (iv) Impact (the dominant impact that the soil property has on the practice being rated)
- (8) Application, Presentation, and Testing
 - (i) Database Needs.—Provide a description of the calculation procedure. The calculation procedure is a set of instructions for the correct access to dataset entries. It is needed to sort criteria from a database without questioning the intention of the interpretation. The description should be specific to the database being used. Instructions for using high, low, or central values of data should be given in this description.
 - (ii) Temporal Considerations for Application.—Identify time dependent or temporal properties or events from the measured permanent features of the soil.
 - Flooding and periods of freezing, wetness, or dryness are significant at the time they occur but not at all times. For example, in planning an installation phase, remember that this phase can be scheduled for alternate times when these events are not significant to the criteria. In these situations, temporal properties should not be part of the criteria unless a practice is being rated for a particular time of the year.
 - If temporal events are important for the permanent performance of the interpretation, then include them in the rating criteria.
 - State the soil moisture condition or the time of the year to which the interpretation applies. Since the conditions of soil moisture and soil freezing vary throughout the year and these conditions affect soil properties, criteria should define stated moisture conditions. Criteria can be developed for different times of the year by defining the criteria for the conditions that exist at the desired time of the year. Information on soil moisture status and freezing conditions are in NASIS.
 - (iii) Reliability
 - Each soil property has a reliability connected to it. Soil property entries may come from measurements, derivations, or estimates. Consider the soil property reliability to inform the users of the reliability of the expected interpretation.
 - Properties can vary according to time of the year. If so, specify a time of the year for the interpretation. The reliability of the interpretation often depends on the seasonal variation of the property. Information presented to the user on temporal variation helps to describe the reliability of the interpretation.
 - Geographic reliability refers to the aerial extent to which an interpretation can be applied. Statements about the consistency, variability, or uniformity of a soil delineation help to define the geographic reliability of the interpretation.
 - (iv) Testing.—Interpretations should be tested against the actual effects on activities or practice performance. Many properties and criteria need further refinement before they can be used. Some terms, such as flooding, require clarifying statements such as for velocity, depth, or duration. Sources of information other than NASIS soil interpretations may be available and should be considered at this stage of criteria development. Also consider related refinements and onsite investigations.
 - Keep in mind that a soil interpretation is for planning purposes. Additional refinements or other resource information can be used for site selection. Soil interpretations alone may not answer all the questions. Inform the intended user about other information that

may be needed. Honestly express the limitations of the interpretation but do not undersell the information. Many users have no other resource information.

- For the final site selection, an onsite investigation may be needed to provide information more specific than that collected and stored in a standard soil survey. Onsite investigation is recommended for expensive installations and for the determination of design criteria.
 - Use benchmark soils for testing interpretations. A benchmark soil and site description and the desired interpretation rating may help to stabilize the criteria. As criteria is developed and adjusted, test the criteria against the benchmark set of properties.
 - Report suspected errors and discrepancies in criteria or constructed interpretation logic to the owner of the interpretation. Contact the national leader for soil survey interpretations for national or standard interpretation errors. When reporting suspected errors in an interpretation include the following:
 - Name of the interpretation
 - Description of the suspected error
 - If known, detail the elements, rules, evaluations, properties, or logic construct that are the problems
 - Reference one or more soil survey map unit components that demonstrate the error
 - Interpretation owner will review and evaluate the reported error:
 - Determine if the interpretation indeed contains an error from its original intent
 - If after review and evaluation the owner determines that the interpretation is functioning as designed, notify the person reporting the error
 - If the interpretation does have an error, notify State soil scientists and NCSS cooperators of the interpretation that contains the error and consider changing the interpretation from “Ready to Use” status to “No” in NASIS
- (9) Date the Interpretation and Criteria.—It is very important to date the criteria and the interpretation tables. As criteria are modified, it may not be apparent that the tables were not generated from current criteria.

617.10 Documenting Soil Interpretation Criteria

A. General. It is important to document information used during development and maintenance of soil interpretations. Soil interpretation users should be able to locate information and references used to develop the interpretation’s rules and criteria. Information regarding the interpretation’s ratings and the person who developed the soil interpretation are helpful in testing or validating interpretations and for determining the geographic extent of intended use of the interpretation. The standard procedure to document soil interpretations is within NASIS. This ensures critical information accompanies products delivered through the Web Soil Survey.

B. Levels of Interpretation Documentation.—Three levels of interpretation documentation are provided for national, standard, regional, State, and local interpretations.

