Soil Data Join Recorrelation Initiative
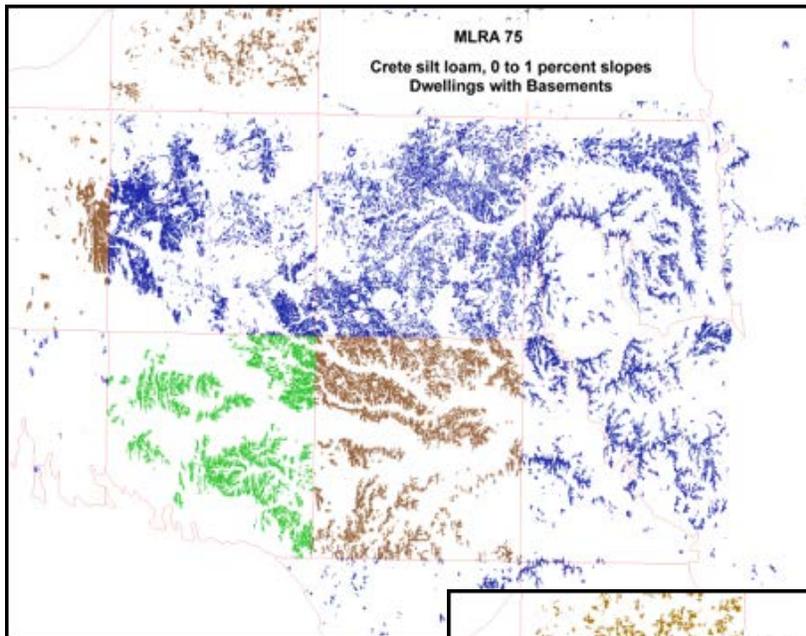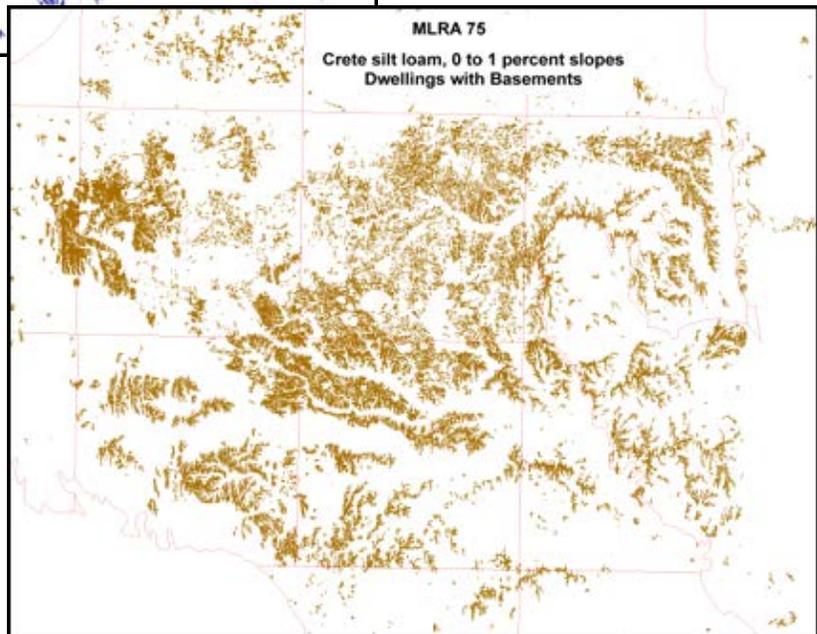
Second Edition

(SDJR)

Accelerating the soil survey improvement phase using an MLRA approach

Evaluating soil surveys and bringing map units to a common standard

From this:

To this:

Title 430 – National Instruction

Contents

(430-305-NI, 2nd Ed., Nov 2013)

Part 305 – Soil Data Join Recorrelation (SDJR) Initiative

305.0 Purpose

A. SDJR Initiative

This initiative emphasizes and accelerates the ongoing MLRA approach to soil survey updating as applied by the National Cooperative Soil Survey program. For soil survey offices working on initial mapping, the completion of the initial mapping is the priority before SDJR is fully implemented. The SDJR Initiative will focus on the evaluation of the map units within the MLRA, identification of future workload, and the harmonization of data in the attribute database. The initiative will result in a recorrelated MLRA map unit concept. This approach will bring map units to a common standard and minimize the influences of political boundaries. The map units with the same and similar names will be evaluated within projects. The map units will be fully populated to 100 percent of their composition and all components fully populated. Soil properties for each component will be evaluated and determined using sound scientific procedures and expert knowledge. In some cases the map unit concept may change drastically enough to warrant multiple MLRA map units. In these instances, all documentation will be maintained within the original project. Future initiatives will focus on new spatial products and field collected data necessary to statistically support map unit composition and soil properties where deficiencies are noted during the SDJR Initiative.

B. Improving Survey Joins

An increasing number of users of soil information request seamless data for State, regional, and national analysis. The maps, models, and ecosystem processes are used in policy discussions, scientific assessments, and natural resource decisions. The analysis and development of the MLRA map unit concept will reduce the perception of soil property misjoins along survey boundaries. The majority of component-level properties are the same for same-named components within map units; however, map unit composition and survey-specific component horizon depths, when aggregated to the map unit level, provide differences in soil property or soil interpretation values. The creation of MLRA map units will allow map unit property and interpretation values to flow seamlessly across political boundaries. This initiative is intended to reduce the number of map units, components, and horizons, resulting in more efficient and consistent data management. When the attribute data are linked to the spatial database, the visual display of map unit property and interpretive maps will be improved. The spatial database polygons will be analyzed in a later initiative.

C. Data Quality and Consistency

This instruction provides the procedures for improving the quality of the component property data and interpretations and reducing unnecessary map unit redundancy. The improvements will follow MLRA soil survey update procedures as identified in Title 430, National Soil Survey Handbook (NSSH), Parts 608, 609, and 610. The initiative will use existing information and knowledge to rapidly evaluate and make database enhancements. Map units requiring field data collection or spatial revision will be documented in NASIS as future projects. Review and future improvement of the spatial database will benefit from the improved attribute database. Consistent population of components in the attribute database will provide information necessary for use in developing raster-based soil survey maps.   Exhibit B identifies those pertinent properties necessary to identify minor components in future raster-based survey maps. Future initiatives will include tools for improving the spatial database and developing new spatial products. The soil polygon lines will not be edited during the SDJR Initiative. Edits to the spatial database should be identified in the future projects. As experts in the MLRA, the soil survey office staff

will work to evaluate the map units within their office boundaries. This initiative will provide consistency of soils information for Farm Bill program needs, operation of the Enterprise Business Initiatives (EBI), the Conservation Delivery Streamlining Initiative (CDSI), the Conservation Effects Assessment Project (CEAP), the National Resources Inventory (NRI), other soil erosion prediction models, and other interpretive decision aids.

305.1 References

A. Soil Survey Division Staff. Soil survey manual (SSM). Soil Conservation Service. United States Department of Agriculture Handbook 18. (Available at http://soils.usda.gov/technical/manual/.)

B. United States Department of Agriculture, Natural Resources Conservation Service. NASIS user guide. (Available at http://soils.usda.gov/technical/nasis/documents/documentation_6/index.html.)

C. United States Department of Agriculture, Natural Resources Conservation Service. Title, National Soil Survey Handbook (NSSH). (Available at http://soils.usda.gov/technical/handbook/.)

D. United States Department of Agriculture, Natural Resources Conservation Service. National soil survey technical notes. (Available at http://soils.usda.gov/technical/technotes/.)

E. United States Department of Agriculture, Natural Resources Conservation Service. Soil survey laboratory information manual (SSIR 45). (Available at ftp://ftp-fc.sc.egov.usda.gov/NSSC/Lab_Info_Manual/SSIR_45.pdf.)

