NATIONAL COOPERATIVE SOIL SURVEY

Northeast Regional Conference Proceedings

New York City, New York
January 15-18, 1968

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PROCEEDINGS OF THE
NORTHEAST COOPERATIVE SOIL SURVEY
WORK-PLANNING CONFERENCE

NEW YORK CITY
JANUARY 15-18, 1968

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

NATIONAL COOPERATIVE SOIL SURVEY
NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE
January 15-18, 1968

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(b) Digital Computers and Their Application to Sail Survey
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AGENDA - NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE - JAN 15-18, 1968

MONDAY - JANUARY 15

8:30-9:00	Announcements, Appointments, and Opening Business
9:00-12:00	Meeting of Committees 3, 4, 5.
12:00-1:00	Lunch
1:00-5:00	Meeting of Committees 6, 7, 8, 9.

TUESDAY - JANUARY 16

8:30-9:00	Business Meeting - Report of Nominating Committee
9:00-12:00	Reports of Committees 1, 2, 3, 4 and 5.
12:00-1:00	Lunch
1:00-5:00	Reports of Committees 6, 7, 8 and 9.

WEDNESDAY - JANUARY 17

8:30-12:00	Application and Interpretation of the New Classification Sys tern. Dr. Guy Smith
12:00-1:00	Lunch
1:00-2:00	Digital Computers and Their Application to Soil Survey. Dr. L.J. blathers
2:00-3:00	Moisture Characteristics of Pennsylvania Soils as Related to Texture and Series. Dr. Gary Peterson
3:00-4:00	Program for Completing a Survey in an Area of Rapid Industrial Expansion. John W. Warners, Jr.
4:00-5:00	Use of Soil Surveys in Urban Planning. Glenn B. Anderson

THURSDAY - JANUARY 18

8:30-10:15	Soil Descriptions - Problems. A.H. Paschal1
10:30-11:30	Discussion of (1) National Committee Reports not covered by Northeast Regional Committees. Dr. D.E. Hill
11:30-12:00	Soil Conservation Districts - Their Shift in Program and Responsibilities. S.L. Tinsley
12:00-1:00	Lunch
1:00-1:15	Report of Northeast Soil Survey Committee - Dr. R. Struchtemeyer
1:15-1:45	The Soil Factor in Sanitary Land Fill. Dr. F.G. Loughry
1:45-3:00	Experiences in Foreign Lands and Soil Survey and Relate.1 Fields. R.P. Struchtemeyer, F. Cleveland, B.J. Patton
3:00-3:30	Concluding Statements and Adjournment

Participants - Northeast Soil Survey Work Planning Conference
New York City - January 15-18, 1968

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NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

THE PENN GARDEN HOTEL
NEW YORK, N. Y.
January 15-18,1968

The meeting was called to order by Chairman, Walter J. Steputis at 8:30 A.M., January 15. Conference participants introduced themselves to the group.

G. J. Latshaw was named recorder for the business sessions. Walter Steputis appointed a committee consisting of A. H. Paschall, Chairman, R. L. Marshall, and R S. Bell to nominate a new vice chairman.

Room locations were assigned to the scheduled committee meetings.

John J. Noll announced that committee 9, Laboratory Studies and Priorities, was to meet at 5:00 P.M.

A. J. Baur requested committee 2, Technical Soil Monographs, to meet at 1:00 P.M. preceeding the afternoon session.

Committee chairmen were given the responsibility for preparing summaries of their committee meetings.

The business meeting was re-opened by chairman Walter Steputis at 8:30 A.M., January 16. Late arrivals to the meeting introduced themselves to the conference.

Committee chairman were directed to send their committee reports to Walter Steputis by February 15.

A. H. Paschall announced that the nominating committee had selected S. A. L. Pilgrim as the new vice chairman. The group unanimously approved the nominating committee's selection for the vice chairman which is for 1969 and 70.

R, A. Struchtemeyer, Vice Chairman, took over the chairmanship for the remainder of the days' session. Dr. Struchtemeyer said he would act as liaison representative to the Northeast Soil Research Committee which is also meeting in the city.

A. J. Baur asked when the next meeting was to be held.

R. A., Struchtemeyer said the next meeting would probably be held about the same time of the year in 1970, and at the same location.

Roy Matelski moved that an extra correlator be added to the Northeast staff so the correlation staff can visit the field more often. M&ion was 2nd. and passed.

A. J. Baur stated the work load of descriptions and correlations has prevented his staff from getting to the different states often enough.

Committee reports were requested by Vice Chairman, Struchtsmeyer.

Committee report summaries are located in a separate section of the proceedings.

Wednesday - January 17, the meeting was reconvened at 8:30 A.M.

Dr. Guy Smith discussed the "Application and Interpretations of the New Classification System."

Dr. T. J. Mathers reviewed digital computers and their application to soil survey.

Moisture characteristics of Pennsylvania soils, as related to texture and series, was given by Dr. Gary Peterson.

John W. Warner, Jr. discussed the program for completing a soil survey in an area of rapid urban expansion,

Olen B. Anderson discussed the use of soil surveys in urban planning.

Thursday - January 18, the meeting was reconvened.

A. H. Paschal1 discussed problems in preparing soil series descriptions.

Dr. D. E. Hill discussed committee reports not covered by North Eastern Regional Committees and NCR - 3 Project - Bibliography of Soil Survey Information,

S. L. Tinsley discussed the shift in the program and responsibilities of Soil Conservation Districts.

The soil factor in sanitary land fill was presented by Dr. F. G. Loughry.

Experiences in foreign lands and soil survey and related fields were discussed and illustrated with slides by R. A. Struchtemeyer, F. Cleveland, and B. J. Patton,

Concluding statements made during the last day of the session, Thursday, January 18:

R. A. Struchtemeyer reported that the Northeast Soil Research Committee is going to have a committee to discuss possible mineralogy study project in Northeast. Dr. Brady would like the Northeast Planning Conference to suggest a specific mineralogy study project.

A. J. Baur stated that soil survey areas containing more than one intensity of survey need separate mapping units and legends for each

mapping intensity. The separate legends are to be labeled as to the intensity - low, medium or high. Users must be able to differentiate between intensities because of differences in combinations of slope and complexes. Interpretations will also vary between different mapping intensities.

A. J. Baur stated interstate coordination will be made on mapping units for all MLRA's in the northeast. State representatives are invited to the workshops.

Francis Cleveland stated that individual states may subdivide degree of limitation ratings for soils. Example would be the division of a severe rating into severe and very severe.

Dr. Baur stated the work of the committees were very good at the Northeast Conference. He pointed out the outstanding work of the experimental station representative in making the meeting a success. The presence of Kentucky and West Virginia had been a very important factor in success of the meeting.

Walter Steputis thanked the group for the cooperation in making the meeting a success.

Conference adjourned 3:00 P.M. on January 18.

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

February 15-18, 1968

REPORT OF COMMITTEE ON BENCHMARK SOILS

The committee on benchmark soils is e standing committee that provides technical liaison to coordinate the benchmark soil report program in the states of the Northeast SCS Region. The committee was asked to review progress in the benchmark soil program throughout the Northeast and to obtain plans and priorities for preparation of benchmark reports for the next biennium.

The committee chairman did not request time et the conference for a committee meeting. He felt e satisfactory committee report could be prepared from information solicited from each committee member prior to the conference. Unfortunately, only 6 states responded. The information for the remainder of the states was obteined at the conference,

The following is e report on tha status of benchmark soil reports and plans for the next biennium.

1. Reports published

   a. 1963 or earlier

      Vergennes (Vermont)
      Caribou (Maine)
      Canf ield (Ohio)

   b. 1963 - Paxton (Connecticut)

   c. 1967 - Bridgehampton (Rhode Island)

2. Reports not published but in press in 1967 - none.

3. Reports being prepared or to be prepared in the next biennium.

   Hagerstown (Maryland - 1968)
   Charlton (Connecticut - 1968)
   Gloucester (Massachusetts - 1968)
   Hermon (New Hampshire - 1969)
   Gilpin (west Virginia - 1969)
   Panton (Vermont - 1969)
   Matapeake (Maryland - 1969)
   Cheshire (Connecticut - 1969 or 1970)

Attached to this report is Appendix I, which lists the benchmark soils assigned to each state in the Northeast for compiling and preparing benchmark soil reports. Maine requested to delete the Adams, Saco, end Suffleld series from their assigned list due to small acreage of the soils in the state end also to delete the Easton series because of manpower shortage. Kentucky suggests that the Tilsit series be shifted to West Virginia es a result of decisions made recently in regard to the series. Maine and Kentucky were the only two states that requested a change In benchmark soil assignments.

Committee Members

S. J. Zayach, Chairman
D. E. Hill, Vice Chairman
R. S. Bell
L. J. Cotnoir
R. E. Daniell
R. A. Farrington
J. E. Foss
R. L. Googins
C. J. Koch
R. L. Marshall
J. J. Noll
N. K. Peterson
G. G. Pohlman
R. A. Struchtemeyer.
K. P. Wilson

P.S. from Chalrmanr R. A. Farrington requested at the conference to be released as a member of the committee. Bruce Watson, the new State Soil Scientist for Vermont, accepted to replace Bob Ferrlngton as a member of this committee.

Notes on discussion by the Conference following committee report

D. E, Hill, Recorder

zeyech: Should the states of Kentucky, Ohio, end Virginia be represented on the committee? They are associated with the Southeast due to the make-up of regions for Land Grant Colleges.

Hill: Representation is desirable so members can serve as contact men for date for benchmark soil reports.

Baur: Assignments of benchmark soils should probably correspond to the states responsible for updating official series descriptions.

Noll: Benchmark soils are for selected series with detailed data. For interpretive purposes. too many other soils have to be interpolated. Pennsylvania has an excellent soil characterization laboratory. Most soils, previously interpolated, have data avai lable now. Therefore? we feel that benchmark reports do not have application under these circumstances.

APPENDIX I

List of benchmark soils assigned to the Northeast States for compiling and preparing benchmark soil reports.

Connecticut and Rhode Island

Brldgehampton 1/
Charlton 2/
Cheshire
Enf ield
Paxton 1/
Stockbridge
Windsor
Woodbridge

Delaware and Maryland

Baile
Beltsville
Chester
Christians
Cookport
Franks town
Glenville
Hagerstown 2/
Legore
Leonardtown
Manor
Matapeake
Mattspex
Montalto
Othello
Pocomoke
Ssssaf ras

Kentucky

Eden
Maury
Pembroke

Maine

Biddef ord
Buxton
Caribou 1/
Howland
Plaisted
Scantic
Suff ield

Massachusetts

Gloucester 2/
Hinckley
Merrimac
Ninlgret
scarboro
Sudbury
Walpole

Pennsylvania

Allis
Berks
Brinkerton
Burgln
Cattaraugus
Cavode
Croton
Culvers
Duff ield
Dunning
Edgemont
Ernest
Lawrence
Middlebury
Montevallo
Morris
Norwich
Oquaga
Readington
Westmoreland

New Hampshire

Agawam
Harmon 2/
Hollis
Leicester
Peru
Ridgebury
Sutton
Whitman

New Jersey

Adelphi
Collington
Elkton
Evesboro
Fallsington
Keyport
Penn
Westphalia
Woodstown

New York

Adams
Ameni a
Canandaigua
Caneadea
Chenango
Collamer
Holly
Mardin
Papakating
Phelps
Red Hook
Tioga
Unadilla
Volusia

1/ Report published

2/ Report being prepared

Smith: Does Pennsylvania also'have crop response data on these soils in addition to physical and chemical data? This is very important for operational farm planning.

Matthews: Agree wlth Pennsylvania in that the benchmark Soil program is a temporary one and should be phased out.

Hill: To increase output of benchmark soil reports, the committee can serve as a worklng committee at the conference to actively assemble data. This will decrease long correspondence and save considerable time. Also soil series, high on priority list for individual states, should be updated and revised as soon as possible to avoid delay in compiling data and confirming its inclusion in the report.

Report of the committee on benchmark soils was accepted by the Conference.

Ohio

Brookston
Canfield 1/
Celina
Crosby
Hoytvi lle
Keene
Mahoning
Venango

Vermont

Berkshire
Colton
Hadley
Limerick
Livingston
Lyman
Panton
Vergennes 1/
Winooski

Virginia

Carbo
Frederick
Tatum

West Virginia

Blago
Dekalb
Elliber
Gilpin 2/
Ginat
Hartsells
Holston
Huntington
Laidig
Lakin
Lindside
Melvin
Monongahela
Murrill
Tilsit
Tyler
Upshur
Wharton
Wheeling

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

January 15-18, 1968

REPORT OF COMMITTEE ON TECHNICAL SOIL MONOGRAPHS

Preparation of soil monographs is a continuing responsibility of the Soil Survey. Monograph writing should be fitted into the schedule of soil survey jobs as opportunity permits. At present work is in progress on four monographs in the United States, but none of these are in the Northeast.

Soil scientists in the Northeast era asked to watch for land resource areas in which circumstances appear favorable for development of a monograph. According to the January 1967 National Committee Report on Soil Monographs, these circumstances include:

a) The area should include important soils of different soil orders.
b) A competent author should be available in the area.
c) A considerable body of knowledge about soil properties already exists.
d) A number of soil surveys in the area are on the 10 year publication schedule,

The 1967 National Committee recommended investigation of a number of areas based on the 1963 United States Major Land Resource Areas Map as possibilities for monographs, These included the following areas in which the Northeast has a major interest:

Technical Monograph	Land Resource Areas1 (1963 Map)	States Primarily Involved
No. 79	124, 125, 127, 126"	Pa., W.Va., Ky. (Tenn.)
8 9	143, 144, 145, 146	New England, New York.
71	111	Ohio (Ind.)
81	128	Va. (Tenn.)

1/ LRA 126 not listed in 1967 National Report

Numbers 79 and 89 are of special interest to us. According to the August 1967 General Soil Hap of the United States, scale 1:17,000,000, the only extensive region in the United States dominated by Ochrepts is in monograph area No. 79 plus adjoining LRA No. 140. Ochrapts also dominate in the Ozark region of Arkansas and Missouri, but this area is not extensive. A monograph on the Ochrepts in area No. 79 would contribute substantially to the body of information for this suborder.

Monograph area No. 89, New England and New York is one of the two extensive regions dominated by Orthods. The other region is in northern parts of Michigan, Wisconsin, and Minnesota, A monograph in area No, 89 would deal with Orthods in mesic and frigid families whereas Orthods in the parts of Michigan, Wisconsin, and Minnesota ate primarily in frigid families.

The Committee on Technical Soil Monographs should be continued. It should give encouragement, advice, and guidance to any potential work on soil monographs in the North&t. In addition, the Committee should serve as liaison between the National Committee on Monographs and our Northeast Conference.

Dr. G. D. Smith reported on the status of the four monographs now in progress. These are:

1. Blacklands Area in Texas
2. Nashville Basin in Tennessee
3. Red River - North in Minnesota, North Dakota, and South Dakota
4. Mississippi Delta in Mississippi, Louisana, Arkansas, and Tennessee

Committee Members:

Dr. A. J. Baur, Chairman
R. P. Matelski, Vice Chairman
W. H. Lyford
R. L. Marshall
J. J. Noll
D. S. Fanning
R. L. Blevins

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

January 15-18, 1968

REPORT OF COMMITTEE ON CLASSES AND PHASES
OF STONINESS AND ROCKINESS

The 1967 National Committee has made the following charges toour committee:

a. Test the criteria for stoniness classes and phases en different size and shape of stones.

b. Study the problem of rockiness with special attention to size of rook, spacing between rocks and percent of surface covered by rocks.

c. Make recommendations for classes and nomenclature for the classes of rockiness.

d. Suggest ways and means for broader phases in addition to the narrow phase name proposed.

Charges a and b

To assist the committee in its study of these two charges, I am soliciting any new data collected or results of the testing of the criteria that has been accomplished in the past two years. I am hopeful that State Soil Scientists in the Northeast will respond to this request and provide available information to the committee.

Charge c

The National Committee recommends that rockiness classes must con-
eider the spacing between rock outcrops and size of the area covered
by rock outcrop.

Charge d

The National Committee recommends that stoniness classes be based on
average spacing between stones.

We need to give further consideration to both the limits of stoniness
classes and the naming of stoniness phases as proposed by the National
Committee.

Responses to the questionaire submitted to State Soil Scientists show
but two pieces of additional information. A field party in New
Hampshire used three methods to check the quantity of stones present
in mapping delineations. All three methods were used on the same
sites. Method 1 consisted of measuring stones in areas 100 feet square,
10,000 square feet; Method 2 consisted of determining average distance
between stones, and average size of stones; and Method 3 oonsieted of
using a 100 foot transect selected at random within the test area.
On test area 1, Method 1 shows the largest percentage of the surface
covered by stones; Methods 2 and 3 gave a somewhat lower percentage
of surface covered but were quite similar in results.

On test area 2 all three methods gave similar results. Method 3 was the most rapid.

Kentucky presented a number of transects showing the spacing of open land and rock outcrop. These studies show a considerable range and indicate the need to consider percent of land occupied by rock outcrop and the pattern of occurrence of the rock outcrops.

The committee discussion indicated that there is considerable similarity between the spacing of stones given for the various stoniness classes in the manual and the spacings reported for stones of 0.83 and 5.0 square feet of area in the 1967 National Committee Report. As a result, the committee recommended the following spacings for the various classes of stoniness (or boulders):

Class	Spacing
0	100 or more feet
1	30 to 100 feet
2	5 to 30 feet
3	2.5 to 5 feet
4	1 to 2.5 feet
5	less than 1 foot

The discussion on phase names cited the need to use a nomenclature that would make it possible to designate stoniness (or bouldery) phases for both intensive and extensive uses.

The suggested nomenclature is:

Class 0	No phase name
Class 1	Slightly stony or bouldery (if needed)
Class 2	Stony or bouldery (This corresponds to the present very stony phase in the manual definitions)
Class 3	Very stony or very bouldery (Corresponds to extremely stony in present manual definitions)
Class 4	Extremely stony or extremely bouldery. Used in lieu of stony land where series designation is possible
Class 5	Paved

This nomenclature is a shift from that used in the Northeastern States. It will, however, permit application of very stony and extremely stony phases in areas of extensive use without overlapping phase terminology used in intensive use areas.

Report of Committee on Classes and Phases of Stoniness and Rockiness - Continued

The discussion on rockiness classes and phases emphasized the need to recognize both the spacing between rocks and the amount of land surface covered by rocks. The pattern of coverage is also significant as this would be needed to determine if the condition was a rockiness phase of some series or represented a complex of a series - rock outcrop.

The classes proposed are:

Class	Spacing (feet)	Percent Rock Outcrop
0		less than 2%
1	100 - 300	2 - 10%
2	30 - 100	10 - 25%
3	10 - 30	25 - 50%
4	less than 10	50 - 90%
5		90%+

The percentage of rock outcrop assumes a scattered pattern which prevents the use of a series - rock outcrop complex.

The committee believe that it has gone as far as possible on class and phase names. Any future activity should be confined to outlining criteria useful to field men in determining the classes of stoniness, boulderiness or rockiness.

Report of Committee on Classes and Phases of Stoniness and Rockiness - Continued

Illness prevented Mr. Pilgrim from being present so Mr. Paschall acted as Chairman.

Committee members present:

A. H. Paschall, Vice Chairman

R. Rrnold

J. Elder, Jr.

R. A. Farrington

W. H. Lyford

M. Markley (Recorder)

R.L. Marshall

E. D. Matthews

Visitors present:

J. Kubota

R. Sinclair

W. J. Steputis

The committee report was adopted by the conference.

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

January 15-18, 1968

REPORT OF COMMITTEE ON SOIL MOISTURE

The soil moisture committee met for one-half day and several additional worthwhile comments were made by committee and non-committee members when the oral committee report was presented before all the Northeast Conference participants. The soil moisture committee concerned itself mainly with the charges given to it by the national soil moisture committee,

Water Table Regime Classes

The committee was asked to attempt to formulate descriptive statements of the water table regime in terms of kind of water table, depth of occurrence and season of the year which would replace the drainage classes of the soil survey manual and to explore the use of these definitions in the new classification system in place of morphologic features in framing definitions.

No statements were developed on the kind of water table. It was agreed that the kind of water table observed depends on the method of measurement and that some standardization of methods of water table measurement is needed. This appears to be one stumbling block to the development of water table definitions to supplement or replace the present drainage classes. At its last meeting this committee agreed that most water table studies in the Northeast were observing apparent water tables. The apparent water table has been defined (Proc. of 1965 National Conference) as the level at which water stands (adequate time allowed for adjustments) in an unlined borehole. Although the wells in many studies are lined, a water table resembling an apparent water table is probably still observed if the liner is perforated or if the seal between the liner and the surrounding soil is not tight.

The committee chairman felt that all water tables are perched (at some depth). Investigations should be made to determine if soils with the same water table depth and duration could be used differently if they had different depths of perching.

Attempts were made to formulate some water table regime classes based on water table fluctuation patterns. One of these schemes is presented in the appendix 1. Annual water table fluctuation patterns for soils in the Northeast (e.g. Lyford, 1964) have shown that water tables in these soils are highest in late fall, winter and early spring. The water tables drop in late spring and summer and rise again in the fall. From fluctuation patterns (graphs of depth vs time) the percent of the year, or other defined period, that the water table remains at or above a specified depth may be determined. In the system presented in appendix 1, winter water table depth classes are based on the percentage of a winter period that the water table remains above specified depths.

An additional category was added (appendix 1) to show the amount annual fluctuation below the bottom of the winter water table depth class. This could be defined as the maximum drop below the bottom of the winter depth class or on the basis of a depth that the water table remains above during most (perhaps 90%) of the year.

The committee felt that the system presented in appendix 1 should be included in the committee report so that it could be considered by other soil scientists. Some of the main problems with, the appendix 1 system that have been noted are:

1) There arc too few long term water table studies to allow a thorough testing of the system and the setting of meaningful class limits, especially in regard to present drainage classes. The need for long term studies is emphasized because the data available show that periods that water tables remain above given depths vary considerably between wet and dry years:

2) The water table data that are available have **not. been** evaluated in terms of such a system;

3) Practical applications should be given further consideration in setting class limits;

4) The winter period would definitely have to he defined differently in other parts of the world and the whole system might break down if tested worldwide; and

5) Consideration needs to be given to the handling of water table data obtained by different methods.

Some of the better attributes of the appendix 1 system are:

1) It is a rather simple system that in its present or in a modified form could be used to classify soils, by their water table fluctuation patterns; and

2) The system could lend itself to simplification by which a soil could be classed on the basis of a few winter and summer water table measurements if care ware taken to avoid excessively wet and dry periods."

With regard to the comprehensive soils classification system, it would appear that soils with a winter water table depths (as defined in appendix 1) above 0.5 meters (20 inches) could be placed in the aqu suborders. Soils with winter water table depths between 0.5 and 1 meter might be placed in the aquic subgroups of the better drained (non aqu suborder) great groups. Typic subgroups of the better drained great groups might be defined as having winter water tables below a depth of 1 meter.

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* This thinking is partly based on a suggestion by letter from Dr. R. B. Grossman.

The committee was of the opinion that a water table system for defining drainage classes should be considered as a supplemental or alternate system to the presently used morphological criteria and not as a replacement. A problem, which needs to be considered, is that poorly drained soils that have been artificially drained could be placed in the same drainage class as a naturally well drained soil by a water table classification system, However, reflecting what Dr. R. W. Simonson has called pedogenic inertia, the artificially drained soil would probably have higher organic matter and lower free iron oxide contents than the originally well drained soil for a long period of time after drainage. These differences between the two soils would be shown by soil color. Thus both the water table and the morphological criteria may be needed to adequately classify the soil. However, soil wetness might be best indicated by a water table system.

Terminology for Describing Water Movement Through Soils

The committee was asked to consider alternative terminology for the description of water movement through the soil that

1) is in keeping with terminology used by soil physicists and

2) is descriptive of the conditions under which the measurements were made.

Dr. D. E. Hill headed up the committee's response to this charge. This response is summarized in the following quote (slightly modified after committee discussion) from a memorandum that Dr. Hill sent to the committee members prior to the meeting.

"To meet the requirements of item (1) (of the charge), it would be necessary to use terms currently available in the literature. This point is well taken. New terminology could be devised that would be more descriptive but this might only serve to confound. The movement of water through a soil has been expressed by various terms by soil physicists. Each term describes a given set of boundary conditions, The terms most appropriate to our use must have an element of time associated with them. The terms 'permeability' and 'conductivity' are poor choices because they merely describe the characteristics of a porous medium. These terms are perfectly acceptable for describing the quality of the medium to transmit water. They should not, however, be used to express flow rates because they do not contain the element of time.

The terms commonly used to describe flow rates are:

Hydraulic conductivity
Percolation rate
Soil water diffusivity

The term hydraulic conductivity can be used to express water flow in the saturated or unsaturated state. If the geometry of the test is defined and Darcy's law can be applied, the term is a useful one. Under conditions of unsaturated flow, some prefer the term soil water

di ffusivi ty. This is a restrictive term implying unsaturation.

In the conduction of percolation tests, the geometry of the system is ill-defined. although modification of the test could permit more accurate definition. The term hydraulic conductivity, applied to these tests, is not a suitable one. The term ' percolation rate' is satisfactory because it is simply, defined as downward movement of water in the soil at hydraulic gradients of 1.0 or less. This implies unsaturation, a fact consistent with the conditions under which most percolation tests are run.

In suggesting usable terms (1) to be consistent with present terminology and (2) to be descriptive, those suggested by the National Committee seem suitable with slight modification.

(1) For rates determined by the Uhiand Method (laboratory saturated cores), the precise descriptive term would be 'one dimensional saturated hydraulic conductivity' or 'confined saturated hydraulic conductivity'. Both are obviously too long and could be shortened to '<u>saturated hydraulic conductivity</u>'. At the National Meetings even this term was thought too long for table headings, but I believe it is unfortunately unavoidable. The simple term 'hydraulic conductivity' is not descriptive enough.

(2) For rates determined by the auger method in the field, the term '<u>percolation rate</u>' is satisfactory. The adjective 'unsaturated' as proposed by the National Committee could be used for emphasis, however, it is not necessary because, by definition, the term implies unsaturation.

(3) The term 'saturated percolation rate' cannot be used. If a water table is present in the auger hole, a percolation rate cannot be determined except by conventional hydraulic conductivity measurements below a water table. Such rates should be properly labeled 'three dimensional saturated hydraulic conductivity' or 'unconfined saturated hydraulic conductivity'."

The committee supported Dr. Hill's recommendations.

In the discussion it was pointed out that, assuming that the suggestions of this and the National Committee are approved, the soil permeability classes of the Soil Survey Manual (p.168) should be called "saturated hydraulic conductivity" classes since they were meant to apply to rates determined by the Uhiand method.

Information on Field Soil Moisture Regimes

The committee was asked to collect information on field soil moisture regimes. This was a very broad charge and the committee only attempted to bring the list of studies in the Northeast, given in the 1966 committee report, up to date. This supplemental list

is given in appendix 2.

The studies brought to the committee's attention were mainly water table studies. Of the current studies, those mentioned for Connecticut and New York state apparently have been going on for the longest periods and have the best chance of observing the effect of year to year weather changes,.

The studies of soil moisture regimes during crop growth in Maryland by Dr. E. Strickling and co-workers are of interest on the topic of available water. These studies indicated that crops suffered from lack of water even though there was considerable "available water" in the soil profiles. During drought periods crops wilted (non permanently) enough to severely lower crop yields, but the soil only reached the permanent wilting point (on a 15 atmosphere tension basis) at the soil surface, This data supports the suggestion in the1967 National Committee Report that the difference between the 1/3 and 15 atmosphere water contents be called "water retention difference" instead of "available water", These studies indicate that much remains to be learned about water extraction from soils by plants.

The National Committee also recommended that the regional moisture committee coordinate activities with any regional climate committee. The Northeast has no regional climate committee within the soil survey work planning conference. There has been an active regional climate project in the Northeast (NE-35). Efforts to coordinate activities with workers of that project need to be made. Several publications have resulted from NE-35 that should be reviewed to determine how they relate to the work of the soil moisture committee.

Moisture Criteria in the New Classification System

The committee was asked to review the moisture criteria in the new classification system and make recommendations for changes if needed, An evaluation of the kind of field soil moisture data available and what would be most applicable to the new system was considered desirable by the national committee.

Soil moisture problems with the new classification system in the Northeast have already been discussed by A. H. Paschall in the 1967 National Committee Report.

One of the problems cited by Paschal1 was the apparent failure of the wetness classes (suborders and subgroups), as defined by soil morphology, to adequately describe the degree of wetness of some of the soils of the region. If this is true, and some supporting comments were made when this committee report was presented orally before all the Northeast participants, then further attempts to develop a water table system for defining drainage classes are justified. If this is to be done, the water table regime data already available will be valuable and more data will be needed. Long term data to evaluate the effects upon water tables of dry vs. wet vs. "normal" seasons will be necessary if good definitions of classes are to be developed. Also further examinations of the relationship between

soil morphology and water tables are needed.

