

Minutes of NCR-3
Indianapolis, IN
July 12-16, 2004

Administrative Advisor:

Gerald Miller
Iowa State University
132 Curtiss Hall
Ames, IA 50011-1050

Chair:

Richard D. Hammer
University of Missouri
Dept. of Civil/Env. Engineering
Columbia, MO 65211

Secretary:

Cynthia Stiles
University of Wisconsin
Dept. of Soil Science
Madison, WI 53706

Members in attendance:

Terry Cooper – Minnesota (substitute for Jay Bell), Tim Gerber – Ohio (substitute for Neil Smeck), Dave Hammer - Missouri, Russ Kelsea – NRCS Lincoln, Ken Olson - Illinois, Mickey Ransom - Kansas, Gary Steinhardt - Purdue, Cynthia Stiles – Wisconsin.

Members absent:

Tom Fenton – Iowa, Dave Hopkins – North Dakota, Doug Malo – South Dakota, Del Mokma - Michigan, Bill Zanner – Nebraska, James Bockheim – Wisconsin, Laurie Osher – Maine, and Jay Noller – Oregon State, Ray Knighton – CSREES.

Meeting called to order Monday, July 12 at 6:25 PM at the Indiana State NRCS office, Indianapolis, IN. The meeting continued until approximately 8:30 PM, recessed, and was reconvened Tuesday, July 13 at 9:00 AM during the Regional Soil Survey Work Planning Conference.

2003 minutes were approved by voice vote upon a motion made by M. Ransom, seconded by T. Cooper.

Report from Administrative Advisor Gerald Miller:

- 1) Current 5-year project terminates Sept.30, 2004. Dave Hammer and writing team got the renewal in on time (NCRA committee in Madison, presently designated as NC_temp1089). The proposal was approved for renewal for five years, October 2004 – September 2009. The committee will retain its current designation, NCR-3. Specific criticisms of the project: 1) Objectives are excessively broad and do not seem to address emerging issues and 2) there is a need to reach wider audience.
- 2) Specific comments shared by the Administrative Advisor addressed separation of objectives and operating model of NCs and NCRs, reducing administrative burdens to NCR and delegation of more flexibility to committees.
 - a. Despite this anticipated separation, there is still a need for clear accountability for the project – a need for immediate accomplishment. Review will be in third year (FY 2007) for midterm, so the committee needs to conceptualize and activate a productive output to demonstrate in this review.

- b. Appendix E's have been filed for the representative for each University, Two new states have been added, Kentucky (Tassos Karathanasis) and Oregon State (Jay Noller). Terry Cooper replaces Jay Bell for Minnesota, Andrew Manu will replace Tom Fenton (retired) for Iowa. Laurie Osher, Maine, has not filed an Appendix E for the new NCR-3.
- c. The NIMSS webpage is accessible through specific directions given in Appendix 3. Budget information for fiscal years 2004 and 2005 was distributed and showed that distributed funds have been cut by roughly 10% overall in 2004 but are projected to be level into 2005.
- d. Directors originally asked for multi-state committees to have a chair, chair-elect, and a secretary, and for each officer to serve for a two-year term, but this is under discussion.

David Hammer thanked Jerry for his extraordinary service and support through the renewal efforts, and observed that Jerry had kept in touch with the committee throughout the year and had attended and participated in all meetings.

Report from NRCS Representative Russ Kelsea:

- 1) NRCS re-organization: there are to be three new national technology support centers (NTSC) with core soil scientist to focus on interpretation and proper use of soil information (Greensboro, NC, Ft. Worth, TX, and Portland, OR) in place and operational by Sept 2004. Soil Survey's charge is to develop and promulgate soil resource information and this re-organization will address the contemporary needs of the survey users. Office of Management and Budget has found that this is a weak link for the agency, but still has problems deciding under whose jurisdiction this falls. National Headquarter changes: Ken Lubich will be the Program Manager (Replacing Maxine Levin), Carolyn Olson will transfer to Washington as the new Science Advisor, and eventually new national leader will be named for to replace Dr. Olson in Lincoln. This position will combine the investigations and research with the director of the National Soil Survey laboratory.
- 2) National Cartographic and Geospatial Center (NCGC) to open in Morgantown, WV, as a mandated center through CESU, emphasis on new technology development – first project will be to get the existing centers to work together (Information Systems Plan). NCGC won aggressive bid but will have to reduce personnel to follow up on digital survey production job. The agency is now deciding on best method of delivering the product and amending bills to move from requirement of electronic promulgation only to optional print format. Shifting to an electronic format has been challenging because the existing federal guidelines require that soil surveys be in “book” format. A more generic set of working guidelines is being proposed.
- 3) There has been a reduction of roughly half the number of soil scientists from 1970 to present. Many more soon will retire and opportunities to hire many new, young soil scientists will be available in the upcoming years. Committee members raised questions on whether or not the agency will try to make information available to potential employees and simplify the application process. A perceived problem in recruiting new hires is that the agency uses human resources personnel to recruit rather than allowing