305.2 Background

A. Initial Soil Surveys

In the first 100 years of the National Cooperative Soil Survey (NCSS) program, soil surveys were conducted county by county based on State priorities and on applied statewide and regional guidance documents and correlation processes. The application of soil survey data and maps was designed for local planning management. Material that was originally developed as information pertinent to a specific county is now being used on a larger scale, and data differences related to the product's vintage are perceived as improper map unit joins across political boundaries. Technologies in soil survey evolved significantly over this 100-year period, and surveys of adjacent counties were often separated by years of scientific advancement. The SDJR Initiative begins the process of bringing attribute data to a common standard through "harmonization" and identifies future projects requiring additional fieldwork.

B. Technology

Technological advances in tools for managing attribute and spatial data have allowed soils data and maps to be stored and manipulated digitally in the National Soil Information System databases. These data are being used far beyond the scope of their original design or intention. Sophisticated analysis and modeling techniques using geospatial visualization and operating on State and national scales often highlight the differences in attribute data between adjoining soil surveys, even when the map unit names and soil series are similar.

C. MLRA Soil Surveys

The Soil Science Division has positioned its future program by establishing MLRA soil survey regional offices and MLRA soil survey offices. The organization of these offices fosters the update of soils information in a manner that minimizes historical political or regional bias. Update of soils information will be based on typical conditions within the MLRA.

305.3 Responsibilities

A. National Headquarters

(1) Provide direction for the new SDJR Initiative
(2) Provide appropriate goals
(3) Track progress and post results
(4) Brief national staff and States on the initiative
(5) Educate customers on progress and how a more uniform soils database will reduce inconsistencies across political boundaries

B. National Soil Survey Center

(1) Establish an advisory team and technical team to coordinate necessary tools, techniques, and data layers
(2) Provide national training to soil survey regional staff
(3) Provide national oversight on the progress of the initiative
(4) Ensure consistency across soil survey regional boundaries
(5) Develop success metrics (progress maps) to monitor initiative progress

C. State Soil Scientist

(1) Educate and inform their State Conservationist, NCSS cooperators, and soil survey users of priorities and progress
(2) As a member of the MLRA management team, help to establish workload priorities
(3) Assist in removing political and regional bias in favor of actual conditions found within the MLRA
(4) Certify the soil survey legend and upload data to the Soil Data Mart
(5) Inform the field offices and public of significant changes

D. Soil Survey Regional Office

(1) Ensure MLRA quality assurance of all SDJR projects
(2) Provide training, coordination, and support to the MLRA soil survey offices
(3) Ensure consistency across soil survey office boundaries within the soil survey regional boundaries

E. MLRA Soil Survey Office

(1) Ensure quality control of all SDJR projects
(2) Inventory and assess map units within the area of responsibility
(3) Document evaluation findings
(4) Propose MLRA map units
(5) Compile and analyze existing documentation (this information will be used to update map unit composition and component properties for the MLRA map units)
(6) Complete SDJR approved projects
(7) Populate future projects in the NASIS Project table

305.4 Objectives

A. Map unit evaluation

SDJR will evaluate map units as set forth in 430-NSSH, Part 610. The inventory and analysis of the map units will be performed within an MLRA. The evaluation will document the completeness, accuracy, and continuity of soils information. This evaluation will be used to

prioritize the review of soil components or map units to be "harmonized" or to document the need for a future field project.

B. Documenting Future Needs

SDJR will identify and document future soil survey projects requiring additional fieldwork or spatial revisions outside of the SDJR Initiative. The list of future projects will be used to build the long-range plan for the MLRA soil survey office. Soil survey offices working on initial mapping or extensive revision projects can propose and document future projects as they identify issues.

C. Harmonizing Data in the Attribute Database

SDJR will use existing survey documents (manuscripts, correlation documents, pedon descriptions, lab data, etc.), databases, and expert knowledge to harmonize attribute data. SDJR will reconcile map unit phase names and harmonize component properties as the map unit flows across multiple soil survey areas within an MLRA. Attribute data will reflect actual conditions documented within the MLRA and will minimize regional or political bias.

305.5 Project Procedures

A. MLRA Inventory and Assessment

(1) The inventory and assessment will develop the list of map units (MUs), excluding miscellaneous areas, within the MLRA soil survey office territory to be developed as SDJR proposed projects.

(2) Priority of map unit selection will be based on those map units in the highest number of survey areas, those with the highest total map unit acre count, and those same-named or similarly named map units linked to multiple data mapunits. Similarly named map units using the same major component should be grouped and included in the development of SDJR projects (regardless of the number of acres, number of soil survey areas, or number of map units).

(3) Projects are developed in the NASIS database. Map units with the same map unit concept and the same or similar names should be grouped into projects.

(4) NASIS contains a number of national evaluation reports prefixed with "MLRA – eval." These reports are used to analyze MLRA assignment, map unit acreages, map unit component composition, and component properties. The reports will be used to identify the potential MLRA fiscal year workload and priorities. Grouping fiscal year map unit projects by component name will improve efficiency and reduce inconsistencies within same-named (identical) components within a survey area (e.g., all Alpha components within the MLRA).

(5) The inventory and assessment should consider—

(i) Unique map unit names linked to multiple data mapunits (DMUs).

(ii) Benchmark soils.

(iii) Similarly named map units occurring in multiple survey areas.

(iv) Map units with large acreages.

(v) Soil series and components with large acreages.

(vi) Map units within a similar landform catena.

(vii) Development of MLRA choice lists for series, their parent materials, their geographic positions, and other pertinent choice lists and "similar/dissimilar models" for soils within the MLRA for consistency.

(6) The soil survey office will work on the map units and develop projects within the relevant MLRA boundaries. For map units flowing across the boundaries of MLRA soil survey offices, the regional director will determine whether projects involving these map units

should be coordinated and completed simultaneously by the different MLRA soil survey offices.

B. Creating Spatial Distribution Maps

   (1) GIS datasets and tools are available to rapidly create maps necessary for evaluating the geospatial variability of the project map units. Additional tools and spatial datasets can be found on the SDJR SharePoint site, https://nrcs.sc.egov.usda.gov/ssra/nssc/datajoinr/Shared%20Documents/Forms/AllItems.aspx.

   (2) Soil property thematic maps or interpretation thematic maps, or both, are generated during inventory and assessment and used to identify potential issues. These maps should be saved for use as future documentation and marketing to identify the SDJR improvements.

   (3) Other important GIS layers to supplement the soils layer are:
       (i) Climate
           • Precipitation/temperature
           • Precipitation effectiveness
           • Frost-free days
       (ii) Geology
       (iii) DEM, landform, etc.
       (iv) Land cover
       (v) STATSGO2
       (vi) Ecological regions, subsections, etc.

C. Compiling Historical Information

   See 430-NSSH, Part 610, Exhibit 610-1 for a detailed list of information to compile. Items to compile include the following:

       (i) All available historical documentation
       (ii) Personal interviews from retired soil scientists
       (iii) Published soil survey manuscripts
       (iv) Laboratory investigations by the Kellogg Soil Survey Laboratory (KSSL) and university labs (Lab data will be used in the review of a component's properties.)
       (v) University research findings (theses, dissertations, etc.) and other published materials
       (6) Official soil survey records (correlation documents, progress field reports, etc.)
       (vi) Pedon descriptions and transects
       (vii) Expert knowledge from soil scientists familiar with the area

D. Reviewing Historical Manuscript Map Unit Descriptions

   Read the manuscript map unit descriptions, pedon descriptions, and lab characterization reports. It is the manuscript, not the database, that explains the map unit concept. The manuscripts can contain information or overrides never entered into the database.

       (i) Review the map unit names and phase criteria within the MLRA based on guidance in 430-NSSH, Part 627, and the Soil Survey Manual (SSM), Chapter 2. Reconcile the map unit name phase criteria for similarly named map units to a standard developed for the MLRA.