Committee Members

R. J. Bartlett
*R. S. Bell
*D. E. Hill
*L. Kick
K. LaFlamme
*R. P. Hatelski
G. G. Pohlman
N. K. Peterson
*H. c. Porter
E. J. Rubins
*R. A. Structemeyei
M. E. Weeks
*A. E. Shearin, V. Chairman
*D. S. Fanning; Chairman

"Present at the committee meeting.

Other participants at the committee meeting:

C. F. Engle
L. Johnson
W. Steputis

Summary of comments on the oral 'report:

G. D. Smith - a winter water table would give you trouble in the tropics.

E. D. Matthews - perhaps the rainy season could replace the winter there.

Others - Could it be done by months, ignoring winter?

- In Florida water tables may be higher in summer than, in winter.

- Probability Predictions are, needed, especially for the maximum hlgh water table.

W. Lyford - Morphological evidence of wetness has weaknesses. Mottling in the lower portion of some soils in the Northeast may be from formerly higher water tables associated with beaver ponds.

Someone - What about correlating "available" water with soil texture?

G. D. Smith - Very poor corielotion.

R. P. Matelski -Seem to be finding a good correlation in Pennsylvania. Dr. G. Peterson will show this in his report.

G. D. Smith - May be possible if mineralogy is relatively constant, but beware of trying to extend results to all soils.

Appendix 1 - Depth of Winter Water Table and Water Table Fluctuation Classes.
(A proposed scheme for classifying water table regimes. Would probably be based on apparent water tables).

Depth of Winter Water Table* (meters and inches)	Annual Fluctuation Below the Bottom of Apparent Winter Water Table Depth Class** (meters and inches)
< 0 (ponded)	0 0 to 0.5 (0 to 20") 0.5 to 1 (20 to 40") 1 to 2 (40 to 80") > 2 (> 80")
0 to 0.25 (0 to 10")	0 0 to 0.5 (0 to 20") 0.5 to 1 (20 to 40") 1 to 2 (40 to 80") > 2 (> 80")
0.25 to 0.5 (10 to 20")	0 0 to 0.5 (0 to 20") 0.5 to 1 (20 to 40") 1 to 2 (40" to 80") > 2 (> 80")
0.5 to 1 (20" to 40")	0 0 to 1 (0 to 40") 1 to 2 (40" to 80") > 2 (> 80")
1 to 2 (40" to 80")	0 0 to 2 (0 to 80") > 2 (> 80")
> 2 (> 80")	

* Water table at or above the bottom of the depth interval, but not at or above the bottom of the next shallower interval, for 50 or more percent of the December 1 to April 30 period in 7 or more years out of 10.

** See the text on water table regime classes for possible ways of defining this property.

Appendix 2

List of Soil Moisture. Regime Studies

This list supplements and brings up to date the list published in the 1966 Northeast soil moisture committee report. It undoubtedly is incomplete.

In Connecticut water table studies have been continued on the Whitman, Ridgebury and Sutton soils. Data brought to the meeting indicated water table differences in the expected direction between these soils of different drainage class by soil morphology.

In Maryland both of the water table studies mentioned in the 1966 report have been discontinued in the field because the soils surveys in the respective counties have been completed and the SCS soil scientists who made the measurements have moved to other counties. The Talbot County study of three poorly drained soil series (Typic Ochraquults) differing In texture has been summarized and will be published in the spring of 1968:

Fanning, D. S. and Reybold, W. U., III (1968) Water Table Fluctuations in Poorly Drained Coastal Plain Soils, Md. Agric. Expt. Sta. Misc. Publ. No. 662.

Data from the 2 year water table study of soils of the Sassafras catena (2 or 3 sites on each of 4 soil series) in Worcester County, Maryland, have been partially summarized.

Studies of the field soil moisture regime during crop growth on some Maryland soils have been conducted by Dr. E. Strlckllng and co-workers of the University of Maryland, Department of Agronomy,

In New York State water table studies of 7 soil series in Broome County, started by Huddleston, have apparently been continued by the Broome County Health Department. A total of about four years data should now be available and measurementsare apparently continuing. This could be an especially valuable study if it continues long enough so that years of different rainfall may be compared.

In Pennsylvania Penn State has a research project on water tables at the new Agronomy Department farm and at a branch station farm. Also studies are being continued on several soil series in Montgomery County, near Philadelphia.

In Rhode Island, Or. Jim Brown, in the Department of Forestry at the University of Rhode Island has been measuring soil moisture, probably with a neutron probe, in forests.

In Virginia, measurements of water tables are now being made at about 200 sites representing 48 different soil types. Most of these sites are in Chesterfield, Prince William and Loudon Counties. Seven wells are being followed at Experiment Stations.

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

February 15- 18, 1968

REPORT OF COMMITTEE ON MADE SOILS

This committee reviewed the recommendations of the National Committee on "Criteria for Classification and Nomenclature of Made Soils."

This committee agreed with the definition of MADE LAND in item I of the National Committee recommendations. There was some discussion on the matter that the definition neither includes nor excludes the ability of the material to grow plants. It was felt that it was best to leave this unsaid because lack of such ability cannot be diagnostic. Some Made Land materials will eventually permit plant growth and some won't. Generally it does not.

The Northeast Committee recommended that the name MADE LAND be replaced by the term "Fill" modified by an appropriate term such as "industrial waste, sanitary, stony, trash, etc.

In the past the term MADE LAND has had such varied meanings covering such a wide variety of conditions that a new term would help distinguish these kinds of materials from earthy materials which the committee still prefers to call MADE SOILS..

The Northeast Committee accepted without change recommendations 2, 3, 4 and 5 of the National Committee report of 1967.

The National Committee did not cover the heterogeneous areas of cuts and fills intermixed with urban areas which are such a big problem In the Northeast. This matter was discussed briefly in committee and at some length by the conference as a whole. A number of examples had been made available to the committee by the several states.

Where there are mixtures or complexes of spots of recognizable series extensive areas of cut and fill made soil, both intermixed with urban areas of streets, houses and industrial areas, a name combining the identified series and urban land was used. An example is Aura-Urban land complex.

In large areas where the diagnostic horizons have been completely destroyed by extensive cuts and fills (not usually including road cuts and fills) the most recent correlated names are somewhat as follows:

Cut and fill land, sandy.
Cut and fill land, silty.
Or whatever appropriate modifier is deemed useful.

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The committee generally would prefer the term. Made soil, (plus adjectives) in such cases. The conference as a whole appeared to prefer it also. The participants seemed to feel that the term "Cut and fill land" was connotative of deep cuts and fills along highways and not particularly descriptive of areas developing for housing and commercial uses.

The Soil Survey Manual on page 276 defines Urban land use as including areas used for factories, warehouses, trading centers, houses, roads, streets, cemeteries, parks, and other public facilities.

On page 311 It defines the land type Urban land as land so altered and obscured by urban works and structures that identification of soils is not feasible, It further states that "Soil boundaries should be extended into urban areas wherever it is possible to do so with reasonable accuracy, and the use of this miscellaneous land type Is restricted to the closely built-up parts of the cities.!'

It was agreed by the committee that the last part of this definition does not adequately cover the needs in areas of rapid suburban development where large areas have had diagnostic horizons destroyed yet the percentage of land covered by roofs, pavements, etc., is generally less than 25 percent even on 1/8 acre lots.

As used in the more recent correlations In the Northeast, the term "Urban land" when used in combination with a series name or made soil designation does not meet the criteria of the last lines of the definition on page 311 of the Manual.

It was recommended by the committee that the definition of Urban land be liberalized to help fit the conditions so prevalent in the Northeast.

<u>Committee Members</u>

Chairman: K. P. Wilson
Vice Chairman: Or. John E. Foss
Secretary: R. E. Danielt
A. J. Baur
H. R. Sinclair, Jr.
N. B. Pfeiffer
J. J. Noll
B. J, Patton (arrived after committee meeting)
S. J. Zayach
F. W. Cleveland
J. F. Tedrow (absent)
R. Googins
G. A. Quakenbush
G. J. Latshaw
F. G. Loughry

Samples of mapping unit descriptions involving certain miscellaneous land types and urban land complexes were submitted by committee members. Reproduction of these in amount of 150 copies is not considered desirable. If copies are desired for use by the National Committee, a supply of 15 copies each is available through the Northeast Conference chairman.

Discussion by conference members:

Marshall pointed out that the suggested term "Fill" conflicts with "Cut and fill land" now being used in correlations.

Baur indicated that a change to Made soils for earthy material was part of the suggestion.

Paschall stated that the Urban land definition in the manual could be interpreted two ways, depending on which sentence is used.

There was general discussion on (1) drawing boundaries across multilane, divided highways and into built-up areas versus (2) delineating these areas as some kind of "Made soils." Apparently 1 or 2 states delineate such highways, particularly interchanges (as large as 80 acres), Most states draw lines across these areas, letting the highway symbol and photo mosaic show users the situation. Someone stated that delineation of highways as cut and fill land tell one less than if lines were extended across. This was questioned in case of deep cuts and fills.

It was brought out more than once that heterogeneity of the areas of Made soils (cuts and fills) in the Northeast makes them difficult to classify other than in some miscellaneous land type. The name series - Urban land complex seems to be quite satisfactory for many areas.

Cleveland suggested that the term Made land be changed to Fill and that then Made soils with an appropriate modifier be used for earthy material. This would eliminate conflict between Made land and Made soil on the one hand and avoid conflict between "Fill" and "Cut and Fi 11 land" on the other.

The Report of the Committee was accepted by the conference.

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NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

January 15-18,1968

REPORT OF COMMITTEE CN HIGHER CATEGORIES AND SOIL ASSOCIATION MAP FOR NORTHEAST'

The committee mct on Monday afternoon, January 15, 1968.

Our committee concentrated efforts on topics suggested by the 1967 National Committee on Soil Interpretations at the Higher Categories of the Current Classification Scheme.

1. To explore interpretations for farm and nonfarm uses that could be made from maps at higher categories.

   This charge was carried through by the committee, The results are discussed in this committee report.

2. Examine existing general soil maps, both State and Regional, that could be adapted or modified for making interpret&ions for farm and nonfarm uses at the higher categories of the classification system,

   The following State General Soil Maps were discussed: Delaware, Maryland, New Jersey, New York, Pennsylvania, and West Virginia. The interpretations can be made by using phases of Great Groups for 311 the general soil maps except for West Virginia.

   Regional general soil maps were not discussed because of insufficient time.

   Dr. G. D. Smith acquainted the committee with the general soil maps that are now available or will be avialable in the next few months, The coverage of the general soil maps 'ranges from region31 for the United States to the whole world. The soil legends for some general soil maps are different than normally used in the United States.

3. Select a county where 3 detailed soil survey map and a general soil map are available and are part of 3 State or Regional map.

   The committee chose the published soil survey of Franklin County, Massachusetts. The County General Soil Map is port of the State General Soil Map. There isn't a recent Regional General Soil Map for the New England States.

   Some of the committee proposed combining soil associations 8 and 12 into one association.

3a. Describe the mapping units of the county general soil map in the nomenclature of tha current classification system and prepare 3 legend.

Legend for Franklin County, Massachusetts General Soil Map

1. HAPLORTHODS-FRAGIORTHODS: coarse-loamy, mixed, acid, frigid, shallow and deep, extremely rocky and extremely stony soils on moderately steep to very steep slopes.

2. HAPLORTHODS-FRAGIORTHODS: coarse-loamy, mixed, acid, frigid, slowly permeable, shallow and deep, extremely rocky and very stony and extremely stony soils mostly on gentlo to moderately steep slopes.

3. HAPLORTHODS-DYSTROCHREPTS: sandy and coarse-loamy over sandy, mixed, acid, mesic, rapidly permeable, nonstony soils mostly on level to gentle slopes on terraces and flood plains.

4. HAPLORTHODS-FRAGIORTHODS: coarsk-loamy; mixed, mainly nonacid, frigid, shallow and deep, extremely rocky and very stony and extremely stony soils on gentle to moderately steep slopes.

5. DYSTROCHREPTS-FRAGIORTHODS-HAPLORTHODS: loamy-skeletal or coarse-loamy, mixed, mesic, slowly and moderately permeable, shallow and deep, extremely rocky and very stony soils on gentle to very steep slopes,

6. HAPLORTHODS: coarse-loamy,, mixed, mesic, moderately permeable', shallow and deep, extremely rocky and extremely stony soils. mostly on gentle to moderately steep slopes.

7. UDIFLUVENTS-HAPLAQUEPTS: 'coarse-silty; nonacid, mesic nonstony soils on level or. nearly level flood plains.

8.&12. HAPLORTHODS:. sandy-skeletal or sandy, mixed, mesic, rapidly permeable, nonstony soils mostly on level to moderate slopes on terraces.

9. DYSTROCHREPTS-HAPLORTHODS: coarse-loamy, mixed, mesic, shallow and deep. The shallow and extremely rocky soils are on moderately steep to very steep slopes and the deep, nonstony to extremely stony soils are on gentle to moderately steep slopes.

10. HAPLORTHODS: coarse-silty or coarse-loamy, mixed, mosio, nonstony soils mostly tin level to gentle slopes on terraces,

11. HAPLORTHODS-FRAGIORTHODS: sandy, mixed, mesic, shallow and deep, extremely rocky and extremely stony and bouldery soils on gentle to very steep slopes.

3b. Examine this new legend and dotermine for each of the mapping units, the most useful categorical level, Suborder cr Great Group, for making both farm and nonfarm interpretations.

The committee feels the Great Group is the logical level., The Great Group level allows drawing a county general soil map at a scale sufficiently large enough to make significant farm and nonfarm interpretations. The committee suggests town and township interpretations be made at the Subgroup categorical level,

3c. After this judgement has been made, determine what additional words: e.g., from the nomenclature used at the family or phase level, would have to be added to tho Suborder or Great Group names in order to provide the information that would be required for making the interpretations.

The discussion centered on the Groat Group categorical level. The committee suggests using any family or phase nomenclature that is pertinent in helping to determine interpretations for the associations. Tha legend for Franklin County, Massachusetts General Soil Map, section 3a, uses some of the family and phase nomenclature in describing the associations.

The committee emphasizes that the phasos can include differentiae from any level of the taxonomic system as long as it is below tho categorical level used in naming the association on the general soil map.

3d. Prepare map using legend.

The map is in the Franklin County, Massachusetts Soil Survey,

3e. Consider what supporting tabular or text information would be requirod.

Four interpretations in tabular form are suggested by the committee (see table 1). They (farming, forestry, housing, and recreation) may need to be qualified as to the type and frequency of use. An explanation to the criteria used in determining the limitations would be helpful to the render. A definition or the meaning of the limitations (slight, moderate, and severe) is needed, A glossary of pedologic terminology would assist the reader who does not have a soil science vocabulary,

It is recommended that the committoe bo continued.

Committee Members:

Chairman - * N. K. Potorson
Vice-Chairman-B. J. Patton
I,. J. Cotnoir
* H. R. Sinclair, Jr.
* A. E. Shearin
* E, D. Matthews
* G. Quakenbush
* L. W. Kick
R. Googins
* S. J. Zayach
* A. H. Paschal1
* H. Porter
G. Potorson
R. L. Blevins

* Present at committee and report session.

Visitors:

G. D, Smith
R. L. Cunningham
B. G. Watson
R. A. Farrington

A brief discussion ensued following presentation of the report by Chairman N. K. Peterson.

E. D. Matthews:	The limitation given in table 1 is for the most severe use for that specific interpretation.
F. W. Cleveland:	The term recreation includes so many activities, a person should not try to make the interpretation.
S. J. Zayach:	The recreational interpretation is being made on a county general soil map.
H. R. Sinclair:.	In the text the typo or typos of recreational interpretations can be spelled out.
W. H. Lyford:	Define the word - farming.
Dr. G. D. Smith:	Farming - The active engagement in raising corn, soybeans, etc.
Dr. A. J. Baur:	Must lay ground rules and explain the method in preparing the interpretative materials and soil legends,
A. H. Paschall:	Preparing general soil maps at the Subgroup categorical level creates too much detail, As the scale becomes smaller, as with a county general soil map, the, categorical level used must be above the Subgroup level.'
G. Quakenbush:	The committee did not have time to find all the answers on how to do it but they did demonstrate general soil maps could be prepared and interpretated at higher categorical levels,
H. R. Sinclair:	Should a general soil map be prepared for the' Northeastern States?
Dr. G. D. Smith:	After seeing the general soil maps that are now available or will be available in the next few months, the committee can make a decision on preparing one for the Northeastern states.

Table 1. FARM and NONFARM INTERPRETATIONS for the FRANKLIN COUNTY, MASSACHUSETTS GENERAL SOIL MAP

Soil Association	Farming	Forestry	Houses	Recreation
1	Severe, stony, rocky, slope	Severe, stony rocky, slope	Severe, slope, rocky, stony	Moderate-Severe, slope, stony, rocky
2	Severe, rocky, stony	Moderate, rocky, stony	Severe permeability, rocky, stony	Moderate; Severe where rocky, stony
3	Slight	Moderate, low moisture capacity	Slight: Severe where flooded	Slight
4	Severe, rocky, stony	Slight; moderate where rocky	Severe, rocky	Moderate; Severe where rocky
5	Severe, rocky, stony	Severe, rocky, low moisture capacity	Severe, rocky	Moderate; Severe where rocky
6	Severe, rocky, stony	Slight: Moderate where shallow	Moderate: Severe where shallow	Moderate, rocky, stony
7	Slight: Moderate where wet	Slight: Moderate where wet	Severe flooding	Slight: Moderate where wet
8 & 12	Moderate to Severe low moisture capacity	Moderate to Severe low moisture capacity	Slight	Moderate, low moisture capacity
9	Severe, slope, rocky, stony	Severe, rocky, low moisture capacity	Severe, rocky, slope	Moderate to Severe, slope, stony, rocky
10	Slight	Slight	Slight to Moderate permeability, wetness	Slight
11	Severe, rocky, stony	Moderate to Severe, low moisture capacity, rocky	Severe, slope, rocky	Moderate to Severe, slope, rocky

NATIONAL COOPERATIVE SOIL SURVEY
NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

February 15 - 18, 1968

REPORT OF COMMITTEE ON ENGINEERING APPLICATION AND INTERPRETATIONS OF SOIL SURVEYS

Objectives

The committee on engineering application and interpretations of soil surveys had the following objectives:

1. Review replies to questionnaire submitted by R. L. Marshall, Chairman, to State Soil Scientists in the Northeast. The questionnaire posed three questions as follows:

   a. Should the committee recommend that nonfarm uses such as camp sites, athletic fields, play and picnic areas, lawns, landscaping, golf, sanitary landfill, cemeteries, etc., be added to the present Guide for Interpreting Engineering Uses of Soils?

   b. Should the committee recommend columns 15 and 16 be deleted from table 7 of this guide and, a new table be added to list soil limitations for sewage disposal along with uses such as camp sites, athletic fields, etc.?

   c. Should the committee recommend that the engineering application section in soil survey reports be expanded to include the nonfarm use section to help eliminate any duplication on contradictory statements in, these: sections?

2. Make recommendations for improving and expanding guidelines to soil scientists for the purpose of making soil interpretations.

3. Consider different formats of tables for presenting the interpretations.

Discussion

Replies to the questionnaire mentioned in objectives 1 were reviewed. All states gave an affirmative response to questions a and b. In answer to question c most states reported that interpretations for community development and recreation should be presented in a separate section of the published soil. survey if these interpretations are important in the county.

In considering the expansion of the Guide for Interpreting Engineering Uses of Soils, the committee felt that an additional table (table 8) should be made a part of the guide. An appropriate title would be "Estimated Degree of Soil Limitations for Community Development and Recreational Use". The table would show the degree of soil limitation and factors causing the limitation for the following items:

1. Septic tank filter fields (currently in table '7 would be moved to table 8 in order to conform to type of use and rating)

2. Sewage lagoons (currently in table 7 would be moved to table 8 in order to conform to type of use and rating)

3. Low building

   a. With basements
   b. Without basements

4. Camp sites

   a. Tents
   b. Trailers

5. Parking lots and streets in subdivisions

6. Athletic fields and intensive play areas

7. Picnic areas

8. Paths and trails

9. Lawns, landscaping, and golf fairways

10. Sanitary land fill

    a. Trench method
    b. Side-hill method

11. Cemeteries.

Criteria for making these interpretations should be developed nationally and added to the text of the guide. In relation to developing criteria for these interpretations, it was suggested that the criteria developed by Montgomery and Edminster (as published in Soil Surveys and Land Use Planning) be given nation-wide trial during the next two years. At the same time criteria developed and utilized in the Northeast should be tested.

The committee discussed the preparation of a soils interpretation handbook which would contain in loose leaf form criteria for developing all soil interpretations. It would contain criteria needed to develop capability classification, woodland or rangeland, wildlife, engineering, community development and recreational uses and other uses required for soil survey reports.

This would enable a soil scientist to have all interpretation specifications in one volume to facilitate his work. By having the material in loose leaf form, the material could be revised as the need arose. The committee recommends that this proposal be given consideration by the national committee.

The committee also discussed the format for a state-wide handbook of soil interpretations as mentioned in Advisory Soils 17 dated December 15, 1967. Attached is a modification of the format proposed by New York. The committee felt that this modification designed for a one-sheet (2 pages) format has value but that some leeway should be given to fit the conditions of the state or other area of consideration.

Summary

The committee makes the following recommendations:

1. Expand the "Guide for Interpreting Engineering Uses of Soils" to include criteria and a table showing Estimated Degree of Limitations for Community Development and Recreational Use.

2. Develop and test criteria (including those of Montgomery and Edminstcr) during the next two years.

3. Develop a Soils Interpretation Handbook to contain in loose leaf form criteria for all soil interpretations. If this is approved, items 1 and 2 above would be a part of this handbook.

4. That the committee be continued.

Committee Members

R. L. Marshall, Chairman
F. W. Cleveland, Vice-Chairman
R. S. Bell
R. A. Farrington
D. E. Hill
R. A. Struchtemeyer
F. G. Loughry
J. Elder, Jr.
E. Ciolkosz
Bruce Watson
W. J. Steputis

Attachment

Interpretation of Soil Surveys for Selected Uses

INTERPRETATIONS OF SOIL SURVEYS FOR SELECTED USES

NY-187 (2-68)
SCS Syracuse, N.Y.

MAP SYMBOLS: _____
SOIL SERIES: _____
SOIL TYPES:

AREA: _____
DATE: _____
ADVANCE COPY-SUBJECT TO CHANGE

DESCRIPTION OF SOIL

SUITABILITY OF SOIL AS RESOURCE MATERIAL

RESOURCE MATERIAL	SUITABILITY
TOPSOIL	
SAND	
GRAVEL	
BORROW FOR FILL	

SOIL FEATURES AFFECTING SPECIFIED ENGINEERING USES

USE	SOIL FEATURES
POND RESERVOIR AREA	
POND EMBANKMENT	
AGRICULTURAL DRAINAGE	
IRRIGATION	
DIVERSIONS	
GRASSED WATERWAYS	
HIGHWAY LOCATION	
EMBANKMENT FOUNDATION	
BUILDING FOUNDATION	
PIPELINE CONST. AND MAINTENANCE	

SOME ESTIMATED PHYSICAL AND CHEMICAL PROPERTIES

DEPTH TO SEASONAL WATER TABLE	DEPTH FROM SURFACE TYPICAL PROFILE	ENGINEERING CLASSIFICATION		PERCENTAGE PASSING SIEVE		
		UNIFIED	AASHO	NO. 4 4.7 MM	NO. 10 2.0 MM	NO. 200 0.074 MM

DEPTH TO BEDROCK	DEPTH FROM SURFACE TYPICAL PROFILE	USDA TEXTURE	PERMEABILITY IN./HR.	AVAILABLE WATER CAPACITY IN./IN.	REACTION PH VALUE

USDA SOIL CONSERVATION SERVICE IN COOPERATION WITH CORNELL AGRICULTURAL EXPERIMENT STATION

NATIONAL COOPERATIVE SOIL SURVEY

DEGREE AND KIND OF LIMITATION AFFECTING SPECIFIED USES

USE		DEGREE AND KIND OF LIMITATION 1/
SEPTIC TANK FILTER FIELDS		
HOMESITES OR SMALL BLDG. LOCATIONS	with BASE	
	without BASE	
SANITARY LANDFILL AND CEMETERIES		
STREETS AND PARKING LOTS		
CAMP SITES	Tent	
	Trailer	
PLAY AND PICNIC AREAS		
ATHLETIC FIELDS		
LAWNS, LANDSCAPING AND GOLF FAIRWAYS		
FIELD OR ORCHARD CROPS		
TRUCK CROPS		

SUITABILITY OF SOIL FOR WOODLAND AND WILDLIFE USES

WOODLAND; PRODUCTION	
SPECIES TO PLANT	

WILDLIFE	SOIL	HABITAT ELEMENTS								CLASSES OF WILDLIFE		
Land	Slope	Grain	Grass	Herbs	Hdwd	Conif.	Wet Pl	Marsh	Ex Imp	Openld.	Woodld.	Wetld.

1/ THE SOIL IS EVALUATED ONLY TO A DEPTH OF 5 FEET OR LESS. SOILS ARE RATED ON THE BASIS OF THREE CLASSES OF SOIL LIMITATIONS; SLIGHT - RELATIVELY FREE OF LIMITATIONS OR LIMITATIONS ARE EASILY OVERCOME; MODERATE - LIMITATIONS NEED TO BE RECOGNIZED, BUT CAN BE OVERCOME WITH GOOD MANAGEMENT AND CAREFUL DESIGN; SEVERE - LIMITATIONS ARE SEVERE ENOUGH TO MAKE USE QUESTIONABLE.

National Cooperative Soil Survey

Northeast Soil Survey Work-Planning Conference

1 9 6 8

Report of Committee on Family Criteria end Testing Families

In response to a request from the National Committee to investigate suggested changes in mineralogy this regional committee was activated.

The charges were to consider the effects of (a) increasing the control section, (b) employing a split control section, and (c) for some soils using both clay end non-clay mineralogy. The detailed charges are as follows:

> "Control section to extend from the top of the first mineral horizon to a lithic contact or to one meter, whichever is shallower, except for soils having argillic, natric, or oxic horizons, the midpoint for which occurs below one meter. For these letter soils, the bottom of the control section is either the base of the above diagnostic horizons or two meters whichever is shallower."
>
> The Control section shall be divided et 25 cm except for lithic subgroups; and at one meter for soils with control sections over one meter thick.'!
>
> Use mineralogy of the clay fraction partially to determine placement for soils with, one-fourth or more of the control section having over (5?,18?) percent clay. Clay mineralogy to be indicated individually for the parts of the control section if differences are contrasting. If clay mineralogy is not contrasting, then one term based on average properties of the control section is used to describe the clay mineralogy. Mineralogy of the noncley to be determined on the average properties of the control section."

Work sheets for selected series were filled in by the members prior to the meeting. The following guidelines were suggested for the initial collection of data (a) if family is sandy or sandy skeletal also consider clay mineralogy for those horizons having more then 5% clay, (b) if family textures are coarse silty or coarse loamy (< 18% clay) use only non-clay mineralogy. (c) if, family textures are fine loamy or fine silty (18-35% clay) consider both the non-clay end clay mineralogy, end (d) if family textures are fine or very fine consider

the effect of not using clay mineralogy for horizons having less than 35% clay.

It was not possible to summarize the data on the 57 pedons before the meeting, so the informationwas circulated to members later and served as a basis for the following comments and recommendations:

Utility of Mineralogy

The committee discussed the utility of mineralogy classes at the family level. The concensus was that clay mineralogy is an important seat of exchange phenonema and is also fairly well correlated with other soil properties of interest. It was pointed out that initially family criteria were selected to reflect physical properties rather than chemical properties as the current emphasis appears to be. The majority believe that much more attention should be given to increasing the available data of both non-clay and clay mineralogy. It was noted, however, that organic matter also probably deserves more attention than at present.

Methodology and guidelines

It was the general opinion that recommending procedures and names for mineralogy classes is not a function of this committee. Such a responsibility rests with the soil mineralogists and we urge them to explore various ways of making mineralogy more meaningful. It seems that some guidelines or explanations concerning the amount of acceptable variations due to identification techniques as well as range of variability commonly exhibited among pedons of the same polypedon, and among polypedons of, the same series would enable us to make better value judgements. There was some concern that by sample treatment and cleaning we are losing sight of some very important features of the "real" soil environment.

Most of the committee thought that the present mineralogy classes seem adequate for grouping soils, however, there were some reservations about the "lumping- together" of dissimilar pedons in the mixed clay mineralogy class. It was noted that many of the classes have an accuracy of identification far beyond simple field determinations but probably provide broad enough groupings for the methods currently used in most laboratories.