field soil scientists to recruit and explain the nuances of a career in soil survey. Russ Kelsea noted that future soil scientists will have different career tracks, and a new spectrum of skills and opportunities exists. Additional commentary followed on reaching high school students and continuing soil-judging programs at the undergrad level.

- 4) NASIS/TERRA (Forest Service) issues are being addressed at the NCSS. Forest Service views Resource Inventory as an empirical survey whereas NCSS tends to be a stochastic inventory (i.e., landscape mapping). Issues will be addressed at NCSS.

Old Business:

Eroding Mollisols (reported by Ken Olson) focuses on taxonomic problems associated with erosional phases - eroded Mollisols = prime timber soils and loss of genetic "thread". Proposal written by K. Olson was sent for review to M. Ransom, D. Hammer, N. Smeck, and T. Fenton and criteria were refined for the mollic epipedon thickness requirements, OC content, color, to exclude timber soils. Russ Kelsea suggested that we need to define the characteristics of these soils to help the survey folks make best interpretations. M. Ransom advanced the idea that the entire landscape needs to be evaluated rather than specific sites and perhaps the taxonomic problem should be less important than interpretation and land use capability. Dave Hammer suggested that subcommittees should look at specific problems and produce white paper reports of their findings. He further suggested that this is the kind of activity and reporting that administrators are expecting of multi-state committees.

New Business:

- 1) Ken Olson presented the updated list for officer sequence through the states and then brought a motion to have three officers as suggested by the multi-state research committee. T. Cooper second - passed as stated. The suggestion that officers serve two-year terms was rejected. Officers will serve one year term only as traditionally done in the past. New officers for next year Chair: Cynthia Stiles, Chair-Elect: Terry Cooper, Secretary: Mickey Ransom.
- 2) Meeting for 2005 will be 20-21 June in Madison, WI, with arrangements being made by C. Stiles.
- 3) Mickey Ransom made a motion to organize subcommittees into "action" and "service" categories, seconded by G. Steinhardt, motion passed by voice vote.

Subcommittees current at meeting time were:

- Soil taxonomy
- Hydric soils
- Nominating committee
- Soil survey advisory
- Precision farming
- Database
- Spatial and temporal distribution of soil organic carbon committee, which replaced the Eroded soils committee in 2003.

The following new subcommittees and members were confirmed:

New service subcommittees:

- Soil Taxonomy, (C. Stiles carryover, G. Steinhardt new)
- National Conference on Soil Survey, (G. Steinhardt carryover, D. Hopkins new)
- National Soil Survey Advisory (inactive; K. Olson volunteered as contact)
- National Soil Survey Database (T. Fenton has been handling this and it is generally inactive but not officially so; M. Ransom volunteered to work on this).

Inactive service committee: National Soil Survey Standards

Motion made by M. Ransom to accept these action committee as suggested, R Kelsea second, motion passed by voice vote.

New action committees

- Soil Organic/Inorganic (Eroded Mollisols): Olson (chair), Hammer, Ransom, Zanner.
- Education and Training: Ransom (chair), Cooper, Hammer, Steinhardt, Stiles.
- High intensity Survey: Steinhardt (chair pro-temp)
 - Focus to be on scale, quality assurance, procedures and standards
- Interpretations: Hammer (chair)
 - Focus to be on user population, their needs, and moving to web-based information and data

Motion made by K. Olson to accept these service committees and chairs as suggested, seconded by C. Stiles, D. Hammer will e-mail absent members to participate in these committees, G. Miller suggested that we act quickly to define objectives and consider ideas for action. M. Ransom volunteered to update list-serve for committee members. Motion passed on voice vote.

- 4) Mickey Ransom made a brief progress report on NC-94 (renewed as NC 1018): “Impact of climate and soils on crop management”. He and Brian Slater (Ohio) are responsible for contributing appropriate soil information for this project.
- 5) Mickey Ransom suggested that committee chairs update membership using a listserv, and Mickey volunteered to establish the listserv.
- 6) Ken Olson suggested that we be open to interaction with national committees and participate in the national Soil Survey Work Planning Conference, and that we send at least one member to this meeting each year that it is held. The ensuing discussion produced the following suggestions for topics:
 - Working with NRCS for national education and recruitment goals.

