TABLE OF CONTENTS **PAGE**

2000 NORTH CENTRAL SOIL SURVEY WORK PLANNING CONFERENCE
GRAND RAPIDS, MICHIGAN

CONFERENCE AGENDA

SUNDAY - June 18, 2000

3:00 pm - 5:30 pm	Registration at the Holiday Inn Airport East in Grand Rapids
6:00 pm	Reception sponsored by the Soil Classifiers Association of Michigan

MONDAY - June 19, 2000

8:00 am - 10:00 am	Registration

Session I (Welcome and Agency Reports) – Facilitator: W. Frederick, NRCS

8:00 am - 8:15 am	Welcome by NRCS Ronald C. Williams, State Conservationist
8:15 am - 8:30 am	Remarks from Michigan State University Ian Gray, Director, Michigan Agricultural Experiment Station
8:30 am - 8:45 am	Remarks from Michigan Department of Agriculture Vicki Pontz-Teachout, Director, Environmental Stewardship Division
8:45 am - 9:30 am	Agency Reports
	USDA Natural Resources Conservation Service Horace Smith, Director, Soil Survey Division
	USDA Forest Service Larry Laing, Soil Scientist, Region 9
	NCR-3 Tom Fenton, Iowa State University
9:30 - 10:00 am	BREAK

Session II (Topics of Interest and Presentations) – Facilitator: Tom Fenton, Iowa State University

10:00 am - 10:30 am	Methodology on Generating Grass Roots Support For Updating A Soil Survey, Steve Olds, DC, NRCS
10:30 am - 11:00 am	Techniques for Updating Soil Surveys, Shane McBurnett, MLRA Project Leader, NRCS
11:00 am - 11:30 am	Precision Farming Activities in the North Central Region Dr. Fran Pierce, Michigan State University
11:30 am - 12:00 pm	Research On Hydric Soils Within The North Central Region Dr. Jay Bell, University of Minnesota Byron Jenkinson, Purdue University
12:00 - 1:00 pm	LUNCH AT THE HOLIDAY INN

Session III (Committee Breakout Sessions)

1:00 pm - 2:15 pm	Committee 1 - Updating the NCSSWPC Bylaws Committee 3 - Research Needs for North Central Region
2:15 pm - 2:45 pm	BREAK
2:45 pm - 3:45 pm	Committee 2 - Data Acquisition for Problem Solving Committee 4 - Hydric Soil Indicators For North Central Region

TUESDAY - June 20, 2000

Session IV (Committee Breakout Sessions and Agency Meetings)

8:00 am - 9:30 am	NCR-3 Meeting Natural Resources Conservation Service
9:30 am - 10:00 am	BREAK
10:00 am - 11:00 am	Committee 1 - Updating the NCSSWPC Bylaws Committee 3 - Research Needs for North Central Region
11:00 am - 12:00	Committee 2 - Data Acquisition for Problem Solving Committee 4 - Hydric Soil Indicators For North Central Region
12:00 - 1:00 pm	LUNCH AT THE HOLIDAY INN

Session V (MLRA Reports) – Facilitator: Nathan McCaleb, NRCS

1:00 pm - 1:50 pm	Reports from MLRA Region Offices In Salinas, KS, Bismark ND, St. Paul, MN, Indianapolis, IN and Little Rock, AK (10 minutes each report)
1:50 pm - 2:20 pm	BREAK

Session VI (Topics of Interest/Field Trip Orientation) – Facilitator: Del Mokma, MSU

2:20 pm - 2:50 pm -	Integration of Use-Dependent Soil Properties in the Survey Update Process, Craig Ditzler, NRCS, Soil Quality Institute
2:50 pm - 3:20 pm	Preliminary Results of Crop Management Practices on Carbon Sequestration, Craig Ditzler, NRCS, Soil Quality Institute
3:20 pm - 3:50 pm	New Technology For Automation of Map Compilation For SSURGO, Jay Bell, University of Minnesota

3:40 pm - 4:50 pm	Geological Perspective of South Western Michigan, Dr. Dave Lusch, MSU
6:00 pm	EVENING BANQUET & PRESENTATION
	Presentation: From the Mackinac to the Montrael and Back by Loren Berndt, Retired Asst. State Soil Scientist

WEDNESDAY - June 21, 2000

All Day Field Trip
Evening cookout: Brats on the Beach

THURSDAY - June 22, 2000

Session VII (Committee Reports and Business Meeting) – Facilitator: Dennis Potter, NRCS

8:00 am - 8:30 am	Committee 1 Report
8:30 am - 9:00 am	Committee 2 Report
9:00 am - 9:30 am	Committee 3 Report
9:30 am - 10:00 am	BREAK
10:00 am - 10:30 am	Committee 4 Report
10:30 am - 11:00 am	NCSSWPC Business Meeting
11:00 am - 11:10 am	Closing Remarks – W. Frederick, NRCS
	Adjournment
11:10 am - 12:00	NCR-3 Meeting
11:10 am - 12:00	NCSSWPC Steering Committee Meeting

NORTH CENTRAL SOIL SURVEY WORK PLANNING CONFERENCE MASTER LIST

Robert Ahrens
National Leader Soil Classification and Standards
National Soil Survey Center
Federal Building, Rm 152
100 Centennial Mall North
Lincoln, NE 68508
Email: bahrens@nssc.nrcs.usda.gov

Jay Bell
University of Minnesota-St. Paul
Dept. of Soil, Water & Climate
439 Borlaug Hall
St. Paul, MN 55108
(612)625-6703
Email: jay.bell@soils.umn.edu

William Bowman
Natural Resources Conservation Service
3001 Coolidge Rd., Suite 250
E. Lansing, MI 48823
(517) 324-52__
Email: william.bowman@mi.nrcs.usda.gov

Asghar Chowdhery
Natural Resources Conservation Service
6013 Lakeside Blvd.
Indianapolis, IN 46278
(317)290-3200 x374
Email: achowdhe@in.nrcs.usda.gov

Bennie Clark
Natural Resources Conservation Service
6013 Lakeside Blvd.
Indianapolis, IN 46278
(317)290-3200 x394
Email: bclark@in.nrcs.usda.gov

James Culver
Natural Resources Conservation Service
100 Centennial Mall North
Federal Building, Rm 152
Lincoln, NE 68508-3866
(402)437-5321
Email: jculver@nssc.nrcs.usda.gov

Tom Fenton
Iowa State University
Dept. of Agronomy
2407 Agronomy Building
Ames, IA 50011-1010
(515)294-2414
Email: tfenton@iastate.edu

Henry Ferguson
Natural Resources Conservation Service
6013 Lakeside Blvd.
Indianapolis, IN 46278
(317)290-3200 x377
Email: hferguso@in.nrcs.usda.gov

Donald Franzmeier
Purdue University
Dept. of Agronomy
West Lafayette, IN 47907-1150
(765)494-8065
Email: dfranzmeie@purdue.edu

William Frederick
Natural Resources Conservation Service
1405 S. Harrison Rd., Rm 101
E. Lansing, MI 48823
(517)324-5233
Email: bill.frederick@mi.nrcs.usda.gov

Charles Fultz
Natural Resources Conservation Service
7600 Eagle Point Dr.
N. Little Rock, AR 72116
(501)324-5410
Email: cfultz@ar.nrcs.usda.gov

Tim Gerber
Ohio Dept. of Natural Resources
Division of Soil & Water Conservation
1939 Fountain Square Ct.
Columbus, OH 43224-1336
(614)265-6680
Email: tim.gerber@dnr.state.oh.us

Jonathan Gerken
Natural Resources Conservation Service
200 N High St., Rm 522
Columbus, OH 43215
(614)255-2482
Email: jon.gerken@oh.nrcs.usda.gov

Charles Love
Natural Resources Conservation Service
6013 Lakeside Blvd.
Indianapolis, IN 46278
(317)290-3200 x375
Email: clove@in.nrcs.usda.gov

Dr. David Hammer
University of Missouri
331 AB Building
Columbia, MO 65211
(573) 882-0614
Email: HammerR@missouri.edu

Birl Lowery
Dept. of Soil Science
1525 Observatory Drive
University of Wisconsin
Madison, WI 53706-1299
(608)262-2752
Email: blowery@facstaff.wisc.edu

C.J. Heidt
Natural Resources Conservation Service
Federal Building
3rd and Rosser
Bismark, N.D. 58502
Email: cj.heidt@nd.usda.gov

Dr. Doug Malo
S. Dakota State University
Plant Science Dept.
BSL 247, Box2140C
Brookings, SD 57006
Email: Douglas_Malo@sdstate.edu

David Hopkins
North Dakota State University
Dept. of Soil Science
225 Walster Hall
Fargo, ND 58105
(701)231-8948
Email: hopkins@badlands.nodak.edu

Joseph Mason
University of Nebraska
Conservation & Survey Division
113 Nebraska Hall
Lincoln, NE 68588-0517
(402)472-7537
Email:

Erik Johnson
Michigan Dept. of Agriculture
9219 Aura St., PO Box 325
Kaleva, MI 49645
(231)362-2659
Email: erik.johnson@mi.nrcs.usda.gov

Nathan McCaleb
Natural Resources Conservation Service
Room 152, Federal Building
Lincoln, NE 68508-3866
(402)437-5315
Email: nathan.mccaleb@ne.nrcs.usda.gov

Larry Laing
US Forest Service, Region 9 Office
310 W. Wisconsin Ave, Suite 520
Milwaukee, WI 53203
(414)297-3127
Email: lelaing@fs.fed.us

Robert McLeese
Natural Resources Conservation Service
1902 Fox Dr.
Champaign, IL 61820
(217)398-5286
Email: r.mcleese@il.nrcs.usda.gov

Jerry Larson
Natural Resources Conservation Service
6013 Lakeside Blvd.
Indianapolis, IN 46278
(317)290-3200 x378
Email: jlarson@in.nrcs.usda.gov

Joseph McCloskey
Natural Resources Conservation Service
375 Jackson St, Suite 600
St. Paul, MN 55101-1854
(651)602-7861
Email: Joe.McCloskey@mn.nrcs.usda.gov

Kevin McSweeney
University of Wisconsin-Madison
School of Natural Resources
1450 Linden Dr.
Madison, WI 53706-1290
(608)262-6968
Email: kmcsween@facstaff.wisc.edu