Current nonclay mineralogy

In those families where non-clay mineralogy is diagnostic; an expansion of the control section to 0 to 100 cm did not result in any changes except for those soils with arenic or drenic-like epipedons. In the latter cases the mineralogy was believed to be contrasting, e. g. siliceous over mixed, Our suppprting data on non-clay mineralogy is meager, however, it was the opinion of those supplying information that a split control section, 0 to 25 cm and 25 to 100 cm, seldom altered the non-clay mineralogy class except for those soils having arenic horizons.

We did not have enough samples of pedons having thin diagnostic sections to observe the effect of increasing and/or splitting a control section. It is felt that a further testing of Fragiochrepts, Fragiudalfs, and Fragiudults would be desirable.

Current Clay Mineralogy

In clayey or fine families the expansion of the control section to 0 to 1.00 cm changed the class of I. out of 8 pedons,,, primarily in the Ultisols. This is supported by additional data from Pennsylvania which indicates a potential, shift of about 14% of the soils, which have more than 18% clay in the control section although these are not all in the clayey family. The committee recommends that the control section not be expanded to 0 to 100 cm and no subdivision of the control section be made in fine or clayey families until such time as further review merits such a change.

Supplemental use of Clay Mineralogy

Most of our testing was made for soils classified on the basis of no"-clay mineralogy in the mixed class. These soils are primarily Alfisols and Ultisols with 18-35% clay in the current control section (argillic horizon). Of the Alfisols 11 pedons were fine loamy and 7 were fine silty; of the Ultisols 11 pedons were fine loamy and 3 were fine silty. (a) 0 to 100 cm control section. By using clay mineralogy of the 0 to 100 cm the Alfisols separated into 7 mixed, 6 illitic, 3 kaolinitic, and 2 kaolintic over illitic; in similar manner, the Ultisols separated into 12 mixed and 2 kaolinitic. (b) 0 to 25 cm portion. We found it very difficult to apply the restrictive charge of considering clay mineralogy when only one-fourth or more of the section has more than a specified clay content, consequently we ignored the percent of section. If we considered the clay mineralogy of the 0 to 25 cm portion the Alfisols subdivide into 13 mixed, 2 illitic, and 3 kaolinitic whereas, the Ultisols divide into 12 mixed and 2 kaolinitic. Five of the 18 Alfisols have contrasting clay mineralogy in the 0 to 100 cm control section but none of the Ultisols were contrasting.

(c) within one family, Baur and Paschal1 summarized the clay mineralogy for 8 series in the fine loamy, mixed, mesic Typic Hapludults which includes 39 series. On the basis of available data from 18 pedons there were three subdivisions of this family using clay mineralogy of the 0 to 100 cm control sect-ion: mixed, illitic, and kaolinitic. Only 3 of the 18 profiles have contrasting mineralogy when splitting the section into 0 to 25 and 25 to 100 cm segments.

(d) Conclusion. A majority of the committee felt that the clay mineralogy in the 0 to 25 cm portion is probably important, however, we were unable to agree whether it should (a) always be given, (b) used only when a soil has specified range of clay content, (c) should only be averaged in a 0 to 100 cm control section, or (d) other alternatives such as using as additions1 series information.

Although clay mineralogy may be useful supplement to the "on

clay mineralogy classes in the fine loamy and fine silty textured families we feel that further evaluation, primarily within families, should be made before a national or even a regional policy is adopted.

Mineralogy in Sandy Families

For sandy textured families in the Northeast the nonclay mineralogy is not particularly meaningful for interpretation as the main choice is between mixed and siliceous. It appears that the clay mineralogy is at least, if not more, informative than the nonclay mineralogy. The committee believes that additional evaluation should be made of using clay rather than nonclay mineralogy in sandy families.

Summary

In many instances we noted a name change for a whole family, whereas in some cases each change of criteria will subdivide the family into several segments. We have, therefore, a mechanism that could prove useful for changing group names to be more connotative or useful, or for subdividing other groups if and when such changes are thought to be desirable. Just because we can observe and measure a property does not automatically justify its use at a given categorical level. We encourage our soil mineralogists to help us understand and interpret the significance of mineralogical findings.

We recommend caution in implementing changes in the mineralogy criteria and classes. We found no compelling reasons to justify changes of the control section, and conversely, we found no compelling reasons other than precedence to retain the present control sections. We note that in those soils where nonclay is diagnostic that the use of clay mineralogy appears to be a good supplement or even a substitute for the nonclay mineralogy. If clay mineralogy is used in conjunction with the nonclay as a family criteria we would recommend that the reference to absolute amount of clay and proportion of control section having same, be dropped.

Overall we recommend that no changes be made at present and that the reasoning for suggested changes be clearly stated. Most of us are somewhat disturbed by our knowledge of mineralogy and our lack of data in some cases, yet we are more uncertain as to the illness and remedy of mineralogy as a family criteria.

We support the concept of a mineralogy committee and/or project in the Northeast and recognize the need to continue data collection of both clay and nonclay mineralogy.

We recommend that more mineralogists be assigned to the committee and that the committee be continued in view of the many unresolved questions concerning soil mineralogy.

Committee Members:			Guests:
R. W. Arnold, Chr.	G. J. Latshaw	*J. C. F. Tedrow	R. L. Cunningham
J. J. Noll, V-Chr.	W. H. Lyford	J. W. Warner Jr.	C. Engle
A. J. Baur	M. Markley	M. E. Weeks	L. Johnson
R. E. Daniel1	R. P. Matelski	E. P. Wilson	G. Peterson
D. S. Fanning	*S. Pilgrim		N. B. Peiffer
J. E. Foss	*G. G. Pohlman		G. D. Smith

*Not Present

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

February 15-113, 1968

REPORT OF COMMITTEE ON LABORATORY STUDIES AND PRIORITIES

The Committee on Laboratory Studies and Priorities is a temporary working committee. Assignment of this committee is an outgrowth of the report of the audit of the Soil Survey Laboratories by the Inspector General that included the recommendation that procedures be developed for planning, programing and budgeting laboratory work. There is a need to determine long-range and annual estimates of laboratory work required to support soil classification and interpretations. Committee work at this time is mainly to search the subject and formulate objectives for future committee work.

Things the committee can do are:

1. List problems requiring special laboratory study.

2. List specific laboratory projects and determine priorities.

3. Determine annual work load on projects and procedures for planning and programing laboratory work.

4. Develop procedures for coordinating research work of the SCS laboratory with research of other agencies.

5. Recommend methods for improved publication and distribution of research findings.

6. Establish priorities for studies of benchmark soils by states.

Committee members, state soil scientists and others were asked to list special laboratory studies which would help solve problems of classification and interpretation. Some of the suggested projects are part laboratory-part field studies or may be primarily field studies. Some suggested research projects are listed below:

1. Determination of mineralogy of the non-clay fraction of soils,

2. Studies related to unstable soils.

3. Separating Entic Raplorthods from Typic Raplorthods.

4. Characterization of Ochreptic Fragiudalfs and Aqueptic Fragiudalfs.

5. Laboratory and field investigation to determine limits usable in the field for designating fragipans. What features should be present (bulk density, structure, consistence, permeability, etc.) and what are the ranges in these properties? What effect do these properties have on plant growth and water movement over the entire year?

6. Study of paleosols in the northeast.

7. Study of the relationship between amounts of coarse fragments and moisture holding capacity.

8. Significance of contrasting textures occurring within five foot section for nonfarm interpretations.

9. Study of soils developed in glauconitic material.

10. Laboratory studies and companion field studies to determine the percent base saturation under normal farming operations as compared with base saturation of undisturbed soils.

11. Study of relationship of mottling, reduced colors and other features used to determine natural drainage classes, and their relationship to fluctuating water tables and plant development.

12. Effect of sewage effluent on soil characteristics.

13. Relating particle size distribution and exchange capacity.

14. Identification of cambic horizons.

15. Improved criteria for recognizing argillic horizons.

16. A study of the comparison of percolation rates determined by the Uhland Laboratory method and auger hole field method.

17. Study of clay mineralogy and organic carbon.

18. High priority on characterization of benchmark soils.

19. Identification of loess deposits and their significance on the Allegheny Plateau.

20. Weatherable minerals in paleudults.

21. Available Moisture -- Most available moisture estimations are now made using one-third atmosphere of tension on soil clods or cores. Much of the work that established the figure of one-third atmosphere was done many years ago on crushed samples and on soils with no coarse fragments. It has been shown that one-third atmosphere is too high a tension to use for very sandy soils. Correlations between direct measurements of field capacity and present methods of laboratory estimation need to be made--particularly on soils with coarse fragments. This would involve a good many tests to cover the range of textures and coarse fragment content and would require considerable logistic effort hauling water to sites, etc.

22. Fine clay determination -- Reliable detection of argillic horisons poses many problems, Stratification of parent material, heavy texture in the C horizon, difficulty in detecting clay coats and other problems often leave the classification of a soil uncertain. Known argillic horizons have been shown to have more fine clay (0.24) than accompanying eluvial horizons or C horizons. Routine determination of fine clay would test the universality of this and probably would help settle questions about soil classification. It may be possible to adopt a density gradient method (A. H. Beavers, Univ. of Illinois) with centrifugation to the conventional particle size analysis and get the desired information without prohibitive increase in work load.

23. Organic Carbon -- Organic Matter Conversion Factor -- Organic matter is usually assumed to contain 58 percent carbon. Most investigations, including preliminary work in Pennsylvania, seem to indicate that on the average It is closer to 50 percent for surface soils. Direct determinations of organic matter should be made on pilot soil samples in the various soil regions to see if the conversion factors being used are correct, For organic samples, above 10 percent carbon, ignition is usually satisfactory for direct determination of organic matter. For more usually, low-organic samples, however, it is very difficult to determine organic matter directly.

The conference was divided into four groups having common problems for consideration of interstate research projects. The groups were:

1. New York - New England
2. New York - Pennsylvania
3. Piedmont - Coastal Plain
4. Allegheny Plateau - Ridge and Valley

Each group examined the list of submitted projects and prepared a report, evaluating each and giving priority to several. For those given priority, estimates of the numbers of profiles required for study were then made. From these reports, the Principal Correlator compiled a list of interstate projects (TSC Advisory SOILS-LID-l, l-29-68). Each state is expected to incorporate its portion of laboratory work into the ten-year plan for laboratory investigations. Each state is expected to prepare a reply to Washington Advisory SOILS-16 dated 11-21-67. When answering this memorandum the states should include their portion of interstate projects compiled by the Principal Correlator. In addition, each state may want to add one or more special problems and list its benchmark soils for characterization.

Committee Members:

John J. Noll, Chairman
A. J. Baur
D. E. Hill
J. E. Foss
B. J. Patton

NATIONAL COOPERATIVE SOIL SURVEY
NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE
January 15-18, 1968,

Soil Classification Questions and Problems,
Dr. Guy Smith, Discussion leader

Status of new classification system:

Expected to go to printer this calendar year. It will be at least 18 months before printed copies are available. Will be in two volumes.

1. Outline of system, like "Brown Book",
2. Outline of taxa with placement of series.

The second volume will probably be in spiral binder so it can be kept up' to date-i The list of family groups will include all series in the United States.

The Northeast has completed placement of series'.

Dr. Baur's office will issue an interim placement of Northeast series.

Several months prior. to the conference the State Soil Scientists were polled for problems encountered during the recent placement'of series in the various families and for questions on any part of the. new classification scheme that was not understood by 'them. The questions are herein briefly stated followed by Dr. Smith's answers.

Discussion of Questions on System

The following notes are keyed to the list of problems distributed at the conference,

Q. 1. Where contrasting family texture classes are within control sections, what is minimum thickness before. they are recognized?

Smith - Referred to Soils Memo-66. No exact number can be given.,

Uae principle of reliability of observations.

Example No. 1 - Loamy fine sand over coarse silty at 26" would be contrasting, sandy over loamy,

Example No. 2 1/	Example No. 3 2/	Example No. 4 3/
O-8 fsl	O-9 fsl	0-3-vfsl
8-10 sil	9-13 light sil	3-1.0 vfsl
10-22 clay	13-30 clay	10-40 vfs
22-45 clay	30-40 sandy loam	

1/ This example has no strongly 'contrasting particle size classes.

2/ This actually has two strongly contrasting boundaries, but the suggested classification is clayey over loamy, ignoring the 9-13 inch horizon, for texture classification.

3/ This example lacks strongly contrasting textures,

On page 38, definition of "sandy", the text should read: "sands and loamy sands exclusive of very fine sand and loamy very fine sands."

Very fine sand needs to be added to "coarse-loamy", following "silt loam".

Q. 2. Need for recognizing a parelithic contact between 20 and 40 inches - which defines moderately deep soils.

A. This is not presently a family criteria. It is a series and family phase criteria.

Q. 3. Differentfae for degrees of wetness. The criteria do not always result in classification which corresponds with observed degrees of wetness. Some of wettest soils are classed as aerfc and some imperfectly drained soils fall in wettest groups.

Dr. Smith made the following points:

1. Mottling is not an infellable criteria for degree of wetness.
2. There ere defects in definitions but we do not yet know the cure.
3. Use phases of drainage classes 'for interpretation.

The same kinds of problems exist in the distinction between aquic and typic groups.

On page 94, Typic Haplaquepts, a(l) should have the addition: "and the organic matter decreases regulerly with depth".

The needed parallel change for a(2) has been sent to the Northeastern states in TSC Advisory UD-Soils 17, November 27, 1967.

Q. 4. Paschal1 - What is texture control section for alfic or aqualfic haplorthods?

Is it 10 to 40 inches without regard to underlying argillic horizon?

Description of Briggs Series was used as example.

The answer is yes.

Page 38, b-2 is applicable for the Briggs Series example.

Q. 5. When is fine and very fine used as against clayey?

A. Clayey. classes are. presently used in Ultisols and Oxisols (see p. 41'of '67 Supplement). Similarly, they are used in families of lithic, arenic and grossarenic subgroups in the other orders, and in shallow families in the other orders. Otherwise, we use the fine and very fins particle size classes.

Q. 6. Aqualf - Item (a) (p 160) requires dominant chromas of 2 or less on surface of peds accompanied by mottles within peds, *etc.*

Q. Does this apply to the whole argillic horizon regardless of thickness.

A. Domfnant chromas on pel faces refers to the &tire argillic horizon. If most of the ped faces in more than half of the argillic horizon have low chromas we would have more low than "high" chromas and the low chromas would be dominant. Note that we did not say 'dominant throughout all parts of the argillic horizon'.

Q. 7. (p 169) Typic Fragiudalfs. The question here concerned the inclusion of the fragipan with the argillic. The answer resulted in a revision of the definition and 'the deletion of certain items under Typic Fragiudalfs and Typic Fragiudults. These revisions are not included in this report as it is planned to make official distribution of the changes from the Principal Correlator's office before this report is circulate;.

Q. 8,9. Questions relative to wording of definitions of Ultisols and Aquults.

8. Page 184 Ultisols, parts a and b - the following b(1) should be added.. "or that underlies" an argillic horizon and - - .

9 . P 184 Aquults -- Third line - remove word "<u>has</u>".

Q. 10. Importance of clay films in C horieons.

A. Such clay skins are evidence of clay movement. Present definitions of argillic horizon does not require clay skins in B horizon, but does require evidence of clay accumulation somewhere in profile. But clay skin6 alone may not be adequate evidence of an argillic horizon.

Q. 11. . Sassafrass profile.

A. It has an argillic horizon. The texture family is barely fine-loamy.

Q. 12. Proper use of Thapto subgroups.

A. Most Thapto subgroups have been dropped. Would not class Chillum as Thapto.

Q. 13. Question on recognition of paleosols. Aura series use:' as example. Palsudults?

A. Data on weatherable minerals excludes this profile from Paleudults. Mineralogy on non-clay fraction might change classification. Mineralogy is key to classification as Paleosol.

Q. 14. Proposal suggested to intergrade between texture families,

A. No. Extremes in textura may be a taxajunct or, if big enough, end important enough, two series.

Q. 15. Page 92 Aquepts - item 2 (1) .at depths of less than 50 cm.

a. Does above mean that there can be an intervening horizon between epipedon an3 50 cm that does not meet requirements of wetness. Revisions for Northeast have been distributed.

A. 'Yes.

b. Does it imply that if an umbric or histic epipedon is 50 cm thick there can be no cambic.

A. No - but doesn't matter.

c. Does a cambic (wetness) have to (1) immediately underly an umbic, hfstic or ochric or be at the surface to be an Aquept.

A. No - except if umbric is greater than 50 cm - then yes.

d. Should a soil with a cambic horizon (not due to wetness) at a depth of 10-15" overlying a gleyed horizon at a depth of 15-20" be classified as Pqupets or an Aquic aubgroup of Ochrepts?

A. Aquepts, but probably in an aeric subgroup.

Q. 16. Page 98 - Ochrepts Item 4.

A. Delete reference to hues too red.

Q. 17. Page 92 - March Supp. Aquepts - Item 2 ."are saturated at some period of the year," Most soils in the Northeast, Including well drained soils, are saturated with water at sometime during the year. With this knowledge how ehould the above statement relative to Aqupets be interpreted2

A. Temperature must be above 41° F (Biological zero). If saturated when below 41° F aaturation is not to be conridered.

See page 37 March Supp. for statement regarding maturated soils during cold periods.

Q. 18. Question on semantics of mineralogy vs. mineral classes.

A. Mineralogy is preferred.

Q. 19. Page 40 vf sands are treated as silt for family groupings. Does this apply only to fine loamy, fine silty, loose loamy, and coarse silty.

A. vfa treated as loamy material,

Page 41 - 1st para. "Note that sandy includes fine as well as coarser sands. Doesn't sandy also include vfs.

A. Same as above.

Q. 20. Page 23 - Spodic horizon. Definition does not account for albic horizons less than 18 cm thick. Definition revised as follows:

A. (Page 23) March supp. - Summary of the limits of the spodic horizon - Item 2. Change to read as follows: If an 0 or an Ap or an Al rests on the spodic horizon or on an albic horizon thinner than 18 cm (7 inches), the spodic horizon has the requirements of (1) above and in addition has (a) Either (1) a PH (parts per H_2O) of less than 5.0 and a pH in KCL in some part that is at least 0.5 pH units lower than in H_2O or (2) a 15 bar water content less than 20% and (b) enough depth that -- (continue as in c in Supp.)

Q. 21. Organic carbon page 47, 7th approx.; page 23, March supp. Contradict each other.
Is 0.297. OC still in effect?

A. Requirements on p 23 - March 1967 supp. is to be used.

Q. 22. New Hampshire - Progress on Histosols - Not yeat complete but expect a review edition in near future,

Conference adjourned 9:00 p.m.

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

January 15-18, 1968

DIGITAL COMPUTERS AND THEIR APPLICATION TO SOIL SURVEY

Dr. L. J. Mathers, Assistant Professor,
Villanova University

Dr. Mather outlined the capabilities and limitations of computers. He recommended an article in the October, 1967 issue of Playboy Magazine for a non-technical explanation of the digital computer. A common application of a digital computer is the telephone system with the dial being a simple console, Railroads use computers to keep track of cars, and airlines use them to keep track of reservations and ticket sales. Scientific application is largely as a means of data storage and information retrieval. Chemistry and medicine have led in this use of digital computers.

The principal limitation of a computer is that it cannot think, and its product is only as good as the data it receives and the programming for handling these data. The digital computer is a counting machine using addition, subtraction, multiplication, and division as basic processes applied to discrete units. A mechanical illustration is the desk calculator, The more sophisticated equipment uses electronic impulses and thereby gains in speed and range. The analog computer has the capability of dealing with continuous functions.

The computer uses machine language. Several special procedural languages are simplified combinations of English and machine language to bridge between groups of users and the computer in setting up detailed instructions, called a program, for a computation or the retreival of certain data,

Computers can store, sort, and report soil data, The field is open for application of the computer to processing soils data, to make them more accessible and useful,

With the help of statisticians and computers the validity of soil data can be tested and similarities and differences measured.

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

January 15-18, 1968

Moisture Retention5 of Pennsylvania Soil5 as Related to Texture and Series

Gary W. Petersen

Approximately 1,300 samples from 27 counties were studied with the aid of a computer to obtain a better understanding of the moisture characteristics of Pennsylvania soils.

Available water (W_A) was determined by subtracting moisture retained in the less than 2mm sieved soil material equilibrated at 15 atmospheres of tension (W_{15}) from the moisture retained in 'undisturbed cores' equilibrated at 1/3 atmospheres of tension ($W_{1/3}$).

W_A was lowest in the coarser textured soils, increased to a maximum in the medium texture5 and decreased in the finer textures (Table 1). WA was highest in the silt and silt loam textural classes and decreased in any direction from this corner of the textural triangle. Correlation studies also indicated that W_A increased as silt content increased.

Coarse fragments are also Of great importance in controlling WA and their presence should be accounted for when calculating WA. This can be accomplished by correcting $W_{1/3}$ for fragment5 within the core and thereby determining WA on a less than 2mm basis, This value of W_A can then be corrected for fragments within the sample as follows:

$$\frac{(W_{1/3} - W_{15}) \quad (\% < 2\text{mm material})}{100} = \text{WA (percent by weight corrected for fragments)}$$

This weight percentage can be multiplied by the bulk density to convert W_A to a volume basis.

Additions of organic matter to coarser textured soils usually increases WA. This does not appear to be true for Pennsylvania's silt loam5 as increases in organic carbon did not appreciably change W_A, which may indicate that the addition of organic matter to texture5 finer than silt loams may not increase WA.

WA was also determined on over 400 Pennsylvania soil profiles and the cm of WA per cm of soil averaged for each series (Table 2). These profiles were subdivided into the following soil parent material groups: glacial-fluvial, alluvial, loessial, limestone, sandstone, shale and till. W_A was averaged for A, B and C horizons for each parent material group with the relative amounts of WA within each horizon as follows:

A horieons

Sandstone < Glacial = Fluvial < Shale < Limestone < Alluvial < Till < Loessial

Moisture Retentions of Pennsylvania Soils-2

B horizons

Sandstone <Glacial = Fluvial < Shale < Till <Alluvial <Limestone < Loessial

C horizons

Glacial = Fluvial < Shale <Sandstone < Till < Alluvial < Limestone < Loessial

For all groups, except those soils developed from limestone and loess, WA decreased in going from the A to the B to the C horizons.

Cumulative WA with depth was also calculated resulting in the following relative order for the parent material groups:

Glacial = Fluvial < Sandstone < Shale < Till < Limestone < Alluvial < Loessial

This same group of soil profiles were also subdivided *into* their respective drainage classes. Within each drainage class WA, was highest in the A less in the B and lowest in the C horizons. Cm a cumulative basis, WA increases as follows:

Well < Somewhat poorly < Moderately Well < Very Poorly < Poorly

TABLE 1 - Moisture Retentions of Textural Classee Within the USDA Textural Classification and for Family Grouping Within the New Classification System.

Textural Class	$W_{1/3}$	W_{15}	WA
	----------% by vol----------		
Textural Classes Within USDA Textural Classification			
Sand	6.8	2.8	4.0
Loamy sand	11.3	3.8	7.5
Sandy loam	22.0	8.9	13.1
Loam	26.0	14.6	13.4
Silt loam	32.3	14.4	17.9
Silt	30.8	9.1	21.1
Sandy clay loam	27.2	16.6	10.4
Clay loam	32.7	21.2	11.5
Silty clay loam	35.2	20.7	14.5
Silty clay	38.9	26.8	12.1
Clay	40.2	29.2	11.0
Textural Classes for Family Grouping Within the New Classification System			
Sandy	10.6	3.4	7.2
Coarse loamy	26.2	10.9	15.3
Fine loamy	31.1	17.3	13.8
Coarse silty	33.9	11.9	22.0
Fine silty	34.9	17.5	17.4
Fine clayey	37.4	25.2	12.2
Very fine clayey	42.3	31.0	11.3

NORTHEAST COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

January 15-18,1968

Program for Completing a Soil Survey in an Area of Rapid Suburban Expansion

J. W. Warner, Jr.

The following is a résumé of the presentation at the meeting.

Suffolk County, New York is located on the eastern end of Long Island. The large areas of housing developments are located, primarily, in the western part of the county. With a large area under concrete and roof tops, it became apparent that a normal mapping legend and mapping techniques would be inadequate for our needs.

Because of the ease of reshaping and remolding the landscape, it became necessary to add mapping units to the legend, especially for the purpose of mapping the housing developments.

A person may be inclined to ask: "Why map these areas at all; the damage is done and the houses built." There are two main reasons for mapping into the urbanized areas. The large areas of urban expansion have made it desirable to provide soils information to home owners in the suburban developments. Extension agents, landscape architects, lawn and garden maintenance companies, etc. could use the information for seeding, lawn irrigation, and fertilizer recommendations as well as selections for varieties for tolerance to different soil conditions. The other reason is minor; however, it has a bearing. There would be large vacant areas in the soil maps and there would always be the ever present problem of where to make the cut off between mappable and unmappable areas.

There are numerous requests from individual homeowners asking for assistance or advice on lawn and shrub plantings, bank stabilization, preventing wet basements, and what to do about sinking homes and lawns.

To provide information to these people, the existing legend was expanded to provide broad mapping units that could be used for mapping in the disturbed areas.

From observation and studies of the various types of housing developments, it seemed that there would be about three main types of disturbed areas to map. These three types of units would cover what I call, high, medium, and low intensity housing developments. High intensity developments have every acre disturbed. Medium intensity developments contain areas of both disturbed and undisturbed soils. Low intensity developments are largely undisturbed.

The following groups of mapping units which I shall arbitrarily call groups 1, 2, and 3 were set up for use in mapping in the above types of developments.

Group One — Made soil groups - silty, loamy, or sandy. 85% or more of the unit was Made soil. These units were conceived to be composed of soil material that had been so altered by cutting, filling or both that very little or no diagnostic horizonation could he recognized. The silty, loamy, and sandy groupings were thought of in the same way as the textural family groupings in the 7th approximation. The dominant texture of the 40" control section was the basis for making these separations. The thick silty soils would he made soil silty. Shallower silt loam, loam, and sandy loam soils would be made soil loamy. Made soil sandy was to be composed of areas of loamy sand and sand textures.

Group Two - Named soil, disturbed 10-20 inches. 85% or more of the unit was disturbed. Soils in this group were disturbed, but not enough so to destroy all recognizable horizons. Soil series could be recognized by the remaining B horizons where shallow cuts were made, or where fills were shallow enough that the series could be recognized even though buried under 10-20 inches of fill material.

Group Three - Complexes of a named series and either Made soil silty, loamy, or sandy. This unit was quite broad, covering conditions with as little as 15% disturbance to as much as 85% disturbance.

Areas with 15% or less disturbance were to he with the normal series mapping wits .

A and B slopes are combined in all of the preceding units. C slopes are mapped separately. D and E slopes are combined.

The primary factor that makes this grouping workable is the brief mapping legend. Over 90 percent of the housing developments is located on only six different soil series. The six soil series are grouped into four disturbed units. These groups of disturbed units, with one exception, are similar in texture in the solum. The substrata of thk disturbed units are coarse sand and gravel of outwash or till origin., The Rockaway soils are the only unit with till substrata. All disturbed units have a friable substrata except the Rockaway unit that is firm.

These units seemed to fill the needs adequately; however, the named series disturbed 10-20 inches (group 2) was being used very little. The Made soil units and complexes were being used almost exclusively. A few golf courses were partially mapped using the group 2 units.

Near the end of the summer, transects were run on areas of Made soil sandy and Made soil loamy, The transects on the Made soil sandy units indicated that diagnostic horizons were difficult or 'impossible to recognize. This was in accord with the original concept. Transects in units mapped as Made soil loamy indicated that in almost every hole there was a recognizable diagnostic B horizon. For this reason, it was decided that the time had come for a 2nd. approximation. This change still allowed the main separations of silty, loamy, and sandy families.

DISTURBED UNITS IN MAPPING LEGEND

ORIGINAL	PRESENT
Made soil silty Bridgehampton soils disturbed Bridgehampton - Made soil silty	Bridgehampton soils disturbed
Made soil loamy Haven soils disturbed Haven - Made soil loamy Riverhead soils disturbed Riverhead - Made soil loamy	Haven and Riverhead soils disturbed
Made soil sandy Carver & Plymouth - Made soil sandy	Made soil sandy
Rockaway soils disturbed Rockaway - Made soil loamy	Rockaway soils disturbed

Percentage of inclusions was increased with the last change. Inclusions may now go as high as 25%. These inclusions can be areas that were previously considered as made soil or areas of undisturbed soils in a disturbed unit or vice versa.

Mapping techniques:

Adjoining undisturbed areas are mapped first. This helps the soil scientist to obtain the soil patterns; however, map unit boundaries cannot be drawn on the basis of neighboring undisturbed areas. Some developers completely scalped tracts prior to building. The clues given by the undisturbed areas must be tested by borings throughout the development.