- Intepretation revisions from eroded soils.
- Precision agriculture and first order soil surveys
 - Quality assurance
 - Standards

7) Possible NCR-3 objectives were discussed and included:

- Create “critical mass” for policy decisions.
- Identify soil and landform research needs.
- Develop and coordinate interpretations.
- Bring interpretations to national recognition

Business meeting adjourned at 11:15AM after the exchange of state reports and reaffirmation of next year’s officers.

Approved:

Cynthia A. Stiles 8/30/2004
 Cynthia A. Stiles Date

NCR-3 Secretary 2004

Gerald Miller 8/30/2004
 Gerald Miller Date

NCR-3 Adminstrative Advisor 2004

NCR-3 State Summary Reports 2004

University of Illinois

Ken Olson

Illinois has 100 published county reports with 2 reports awaiting publication. Thirty counties have a digital soil survey in progress. Several soil scientists are assigned to MLRA offices.

Research Activities:

- Soil productivity-erosion relationships
- Evaluation of conservation tillage systems for the restoration of productivity of previously eroded soils
- Crop yield production by soil series
- Quantification of erosion and sedimentation
- Effects of soil tillage on SOC sequestration

Publications:

5 peer-reviewed journal articles
2 book chapters

Indiana -- Purdue University

G.C. Steinhardt

All 92 Indiana counties have been surveyed and have published soil survey reports. Three survey reports are in press. Ten counties have been updated at a scale of 1:12,000 and updates are in progress in four counties. Surveys published after 1980 are being recompiled on orthophotography and digitized, and 30 counties have been completed.

Purdue no longer has a soil characterization laboratory, and all analyses in support of the NCSS are being conducted at the NSSL in Lincoln, NE.

Research in support of soil survey:

- Monitoring water table depth, mineral reduction and water movement in a variety of parent materials. This is part of the global change initiative.
- Properties of reclaimed minesoils
- Precision studies that include soil variability.
- Hydraulic conductivity on Bluffton and Tipton Till plains. Emphasis in on need for on-site septic systems.
- Noninvasive septic system evaluation with electromagnetic induction.

Courses taught: No information provided

Publications: No information provided

Iowa State University
T.E. Fenton

All Iowa counties have been mapped once. Some counties have multiple soil survey publications, and 12 counties have out-of-date soil surveys. The oldest soil surveys are being updated, and all updates will be on an MLRA basis using an orthophoto base with a scale of 1:12,000. All previous surveys were at a scale of 1:15,840.

All Iowa counties have digitized, georeferenced soil maps with county-specific soil data bases. Joining of sections into townships has been completed. The digitized soil survey maps and data bases are available at: <http://extension.agron.iastate.edu/soils/>

The soil characterization laboratory has insufficient funds for the first time since 1967, and for the first time since 1950, no NRCS soil survey personnel are housed on campus.

Research activity related to soil survey:

- Use of ground conductivity meters in soil survey
- Organic matter inventory by soil map unit
- Stratigraphic relationships on loess-covered benches in the Savanna Terraces
- Soil moisture regime
- Restored wetlands
- Use of cesium-137 to evaluate soil erosion and deposition
- Improved procedures for updating soil surveys
- Use of soil-landform attributes for sanitarians and wastewater treatment
- Updating modeling of Iowa crop yields

Publications:

- 5 peer-reviewed articles
- 3 articles in Soil Survey Horizons
- Several articles “in press” or “in review”

Kansas State University
M.D. Ransom

Future updates of soil surveys will be on an MLRA basis. Six MLRA's currently targeted for revision on a 1:12,000 ortho-quad base:

- Central High Tableland (MLRA 72)
- Southern High Plains (MLRA 77)
- Central Rolling Red Prairie (MLRA 80A)
- Cross-Timbers (MLRA 84A)
- Nebraska and Kansas Loess-Drift Hills (MLRA 106)
- Iowa and Missouri Deep Loess Hills (MLRA 107)

All Kansas county soil surveys are digitized to NRCS standards for SSURGO certification. This was collaborative effort among NRCS, KSU Agronomy Department and KSU Geography

Department in effort to develop a state-wide GIS. Data are available at:
<http://gisdasc.kgs.ukans.edu/dasc.html>

Work has begun to produce online soil survey manuscripts. Morton, Brown, Reno and Geary counties currently are available at: http://soils.usda.gov/survey/online_surveys/kansas/

Soil surveys are being published on CD and Reno County is available.