Ed Miller
Ohio Dept. of Natural Resources
Div of soil & Water Conservation
1939 Fountain Square Ct.
Columbus, OH 43224
(614)265-6683
Email: ed.miller@dnr.state.oh.us

Delbert Mokma
Michigan State University
Dept. of Crop & Soil Sciences
Plant & Soil Sciences Building
East Lansing, MI 48824-1325
(517)353-9010
Email: mockma@pilot.msu.edu

Travis Neely
Natural Resources Conservation Service
6013 Lakeside Blvd.
Indianapolis, IN 46278
(317)290-3200 x380
Email: tneely@in.nrcs.usda.gov

Ken Olson
University of Illinois
Dept of Natural Resources & Envt'l Science
W 401C Turner Hall
Urbana, IL 61801-4978
(217)333-9639
Email: k-olson1@uiuc.edu

Mark Osborn
MO Dept. of Natural Resources
PO Box 176
Jefferson City, MO 65102-0176
Email:

Dennis Potter
Natural Resources Conservation Service
Parkdale Center, Suite 250
Columbia, MO 65203
(573)876-9411
Email: dennis.potter@mo.nrcs.usda.gov

Michel Ransom
Kansas State University
Dept of Agronomy
Throckmorton Plant Science Center
Manhattan, KS 66506-5501
(913)532-7203
Email: mdransom@ksu.edu

Pierre Robert
Professor, Precision Agriculture
Director, Precision Agriculture Center
Department of Soil, Water, and Climate
University of Minnesota
568 Borlaug Hall, 1991 Upper Buford Circle
St. Paul, MN 55108-6028
(612)625-3125
(612)624-4223 (FAX)
Email: probert@soils.umn.edu

Jerome Schaar
Natural Resources Conservation Service
200 4th St SW
Huron, SD 57350
(605)352-1252
Email: jerome.schaar@sd.nrcs.usda.gov

Steve Scheinost
Natural Resources Conservation Service
5930 S. 58th Ste T
Lincoln, NE 68516-3653
(402) 421-3758
Email: steve.scheinost@ne.nrcs.usda.gov

Richard Schlepp
Natural Resources Conservation Service
760 South Broadway
Salina, KS 67401-4642
(785)823-4558
Email: rick.schlepp@ks.nrcs.usda.gov

Daniel Shurtliff
Natural Resources Conservation Service
Federal Building, 200 4th SW
Huron, SD 57350
Email: danied.shurtliff@sd.nrcs.usda.gov

Ray Sinclair
Natural Resources Conservation Service
National Soil Survey Center
100 Centennial Mall North
Federal Building, Room 152
Lincoln, NE 68508-3866
(402) 437-5699
Email: rsinclair@nssc.nrcs.usda.gov

Neil Smeck
Ohio State University
School of Natural Resources
2021 Coffey Rd
Columbus, OH 43210
(614)292-9059
Email: smeck.1@osu.edu

Horace Smith
Natural Resources Conservation Service
Rm 4250 South Building
14th & Independence Ave, SW
Washington, DC 20250
(202)720-7848
Email: horace.smith@usda.gov

Steven Sprecher
US Army Corps of Engineers
2422 Viridian Drive, Suite 101
South Bend, IN 46628
Email: Steven.W.Sprecher@lreo2.usace.army.mil

Gary Struben
Natural Resources Conservation Service
6013 Lakeside Blvd.
Indianapolis, IN 46278
(317)290-3200 x373
Email: gstruben@in.nrcs.usda.gov

Michael Sucik
Natural Resources Conservation Service
210 Walnut St., Suite 693
Ames, IA 50309-2180
(515) 284-4353
Email: mike.sucik@ia.nrcs.usda.gov

(George Teachman)
Commander
U.S. Army Environmental Center
ATTEN: SFIM-AEC-EQN (Mr. George Teachman)
5179 Hoadley Rd.
Aberdeen Proving Grounds, MD 21010-5401
Email: George.Teachman@aec.apgea.army.mil

Richard Tummons
Natural Resources Conservation Service
Parkdale Center, Suite 250
Columbia, MO 65203
(573)876-0907
Email: richt@mo.nrcs.usda.gov

Cleveland Watts
Natural Resources Conservation Service
PO Box 1458
Bismarck, ND 58502
(701)250-4435
Email: cwatts@nd.nrcs.usda.gov

BY- LAWS OF THE

NORTH CENTRAL REGIONAL SOIL SURVEY CONFERENCE

OF THE NATIONAL COOPERATIVE SOIL SURVEY

2000 (REVISED)

Article I. Name.

The name of the Conference shall be the "North Central Regional Soil Survey Conference". The letters NCRSSC may be used as the official acronym of the conference.

Article II. Purpose of Conference.

The purpose of the conference is to bring together North Central States representatives of the National Cooperative Soil Survey (NCSS) for discussion of technical questions. Through the actions of committees and conference discussions, experience is summarized and clarified for the benefit of all; new areas are explored; procedures are proposed; and ideas are exchanged and disseminated. The conference also functions as a clearinghouse for recommendations and proposals received from individual members and state conferences for transmittal to the National Cooperative Soil Survey Conference (NCSSC). It also acts on recommendations from the national conference and other regional conferences.

Article III. Membership.

Participants of the conference are the National Cooperative Soil Survey soil scientists of Federal, State, University, local units of government and private organizations of the North Central Region (Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota and Wisconsin). A National Leader of Natural Resources Conservation Service (NRCS) Soil Survey Division will be a Liaison to the NCRSSC and will maintain a membership list for the Conference and distribute it to the incoming chair. All cooperating agencies and organizations will be responsible to provide update membership information to a Liaison National Leader of Soil Survey Division. All soil scientists or other technical specialists of any cooperating agency or organization whose participation would be helpful for particular objectives or projects of the Conference may be sent including those from the host state.

Article IV. Meetings.

Section 1. Time of Meetings.

The conference will ordinarily convene every 2 years in even-numbered years. Time of year is determined by the conference chair. Additional meetings may be called by request of the steering committee or the conference with the administrative approval of the participating agencies and organizations.

Section 2. Host State.

The host state is determined two meetings in advance; (e.g., the 2000 conference selects the host state for 2004, the 2002 conference selects the host state for 2006, etc.). During the conference business meeting invitations from the various states are considered and voted upon. A simple majority vote decides the host state. The conference may be held at any suitable location within the host state. The state rotation for the NCRSSC is as follows: Michigan, Wisconsin, Indiana, North Dakota, Kansas, Ohio, Nebraska, Iowa, Minnesota, Illinois, South Dakota, and Missouri.

Section 3. Separate Meetings.

University Agricultural Experiment Station representatives to the North Central Regional Committee No. 3 (NCR-3) on soil surveys will meet during the conference. Concurrently, soil scientists of the other cooperating agencies may meet to discuss their issues.

Section 4. Basic Structure of Regional Conference

Although the agenda for each conference will vary depending upon current issues and items of interest, the following is a basic recommended list of items that would be included in a North Central Regional Soil Survey Conference. This list can be used as an aid for states planning future conference meetings:

1. Welcome by cooperating host state agencies.
2. Reports by cooperating agencies such as NRCS, NCR-3, Forest Service (FS), Bureau of Land Management (BLM), Bureau of Indian Affairs (BIA), and others if applicable.
3. Reports from Major Land Resource Area (MLRA) Regional Offices (MO=s) within the North Central Region. These would include: Indianapolis, IN; St. Paul, MN; Salina, KS; Bismark, ND; Amherst, MA; Morgantown, WV and Little Rock, AR.
4. Time allotted for agency breakout session. These typically are NRCS and NCR-3 but others as needed.
5. Time allotted for committees to meet and discuss charges presented to them by the steering committee as well as time allotted for conference attendees to make input to each committee=s activities.
6. Time allotted for committee reports to the conference.
7. Time allotted for a business meeting toward the end of the conference.
8. A half or full day field trip to look at soil related problems or landscapes of interest in the area.

Article V. Steering Committee, Officers and Committee Chairs.

Section 1. The Conference shall have a Steering Committee.

The steering committee shall consist of:

1. NRCS State Soil Scientist of host state
2. The University representative for host state
3. NRCS and University representative from the next host state
4. Past NCRSSC chair and co-chair
5. Liaison National Leader of Soil Survey Division
6. MO leader for the host site

Officers rotate among agencies. That is, the chair must be of a different agency than the past chair. Similarly, the secretary must be of a different agency than the past secretary. At each biennial conference a secretary is elected for the succeeding conference. The secretary (whoever will be the next NCRSSC chair - either the NRCS State Soil scientist or University Representative) becomes chair when his/her successor is elected. When an officer is unable to complete his/her term of office, the steering committee shall appoint a successor.

Responsibilities of the Steering Committee include the following:

1. The committee will meet once after the business meeting of each conference and may meet at other times if necessary.

2. The steering committee assists in the selection of special participants in a

specific regional conference.

3. The steering committee assists in the formulation of charges to committees.

4. The steering committee will be responsible for compiling, editing and distributing the NCRSSC Proceedings to all conference attendees within the 120 days after the conference.

5. Steering committee will forward action items, recommendations and resolutions to appropriate Liaison National Leader of Soil Survey Division and Director of Soil Survey Division.

Section 2. Conference Officers

A. Chair.

The chair is from the host state. Responsibilities include the following (specific tasks may be delegated to the secretary):

1. Functions as head of the Steering Committee.

2. Plans and manages the biennial conference.

3. Determines, in consultation with the steering committee, the kinds of committees, selects the committee chairs and assistant chairs, formulates and transmits charges to committees, and appoints committee members.

4. Issue announcements of and invitations to the conference.

5. Writes the program and has copies prepared and distributed to the membership.

6. Makes necessary arrangements for: food and lodging accommodations; special food functions; meeting rooms (including committee rooms); and local transport for official functions.

7. Provides for appropriate publicity for the conference.

8. Presides at the business meeting of the conference.

9. Make arrangements for a half or full day field trip.

B. Secretary.

The secretary is from the state that will host the next biennial conference. The secretary for the succeeding conference (in 2 years) is elected by simple majority vote at NCRSSC business meeting.

Responsibilities of the Secretary include the following:

1. Assists in the planning and management of the conference.

2. Assists in the selection of committee chairs and assistant chairs and in the selection of committee members.

3. Responsible for taking of all business meeting minutes, collecting final reports from committees, and collecting any papers or presentations given during the conference.