In determining proportions of disturbed and undisturbed soils in a unit, the areas covered by street and houses are not considered. The aerial photo shows these features. Our maps show only what the soil conditions are around the buildings.

It has proven worth while to work with two soil scientists in each vehicle. Not only is mapping efficiency expedited; the prime factor of safety is an important consideration. The driver does not have to look at the landscape and field sheet and watch for suitable sites to make borings. He can give his undivided attention to other vehicles, pedestrians, stop lights, and stop signs.

Other clues to look for that help arc:

1) Houses with basements probably have more sandy material in yard due to excavation.

2) Developments on C or steeper slopes usually necessitate greater excavation, hence, a greater likelihood of Made soil sandy.

3) Areas of small summer cottages, even though crowded together, may have very little disturbed soil in the development.

4) Older developments built prior to the building boom in the post World War II era usually have relatively undisturbed soils. This was due to builders not clearing large areas and putting houses up in a mass production basis. These houses were usually built one by one over a longer period and about the only disturbance was directly under the house.

Areas where we originally used the complexes are sometimes difficult to separate into the various components. Such areas must be mapped out based primarily on land use. Small, disturbed or undisturbed areas must be separated so that you do not exceed the 25% inclusions allowed in any of the units. To do this, we have set a lower limit of 5 acres in a unit which we will map to obtain the proper proportions. Separations made on this basis are strictly cartographic in nature.

Progress in a mixed urbanized area has been very good. Mapping rates have averaged 38 acres per hour of code 31 time. To better utilize the time of men on detail to Suffolk County, Saturday work has been authorized. When time is computed using a constructed salary rate and 7 days per diem, the cost per acre is reduced by about 1 cent per acre by working on Saturdays.

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

January 15-18, 1968

Use of Soil Surveys in Urban Planning
Glenn B. Anderson

Glenn B. Anderson, Work Unit Conservationist in Fairfax County, Virginia, gave an informative address on the above subject. It was based on developments since 1953 in Fairfax County. Some points from the address follow.

Interest in the soil survey developed as a result of circumstances like the following:

Costly damage to a school erected on unstable land.

Flooding of housing on flood plains.

Land slippage on slopes,

A $20,000,000 bond issue to solve health problems resultant from septic disposal in unsuitable soils.

Want of a gravel and sand for mining, control of mining, and reclamation of mined areas.

The extent to which soil surveys are being used is indicated by the approximate 2000 services rendered about soils last year. These were sought by county, state, and federal agencies; by land developers, builders, and contractors; by such professional persons as planners and architects; by civil organizations, institutions, and industrial and commercial units; and by individual home owners. The district governing board designates priorities for time, giving the highest priority to public agencies and lowest to individual persons.

The major categories of assistance given during 1967 included:

Soil stabilization, erosion control.

Agronomy, plant materials, forestry.

Sedimentation of water resources, including ponds and lakes, on lots of 3 acres up to tracts exceeding 1000 acres.

Basic land use planning, as with park authorities

Watershed planning

Planning development for recreation, with private groups and public agencies.

Regional and County planning

Regional and county planners are interested in the following types of maps: flood plain, slope, general water hazard including water table, percolation, depth to rock, bearing strength for buildings, gravel, suitability for agriculture.

In the beginning there was notable reluctance on the part of the public to use the soil survey. This has been considerably overcome through intensive promotion by members of the district board. The County Agent is a member of the Board and is himself a strong advocate of use of the survey.

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

January 15-18, 1968

Notes on Soil Series Descriptions
A.H. Paschal1

Soils 11

Some series descriptfons do not follow format for soil series descriptions.

Soils Memo 66

Some series descriptions do not follow accumulated *criteria on* the concept of the series. Some do not follow rules for concept of the control section as outlined. B3 horizons are part of the solum but may not. be within the control section.

A real problem is allowing ranges in the range in characteristics section that cross subgroups and family boundaries. This section is a problem in many series descriptions.

Very few are doing a good job of reviewing neighbor series descriptions. Many series including Ridgebury, Whitman, Walpole and Scarboro are giving us trouble because of changes in concepts and ranges allowed in the series over the years.

The section on competing series also causes trouble in series descriptions.

Series descriptfons are too long. 2 pages is about the right length but some are 3 or 4 pages.

An edited series description in the Appleton series was circulated to show how words and phrases could be deleted.

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

January 15-18, 1968

REPORTS OF NATIONAL COMMITTEES NOT COVERED BY REGIONAL COMMITTEES

David E. Kill

Abstracts of the following National Committee Reports were presented to the conference:

1. Criteria for series and phases.
2. Application of the new classification system.
3. Soil survey procedures.
4. Climate in relation to soil classification and interpretation.
5. Updating soil correlations of old but good publiehed maps.

Northeast regional committees did not operate in these areas for a variety of reasons. 1) The application of the new oleseificatioo system was a special topic end the entire conference devoted one-half day and one evening *to* this subject. 2) Many recommendations of the committeea "Soil survey procedures", and "Updating soil correlations of old but good published surveys" are now establiahed practice, embodied in various Soils Memos and Advisory Notices.

A brief discussion followed the abstract of the report of the National Committee on Application of the New Clasaifioation System. In this report, the Southern Regional Committee presented a list of characteristics associated with fragipans. Recognizing that fragipan horizons form under widely varying conditions in different parts of the country, the Northeast suggested additiona *and* modifications of the Southern Region's list. Comments on some items (a through a) are noted :

b. A polygonal oolor pattern is often observable but color may be patternless.

c. Some fragipans are associated with bisequal characteristics; others are not. The lower sequum is rarely a part of the fragipan.

i. Textures in glaciated areas also include fine sandy loam and loamy sand.

. Dominant structure in glaciated areas is plate;.

a. Fragipans in glaciated areas are common on slopes to 35% but occasionally occur on steeper slopes.

PROPOSED NCR-3 PROJECT

BIBLIOGRAPHY OF SOIL SURVEY INFORMATION

NCR-3 is investigating development of a bibliography of available soil survey information. Presumably this will include published soil survey maps and technical papers on morphology, classification, and genesis. Bibliographical accumulations may be accomplished in two ways:

1. Each state submit contributions concerning his own state;

2. A tentative bibliography can be prepared by a University Library, and each state *can* check the contents, adding or deleting items.

No other information was available at this time. Dr. Kubota euggeeted tbat data processing systems could be used to advantage in information retrieval. Dr. Smith indicated that the National Agricultural Library is planning to apply data processing to information retrieval.

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PUNNING CONFERENCE

January 15-18, 1968

Soil Conservation Districts -
Their Shift in Program and Responsibilities
S.L. Tinsley

Gradual change from rural oriented program to community approach.

Ressons for changes.

1. Communication up-dated and speeded up.
2. Transportation speeded.
3. Education enjoyed by more people
4. Affluence enjoyed by more people
5. Changing attitudes of people toward work, benefit-cost ratio of projects.

Changes reflected in:

1. "The Future of Districts" by National Association of Soil Conservation Districts
2. "Resources in Action" by U.S. Department of Agriculture in Agriculture in 2000.
3. "Communities of Tomorrow' from U.S. Department of Agriculture in Agriculture in 2000.

Progress in Goal

1. Dredging of silted pond
2. Planting program under power line instead of spraying
3. Revegetation of gravel pits and mine spoil banks
4. Natural resource planning
5. Conservation plans for urban areas as in Fairfax County, Virginia end Montgomery County, Maryland

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PUNNING CONFERENCE

January 15-18, 196C

Report of Soil Research Committee Liaison
R. A. S truchtemeyer

Proposed for establishment of regional committee on soil mineralogy - to include not only clays but coarser fractions as well.

There appears to be much Interest in the Northeast on this matter. The proposal presented to the Northeast Regional Committee was declined after much discussion. The proposal was ton much of an umbrella type study and not designed to tackle specific problems,

In view of the interest, however, it was recommended that an interim committee be established and that travel funds be recommended for allocation to those interested, in order that those interested could get together and develop a proposal of specific projects to be presented to the Experiment Station director for consideration.

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

1968

The Soil Factor in Sanitary Land Fill 1/

F. G. Loughry

Many materials placed in land fills today are resistant to decomposition; therefore, it is doubtful if land fills can be reused within a generation.

Several methods of solid waste disposal include:

1. Dump in Remote Area - This presents vector and odor problems.

2. Incineration - This process can reduce volume of solid waste to about 20 percent of original volume. This process can result in air pollution.

3. Composting - To obtain useable product.

4. Hog Feeding - Limited because of glass and metal content.

5. Dumping Trash at Sea - This has been stopped because of pollution problems.

6. Sanitary Land Fill - This is a waste disposal area which operates so odors, smoke, rodents, insect pests, blowing paper, and water pollution are avoided. The waste material is placed in a trench or other areas where the soil has been stripped. Soil material is placed and compacted over the waste material daily.

Much of the land in the Northeast does not have soil that is suitable for making a good sanitary land fill. It is estimated that about 27 percent of the State of Pennsylvania is suitable for sanitary land fills.

Listed below are the main soil factors used by the Pennsylvania Department of Health in determining the suitability of soils for sanitary land fills:

1. Depth of solum and hard rock.
2. Drainage class.
3. Depth to seasonal high water table.
4. Soil texture.
5. Slope.
6. Stoniness.
7. Flooding hazard.
8. Risk of free flow to ground water.
9. Acidity.
10. Cation exchange.
11. Base saturation.

Sanitary land fill operations appear to be a profitable business in Pennsylvania.

1/ F. G. Loughry has prepared a paper on this subject.

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

January 15-18, 1968
Summary Remarks by Arnold J. Baur

Lo" intensity mapping. We can use lo" intensity mapping in parts of large wooded areas, especially in New England, and Hew York. Some survey areas may require medium intensity survey for part of the land, and low intensity for the remainder. We must distinguish clearly between low and medium intensity surveys:

1. Composition of the mapping units differ (mostly undifferentiated units or soil associations in low intensity legends);
2. Mapping intensity is at different levels;
3. Interpretations are written differently;
4. If a survey area contains two intensities, a separate mapping legend is needed for each intensity. Label and date each legend. Mapping unit symbols must be different and distinctive for each intensity. Each soil symbol can be used in only one of the legends.
5. A low intensity legend should contain an explanation of the method of mapping, frequency of observations, and reliability of delineations.
6. Soils Memo 3 (Rev. 2), and Soils Memo 62 include directives for low intensity surveys.

Interstate coordination, We are beginning our second round of interstate coordination of interpretations; a series of meetings has been set up. In our first round, we laid a solid foundation for this work by use of benchmark soils. There has been time to test this first work, so now we are ready to improve and expand the interpretations as needed, Francis Cleveland and other men from the RTSC will work on this, but State Offices have much more responsibility in this second round than in the first. We are doing this by Land Resource Areas rather than on a regional basis.

General. This has been a productive conference. The committee reports contained some good recommendations, and the discussion topics were timely and well presented. Participation and contributions by Agricultural Experiment Station people was especially helpful on committees, and in presentation of special topics. We should keep Glade, L., and Walter, L. as participants in our conference, We need Walter to needle us from time to time, and we need Glade to keep us sanitary.

I hope that Virginia, Kentucky, and Ohio will continue to send representatives to our Northeast meetings. Participation from these states strengthens our conference. We need you.

Walter Steputis - we thank you for a job well done in developing and running this conference. You had help from Dave Hill, and Dr. Struchtemeyer, but you did the lions share of the work.

Pedons used for Testing Proposed Changes in Family Mineralogy Criteria

Texture and Mineralogy	Control Section (cm)	Clay Mineralogy 0-25 cm	Clay Mineralogy 25-100 cm	Interpretations for 0-100 cm non-clay	Interpretations for 0-100 cm clay
SANDY					
Siliceous					
E Lakeland	25-100	m 2/	m	siliceous 3/	mixed
E Lincroft	25-100	k	k	siliceous	kaolinitic
S Berryland	25-100	?	?	siliceous	?
S Lackhurst	25-100	?	?	siliceous	?
Mixed					
E Scarboro	25-100	m	?	mixed	mixed
I Norwell	25-50	i	i	mixed	illitic
S Acton	25-100	m	m	mixed	mixed
s Crogan	25-100	m	m	mixed	mixed
S Gloucester	25-100	i	i	mixed	illitic
S Merrimac	25-100	i	i	mixed	illitic
COARSE - LOAMY OR SILTY					
Mixed					
S Bridgehampton	25-100	?	?	mixed	?
U Fort Mott	55-85	m	m	silic/mix	mixed
U Tinton	50-90	m	m	silic/mix	mixed
FINE - LOAMY					
Mixed					
I Mardin	20-37	m-i	i	mixed	illitic
A Honeoye	30-65	m-i	i	mixed	illitic
A Wiltshire (1)	27-65	i	i	mixed	illitic
A Wiltshire (2)	25-75	m-k	m-i	mixed	mixed
A Lehigh	27-55	m-k	m-k	mixed	mixed
UA Duffield	25-75	m-i	m	mixed	mixed
UA Penn (4)	20-60	m	m	mixed	mixed
UA Westmoreland	25-65	m-i	i	mixed	illitic
UA Penn (3)	35-60	m-k	m-i	mixed	mixed
UA Penn (1)	20-50	m-k	k/i	mixed	kaol/ill.
UA Penn (2)	27-42	k	k/i	mixed	kaol/ill.
UA Morrison	15-52	k	k	silic/mix	kaolimitic
U Sassafias	47-75	m	m	mixed	mixed
U Meckesville (1)	42-72	m-i	m-i	mixed	mixed

U Shelmadine	27-80	m-i	m-i	mixed	mixed
U Clymer (2)	25-75	m-k	m-i	mixed	mixed
U Clymer (1)	20-70	m-k	m-i	mixed	mixed
U Lansdale (2)	22-60	m-i	m-k	mixed	mixed
U Meckesville (2)	25-75	m-k	m-k	mixed	mixed
U Lansdale (1)	40-75	m-k	m-k	mixed	mixed
U Chester (1)	30-80	m-k	m-k	mixed	mixed
U Chester (3)	27-75	k	k	mixed	kaolinitic
U Chester (2)	30-82	k	k	mixed	kaolinitic
U Glenelg	15-50	m	m	micaceous	mixed
FINE - SILTY					
Mixed					
I Newark	25-100	m	m	mixed	mixed
S Buxton	45-100	m	i	mixed	illitic
A Niagara	35-77	i	i	mixed	illitic
A Brinkerton (1)	20-35	m-i	i	mixed	illitic
A Brinkerton (4)	25-42	m-i	i	mixed	illitic
A Zanesville	17-67	m	m	mixed	mixed
A Brinkerton VW (2)	0-27	m-k	k	mixed	kaolinitic
A Brinkerton VW (3)	0-27	k	k	mixed	kaolinitic
UA Crider	30-80	m	m	mixed	mixed
U Beltsville	40-50	m	m	mixed	mixed
U Matapeake	40-90	m	m	mixed	mixed
U Othello	35-80	m	m	mixed	mixed
CLAYEY OR FINE					
Glauconitic					
U Colemantown	25-75	mt	mt	glauconitic	montmorill.
U Marlton	35-75	mt	mt	glauconitic	montmorill.
Illitic					
A Cayuga	32-62	i	i	mixed	illitic
Mixed					
I Whippany	25-100	m	m	mixed	mixed
A Hagerstown	20-70	m	m	mixed	mixed
U Wharton (1)	25-75	m-i	i	mixed	illitic
U Wharton (2)	17-67	k	m-k	mixed	kaolinitic
Kaolinitic					
U Christian	17-67	m	k	mixed	kaolinitic

1/ Letters in front of series name indicate order: E - entisol, I - inceptisol, S - spodosol, A - Alfisol, U - ultisol.

2/ Clay mineralogy groups are abbreviated as: i - illitic, k - kaolinitic, m - mixed, m-(i or k) - mixed but illite or kaolinite dominant in mixture, mt - montmorillinitic, ? - not given, k/i - considered to have contrasting mineralogy in section being considered.

3/ The non-clay mineralogy is not given for a split control section because it was the same throughout except for three soils: Fort Mott, Tinton, and Morrison.

NATIONAL COOPERATIVE SOIL SURVEY

Northeast Regional Conference Proceedings

New York City
January 24-27, 1966

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Planning Conference

PROCEEDINGS OF THE NORTHEAST COOPERATIVE SOIL SURVEY WORK-PLANNING CONFERENCE

NEW YORK CITY

JAN. 24-27, 1966

NATIONAL CO-OPERATIVE SOIL SURVEY
NORTHEAST TECHNICAL WORK PLANNING CONFERENCE

1966

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Discussion by D. E. Hill

Guidelines in the Application of the New Classification System
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Revision of Soil Series Descriptions
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AGENDA - NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE - JAN 24-27, 1966

MONDAY - JANUARY 24

8:30 - 9:00 Announcements, appointment5 and opening business
9:00 - 12:00 Meeting of committees 3, 4, and 5
12:00 - 1.:00 Lunch
1:00 - 5:00 Meeting of committees 5, 6, and 7

TUESDAY - JANUARY 25

8:30 - 9:00 Business meeting - Report of nominating committee
9:00 - 12:00 Report5 of committee5
12:00 - l:00 Lunch
l:00 - 5:00 Reports of committees

WEDNESDAY - JANUARY 26

8:30 - 12:00 Symposium on soil percolation testing

Dr. Franzmeier - Sustained percolation testing
Dr. Matelski - Effect of variable and constant heads and seasonal variation
Dr. Hill - Principals of the percolation test, site and seasonal variation
Open conference discussion

12:00 - l:00 Lunch
l:00 - 3:00 Guideline5 in the application of the new classification system - Dr. Simonson
3:00 - 4:00 Soil Correlation procedures - Dr. Baur
4:00 - 5:00 Engineering applications and interpretation5 - Dr. Van Eck

THURSDAY - JANUARY 27

8:30 - 9:15 Climate in relation to soil classification and interpretation - Dr. Bailey
9:15 - 10:00 Organic soils - Mr. Wilson
lo:00 - 10:30 Progress report on the new classification system - Dr. Simonson
10:30 - 11:00 Revision5 of soil series descriptions - Mr. Paschal1
11:00 - 11:30 Projected soil survey schedule - Mr. Garland
11:30 - 12:00 Concluding statements and adjournment

PARTICIPANTS NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

January 24-27,1966

F. W. Bonnell

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C. Eby, SCS, Court House, Morristown, N. J.
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R. Goggins
J. J. Mokel

GUESTS:

D. B. Franzmeier, SCS, Belstville, Md.
J. Kubota, SCS, Ithaca, N. Y.
F. G. Loughry

MEMBERS OF CONFERENCE GROUP NOT PRESENT:

M. G. Cline, Agronomy Dept., Cornell University, Ithaca, N. Y.
T. W. Green, USFS, 50 7th Street NE, Atlanta, Ga.
W. J. Lyford, Harvard Forest, Petersham, Mass.
J. C. F. Tedrow, Dept. of Soils & Crops, Rutgers Univ., New Brunswick, N.J.
M. E. Weeks, Agronomy Dept., University of Mass., Amherst, Mass.

F. G. Loughry

MINUTES OF THE NORTHEAST SOIL SURVEY TECHNICAL WORK PLANNING CONFERENCE

Governor Clinton Hotel, New York, N. Y.

January 24-27, 1966

The meeting was called to order by Chairman David Hill at 8:30 A.M., January 24.

Members of the Conference were introduced. Representatives from Virginia, Ohio, and Kentucky were welcomed by the Chairman as new members of the Northeast group.

F. G. Loughry, Vice Chairman of the Conference, was named Recorder for the business sessions.

G. A. Quackenbush, Past Chairman, was named as Liaison Representative to the Northeast Soil Research Committee, and instructed to report to that committee during its Wednesday Morning session in the same hotel.

Roy P. Matelski and Montague Howard were appointed as a Nominating Committee and instructed to present the names of two Experiment Station Representatives as candidates for the office of Vice Chairman for the next two years.

Business meeting adourned and Technical Committees met as scheduled in the program. In addition, Committee 2, **Soil** Monographs, held a short meeting at the request of Chairman Ray Marshall.

The business Meeting was reconvened at 8:30 A.M., January 25.

Members who had been late because of the blizzard were introduced.

R. P. Matelski reported for the Nominating Committee and put in nominations for Vice Chairman: R. S. Structemeyer
H. C. Porter

It was moved and seconded that nominating be closed.

W. 0. Van Eck and G. M. Schafer were appointed tellers.

Elected Vice Chairman for the next two years and Chairman Elect for 1969 and 1970: R. S. Structemeyer

The business meeting was followed by committee reports.

Committee 1. Benchmark Soils - S. J. Zayach, Chairman

It was moved, seconded and voted that the committee be continued. The report of the Committee was accepted.

Committee 2. Technical Soil Monographs - R. L. Marshall, Chairman

The conference suggested that the committee (1) add a statement on procedure for initiating action on a monograph, (2) adopt the recommendation of the National Committee on composition of the individual monograph committees to be activated when an author is found.

It was moved, seconded and passed that the committee report be adopted.

Committee 3. Series, Types, and Phases - B. J. Patton, Chairman

It was moved, seconded and voted that the Committee be continued and the report be accepted.

Committee 4. Classes & Phases of Stoniness & Rockiness - A. H. Paschall, Chairman

It was moved and seconded that the Committee be continued and that the committee work on Rockiness Classes and Phases to make tests and report to the National Committee by September. Passed.

Committee report adopted.

Committee 5. Soil Moisture - A. E. Shearin, Chairman

It was recommended that the committee be continued. It was moved and seconded that the report be accepted. Passed.

Committee 6. Made Soils . . M. F. Hershberger, Chairman

The report included a request that transects of representative areas of made soils be described in each state and forwarded to the committee by June 1, 1966 to be summarized as an appendix to the roport.

It was moved and seconded and voted that the report be adopted.

Committee 7. Northeast Soil Association Map - Committee Report given by D. E. Hill

It was moved and seconded that the report be accepted. Motion carried.

Meeting adjourned - 5:00 P.M.

At 8:30 A.M., January 26 the meeting reconvened for a symposium on Soil Percolation Testing. Speakers were: D. B. Franzmeier
R. P. Matelski
D. E. Hill

At 1:00 P.M., January 26, William Wertz, Soil Scientist, U. S. Forest Service, Milwaukee, explained new Forest Service regional boundaries and changes in headquarters organization.

Roy D. Simonson discussed application of the New Classification System.

A. J. Baur discussed current field correlation procedures.

W. A. Van Eck discussed engineering applications and interpretations.

The final session of the conference started at 8:30 A.M., Thursday, January 27.

The Chairman announced that all Committee Reports and abstracts of papers should be sent to F. G. Loughry by the middle of February.

H. H. Bailey reviewed the National Committee Report on Climate in Relation to Soil Classification.

K. P. Wilson reviewed the National Committee Report on Organic Soils.

A. H. Paschalldiscussed the Revision of Soil Series Descriptions.

R. D. Simonson made a progress report on the application of the New Classification System.

L. E. Garland reviewed the projected soil survey publication schedule.

There was a motion from the floor by R. P. Matelski than an additional correlator be added to the Principal Correlator's office to increase field contacts in preparing correlations and to reduce the amount of special assistance that is now being required to handle the increased work load due to increased area of the region.

The motion was seconded by H. C. Porter. It was discussed, voted, and unanimously passed.

It was determined that 150 copies of the report would be needed.

Conference adjourned 12:00 Noon.

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

1966

SUMMARY TO THE NORTHEAST SOIL RESEARCH COMMITTEE

Members of the Soil Survey Work Planning Conference appreciate the opportunity to report on its activities to the Soil Research Committee.

Following is a brief résumé of the activities of each committee conducted first in committee sessions and then discussed by the full conference:

1. Benchmark Soils. This concerns assembling and publishing data on individual soil series chosen for their regional extent and agronomic importance. Published to date are Caribou, by Maine; Vergennes, by Vermont; Paxton, by Connecticut: and Canfield, by Ohio. Work is underway on eight other benchmark reports. The conference reviewed the uses of these publications, the methods and problems of getting them done,

2. Technical Soil Honographs. These would be comprehensive technical publications on the soils of major physiographic regions. Seven areas have been delineated in the Northeast, West Virginia to Maine; ten if Ohio, Kentucky, and Virginia are included. After four years of planning, there has been no action in the Northeast for want of authors and allotted time. New possibilities arise, using the talents of retired scientists as authors.

3. Criteria for Soil Series, Types, and Phases. A need was felt for a study of criteria used by different soil scientists in differentiating series, types, and phases in the new soil classification system. The committee outlined a program of study to be tested this summer and reported to the National Committee this autumn.

4. Classes and Phases of Stoniness and Rockiness. Following a request by the Northeast Region in 1964 that these be reviewed, a nationwide study has been underway to establish uniform standards of measurement and nomenclature. Major attention was given stoniness during the past biennium; the study will now be directed toward similar studies of rockiness.

5. Soil Moisture. Among topics considered were (1) possible changes in class limits of permeability necessitated by the use of the auger hole method of measurement; (2) need for standardization of the auger hole method: (3) kinds and definitions of water tables; (4) classification of water tables as to depth, duration, and season and use of graphic representations of the same; (5) review of field studies of soil molsture, some of which are in progress; (6) the need for a more operational term for "available moisture."

6. Made soils. The committee was concerned with the problem of classification of soils and materlals after urban alteratlon, scalping, "borrowing", cutting and filling of the landscape, mine spoil. etc. The new soil classification system provides a place where some of these can be fitted where diagnostic horizons have not been completely obliterated. The committee will continue to field check made soil areas to determine the presence and uniformity of diagnostic horizons and make recommendations to the National Committee.

7. Northeast Soil Association Map. Publication of a regional soil association map from the Western Region prompted consideration of a similar project in the Northeast. Anticipated areas of use include: teaching, commercial surveys, and regional public planning. Less detailed than state association maps, this regional map should not compete with them, A soil association map of New York-New England was compiled several years ago but the level of cartographic detail may be too great for its intended use. A pending SCS national map seems satlsfactory in outlining the major soll areas. Such a map extracted for the Northeast might have six major divlsions and 30-35 subdivisions. Participation by Ohlo, Kentucky, and Virginla in this map would be a matter for decislon in view of their relation to other land-grant regions. The map should be accompanied by descriptions of physfography, classifications of soil into the new and old systems, descriptions of representqtlve soil series from each of the subdivisions, and broad interpretations for agriculture, forestry, wildlife, recreation, and urban development.

The Soil Survey Work Planning Conference endorsed the project and believes that information to be used in composing the map and text is readily available. It believes, however, that the initiative and leadership must come from the Experiment Stations. Although representatlves from the SCS could not make commitments, they thought that cooperation could be anticipated.

Granville A. Quakenbush
Representative to the N.E.
Soil Research Committee

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK-PLANNING CONFERENCE

1966

REPORT OF COMMITTEE ON BENCHMARK SOILS

The committee on benchmark soils is charged primarily with the coordination and the advancement of the benchmark soil report program in the Northeastern States, Dr. David E. Hill, chairman of the 1966 conference, has requested the committee to:

a. review progress in the benchmark soil program since our meeting in 1964,

b. review benchmark soil priorities, and

c. seek to obtain positive commitments for progress during the coming biennium.

A questionnaire was sent to all members of the committee requesting information on the status of the benchmark soil program in their states. Since only 6 of the 15 states indicated a need for a committee meeting at the conference, this report is based on the information obtained from the questionnaires completed by representatives from all of the Northeastern States.

Status of benchmark soil reports.

1. Reports released in 1963 or earlier..
   Caribou (Maine)
   Vergennes (Vermont)
   Canfield (Ohio)

2. Reports released in 1964.
   Paxton (Connecticut)

3. Reports in press or released in 1965.
   None

4. Reports being prepared, or to be prepared, and anticipated year of release.
   Suffield (Maine - ?)
   Bermon (New Hampshire - 1967)
   Gloucester (Massachusetts - 1966)
   Charlton (Connecticut - 1967)
   Cheshire (Connecticut - preparation in 1967)
   Bridgehampton (Rhode Island - 1966)
   Westmoreland (Pennsylvania - ?)
   Hagerstown (Maryland - ?)
   Gllpln (West Virginia - 1966)
   Upshur (West Virginia - to be prepared in 1966 and published in 1967)

It is assumed that the above reports have a high priority for completion by the states concerned. Ten of the fifteen states have no plans for starting new reports during 1966 or 1967 and three states were noncommittal. Only two states (Connecticut and West Virginia) indicated that they plan to prepare reports for high priority soil series during 1966 and 1967.

Except for a comment from West Virginia and Maryland, there were no requests for changing benchmark soil priorities assigned to the states. Dr. Van Eck suggests' that Pennsylvania instead of West Virginia should prepare the report for the Dekalb series because a graduate student has made a study of the stills in Pennsylvania. Mr. Hershberger feels that priorities and reassignments should be considered at a committee meeting. Since a meeting of the committee will not be held, priorities could be discussed after the report is submitted at the conference. Attached to this report is Appendix I, which indicates the benchmark 'soils assigned to each state.

