PART 303 – NATIONAL COORDINATED COMMON RESOURCE AREA GEOGRAPHIC DATABASE

303.0 Purpose

A. This instruction establishes technical guidance and minimum requirements for creating the National Coordinated Common Resource Area Geographic Database.

B. The project should be completed by January 1, 2004.

303.1 Background

Common Resource Area (CRA) maps were prepared by several states in the mid 1990s. These digital and hard-copy maps have state-specific legends. They are used for various strategic conservation planning purposes. These maps are slated for national review and correlation because of the following deficiencies:

(1) Not all states have existing CRA maps;
(2) Maps and symbols are state specific and do not meet NRCS programmatic needs;
(3) Some map data are nondigital and cannot be used in a Geographic Information System (GIS);
(4) Locational accuracies of digital map data are inconsistent, do not meet national map accuracy standards, and should not be used with data layers developed at comparable scales;
(5) Map units were designed using varying approaches and were not correlated to the national framework of Major Land Resource Area (MLRA) regions;
(6) Metadata that meet a current Federal Geographic Data Committee (FGDC) Metadata Standard do not exist; and
(7) National assessments using existing digital CRA maps are not possible at this time.

303.2 Purpose of the National Coordinated Common Resource Area Geographic Database

A. The purpose of the National Coordinated Common Resource Area geographic database is to provide a logical index and ready access to guidance documents for Section III of the electronic Field Office Technical Guide (eFOTG). The digital CRA map will provide map-based World Wide Web access to the eFOTG and CRA specific guidance documents, conservation plans, and resource management systems, making this information easily accessible to NRCS clients, partners, and technical service providers (GM450 C401).

B. A CRA map delineation is defined as a geographical area where resource concerns, problems, or treatment needs are similar. It is considered a subdivision of an existing Major Land Resource Area (MLRA) map delineation or polygon. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographic boundaries of a Common Resource Area (GM450 C401.21).

C. A National Coordinated CRA Geographic Database will provide:

(1) A consistent CRA geographic database;
(2) CRA geographic data compatible with other GIS data digitized from 1:250,000 scale maps, such as land use/land cover, political boundaries, Digital General Soil Map of the U.S. (updated STATSGO), and ecoregion boundaries;

(3) A consistent (correlated) geographic index for Conservation Management Guide Sheet information and the eFOTG; and
(4) A geographic linkage with the national MLRA framework.

303.3 Action Items

The timeline for major action items is provided in Chief Knight's August 13, 2003, memorandum regarding National Coordinated Common Resource Area Map (Exhibit A). A more specific list of action items is given here:

(1) State conservationists will provide existing CRA map information to the National Soil Survey Center (NSSC).
(2) The NSSC staff will prepare and send CRA base map information (current MLRA region and updated STATSGO polygon map – digital and hard copy) to state conservationists.
(3) State conservationists will prepare digital revised CRA map information or develop new CRA map information and join consistently with the CRA maps of neighboring states. Regional technology specialists will facilitate this process among states.
(4) MLRA Soil Survey Regional Office (MO) Leaders will correlate provisional state CRA legend symbols to National CRA legend symbols, CRA names, and primary distinguishing characteristics in the MLRAs for which they are responsible.
(5) State conservationists will certify that digital CRA map information has been fully joined and correlated across state boundaries and meets the guidelines given in this document (NI.430–303, First Edition).
(6) State conservationists will submit digital, certified state CRA map information to NSSC (see Exhibit B).
(7) NSSC compiles a National CRA map from state CRA maps and sends the National CRA map to State conservationists for review and comment.
(8) State conservationists review the National CRA map and return comments to NSSC.
(9) NSSC incorporates review comments and prepares final National Coordinated CRA Map of the United States.

303.4 Responsibilities

Responsibilities for the coordination and development of the National CRA Geographic Database are outlined in Chief Knight's August 13, 2003, memorandum regarding National Coordinated Common Resource Area Map (Exhibit A).