4. Responsible for forwarding all conference minutes, reports and papers to the Liaison National Leader of Soil Survey Division for the final preparation and distribution of the NCRSSC Proceedings.

5. Updates the conference membership list (given to him/her by the Chair upon conclusion of each conference) and provides the list to the Liaison National Leader of Soil Survey Division.

Section 3. Committee Chairs.

The chair of each committee is selected by the conference chair in consultation with the steering committee..

Article VI. Committees.

Section 1. Most of the technical work of the conference is accomplished by constituted committees. The committees of the Conference shall be determined by the Steering Committee. Some committees will continue from the previous conference. Permanent or standing committees, ad hoc committees, and task force groups are considered to be committees of the Conference.

Section 2. A secretary, or recorder, will be selected by the Committee Chair. Committee members shall be selected after considering Steering Committee recommendations, National Conference recommendations, individual interests, technical proficiency, and continuity of the work. They are not limited to members of the National Cooperative Soil Survey.

Section 3. Each committee commonly conducts its work by correspondence among committee members. Most of the committee=s communications will be by correspondence. Copies of all correspondence between members of the steering committee shall be sent to each member of the committee. Committee chairs shall provide their committee members with the charges as assigned by the Steering Committee and procedure for committee operation. Committee chairs are charged with responsibility for initiating and carrying forward this work. Chairs should initiate committee work at the earliest possible date. Each committee shall meet during the conference to permit other conference attendees to make input to each committee=s activities.

Section 4. Each committee chair shall send copies of a final committee report to the Secretary within the 30 days after the Conference.

Article VII**.** Representation to the National Soil Survey Conference.

Delegates to the National Cooperative Soil Survey Conference will include the Liaison National Leader of Soil Survey Division, and a NCR-3 (state) delegate from the current host state for NCRSSC. These two delegates will also serve on the steering committee for the NCSSC. Two additional delegates to the NCSSC will include one NCRS soil scientist and one NCR-3 (state) representative (with appropriate administrative approval). The NCRS soil scientist will be chosen by simple majority vote during the separate federal session. The second NCR-3 delegate will come from the next NCRSSC host state and be assigned the task of presenting the NCRSSC report at the NCSSC. Both NCR-3 delegates will be chosen by simple majority vote during the separate NCR-3 session at the NCRSSC.

Article VIII. Historical Record.

A cumulative file of conference programs shall be turned over to each incoming conference chairman. A cumulative file should be keep at office of a Liaison National Leader of Soil Survey Division.

Article IX. Amendments.

The by-laws may be amended at any time by a simple majority vote of the participants attending the biennial business meeting. The by-laws may also be amended by ballot with a majority vote of the permanent members. An amendment shall, unless otherwise provided therein, be effective immediately upon adoption and shall remain in effect until changed.

2000 NORTH CENTRAL SOIL SURVEY WORK PLANNING CONFERENCE COMMITTEE CHARGES

COMMITTEE #1 – Updating the North Central Soil Survey Work Planning Conference Bylaws

COMMITTEE CHARGES:

1. Review the existing bylaws for needed revisions.

2. Should the bylaws identify essential components of each conference?

3. Propose amendments for consideration by the membership.

COMMITTEE #2 – DATA ACQUISITION FOR PROBLEM SOLVING

COMMITTEE CHARGES:

1. What data are needed to populate the NASIS database? This list should focus on those data that do no exist now. What additional pedology data are/will be needed for simulation models and soil quality assessments?

2. Who will collect the data? Is the private sector expected to collect some of the data? Who owns the data? Will "private sector" data be available to the public?

3. Who will maintain the soil survey database (NRCS, experiment station, private sector, other)? How will databases be made available to the public?

4. Should estimated data be identified differently than actual data? How might this be done in the database?

COMMITTEE #3—RESEARCH NEEDS FOR NORTH CENTRAL REGION

COMMITTEE CHARGES:

1. Review the 1997 report of the NCSS Research Agenda Standing Committee (chaired by J. Kimble and L.P. Wilding). This NCSS committee focused on the charge to identify document, and address the critical research and development issues within the NCSS. Are there additional issues?

2. Identify additional opportunities for partnering on priority research needs.

3. Identify opportunities for funding priority research needs.

4. Increase the visibility and credibility of NCSS

5. Ensure the technical excellence of the NCSS

COMMITTEE # 4 – HYDRIC SOIL COMMITTEE

COMMITTEE CHARGES:

1. What problems exist with the hydric soil indicators in the north central region?

2. What data are needed to solve the problems? What methods should be used to collect these needed data?

3. Have any of the problems been solved by one or more states? How?

4. Which problems are limited to specific parts of the region? Why?

COMMITTEE #1 – Updating the North Central Soil Survey Work Planning Conference By-laws

CHARGES:

1. Review the existing bylaws for needed revisions.

2. Should the bylaws identify essential components of each conference?

3. Propose amendments for consideration by the membership.

COMMITTEE MEMBERS:

Del Mokma
Michigan State University
Dept. of Crop & Soil Sciences
Plant & Soil Science Building
East Lansing, MI 48824-1325
Ph: (517)353-9010
Email:

William Frederick
Natural Resources Conservation Service
3001 Coolidge Rd., Rm. 200
E. Lansing, MI 48823
Ph: (517)324-5233
Email: wef@mi.nrcs.usda.gov

Jim Culver
Natural Resources Conservation Service
100 Centennial Mall North
Federal Building, Rm. 152
Lincoln, NE 68508-3866
Ph: (402)437-5321
Email: jculver@nssc.nrcs.usda.gov

Jon Gerken
Natural Resources Conservation Service
200 N. High St., Rm 522
Columbus, OH 43215
Ph: (614)2552484
Email: jon.gerken@oh.nrcs.usda.gov

Bill Pauls
Natural Resources Conservation Service
Parkdale Center, Suite 250
Columbia, MO 65203
Ph: (573)876-9410
Email: bill.pauls@mo.usda.gov

Tom Dewitt
Natural Resources Conservation Service
5578 E. Farm Road 186
Rogersville, MO 65742
Ph: (417)882-8542
Email: tod161f@mail.smsu.edu

Nathan McCaleb
Natural Resources Conservation Service
Federal Bldg., Rm. 152
100 Centennial Mall North
Lincoln, NE
Ph: (402)437-4113
Email: nathan.mccaleb@ne.nrcs.usda.gov

Travis Neely
Natural Resources Conservation Service
6013 Lakeside Boulevard
Indianapolis, IN 46278
Ph: (317)290-3200, ext. 380
Email: tneely@in.nrcs.usda.gov

Please note that Nathan and Travis did not respond to the reminders about committee assignments, but were placed on the committee by the co-chairs.

COMMITTEE #2 – DATA ACQUISITION FOR PROBLEM SOLVING

COMMITTEE CHARGES:

1. What data are needed to populate the NASIS database? This list should focus on those data that do no exist now. What additional pedology data are/will be needed for simulation models and soil quality assessments?

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3. Who will maintain the soil survey database (NRCS, experiment station, private sector, other)? How will databases be made available to the public?

4. Should estimated data be identified differently than actual data? How might this be done in the database?

COMMITTEE MEMBERS:

Raymond Sinclair (Co-chair)
Natural Resources Conservation Service
100 Centennial Mall North
Federal Building, Rm. 152, MS-33
Lincoln, NE 68508-3866
Ph: (402)437-5699
Email: rsinclair@nssc.nrcs.usda.gov

Jim Fortner
Natural Resources Conservation Service
100 Centennial Mall North
Federal Building, Rm. 152, MS-36
Lincoln, NE 68508-3866
Ph: (402)437-5755
Email: jfortner@nssc.nrcs.usda.gov

Richard Schlepp
Natural Resources Conservation Service
760 S. Broadway
Salina, KS 67401-4642
Ph: (785)823-4558
Email: rick.schlepp@ks.nrcs.usda.gov

David Hopkins
North Dakota State University
Fargo, ND
Ph:
Email: hopkins@badlands.nodak.edu

Bennie Clark
Natural Resources Conservation Service
6013 Lakeside Boulevard
Indianapolis, IN 46278
Ph: (317)290-3200, ext. 394
Email: bclark@in.nrcs.usda.gov

Larry Laing
Us Forest Service, Region 9 Office
310 W. Wisconsin Ave, Suite 520
Milwaukee, WI 53203
Ph: (414)297-3127
Email: llaing/r9@fs.fed.us

Robert McLeese
Natural Resources Conservation Service
1902 Fox Drive
Champaign, IL 61820
Ph: (217)398-5286
Email: r.mcleese@il.nrcs.usda.gov

Jerome Schaar
Natural Resources Conservation Service
200 4th St. SW
Federal Building
Huron, SD 57350-2475
Ph: (605)352-1252
Email: jerome.schaar@sd.nrcs.usda.gov

Tom Fenton
Iowa State University
Dept. of Agronomy
2407 Agronomy Building
Ames, IA 50011-1010
Ph: (515)294-2414
Email: tefenton@iastate.edu

Charles Love
Natural Resources Conservation Service
6013 Lakeside Boulevard
Indinapolis, IN 46278
Ph: (317)290-3200, ext. 375
Email: clove@in.nrcs.usda.gov

Asghar Chowdhery
Natural Resources Conservation Service
6013 Lakeside Boulevard
Indinapolis, IN 46278
Ph: (317)290-3200, ext. 374
achowdhe@in.nrcs.usda.gov

Please note that T. Fenton, J. Schaar and C. Love did not respond to the reminders about committee assignments, but were placed on the committee by the co-chairs.

COMMITTEE 2

DATA ACQUISITION FOR PROBLEM SOLVING

North Central Soil Survey Work Planning Conference
Grand Rapids, Michigan
June 18-22, 2000

The charges are:

1. **What data are needed to populate the NASIS database?** This list should focus on those data that do not exist now. What additional pedology data are/will be needed for simulation models and soil quality assessments?

There is a national effort to update and digitize older soil surveys. The minimum dataset should be enough to publish the text and tables of an updated, digital soil survey for the soil survey area. This probably should be the highest priority. There is a need to populate NASIS with a minimum dataset for each soil series. NASIS has a track record for running slow. It is taking an exorbitant amount of time to do trivial tasks such as retyping each legend because all the data originally dumped into NASIS was typed in upper case and needs to be converted to proper case. There is no spell check in NASIS and numerous spelling errors will occur. Menial tasks such as converting to proper case could be done by globally editing the data. This would save time and increase the accuracy of the report.