- (1) Summary Description.—A one to two-page narrative summary of the intent of the primary interpretation, its scope, general description of the interpretive criteria, and citations used to support criteria.
- (2) Mid-Level Description.—A more detailed description. It includes contents of the Summary Description plus a description of each interpretive criteria (sub-rule) used in the primary interpretation. It provides the NASIS properties that are used to retrieve data from the NASIS database.
- (3) Full Description.—Information from the mid-level description and the details of data evaluations used in the interpretation.

C. Development and Storage of Documentation

- (1) Summary Description.—Store as prewritten text in the “Rule Description” field of the primary rule in the rule table in NASIS (see example of each below).
- (2) For child rules, evaluations, and properties, store a description of each in their respective description field in their respective table in NASIS (see part 617, subpart B, section 617.20).
- (3) NASIS reports have been written to generate the summary, mid-level, and full interpretation description versions as outlined above. These NSSC Pangaea reports are as follows:
 - (i) INTERP – Rule and Criteria Narration – full
 - (ii) INTERP – Rule and Criteria Narration – mid-level
 - (iii) INTERP – Rule and Criteria Narration – summary

Note: To run these reports in NASIS, all that is needed is to have the primary rule in the selected set.

- (4) During export to the staging server, these three reports will automatically be run and the results stored in the export file.
- (5) These same reports will automatically run when interpretations are updated or added to datasets on the staging server.
- (6) These reports will also be added to the Access template and be available through the Web Soil Survey.

D. Responsibility

- (1) The summary description text and descriptions for each child rule, evaluation, and property are to be developed by the owner of each entity.
 - (i) The national leader for soil survey interpretations maintains documentation for all national and standard interpretations and their component parts.
 - (ii) Each State or local entity is responsible for completing and maintaining documentation for their respective State or local soil interpretations.
- (2) This scheme facilitates a standard delivery mechanism for documenting NASIS interpretations.

617.11 Requirements for Naming Reports and Interpretations

The Web Soil Survey allows the State soil scientist to develop a list of available reports for their particular State. This enhancement requires the development of a State SSURGO Access template database to include the desired State reports. This State-tailored Access template is used to create the State reports on the Web Soil Survey. The following procedures are necessary to provide the management of tailored reports requested by each State:

- (1) Downloading National Reports.—If a State chooses to accept the national reports on the Web Soil Survey and exports only the national and standard interpretations from NASIS to the Web Soil Survey, no additional action is necessary.
- (2) Developing Local Reports, Modifying National Reports, or Creating New Reports.—The following require a tailored SSURGO Access template detailing the exact modifications to be made for the State’s reports on the Web Soil Survey:
 - (i) Developing local interpretations (e.g., sewage lagoons (VA) or dwellings with basements (NC))
 - (ii) Modifying existing national soil property reports (e.g., chemical properties (CA) or water features (CA))
 - (iii) Creating a brand-new report (e.g., soil fact sheet (VT))
- (3) Requirements for Creating a Local Interpretation From a National Interpretation.—When creating a local interpretation from the national/standard (e.g., “ENG - Septic Tank Absorption Fields”), modify the following in NASIS:
 - (i) Naming Convention

- Use the same prefixing protocol established for NASIS interpretations (see figure 617-A1) and the interpretation text name as used for the national or standard interpretation “Rule” name.

Figure 617-A1

Ag Waste Management	(AWM)
Agronomy	(AGR)
Bureau of Land Management	(BLM)
Dept. of Homeland Security	(DHS)
Forage Suitability Groups	(FSG)
Forestry	(FOR)
Grazing Land	(GRL)
Military	(MIL)
National Commodity Crop Productivity Index	(NCCPI)
Recreation	(REC)
Standard Engineering	(ENG)
Urban	(URB)
Urban/Recreation	(URB/REC)
Water Management Systems	(WMS)
Water Quality	(WAQ)
Wildlife	(WLF)