303.5 CRA Map Unit Specifications

A. Delineations:

(1) Approximate minimum area to be mapped is 400 square kilometers (40,000 hectares, or 98,724 acres); this is represented on a 1:1,000,000 scale base map by an area approximately 2 cm x 2 cm (.75 inch x .75 inch). Linear delinations should not be less than 0.5 cm (0.2 in) in width (5 km, or 3.1 miles). This standard is consistent with 5th order mapping (Soil Survey Manual, 1993). The Pacific and Caribbean Islands are excluded from the minimum delineation rule.
(2) Political boundaries, such as county and state, will not be used as delineation boundaries.
(3) Map units may occur in only one MLRA. Map units logically "nest" within MLRAs.
(4) CRA delineations may be developed by grouping State Soil Geographic Database (STATSGO) polygons into CRA regions, thereby preserving a digital reference base scale of 1:250,000 or using an alternative 1:250,000 scale referenced digital map, such as

U.S. Environmental Protection Agency (EPA) Ecoregions level III and IV or U.S. Department of Agriculture Forest Service (USFS) National Hierarchy of Ecological Units (Subsections and Land Type Associations).

B. Delineation guidance:

(1) In general, a different CRA delineation will reflect a change in potential resource concerns or risk for various land uses in the landscape.
(2) Potential resource concerns and land-use related risks are often directly related to changes in soil parent materials, climate, aquifers, geology, physiography, vegetation, and land use patterns.
(3) CRA delineations should be easily described by a "primary distinguishing characteristic" (PDC) statement. A PDC statement explains in a sentence or two, why CRA subdivisions differ from one another. The CRA name generally is a short version of the PDC statement.

303.6 CRA Labeling Conventions

A. The National CRA map delineation label is the MLRA symbol, followed by a dot and a numeric code (for example: 102C.3 or 72.6).

B. Provisional state CRA map delineation labels are similar to the National CRA labels, but they include the state alphabetic FIPS (Federal Information Processing System) code. For example, in Nebraska 106.NE2 may join 106.KS5 in Kansas.

C. Provisional state CRA map symbols are correlated to the National CRA legend symbols by the MO Leader responsible for the respective MLRA. In the Nebraska/Kansas example above, the resulting National CRA label symbol could be 106.3.

303.7 Compilation Base Map Materials and Information

A. 1:1,000,000 scale (1:3,500,000 scale for Alaska) paper maps provided by the NSSC illustrating MLRA regions and updated STATSGO polygons plus state and county lines draped on a shaded landform base map.

B. Digital map products (ESRI©ArcInfo map coverages and shape files) for updated STATSGO and MLRA Region polygons (original registered to a 1:250,000 scale U.S. Geological Survey base map) and alternative digital map products that share a 1:250,000 scale reference base map (EPA and USFS ecoregion type mapping).

C. PDF (portable document format) files for the 1:1,000,000 scale paper maps described in 303.7(a).

D. Red pencils to delineate and label CRA map polygons directly on the 1:1,000,000 paper base maps.

303.8 Compilation Procedures for Existing and New CRA Map Unit Delineations

A. Delineate CRA map units using various related national digital reference datasets. These include but are not limited to: landform maps (analytical hillshade calculated from Digital Elevation Models, geology maps, soil climate maps, plant hardiness maps, climate maps (30-year normals MAP and MAAT), EPA Ecoregion Level III and IV, USFS National Hierarchy of Ecological Units – Sections, Subsections and Land Type Associations, MLRA 2003 Regions,

Digital General Soil Map of the U.S. (STATSGO update), soil root zone available water capacity maps, and other digital and hard-copy maps available at the state level.

B. Draft CRA map unit lines and symbols using a red pencil on the 1:1,000,000 scale paper state base maps.

C. Label CRA map units with a state provisional symbol. Refer to section 303.6(b).

D. Contact regional technology specialists for assistance in organizing meetings with neighboring states to "join" CRA delineation symbols and concepts across state lines. This work is recorded on the base map with the joining state's corresponding provisional state CRA symbol and in a spreadsheet file used to maintain a state list of correlated provisional CRA symbols.

E. Use the GIS to assign appropriate state provisional CRA symbol to selected updated STATSGO polygons (Digital General Soil Map of U.S.). Use the 'prov_st_cra' column name unless your state is using an alternative 1:250,000 scale registered digital map coverage.

(1) If using an alternative 1:250,000 scale registered digital map coverage to create CRAs, (EPA level III and IV ecoregions, or USFS National Hierarchy Ecological Units – Subsections or Land Type Associations), please add two columns to the subject map coverage:
   - prov_state_cra, 9 character, text field, and
   - national_cra, 7 character, text field

(2) Also, please use the state clipping coverages provided by the NSSC to subset a state coverage from one of these alternative 1:250,000 scale sources.