Since the emphasis is on a science-based soil survey there needs to be measured numbers to work with. Much of the data on the Soil Interpretations Records/National Map Unit Interpretations Records were estimated so there needs to be more measured data to support those numbers that were transferred to NASIS. There probably is good data on particle size, organic matter, and pH but there can always be a need for more.

Yield monitors and GPS offer the opportunity to do a better job of yield estimates by soil map unit, but improved efficient means are needed to quantify map unit composition to help understand the yield maps generated. Water table data collection should be a high priority. However, we need to decide where to put our resources. In most states in the north central region, a very high percentage of the somewhat poorly, poorly, and very poorly soils have been drained. The interpretations for most of the uses except for crop yield and management are based on undrained conditions. There is a need to do a better job of describing the numbers that are given.

No one is charged with the responsibility of observing the characteristics of flooding. Yet there is the need to populate tables with frequency, duration, and time data for flooding. This is a very difficult assignment.

Data elements are needed to evaluate soil quality. However, there is a lack of emphasis on soil properties beneath the surface horizon. There should be some way of assembling the data that are collected for subsurface layers including temporal soil properties for the surface layer so it could be evaluated based on more than a one time, one point measurement. Soil quality is becoming a very big issue in some states. Determining a base line for what soils have for carbon is the biggest need. Also, the amount of carbon the soils could potentially sequester and store.

One respondent indicates that its state has not worked a lot with future population of NASIS for interpretations. Most of its state users haven't requested a lot more information then what is currently available. Another respondent stated that data needed is related to properties supporting classification. One person suggests that any additional data for simulation models and soil quality should be handled by the modelers (USDA-ARS, the different Institutes etc.) themselves as needed in conjunction with National Soil Survey Center (NSSC and NSSL).

Examples of some data elements needed to populate the NASIS database for National Cooperative Soil Survey (NCSS) Soil Survey Publications and Technical Soil Service Programs are in Attachment A.

2. Who will collect the data? Is the private sector expected to collect some of the data? Who owns the data? Will "private sector" data be available to the public?

Who will collect the data?

Soil scientists in the field, who have made soil maps to NCSS standards and understand soil/landscape relationships, will collect the soil samples for the laboratory and field data as part of a systematic gathering of soil-landscape data. Data that has already been collected by NCSS, should be reviewed and then be included in the data set if the data meets the requirements of the NCSS standards for quality. Someone will need to define what quality data is? It is time and cost prohibitive to collect measurable data on all soil series. It is possible to come up with benchmark soils to collect complete soils data on, and then interpolate (not extrapolate) the data for soils in between. It would be easy to flag benchmark soil series data (measured data) and differentiate it from interpolated data. Each of the benchmark series should have complete characterization. Interpolated data can be flagged by saying something like - "The data for the Y series was developed (interpolated) by using data from the X and the Z series."

Data can be collected by public and private sectors. The Natural Resources Conservation Service (NRCS) is the lead federal agency for the federal soil survey program; therefore, at this time the "keeper" of the soils database for the federal government. The standards to which the data needs to be collected, submitted, and stored is the responsibility of the NCSS. Data should be collected by or under the quality assurance of NCSS.

Data Collection

- Gather data in the field using devices such as a GPS unit, Palm Pilot, a windows based computer with Pedon software.
- Dump the data into a GIS relational database for local use.
- Have NASIS set up so you can download data from a data recorder (Palm Pilot) and soil descriptions in Pedon directly into National Soils Information System (NASIS).

Data Population

- One respondent suggests globally populating the data for the tables based on the official series description and soil interpretations records data. The entries in each field should be for the entire range allowed. As each Major Land Resource Area (MLRA) Project Office reviews the data for a soil they can decide if the data fits, if expanding the range for that particular field needs to be proposed, or if another soil needs to be considered. The results of global population would be:

- Fewer transposition errors
- Better control of the range and the data for each soil series. If local data falls outside the range that is allowed, then a proposal would have to be made to expand the range for that series, taxadjunct the soil, or propose a new series.

Is the private sector expected to collect some of the data?

The collection of the data should be done as a partnership involving the private sector. The private sector can recommend and share data to fill data gaps for NCSS database such as soil quality, precision agriculture, water quality, carbon sequestration, soil chemical and physical properties, etc. Data should be collected by or under the quality assurance of NCSS. Someone in the NCSS must be ultimately responsible for the day-in-day-out quality of the data. At this time, it is someone in NRCS. The private sector will be able to add data with the appropriate computer permissions.

Who owns the data?

The Public owns the data. NRCS, the Experiment Station, and Extension Service will continue to provide data. There has not made a real effort to incorporate Agricultural Research Service (USDA-ARS) data into the system, but USDA-ARS collects a lot of data. With a little effort and the use of GPS locations one could probably capture a lot of their data and incorporate it into the soil map unit databases. USDA-ARS is more inclined to communicate on a soil series basis or even higher abstraction, such as by soil association area. Data within NASIS are public information and shall not be copyrighted.

Data Tracking

- **It is essential as NASIS and other databases are developed to keep track of what entries are "measured data" and what data is "developed". It is much easier to do this at the outset then go back later on and try to determine what data is measured and what data was developed using some procedure not peer reviewed.**
- **It will be the "keeper of the data's" responsibility to keep track. The "keeper of the data" should be responsible for:**
  Determining the accuracy of the data.
  Keeping track of the source of the data.
  Determining if the range of a specific field should changed
  Send out proposed or preliminary data for comments or review.

Will "private sector" data be available to the public?

The private sector will certainly be collecting data. However, when an operator pays for the data it may not be possible to have access to it for general use unless some agreement is made. This is a question that deserves some in-depth thought and planning. If the private sector data meets NCSS standards and is incorporated into NASIS, it should be available to the public.

3. Who will maintain the soil survey database (NRCS, experiment station, private sector, other)? How will databases be made available to the public?

Who will maintain the soil survey database (NRCS, experiment station, other)?

First, let us examine the need for a database – use for local, state, and federal programs, use in models for generating soil interpretations, and users wanting soil chemical and physical properties, soil moisture and temperature regimes, and landscape information. The answer in part depends on how "The" is interpreted. Some of our cooperators have different data needs so a lot depends on how flexible NASIS turns out to be. At present, there are fields of data in some cooperators soil properties and interpretations databases that are not included in the published soil survey reports. If all those fields could be incorporated into NASIS, there would be no need for maintaining different databases. However, until a complete incorporation is reality, there will be a need to maintain more than one database.

At this time and probably sometime into the future NRCS will be the custodian of the federal soil survey database. It is expected that NASIS will be the database. Also, it is envisioned that the maintenance and quality assurance of the soil database will be through NRCS – MLRA Soil Survey Offices and State Office Staffs using NCSS standards. Hopefully, there will be Soil Data Specialists and State Soil Scientists whose job is maintenance of the database.

How will databases be made available to the public?

The data will be placed on a soil data warehouse and the public will be able to access the data through the internet. It will be available in paper copy and CD's. At the present time, the existing systems (all are not available to all the public) are: National Soils Information System (NASIS), State Soil Survey Database (3SD), Soil Interpretations Records (SIR), Map Unit Interpretations Records (National MUIR), Official Series Descriptions (OSD), Soil Classification File (SC File), and National Soil Survey Laboratory Characterization Data (NSSL Data). The information should be made available to the public through the internet in an easy to understand, easy to search, and easy to download format. Access to OSD's is a good example of this.

4. Should estimated data be identified differently than measured data? How might this be done in the database?

There are different kinds of data:

1. Laboratory data, e.g., mechanical analyses, cation exchange capacity, pH, organic matter, clay mineralogy, bulk densities etc.
2. Calculated data (relational data), for example knowing mineralogy, clay content and organic matter content using the formula one can estimate the cation exchange capacity of the layer. Estimating the data by field method and then correlating to certain properties, for example using field techniques to determine the Unified class and then correlate it to the liquid limit and plasticity index.
3. Copying the data from a similar soil, for example splitting a series into a typic and oxyaquic that are formed in the same parent material.

Should Estimated data be identified differently than the measured data?

Yes

How might this be done in the database?

Certainly, soil scientists should know the source of the data, how many profiles or pedons were averaged, etc., but there will not be complete data on all soils in our lifetime or probably two or three lifetimes at the present rate of data collection. However, even if there were a lot of data on many soils, there would still be a problem of how the data are presented. The NCSS can effectively use the concept of benchmark soils and use modeling methods to estimate properties of other soils that have similar characteristics or are grading between two benchmark soils. Therefore, can there be one database that contains the hard data that can be used to estimate properties of other map units? Perhaps most of the data used to make interpretations in the soil survey report will be made based on estimated data that has been modeled from the measured data. If presented in a professional manner, the general public will accept the best judgement of qualified soil scientists.

Some alternatives for indicating the type of data in the soil database are:

Under the remarks in the typical pedon description, a statement can be made that the properties are estimated i.e., available water capacity, CEC, K sat, liquid limit, plasticity index are estimated.

In the NASIS database, it can be shown with an asterisk and then can be explained as footnote how the data was arrived.

By inserting a letter with the data like K sat 2.0-6.0(e). Then define e as an estimated data.

If there is a way of entering certain data figures as an *italic*. Others regular or underlined etc.

Computer experts can come up with a way of showing it differently.

May be a general introduction, that certain values are calculated or estimated using certain formulas or copied from similar soils that have been determined by laboratory data.

Estimated data in the soil survey database should be defined in the NASIS Metadata overview.

Just as in the GIS spatial and tabular information there is an attached file (metadata). This should contain the origin of the data along with any pertinent information as to how it was gathered, quality, etc. This activity can become as big as the original data sought.

NRCS in conjunction and cooperation with partners of the NCSS.

- Centralized control of the NASIS database is essential. This will ensure the quality and accuracy of the data being used. Centralized control will allow any NCSS cooperator or private sector soil scientist to enter data after review.

- Global population of the NASIS database is much more efficient, ensures greater accuracy of data entries and speeds up the time it will take to publish a soil survey update using NASIS.

Two respondents suggested tagging each data element with measured (M), calculated (C), estimated (E), copied (Cp), etc. from similar soil will be a nightmare for data entry person.