       (ii) Compare the map unit concept for the similarly named map units within the MLRA. Identify and reconcile the map unit compositions (major and minor components) from the various soil surveys.

       (iii) Identify minor components worthy of populating within the MLRA map unit. Verify those minor components contrasting to the named major components. Development of a MLRA similar/dissimilar model provides consistency.

(iv) Ensure the spot symbol layer has been reviewed to identify additional minor components not written into the map unit description.

(v) Review the manuscript reports and compare the soil properties and interpretations assigned to the map unit components.

(vi) Gather all characterization data on the major components for the given project. Analyze the data to verify proper correlated name and correlated classification. Manuscript information and lab data will be used as the foundation for populating the estimated soil properties for the components in the MLRA map unit.

E. Creating Proposed SDJR Projects

The SDJR Initiative will be managed in the NASIS Project object. The soil survey regional office staff will assist with identifying priority map units. The management team concurs with the SDJR project. SDJR projects are approved by the soil survey regional director. SDJR projects will include the following elements:

(1) Two or more similarly named "correlated" map units will be recorrelated to a single map unit concept using a single national map unit symbol.

(2) Same-named map units (phases) occurring in the same MLRA and having multiple DMUs will be recorrelated into an MLRA map unit represented by one DMU.

(3) The major components of the MLRA DMU are correlated to a current soil series or taxonomic unit. The taxonomic class of the major named components of the DMU and the OSD are updated to the latest version of the Keys to Soil Taxonomy. The official series description (OSD) will be reviewed to ensure it encompasses the representative value (RV) of component properties.

(4) Detailed instructions for "Project" table population are provided in the NASIS User Guide, Chapter 14. This document is available at http://soils.usda.gov/technical/nasis/documents/documentation_6/index.html.

(5) Proposed SDJR projects will be populated in the "Project" table and "Project Mapunit" table:

(i) Project Name

SDJR projects are required to contain "SDJR – MLRA XXX – " as a prefix in the project name (e.g., SDJR – MLRA 133B – Bowie fine sandy loam, 1 to 3 percent slopes). The MLRA used in the project name is the one in which the largest extent of the map unit occurs. Project names will remain unchanged once the project is approved.

(ii) Project Description

Projects will include a description to substantiate the issues and needs. This description will be used by the MLRA management team to establish priorities. The project description should identify what was found during the inventory and assessment of the map units and the course of action to be taken, for example—

   - The historical nature of the project.
   - The soil surveys and location of the project area.
   - The acreage of the map units.
   - Why the project is needed.
   - The hypothesis of the project.

(iii) Approval

This column is checked when "Approved" or cleared if "Not approved."

(iv) MLRA Soil Survey Office

This is the office assigned to work on the project. The evaluation may identify map units with the same or similar names within another office's territory. In these instances, more

than one project may be created for those same-named map units and assigned to the appropriate office. The regional director will determine whether these projects should be coordinated and completed simultaneously by the different MLRA soil survey offices.

(v) Non-MLRA Soil Survey Area

The columns in this banner are NOT populated for SDJR projects.

(vi) State Responsible

Populate the State in which the soil survey regional office resides.

(vii) "Project Mapunit" Table

Populate the correlated map units assigned to the SDJR project.

(6) After review by the soil survey regional office, the MLRA soil survey leader will notify the MLRA management team, which will review and concur with proposed SDJR projects as outlined in 430-NSSH, Part 610, "Policy and Responsibility" and "Project Plan." The soil survey regional director approves SDJR projects.

305.6 Approved Projects

A. Developing Approved SDJR Projects

When approved, the soil survey office staff will begin to populate and manage the project. Detailed instructions for populating the "Project" object are provided in the NASIS User Guide, Chapter 14.

(i) The "Project Mapunit" table should already include correlated map units associated with the project.

(ii) Check the "Project Approved" column.

(iii) Populate the "Project Land Category Breakdown" table. Identify the appropriate land category and populate the sum of map unit acres for each category.

(iv) Populate the "Project Mapping Goal" table. Populate the fiscal year. The SDJR goaled acres are 20 percent of the total project map unit acres.

(v) Populate the "Project Staff" table with the names of people whose time or resources will be needed for the project. Identify the person leading the work on the project as the "Project Leader."

(vi) Populate the "Project Milestone" table with the required milestones and dates:
- Project approval date
- SDJR 1. Create spatial distribution maps
- SDJR 2. Compile/review/evaluate historical data
- SDJR 3. Populate correlated map units into SDJR project
- SDJR 4. Enter pedons in NASIS
- SDJR 5. Review historical MU/DMUs
- SDJR 6. Create and populate the new MLRA MU/DMU
- SDJR 7. Document the MLRA MU/DMU
- SDJR 8. Identify/propose future field projects
- SDJR 9. Update OSD and lab characterization data
- SDJR 10. Quality control completed
- SDJR 11. Quality assurance completed
- SDJR 12. Correlation activities completed
- Project completed date

(vii) Create new MLRA map units and their new MLRA data mapunits.

- The creation of a new MLRA map unit will establish a new map unit concept for the MLRA. The original map units will be preserved to archive the original data.
- Add the new MLRA map units into the "Project Mapunit" table.
- Populate "500" in the "Project Mapunit" sequence number column as the sequence number for the MLRA map units. This sequence number will be used to identify the MLRA map unit.
- All notes and all data population will be contained within the MLRA map unit.

B. Entering Taxonomic Unit Descriptions into NASIS

(1) Review and update the classification of the taxonomic unit descriptions (TUD) and enter them into NASIS.
(2) Confirm the taxonomic unit concept is within the series taxonomic class; confirm the RVs of map unit component properties do not cross critical taxonomic limits now considered series criteria.
(3) Verify the TUD correlation to the soil series and ensure all soils of the named series currently fit the OSD series concept (as the series concept may have been refined in the previous process step).
(4) Consider TUDs falling outside the current series taxonomic class for use in other named components or identify future field projects to collect additional data on the particular soil.
(5) Review other pertinent pedon descriptions and laboratory data. Duplicates do exist and should be reconciled if necessary.
(6) Link the pedons to the component for the new MLRA map unit. Identify the one pedon to be assigned as the representative pedon.
(7) Enter any additional supporting pedon data deemed appropriate. Link supporting pedons to the MLRA DMU component in the NASIS "Component Pedon" table. The TUD pedons, and linked pedons, represent a population aggregated to build the component. It is not an SDJR requirement that the representative pedon horizon depths match the component RV horizon depths.
(8) Pedons entered in NASIS should include the following, at a minimum:
   (i) User Site ID and User Pedon ID, created using proper national nomenclature, e.g., 1972WA027009 (the dates associated with the TUD, if not known, should use the manuscript correlation date)
   (ii) "Sampled as" name and classification
   (iii) "Correlated as" name and classification
   (iv) Pedon Type
   (v) Current Taxon Kind
   (vi) Latitude and longitude expressed as WGS84 decimal degrees
   (vii) Geomorphic description
   (viii) Parent material
   (ix) Overlap tables (e.g., State, county, MLRA, survey area, map unit, topographic quad)
   (x) Horizons and depths
   (xi) Soil diagnostic properties needed to classify the pedon
   (xii) All information that accompanies the pedon description

C. Populating the New MLRA Map Unit

The NASIS database contains estimated soil properties for general land use planning; therefore, the entire population of a map unit should be evaluated prior to population of its soil properties.

   (i) Existing manuscripts, pedon data, and correlation documents will be used to support map unit phase name decisions.

(ii) A new MLRA map unit and data mapunit will be created for the project. The SDJR requirement is a fully populated data mapunit (see exhibit A).

(iii) If data is not available to fully populate minor components (per exhibit A), placeholders will be used and populated with the minimum data population for minor components (see exhibit B). These placeholders will be replaced with a fully populated component when data is available.