The problem of finding the time and the people to work on benchmark reports appears to be getting worse instead of better. Most of the states do not plan to schedule such work for 1966 or 1967. The following 'are excerpts taken from statements made by members of the committee from several states regarding benchmark reports,

> "It will. be difficult to obtain cooperation from 'the Dean's Office in assigning time, to write. the reports."

> "Series are in such a state of flux that anything written now will be obsolete in a year. Likewise priorities are hypercritical now."

> "I feel that there should be a temporary moratorium on these reports, I think our full effort should be placed on getting soil series into shape. Many of the benchmark soils need to be better defined before any publications are considered."

> "Benchmark soil report is not part' of regular assigned duties. More or less dependent on free time available."

> "We have been unable to schedule personnel from Soil Conservation Service or from our cooperating agencies for work on a benchmark soil report at the expense of completion of field soil surveys, soil survey manuscripts, series descriptions; soil correlation, etc."

> "Finding the time for going through the steps of making a benchmark report for a single soil and justifying the effort and expense put an it will be difficult when we have moved so fast into a larger field of description and interpretation..... It may be that we should look at the benchmark soils with a broader def inition."

"I hope you get more encouraging reports from other states. Some rejuvenation is needed to make these studies bear fruit."

The participants at this conference should take a hard look at the problems involved in preparing and. releasing benchmark reports. Should the program be continued or abandoned? Are the reports of such value that they warrant the time and cost to compile and release?

Around 100 man-days were spent in compiling each of the Paxton and Hagerstown reports. The 100 man-days. spent on the Hagerstown report was as of January 1964. It has not been completed as of December 1965" The chairman of this committee does not know how many additional days have been spent on the report.

The committee members ware not canvassed about plans for preparing reports beyond 1967. It appears that most states do not plan to start new reports for benchmark soils assigned to them, This is certainly the case in 1966 and 1967 and may be the case in succeeding years.

The majority of the members recommend that the committee should be continued. Actually this is a permanent committee and will be discontinued only when the benchmark soil report program is abandoned.

Committee Members

R. S. Bell
L. J. Cotnoir
R. E. Daniel
R. A, Farrington
L. E. Garland, Vice Chm.
M. F. Hershberger
D. E. Hill
C. J. Koch
F. G. Loughry
R. L. Marshall
N. K. Peterson
G. M. Schafer
R. S. Struchtemeyer
W. A. Van Eck
K. P. Wilson
S. J. Zayach, Chairman

APPENDIX I

List of benchmark soils assigned to the Northeastern States for compiling and preparing benchmark soil reports,

Connecticut and Rhode Island

Bridgehampton 2/
Charlton 2/
Cheshl re
Enfield
Paxton 1/
Stockbridge
Windsor
Woodbridge

Delaware and Maryland

Beltsvllle
Chester
Christiana
Cookport
Frankstown
Glenville
Hagerstown 2/
Legore
Leonardtown
Llckdale
Manor
Matapeake
Mattapex
Montalto
Othello
Pocomoke
Worsham

Kentucky

Eden
Maury
Pembroke
Tilsit

Maine

Adams
Blddef ord
Buxton
Caribou 1/
Easton
Saco
Scantic
Suffield 2/

Massachusetts

Gloucester 2/
Hlnckley
Merrlmac
Nlnlgret
Scarboro
Sudbury
Welpole

Ohio

Brookston
Canfleld 1/
Celina
Crosby
Hoytville
Keene
Mahoning
Venango

Pennsylvania

Allis
Berks
Brinkerton
Burgin
Cattaraugus
Cavode
Croton
Culvers
Duffield
Dunning
Edgemont
Ernest
Lawrence
Middlebury
Montevallo
Morris.
Norwich
Oquaga
Readington
Westmoreland 2/

New Hampshire

Agawam
Hermon 2/
Hollis
Leicester
Peru
Ridgebury
Sutton
Whitman

New Jersey

Adelphi
Bayboro
Collington
Elkton
Fallsington
Keyport
Lakeland
Penn
Sassafras
Westphalla
Woodstown

New York

Amenia
Canandalqua
Caneadea
Chenango
Col lamer
Hol ly
Mardin
Papakating
Phelps
Red Hook
Tl oga
Unadilla
Volusia

Vermont

Berkshire
Colton
Hadley
Limerick
Livingston
Lyman
Panton
Vergennes 1/
Wlnooski

1/ Report completed

2/ Report under preparatlon

(Appendix cont)

Virginia

Carbo	Sassafras
Frederick 2/	Tatum

west Virginia

Blago	Lakin
Dekalb	Lindside
Elliber (Bodine)	Melvin
Gilpin 2/	Monongahela
Ginat	Murrill
Hartsells	Tyler
Holston	Upshur
Huntington	Wharton
Laidig	Wheeling

1/ Report completed

2/ Report under preparation

v

Notes on discussion after committee report.

A. G. A. Quakenbush: What use has been made of the benchmark reports?

1. Answers

a. D. E. Hill: 3500 copies were printed of the Paxton report. About one-half distributed within Connecticut, primarily to planning boards and commissions, and about one-half distributed to Soil Conservation Service and Experiment Stations throughout the United States. Only ten copies left for distribution,. It is difficult to assess the use made of the report except by implication of distribution.

b. A. H. Paschall: When published in a numbered series by Experiment Station, the demand is good: otherwise the demand is slight.

C. W. 3. Steputis: The Caribou report was mimeographed. Not many requests for it.

d. R. S. Struchtemeyer: When published as a numbered series, the report goes to a fixed mailing list. This may not indicate use.

e. D. E. Hill: Some foreign countries have requested the Paxton report.

f. R. W. Simonson: Foreign countries use such reports to get a better idea of series concepts in the United States.

g. D. S. Fanning: Graduate students use the reports.

h. A. J. Baur: We need these reports in libraries, same as other disciplines. Actually we are weak on this item in our discipline.

i. S. J. Zayach: We should complete and release the reports that have been started. Then perhaps declare a moratorium for a while.

B. D. S. Fanning: Funds are a problem in getting the reports published by Experiment Stations.

C. D. E. Hill moved that the committee be continued. Seconded by R. S. Bell.

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

1966

REPORT OF COMMITTEE ON TECHNICAL SOIL MONOGRAPHS

The committee reviewed proposals of the 1965 National Committee on Technical Soil Monographs. All items were discussed by the committee and those worthy of action were recommended for implementation in order to move ahead with the preparation of Soil Monographs in the Northeast.

The National Committee recommended a permanent committee be established for each soil monograph area. This committee would consist of the State soil scientist and the State soil survey leader for each State which forms a part of the monograph area. Thus, the committee for a particular soil monograph area may consist of men from one, two or more States,

The Regional Committee agreed with this proposal. It also recognized that such a committee would remain inactive until a suitable author(s) was secured.

The committee took the following action to clearly identify committee members, select authors and activate committees when authors are obtained:

1. The 1962 Northeast soil monograph areas were redefined in terms of the January 1963 "Land Resource Regions and Major Land Resource Areas Map of the United States" and areas were extended to include major areas in Kentucky, Ohio and Virginia recently added to the Northeast Region, (See appendix.)

2. Authors for each soil monograph area were solicited from the conference as a whole as suggestions to the area soil monograph committees. (See appendix for names of authors suggested by the conference,)

3. When an author(s) is proposed the following procedure is suggested:

   a. The State soil scientist and State soil survey leader in the State where the author(s) is residing make initial determination on competence of the prospective author(s) for writing a technical soil monograph.

   b. If the author(s) is considered suitable submit name(s) to State Conservationist to transmit to Dr. Kellogg's office for approval and operating procedure.

   c. If Dr. Kellogg's office approves, the State Conservationist should notify the author(s) involved.

   d. After notification by the State Conservationist the State soil scientist and State soil survey leader should jointly activate the area soil monograph committee for preparation of a work procedure, which would include items pertinent to getting the soil monograph underway.

The committee report was accepted by the conference,

(Over)

Committee Members:

R, L. Marshall, Chairman

A, J. Baur
F, G. Loughry
R, P. Matelski
* Richard Arnold
* John Elder
* D. E. Hill
* J. R. Mott
* G. A. Quakenbush
* Roy D. Simonson.

* Visitors participating in the committee session.

Technical Soil Monograph Areas and Prospective Authors, Northeast - 1966:

NE-l New England, Eastern New York Uplands and Northeastern Mountains

141 Tughill Plateau
143 Northeastern Mountains
144 New England and Eastern New York Upland
145 Connecticut Valley
146 Aroostook Area

Committee Members - New England States, New York, New Jersey
Proposed Authors - J. S. Hardesty; W. H. Lyford.

NE-2 Erie-Ontario-Mohawk-St. Lawrence-Champlain Plain

100 Erie Fruit and Truck Area
101 Ontario-Mohawk Plain
142 St. Lawrence-Champlain Plain

Committee Members - New York, Pennsylvania, Ohio
Proposed Authors - None suggested.

NE-3 Glaciated Allegheny Plateau

139 Eastern Ohio Till Plain
140 Glaciated Allegheny Plateau and Catskill Mountains

Committee Members - New York, Pennsylvania, Ohio
Proposed Authors - None suggested.

NE-4 Unglaciated Allegheny Plateau

124 Western Allegheny Plateau
126 Central Allegheny Plateau
127 Eastern Allegheny Plateau

Committee Members - Pennsylvania, Maryland, West Virginia, Ohio
Proposed Authors - None suggested.

NE-S 147 Northern Appalachian Ridges and Valleys

Committee Members - Pennsylvania, Maryland, West Virginia, Virginia, New Jersey
Proposed Authors - Howard W. Higbee; David C. Taylor; Robert Devereaux.

NE-6 148 Northern Piedmont

Committee Members - New Jersey, Pennsylvania, Delaware, Maryland, Virginia
Proposed Authors - None suggested.

NE-7 149 Northern Coastal Plain

Committee Members - Massachusetts, New York, New Jersey, Delaware, Maryland, Virginia
Proposed Authors - None suggested.

NE-8 125 Cumberland Plateau and Mountains

Committee Members - West Virginia, Virginia, Ohio, Kentucky, Tennessee, Alabama
Proposed Authors - None suggested.

NE-9 121 Kentucky Bluegrass

Committee Members - Kentucky, Ohio, Indiana
Proposed Authors - Willard Carpenter.

NE-10 120 Kentucky and Indiana Sandstone and Shale Hills and Valleys

Committee Members - Kentucky, Indiana
Proposed Authors - Willard Carpenter.

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORE PUNNING CONFERENCE

1966

REPORT OF COMMITTEE ON SERIES, TYPES AND PHASES

The committee reviewed the report of the national committee, which included a request that regional committees summarize criteria currently used to distinguish soil series and phases within family groups.

The committee did not consider phase criteria, but agreed to concentrate during the current period on series criteria.

It was noted that the soil type is no longer a part of the soil classification system; thus surface texture should be considered along with phases.

Most of the discussion centered on the problem of a method of recording, evaluating and summarizing series criteria. It is not hard to agree that certain characteristics are series criteria, but to evaluate the range of characteristics, in relationship with other characteristics which are used to differentiate series, makes for a complex problem,

It was the concensus that we cannot, at this stage, be completely quantitative in setting up criteria. There was substantial doubt that series criteria could or should ever be completely quantitative.

The committee tentatively listed soil characteristics currently used as series criteria, thus:

- Color (including mottling)
- Texture - B horizon or control section
- Degree of horlzonation
  - a. consistence
  - b. grade of structure
  - c. prominence of clay films
- Thickness of solum
- Thickness of diagnostic horizons
- Amount of coarse fragments
- Reaction
- Mineralology
- Horizon sequence

Other Comments:

The above list is not ranked according to weight or importance. Several of the items would not stand alone as series criteria, but would be used in combination with other characteristics. All need testing.

The above properties apply, in most Instances, to B horizons or control sections. Surface color and texture are, in a few cases, used as series criteria if strongly contrasting with subjacent horizons.

The committee agreed that each member will list, for selected series in representative families, the criteria used to separate series. The committee chairman will develop a format for use in listing this information. A meeting of the committee, or a representative subcommittee, will be needed in September or October to evaluate and summarize the various reports.

Dr. Simenson, or a representative of his office, will be asked to meet with this summary committee. Tabulation of series criteria will be on the basis of series having standard description approved or circulated for review according to the new classification system.

A summary of the committee's work will be submitted to the national committee prior to the next national work planning conference.

The report of the committee was accepted by the conference. It was agreed that the committee be continued.

Committee Members

Richard Arnold (for Dr. Cline)
A. J. Baur
Robert Googins (absent)
M. F. Hershberger
Montagne Howard
J. R. Mott
G. A. Quackenbush
W. J. Steputis
Roy Simenson, Consultant
Charles Koch, Secretary
George Schafer, Vice Chairman
Boyd J. Patton, Chairman

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE - 1966,

COMMITTEE ON CLASSES AND PHASES OF STONINESS AND ROCKINESS

A. H. Paschal1

This Committee was formed after the January 1964 Northeast Regional Meeting "To be a standing committee in action to study and test by the best means practical, class and phase naming of stoniness and rockiness aimed toward concluding and up dating standards".

Initial efforts were to-be directed towards stoniness classes with the goal of completing recommendations for submission to the appropriate national committee by January 1965.

Committee members conducted field checks and prepared specific recommendations which were submitted to the National Committee. These recommendations are contained in "Preliminary Report, Northeastern States Committee on Stoniness and Rockiness" released February 4, 1965. The material contained in this report was used by the National Committee in preparing its recommendations.

The Committee for 1966 was asked to:

(a) Review the National Committee report.
(b) Suggest names for stoniness classes.
(c) Test rockiness in the field using same methods used on stoniness in 1964.
(d) Evaluate this years field data.

The Committee is in general agreement with the National Committee recommendations but believes that spacing between stones and volume of stones above the surface are equally as important as percentage surface covered by stones in determining the stoniness class, and are more important in interpreting stoniness classes into phases. See Table 1 attached, for example of class limits.

Three proposals for naming phases of stoniness were offered to the conference. These are:

(1) Retain existing system with a mimimum of additional phases for better expression of phases for extensive uses.

(2) Use present system and add several new phases to narrow spread of stoniness classes in each phase.

(3) Drop use of phases and use classes of stoniness for interpretative purposes.

The group voted in favor of retaining the existing system in so far as possible. An application of this proposal based on classes in table 1 is as follows:

Class 1 (1.0, 1.1) Series name without phase or series name, slightly stony phase

Class 2 (2.1-2.2 etc) Series name, stony phase

Class 3 (3.1-3.2 etc) Series name, very stony phase

Class 4 (4.1-4.2) Series name, extremely stony phase

Class 5 (5.0) Series name, rubbly phase

Class 6 (6.0) Rubble land, with or without statement as to kind of materials

Limitation on time prevented specific recommendations on classes and phases of rockiness. The Committee agreed that spacing between rocks should be the primary guide to setting up rockiness classes.

Data collected in Kentucky show phase names were not used where rockiness occupied leas than 2 percent of the land surface, very rocky phases were recognized where rocks covered 2 to 25 percent of the surface and a complex of a series and rockland were used when surface coverage exceeded 25 percent.

The Committee recommended that it be continued to prepare an interim report to the National Committee on Stoniness and Rockiness which would:

(a) Contain specific recommendations on limits for classes of stoniness and give phase designations end definitions.

(b) Collect and transmit additional information on the amount of rockiness and to make suggestions for limits of classes of rockiness and for phase designations and definitions.

The Committee report was accepted.,

Committee Members

* A. H. Paschall, Chairman
R. F. Reiske, Vice Chairman
L. G. Cotnoir
* R. E. Daniell
R. A. Farrington
W. H. Lyford
*R. L. Marshall
N. K. Peterson
J. C. P. Tedrow
*K. P. Wilson
*S. J. Zayach

* Present for committee meeting, January 24, 1966.

Table 1 Stoniness class limits, expressed in terms of percent surface covered, space between stones, and ratio of open land to stone surface. (Eased on stones one foot square)

Class	No. of Stones	Percent Surface Covered	Spacing between Stones	Ratio of Open Land to Stone Surface Smallest for Class	Possible Phase Name
1.0	4 or less	<.01	7100	10,000 - 1	
1.1	4 to 21	.01 -.05	45 - 100	2,000 - 1	none
1.2	21 - 44	.05 - .1	32 - 45	1,000 - 1	
2.1	44 - 217	.1 - .5	22 - 32	500 - 1	
2.2	217 - 440	.5 - 1.0	10 - 22	100 - 1	stony
2.3	440 - 650	1. - 1.5	8 - 10	70 - 1	
3.1	650 - 870	1.5 - 2.0	7 - 8	50 - 1	
3.2	870 - 1300	2.0 - 3.0	6 - 7	33 - 1	very stony
4.1	1300 - 4350	3.0 - 10.0	3 - 7	18 - 1	Extremely
4.2	43560 - 21780	10 - 50	1.5 - 3	2 - 1	stony
5.0	21780 - 39204	50 - 90	(1.5		Rubbly
6.0		90+			Rubbleland

Each whole number (1, 2, 3) represents a broad class which may qualify as a phase. Each decimal number as .1, .2, etc., represents a subdivision which may be placed with an adjoining class to make a phase.

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

1966

REPORT OF COMMITTEE ON SOIL MOISTURE

Our committee concentrated efforts on topics suggested by the 1965 National Soil Moisture Committee. These included soil permeability, water table definitions and depth and duration classes, available information on water table studies, available moisture and suggested field moisture studies.

Permeability

Permeability classes based upon the Uhland core method and the auger hole method were discussed. The committee feels that the permeability classes proposed by the National Committee in 1963 based on the Uhland core method are not applicable to the auger hole method. More information on percolation rates using the auger hole method i.s needed before meaningful classes can be established. The two methods of measuring permeability are not comparable in theory. The Uhland core method measures one dimensional saturated flow in a confined core while the auger hole method, used as a measure of septic tank drainage field performance, measures three dimensions.1 unsaturated unconfined flow (except in the presence of a water table). Comparisons of the two methods were made in Fairfax County Virginia by the Virginia Agricultural Experiment Station and it is reported that the two methods were fairly comparable except in soils with swelling clays and those with lithologic discontinuities. Studies in Connecticut indicated that in soils with lithologic discontinuities the two methods could not be compared. Auger hole rates were higher than Uhland rates by a factor ranging between 1.6 and 3.7 for the limited number of soils studied.

The committee feels that percolation tests by the auger hole method gives a better' expression of the probable performance of a septic tank filter field under similar weather conditions. The auger hole method, however, needs to be standardized as to:

1. Size and depth of auger hole.
2. Length of presoaking period.
3. Height and maintenance of a constant head of water.
4. Time of year tests are made, etc.

In New Jersey attempts have been made in two locations to relate auger hole percolation tests with interpreted limitations based on standard soil surveys. At one location results were not satisfactory probably in part because the percolation tests were not standardized and were made by a number of people. At the other location the soils were examined in 2' x 2' pits and percolation rates were interpreted, In this case interpreted percolation rates based on the soil profile characteristic were supported by percolation tests.

At the conference a symposium on soil percolation testing was held. The participants were Dr. D. P. Franzmeier of the Soil Survey Laboratory, Beltsville, Maryland, Dr. R. P. Matelskf, Pennsylvania State University, and Dr. D. E. Hill of the Connecticut Agricultural Experiment Station. Summaries of their discussions appear in a separate report,

Water Table Classes, Depth and Duration

The committee recommends adoption of classes as listed below:

Very shallow	0 - 10 inches
Shallow	10 - 20 "
Moderately shallow	20 - 40 "
Moderately deep	40 - 80 "
Deep	8 - 240 "
Very deep	>240 "

By oversight duration classes proposed by the 1963 National Committee were not discussed. The committee feels that water tables should be defined in terms of depth, duration and time of the year. On soils that are ponded the duration and time of ponding should be noted. In soil survey reports and other publications the committee suggests that water table data be presented in chart form.

The committee was divide9 on whether measurement of water tables in mineral soils should be from the top of the 0 horizon or to top of the mineral soil. It was pointed out that the 0 horizons are subject to change due to burning, subsidence, etc. This is something that should be noted in the description of the sail profile and other notes concerning the site where water table data is recorded.

Perched and Virtual Water Tables

The need for recognizing perched and virtual water tables was discussed. The committee feels that perched water tables should be distinguished from apparent or true water tables in well, moderately well and probably somewhat poorly drained soils but not in poorly and very poorly drained soils. It is realized that in deep bore holes unlined or lined and sealed a perched water table may be missed. The committee feels that there is a need for recognizing and naming the condition described under the heading "Virtual Water Table" in the 1965 National Committee report.. The committee has no good suggestions for a better term than virtual .

The committee feels that in the northeast water table measurements are mostly apparent water tables or a combination of apparent and perched. The data. by Gile (see Appendix I) in New Hampshire is probably mostly perched water tables and the data in Ohio and Broome County, New York (see Appendix I) is probably a combination of apparent and perched. The committee assumes that the definition for true water tables means that the bore hole is lined and sealed. It is the concensus of the committee that measurement of apparent and perched water tables are the most meaningful. In Appendix I available information of water table studies and long time moisture studies in progress or completed are listed.

Available Moisture

The committee discussed briefly the request from the National Committee for suggestions for a more operational term for available moisture. No suggestions were made but the term readily available moisture was mentioned for moisture held at tensions between 0.1 or 1/3 and 6 bar values. One suggestion was made that more points on moisture release curves between .06 and 15 bar values would be helpful. Some moisture data by the New Jersey Agricultural Experiment Station show moisture retention value of 0.02, 0.06, 0.1, 0.33, 1.2, 6 and 15 bars. It is well know that 1/3 bar tension values do not represent field capacity for coarse textured soils and it may under estimate field capacity for other soils in coarse loamy and coarse silty families. Some data from New Jersey suggests that 0.06 bar retention values may more nearly express field capacity in coarse textured soils and 0.1 bar values in some coarse loamy and coarse silty soils.

Several members of the committee explored the possibilities of stratifying 1/3 - 15 bar retention values by classification of soils in the new system. Complete laboratory data is available for quite a few profiles but 1/3 bar tension values were determined on fragmented rather than core samples. In many profiles bulk densities were not determined and in many 1/3 and 1.5 bar retention values were not determined for the entire 40 inch control section. In Appendix II available moisture (1/3 - 15 atmos.) is tabulated for the 40 inch control section or to the top of a horizon that restricts roots for a number of soils profiles.

Field Moisture Field Study

Possible field moisture studies that could be conducted by a soil scientist in charge of a survey were discussed.

1. Water table studies is probably the simpliest and the one involving the least time that a soil scientist in charge of a survey could undertake. This would involve selecting the sites, preparing bore holes, describing the soil profiles, taking water table readings at regular intervals and keeping precipitation records.

2. Permeability studies is a project that a soil scientist in the field could undertake. Comparison of the auger hole and Uhland core methods on selected soils would be a good project. A project of this kind to be of value would require considerable time,

3. Another project mentioned was a study showing moisture values and percolation rates by horizons for selected soils over a period of time.

The committee feels that field soil scientists should be encouraged and given time to work on such projects. Giving them more responsibility would make, their job more interesting and make for better soil scientists.

Committee Members

*H. H. Bailey
*R. S. Bell
*C. Ehy
*D. S. Fanning
*L. E. Garland
*R. P. Matelski
S. A. L. Pilgrim
*H. C. Porter
E. J. Rubins
R. A. Struchtemeyer
*W. A. Van Eck
M. E. Weeks, V. Chairman
*A. E. Shearin, Chairman

*Present at the committee meeting,

Appendix I. Available Information on Water-Table Studies and Long-Time Moisture Studies in Progress or Completed.

In 1957 Midgley reported on water-table fluctuations in cultivated soils of the Hadley and Suffield series and the closely associated soils.
Midgley, A. R., 1957. Water-table studies on some Vermont soils. Vermont Agricultural Experiment Station Bulletin 597.

In 1958 Gile reported on a short study (Sept. '56 - June '57) on fragipan and water-table relationships of Paxton, Scituata and Ridgebury series in southern New Hampshire. The soil classified as Ridgebury in this study probably would be classified as Norwell now.
Gile, L. H., Jr., 1958. Fragipan and water-table relationships of some Brown Podzolic and Low Humic Glei soils. Soil Science Society of America Proceedings 22:560-565.

*The Ohio Department of Natural Resources, Division of Lands and Soil started a water-table study in 1961 on a number of series including Brookston, Crosby, Celina, Miami, Clermont, Avonbury, and Russmoyne series. The soil and water table studies were summarized for the years 1961, 1962 and 1963. A copy of this summary is available from the Ohio Department of Natural Resources, Division of Lands and Soil.

In 1964 Lyford reported on water-table studies over 4 to 6 year periods at two locations, one at Fremont, New Hampshire and the other et Harvard Forest, Peter&am, Massachusetts. The study included soils classified in the Woodbridge, Ridgebury, Elmwood, Swanton, Whatley, Sudbury and Ninigret series. Sudbury loamy coarse sand and Ninigret loamy sand are outside the range of the Sudbury and Ninigret series as now defined.
Lyford, W. H., 1964. Water-table fluctuations in periodically wet soils of central New England, Harvard University, Harvard Forest Paper No. 8.

In Broome County, New York, Huddlcston studied the depth to free water over a period of 2 years at weekly or semi-weekly intervals at one site each on Canaseraga, Culvers, Dalton, Mardin, Morris, Scio and Valusia series.
Huddleston, J. H., 1965. Soil Survey Interpretation for subsurface sewage disposal in Broome Co., N.Y. A thesis presented to the faculty of the Graduate School of Cornell University for a degree of Master of Science.

*The University of Maryland and the. Soil Conservation Service initiated a study on ground water levels and fluctuations about 2 years ago. The study is being conducted on 3 poorly drained series, Fallsington, Othello and Elkton in Talbot County and on Sassafras, Woodstown, Fallsington and Pokomoke series in Worcester County. Some data for the first. two years of the study has been summarized in rough draft form.

*In New Jersey Rutgers University in cooperation with the Soil Conservation Service have a study entitled 'Water-table levels and physical characteristic of wet soils in New Jersey". This study has been in progress for several years but no data has been summarized to date.

In Connecticut water table levels have been measured for a period of 3 years on one site on Sutton, 2 years on one site each on Ridgebury, Whitman and Walpole series.

The Department of Agricultural Engineering of the University of Connecticut has a project on Individual Water Disposal Systems. Preliminary laboratory investigation on non-saturated flow in soils on E. Coli movement due to temperature differential are now in progress.

In addition to the long-time moisture studies now in progress listed above the following have been initiated recently or will be at an early date:

The Soil Conservation Service in Pennsylvania started water table studies in Montgomery County in October.

In Delaware the State of Delaware Drainage Commission plane to initiate a soil moisture and water table study in drained areas that seem to be overdrained due to the continued drought over the last few years.

The Kentucky Agricultural Experiment Station is initiating a long-time study concerned with soil moisture, temperature and rainfall.

The Virginia Agricultural Experiment Station is starting a water study on a number of series.

*Long-time moisture studies.

Long-Time Moisture Studies Completed.

.S47 Project, Southern Region, dealing with rainfall, soil moisture, evaporation and temperature in 5 locations: 1 in Kentucky, 2 in Tennessee, 1 in Virginia and 1 in Florida. The project was for 4 years in Kentucky and for 5 years at the other locations.