SUMMARY

There is a need to take a close look at NASIS and the end product after the basic data are entered. What will there be if there is sporadic or minimal quality control? If the data going into NASIS are inaccurate, then NASIS will become less useful to users of the data. It is much easier to envision the desired end product, identify potential problems and make the necessary corrections at the outset. Trying to identify measured from developed data at a later date will be a nightmare. Tracking data quality will be helpful in planning and prioritizing what data needs to be updated.

Why can't NASIS be populated Globally at a higher level (e.g. MO Offices) and edit NASIS Locally (Soil Survey Offices and State Offices)? (this quote was taken from a bumper sticker – Think Globally!, Act Locally!) Let the field soil scientists spend time in the field collecting data and understanding soil-landscape relationships. Let the field soil scientists supply the data, let NASIS get populated globally at a higher level, and then finally let the field soil scientist edit the data.

In the past, soil data have been correlated by soil survey. In many cases this resulted in differences in soil data between soil surveys. These differences have not gone unnoticed by intensive users of our soil survey products in the past and will become even more evident as users of soil survey data apply it in multiple subset GIS applications.

As a result, the philosophy of correlation is changing. Now the Major Land Resource Area (MLRA) is defined as the soil survey area for correlation purposes. MLRA boundaries are defined by differences in land use, elevation and topography, climate, water, soils, and potential natural vegetation. The delineation of these boundaries is made without regard to any political or ownership boundary, i.e. county, state, or national forest.

By using the MLRA as the soil survey area, changes in the soil legend will be based on significant changes in soil properties that occur on natural boundaries. The soil survey legend will be on natural boundaries making it scientific and defensible. Changing it on political or ownership boundaries is not.

Soil survey legends are being developed for the MLRA soil survey areas. In the NASIS database these MLRA units can also be linked to county, state, or national forest. This link insures that the soil property data for the soils in the soil legend will be consistent across political or ownership boundaries and provide for a seamless soil map throughout the MLRA and hopefully between MLRAs.

RECOMMENDATIONS:

The members at the North Central Work Planning Conference made the motion and it was seconded with majority voting yes to have this committee as a committee at the meeting to be held in 2002 in Wisconsin.

Recommendations for the Charges -

Charge 1 – What additional data is needed in NASIS

1. Conduct user testing of NASIS users to see if they have any suggestions to improve usability, add additional data elements, and evaluate if it is meeting their needs before proceeding much further with database population. NASIS is designed to be flexible and could be easily amended if user testing suggests alterations should be made.

Note: NASIS is designed to be used by soil scientists involved in the NCSS. This being the case, the appropriate user test group would be current users of NASIS. However, essentially the same database will be made available to the public through the data warehouse. There may be other data that may be of use to other users of NASIS that those of us involved closely with the NCSS may be aware of. This being the case, we should also consider some form of user testing outside of the realm of current users of NASIS. Otherwise we run the risk of only talking to ourselves and not being relevant to the broader scientific community. If we don't ask, we can't know.

Charge 2 – Who will collect the data

1. Encourage contributions to NASIS from private sector scientists, federal, state, and local agencies and other cooperators. This data will be subject to review by NRCS or AES cooperators prior to entry into NASIS and must meet data quality standards.

2. Any data into NASIS will be made available to the public

3. Within the context of NASIS, the data is "owned" by the entity that enters the data into the system. As such, close scrutiny must be given as to who will be allowed to enter data into NASIS.

Charge 3 – Who will maintain the data

1. NASIS data can be entered from multiple sources. NASIS is designed for users to be able to enter custom data elements that users outside of their region may not have any knowledge of. As such, we recommend that maintenance be the responsibility of the data "owner". In other words, the entity that entered the data. In the case of data from the private sector, we may want to associate the data with either NRCS or a traditional partner. As a policy, we do not want to let all potential users to be able to enter data into NASIS.

Charge 4 – Estimated vs. Measured data

Note: Data stored (or potentially stored) in NASIS can be broken down into elements associated with data map units, components, or point data. All data elements for data map units and components are estimated whereas those for point data are measured.

1. There is a need for the user to be able to distinguish the type of data (measured, observed, estimated, reference, null). From a database management point of view, this can be assigned in the metadata. However, this information cannot be buried in such a way the user is not aware of the status of the data. We recommend that NASIS clearly inform the user as to the status of the data.

   2. There are varying levels of confidence associated with values for the data elements depending on the number and quality of actual measurements used to derive the estimated value. The user should be able to ascertain the level of certainty associated with an estimated value. We suggest developing a data element that would provide perhaps several classes of rating the confidence of an estimate based on data quantity and quality. Additionally, some values for data elements are derived from algorithms. The user should also be able to clearly ascertain if a value is part of the original set of data entered into NASIS or was derived from the original set of data using an algorithm. Because this committee does not have the technical expertise to suggest specifically how this should be accomplished within NASIS, we will limit our recommendation to the need and let others decide how it should be implemented.

ATTACHMENT A

Data elements denoted by an asterisk (*) are data fields that are needed for the Map Unit Generator Program (MUG) for development of the soil survey manuscript, Field Office Technical Guide, and other special reports.

DATA MAP UNIT
COMPONENT (* MUG Items)

Slope Length - (Low | RV | High)
Elevation - (Low | RV | High) – If known
Aspect counter clockwise
Albedo Dry (low, RV, high)
IRR Land Capability Class – if applicable *
IRR Land Capability Subclass – if applicable *
Windbreak Suitability

Frost Action *
Initial Subsidence - (Low | RV | High) – if applicable
Total Subsidence - - (Low | RV | High) – if applicable
Hydrological Group
Corrosion (Concrete | Steel)
Taxonomy Class – Calculated

DATA MAP UNIT
COMPONENT
COMPONENT CROP YIELD – if applicable

Productivity Index

DATA MAP UNIT
COMPONENT
CANOPY COVER – IF APPLICABLE

Canopy Cover %
Local Plant Symbol
Local Plant Name

DATA MAP UNIT
COMPONENT
COMPONENT EXISTING PLANTS – if applicable

Local Plant Symbol – Do this and the name is auto
Local Plant Name
Understory Prod %

DATA MAP UNIT
COMPONENT
COMPONENT FOREST PRODUCTIVITY – if applicable

Local Plant Symbol – Do this and the name is auto
Local Plant Name
Site Index Base (if known)
Site Index - (Low | RV | High)
Productivity - (Low | RV | High)

DATA MAP UNIT
COMPONENT
COMPONENT POTENTIAL ECOSYSTEM – if applicable

Ecosystem Type
Ecosystem ID
Ecosystem Type

DATA MAP UNIT
COMPONENT
COMPONENT GEOMORPHIC DESCRIPTION – if applicable (* MUG Items)

Feature Type * (For MUG use Landform)
Feature Name *
Feature ID – (if more than one) *
Exists on Feature ID – (fill in if Landform is on a Landform – Example: flats on outwash plains) *

DATA MAP UNIT
COMPONENT
COMPONENT TWO DIMENSIONAL SURFACE MORPHOMETRY – if applicable (

Hillslope Profile

DATA MAP UNIT
COMPONENT
COMPONENT 3 DIMENSONAL SURFACE MORPHOMETRY – if applicable (* MUG Items)

Geomorphic component – Hills
Geomorphic component – Terraces
Geomorphic component – Flats

DATA MAP UNIT
COMPONENT
COMPONENT SLOPE SHAPE SURFACE MORPHOMETRY – if applicable (* MUG Items)

Slope Shape Across
Slope Shape up/down

DATA MAP UNIT
COMPONENT
COMPONENT MICORELIEF SURFACE MORPHOMETRY – if applicable (* MUG Items)

Microrelief Kind

DATA MAP UNIT
COMPONENT
COMPONENT EROSION ACCELERATED – if applicable

Kind
RV?

DATA MAP UNIT
COMPONENT
COMPONENT SURFACE FRAGMENTS – if applicable (* MUG Items)

Cover % - (Low | RV | High)*
Spacing - (Low | RV | High)*
Kind *
Size - (Low | RV | High) *
Shape
Roundness
Hardness

DATA MAP UNIT
COMPONENT
COMPONENT PARENT MATERIAL GROUP (* MUG Items)

Group Name – Calculated from Component Parent Material

DATA MAP UNIT
COMPONENT
COMPONENT PARENT MATERIAL (* MUG Items) – Upon completion use Options-Calculate Group Name to populate parent material group name above

Vertical Order – (fill in if one kind of material is over another – Example: herbaceous material over marl)
Modifier *
Kind *

DATA MAP UNIT
COMPONENT
COMPONENT MONTH (* MUG) (In areas that do pond or flood at sometime during the year - do not use
"none" in the months that do not have any ponding or flooding)

Month
Flooding Frequency – For units that <u>do not</u> flood fill in "None" *
Flooding Duration
Ponding Frequency – For units that <u>do not</u> pond fill in "None" *
Ponding Duration
Ponding Depth - (Low | RV | High)

DATA MAP UNIT
COMPONENT
COMPONENT SOIL MOISTURE (* MUG Items)

Top Depth - (Low | RV | High) *
Bottom Depth - (Low | RV | High) *
Moisture Status *

DATA MAP UNIT
COMPONENT
COMPONENT SOIL TEMPERATURE

Monthly temperature
Top Depth (Low|RV|High)
Bottom Depth (Low|RV|High)

DATA MAP UNIT
COMPONENT
COMPONENT RESTRICTIONS (* MUG Items)

Kind *
Hardness
Top Depth - (Low | RV | High) *
Bottom Depth - (Low | RV | High)
Thickness - (Low | RV | High)

DATA MAP UNIT
COMPONENT
COMPONENT DIAGNOSTIC FEATURES

Kind *
Hardness
Top Depth - (Low | RV | High) *
Bottom Depth - (Low | RV | High)
Thickness - (Low | RV | High

DATA MAP UNIT
HORIZON
HORIZON – items that are applicable (* MUG Items)

Designation - Ap, Bt, C, etc * - Use Horizons

Description
Master
Subdivision
Top Depth - (Low | RV | High) *
Bottom Depth - (Low | RV | High) *
Total Sand - (Low | RV | High)
VCOS - (Low | RV | High)
COS - (Low | RV | High)
MS - (Low | RV | High)
FS - (Low | RV | High)
VFS - (Low | RV | High)
Total Silt - (Low | RV | High)
C. Silt - (Low | RV | High)
CACO3 Clay - (Low | RV | High)
Organic Matter - (Low | RV | High)
Db 0.1 Bar H20
Db 0.33 Bar H20
Db 15 Bar H20
Satiated H2O