(iv) Any unnamed or uncorrelated hydric soil components added to the database for program activities will be populated with the minimum data population for minor components (see exhibit B).

(v) Component layer data can be expanded to all horizons necessary to fully express the change in soil properties associated with depth.

(vi) The component horizon relative value (RV) depths are populated based on the analysis of the full population of linked pedon descriptions. Using the representative pedon depths, as identified in section 305.6B(7) above, is not a SDJR requirement. Horizons with similar properties will be grouped for depths based on sufficient field documentation. The estimated horizon depth ranges (low and high) will be developed after analyzing and aggregating supporting pedons.

(vii) Where documentation or confidence allows, component horizons will be extended to a depth of 200 centimeters or a depth of 25 centimeters below the root-restricting depth.

D. Documenting the MLRA Map Unit

(1) Summarize all evaluation decisions for the new MLRA map unit in the "Mapunit Text" table. Instructions are provided in 430-NSSH, Part 610.

(2) All correlation decisions for the MLRA map unit will be documented in the "Mapunit History" and "Legend Mapunit Text" tables. Maintaining documentation in these tables will keep all decisions readily available and linked with the map unit.

(3) The required "map unit concept" completes the development of the MLRA map unit. This free-form text will explain issues discovered when moving the historical county map unit phase concepts into the new MLRA map unit concept. It should be concise (with correct spelling and proper grammar), focus on the soil-forming factors, and provide information so the future reader can understand the project decisions. This text is the opportunity for the project leader to provide additional details about how and where the map unit is geographically mapped and identify spatial areas that should be field verified. The text should include the new geographic setting and the range for the new map unit. Explain the parent materials describing the geological formations typical for the map unit. Include vegetative information (crops, plants, trees, etc.) to assist in development of plant communities. Provide an explanation on the minor inclusions written into the manuscripts and the decision process leading to those components populated in the database. Provide further explanations on soil properties, qualities, and interpretations to clarify map unit component concepts; this could include soil classification, other phases, soil moisture status, restrictions, organic matter, pH, carbonates, hydric status, farmland class, land capability subclass, hydrologic soil groups, ponding, flooding, ice melt issues, etc. Incorporate the expert knowledge gained during the spatial, manuscript, database, and interpretation evaluations. And, most importantly, provide a thorough listing of all the issues that need to be addressed in future MLRA projects.

(4) The "map unit concept" will be stored in the "Mapunit Text" table. Because the concept is mined for reports, it is critical to populate exactly as specified:

(i) "Kind" is "map unit description"

(ii) "Category" is "map unit concept"

(5) Map units requiring spatial recertification because of a map unit symbol change will be identified in the "Project Mapunit" table. The original map unit, in the "Project Mapunit"

table, will have a sequence number identifying the fiscal year (2013, 2014, etc.). The sequence number will be mined from the database by the SSRO GIS personnel to identify the map unit and survey area recertification workloads.

E. Identifying Future MLRA Workload

(1) Soil survey offices working on initial mapping or extensive revision projects may propose and document future projects.

(2) Each completed SDJR project will identify future projects. A future MLRA project will be created to address the deficiencies noted in the SDJR evaluation (e.g., additional lab analysis, reliable map unit composition, spatial revisions and modifications, minor component population, ecological site inventories, etc.). The future projects will be used to develop the MLRA long-range plan.

(3) Future MLRA field projects will be entered in the NASIS "Project" object and the following fields will be populated:

(i) Project Name

Proposed MLRA projects will begin with the MLRA as a prefix in the project name (e.g., MLRA 133B – Smithdale fine sandy loam, 8 to 15 percent slopes).

(ii) Project Description

MLRA projects can use the SDJR "map unit concept" text, as described in Section 305.6D(3) above. Sufficient information will be provided to clearly explain the issues and workload.

(iii) Approval

This column is cleared to indicate "Not Approved."

(iv) MLRA Soil Survey Office

This is the office assigned to work on the project.

(v) State Responsible

This is the State in which the soil survey regional office resides.

(vi) "Project Mapunit" Table

This populates the map units assigned to the project.

(vii) "Project Milestone" Table

The milestone "Future Project from SDJR" will be assigned to the project. This milestone is used to mine the database for these future projects. Other milestones can be added to the table to identify future issues or workload to be addressed.

(4) There may be instances where map units cannot be harmonized under the SDJR Initiative without fieldwork or changes to soil polygon lines. If it is determined, during the progression of an approved SDJR project, that the database harmonization cannot be completed without fieldwork or spatial revision, the MLRA soil survey office leader will complete the "map unit evaluation" and the "documenting future needs" objectives and remove the acronym "SDJR" from the project name, converting the SDJR project into a future MLRA field project. Mapping progress is only reported on those SDJR projects completing all three SDJR objectives of evaluation, documentation, and harmonization as listed in section 305.4. After consultation with the regional director, the future MLRA field project will be edited to—

(i) Fully document the evaluation issues preventing the "harmonizing of the attribute database" objective.

(ii) Set the "Project Approved Flag" to unchecked.

(iii) Edit the "Project Mapping Goal" record.

(iv) Edit the "Scheduled Completion Date" in the milestone "Project completed date."

F. Reviewing Official Series Description and Lab Characterization Data

(1) The official series description (OSD) will be reviewed after completion of the SDJR projects. Updates to the OSD will follow the standard operating procedures for the soil survey regional office. Submit proposed OSD revisions to the soil survey regional office.

(2) The Kellogg Soil Survey Laboratory (KSSL) data will be used to support the component properties. The KSSL pedons used to support the component properties will be reviewed and, if needed, updated by the soil survey office. Submit changes to the soil survey regional office for review. See the KSSL SharePoint site (https://nrcs.sc.egov.usda.gov/ssra/nssc/ssl/Shared%20Documents/Forms/AllItems.aspx) for instruction on updating the correlated name and correlated classification for sampled pedons.

305.7 Quality Control

A. Quality Control Guidance

The soil survey leader will complete the quality control process in accordance with 430-NSSH, Part 609. Exhibit A will be used as a quality control checklist. It provides a logical method of populating the component so that all fields are populated properly.

B. Supplemental Instruction

The soil survey regional office can supplement the national quality control exhibit (exhibit A) with additional explanation or clarification.

C. Reconciling State Interpretations and Performance Data

The SDJR intent is to harmonize the map unit concept across political boundaries to create a MLRA map unit concept. Any performance data, interpretation, or interpretation grouping that disrupts flow of a map unit across the MLRA will be resolved by the soil survey office staff.

(i) The resolution will be based on the actual soil properties evaluated using national criteria.

(ii) Where performance data is in question, the State soil scientists will be consulted to provide the agreed-upon values to be assigned in the MLRA map unit.

(iii) Where an interpretation is in dispute, the written State criteria from each State will be provided and analyzed. Written interpretive criteria is required in the event of any dispute. The soil survey office staff will review the written criteria and provide a resolution. Discrepancies will be noted, and a proposed compromise will be documented.

(iv) Unresolved issues will require review and resolution by the management team.

D. If a State requires specific county-based performance data, the data will be delivered via the Field Office Technical Guide (eFOTG) or State-based SSURGO template as a separate State- or county-specific report.

E. Map Unit History

The MLRA soil survey office leader will populate all MLRA map unit correlation decisions in the "Mapunit History" table within the new MLRA map unit.

F. Quality Control Products

The NASIS component validation "!SDJR Required Component Data" and the horizon validation "!SDJR Required Horizon Data" are provided for the QC check. Additional validations are noted

in exhibit A. The complementary NASIS report named "!!SDJR – DMU Quality Check" should be used as a final check of the DMU data.

G. Quality Control Certification

The MLRA soil survey office leader—

(i) Certifies the completed quality control review in the "Data Mapunit Certification" table.

(ii) Populates the "SDJR 10. Quality control completed" milestone with the completion date.