F. Contact MO Leaders responsible for MLRAs in your state and provide to the MO Leader the spreadsheet file of "joined" state provisional CRA symbols and the state CRA map with state provisional symbols at 1:1,000,000 scale.

G. For each nationally correlated CRA symbol, the MO Leader prepares a CRA name, generally taken from a local landscape feature (example: 65.3 – Sand Hills – Wet Meadow and Marsh Plain), and primary distinguishing characteristic statement. Each PDC statement should not exceed four brief sentences.

H. Each MO Leader prepares a final MO_CRA spreadsheet file that contains four columns: prov_st_cra (9 character text field), national_cra (7 character text field), national_cra_name (80 character text field), and national_cra_pdc (500 character text field).

(1) This spreadsheet file is shared with appropriate states and coordinated with assistance from regional technology specialists.

(2) A copy of the MO_CRA spreadsheet is also sent to the NSSC by the MO Leader. The naming convention for this file is MOx_CRA, where x = the MO number (e.g., MO9_CRA.xls for MO9 in Temple, Texas).

(3) This information will be used for national correlation and naming of CRA map units.

I. State prepares and prints final CRA map with national symbols at a scale of 1:1,000,000. Alaska CRA proof plots will use a map scale of 1:3,500,000.

303.9 Transmittal of Nationally Correlated and Certified CRA State Map Information to NSSC (digital and hard copy)

A. Prepare and send a transmittal memo addressed to:

Robert J. Ahrens
Director, National Soil Survey Center

100 Centennial Mall North
Federal Building, Room 152, MS 32
Lincoln, NE 68508-3866

with the subject line of "SOI – National Coordinated Common Resource Area Map" and File Code: 430–17," with a list of enclosures. Please include the name and title of a state contact person (phone and e-mail address).

B. Please enclose the following:

(1) CD–ROM containing a single digital state clipped ESRI© .e00 or shape files with full projection information, with prov_st_cra, and national_cra attributes fully populated. (If using STATSGO, do not dissolve on any item.)
(2) 1:1,000,000 scale state map similar to the original CRA base map illustrating new CRA map information with national CRA symbols (paper copy and PDF included on CD–ROM).
(3) State certification letter signed and dated by the state conservationist.

C. The CD–ROM contents are also be transferred electronically to the NSSC ftp site. Please place files in proper state subfolder and send e-mail to Sharon.Waltman@usda.gov when files have been successfully transmitted to the ftp server. See instructions below to ftp CRA map project files to the NSSC ftp server:

(1) Start an ftp session and connect with the following information:
Note that it is best to use the ftp Client software and NOT a browser.
Host: ftp.nssc.nrcs.usda.gov
Username: crauser
Password: (password will be provided to State Soil Scientists at a later date.)
(2) Select the state subfolder you want to copy the files into: (Just double click on the correct folder).
(3) Go back to My Computer and select the files to Copy.
(4) Copy the files.
(5) Paste the files into the correct state folder on the ftp server.
(6) Disconnect the ftp session (save the session if it may be needed again).

Exhibit A

SUBJECT: SOI – National Coordinated Common Resource Area Map — August 13, 2003

TO: Regional Conservationists File Code: 430
State Conservationists
Directors of Pacific Basin and Caribbean Areas
Center and Institute Directors
NHQ Division Directors and Above

ACTION REQUIRED BY: SEPTEMBER 12 AND OCTOBER 12, 2003

The National Soil Survey Center (NSSC) is coordinating the development of a digital Common Resource Area (CRA) map for the Nation. This national map is an important component of a new initiative to develop guidance documents for Section III of the electronic Field Office Technical Guide (eFOTG). The digital CRA map will provide map-based Web access to the eFOTG and CRA specific guidance documents, conservation plans and resource management systems, making this valuable information easily accessible to NRCS clients, partners, and technical service providers (GM 450 C 401).

States are requested to provide the information detailed in the attached timeline for the development of the digital Common Resource Area map of the Nation.

A CRA is a geographical area where resource concerns, problems, or treatment needs are similar. It is considered a subdivision of an existing MLRA map delineation or polygon. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographical boundaries of the common resource area (GM 450 C 401.21). The CRA naming convention is the MLRA symbol followed by a dot and a numeric code (for example 102C.3 or 72.6). The National CRA Map will be developed at a 1:250,000 scale.