- Modify this interpretation “Rule” name in NASIS to include the two-letter FIPS State code or agency codes (BLM, FS, NPS, etc.) in parentheses, preceded by one space, after the rule name (e.g., “ENG – Septic Tank Absorption Fields (OH)” or “WLF – Desert Tortoise Habitat (BLM)”).
 - Use only State FIPS codes or agency codes. Do not use terms such as, RSS, initials, survey area, etc. See https://www.census.gov/geo/reference/ansi_statetables.html.
- (ii) Documentation.—Use the description field in the NASIS rule table to fully document the State-created interpretation (including “Summary,” “Description,” “Scope” with source citations, and “Criteria” detailing the rule, evaluation, and property as outlined in section 617.10). See national rules for examples of acceptable format and content.
- (iii) Sharing Interpretations Developed by Other States.—To use a local interpretation created by another State or agency, copy and paste the primary interpretation (in NASIS) and change the State or agency code to reflect the new State code or simply export the interpretation as named even though it will contain a different State code.
- (iv) Report Name and Title.—Change the reports in the Access template to display the local interpretations:
- Use the report name and title for the local interpretation as described above.
 - Column headers for local interpretations include the FIPS code or agency code, but not the three-letter prefix code (ENG, WMS, etc.). For example, “Sewage Lagoons (VA)” is correct.
 - Edit the Access “Report Documentation” field to provide an explanation of the use of the State code designating the interpretation as one that has been developed using local criteria. Inform the user of any significant criteria differences or criteria references necessary to understand the use of the interpretation.
- (4) Requirements for Modifying Existing National Soil Property Reports.—If a national properties report is modified (e.g., removal of the “gypsum” column from the Chemical Properties report), the following changes are needed:
- (i) Report Name (Displayed on Drop-Down Menu on Web Soil Survey).—Add the State two-letter FIPS code or agency code to the report name to identify “State” modification of the report (e.g., Chemical Soil Properties (CA)). Place the two-character State code in

parentheses, preceded by one space, after the report name. This State “report name” supersedes the national report and replaces the national report. The Web Soil Survey drop-down list is alphabetically arranged. Multiple versions of the same report may be used within a State with the names modified to distinguish between them (e.g., Chemical Soil Properties (CA), Chemical Soil Properties for Volcanic Soils (CA)).

- (ii) Name Modification.—Use only State codes or agency codes (BLM, FS, NPS, etc.) as modifiers to the report name. Do not use terms such as MOxx, initials, survey area, etc.
- (iii) Report Title.—The report title is the actual title on the printed report page. The report title is changed to match the report name (e.g., Chemical Soil Properties (CA)).
- (iv) Documentation.—The “Report Documentation” field in the Access template table “SYSTEM - Soil Reports” is edited to reflect any report modification. This prewritten material is specific to the report and is reviewed by editorial staff.
- (5) Requirements for Creating a New Report.—When creating a new report that does not replace a national report (e.g., “Soil Fact Sheet” created by Vermont), take the following actions:
 - (i) Develop the Report Name.—The report naming convention should include the State code or agency code as described above (e.g., “Soil Fact Sheet (VT)”).
 - (ii) The new State-specific report is intermingled alphabetically with the national reports.
- (6) Detailed instructions for modifying the Access template database. See the document titled “SSURGO_Template_DB_Customization_Guide.doc” for detailed instructions about modifying the Access template database. The guide is housed in a .zip file which is available for download at https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2_053550 under the heading “Microsoft Access SSURGO Template Databases.”
- (7) Use of the National Template.—The National SSURGO Template Database is now available exclusively through the Web Soil Survey by clicking on the “Start WSS” button, “Download Soils Data” tab, and “Download SSURGO Template Database” bar at <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>. Modify this template with State reports and submit to the national leader for soil survey interpretations for inclusion in Web Soil Survey.
- (8) Editorial Review.—Submit all reports developed or modified by a State, including report descriptions, to the national leader for soil survey interpretations for review by the editorial staff. This includes all local reports in existing Access templates.
- (9) Coordination and template delivery to the Web Soil Survey.
 - (i) The national leader for soil survey interpretations coordinates all editorial, consistency, and “look and feel” issues with State soil scientists, SSRs, editors, and others.
 - (ii) The national leader for soil survey interpretations provides the final Access template to the ITC staff for template delivery to the Web Soil Survey web site and for development of the State reports. Access templates are not posted directly to the staging server.

617.12 Interpretation Overrides

The NASIS interpretation generator has methods of overriding the standard interpretation results. This enhancement requires the development of an interpretation property that is used to flag a specific soil property to trigger the interpretation override. There are two instances that have been created to override the generated interpretations. The following population procedures in the local phase column provide an interpretation override.

- (1) Unstable Fill.—Population of the term “unstable fill” in the local phase column is used to override interpretations for soils built from mine reclamation materials. Typically, these soils will interpret with few, if any, limitations within the 2-meter zone of observation. However, these materials are susceptible to differential settlement due to reclaimed materials outside the zone of observation. To override the results of the standard interpretation, the local phase is populated with the term “unstable fill.” This term is a flag used by the NASIS interpretation generator to rate the soil as “very limited” with a restriction as “unstable fill.”

- (2) Impacted.—Population of the term “impacted” in the local phase is used to override used in soils that have become contaminated with heavy metals and other toxic elements. These soil materials may rate as favorable for uses however the contamination is an overriding factor that should preclude the soil from being rated. To override the results of the standard interpretation, the local phase is populated with the term “impacted.” This term is a flag used by the NASIS interpretation generator to rate the soil as “not rated.”