A soil characterization laboratory provides analyses of “grab samples” for the soil survey program. Approximately 500 samples were analyzed in FY04.

Research activities related to soil survey:

- Clay translocation and carbonate accumulation in 16-26 in. rainfall zone of western KS
- Distributions and properties of clay minerals in KS soils with emphasis on fertility
- Soil genesis and geomorphology in the Bluestem Hills
- Development of the Kansas Irrigated Productivity Index (KIPI) for KS soils
- Carbon sequestration using benchmark sites to estimates in SOC quantities.
- With NC-1018 – Impact of Climate and Soils on Crop Selection and Management

Courses taught include: Soil Judging, Environmental Quality, Soil Genesis and Classification, Soil Problems.

Four publications:

- 1 peer-reviewed journal article
- 1 symposium
- 2 abstracts

Maine – No Report

Michigan – No Report

Minnesota

T.H. Cooper

Minnesota has 87 counties, of which 49 have published modern soil surveys. Five counties have completed update mapping and update mapping is active in 9 counties. Ten publishes soil surveys are out-of-date. Six metropolitan counties require survey to meet intensive urban land use interpretations.

Research related to soil survey:

- Gullying, erosion and stream bank erosion – Cannon Valley Big Woods Project
- GIS/RS innovative soil mapping update research involves using orthophoto data, IKONOS imagery and digital terrain analysis
- Use of DGPS to produce a DEM for research efforts.
- Use of web technology to distribute National Wetlands Inventory information

- Investigation of spatial errors in Minnesota county soil surveys
- Wet soil monitoring
- Ecosystem atmosphere investigation to improve understanding of carbon balance dynamics in northern coniferous forests
- Use of GIS to evaluate weed populations
- Terrain, climate, soil, and crop interactions in the Minnesota River Basin
- Effects of terrain, soil erosion and cropping on water quality in the Red River Valley

Course taught: no information provided

Publications: no information provided

University of Missouri David Hammer

All counties are digitized and most county soil surveys now are available in electronic format on the Center for Agriculture, Resources and Environmental Sciences (CARES) web site at <http://soils.missouri.edu/> Also available at this site is the statewide DEM data base. The “update” approach has been divided into three phases, of which Phase I is in progress. Phase I activities include:

- Develop a statewide legend and map unit numbering system
- Generate a list of Missouri soil map units from NASIS to determine common soil map units.
- Assign an MLRA office to be responsible for each map unit. Most MLRA offices will have 300 to 550 map units from the total of 4,972 map units in Missouri.
- MLRA map unit symbols are managed and assigned through the state office, based on recommendations from the MLRA project leaders.
- State Legend assignments are approved by the State Soil Scientist and an Excel spreadsheet of map units is being maintained. All legend changes are documented in the NASIS data base.
- Non-MLRA Legends also are being developed in NASIS.
- Project leaders are determining needs for NASIS specialists in order to complete the NASIS data base.
- Procedures have been developed and are in place for NASIS attribute data.
- Adjust map unit delineations to landforms, ensuring compliance, “fit,” and accuracy of map unit boundaries across county lines.

Each NRCS MLRA office will have at least two “high end” computers and ArcGIS software. Phase II planning is nearing completion. Some Phase II efforts are underway. These include: 1. Pedon certification of existing laboratory data; 2. Identification of map units requiring field sampling and development of characterization data in the laboratory; and , 3. Development of attribute-based interpretations for locally important land uses.

Annual reviews are conducted for each MLRA office by the State Soil Scientist, the MDNR Soil Survey Manager and the MU cooperating soil scientist.

Research related to soil survey and interpretations: 1. Development of a Soil Potential Index (SPI) for onsite wastewater systems; 2. Storm water runoff in urban areas; Synthetic soils developed from cement kiln waste, yard waste and tertiary sludge

Publications: 4 peer-reviewed journal articles, 5 published abstracts

Courses taught: Genesis of Soil Landscapes; Pedology; Urban Watershed Management; Hydrology; Special Problems in Civil Engineering

University of Nebraska-Lincoln
William Zanner

Nebraska retains 93 published modern soil surveys. Thirty five counties have out-of-print soil surveys. Seven updates have been completed, four updates are in press, two updates are in progress and two more are scheduled to begin in October, 2004.

The Washington County soil survey is available on CD and two other counties are awaiting CD soil surveys.