H. Map Unit Concept

The MLRA soil survey office leader will review the "map unit concept" text note written by the project leader.

I. Quality Assurance

The MLRA soil survey office leader releases the project to the soil survey regional office for quality assurance.

305.8 Quality Assurance

A. Quality Assurance Guidance

The SDQS will complete the quality assurance following guidelines outlined in 430-NSSH, Part 609.

B. Map Unit Concept Documentation

The SDQS will ensure that the "map unit concept" has been written for the completed project and review the correlation decisions populated in the "Mapunit History" table.

C. Certifying Quality Assurance

The SDQS—

(i) Certifies the completed quality assurance review in the "Data Mapunit Certification" table.

(ii) Populates the "SDJR 11. Quality assurance completed" milestone with the completion date.

D. New Map Unit Symbols

The State soil scientist will provide the SDQS with the publication map unit symbol if a new MLRA map unit is needed. The SDQS edits the legends to change the status of the old map units from "correlated" to "additional" and the status of the MLRA map unit to "correlated." Detailed instructions are found in the NASIS User Guide, Chapter 14.

E. Overlap Tables

The SDQS reviews the overlap tables and verifies that the new MLRA map unit is assigned in the appropriate overlap tables.

F. Correlation Notes

The SDQS is responsible for ensuring that the pertinent mapunit history notes for the project are pasted into the "SDJR Project Correlation" table. These notes constitute the final correlation document for the project.

G. Legend Certification

The SDQS certifies the "Legend Certification History" table. Project decisions on adding map units to a legend will be documented in the "Legend Certification History" table. This table will grow each time a project affects the specific legend.

H. Milestone Population

(1) The SDQS assigns a "milestone date completed" to the "SDJR 12. Correlation activities completed" milestone.
(2) The SDQS notifies the State soil scientists of the legends have been updated and certified.

I. Project Completion

The SDQS assigns a "milestone date completed" to the "Project Completed Date" milestone.

305.9 Legend Certification and Export activities

The State soil scientist (SSS) is responsible for publication of the soil survey legends to the Web Soil Survey. Throughout the year, there will be many projects impacting many soil survey legends.

(1) The SSS is responsible for providing the map unit symbols published for the legends in their State. If a split in the MLRA map unit concept requires more than one MLRA map unit to complete the project, the SSS will work with the SSRO digitizing staff and SDQS to ensure that the proper symbols are added to the spatial and attribute databases.
(2) If the affected legend includes both MLRA map units, then one map unit will use the existing publication symbol and the second will use a new symbol. The SSS will work with the SSRO digitizing staff to ensure that the edited spatial layer is sent to the staging server.
(3) The SSS reviews the overlap tables and verifies that the new MLRA map unit is assigned in the appropriate overlap tables.
(4) The SSS certifies the legends by populating the "Legend Export Certification History" table identifying the modifications to the legend by the project.
(5) The SSS exports the legends to the staging server.
(6) The SSS validates the spatial and attribute data at the staging server before committing the data to the Soil Data Warehouse and Soil Data Mart.

305.10 Progress Reporting

A. Progress is reported by the soil survey office after quality assurance is completed (see 305.8C(2)). This instruction deviates from instructions in 430-NSSH, Part 608, Section 608.7, because of the special nature of the SDJR projects.

B. The "Project Mapping Progress" table is populated with the acres populated in the "Project Mapping Goal" table.

C. The soil survey regional office will notify the State soil scientist and State Conservationist annually of completed projects in the relevant States. This notification may be made electronically or retrieved from the masterlist report (https://nasis.sc.egov.usda.gov/NasisReportsWebSite/limsreport.aspx?report_name=WEB-Masterlist).

305.11 Exhibits

A. Exhibit A – Required Dataset Population for National Reports and Interpretations

This is a minimum review and population guide for SDJR. Refer to 430-NSSH, the National Soil Information System (NASIS) User Guide, the Soil Survey Manual (SSM), the Soil Survey Laboratory Information Manual (SSIR 45), and national soil survey technical notes for definitions

and allowable values for the population of all columns and properties. Edit the data fields in the order of this document. Data fields lower on the list may be dependent on the population of fields higher up. **Note:** This list is not complete; a table that is not included should not be ignored or deleted.

☑	Table	Column	Comments
	Datamapunit	Open New Row	CREAT A NEW DATA MAP UNIT (DMU). This eliminates the need to edit old notes, legacy yields, and legacy highly erodible land (HEL) classes that do not pertain to the DMU. Enter a new DMU description, text notes, and certification status. Existing components will be copied using the "Copy tree" command and pasting into this new DMU.
	Datamapunit	DMU Description	The convention for the SDJR Initiative is to use the MLRA and map unit name (e.g., *MLRA 133B – Bowie fine sandy loam, 0 to 1 percent slopes*). Abbreviations and addition of the national map unit symbol are acceptable in this field.
	Datamapunit	Order of Mapping	The order of survey for which the DMU was developed.
	Datamapunit Text	Author, Kind, Text Required, Category (optional)	Enter notes relevant to what you are doing.
	Datamapunit Certification History	Certification Date, Kind, Status, Text	This is a new data mapunit. The certification and review process begins anew. Populate "Certification Kind" for QC and QA. Review the "DMU Certification Status" choice list and choose the appropriate certification status.
	Component		Use the "Copy tree" command to copy the component that is the best fit and starting point. Paste to insert a new row into the new SDJR DMU.
	Component	Component Name	Refer to 430-NSSH, Part 617, "Policy and Responsibilities," and Part 627, "Map Unit Components." For miscellaneous areas, refer to 430-NSSH, Part 627, Exhibit 627-1.
	Component	Component Percent	The components RV will add up to 100 percent.
	Component	Local Phase	Refer to 430-NSSH, Part 627, "Map Unit Components." Used to distinguish various component phase criteria, such as drained and undrained phases, which will have significantly different properties.
	Component	SIR Phase–Obsolete	DELETE. This does not apply to the new component record.

☑	Table	Column	Comments
	Component	Taxon Kind	When combining map units and consolidating data mapunits, if the component is listed as a taxadjunct in one or more counties, is a minority of the data, and is considered "dissimilar." Either— • combine into one component if the data supports it • identify it appropriately and make a component text note that in Alpha and Beta Counties this component was a taxadjunct and the reasons why • if warranted, add as a separate component and identify as a taxadjunct Or— • create an SDJR or MLRA project. The text note entry is entered in the map unit history text note to ensure it will show in the project correlation.
	Component	Major Component Flag	Identify those components within the map unit name.
	Component	Elevation	Elevation in meters for the map unit as it occurs in the MLRA. As part of the MLRA evaluation, this and the next three columns should be determined before the rest of the columns are populated.
	Component	MAAT	Refer to 430-NSSH, Part 618, "Climatic Setting." Values for these properties should have been decided as part of the MLRA review of distribution and extent of soils.
	Component	MAP	Refer to 430-NSSH, Part 618, "Climatic Setting." Values for these properties should have been decided as part of the MLRA review process.
	Component	Frost Free Days	Refer to 430-NSSH, Part 618, "Climatic Setting." Values for these properties should have been decided as part of the review process. Entries are rounded to the nearest 5 days.
	Component	Slope Gradient	Refer to 430-NSSH, Part 618, "Slope Gradient." Give low, RV, and high values. (Use whole numbers when slope is greater than 1.)
	Component	USLE Slope Length RV	Refer to 430-NSSH, Part 618, "Slope Length." This is the USLE slope length value (not landform slope length). A calculation is available for a national RV default value. This field is used by many external national customers who use the USLE model.
	Component	Erosion Class	Refer to 430-NSSH, Part 618, "Erosion Class." This class should correspond to the map unit name. See NASIS Help System and *Soil Survey Manual* for definitions.
	Component_ erosion_ accelerated	Kind	Refer to 430-NSSH, Part 618, "Erosion Accelerated, Kind." Used if erosion is noted in the map unit name.
	Component_ erosion_ accelerated	Representative?	Refer to 430-NSSH, Part 618, "Erosion Accelerated, Kind."