Free iron - (Low | RV | High) *
Oxalate FE - (Low | RV | High) *
EXT. Acidity - (Low | RV | High)
EXT AL - (Low | RV | High)
Oxalate Al - (Low | RV | High)
Bray 1 Phos - (Low | RV | High)
Oxalate Phos.- (Low | RV | High)
Total Phos. - (Low | RV | High)
Excav. Diff. - (Low | RV | High)
Exacav. Diff. Moist - Single Entry

DATA MAP UNIT
HORIZON
HORIZON DESIGNATION SUFFIX

Suffix

DATA MAP UNIT
HORIZON
HORIZON FRAGMENTS – (Fragments >3") if applicable

Volume - (Low | RV | High)
Kind
Size - (Low | RV | High)
Shape

DATA MAP UNIT
HORIZON
HORIZON TEXTURE GROUP – (* MUG Items)

Texture Modifier & Class – Calculated after horizon texture table is completed.
RV – ("yes" – for surface horizon and "yes" for at least one texture modifier & class line within each subsurface
horizon) *
Stratified – (yes/no) *

DATA MAP UNIT
HORIZON
HORIZON TEXTURE – (* MUG Items)

Texture *
In Lieu *

DATA MAP UNIT
HORIZON
HORIZON TEXTURE MODIFIER – (* MUG Items)

Modifier – if needed *

DATA MAP UNIT
HORIZON
HORIZON PORES

Quality - (Low | RV | High)
Size
Continuity
Shape

DATA MAP UNIT
HORIZON
HORIZON TEXT

Date
Author
Kind
Category
Subcategory
Text

Unified *
RV – ("yes" for at least one Unified texture per horizon.) *

COMMITTEE #3—RESEARCH NEEDS FOR NORTH CENTRAL REGION

COMMITTEE CHARGES:

1. Review the 1997 report of the NCSS Research Agenda Standing Committee (chaired by J. Kimble and L.P. Wilding). This NCSS committee focused on the charge to identify document, and address the critical research and development issues within the NCSS. Are there additional issues?

2. Identify additional opportunities for partnering on priority research needs.

3. Identify opportunities for funding priority research needs.

4. Increase the visibility and credibility of NCSS

5. Ensure the technical excellence of the NCSS

COMMITTEE MEMBERS:

Al Giencke (Co-chair)
Natural Resources Conservation Service
375 Jackson St., Suite 600
St. Paul, MN 55101-1854
Ph: (651)602-7863
Email: Al.Giencke@mn.nrcs.usda.gov

Ken Lubich
Natural Resources Conservation Service
6515 Watts Rd., Suite 200
Madison, WI 53719-2726
Ph: (608)276-8732, ext. 248
Email: klubich@wi.nrcs.usda.gov

Dr. David Hammer
University of Missouri
331 AB Building
Columbia, MO 65211
Ph: (573)882-8614
Email: HammerR@missouri.edu

Dennis Potter
Natural Resources Conservation Service
Parkdale Center, Suite 250
601 Business Loop 70 West
Columbia, MO 65203
Ph: (573)876-9411
Email: dennis.potter@mo.usda.gov

C.J. Heidt
Natural Resources Conservation Service
P.O. Box 1458
3rd St. & Rosser Ave.
Bismark, ND 58502-1458
Ph: (701)530-2021
Email: cjh@nd.nrcs.usda.gov

Dr. Doug Malo
South Dakota State University
Plant Science Dept.
BSL 247, Box 2140C
Brookings, SD 57006
Ph:
Email: Douglas_Malo@sdstate.edu

Dr. Neil Smeck
School of Natural Resources
The Ohio State University
2021 Coffey Road
Columbus, OH 43210
Ph: (614)292-9059
Email: smeck.1@osu.edu

Gary Struben
Natural Resources Conservation Service
6013 Lakeside Boulevard
Indinapolis, IN 46278
Ph: (317)290-3200, ext. 373
Email: gstruben@in.nrcs.usda.gov

Kevin McSweeney
University of Wisconsin-Madison
School of Natural Resources
1450 Linden Dr.
Madison, WI 53706-1290
Ph: (608)262-6968
Email: kmcsween@facstaff.wisc.edu

Joseph McCloskey
Natural Resources Conservation Service
375 Jackson St., Suite 600
St. Paul, MN 55101-1854
Ph: (651)602-7861
Email: Joe.McCloskey@mn.nrcs.usda.gov

Lynn DesLauriers
Natural Resources Conservation Service
375 Jackson St., Suite 600
St. Paul, MN 55101-1854
Ph: (651)602-7864
Email:
Lynn.Deslauiers@mn.nrcs.usda.gov

Erik Johnson
Michigan Dept. Of Agriculture
Benzie-Manistee Co. Soil Survey Office
9219 Aura St., P.O. box 325
Kaleva, MI 49645-0325
Ph: (231)362-2659
Email: ejohnson@mi.nrcs.usda.gov

Please note that K. McSweeny, J. McCloskey, and L. DesLauiers did not respond to the reminders about committee assignments, but were placed on the committee by the co-chairs.

North Central Soil Survey Conference

Committee 3: Research Needs in the North Central Region

June 18-22, 2000

Chair: Mickey Ransom

Co-Chair: Al Giencke

Members:

Jay Bell
William Bowman
Asgar Chowdhery
Bennie Clark
Jim Culver
Lynn DesLauriers
Tonie Endres
Scott Eversoll
T. E. Fenton
Henry Ferguson
Joe Gates
Tim Gerber
Rich Gehring
John Gerken
David Hammer
C.J. Heidt
Byron Jenkinson
Eric Johnson
Bruce Knapp
Marty Kvoell
Charles Love
Ken Lubich
Joseph McCloskey
Kevin McSweeney
Doug Malo
Joe Mason
Ed Miller
Byron Nagel
Travis Neely
Mark Osborn
Dennis Potter
Thomas Reinsch
Jerome Schaar
Richard Schlepp
Daniel Shurtliff
Neil Smeck
Gary Struben
Mike Sucik
Richard Tummons

Introduction

As part of the North Central Soil Survey Conference in Grand Rapids, Michigan, June 18 - 22, 2000, a committee was formed by Bill Frederick and Del Mokma, Co-Chairs of the Conference. This committee was designated Committee 3, Research Needs in the North Central Region. The overall purpose was to (1) follow up on a 1997 report prepared by the National Cooperative Soil Survey Research Agenda Standing Committee, which was Co-Chaired by John Kimble and Larry Wilding, and (2) review research needs in the north central region. Committee 3 was assigned five specific charges. This report will contain the discussions of the committee on these charges. It will also include additional recommendations.

Charge 1

Review the 1997 report of the NCSS Research Agenda Standing Committee. This NCSS committee focused on the charge to identify, document, and address the critical research and development issues within the NCSS. Are there additional issues?

1997 Priorities with comments from the 2000 committee

1. Quantify field soil water regimes in a landscape setting

- We map soils in a drained condition but interpretations are based on a natural (undrained) condition. (NASIS can handle and interpret both drained and undrained conditions if there is a need for this.)
- We need to address water quality issues (nutrient runoff, leaching potentials, etc.), but it may be more than we can do in current soil survey work.
- We can make guides and make potential ratings.
- Management is the key to some water quality issues, although some are temporal properties.
- Modellers usually want RV values, so we should provide the values. If not they will decide what the RV values are on their own.
- We need to develop tools for the management process. Funding is often tied to water quality. In some cases, we may need to give red flags to managers concerning water quality values.
- We need to gather data consistently, and data are needed for the length of saturation as well as for the length of reduction. To many users of soil survey, the length of saturation is most important.
- When we gather data, it should be on a catena of soils, not just a specific site on a landscape. There is a need to understand the whole landscape soil hydrology.
- Saturation is a problem if it occurs less than 1 month, but this type of temporal data is difficult to show in a soil survey.
- We need to compile and use existing data, and in some cases, the data will need reevalutation.
- We should start looking at the web and hyperlink technology to deliver soil data in the future.

This is still a priority for research need in the National Cooperative Soil Survey.

2. Develop integrated scaling of research using a landscape approach.

- We need to look at points raised in the 1997 report.
- Although this priority is important for the North Central region, Committee 3 had difficulty understanding some of the issues raised.
- Since site specific management is such a big issue in the north central region, it should be considered under this research priority.
- This should also include the use of DEM and GIS

We recommend that this priority be better defined and subdivided.

3. Develop baseline soil survey information to assess soil quality/soil health.

- Soil quality researchers tend to study only the surface soil, but there is a need to look and quantify deeper in the profile.
- There are existing guides used that are used for identifying soil quality.
- We need to partner with the Soil Quality Institute to improve efficiency and gain knowledge.
- There are some natural differences between Mollisols and Ultisols. We should try to keep soils from degrading instead of trying to develop remediation procedures have they have degraded.
- Published soil surveys do not currently mention soil quality. We need to add soil quality to manuscripts.
- We need to recognize the quality that soils have in a natural setting. Management will affect soil properties and soil quality.
- We need to make soil quality data available to users in different and user friendly formats such as

CD, web and GIS formats. The hard copy is becoming too restrictive for some users.

- We should get baseline data for heavy metals on benchmark soils to follow how they degrade in the future. Some of these data is of local use, such as heavy metal contents around smelters, etc. The local needs for data may not be the same as national needs.

This is still a priority for research need in the National Cooperative Soil Survey

4. Quantify Biological Processes

- This item is related to soil quality

We recommend adding this item to number 3 above.

5. Quantify paleo versus modern properties and processes in soil systems

- In the north central region, this is mostly related to the question of drained and undrained conditions. Some soils in the north central region have redoximorphic features but no saturation if they are drained.

This is still a priority for research need in the National Cooperative Soil Survey

6. Develop new methodologies and techniques to enhance research capabilities and delivery of soil survey services

This is still a priority for research need in the National Cooperative Soil Survey

New list of research needs from the 2000 committee

7. Identify densic contacts. (Will add this to the priority research needs)

8. Organize and re-evaluate existing data. The data should be in a format that all can access and use. Who owns the data will be an issue.

9. Research on urban soils and urban soil interpretations.

Items 7, 8, and 9 will be added to the final report as additional research needs for the north central region.