Soil surveys are available online for Boone, Deuel, Sheridan and Gage counties. Historical soil surveys are available online for Lancaster, Richardson, Seward and Wayne counties.

Research activities include:

- Sand Hills biocomplexity project. (Funded by NSF). Many collaborators with the goal of understanding the processes controlling the ecological and geomorphic stability of the grass-covered Sand Hills.
- Effects of establishing pine on Sand Hills prairie soils.
- Phenological network for ecological viticulture. Integrating empirical observations from Nebraska growers and university research sites into a viticulture phenology network and to match wine grape cultivars to the microclimates, soils and landscapes of Nebraska.

Publications:

2 book chapters

2 peer-reviewed journal articles

No courses taught were reported.

North Dakota State University
David Hopkins

Twenty one counties have modern, published soil surveys. Eleven soil surveys are in press, 3 counties currently are being mapped and 18 county soil surveys are out of date.

Research activities related to soil survey:

- In cooperation with North Dakota Geological Survey – acquisition of trace element data for surface horizons and B horizons of soils at 735 sites. Samples are being collected by field-experienced soil scientists. A subset of samples will be analyzed at the National Soil Survey Laboratory (NSSL) for ancillary physical and chemical properties.
- Influence of geologic materials and pedogenic processes on trace elements and salinity in soil landscapes. Objective is to examine differences in trace element chemistry among different glacial till deposits in eastern North Dakota. In collaboration with ARS.
- Characterization of increasing soil salinity in eastern North Dakota agricultural soils. In collaboration with an NDSU corn-breeder to identify salt-tolerant corn varieties.
- Effects of sustained irrigation on reducing surface water levels in the Devils Lake area.
- One year administrative study with U.S. Forest Service to examine potential impacts of grazing on the Dakota Prairie Grasslands.

Courses taught: Introduction to soil science; Advanced soil genesis, morphology and classification.

Publications:

- 3 manuscripts in peer-reviewed journals
- 1 published abstract

Ohio – No Report

Oregon – No Report

South Dakota State University
D.D. Malo

All 67 counties have been mapped once and have a published soil survey. Soil survey update is progressing on an MLRA basis. Five counties have been updated in this process and field mapping continues in one county. All soil surveys have been digitized through a cooperative effort of state, federal and local agencies and SDSU. Topographic quad sheets also have been digitized. Cooperative efforts continue to develop a database of basic soils information.

Research related to soil survey activities:

- Critical evaluation of soil productivity for crop and range yields and range species composition and distribution.
- Scanning old aerial photographs that are not otherwise available
- Characterize research field soils as requested by other SDSU research staff
- Soil factors that affect EM readings in eastern South Dakota
- Helping with curriculum planning for a land-grant university in Bolivia, South America
- Impacts of long-term grazing on soil chemical and physical properties

- Evaluation of impacts of warm and cool season grasses and agricultural crops on soil chemical and physical properties
- Feasibility of switchgrass as a means to sequester SOC
- Effects of soil tillage on soil physical properties in Minnesota and South Dakota

Courses taught: Introductory Soils; Integrated Management of Agricultural Resources; Soil Judging; Rural Real Estate Appraisal; Advanced Soil Genesis; Field Studies in Pedology

Publications:

- 4 peer-reviewed journal articles
- 1 Experiment Station publication.
- 1 book chapter
- 1 url site
- 3 abstracts

University of Wisconsin-Madison
Cynthia A. Stiles

The pedology program at the University of Wisconsin-Madison is alive and well, and enjoying the helpful cooperation of state and regional NRCS personnel in field investigations. Ongoing field work includes:

- With UW Geography Dept. – digital mapping with SoLIM (Soil-Landscape Inference Models) based on fine-resolution Digital Elevation Models (DEM's). Expect a completely SoLIM-generated soil map soon for Dane County.
- Deep soil investigations in Driftless Area of southwest Wisconsin. Subsoil morphology shows signs of multiple generations of soil genesis under different environments. Important agricultural implications.
- Investigating relict sub-tropical soil properties in North Dakota soils.
- Major effort—complete geochemical assessment of soils in the state of Wisconsin, in cooperation with NRCS. USGS is a project sponsor.

Hope to have a full-time NRCS member staffed in UW Soil Science Department in coming calendar year.

Student enrollment is holding steady.

Six publications produced:

- 3 peer-reviewed journal
- 3 abstracts in Geological Society of America

Courses taught: Pedology, Advanced Pedology, Wetland Ecology, Advanced Topics