☑	Table	Column	Comments
	Component	Cover Kind 1	The most common use of the map unit which corresponds to the interpretative focus. ALL horizon properties (e.g., organic matter and structure) will be based on this land use. See NASIS Help System for population details. Make sure the surface horizon nomenclature matches what is entered here (e.g., Ap for crop cover or A for other cover).
	Component	Cover Kind 2	The most common use of the map unit. See NASIS Help System for population details.
	Component	Drainage Class	Refer to 430-NSSH, Part 618, "Drainage Class." The MLRA soil survey office is responsible for identifying the "modeled" depth to water table or redoximorphic features and coordinating the appropriate class for the given depth. Review this with what is listed in the OSD.
	Component	Non-irrigated Land Capability Class	Refer to 430-NSSH, Part 622, "Land Capability Classification." Populated for components.
	Component	Non-irrigated Land Capability Subclass	Refer to 430-NSSH, Part 622, "Land Capability Classification." Populated for components.
	Component	Irrigated Land Capability Class	Refer to 430-NSSH, Part 622, "Land Capability Classification." Populated for components suited to irrigation; otherwise, NULL.
	Component	Irrigated Land Capability Subclass	Refer to 430-NSSH, Part 622, "Land Capability Classification." Populated for components suited to irrigation; otherwise, NULL.
	Component	Order	Bring all taxonomy fields to current edition after review.
	Component	Suborder	Bring all taxonomy fields to current edition after review.
	Component	Great Group	Bring all taxonomy fields to current edition after review
	Component	Subgroup	Bring all taxonomy fields to current edition after review
	Component	Particle Size	Populate as "not used" if it is not needed.
	Component	Particle Size Modifier	Populate as "not used" if it is not needed.
	Component	CEC Activity Class	Populate as "not used" if it is not needed.
	Component	Reaction	Populate as "not used" if it is not needed.
	Component	Temperature Class	This field is used in the calculation of taxonomic class. Populate as "not used" if it is not needed.
	Component	Moisture Subclass	Used in some forestry interpretations. See National Soil Survey Technical Note 9.
	Component	Temperature Regime	Populate for all named components.
	Component	Keys to Taxonomy Edition	Bring all taxonomy fields to current edition.
	Component Taxonomic Family Mineralogy	Mineralogy	Populate as "not used" if it is not needed.
	Component Tax Moisture Class	Moisture Class	Every named soil should have a moisture class populated.

☑	Table	Column	Comments
	Comp Tax Family Other	Family Other	Populate as "not used" if it is not needed.
	Component	Taxonomic Classification	CALCULATE. Review this with the OSD classification.
	Component Parent Material	Kind, Origin	Populate origin if relevant. If the OSD is described as having multiple parent materials, e.g., loess over till, then also populate vertical order; if known, populate top depth, bottom depth, and textural or general modifiers.
	Component Parent Material Group	Parent Material Group Name	CALCULATE. This can also be manually altered to improve the description.
	Component Parent Material Group	Representative	Make sure there is a check in the "Representative" box.
	Component Geomorphic Description	Feature Type	Populate Landscape and Landform with approved Feature Name, Feature ID, Exists on Feature ID, and mark "Representative." Review this with what is listed in the OSD.
	Component 3D Surface Morphometry	Hills, Terraces, Mountains, Flats	Flats are areas with deranged, nonintegrated, or incipient drainage networks (see *Field Book for Describing and Sampling Soils*, Version 2.0, pp. 3-41). Most areas of plains have an integrated drainage network even though it is not deeply incised. These areas can have the 3D terminology for hills populated. Populate only for landform; do not populate for landscape.
	Component 2D Surface Morphometry	Hillslope Profile	Used only for landforms that have a hillslope profile (not for stream terraces, flood plains, mountain slopes, canyon slopes, etc.). All other landforms will have the most common for the map unit. Populate only for landform; do not populate for landscape.
	Component Slope Shape Morphometry	Across	Typical for the map unit as it occurs throughout the MLRA. This feature is used in some interpretations to determine if there is runoff or run-on and possible sequestration.
	Component Slope Shape Morphometry	Up/Down	Typical for the map unit as it occurs throughout the MLRA. This feature is used in some interpretations as above.
	Component Microrelief Surface Morphometry	Kind	Typical for the map unit as it occurs throughout the MLRA. Populate only when microrelief is needed for a component.

☑	Table	Column	Comments
	Component Month	12 Months Flooding Frequency and Duration	Refer to 430-NSSH, Part 618, "Flooding Frequency Class, Duration Class, and Month." All 12 months will be populated. "None" is assigned to all 12 months for those soils that have no reasonable possibility of flooding. "Very frequent" is only used in tidal situations and will be populated for all 12 months. Otherwise, identify the most common months in which single annual flooding frequency occurs. Multiple frequencies and durations will not be used.
	Component Month	12 Months Ponding Frequency, Duration and Depth L, RV, H	Refer to 430-NSSH, Part 618, "Ponding Depth, Duration Class, Frequency Class, and Month." Identify the most common months in which single annual ponding frequency occurs. Multiple frequencies and durations will not be used. "None" will be populated for all 12 months if soils have no reasonable possibility of ponding.
	Component Soil Moisture	Moisture Status	Refer to 430-NSSH, Part 618, "Soil Moisture Status." Status is required for every month with a wet layer. Only populate other months without a wet layer if you can make reliable estimates. Wet layers are required for components with a water table. Moist layers are required in some instances. If the water table is perched, there must be a wet layer above a moist or dry layer. If there is an apparent water table, all layers must be populated as "wet" to the last layer. If there is supposed to be a water table and there is nothing mentioned in the OSD, add it to the OSD.
	Component Surface Fragments	Cover %, Spacing, Kind, Size L, RV, H, shape, roundness, hardness	Refer to 430-NSSH, Part 618, "Surface Fragments." Indicates fragments ON THE SURFACE, not fragments mixed in the surface horizon. Populate for all components having surface fragments, regardless of whether a fragment phase is named.
	Component Restrictions	Kind, Hardness, Top Depth L, RV, H, Bottom Depth, Thickness (L, RV, H)	Refer to 430-NSSH, Part 618, "Restriction Kind, Depth, Thickness, and Hardness." Verify that restriction depths agree with the horizon depths; e.g., an R horizon at a depth of 35 cm will have "bedrock, lithic, top depth RV at 35 cm." "Hardness" must agree with "Kind"; e.g., paralithic cannot be strongly cemented. Bottom depth for stacked restrictions above another restriction or above a non-restrictive layer need to be populated; it is not required that the bottom depth of the last restriction be populated otherwise. The Low and Highs are populated where there exists supporting data.
	Component Diagnostic Features	Kind, Top Depth, Bottom Depth, Thickness (L, RV, H)	Refer to 430-NSSH, Part 618, "Diagnostic Horizon Feature." Consider the aggregated basis for this component as it occurs in this map unit across the MLRA. This is not a table for point data. With a thorough understanding of this component in this map unit, you should be able to give ranges in depths and thicknesses where sufficient data exists.