Charge 2

Identify additional opportunities for partnering on priority research needs.

- NRCS should work with Land Grant Universities on technical issues such as MLRA boundaries and landform terms.
- Land grant universities and state agencies are natural partners, and they need to continue to work together with NRCS on the NCSS.
- The NCSS may be able to partner with the National Association of Consulting Soil Scientists. That group has indicated that they would be willing to work with us and share data. We need to work out a mechanism to exchange the data. It has to be credible and also tied to the correlation process.

Follow the 1997 report and make sure we include AES, NRCS, State Agencies, Forest Service, and the Private sector.

Charge 3

Identify opportunities for funding priority research needs.

- The 1997 report has a long list of sources of funding sources.
- State and local sources for funds should be added to the 1997 list.
- The list should also include environmental groups such as Ducks Unlimited, Sierra Club, Nature Conservancy, etc.

Charge 4

Increase the visibility and credibility of NCSS.

- Student numbers have gone down in the soils discipline along with an interest in government employment. NCSS should quickly develop a plan to replace the large number of aging soil scientists.
- The pay scale should be adjusted to get new hires to come to work for NRCS.
- NRCS is looking at the workforce issue in detail. In the past, NRCS has offered some limited scholarships to minorities and women. The Chief of NRCS is proposing employing 150 new soil scientists if the budget will allow in FY2002.
- Student trainees should be placed in good training locations, with moves designed to gain experience.
- GIS activities will offer an opportunity to hire new people.
- The soil science profession should be recognized by state codes that require professional licensing. As a first step, the NCSS should consider the possibility that all Soil Scientists be licensed or certified.
- In order to foster professionalism and elevate the image of soil scientists, professional licensing and certification should be stressed both in the NCSS and in the public sector.
- It was generally agreed that our professional organizations are helping us to promote the soil science image.
- The NRCS image is changing to more of program implementation and regulation instead of resource information and technical assistance.
- NRCS has promoted soil survey extensively during the Centennial celebration to increase visibility.
- We need to expand our product line and make use of the internet, CD, and electronic delivery.
- We all can help to increase visibility.
    - Developing displays for educational displays for rest areas, schools, civic meeting locations, etc.
    - Work with the K – 12 school system to get soil science into the curriculum. This could included mentoring activities. Some programs that do this are GLOBE (developed by NASA) and Envirothon (envolves high school students in competitions dealing soils, forestry, wildlife, aquatics, etc.)
    - Participation of NCSS professionals in these activities should be recognized as valuable work.

Recommendations:

a. Continue to push for professional licensing and certification of soil scientists
b. Promote adding soil science to the curriculum in the K – 12 schools.
c. Add a discussion of the marketing issue to each of the state work planning conferences in the future.

Charge 5

Ensure the technical excellence of the NCSS.

- The 1997 report adequately covers this charge.
- Partnerships should be emphasized.

COMMITTEE # 4 – HYDRIC SOIL COMMITTEE

CHARGES:

1. What problems exist with the hydric soil indicators in the north central region?

2. What data are needed to solve the problems? What methods should be used to collect these needed data?

3. Have any of the problems been solved by one or more states? How?

4. Which problems are limited to specific parts of the region? Why?

COMMITTEE MEMBERS:

Michael Whited (Co-chair)
Natural Resources Conservation Service
National Wetlands Institute
C/o USFWS
300 Westgate Center Dr.
Hadley, MA 01035
Ph: (413)253-8624
Email:

William Bowman
Natural Resources Conservation Service
3001 Coolidge Rd., Rm 200
E. Lansing, MI 48823
Ph: (517)324-5241
Email: wbowman@mi.nrcs.usda.gov

Marty Jurgenson
School of Forestry & Wood Products
Michigan Technological University
1400 townsend Dr.
Houghton, MI 49931
Ph: (906)487-2206
Email: mfjurgen@mtu.edu

Robert Ahrens
Natural Resources Conservation Service
100 Centennial Mall North
Federal Building, Rm. 152
Lincoln, NE 68508-3866
Ph: (402)437-5389
Email: bahrens@nssc.nrcs.usda.gov

Steven Sprecher
US Army Corps of Engineers
2422 Viridian Drive, Suite 101
South Bend, IN 46628
Email:
Steven.W.Sprecher@lre02.usace.army.mil

Ed Miller
Ohio Dept. of Natural Resources
Div. of Soil & Water Conservation
1939 Fountain Square Ct.
Columbus, OH 43224
Ph: (614)265-6683
Email: ed.miller@dnr.state.oh.us

Dennis Rodacker
Natural Resources Conservation Service
Schoolcraft Co. Soil Survey Office
Route 1, Box 1514C
Manistique, MI 49854-9738
Ph: (906)341-5735
Email: drodacker@mi.nrcs.usda.gov

Richard Tummons
Natural Resources Conservation Service
Parkdale Center, Suite 250
601 Business Loop 70 West
Columbia, MO 65203
Ph: (573)876-9047
Email: richard.tummons@mo.usda.gov

Dan Childress
Natural Resources Conservation Service
HC 1 Box 185
Eminence, MO 65466
(573)226-5527
Email: dchildress@mo.nrcs.usda.gov

Bruce Knapp
Natural Resources Conservation Service
1501 Cass St.., Suite A
Traverse City, Michigan 49684-4187
Ph: (231)941-0951, ext. 113
Email: bknapp@mi.nrcs.usda.gov

Cleveland Watts
Natural Resources Conservation Service
P.O. Box 1458
3rd & Rosser Ave.
Bismark, ND 58502-1458
Ph: (701)530-2025
Email: cleveland.watts@nd.usda.gov

Larry Carey
Natural Resources Conservation Service
201 Rublein Street
Marquette, MI 49855-4094
Ph: (906)226-7487
Email: lcarey@min.nrcs.usda.gov

Please note that ND C. Watts did not respond to the reminders about committee assignments, but were placed on the committee by the co-chairs.

2000 North Central Soil Survey Work Planning Conference
Grand Rapids, Michigan

Committee #4 - Hydric Soil Indicators

Charge #1: What problems exist with the hydric soil indicators in the north central region?

Muck or mucky thickness concerns on soils in Region K

- **Indicator Al 0 (2cm Muck)** - Many somewhat poorly and moderately well drained soils in the frigid soils of Michigan qualify for this indicator.
- **Indicator S1 (Sandy Mucky Mineral)** - Many somewhat and moderately well drained soils in the frigid Region qualify for this indicator, especially soils with flaggy or very flaggy as a modifier. The indicator does work in Indiana and Region L of Michigan on sands and in parts of Region K of lower Michigan

Eluviated Vs Reduced Horizons

- Indicator S6 (Stripped Matrix) - Description given in the text may lead to spodosols being mistaken as hydric. Albic horizons of our forested soils meet the definition of stripped matrix in non-wet or better-drained soils.

Redox Concentrations Too Low

- Indicator TS5 (Chroma 3 Sandy Redox) - The 2 percent redox not enough to place the soil in hydric in Region K. Determining whether the percentage is 1 or 2 percent is subject to personal opinion or bias.
- Indicator TF2 (Red Parent Material) - The 2 percent redox in the upper 12 inches of these soils is not indicative of hydric in the Upper Peninsula. There should be at least partial depletion of matrix within 12 inches. Much of Upper Peninsula is redder in the spodic horizon. 7.5YR is too brown. The starting point should be 5YR.

Lower Depth Limits Needed

- Indicator TF5 (2.5Y/5Y Below Thick Dark Surface) - No lower limit is given to the depths below 12 inches that the indicator should be encountered (Region M).
- Indicator TF7 (Thick Dark Surface 2/1) - same as TF5

Miscellaneous Indicators or Comments

- There is no good indicator for recent alluvium.
- **Indicator F1** (Loamy *Mucky* Mineral) - Mucky modifiers are difficult to judge especially in silty soils.
- **Indicator S9** (Thin Dark Surface) - Plate 17 is up side down on page 13 of the March 1998 publication.
- **IndicatorA3** (Histic Epipedon) has redundancy with A2 (Black Histic). Also some feel that a black histic will not form in the absence of aquic conditions yet it is not required for A2.
- **Indicator F5** (Thick Dark Surface) - N or neutral hue not common in wet mollisols in the North Central Region. This forces users of this document to hunt for another indicator for which they are sometimes not successful.
- **TF4 (2.5Y/5Y Below Dark Surface)** - Should be added for testing in Region L.
- Inundation is not listed as an indicator in the latest publication on hydric soils although in the Food Security Act Manual, 14 days inundation is listed as an indicator.

Use of Indicators More Geared to Use by Professional Soil Scientists

- Eluviated horizons are mistakenly used for reduced horizons.
- Mucky modifiers will be misinterpreted especially in silty soils.

Charge #2: What data are needed to solve the problems? What methods should be used to collect these needed data?

- Contact the National Technical Committee to help determine what the data needs are.
- Perform data search of old 232's and note cards to help solve concerns.
- Use graduate students to help do data analysis.
- Run transects on areas mapped as hydric. Dig pits instead of boring holes.
- Run soil temperature studies.

Charge #3: has one or more of the states solved any of the problems?

Answer: None noted in this report.

Charge #4: Which problems are limited to specific parts of the region?

- Muck thickness concerns of Indicators A10 and S1 appear to be related to areas in K or the upper part of the lower peninsula of Michigan and the Upper Peninsula of Michigan.
- Muck accumulations on soils near the Great Lakes are especially troublesome on better-drained soils with cedar trees in Region K.

General Session Comments

- Many areas of hydric soils are buried by varying thickness of erosional sediment. In some cases clear redoximorphic features are developing within this sediment. Additional guidance is required as to the identification of hydric soils in these situations.
- The indicators are used by other disciplines than just soil scientist. The Conference feels that the service of a soil scientist should be sought to aid others in the interpretation of the hydric soil indicators, if at all possible.
- The Conference felt that the matters of this report should be sent to the National Technical Committee for Hydric Soil and other appropriate department heads to be determined by the 2000 NCSSWPC Steering Committee.
- It was determined that the Hydric Soil Indicator Committee should be continued but with possibly different charges.