Appendix II. Available Moisture in 40 inch Control Section or to A Horizon thet Restricts Roots Cor Selected Soils

Soil Series, Subgroup & Family	Available Moisture 1/ 1/3 - 15 atmos. 40" 'Control Section In/in.	Total	To Horizon That Restricts Roots Depth In.	In/In.	Total
Mercer silt loam - S54Ky34-5 Typic Fragiudalf, fine silty mixed, thermic			26	0.16	4.14
Tilsit silt loam - S58Ky103-1 Aquic Pragiudult, fine silty, mixed, ❑ esic			24	0.15	3.57
Dickson silt loam - S55Ky109-1 Typic Fragiudult, fine silty, mixed, thermic			24	0.18	4.38
Bedford silt loam Typic Pragiudul t, fine silty mixed, mesic			19	0.14	2.70
Bosket silt loam - S61Tenn23-12 Typic Normudalf, fine loamy, mixed, thermic	0.17	6.78			
Burton silt loam - S58NH9-1 Aqualfic Entic Normorthod, fine silty (O-14) fine clayey (14-40), mixed, mesic	0.28	11.24			
Buxton silt loam - S58NH8-1 Aqualfic Entic Normorthod, fine silty (O-18) fine clayey (18-40), mixed, mesic	0.27	11.02			
Covington silt loam - S56Vt7-3 Unclassified - fine/very fine clayey	0.22	8.73			
Covington silt loam - S56Vt7-4 Unclassified - fine/very fine clayey	0.18	7.23			
Bridgehampton silt loam - S58RI5-2 Entic Normorthod, coarse silty, mixed, mesic	0.20	7.93			
Bridgehampton silt loam - S58RI5-3 Entic Normorthod, coarse silty, mixed, mesic	0.17	6.79			

Soil Series, Subgroup & Family	Available Moisture 1/ 1/3 - 15 atmos. 40" Control Section In/In.	Total	TO Horizon That Restricts Roots Depth In.	In/In.	Total
Hartland very fine sandy loam - S57NH7-4 Rntic Normorthod, coarse silty, mixed, mesic	0.26	10.50			
Paxton loam - S60NH5-5 Entic Fragiorthod, coarse loamy, mixed, mesic			23	0.18	5.14
Paxton loam - S60NH5-7 Entic Fragiorthod, coarse loamy, mixed, mesic			23	0.14	3.22
Cherlton loam - S60NH5-8 Entic Fragiorthod, coarse loamy, mixed, mesic	0.15	6.00			
Leicester stony fine sandy loam - S58Mass8-6 Aeric Mollic Normaquept, coaraa loamy, mixed, acid, mesic	0.13	5.01			
Leicester stony fine sandy loam - S58Mass8-4 Aeric Mollic Normaquept, coarse loamy, mixed, acid, mesic	0.11	4.30			

1/ 1/3 bar tension values determined on fragmented samples

Discussion of the Report on Soil Moisture

Hill -Laboratory ❑ oiatura release curves do not adequately describe what moisture is available for tha plant, This can only be ● pproxLmated. It becomes necessary to evaluate soils in the field to estimate what is available. Samples from a roil horison, removed and evaluated, are often poor measures because the amount of moisture held in a ● oL1 horizon is not only related to tha characteristics of the horison itself but what is above and below Lt. Laboratory data seldom reflects these relationships.

Franzmeier - In soil moisture studies the greatest need in for release curves showing moisture values and percolation ratta by horizons for selected soils over a period of time.

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

1966

REPORT OF COMMITTEE ON MADE SOILS

Regional Committees were not given specific charges by the National Committee on Made soils. It was stated, however, that what was needed was detailed descriptions of specific examples of different kinds of the so-called "miscellaneous land classes" such as "alluvial land", "strip mines", "urban land", and "cut and fill land." It was suggested that the studies be made by transects across the entire delineated area, that transects be divided into 10 equal sections with observations at each 1/10 interval.

Several examples were submitted from most of the states. Nearly every one was of a different kind of land. Those from Kentucky, Maryland, and Delaware, were in the form of transects. Others were of more uniform conditions which were described by representative profiles. Some were general descriptions of extremely variable conditions. One was of a type of "shaped land."

The Soil Survey Manual definition of Made land is as follows:

> "Made land consists of areas filled artificially with earth, trash, or both, and smoothed. It occurs moat commonly in and around urban areas.
>
> Stabilized land areas with clearly defined soil characteristics or even those with young soils, if definable and uniform enough to map, should be classified as soils, even though originally made or reworked by man."

The 1962 Northeast Committee on "Soil Surveys in Urban Fringe Areas" suggested that most urban areas developed for housing or industry are disturbed to some extent and in many places the diagnostic soil horizons have been destroyed or obliterated. This Committee suggested that 3 categories of disturbed soils should be recognized in mapping.

1. Dumps and fills containing some earthy material but with a high proportion of trash.

2. Cut nnd fill material where the diagnostic soil horizons have been largely obliterated over a high percentage of the area.

3. Areas disturbed somewhat but not to the extant that all the diagnostic soil horizons have been obliterated over a large percentage of the area.

The Committee proposed that the first category be called "Made land", the second "Made soil", and the third "phases of soil series."

It war suggeeted that in the second category mapping units established be based on texture, structure, consistence, drainage, lithology, coarse skeleton, etc., depending on local conditions.

In 1965, at the National Work Planning Conference of the Cooperative Soil Survey, the Committee on "Classification and Nomenclature of Made Soils" discussed the definition of "Made lend." It was agreed that the term wee restrictive and that in practice mapping unite have included areas ranging from rubbish dumps to eoila which have been altered largely by moving equipment in urbanized communities. In come survey areas these various kinds of "Made land" were recognized but may not have been properly named. Therefore, one of the main objectives of this Committee wae to develop guidelinei for recognition and naming of areas which might fell outside the revised definition of "Made land."

Recommendations in the Nartheaetern and Western Regional Committee reports were accepted. These recommendations were:

1. Restrict Made lend to essentially non-earthy material.

2. Uee Made roil as a broad class name for materiel consiting of a mixture of solums and underlying material or artificial fills of earthy materials,

Recommendations of the National Committee are:

1. Revise the definition of Made land as follows:

   Made lend consists of areas filled or covered artificially with miscellaneous material including trash, stones, nod industrial waste, but excluding areas of eaaentially earthy materiel, Hade land is not suitable for crop production.

2. Adopt a new term, "Made soil" with the following definition:

   Made eoil consists of areas of earthy material which have been greatly dieturbed or changed by men. Ae a result their characteristics are so diverse or variable that it is not practical to place them in existing series. Likewise, it is not feasible to write new series descriptions to fit them. Nevertheless, certain general characteristics can be described and alternate uses can be suggested for these dieturbed areas.

3. Recognize as named roils those areas consisting of earthy material disturbed or modified by man in which the characteristics are such as to enable placement in existing soil series or recognition of a new series.

4. Where two or more classes of Wade soil" are established in a survey area. modifying adjectives must be added for differentiation. The modifiera should follow the term "Made soil" in

order to keep these units in alphabetical aequaace in the published report. Modifying adjectives reflecting a soil characteristic or mode of origin may be used, for example:

Made soil, sand and clay
Made soil, calcareous
Made soil, smoothed

The above rule applies to Made land.

The 1966 Northeast Committee reviewed the history of "Made land", the recommendations of the 1965 National Committee, and the descriptions and transects submitted by the several atatee in 1966.

This Committee thought that there is a place for the term "Made soil",, particularly in the Northeast where there is a great demand for interpretive information in urbanized areas and where much of the original soil profiles have been greatly altered. Therefore, the Committee proceeded to develop guidelinea based on the recommendations of the National Committee which are as follow:

1. Identifiable series (new).

   cuts - greater than thickness of diagnostic horizon.
   Fills (deep) - deeper than 40" control section.
   Cuts and Fills - complex of the above.

2. Identifiable series and modifications (established series and phases).

   Cuts - less than depth of diagnostic horizon.
   Fills - less than 40" thick.
   Cuts and Fills - complex of the above.

   These soils could be classified as Arents or Anthropants 1/

3. Made soil - mixtures of materials - variations wider than family limits. Usually fills greater than 40" thick and having no repetitive pattern of profiles making up a pedon.

4. Made land - trashy, non-earthy materials.

Paschal1 suggested, and the Committee approved, that two descriptions of transects of "Made soils" from each state be added to this report as an appendix. These examples should be well documented as to color, texture, coarse fragments, structure consistence, reaction, thickness, composition, and depth to water table. These descriptions are to be forwarded to the Committee chairman by June 1, 1966.

1/ "Arents" have displaced and mixed but identifiable diagnostic horizons.

"Anthropents" have no diagnostic horizons but are uniform.

Discussion After Committee Report

Much discussion followed the Committee report.

Quakenbuah was afraid that series would proliferate. In answer to this the 2,000 acre minimum limitation for establishment of a series was quoted.

Zayach queried the 40" fill limitations.

It was generally agreed that there were conditions uniform enough and widespread enough to need a correlatable name.

The group as a whole started by being antipathetic but as discussion proceeded, comment became more favorable as the recommendations were discussed and better understood.

Many examples were described to the group along with the ways in which the new suggestions would be applied to them.

Committee Members: M. F. Hershberger, Chairman
K. P. Wilson, Vice Chairman
R. E. Daniell B. J. Patton
M. Howard J. C. F. Tedrow
C. J. Koch G. Schafer
A. H. Paschall S. J. Zayach

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

1966

REPORT OF COMMITTEE ON NORTHEAST SOIL ASSOCIATION MAP

The committee met on Monday afternoon, January 23, 1966.'~ Many members of this committee were delayed by snow. However, its ranks were increased by several members of the conference whd'had no specific committee assignments.

I. Review of Progress.

Prior to 1960, a committee on Small Scale Maps 'circulated and compiled a soil association map of that portion of the Northeast region covering New York and the New England states. Walter Lyford and Morris Austin, S.C.S. representatives, were instrumental in the compilation of the map and accompanying legend. For this portion of the Northeast alone there were some 33 mapping units. The project was suspended by action of the 1960 conference as recommended by the Committee on Small Scale Maps pending completion and adoption of the new classification system. Interest was revived soon after the new classification system waa adopted' and was further stimulated by publication of the Western Regional Soil Association Map. Interest was generated both by members of the Northeast Research Committee and the Northeast Soil Survey Work Planning Conference. A committee was formed within the framework of the NESSWPC and charged to evaluate the need for such a publication and to assess the feasibility of. attempting such a project.

II. Uses of the Association Map and Accompanying Text.

Among the uses discussed were:

A. Use in teaching: The usefulness of the map alone would depend upon the size of the map and the level of cartographic detail. The merits of large wall maps for group demonstrations vs. small maps that could be used as handouts for personal use were freely discussed but no strong preference for either developed. There was general agreement that the number of map units and level of cartographic detail be kept to a minimum, The basic function of the map would be to demonstrate that regional differences exist 'and can be delineated on the basis of geographical extent' and general land use.

B. Commercial Surveys: Many members of the committee related personal contacts with representatives of commercial interests in which a regional association map would have proven useful.

C. Regional Planners: The usefulness to regional planners would depend upon the extent of regional responsibility. Regional 'lanning .gencies operating across state lines would gain more value of such a map than an agency involved in planning within

a state. State agencies would appreciate more cartographic detail within the confines of their respective states.

D. A Promotional Publication: 'An association map has value in calling people's attention to the fact that there is a branch of science which deals with the classification of soils and interpretation of soil information.

III. The Map

The we of the association map, already partially completed for the Northeastwas discussed. At present in New York-New England there were some 33 map units. Expanding this to cover the remaining portions of the Northeast, it was estimated that 50 to 60 map units would be required to maintain the present level of cartographic detail. As the number of map units increase? its effectiveness as a teaching aid would diminish.

The S.C.S. is currently preparing a general soil tip of the United States. It is now in draft form. The concensus of the committee was to explore the use of this map.

The general map has sufficient cartographic detail to highlight the regional differences in soils and delinate the higher categories of the new classification system. It was estimated that for the entire Northeast Region, there would be six major units and some 31 subunits.

IV. The Text

The S.C.S. General Soil Map will probably be issued without text except for a legend which would appear on the back. This will give very brief descriptions of the map units. To use the map effectively in teaching, amplification would be desirable. Using the Western Regional map as an example, the committee recommended inclusion of the following kinds of information.

1. Description of general physiography of each area.
2. Broad classification of soils in each unit with emphasis on the new system, yet with a tie-in with the old system whenever possible.
3. Profile description of a representative soil series in each unit,
4. Broad interpretations for agriculture, forestry, wildlife, recreation, and urban development.

It was estimated that a committee of about 6 can accomplish the task in a reasonable amount of time with one designated as chairman and coordinator of the project.

Recommendations:

1. The committee found that the project is a feasible one both in terms of need and execution and that a favorable report be passed on to the Northeast Soil Research Committee for further study.

2. Project financing and personnel assignments should come from Experiment Station and University organizations. It is reasonable to assume that if the Northeast Soil Research Committee acts favorably to the project, the S.C.S. would lend some measure of cooperative support.

3. The region be confined to the present Experiment Station Regional area unit, but that provisions should be made to include Ohio, Kentucky and Virginia if they wished to lend cooperation.

Committee members:

Chairman - N. K. Peterson
Vice-chairman - W. J. Steputis
* L. G. Cotnoir
* J. H. Elder
R. A. Farrington
W. H. Lyford
* R. L. Marshall
* J. R. Mott
* G. A. Quakenbush
W. Wertz

Visitors: A. J. Baur
F. G. Loughry
R. W. Simonson
D. E. Hill (Chairman Pro-tern)

* Present at committee meeting and report session.

Brief discussions ensued following presentation of the report by Chairman Pro-tern D. E. Hill.

Comments from members of Experiment Stations and Universities not represented in committee were solicited. Most Experiment Station representatives expressed interest in the project. The question arose concerning possible conflicts with state soil association maps but there was general agreement that conflicts would be minimal because cartographic detail is considerably less than found at the state level. There was concern, however, that several states might not accept, in principal, the lines which have already been delineated on the S.C.S. general soil map.

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

1966

SYMPOSIUM ON SOIL PERCOLATION TESTING

Introductory remarks by D. E. Hill

In our interpretations of soils for urban use, we attach great importance to soil permeability as it affects effluent disposal from septic tank drain fields. To evaluate soil permeability at any given site, the sanitary engineer has devised the percolation test, a method accredited to Henry Ryon of the New York State Department of Health some 40 years ago. The percolation test has changed little from its original form, Subsequent investigations have led' to improved standardization and adjustment of the empirical evaluation of sewage loading rates and design of disposal systems,

With urban expansion into the rural fringe, both sanitary engineers and soil scientists have been taking a harder look at percolation testing. Many have concluded that the percolation test, as we know it, is a poor measure of the permeability in a disposal field. The purpose of our symposium today is not to belabor the percolation test, but to understand it more fully. It is important to know how it operates and what it measures. Once we have a firm understanding of the principles involved, we have three choices: we can use the test as is and adjust our interpretations according to its limitations; we can redesign the test to overcome its limitations; we can attempt to use an entirely new tool in evaluating soil permeability. Across the nation, energy is now being expended in each of these three directions.

Today's speakers have been intimately involved in programs of study of percolation testing. Dr. Franzmeier, our first speaker, comes from the Soil Survey Laboratory in Beltsville, where studies have been made in long-range or sustained percolation tests. Dr. Matelski, Penn State University, will discuss percolation studies being made relative to their active soil characterization program. Finally, I will tell of studies in Connecticut involving the principles of water flow in the percolation test holes, site and seasonal. variations.

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SYMPOSIUM ON PERCOLATION TESTING
SUSTAINED TESTS

Percolation tests designed to study some of the test variables such as diameter of hole, depth of water, and methods of preparing the surface were conducted on a uniform area of Christiana silt loam (series classified Typic Normudult; clayey, kaolinitic, mesic). The tests were continued for one month and all the water added was measured. Differences in rate as great as 100-fold were observed among three replicates of some treatments. The trend was for the percolation rate to decrease until it maintained some constant rate, but the constant rate in many cases was not reached for 7 to 10 days. (In most studies, rates are reported to become constant in a few hours.) Different methods of preparing the surface of the test hole greatly influenced the measured percolation rates. Details of the study are included in a report that can be obtained from the Soil Survey Laboratory.

A report by Coulter, et al.*, was reviewed. After examining existing seepage beds the authors of this report drew curves of the expected survival of seepage beds in certain soils. For the soils they encountered, from 5 to 65 percent of the systems failed after 5 years. This emphasized the point that a septic tank drainage field is only a temporary method for disposing of sewage effluent, even in coarse-texture soils (10 to 25 percent of the seepage beds in Plainfield sand failed after 5 years).

The problem of pollution of soil and water was presented for discussion. Apparently, few studies and surveys have been made to establish the magnitude of the problem. Perhaps future Work Planning Conferences should consider to what extent the Cooperative Soil Survey should be concerned with the problem. If we are to be more

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* Coulter, J. B., Bendixen, T. W., Edwards, A. B., Jones, J. II., nnd Muhich, A. J.
Report of a Study Sponsored by the Federal Housing Administration to Develop Practical Design Criteria for Seepage Beds as a Method for Disposal of Septic Tank Effluent. Taft Sanitary Engineering Center, U. S. Public Health Service. December 15, 1960

concerned, one possible course of action would be to document our observations of pollution and to conduct studies of the magnitude of the problem or to encourage that such studies be done. In many cases we may know that the problem is already sufficiently important to require something to be done about it. In these cases, the course of action could be to recommend against using the soil for septic tank drainage fields, even if the soil is "suitable" according to some technical standards, and to educate the public about the importance of installing central or commit); sewer systems as the urban fringe expands.

It seems to me that by making recommendations regarding the suitability of soils for septic tanks, we are giving tacit approval to the practice of using the soil as an absorbing medium for effluent without knowing the consequences of the practice. It is possible that serious problem may result in areas of high concentrations of septic tank systems, such as some urban-fringe areas.

D. P. Franzmeier, SCS
Soil Survey Laboratory
Beltsville, Maryland

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SYMPOSIUM ON SOIL PERCOLATION TESTING

R. P. Matelski, The Penn State University

A total of 72 modal soil types in duplicate from 18 counties in Pennsylvania were field percolated. Percolation was usually at the 36" depth for the deep soils and to the maximum soil orchard auger augerable depth for the moderately deep and shallow soils.

Surrounding the modal site plt usually at least six test holes were drill led and percolated. The minimum, maximum and average percolation were recorded, Procedures of the U.S. Public Health Service were followed. Soils were wetted over night and tests continued at least four hours beyond the point at which the percolation rate became constant.

Data showed In almost all moderately well to poorly drained Pennsylvania soils the percolation was below the minimum of the 1"/hr. rate. Not all well drained deep, moderately deep and shallow soils were above the 1"/hr. rate. In some soils, in the R horizon, (Gilpin, Calvin, Westmoreland) percolation rate also was reduced to less than 1"/hr. Laboratory characterization such as percent of coarse fragmonts, clay content, and sand fractionation of some soils helped explain variatlons in percolation.

Percolation tests determined in dry Augusts on some poorly and somewhat poorly drained soils showed that on some sites percolation approached the 1"/hr. rate.

In the winter months. with sol I and water temperature at the percolating level at 2 to 4° C., the percolation rate was greatly reduced, A modal Hagerstown was reduced from an average of 4.5 to 0.5 in./hr.; a modal Millheim from 1.5 to 0.4; a modal Morrison from 3.3 to 0.5; a modal Gatesburg from 21 .0 to 14.0 with some showing no percolation.

On a modal Hublersburg, the percolation rate increased with an increase in constant head; 0.37 for the 4 inches to 3.0 for the 10 inches of head. Likewise the percolation rate increased with an increase in the variable head. There was a tendency for the comparable constant head to more rapldly percolate than the variable head.

A pilot computer study showed that percolation was related to the content of coarse fragments, sands, fine silts, clays, and bulk density. Other analyses for prediction of the percolation rate and the relative Importance of the soil factors are being made.

Research on a uniform modal Hublersburg soil showed considerable variations in percolation (0.19 to over 9.84 in./hr.) and In percent of sand, silt, clay, coarse fragments, and bulk density. After seven weeks of almost continuous percolation the following:

	in./hr.
5% calgon ---	0
State College effluent ---	0.2
Water ---	0.5

PERCOLATION STUDIES IN CONNECTICUT

D. E. Hill

Recent investigation5 were designed to elucidate the following points:

1. How water moves away from the test hole.

2. How percolation rate5 vary with time during the test and throughout the seasons.

3. How percolation rates vary within and between sites of the same soil and with depth at the same site.

Percolation tests were conducted in the manner prescribed by the Manual of Septic Tank Practice, modified to create a constant head in a gravel-filled hole during the pre-soaking period. Three soils, Wethersfield (till with fragipan), Cheshire (till without fragipan) and Merrimac (stratified terrace) were studied.

Some result5 are summarized as follows:

1. Water flows from a percolation test hole through unsaturated soil, and its movement is governed more by capillary forces than by gravity.

2. Constant heads of water in test holes during pre-soaking reduces soil slumping and prevent5 air from entering the pores of the hole wall, thus slowing percolation rates,

3. Structural support of the hole wall with deep gravel fill reduce5 slumping and provides an effective trap for suspended soil particle5 which tend to clog pores in the wall.

4. Percolation rates are significantly affected by moisture content (seasonal effect). They are low in the wet soil of early spring, increase as the soil dries during late spring and summer and may decrease again if the soil dries excessively in late summer.

5. Percolation rates are more variable at 36-inch depths than at 18-inch depths except in soils with fragipans (Wethersfield).

6. Short term equilibrium rates were established in about 4 hours in most soils. In soils with fragipans (Wethersfield) equilibrium rates were attained after a longer pre-soaking period, often 16 hours.

7. Percolation testing in early spring conservatively estimates the capacity of the soil to transmit effluent. Percolation rates within a site are less variable at this time and high water tables, if present, may be observed.

The details of this study will soon be published by The Connecticut Agricultural Experiment Station.

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SPECIAL REPORT

Guidelines in the Application of the New Classification System
By: Dr. R. W. Simonson

Dr. Simonson reviewed the 1965 National Report of the Committee on Application of New Classification System.

Dr. Simonson briefly reviewed SOILS MEMORANDUM 11 (Rev. 1) relative to format, content and the preparation of series descriptions.

He also reviewed the September 1965 statement on the Application of the New Soil Classification System. The following points were emphasized:

1. The September statement has been revised and the new draft will be released soon for a six-month trial period.

2. Dr. Simonson commented that he expects that there will be about a 50% increase in the number of series from what we presently have. This 50% increase does not include new series for new survey areas.

Notes on Discussions After Presentation of the Special Report to the Conference:

Howard:	Will this statement on the Application of the New Soil Classification System be published as a Soils Memorandum?
Simonson:	After the six-month trial, the statement will be issued as a Soils Memorandum.
Paschall:	Would you elaborate upon "taxonomic inclusions" relative to the naming and recognition of new soil series?
Simonson:	We should be cautious in establishing new series for soils that are of limited extent if they are just outside the defined limits of a family.
Hersberger:	In Prince Georges County we have set up a variant for such situations and then find that we do not join up with adjoining counties or even along state lines.
Simonson:	It may be better to go to a series in this case. We will have examples of this.

Respectfully submitted,

/s/ Sidney A. L. Pilgrim
Recorder

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SOIL CORRELATION WORK IN THE PRINCIPAL CORRELATORS OFFICE

A. J. Baur

Cooperation has been good between the states and our office on soil correlation and report work. Men who have been in our office on temporary assignment have been very helpful. Materials being sent in are better than in the past, but continued improvement is needed.

Twelve final correlations have been completed in the Principal Correlator's office in Upper Darby in the seven months period July 1965 - January 1966. Ten correlations are scheduled for completion during the period February 1966 to June 1966 and twenty-nine are scheduled for completion during July 1966 to June 1967.

Time has been scheduled for two major steps for each of these correlations which are to be completed. At present the time lapse between the two steps is one to three months; beginning in March the schedule allows three months or more between the two steps, The steps are:

1. Review and check the field correlation and supporting material. This includes activities such as preparing a list showing status of series descriptions used as basis for correlation; checking placement of series in the new system; testing supporting material for validity of series and mapping units; requesting additional information from states; and corresponding with Dr. Simonson's office about establishment of new series or change in status of series.

2. Compose the final correlation. This involves mainly checking responses from the states and from Dr. Simonson, completing all testing, compiling the final correlation in proper format, and distribution of the document.

The above outline of steps used in our office should guide the states in providing better information for preparation of final correlations. Some areas which have been especially troublesome are:

1. Description for soil series for which concepts are undergoing change.

2. Incomplete series descriptions in the supporting material or conflicts between "technical" and "popular" descriptions.

3. Mapping units - total number needed; combining units with small acreage and describing inclusion; and doubtful justification in description. State office can make better combinations of units than the Principal Correlator.

4. Names for miscellaneous land types.

5. Amendments to the final correlation can be made, but careful checking of map symbols, spelling, etc. will reduce the number of amendments needed.

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Engineering application and interpretation

W. A. "an Eck

From the 1965 national report there cannot be much extracted that is of specific interest to the regional committee. Suffice it to mention that the national committee once again struggled with the evaluation of soil percolation tests, and that it sponsored the distribution of a laboratory method to predict shrink-swell behavior of soils. It recommended the preparation by S.C.S. laboratories of literature summaries on recent research in soil water movement. It also recommended the preparation of a nationwide guide for soil engineering interpretations, to be compiled from up-to-date information, especially two existing guides for the Great Plains and the North Central States. Lloyd Garland is a member of the committee charged with this project and they are making good progress. The S.C.S. will circulate edited drafts of the guide to all concerned for their comments and review.

Other recommendations of the national committee were proposals for S.C.S. sponsorship of joint training sessions for State leaders in the non-agricultural uses of soil surveys, to concur with the publication of soil interpretation guides.

This conferee attempted to summarize recent progress to a better rapport with non-agricultural interests in soil survey. There was a special session at the Columbus A.S.A. meetings where S.C.S.A. members conferred with representatives of the Highway Research Board, the American Society of Civil Engineers, the American Society for Testing Materials and the Society of Economic Paleontologists and Mineralogists, in an attempt to come to agreement on particle size standards. But many other concepts and standards divide the disciplines that deal with soils, and terms such as "soil", "structure", "granular", etc. have widely different meanings.

The County soil report often fails to fit the engineer's needs because of such limitations as: insufficient data for unconsolidated materials, variable homogeneity of mapping units, lack of detail for specific construction sites, variable accuracy and information for rights-of-way in adjoinging counties, etc.

Certain examples of efforts to bring soil interpretation to the non-agricultural user should be mentioned here. West Virginia University may have the only integrated engineering soils course ("Geotechnics") offered in the country. From the experience have stemmed suggestions to improve the contents and use of soil survey information. Where it is known, the geology and mineralogy of soils should be covered in more detail in the report. The need for pooling engineering

soils data by State or region is urgent. Such bulletins can also show how soil maps can be converted to interpretive maps for specific applications (see Pelzner's paper for Jackson-Mason County, W. Va.) In residual soil area6 the modern soil map is an accurate guide in geologic surveys of formation8 without surface outcrops and this indirectly helps the engineer who relies on this information.

The teaching experiment with the Engineering College deserves duplication elsewhere as it has led to faculty exchange on research committees, conference6 on soil research priorities, joint sponsorshi of a foreign lecturer on soil mineralogy, membership of regional and local planning and zoning boards and conferences, exchange of relevant literature, etc.

The last few years we have participated in the Appalachian Underground Corrosion Short Course which is attended by some 700 engineers and the largest of its kind in the country. To illustrate how this contact can lead to new ideas, let me mention our conclusions from a study of pipeline corrosion in N.Y. glacial till soils. Resistivity nor any static soil property explained corrosivity as well as a fluctuating water table in imperfectly drained soil or the occurrence of wet and dry soils side by side. (Proc. 9th and 10th Underground Corrosion Short Course, W. Va. Univ.)

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Climate in Relation to Soil Classification and Interpretation

Climate in relation to soil classification and interpretation has been of great interest to the workers in soils during the past few years. With the advent of the new classification scheme, we have become keenly aware of many gaps in our knowledge of the basic characteristics of climate as well as their implications in soil classification and interpretation. Today we must know, for example, the temperature and moisture regimes of all of our individual soil series (Soils Memorandum ll-Rev. December 21, 1965).

The national committee on climate has recommended that the regional committees "encourage each State to make soil temperature measurements in accordance with prescribed methods and with the technical guidance of the Principal Soil Correlators and that a progress report be made at the next regional work planning conference".

Several studies have been undertaken to gain a better idea of the micro and macro climatic environment under which soils occur. In 1965, Dr. D. P. Franzmeier, and others, reported on the effects of north-south aspect in relation to soil temperature. Their method of obtaining temperature measurements was to dig a hole about 17 inches deep and insert a dial thermometer into the soil so that the center of its sensitive area was at the 20 inch depth. Readings were made about the 15th of each month, and new holes were dug for each reading. Well water temperatures-were also obtained from nearby used dug wells. The Weather Bureau air temperature data from nearby stations were obtained. The cumulative data thus obtained were adjudged to be quite reliable even though the instrumentation was not elaborate. Perhaps similar studies would be appropriate in some of the survey areas of the region.

A more elaborate instrumentation was recently used at five sites (Lexington, Ky., Knoxville and Jackson, Tenn., Blacksburg, Va., and Gainesville, Fla.) for Southern Regional Project S-47. In this work, air temperatures 5 feet and 3 inches above the ground, and 1 and 4 inches below the ground were obtained as well as precipitation, evaporation, wind velocity, and solar radiation. This project is being terminated and results are due for publication in mid-1966. In conjunction with this work, the Kentucky station farmed an adjacent plot of Maury silt loam soil using supplemental irrigation so that the only known Limiting factors to crop growth would be available solar energy and the genetic limitations of the plants themselves. Some data from this work will serve to illustrate our need to be careful in interpretative work when we rely wholly on standard Weather Bureau air temperature data.