☑	Table	Column	Comments
	Component Pedon	User Pedon ID, Representative	At a minimum, all county modal pedons (TUDs) must be populated and linked. One component pedon must be marked as RV. There is no requirement to duplicate component depths to match pedon depths.
	Component	Albedo Dry RV	Refer to 430-NSSH, Part 618, "Albedo, Dry." CALCULATE once the representative pedon is identified in the Component Pedon table
	Component	Aspect, Clockwise, L, RV, H Counter Clockwise L, RV, H	Refer to 430-NSSH, Part 618, "Slope Aspect," for population instruction.
	Component	Hydric Rating	Make an entry based on available information. This will be validated later.
	Component Hydric Criteria	Hydric Criterion	Populated based on Jan 2012 CFR hydric list criteria.
	Horizon	Top Depth (L, RV, H)	These depths should be based on the review of modal pedons, lab data, etc.; however, they are not required to match a single linked pedon. Populated as part of the evaluation of the map unit as it occurs in the MLRA.
	Horizon	Bottom Depth (L, RV, H)	Bottom depth RV for R and Cr are to be populated to the zone of observation (200 cm) or at a minimum of the top depth RV plus 25 cm.
	Horizon	Thickness (RV)	CALCULATE.
	Horizon	Master	H1, H2, etc., will be modified to match the modal pedon description but may be aggregated.
	Horizon Designation Suffix	Suffix	
	Horizon	Prime	
	Horizon	Sub (vertical subdivision)	
	Horizon	Discontinuity	
	Horizon	Designation	CALCULATE.
	Horizon	Particle Size Separates	Populate if organic matter content is less than 35 percent. If layer contains andic soil material, populate if organic matter content is less than 50 percent. Leave as NULL if organic matter content is high.
	Horizon	Total Sand Low, High, RV	Total sand should be WHOLE numbers after analysis of lab and pedon data. Review values with the OSD. If nothing is listed in the OSD, add values to range in characteristics.
	Horizon	Sand Fractions Low, High, RV	Populate based on a review of pedon and lab data.
	Horizon	Total Clay Low, High, RV	Use WHOLE numbers. Review values with the OSD. If nothing is listed in the OSD, add values to range in characteristics.

☑	Table	Column	Comments
	Horizon	Total Silt Low, RV, High	Total Silt should be WHOLE numbers based on analysis of lab and pedon data.
	Horizon	CaCO$_3$ Clay Low, High, RV	Use lab data for similar soils that formed in similar parent materials to corroborate values.
	Horizon Texture	Texture or In Lieu Term	Refer to 430-NSSH, Part 618, "Texture Class, Texture Modifier, and Terms Used in Lieu of Texture." Remove and update any obsolete terms. The entries "uwb" (unweathered bedrock) and "wb" (weathered bedrock) are obsolete and should be changed to "br" (bedrock). "VAR" is also obsolete and should be corrected. Review with textures listed in the OSD.
	Horizon Texture Modifier	Horizon Texture Modifier	A child table to Horizon Texture.
	Horizon Texture Group	Tex Mod & Class	CALCULATE.
	Horizon Texture Group	Representative	Check one and only one texture.
	Horizon Fragments	Volume % Low, High, RV	Refer to 430-NSSH, Part 618, "Fragments in the Soil." Make entries agree with any modifier that was entered in the "Horizon Texture Modifier" table. Review values with the OSD. Add values to the OSD if there are fragments in the horizon.
	Horizon Fragments	Kind	Refer to 430-NSSH, Part 618, "Fragments in the Soil." Required if there are fragments.
	Horizon Fragments	Size	Refer to 430-NSSH, Part 618, "Fragments in the Soil" and SSM. Required if there are fragments.
	Horizon Fragments	Shape	Refer to 430-NSSH, Part 618, "Fragments in the Soil." Required if there are fragments.
	Horizon Fragments	Roundness	Refer to 430-NSSH, Part 618, "Fragments in the Soil." Required if there are fragments.
	Horizon Fragments	Hardness	Refer to 430-NSSH, Part 618, "Fragments in the Soil." Required if there are fragments.
	Horizon	Total Fragment Volume RV	CALCULATE. Required.
	Horizon	Total Fragment Volume Low, High	A manual entry. The RV is calculated based on how the RVs in the fragment table were populated. The low and high values require professional judgment.
	Horizon	Particle Size Distribution	VALIDATION.
	Horizon	Texture Modifier (by fragment volume)	VALIDATION.
	Horizon	Texture RV Indicator	VALIDATION.
	Horizon	VALIDATE HORIZON VALIDATIONS	Some of the validations only check for a value and not if the value is reasonable. Checking whether or not the value is reasonable is the project leader's responsibility.

☑	Table	Column	Comments
	Horizon	Organic Matter Low, High, RV	Refer to 430-NSSH, Part 618, "Organic Matter," and SSIR 45, Section 5.5.1. Manually populate based on the Component Cover Kind and use lab data for named component or similar soils with similar land use. This is not organic carbon as reported by KSSL. Consider most common land use. Used in many of the calculations that follow. Critical in Kf and Kw calculations. If other factors are constant, higher contents of organic matter will lower K values (indicating a less erosive soil). Round values to the nearest tenth.
	Horizon	Gypsum Low, High, RV	Refer to 430-NSSH, Part 618, "Gypsum," and SSIR 45, Section 4.4.2. Required for bulk density calculation.
	Horizon	Bulk Density 1/3 bar Low, High, RV	Refer to 430-NSSH, Part 618, "Bulk Density" and SSIR 45, Section 3.2. Manually populate using lab data. A Pangaea test calculation is available for bulk density. "UTIL - Comparison of Bulk Densities, stored vs. calc" (test) will give a comparison. For soils with little bulk density data, this maybe a viable option. Consider similar soils and parent materials. Must be populated before calculating sieves.
	Horizon	Rock Fragments and Percent Passing Sieves	Refer to 430-NSSH, Part 618, "Fragments in the Soil." CALCULATE. Manually entered values are to be rounded down to the nearest whole number.
	Horizon	pH H_2O Low, High, RV	Refer to 430-NSSH, Part 618, "Reaction, Soil," and SSIR 45, Section 4.2.5. Use lab data for similar soils and parent materials based on the Component Cover Kind.
	Horizon	pH $CaCl_2$ Low, High, RV	Refer to 430-NSSH, Part 618, "Reaction, Soil," and SSIR 45, Section 4.2.6.
	Horizon	$CaCO_3$ Low, High, RV	Refer to 430-NSSH, Part 618, "Calcium Carbonate Equivalent," and SSIR 45, Section 4.4.1. Review values with the OSD. Add values to the OSD if there should be some $CaCO_3$ equivalence in the horizon.
	Horizon	SAR Low, High, RV	Refer to 430-NSSH, Part 618, "Sodium Adsorption Ratio," and SSIR 45, Section 4.5.6. Review the values with the OSD. Add values to the OSD if there should be SAR values in the horizon.
	Horizon	ESP Low, High, RV	Refer to SSIR 45, Section 4.5.6. Review the values with the OSD. Add values to the OSD if there should be ESP values in the horizon.
	Horizon	EC Low, High, RV	Refer to 430-NSSH, Part 618, "Electrical Conductivity," and SSIR 45, Section 4.5. Review the values with the OSD. Add values to the OSD if there should be EC values in the horizon.
	Horizon	Ksat Low, High, RV	Refer to 430-NSSH, Part 618, "Saturated Hydraulic Conductivity." Assign values for each layer. The layer with the lowest Ksat RV in the particle-size control section is used in the Kf and Kw calculations. Review values with what is listed in the OSD.