SUBJECT:	SOI – North Central Regional Conference Recommendations	Date:	July 25, 2000
TO:	Horace Smith, Director Soil Survey Division Washington, D.C.	File Code:	430-14

As was agreed upon by the North Central Regional Soil Survey Planning Conference Steering Committee, I am enclosing a summary of the pertinent recommendations from the various committees that met during the week of June 21, 2000. These are for Committee 2 – Data Acquisition For Problem Solving, Committee 3 - Research Needs in the North Central Region, Committee 4 - Hydric Soil Indicators in the North Central Region and a report from the NRCS breakout session. There was no report from the NCR-3 breakout session. Copies of these reports are enclosed for your information. Copies of these reports are also being sent to other key individuals within the National Soil Survey Leadership. The reports will also be part of the proceedings that will be distributed by Kevin McSweeney, secretary for the last North Central Conference and the Wisconsin NRCS.

Some key recommendations and issues from these reports are as follows:

<u>Committee 2 - Data Acquisition For Problem Solving</u>

Charge 1 – What additional data are needed in NASIS

1. Conduct user testing of NASIS users to see if they have any suggestions to improve usability, add additional data elements, and evaluate if it is meeting their needs before proceeding much further with database population. NASIS is designed to be flexible and could be easily amended if user testing suggests alterations should be made.

Note: NASIS is designed to be used by soil scientists involved in the NCSS. This being the case, the appropriate user test group would be current users of NASIS. However, essentially the same database will be made available to the public through the data warehouse. There may be other data that may be of use to other users of NASIS that those of us involved closely with the NCSS may be aware of. This being the case, we should also consider some form of user testing outside of the realm of current users of NASIS. Otherwise we run the risk of only talking to ourselves and not being relevant to the broader scientific community. If we don't ask, we can't know.

Charge 2 – Who will collect the data

1. Encourage contributions to NASIS from private sector scientists, federal, state, and local agencies and other cooperators. These data will be subject to review by NRCS or AES cooperators prior to entry into NASIS and must meet data quality standards.

2. Any data into NASIS will be made available to the public

3. Within the context of NASIS, the data are "owned" by the entity that enters the data into the system. As such, close scrutiny must be given as to who will be allowed to enter data into NASIS.

Charge 3 – Who will maintain the data

1. NASIS data can be entered from multiple sources. NASIS is designed for users to be able to enter custom data elements that users outside of their region may not have any knowledge of. As such, we recommend that maintenance be the responsibility of the data "owner". In other words, the entity that entered the data. In the case of data from the private sector, we may want to associate the data with either NRCS or a traditional partner. As a policy, we do not want to let all potential users to be able to enter data into NASIS

Charge 4 – Estimated vs. Measured data

Note: Data stored (or potentially stored) in NASIS can be broken down into elements associated with data map units, components, or point data. All data elements for data map units and components are estimated whereas those for point data are measured.

1. There is a need for the user to be able to distinguish the type of data (measured, observed, estimated, reference, null). From a database management point of view this can be assigned in the metadata. However, this information cannot be buried in such a way the user is not aware of the status of the data. We recommend that NASIS clearly inform the user as to the status of the data.

2. There are varying levels of confidence associated with values for the data elements depending on the number and quality of actual measurements used to derive the estimated value. The user should be able to ascertain the level of certainty associated with an estimated value. We suggest developing a data element that would provide perhaps several classes of rating the confidence of an estimate based on data quantity and quality. Additionally, some values for data elements are derived from algorithms. The user should also be able to clearly ascertain if a value is part of the original set of data entered into NASIS or was derived from the original set of data using an algorithm. Because this committee does not have the technical expertise to suggest specifically how this should be accomplished within NASIS, we will limit our recommendation to the need and let others decide how it should be implemented.

<u>Committee 3 – Research Needs in the North Central Region</u>

Charge 1 – Review the 1997 report of the NCSS Research Agenda Standing Committee. This NCSS committee focused on the charge to identify, document, and address the critical research and development issues within the NCSS. Are there additional issues?

Additional Priorities identified are as follows:

1. In the area of developing baseline soil survey information to assess soil quality and soil health we need to add soil quality to soil manuscripts. We also should get baseline data for heavy metals on benchmark soils to follow how they degrade in the future. Some of these data are of local use, such as heavy metal contents around smelters, etc. The local needs for data may not be the same as national needs.

2. Identify densic contact. (will add this to the priority research needs)

3. Research on urban soils and urban soil interpretations.

Charge 4 – Increase the visibility and credibility of the NCSS

Recommendations:

1. Continue to push for professional licensing and certification of soil scientists.
2. Promote adding soil science to the curriculum in the K –12 schools.
3. Add a discussion of the marketing issue to each of the state work planning conferences in the future, if this has not already been done.

Charge 1 – What problems exist with the hydric soil indicators in the North Central Region?

These are listed in the attached report, but one major concern by the committee was that the use of these indicators is more geared to use by professional soil scientists, however the indicators are used by a large number of lay people with little or no soils background. These people who are often decision makers can be misinterpreted. Examples are eluviated horizons are mistakenly identified as reduced horizons and mucky modifiers misinterpreted, especially in silty soils.

The conference felt that the service of a soil scientist should be sought to aid others in the interpretation of the hydric soil indicators, if at all possible.

Charge 4 -Which problems are limited to specific parts of the region?

Muck thickness concerns appear to be related to areas in Land Resource Area K or the upper part of the Lower Peninsula of Michigan and the Upper Peninsula of Michigan. They are especially troublesome on the better drained soils with cedar trees in Region K.

Many areas of hydric soils are buried by varying thickness of erosional sediment. In some cases clear redoximorphic features are developing within this sediment. Additional guidance is required as to the identification of hydric soil these situations.

Natural Resource Conservation Service Session

The following key issues were raised and voted upon by the group as the most important to discuss. Due to a lack of time only recommendations were made on the first two issues:

1. Time to input and edit NASIS Database (customer toolkit) (23 votes)
2. Replacing aging workforce (18 votes)
3. Accountability with progress reporting – too many items not counted/Funding Structure, Reporting acres
4. and other reportable items (18 votes)
5. Training (16 votes)
6. Delivery of Soil Survey products (published Soil Survey) (15 votes)
7. Technical Soil Service Structure (14 votes)
8. Guides for temporal soil properties/ Use dependent data (8 votes)
9. Digitizing Personnel – Retention and pay (3 votes)
10. MOU’s for MLRAs
11. Sequence of updating MLRA and STATSGO

Recommendations and points raised on the first issue of the NASIS database are as follows:

- Will take time – Resource Soil Scientist (RSS)

- How to have RSS prioritize this by management
- What database items need edited and/or input for toolkit
- Who is responsible for editing / inputting RSS/Project staff. Arcview training for Soil Scientist (SS)
- States to populate NASIS Data (globally)
- Equipment computer and connection to NASIS needed!
- Suggest designated NASIS staff in Project Office
- RSS - no time for input of data. Suggest project staff
- Form group of knowledgeable staff to edit/input. Guides from M.O. staff
- National Office proposing to take time to suspend field work in order to update NASIS Database
- Have project staff member as key NASIS editor/trainer
- Have the following items to complete the NASIS workload:
    1. EQUIPMENT
    2. TRAINING
    3. TIME
    4. CONNECTION TO NASIS
    5. STAFF
    6. PLANNING AND DIRECTION FROM NATIONAL OFFICE
- Data map units need to be validated to soil properties & RIC
- Evaluate data that have been collected
- Updating of data needs other disciplines (forestry)

Recommendations and points raised on the second issue of the aging work force are as follows:

- State Soil Scientist will work with Assistant State Connservationist's responsible for staffing
- Contacts will be made with university career counselors to keep them informed of the positions available
- Selection process needs improving
- Have Soil Scientist meet with career counselors and student Agronomy clubs, etc.
- Flexible work hours and locations to hire and retain new hires
- Check into partnering
- OPM regulations limit hiring staff
- More communication between states
- Do better job of presenting benefits of working for NRCS

William E. Frederick
Soil Scientist Liaison

Enclosure

cc:
Russ Kelsea, Soil Scientist, NRCS, NSSC, MS 33, Lincoln, NE (with copy of Committee 2 Report)
Wade Hurt, Soil Scientist, NRCS, University of Florida, P.O. Box 110290, 2169 McCarthy Hall, Gainsville, FL 32611-0290 (with copy of Committee 4 Report)
Thomas G. Reinsch, Soil Scientist, NRCS, NSSC, MS 41, Lincoln, NE (with copy of Committee 2 Report)
Kevin McSweeney, University of Wisconsin-Madison, School of Natural Resources, 1450 Linden Dr., Madison, WI 53706-1290

JUNE 21, 2000 NORTH CENTRAL SOIL SURVEY WORK PLANNING CONFERENCE
FIELD TRIP SCHEDULE

Stop	Time	Miles from previous stop
Buses Depart Holiday Inn East in Grand Rapids, MI	7:30 am	---
Arrive at Kellogg Biological Station (KBS)	8:30 am	49 miles

At KBS we will visit the LTER plots, view and discuss the Oshtemo and Kalamazoo soil pits, and the rain simulator area.

A coffee break will be held at the rainout shelter site.

Bus will then travel to the Field Erosion Demonstration Plots.

Buses depart KBS	11:00 am	---
Buses arrive at I-94 rest stop for lunch	11:30 am	11 miles
Buses depart I-94 rest stop	12:15 pm	---
Arrive at vineyard site	12:55 pm	34 miles

At the vineyard site we will be discussing vineyard operations with the landowner, as well as the soils and landforms at the site. Other varied land uses in this area will be evident, based on the variety of land forms that will be observed.

Leave vineyard site	1:55 pm	---
Arrive at a borrow pit to examine the Coloma Series	2:00 pm	5 miles

We will be discussing the pattern and formation of banding in this soil.

Depart Coloma site	2:45 pm	
Arrive at I-94 Watervliet rest area for coffee break	3:15 pm	21 miles
Depart rest area	3:35 pm	---
Arrive at the Saugatuck Series site	3:55 pm	10 miles

At this site we will be discussing blueberry production operations with the landowner and the significance of the Saugatuck soil to this crop.

Depart Saugatuck Site	4:55 pm	---
Arrive at Van Buren State Park	5:25 pm	13 miles

At the park we will walk to the beach to discuss dune landforms and observe buried organic soils.

The Soil Classifiers Association of Michigan will then be hosting an evening cookout.

Buses depart Van Buren State Park	8:30 pm	---
Arrive back at the Holiday Inn in Grand Rapids	9:30 pm	60 miles