Kentucky Project S-47

1961 - last frost	- 5' above ground	- 18 April (32-28°)
	3" above ground	- 27 May (32-28°)
1961 - first frost	- 5' above ground	- 27 October (28-24°)
	3" above ground	- 15 October (32-28°)
1964 - last frost	- 5' above ground	- 10 April (32-28°)
		10 April (below 24°)
1964 - first frost	- 5' above ground	- 10 October (32-28°)
	3" above ground	- 6 October (28-24°)

Generally there was frost several days earlier at ground level than at the 5 foot height. The temperature differential varied with wind movement, but generally the 3 inch reading was always equal to or lower (by 6 to 10 degrees) than the 5 foot reading at night. During the day the reverse was generally true. There was also generally a lag of about 24 hours in the freezing of the surface 1 inch - thus daytime warming might counteract the initial sudden nightime low temperatures. This illustrates that plants live in a zone of greater temperature flux than is indicated by standard weather data.

The irrigation study showed crop response varying from 55% increases in 1962 to a 10% increase in 1963. 1963 was generally a "cooler" year than 1962. The lower temperature of 1963 caused the irrigated responses to be lower than in 1962, while the non-irrigated was higher than for 1962. Temperature, solar radiation, and water evaporation were each highly correlated with corn ear growth. Relative humidity, precipitation, and wind movement were not correlated with ear growth. Day-to-day weight growth of corn kernels was positively correlated with the average air temperature and relatively independent of solar radiation.

Even though the above data are not directly related to soils and soil survey they are given to show that climate is a complex variable in which our soils exist. Thus, the soil scientist needs to comprehend some of the complexities involved in order to provide better interpretative guides for the use of soils with which he is involved. Further, it is hoped that there will be more and better climatic studies associated with our soil survey activities, or that the results of such studies will be made available to us.

H. H. Bailey
University of Kentucky

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ORGANIC SOILS

REVIEW OF JANUARY 1965 REPORT OF THE NATIONAL COMMITTEE

By K. P. Wilson

Dr. R. S. Farnham took over the chalrmanshlp of the 1965 national commlttee from Dr. J. E. Dawson and presented revisions of the proposed scheme for classification of Histosols. Reports from all four regions were rev lewed. All four had conducted field trials of some nature, using the new system.

A. Histosol: - current definitlon (organic carbon vs. loss on ignition were discussed es methods to use in determiningminimum organic content. Soil Survey Laboratories to assist in deciding best method.)

B. The diagnostic horlzon must be more than 12 Inches thick If drained and more than 18 if undrained because of estimated initial sub-s idence. The surface 12 and 18 Inches are excluded. Whiteslde suggested that to avoid unnecessary splitting of series where the organic layer is shallow to mineral, the upper 12 Inches If drained or 18 inches if not drained not be Included with the diagnostic horlzon <u>except</u> where the organic horizons are less than 12 Inches thick.

C. The term "drained" should specify evidence of a plowed surface layer or other evidence of dralnage Indicating that initial subsidence has occurred.

D. The National Committee discussed the problem of pH determination. A correlation of various methods was presented. It was pointed out that pH in salt solutions was preferable to pH In water because (a) replacing power of cations follows lyotroplc series and (b) pH with water fluctuates seasonally, generally increasing on drying. The committee suggested the pHydrion system with salt solution for quick fleld test or possibly the Helllge methods.

E. Diagnostic horizons: some changes made from 1963.

Type I Fibric Horizons - least decomposed.

(1) More than 2/3 fibers in total mass,' More than half of which must be so well preserved as to not change chroma when rubbed wet or must resist becoming disintegrated or greasy.
(2) Increase one or more units in color value (Munsell) when pressed wet.
(3) Sodium pyrophosphate extract on white filter paper is higher in value and lower in chroma than 10YR 7/3.

Type II Hemic (formerly Lenic) - intermediate decomposition.

(1) Fiber content between 1/3 and 2/3 of total mass.
(2) If fiber more than 2/3, over half of fibers will decrease at least one unit in chroma (Munsell) when rubbed wet.
(3) If fiber more than 2/3 of total mass and does change color when rubbed, then more than half of fibers are easily broken down or become greasy when rubbed wet.

Type III Sapric - most decomposed stage.

(1) Less than 1/3 fiber in total mass.
(2) No color change when rubbed wet.
(3) Sodium pyrophosphate extract on white filter paper is lower in value and higher in chroma than 10YR 7/3.
(4) The high mineral content sapric horizons (more than 50 percent mineral) have dry color values of 5 or more.

F. Taxa of suborders

10.1 Saprists
10.2 Hemists
10.3 Fibrists
10.4 Leptists - lack diagnostic horizons which are sufficiently thick.

G. Taxa of great groups

Cryic class - permafrost or ice within control section.
Sphagno (Sphagnum moss) and Hypno Fibrists - unique, easy to identify by their nature, Sphagno is pH 5 or less, Hypno is over 5.
The Dysic and Euic classes based on pH were removed from the great group level to the Typic subgroup only.

H. Taxa of Subgroups

Typic - Kind of horizon of Great Group dominates.
Thaptic - Buried mineral soil in control section.
Limmic - Bog iron, marl etc. horizon
Clastic - High mineral content in organic part of control sect ion.
Cumuiic - Alternate layers of organic and mineral.
Stratic - Alternating different kinds of organic horizons.
Lithic - Rock In control sectlon.
Hydric - Like typic except H_2O layer in control section.

I. Family criteria

Carbonatic
Calcareous
Su iphurous
Fersuginous
Woody
Toxic elements - Al, Zn, etc.
Texture of substratum - (weighted average)
Acidic

Minnesota is piecing HIstosols into series. Florida has made good progress In placing series but has not proposed family names. In both areas field men were able to use established criteria in fleid. in Minnesota a coded legend was used to train soilsclentists in use of system. Experience has shown that field estimates of organic matter are frequently too hlgh. Thls Is not considered serious and will yield to correction as laboratory checking Is available.

New Jersey has done some detailed, trial mapplng of Tidal marshes, many of which will qualify as histosols. Usual difficulty is question of whether or not the particular soil wlll make a hlstosol. Much alluvial silt is common. Mostof these solls are Leptists with Intermixed kinds of horizons. The really big problem in the tidal marshes is access. A boat is needed at high tide and one is marooned at low tide by the soft mud In the empty tidal guts. it Is a two-man job for safetys' sake.

The inland mucks and peats the Wisconsin tlil area of North Jersey are gradually being absorbed by urbanization. The Inland, extremely acid, mucks of the South Jersey Coastal Plain are not being used much.

In a newly accelerated survey for Cape May the SCS has agreed to run profile traverses across the tidal marshes at wide intervals. These are concerned mainly with depth to mineral which ranges from 1 to 60 ft. It has been decided that more detalied studies wlll await specific requests for on-site investigations.

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1966

SPECIAL REPORT

Progress Report on the New Classification System
By: Dr. R. W. Simonson

Dr. Simonson summarized the level of generalization at each category in the new system as follow:

Order	-	10
Suborder		40
Great Groups	-	170
Subgroups		600
Family		
Series		8,500

He also reviewed some of the changes in the June 1964 Supplement to the 7th Approximation. These included the following:

1. Entisols

   One suborder has been added (Fluvents). Five great groups have been established in this suborder.

2. Vertisols

   Two suborders have been added.

3. Inceptisols

   There are no changes in suborders. Some great groups have been dropped and others added.

   Some subgroups have been added.

4. Aridosols

   There are no changes in suborders. The great group "Paleargids" has been added.

5. Mollisols

   There are no changes in suborders. The following great groups have been added:

   a. Paleustolls
   b. Palexerolls

   Each great group has several subgroups.

6. Spodosols

There are no changes in suborders. The following great groups have been added:

a. Tropaquods
b. Tropohumods

7. Alfisols

There are no changes in suborders. The following great groups have been added:

a. Tropaqualfs
b. Paleustalfs
c. Plinthustalfs

8. Ultisols

There are no changes in suborders. The following great groups have been added:

a. Normihumults
b. Tropohumults
c. Tropoudults
d. Tropoustults

9. Oxisols

The old definition of the oxic horizon is not operational. A new definition is currently being developed.

Considerable work is needed to work out concepts of suborders and great groups in the order Oxisols.

Dr. Simonson made the following concluding statements:

It will probably be three years before the classification scheme is published again. This publication will probably be composed of two parts. The first part will consist of the general structure of the scheme (order to the subgroups). The second part will consist of placement of series into families and those into subgroups.

Plans are to issue as soon as possible in the spring of 1966 a supplement to the 7th Approximation to replace the one Issued in 1964.

Respectfully submitted,

/s/ Sidney A. L. Pilgrim
Recorder

REVISIONS OF SOIL SERIES DESCRIPTIONS

A. H. Paschal1

The recently revised SCS Soils Memo 11 outlines in detail the format, content, and the order for discussing items in the series description. The format, content and order of items should be followed carefully.

The section on competing series needs to be complete. Some descriptions submitted to the Principal Correlators office fail to mention the most obvious competitor. In contrasting competing series be sure to mention the soil characteristics which differentiate the soils - do not use family or class names. These may change.

The procedure for review of series descriptions should be followed. The Initial draft should be prepared within the state and sent to neighboring and other interested states for comment and review. These reviewers should give a careful review - check the proposed descriptions against somewhat similar soils within the state. The proposed series or revision may overlap the ranges of soils recognized in your state. Comments returned to the originating states should be complete and should cover all conflicts or overlapping ranges. The originating state reviews these comments and incorporates or rejects them. A revised draft is then prepared for submission to the Principal Correlator for approval and duplication. The originating state prepares a statement summarizing all comments received from outside states and the action taken on each comment. This should be one statement and not merely a copy of each individuals comment. Three copies of this summary statement should accompany the eight copies of the revised draft sent to the Principal Correlators office.

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PROJECTED SOIL SURVEY SCHEDULE

L.E. Garland

The publication schedule for fiscal years 1966, 1967, 1968 and 1969 indicates a decided attempt to increase the number of surveys to be published annually. This escalation procedure involves all phases of the soil survey program if we are to submit the proposed numbers of manuscripts and maps to the printers in the fiscal years indicated, Scheduled dates for field correlations, final correlations, submission of field sheets to cartographic and submission of report manuscripts for editing have to be realistic in terms of meeting the objectives of a quality product as well as increase in quantity. If we are to increase our output and maintain an acceptable level of quality we must have adequately prepared material for each stage of the process. It is not sufficient to forward correlations or report manuscripts simply to meet a deadline. We must emphasize both quality and quantity and recommend realistic submission dates that will provide both. Once the timing of the steps in the publication process has been agreed upon it is imperative that they be completed as scheduled in order to maintain an orderly flow of published surveys, Table 1 summarizes the survey areas (mainly by counties) that are presently scheduled for submission to the printers in the fiscal year indicated.

Table 1 - Projected Soil Survey Publication Schedule
(Based upon submission to printers in fiscal year indicated generally 18 to 24 additional months will be required in the printing process)

A. Manuscripts and maps to be submitted to printers in fiscal 1966

1. Franklin, Mass.
2. Somerset, Md.
3. Queen Anne's, Md.
4. Caldwell, Ky.
5. Henderson, Ky.
6. Adams, Penna.
7. Metcalfe, Ky.
8. Tucker and Northern Randolph, W.Va.
9. Indiana, Penna.
10. Columbia, Penna.
11. Prince Georges, Md.
12. Montgomery, Penna.
13. Columbiana, Ohio

B. Manuscripts and maps to be submitted to printers in fiscal 1967

1. Ross, Ohio
2. Barbour, W.Va.
3. Carroll, Va.
4. Fayette, Ky.
5. Harrison, Ky.
6. Westmoreland, Penna.
7. Howard, Md.
8. Montgomery. Va.
9. Carroll, Md.
10. Genesee, N.Y.
11. Schoharie, N.Y.
12. Preble, Ohio
13. Plymouth, Mass.
14. Androscoggin-Sagadahoc, Me.
15. Berks, Penna.
16. Salem, N.J.
17. Belknap, N.H.

C. Manuscripts and maps to be submitted to printers in fiscal 1968 (preliminary)

1. Barren, Ky.
2. Pike, Penna.
3. Wicomico, Md.
4. Delaware, Ohio
5. McCreary-Whitley, Ky.
6. Orange, Va.
7. Mahoning, Ohio
8. Talbot, Md.
9. Fulton, Penna.
10. Wood-Wirt, W.Va.
11. Mercer, N.J.
12. Champaign, Ohio
13. New Castle, Del.
14. Litchfield, Conn.
15. Cayuga, N.Y.
16. Addison, Vt.
17. Seneca, N.Y.
18. Broome, N.Y.

D. Manuscripts and maps to be submitted to printers in fiscal 1969 (preliminary)

1. Erie, Ohio
2. Madison, Va.
3. Van Wert, Ohio
4. Hancock, Ohio
5. Worcester, Md.
6. Fayette, Penna.
7. Dauphin, Penna.
8. Nelson, Ky.
9. Ashtabula, Ohio
10. So. Somerset, Me.
11. Calvert, Md.
12. Forest, Ky.
13. Mercer, Penna.
14. Greenbriar, W.Va.
15. Kent, Del.
16. Monroe, N.Y.
17. Burlington, N.J.
18. Prince William, Va.
19. Warren, Ohio,
20. Stark, Ohio

Ithaca, New York, 5-8-63
Rev. Upper Darby, Pa.
2-11-66 - A. J. Baur

NORTHEAST COOPERATIVE SOIL SURVEY WORK PLANNING CONFERENCE

Organization and Operation

This is a brief statement on the organization end operation of the Northeast Cooperative Soil Survey Work Planning Conference. The statement is based on correspondence and available minutes of meetings beginning in 1955. Prior to 1955 the Soil Survey Subcommittee of the Northeast Soil Research Committee in general handled some of the kinds of activities now conducted by the Northeast Cooperative Soil Survey Work Planning Conference. Due to overlapping of activities the Northeast Soil Research Cowittee discharged its Soil Survey Subcommittee in 1964. Written and verbal liaison is, however, being maintained between the Northeast Soil Research Committee and our Conference.

1. Purposes: This conference provides an opportunity for direct contribution of ideas and information for improvement of the technical aspects of soil survey. It also contributes to uniformity in understanding concepts about soils, their classification, mapping and interpretation. Since soil survey is cooperative among several agencies, it is necessary to have exchange of ideas. An effective soil survey must be coordinated in our own states and throughout the United States.

   Most of the work of the conference is done by committees; committee reports are presented to the conference and if approved are disseminated to soil scientists in the Northeast and they are also made available to the National Cooperative Soil Survey Technical Work Planning Conference. In addition to the Committee reports, special topics are presented in lectures, discussions, or in the form of a symposium.

2. Participants:
   (a) Soil Survey leaders from cooperating agencies (SCS, Agr. Expt. Sta., Other agencies)

   (b) One or more Administrative Officer of SCS attends meetings of the Conference. Administrative officers of other agencies are welcome to attend.

3. Meetings: The current pattern is for the conference to meet bi-annually in alternation with the bi-annual meetings of the National Cooperative Soil Survey Technical Work Planning Conference.

   In order to economize travel funds for Experiment Station Soil Survey Representatives the scheduling of the conference is coordinated with the Northeast Soil Research Committee Meeting. This usually falls in the last week in January. Three or four days are allotted for the work of the conference.

4. Officers and Duties: Activities of the conference are directed by an executive board consisting of the chairman, vice chairmen, past chairmen and the Principal Soil Correlator, ex officio, A secretary pro tem is designated for each meeting of the conference (the executive board was created by vote of the conference in '1957, amended in 1958). A vice chairman is elected at each bi-annual meeting and he automatically succeeds as chairman. The common practice is to rotate election of the vice chairman between the SCS and a representative of one of the other cooperating agencies.

   The chairmen takes leadership with help from the executive board in developing programs for conference meetings and other activities.

5. Past Officers:

Date of Conference	Chairman	Vice chairman
January 1955	Lyford	-
January 1956	Lyford	
February 1957	Donahue	Patton
January 1958	Cotnbir	Howard
January 1960	Howard	Bourbeau
January 1962	Matelski	Quakenbush
January 1964	Quakenbush	D. E. Hill
January 1966	D. E. Hill	F. G. Loughry

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service

MEMORANDUM DATE: August 9, 1966

TO : state Conservationists, SC.5
Northeastern States

FROM: Dr. Arnold J. Baur, Principal Soil Correlator
RTSC. Upper Darby, Pennsylvania

RE : SOILS - Supplement to NE Committee Report on "Made Soils"

ATTENTION: State Soil Scientists

Enclosed are copies of descriptions of "Made Soils" which are a supplement to the "Made Soils" Committee Report of our Northeast Cooperative Soil Survey Work Planning Conference. Mr. Hershbergar as Chairman of this Committee assembled these materials which includes sample descriptions from Kentucky, Maryland, Delaware, Massachusetts, and West Virginia.

cc: R. D. Hockensmith
D. E. Hill
H. E. Tower

Arnold J. Baur

West Virginia
5-23-66

DESCRIPTION OF MADE SOIL ON STRIP MINE SPOIL

The following descriptions are from a randomly selected transect on an area of graded strip mine spoil. The transect was perpendicular to the high wall, to provide a cross section of the spoil material. The high wall is approximately on the contour, parallel with the coal seam. The coal had been covered and the spoil material graded in accordance with regulations governing surface mining of coal in West Virginia. The area had been graded in 1964.

The adjacent soils are mainly in the Gilpin and Wharton series.

The transect crossed the whole graded area. As the transect was only about 150 feet long, only 5 sample points are recorded. These are spaced at 30 foot intervals.

Profile No. 1 (nearest high wall)

0-2"--Very dark grayish-brown (2.5Y 3/2) very shaly light silty clay loam, massive; friable; 50-60% fine shale fragments; pH 4.2; clear smooth boundary.

2-40"+--Olive brown (2.5Y 4/4) silty clay loam; common lumps of gray (2.5Y 5/0) silty clay; slightly plastic; non-sticky; few black coal and shale fragments; approximately 80% coarse fragments; pH 4.4.

Approximate size distribution of coarse fragments:
30% larger than 3"
30% 1/2" to 3"
20% less than 1/2"
20% less than 2mm

Profile No. 2

0-1"--Dark grayish-brown (2.5Y 4/2) very shaly light silty clay loam; massive; friable; approximately 60% fine shale fragments; pH 4.5; clear smooth boundary.

1-40"+--Dark grayish-brown (2.5Y 4/2) silty clay loam; common lumps of gray (2.5Y 4/0) silty clay; plastic; slightly sticky; approximately 75% coarse fragments. pH 4.0.

Approximate size distribution of coarse fragments:
10% larger than 3"
30% 1/2 larger than 3"
35% less than 1/2"
25% less than 2mm

Profile No. 3

0-1"--Dark grayish-brown (2.5Y 4/2) very shaly silty clay loam; massive; friable; 50-60% fine shale fragments; pH 4.8; clear smooth boundary.

1-40"+--Olive brown (2.5Y 4/4) silty clay loam; 10% lumps of gray (2.5Y 4/0) clay; massive; firm; plastic and non-sticky; approximately 80% coarse fragments; pH 4.0.

Size distribution of coarse fragments:
10% larger than 3"
20% 1/2" to 3"
50% less than 1/2"
20% less than 2mm

Profile No. 4

0-1"--Dark grayish-brown (2.5Y 4/2) very shaly silty clay loam; massive; friable; 50-60% fine shale fragments; clear smooth boundary; pH 4.0.

1-40"--Olive brown (2.5Y 4/4) very shaly silty clay loam; massive; friable; plastic and non-sticky; 20% gray (2.5Y 4/0) silty clay; approximately 80% coarse fragments; clear smooth boundary. pH 4.2.

Size distribution of coarse fragments:
20% larger than 3"
20% 1/2" to 3"
40% less than 1/2"
20% less than 2mm

Profile No. 5 (near outer slope)

0-1"--Olive brown (2.5Y 4/4) very shaly silty clay loam; massive; friable; 50-60% fine shale fragments; clear smooth boundary; pH 4.5.

1-40"+--Olive brown (2.5Y 4/4) silty clay loam with lumps of clay loam and gray (2.5Y 4/0) clay; massive; friable; plastic and non-sticky; 80% coarse fragments; smooth clear boundary. pH 4.2.

Size distribution of coarse fragments:
20% larger than 3"
20% 1/2" to 3"
40% less than 1/2"
20% less than 2mm

NOTE: This profile is noticably less compacted and more moist than the others.

REMARKS - All Profiles

Except for the surface l-2 inches, which shows slight evidence of weathering, the material is quite uniform in diagnistic properties. There is little variation in reaction throughout the matrix.

Based on this transect, this area could be classified as a named series (Anthropents), but barely so. The reservation is because the material is so acid. It approaches pH 4.0, which we consider to be the minimum pH capable of growing useful plants on strip spoil. In practice, I would be reluctant to class this area as a named series because of the likelihood that the reaction may continue to drop for a few years. Our experience has shown that this is a common occurrence.

Estimate of percentage of coarse fragments are based on a rough field sieving with a No. 4 sieve.

Approximately 50% of the coarse fragments smaller than $\frac{1}{2}$ inch, and approximately 25% of those larger than $\frac{1}{4}$ inch can be crushed by hand. Laboratory preparation for mechanical analysis would undoubtedly result in a much lower percentage of coarse fragments than the field estimates recorded here.

pH values were obtained by use of a Beckman portable glass electrode meter. Values run consistantly about 0.5 pH lower than those obtained using Bromeresol green. They were in very close agreement with values obtained using "pHydrion Papers".

Despite the high shale content, this material, except for profile No. 5, appears to be quite dense, apparently due to compaction by heavy machines. No pores or voids are visable. Bulk density is estimated to be quite high.

TRANSECTS OF WADE SOILS" - KENTUCKY

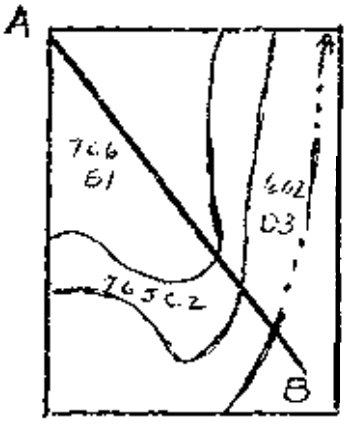
December 1965

A considerable portion of Boone and Kenton counties of northern Kentucky is now "urbanized". Soil surveys were made on some of these areas prior to urbanization. In December 1965 two transects were made of two different areas part of which probably would be mapped Made soil. If zapped today, More information of, the transects is below.

Transect Number 1

This is in an area of housing development where moderate cute and fills were made.

The following drawing shows the soil map before cuts end fills, and location of the transect,



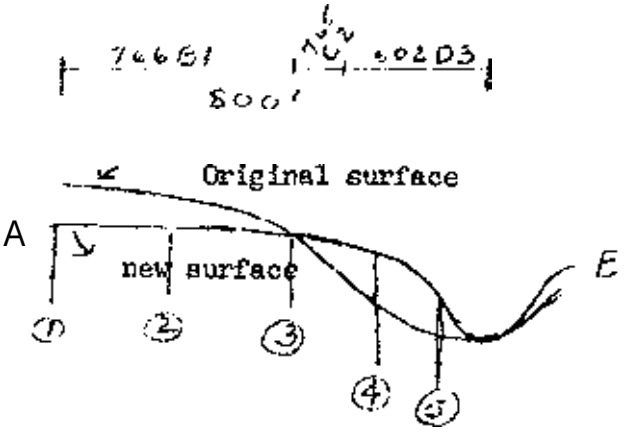
766B1 - Rossmoyne silt loam, 2-6 percent slopes

765C2 - Cincinnati silt loam, 6-12 percent slopes, eroded

602D3 - Faywood silty clay loam, 12-P peroent elopes, severely eroded

Line AB is location of the transect.
Number in circle (1) is location and number of the site.

The following drawing (not to scale) illustrates the shape of the new surface compared to that of the old surface along line AB.



Brief descriptions of the soil are below:

Brief description of soil, December I.965		Remarks
site 1:		
O-4"	Slightly plastic silty clay loam, strongly acid.	Mapped as Rossmoyne silt loam, 2 to 6 percent slopes. Approximately 1% inches removed so that only 4 inches is now above a 12" thiok fragipan.
4-16"	Mottled, brittle silty clay loam (fragipan), strongly acid.	
16-42"	Plastic silty clay glacial till, slightly acid.	
Rock is at 9 feet below the surface.		
Site 2:		
0-14"	Mottled brittle silty olay loam (fragipan), strongly acid.	Included in area of Rossmoyne; estimated 12" of soil removed,
14-42"+	Plastic silty clay glacial till.	
site 3:		
O-8"	Mixed silt loam, silty clay loam and silty clay.	About as originally mapped - included with Rossmoyne silt loam delineat ion.
8-24"	Slightly plastic silty clay loam, strongly acid.	
24-42"+	Plastic silty clay glacial till, medium acid.	
Site 4:		
0-24"	Plastic silty clay, neutral about 5 percent by volume coarse fragments and stones.	Mapped Cincinnati silt loam, 6 to 12 peroen t slopes, eroded, but was filled about 6 feet.
24-42"+	Mixed silt loam and silty clay.	
Site 5:		
A steep (30 percent elope) area at edge of fill - mostly silty clay and silty clay loam.		Same as Site 4.

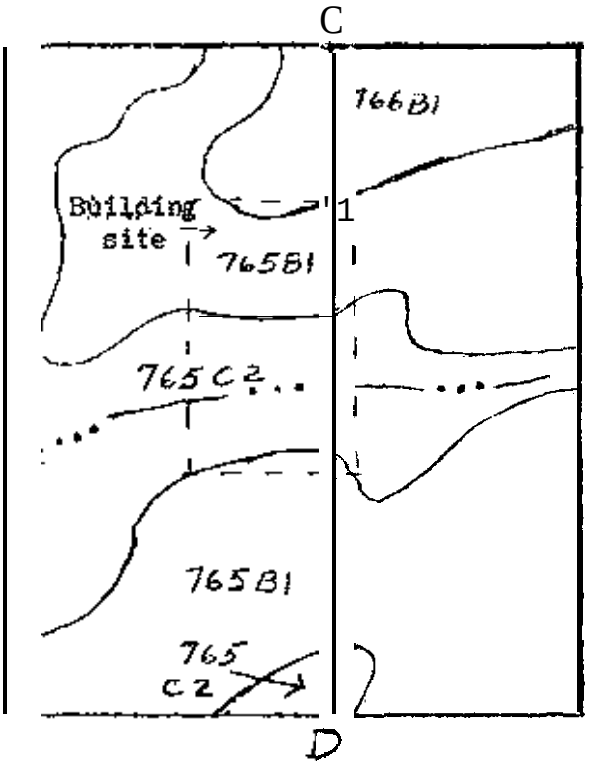
Sites 1, 2 and 3 have enough diagnostic horizons remaining so as to identify the series, The soil name might be a phase of Rosamoyne or a complex such as Rossmoyne-Made soil.

Sites 4 and 5 are fill of relatively uniform material that the profiles couldbeclassified into a series.

Transect Number 2

This is an area where the surface was shaped for an industrial site. Nearly all of the soil was altered so that original soil map and classification is now incorrect. The present surface is nearly level,

The following drawing is of the **soil** map before cuts and fill6 were made. It also shows location of the transect.

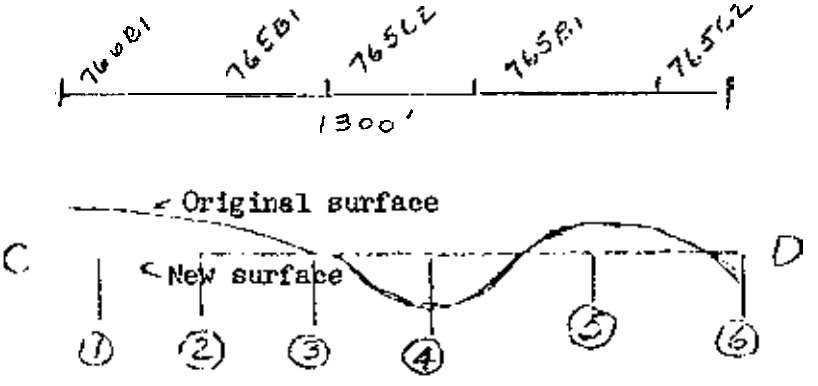


766B1 - Rossmoyne silt loam, 2 to 6 percent slopes.

765Bl - Cincinnati silt loam, 2 to 6 peroent elopes

765C2 - Cincinnati silt loam, 6 to 12 percent slopes, eroded

The following drawing (not to scale) illustrates. the shape of the new surface compared to that of the old along line CD.



Brief description of soil. December 1965		Remarks

Sites 1. 2 and 5:

0-2"	Slightly plastic silty clay loam, strongly acid.	Originally Fiossmoyne silt loam but about 2 feet had been removed.
2-16"	Highly mottled, silty clay loam; compact, strongly acid (fragipan).	
16-84"	Plastic silty clay - neutral to mildly alkaline.	