☑	Table	Column	Comments
	Horizon Structure	Child Table Horizon Structure Grade Size Type	This is an important value in Kf and Kw calculations. It is an aggregation for the layer in this component in a map unit. If the other three factors (texture, organic matter, and Ksat) are constant, then the coarser the structure the higher the K value (indicating a more erosive soil). For example, fine granular is less erosive than medium granular and medium granular is less erosive than blocky.
	Horizon Structure Group	Structure	CALCULATE based on "Horizon Structure" table population.
	Horizon Structure Group	Representative	One, and only one, needs to be marked RV.
	Horizon	CEC or ECEC	Refer to 430-NSSH, Part 618, "Cation-Exchange Capacity," and SSIR 45, Section 4.1.6.2. CALCULATE if no lab data are available.
	Horizon	LEP	Refer to 430-NSSH, Part 618, "Linear Extensibility Extent" and SSIR 45, Section 12. CALCULATE if no related lab data are available. Do NOT populate for layers that have more than 35 percent organic matter.
	Horizon	Bulk Density oven dry	Refer to 430-NSSH, Part 618, "Bulk Density," and SSIR 45, Section 3.2. If lab data are not available, the national calculation may be used.
	Horizon	Water Contents, 0.33, 0.10 (for sands), 15 Bar, Satiated	Refer to 430-NSSH, Part 618, "Water." CALCULATE if no related lab data are available.
	Horizon	Extractable Acidity	Refer to 430-NSSH, Part 618, "Extractable Acidity," and SSIR 45, Section 3.3. CALCULATE if no related lab data are available.
	Horizon	LL and PI	Refer to 430-NSSH, Part 618, "Liquid Limit," and "Plasticity Index" and SSIR 45, Section 3.8. Use lab data. If no data are available, the field can be calculated. Do NOT populate for soils that classify as PT Unified.
	Horizon	Kw, Kf	REQUIRED National Calculation. Refer to 430-NSSH, Part 618, "Soil Erodibility Factors." If this field is not calculated, then reasons and concurrence by the National Leader for Interpretations are noted in the Component Text table with "Kind" = "correlation notes" and "Category" = "override."
	Horizon	Sum of Bases	Refer to 430-NSSH, Part 618, "Sum of Bases," and SSIR 45, Section 4.1.6. Use lab data if available or calculate.
	Horizon	AWC	Refer to 430-NSSH, Part 618, "Available Water Capacity," and SSIR 45, Section 13. This is not the same as water retention difference. Salt content, coarse fragments, and bulk density should be considered.
	Horizon AASHTO	AASHTO	CALCULATE.
		Representative	Check one and only one.

☑	Table	Column	Comments
	Horizon	AASHTO Group Index	Refer to 430-NSSH, Part 618, "Engineering Classification." CALCULATE.
	Horizon Unified	Unified	CALCULATE.
		Representative	Check one and only one.
	Horizon	RUN ALL HORIZON VALIDATIONS	Fix problems. Remember that all the properties are interdependent. Changing one requires checking and recalculating or changing all those below it in the list.
		RUN Pangaea UTIL – Comparison Reports EXPORT	The export reports require only the map unit and data mapunit objects to be loaded in the selected set. Fix problems.
	Component	Local Runoff Class	This is an optional field that can be populated if local written criteria are available. NSSC Pangaea report "UTIL - Comparison of Local Runoff, stored vs calculated" uses criteria in *Soil Survey Manual,* Table 3-10.
	Component	HSG	REQUIRED National Calculation. Refer to 430-NSSH, Part 618, "Hydrologic Group." If this field is not calculated, then reasons and concurrence by the National Leader for Interpretations are noted in the Component Text table with "Kind" = "correlation notes" and "Category" = "override."
	Component	Concrete Corrosion	REQUIRED National Calculation. Refer to 430-NSSH, Part 618, "Corrosion." If this field is not calculated, then reasons and concurrence by the National Leader for Interpretations are noted in the Component Text table with "Kind" = "correlation notes" and "Category" = "override."
	Component	Steel Corrosion	REQUIRED National Calculation. Refer to 430-NSSH, Part 618, "Corrosion." If this field is not calculated, then reasons and concurrence by the National Leader for Interpretations are noted in the Component Text table with "Kind" = "correlation notes" and "Category" = "override."
	Component	T Factor	REQUIRED National Calculation. Refer to 430-NSSH, Part 618, "T Factor." If the value changes, review to make sure this is what it should be and compare it with other T factors of this named component. If this field is not calculated, then reasons and concurrence by the National Leader for Interpretations are noted in the Component Text table with "Kind" = "correlation notes" and "Category" = "override."
	Component	WEG/WEI	REQUIRED National Calculation. Refer to 430-NSSH, Part 618, "Wind Erodibility Group and Index." If the value changes, review to make sure this is what it should be and compare it with other WEG/WEI factors of this named component. If this field is not calculated, then reasons and concurrence by the National Leader for Interpretations are noted in the Component Text table with "Kind" = "correlation notes" and "Category" = "override."

☑	Table	Column	Comments
	Component	Frost Action	Refer to 430-NSSH, Part 618, "Frost Action, Potential." CALCULATE.
	Component	Generated Brief Soil Description	REQUIRED National Calculation.
	Component	Review Generated Brief Soil Description	The description generated above is in Component Text, where "Kind" is "nontechnical" and "Category" is "GENSOIL." This check can point out errors.
	Component	Windbreak Suitability	Obsolete. Delete.
	Component	Range Productivity (if applicable)	Based on the correlated ecological site. Work with ecological site inventory specialist and local rangeland management specialist.
	Component	Initial Subsidence L, H, RV	Refer to 430-NSSH, Part 618, "Subsidence, Initial and Total." Enter "0" if subsidence is not a concern.
	Component	Total Subsidence L, H, RV	Refer to 430-NSSH, Part 618, "Subsidence, Initial and Total." Enter "0" if subsidence is not a concern.
	Component_ ecological_site	Ecological Site (if available)	Work with ecological site inventory specialist or local vegetation specialist (e.g., rangeland management specialist or forester).
	Component	Ord Species (obsolete)	Obsolete. Delete all.
	Component	All Wildlife Interpretations	Unsupported. Delete all.
	Component	RUN ALL COMPONENT VALIDATIONS	
		RUN Pangaea Report UTIL – Hydric Soil Validation	This runs on the entire selected set. It gives more information than the component validation.
		VALIDATE COMPONENT VALIDATIONS	Some of the validations only check for a value. They do not check if the value is reasonable.
	Component	Check Remaining Child Tables	Delete any obsolete information.
	Component	Text	Review existing notes. Delete those no longer appropriate and create new notes for documentation. Run the "Generated Brief Soil Description" calculation.
	Mapunit Text	"Kind" is "map unit description" "Category" is "map unit concept"	The "map unit concept" will be written and stored in the Mapunit Text table per the instructions in NI 430-305-305.6D(3) and (4).
		VALIDATE INTERPRETATIONS	Make sure the values and ratings are reasonable for the map unit and component!
		Run National Report "!SDJR DMU Quality Check"	Use this report as a final review of the MLRA DMU.

B. Exhibit B – Minimum Population Guide for Minor Components

(See exhibit A for specific population requirements on each data element if not specified below)

Table	Element
Component	Comp Percent RV
	Component Name (entry should be "Unnamed" for unnamed components)
	Local Phase (use "hydric" for unnamed hydric components)
	Taxon Kind
	Major Component
	Slope Gradient
	Hydric Condition
	Hydric Rating
	Drainage Class
	Elevation – L, RV, H
	Aspect – Counterclockwise, RV, Clockwise
	MAP – L, RV, H
	Temperature Regime
Component Geomorphic Description	Geomorphic Feature Type
	Geomorphic Feature Name
	Geomorphic Feature Modifier
	Feature ID
	Exists on Feature ID
	RV?
Component Two Dimensional Surface Morphometry	Hillslope Profile
Component Slope Shape Surface Morphometry	Slope Shape Across
	Slope Shape Up/Down
Component Three Dimensional Surface Morphometry	Geomorphic Component – Mountains
	Geomorphic Component – Hills
	Geomorphic Component - Terraces
	Geomorphic Component - Flats
Component Parent Material/Component Parent Material Group	Parent Material Group Name
	RV?
Component Hydric Criteria (if applicable)	Hydric Criterion
Component Restriction (if applicable)	Restriction Kind
	Restriction Hardness
	Restriction Top Depth
	Restriction Bottom Depth
Component Month (if applicable)	Month
	Flooding Frequency
	Flooding Duration
	Ponding Frequency
Component Ecological Site (if available)	Ecological Site ID
	Ecological Site Name

(430-305-NI, 2nd Ed., Nov 2013)