NSSC will provide the states with MLRA map coverage and the State Soil Geographic Database (STATSGO) at 1:250,000 scale as map base materials. The STATSGO is considered useful in the MLRA subdivision process.

If you have any questions, please contact Robert J. Ahrens, Director of the National Soil Survey Center (402) 437-5389; bob.ahrens@nssc.nrcs.usda.gov or Sharon Waltman (402) 437-4007; sharon.waltman@nssc.nrcs.usda.gov.

/s/ Thomas A. Weber
for
BRUCE I. KNIGHT
Chief

Attachment

cc:
P. Dwight Holman, Deputy Chief for Management, NRCS, Washington, DC
Jose Acevedo, Deputy Chief for Programs, NRCS, Washington, DC
Lawrence E. Clark, Deputy Chief for Science and Technology, NRCS, Washington, DC
Maurice J. Mausbach, Deputy Chief for Soil Survey and Resource Assessment, NRCS, Washington, DC
Katherine C. Gugulis, Deputy Chief for Strategic Planning and Accountability, NRCS, Washington, DC
Wayne M. Maresch, Director, Soil Survey Division, NRCS, Lincoln, NE
Robert J. Ahrens, Director, National Soil Survey Center, MS 32, NRCS, Lincoln, NE
National Leaders, National Soil Survey Center, NRCS, Lincoln, NE
Sharon W. Waltman, Soil Scientist, NSSC, MS 35, NRCS, Lincoln, NE

Task	Start date	End date	Who	Where
1. NSSC sends states CRA map base information (MLRA and STATSGO maps @ 1:250,000)	8/05/2003	9/12/2003	NSSC	States
2. States having current CRA maps provide them to NSSC, and tell NSSC if they plan to use those as they are or if they plan modifications	8/12/2003	9/12/2003	State Conservationist	NSSC
3. States having current CRA maps provide modifications, others provide new CRA maps to NSSC. All CRA maps must be matched to surrounding states.	9/12/2003	10/12/2003	State Conservationist	NSSC
4. NSSC drafts National CRA Map and sends to states for review	10/12/2003	11/12/2003	NSSC	States
5. Final National CRA map is prepared	11/12/2003	1/1/2004	NSSC	States

Exhibit B

USDA NRCS Soil Survey Division
National Coordinated Common Resource Area Map of the United States Certification Letter for

_____ _____
State USDA NRCS MLRA Soil Survey Region(s) Office

Map Compilation

1. The Common Resource Area geographic database maps were compiled to the NRCS specifications as described in National Instruction 430–303, First Edition.
2. The minimum size area mapped is 400 sq. km or 98,724 acres (2 cm x 2 cm on 1:1,000,000 scale map).
3. Linear delineations are not less than 5 km or 3.1 miles in width (0.2 inches or 0.5 cm) in width on 1:1,000,000 map.
4. National CRA map unit symbols and delineations match across state boundaries.
5. The national concept of CRA map units have been coordinated across state boundaries.
6. The Major Land Resource Area Soil Survey Region Office (MLRA Office) has worked with States to correlate provisional state CRA symbols to National CRA symbols among all adjacent states.

Spatial Data

1. Digitizing meets NRCS standards and specifications (reference 1:250,000 scale standard NI 430–302).
2. Quality control included a 100 percent edit of completed paper map.
3. A 100 per cent digital data review was done at the State office.
4. Soil and water boundaries are digitized within a 0.01-inch (0.254 mm) line width of the compiled boundary.
5. Where a CRA boundary line intersects a state boundary, the line matches the line in the adjoining state within 0.01-inch (0.254 mm) measured centerline to centerline.
6. Polygon map data are stored in a vector (line segment) format.
7. Map data are in ESRI shape file or interchange format (.e00) with full map projection information and metadata. File name is st_cra where “st” = state alphabetic FIPS code.
8. Map data are in a state coverage (clip cover provided by NSSC was used).
9. Map data and other information are being sent to the National Soil Survey Center with this letter.

Attribute Data

1. Two attributes are included and populated: prov_st_cra and national_cra as part of the digital CRA map.

I certify that the National Coordinated Common Resource Area (CRA) Map meets all of the above certification specifications and is ready for archiving and distribution for my state.

_____
State Conservationist

_____
Date