Site 3:

0-6"	Mixture of silt loam and silty clay loam, strongly acid.	Originally mapped Cincinnati silt loam. Has had some alteration and fill.
6-20"	Slightly plastic silty clay loam, strongly acid.	
20"+	Plastio silty clay glacial till, neutral.	

Limestone rock at 8 feet below surface.

Site 4:

O-36"	Mixture of silt loam and silty clay loam and silty clay, mostly strongly acid.	Original ooilmapped as Cincinnati - now has 3 feet of fill.
36"	original soil.	

Site 6:

Similar to site 4 but with 24 inches of fill.

Sites 1,2 and 5 - soil probably could be classified as a phase of Rossmoyne or a Rossmoyne-Made soil complex.

Sites 3, 4 and 6 - considerable fill but all near a silty clay texture in control section mostly of neutral reaction and having few or no coarse fragments. Perhaps could be classified as Made soil, clayey or a new series,

Robert E. Daniell
State Soil Scientist
Lexington, Kentucky
May 1966

Made Soil, Sands and Gravel — Mass.

Auburn Town, Worcester County, Massachusetts. This area constitutes approximately 10 acres. It consists of a low swampy area that is filled and used for house lots. Fill ranges in thickness from 8 to 10 feet near the road to about 3 feet farthest from the road. A transect across the delineated made soil area was made. The following descriptions were made at approximately 1/10 intervals. Holes were bored to 4 feet with a bucket auger. (All colors moist.)

1. 0-6" Black (10YR 2/1) very fine sandy loam; structureless, single grain: friable, pH less than 5.0.

   6-36" Olive gray (5Y 5/2), very fine sand; structureless, single grain: pH 5.6.

   36-48"+ Grayish brown (2.5Y 5/2) very stony sandy loam glacial till material: structureless, massive; firm. Water table at 6 to 7 feet.

2. 0-3" Black (10YR 2/1) gravelly very fine sandy loam; structureless, single grain; friable; pH less than 5.0.

   3-48" Olive gray (5Y 5/2) very fine sand with thick pockets of olive (5Y 5/3) silt; structureless, single grain; friable, loose when dry; pH 5.4.

   48"+ Olive gray (5Y 5/2) sands and gravel: single grain; loose when moist; pH 5.6. Water table at 8 feet.

3. 0-40" Olive gray (5Y 5/2) very fine sand with some olive (5Y 5/3) silt pockets; single grain; friable; occasional pebbles: pH 5.6. Water table at 40 inches,

   40-48"+ Saturated sands and gravel, or sandy glacial till material.

4. 0-40"+ Same as #3. Water table at 40 inches.

5. 0-12" Light olive brown (2.5Y 5/4) gravelly fine sand: single grain; friable: pH 5.4.

   12-40"+ Olive gray (5Y 5/2) very fine sand; single grain; friable; pH 5.6. Water table at 40 inches.

6. 0-40"+ Grayish brown (2.5Y 5/2) very gravelly fine sand: single grain: friable; some cobblestones: pH 5.4. Water table at 36 inches.

7.	O-60"	Very cobbly gravel.
	60"+	Olive (5Y 5/4) gravelly sandy loam glacial till material; single grain; friable: pH 5.4, Water table at 10 to 15 feet.
8.	O-18"	Olive gray (5Y 5/2) flne gravelly medium sand; single grain, friable; pH 6.4.
	18-60"	Very gravelly sands: pH 6.0. Mater table at 6 feet.
9.	O-36"	Olive gray (5Y 5/2) and olive (5Y 5/3) very gravelly sand, Water table at 36 inches. Glacial till at estimated 5 feet.
10.	O-36"	Same as #9.

Made Soil, Calcareous Till - Made Land, Mass.

This area consists of 8 variety of materials used to fill in a swampy area. The materials appear to be dominetely of glacial till origin that contain many dolomltlc limestone fragments. Fragments range from 2 mm. to boulders 6 feet or more in diameter. This area contains 30 to 40 percent materials other than calcareous till, mostly roadbed. cinders and organic materials. There are about 5 acres in this area. A transect was made across the area and samples described at about 1/10 intervals. At the time the area was described it had been partially smoothed. Depths given are estimates of the materials when smoothed. Due to coarse fragments it was not possible to sample with an auger.

1. 4 feet of bouldery glacial till material containing many dolomite boulders. Some boulders are 6 feet in diameter. This material is underlain by poorly drained Kendaia soils.

2. 2 to 6 feet deep. Broken up road pavement consisting of reinforced concrete slabs and roadbed material. Roadbed material appears to be of glacial till origin, is domlnately olive (5Y 5/3) and is calcareous.

3. 8 feet of olive brown (2.5Y 4/4) glacial till material containing many dolomite fragments over Kendaia soils: massive; firm.

4. 8 feet deep. Mixture of sand, gravel and organic matter over dolomitic glacial till material.

5. 6 feet deep, Mlxture of black (10YR 2/1) clumps of organic matter 3 to 12 inches in diameter, peat, and olive gray (5Y 5/2) pockets of massive silt. Appears to be dredgings from a shallow muck area underlain by silts and gravel. pH 6.6.

6. 5 feet of dolomitic till material; appears to be yellowish-brown (10YR 5/6) B horizon material 5 feet deep over muck; massive; firm in place; contains dolomite boulders 2 to 4 feet in diameter; has some cinders scattered throughout; pH 6.8. Water table at 5 feet.

7. 4 to 6 feet of cinders over glacial till material.

8. 4 to 6 feet of what appears to be old roadbed material and glacial till. Estimated 80 to 90 percent coarse fragments of dolomite.

9. 6 to 7 feet of black (10YR 2/1) muck and dark brown (10 YR 3/3) sphagnum peat; pH 6.0. Water table at 8 feet.

10. 6 feet of dolomitic till material; dominately olive (5Y 5/3) calcareous till containing 40 to 50 percent coarse fragments of dolomite. Water table at 8 feet.

TRANSECT OF "MADE SOIL", Sandy over Organic - MARYLAND

Transect of an area mapped as Made Land. Site appears on Worcester County soil map ANN 25-136, 1938 flight. southeast side of the Pocomoke River, in the town of Snow Hill, Maryland.

Site #1: 10 feet from edge of river.

0-5"	olive gray (5Y 4/2) sandy loam.
5-18"	light yellowish brown (10YR 6/4) loamy sand.
18-20"	very dark grayish brown (10YR 3/2) mucky sand.
20-36"	light brownish gray (2.5Y 6/2) sand, wet below 30 inches.
36-66"	light brownish gray (2.5Y 6/2) sand mixed with aaw duet and larger chips of wood.

Site #2: 20 feet southeast of aite #1.

O-8"	olive gray (5Y 4/2) sandy loam.
8-14"	light yellowish brown (10YR 6/4) loamy rend.
14-20"	black (10YR 2/1) mucky rilt loam and wood chips.
20-36"	grayish brown (2.5Y 5/2) eand mixed with some black material and wood chips.
36-60"	light brownish gray (2.5Y 6/2) sand, wet.
60-66"	dark brown (7.5YR 3/2) muck end wood chips.

Site #3: 20 feet southeast of site #2.

O-5"	olive gray (5Y 4/2) sandy loam.
5-20"	light yellowish brown (10YR 6/4) loamy sand.
20-42"	light brownish gray (2.5Y 6/2) light loamy sand, wet below 35 incher.
42-54"	very dark grayish brown (10YR 3/2) muck and wood chips.
54- 66"	black (10YR 2/1) muck, wood chfpr with sand lenses.

site #4: 20 feet southeast of site #3.

O-5"	olive gray (5Y 4/2) sandy loam.
5-30"	light yellowish brown (10YR 6/4) light loamy rend.
30-66"	black (10YR 2/1) muck with a few fine sand lenses end wood fragments.

site #5: 30 feet southeast of site #4.

O-6"	light olive brown (2.5Y 5/4) sandy loam.
6-24"	olive gray (5Y 5/2) loamy sand.
24-60"	light yellowish brown (10YR 6/4) light loamy rend, wet below 50 incher.

TRANSECT OF "MADE SOIL", Sandy and Clayey - DELAWARE

This area was mapped as Made Land. Sites examined 100 feet apart near Summit Bridge in material dredged from the Chesapeake and Delaware Canal.

site #1.	o- 18"	Yellowish brown (10YR 5/4) and light brownish gray (10YR 6/2) in equal proportions; fine sandy loam with moderste amounts of gravel up to ¼"; structureless and loose.
	18-30"	Dark brown (7.5YR 4/4) with 10% gray (10YR 6/0), silt loam; massive and somewhat firm.
	30-48"+	Dark grayish brown (10YR 4/2) and light brownish gray (10YR 6/2) in equal amounts; fine sandy loam; massive.
Site #2.	o-12"	Equal proportiona of brown (7.5YR 4/4) and red (2.5YR 4/6), silty clay; massive; some fine gravel.
	12-18"	Gray (10YR 6/1), silt loam; massive.
	18-36"+	Rounded gravel ranging from ¼" to 1".
Site #3.	O-6"	Yellowish brown (10YR 5/6) with 30% light gray (10YR 7/1), fine sandy loam; structureless and loose.
	6-18"	Black (10YR 2/1), silty clay; massive; firm; highly plastic.
	18-24"+	Equal proportiona of pinkish brown (7.5YR 7/2) and red (2.5YR 4/6), clay; massive; very firm.
Site #4.	o- 12"	Dark yellowish brown (10YR 4/4), loamy fine sand; structureless; loose.
	12-24"	Light gray (10YR 7/2), silt; structureless, friable.
	24-36"+	Dark yellowish brown (10YR 4/4) with 20% brown (10YR 5/3), loose sand.
Site #5.	O-24"	Dark yellowish brown (10YR 4/4), gravelly sandy loam; structureless; loose.
	24-30"+	Pale brown (10YR 6/3), looae send.

Site #6.	0-24"	Brownish yellow (10YR 6/6), loose fin6 sand.
	24-40"+	Light brownish gray (10YR 6/2), loose fine sand.
site #7.	O-20'	Yellowish brown (10YR 5/4), coarse loamy sand; structureless; loose.
	20-34"	Grayish brown (10YR 5/2), loose fine sand.
Site #8.	0-18"	Yellowish brown (10YR 5/4) loamy sand and gray (10YR 6/1), silt; structureless but friable.
	18-36"+	Equal proportions of yellowish brown (10YR 5/6) and dark grayish brown (10YR 4/2), sandy clay; massive; slightly sticky and plastic.
site #9.	o-18"	Yellowish brown (10YR 5/6) loose loamy sand with 20% very dark grayish brown (10YR 3/2) massive sandy Clay.
	18-30"+	Same a6 above but in equal proportions.
Site #10.	O-36"	Yellowish brown (10YR 5/6), loose fine sand.

NATIONAL COOPERATIVE SOIL SURVEY

Northeast Regional Conference Proceedings

New York City
January 20-23, 1964

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PROCEEDINGS OF THE NORTHEAST COOPERATIVE SOIL SURVEY WORK-PLANNING CONFERENCE, 1964

NEW YORK CITY

JAN. 20-23, 1964

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

1964

SUMMARY OF PLANNED ACTIONS AND ASSIGNMENTS

The Conference directed the Chairman to summarize all subjects that would hold special concern for administrators. These follow.

REPORTS ON BENCHMARK SOILS

This notation is to assure that Directors of Experiment Stations and State Conservationists, SCS, are informed about these reports on benchmark soils. These publications bring into single volumes available descriptive, analytical, and Interpretative data on individual key soils, This data otherwise remainslargely scattered and unavailable. Usually it would come from more than one state and more than one agency.

Eighty-one key soils of the Northeast are allotted among the states for these reports. Compilation of the data for each of two soils for which reports are in progress, is estimated to have taken approximately 100 man-days. Writing, of course, would take additional time. Interest in these compilations antedates the 1960 regional conference at which time at least one report per state per year was proposed. As of January 1964 two had been completed, one was at press, and five others were in progress. Assignment of men and scheduling of time are important if this work is to be done.

The subject is covered more fully in the accompanying Report of the Committee on Benchmark Soils.

TECHNICAL SOIL MONOGRAPHS

Assignment of an author, or authors, with release from other duties is needed if these monographs will be written.

Technical soil monographs by soil areas are provided for in Soils Memorandum 39, March 29, 1961, of the Soil Conservation Service. That memorandum states the SCS policy to publish the monographs and suggests authors from other agencies.

These monographs are proposed to make conveniently available data on the broad range of soils over major areas of soil similarities. This data would concern soil morphology, environment and analyses. From it interpretations could be made into soil genesis and use. The monographs would provide reference material. They should be useful in teaching and planning research,

The 1962 Conference established seven areas in the Northeast for each of which a monograph would be written, It prepared an outline for the writing. It proposed authors. It developed a schedule for completion of six of the monographs during 1964 through 1967. Essentially no progress can now be reported.

Six to twelve man-months of uninterrupted work by the principal author are estimated to be required. There likely would be some work of associate authors and those supplying data.

This subject is presented more fully in the report of the Committee on Technical Soil Monographs.

REVIEW OF THE CLASSIFICATION OF STONINESS, ROCKINESS

Proposals for a revision of the classification of stoniness of soils were submitted. A study of the classification of stoniness and rockiness was deemed to be warranted. A committee was named to make such a study and to report to an appropriate national committee by January 31, 1965. This regional committee consists of A.H. Paschall, Chairman: R. A. Farrington, R. T. Marshall, B. J. Patton, J. A. Pomerening, R. F. Reiske, and A. E. Shearin.

Accompanying in the report of the Conference is a paper by Robert F. Reiske on "Classification of Stoniness".

PROVISIONS FCR THE FUTURE OF THE CONFERENCE

1. It was planned that the Conference should be continued. The next meeting would tentatively be held in 1966.

2. The Committee on Benchmark Soils would be a working committee during the interval between conference meetings, to coordinate the work on the reports on these soils. Members, one from each state, are listed in the report of that committee but some changes are possible.

3. The committee to study the classification of stoniness and rockiness, stated in the foregoing, is a working committee.

4. The Chairman of the 1966 meetings and the intervening interests is Dr. David E. Hill, Connecticut Agricultural Experiment Station. The Vice Chairman is Dr. F. Glade Loughry. On the Executive Committee are Dr. Hill, Dr. Loughry, Dr. Arnold J. Baur, Principal Correlator in the Northeast, ex-officio, and retiring Chairman Granville A. Quakenbush.

5. A recommendation was adopted to propose that the Directors of the Agricultural Experiment Stations have one or more of their group attend the meetings of the Conference at a time of discussing programs of special administrative concern.

NATIONAL CO-OPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

1964

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NATIONAL COOPERATIVE SOIL SURVEY

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MINUTES

This conference was held in New York City, at the Governor Clinton Hotel, January 20-23, 1964. The conference was called to order at 8:30 a.m., the 20th, and adjourned at noon, the 23rd. Walter J. Steput I s was appoi nted recorder.

PARTICI PAT1 ON

1. Department of Forests and Parks, Vermont; R. A. Farrington
2. State Agricultural Experiment Stations and Colleges:
   - Connecticut, at New Haven; D. E. Hill
   - Connecticut, at Storrs; E. J. Rubins
   - Delaware; not represented
   - Maine; representative, R.S.Struchtemeyer, storm-bound in Maine for time scheduled to attend.
   - Maryland; J. A. Pomerening
   - Massachusetts; M. E. Weeks
   - New Hampshire; N. K. Peterson
   - New Jersey; not represented
   - New York; G. W. Ol son
   - Pennsylvania; R. P. Matelski
   - Rhode Island; R. S. Bell
   - Vermont; not represented
   - West Virginia; W. A. van Eck
3. Forest Service, U.S.D.A.; R. F. Reiske
4. Soil Conservation Service, U.S.D.A.;
   - A. J. Baur, the Northeast, soil correlation
   - M. F. Hershberger, Del., Md. A. E. Shearin; Conn., R.I.
   - M. Howard, Vt. W. J. Steputis, Me.
   - F. G. Loughry, Pa. F. J. Vieira, N. H.
   - R. L. Marshall, N.Y. K. P. Wi lson, N. J.
   - B. J. Patton, W. Va. S. J. Zayach, Mass.
   - B. Isgur
   - S. L. Tinsley
   - R.W. Simonson, Washington office, soil correlation
   - G. A. Quakenbush, Conference Chairman

LIAISON

The Northeast Soil Research Committee, in session during the 22nd and 23rd, was represented by Dr. N.K. Peterson as liaison to the Conference.

AGENDA

January 20, 8:30-9:00 a.m. - Assembly, announcements, appointment of Nominating Committee.

9:00-5:00 p.m. - Work of committees, as follows:

1. Benchmark soil reports
2. Soil Correlation
3: Laboratory Characterization
4. Sof lMoi sture
5. Technicalsoil monographs
6. Soil survey procedures. (This committee yielded its time to extended work of the committee on urban-fringe areas.)
7. Soil surveys In urban-fringe areas.

January 20. night work, unassembled - preparation of committee reports.

January 21, 8:00-8:30 a.m. - business session.

8:30-3:00 p.m. - reports of Committeesl through 5.

3:00-5:00 p.m. - sympos ium on
Soil texture
Soil morphology
Shape of soil areas

7:30-9:30 p.m. - symposi um on
Climate In relation to soil classification and interpretation,
Criteria for soil series, types, and phases.
Organic soils,

(The six subjects under the symposium were studied by the National Soil Survey Work Planning Conference that met in Chicago, March, 1963, for which this regional Conference had no committees.1

January 22, 8:30 a.m. - 5:45 p.m.

Report of Committee 7, urban-fringe areas

Classification of Stoniness - by Robert F. Reiske, U. S. Forest Service. Contained proposals for revisions In this classification.

Soil landscapes*. - A discussion of the concept and Its usefulness.

Lithologic discontinuities*.- Meaning and application of the phrase,

Symbols for identification and nomenclature of soi l horizons*. - intended and conventional uses thereof.

Phasing of soils for forestry, construction, urbanization, etc. as well as for agriculture.
B.J. Patton, A.E. Shearin, K.P. Wilson, of the SCS.

Soil survey interpretations, urban areas, experiences in Hanover Town, Plymouth Co., Mass. - S. J. Zayach, SCS.

*Discussion topics. R. W. Simonson, Director of Soil Classification and Correlation, and A. J. Baur, Principal Correlator for the Northeast, were looked to for expert guidance.

January 23, 8:00 a.m. - 12:00 noon

Low-intensity standard surveys in Vermont - M. Howard
An explanation and discussion thereon.

Writing of soil series descriptions - A. J. Baur
Preceded by general remarks by R. W. Simonson.

BUSINESS ACTIONS

Election of Vice Chairman:
Nominating Committee: Boyd Patton, Martin Weeks.
Nominees: Glade Loughry, Stephen Zayach.
Vice Chairman Elect: Glade Loughry.

PROPOSITIONS :

1. That recommendations and plans from the Conference that would require time of staff members or funds be summarized as an assist to administrators. - Adopted.

2. That recommendation be made to Directors of Agricultural Experiment Stations that they have representation from their own group at meetings of future Conferences when matters of special administrative concern might be considered. Adopted. (The SCS sends administrative representation.)

3. That the Conference Chairman convey to the Administration of the SCS, the Directors of Agricultural Experiment Stations, and the Northeast Soil Research Committee need for assignment of persons and allotment of time for writing the technical soil monographs. - Adopted. (Solicitation sent to the Northeast Soil Research Committee at once through Dr. N. K. Peterson, liaison from the Research Committee. The proposition is treated further in the accompanying Summary and in the Report of the Committee on Technical Soil Monographs.)

4. That, in the future, for purposes of information, a representative from the Conference attend meetings of the Northeast Soil Research Committee. This proposition was received out of session. It was announced in session but without an opportunity for discussion.

5. That there be an action committee to study and to test, by the best means practical, classes and phase naming of stoniness and rockiness, toward updating of standards, the first consideration to be given to stonlness classes, and the goal to be to complete recommendations for submission to the appropriate national committee by January 31, 1965. Adopted. This action followed the paper by R. F. Reiske. (The committee announced later by Dr. Hill, incoming Chairman of the Conference, is stated in the Summary.1

Northeast Soil Survey work Planning Conference

Report of the Committee on Bench Mark Soils

I. Background

The committee on bench mark soils Is charged with the coordination and advancement of the bench mark soil report program In the Northeastern States. Coordinating and advancing activities Include such matters as, selecting the bench mark soils, allocating the bench mark soils among the states, developing an outline for the reports, planning for characterization studies, disseminating information to be used in the reports, planning for personnel and time assignments for compiling the reports, doing the compiling of the reports, reviewing the manuscripts, planning publication and dissemination procedures, evaluating the validity of available Information In view of current classification concepts, and evaluating the usefulness of the bench mark soil report program.

In order to effectively carry out these activities, it was decided at the 1962 NESSWPC that the committee on bench mark soils would be a worktng committee during the 1962-1964 interval wtth a membership of 13 persons comprised of individuals from each of the 12 Northeastern States and Lloyd Garland, Soil Correlator (Interpretations), NES. as a member-at-large.

II. Progress in report writing

A. Reports released In 1962 or earl ler
   1. Vergennes (Vermont)
   2. Caribou (Maine)

B. Reports released In 1963
   None

C. Reports In press
   1. Paxton (Connect icut)

D. Reports under preparation
   1. Gloucester (Massachusetts)
   2. Hagerstown (Maryland)
   3. Suffield (Maine)
   4. Volusla (New Vork, reviewed and discarded because of correlat Ion adjustments)
   5. Gilpin (West Virginia)

E. Reports with high priorities for completion
   1. Cheshire, Charlton (Connecticut and Rhode Island)
   2. Chester (Delaware and Maryland)
   3. Scantic (Maine)
   4. Ninckley (Massachusetts)
   5. Hermon (New Hampshire)
   6. Sassafras (or Collington or Penn) (New Jersey)
   7. Volusla, Mardin (New York)
   8. Westmoreland, Cavode, Readington (Pennsylvania)
   9. Hadley (Vermont)
   10. Monongahela (West Virginia)

III. Changes in the list of bench mark soils in the Northeastern States

The list of bench mark soils in the Northeastern States was reviewed in 1963 under the supervision of Lloyd Gariand. The revised list was made to provide a frame of reference for all of the major soil interpretations. It only includes soils that occur in two or more states end contains some additions to and deletions from earlier lists. The rolls that were added have been tentatively allocated to individual states. Exhibit A is a listing of the bench mark soils according to states. Each state is recommended to take the major responsibility for writing the reports for those soils assigned to it. individual states will commonly have soils in addition to those listed in appendix A on their own lists of bench mark rolls.

IV. Coordinating activities of Committee members

Most of the committee members have contributed to the bench mark program by supplying requested information and reviewing manuscripts during the 1962-1964 interval. Many have participated in planning sessions concerning scheduling for compilation and procedures for publication. The Connecticut, Massachusetts, end Maryland Experimental Stations have indicated that they will publish the Paxton, Gloucester, and Hagerstown reports, respectively. In New Jersey the 1964 SCS survey plan of operations will include a definite ● ssignnlent for a bench mark soil report,

V. Uses and usefulness of the reports

The finished reports have been used, to some extent, as sources of information for roll correlation problems, end for making soil use and management recommendations. They have been used intensively as refer- • rices to compilers of bench mark reports for examples of format and substance.

The usefulness of the report8 in the Northeastern region cannot be properly evaluated until more become available. They are costly to make. Around 100 man-days were spent in compiling each of the Paxton end Hagerstown reports.

Some have expressed concern about overlapping in the contents of the bench mark reports with that of the technical monographs, the tables of the major soil interpretations, ● d published soil surveys.

VI. Recommendations

1. The Committee should be continued as • working committee during the January 1964 to January 1966 interval.

2. Administrative officers should be encouraged to make definite assignments of personnel and allotted time for writing these reports.

3. Steps should be taken to coordinate lists of bench mark soils between regions. Some of the soils assigned to Northeastern States bordering other regions are centered on concepts occurring outside the Northeastern Region.

Committee Members

R. S. Bell*

L. J. Cotnolr

R. A. Farrington*

L. E. Garland, V. Chairman

G. A. Quakenbush*

D. E. Hill*

F. G. Loughry*

R. L. Marshall*

B. J. Patton* 1/

N. Paterson*

J. A. Pomerening*, Chairman

R. S. Struchtemeyer

S. J. Zayach*

---

*Present at the Conference.

1/ W. A. van Lck was added to the committee at the conference to fill the position being vacated by B. J. Patton.

Exhibit A

A tentative allocation of bench mark rolls that occur In two or more states of the Northeastern Region to individual states for leadership in compiling bench mark reports.

Connecticut and Rhode Island

Charlton
Cheshire
Enfield
Paxton 1/
Stockbridge
Windsor
Woodbridge

Delaware end Maryland

Beltsville
Chester
Christiana
Cookport
Frankstown
Glenville
Hagerstown 2/
Legore
leonardtown
Lickdale
Manor
Matapeake
Mattapex
Montalto
Othello
Pocomoke
Worsham

Maine

Adams
Biddeford
Buxton
Caribou 1/
Easton
Saco
Scantic
Suffield

Massachusetts

Gloucester 2/
Hinckley
Merrimac
Ninigret
Scarbor
Sudbury
Walpole

Pennsylvania

Allis
Berks
Brinkerton
Burgin
Cettaraugus
Cavode
Croton
Culvers
Duffield
Dunning
Edgemont
Ernest
Lawrence
Middlebury
Montevallo
Morris
Norwich
Oquaga
Readington
Westmoreland

New Hampshire

Agawam
Hermon
Hollis
Leicester
Peru
Ridgebury
Sutton
Whitman

New Jersey

Adelphi
Bayboro
Collington
Elkton
Fallsington
Keyport
Lakeland
Penn
Sassafras
Westphalia
Woodstown

New York

Amenia
Canandalqua
Caneadea
Chenango
Collamer
Holly
Mardin
Papakating
Phalps
Red Hook
Tioga
Unadilla
Volusia

Vermont

Berkshire
Colton
Hadley
Limerick
Livingston
Lyman
Panton
Vergennes 1/
Winooski

West Virginia

Biago
Dekalb
Elliber (Bodine)
Gilpin 2/
Ginat
Harts81is
Holston
Huntington
Laidig
Lakin
Lindside
Melvin
Monongahela
Murrill
Tyler
Upshur
Wharton
Wheeling

1/ Bench mark report completed

2/ Bench mark report under preparation

Discussion of Report of Committee on bench mark soils.

Marshall: Is there any chance of combining two or more soils in one bench mark report? I'm thinking of soils like Hardin and Volusia, both of which are extensive soils that are members of the same drainage catena and occur in the same areas. it would probably save time and effort if reports for such soils were combined.

Hershberger: How many series could be combined? In the Piedmont, soils of the Manor, Glenelg, and Chester series are all extensive and closely associated. Perhaps one report would suffice for those soils.

Marshal 1: The number of bench mark soils combined into one report would depend on the soils involved.

Wilson: Isn't there some danger of making it difficult to file the reports if they contain information about several soils?

Pomeraning: At the rate we are going in completing the reports that should be no problem for awhile. I think combining date of two or more closely associated bench mark soils into one report is an idea worthy of consideration.

NATIONAL COOPERATIVE SOIL SURVEY
NORTHEAST WORK PLANNING CONFERENCE

January 20 - 21, 1964

Report of the Committee on Soil Correlation

A. Objective of Committee

This committee was to review responsibilities for correlation. To study efficient scheduling of correlation with regard to stages in the course of a survey and the writing of the survey report. To examine information needed for correlation as follows:

1. Content
2. Time and methods and preparation
3. Form of presentation
4. Common deficiencies and possibilities for eliminating deficiencies.

B. Discussion and Recommendations

1. Content of field correlations

Under present operating procedures a field correlation requires the preparation of certain documents and supporting evidence. These items are outlined in Soils Memorandum SCS-44, Requirements for Field Correlations .

The committee studied the relevance of each item and concluded that all are essential for a field correlation but items may vary in importance in different localities. No recommendations were made for improvements of the current requirements.

2. Time and methods of preparation

The committee discussed the great amount of time required at all levels to up-date or revise soil series descriptions and concluded that this will remain a continuing need. Delays in this phase of the work add to correlation problems if not handled prior to the final field correlation. To assist in overcoming these problems the committee recommended the following :

(a) List the status of all soil series appearing in a soil survey legend on form SCS-233 during all initial and progress reviews. Soil series that require up-dating or revising that are modal in the survey area would be indicated. Plans for revision would list assignments and target dates for initial drafts. Series considered modal outside of the survey area would list the county or counties where the information should be collected.

(b) Schedule the final field review and field correlation approximately one year in advance of the completion of the field mapping. The gain in time should offset the small amount of changes in the correlation that may be needed at the completion of the field work.

(OVER)

(c) Schedule the intermediate correlation shortly after the completion of the field mapping

This one-year interim would be used for revision of technical. and mapping unit descriptions as shown in the final field correlation. Descriptions of new series set up as a result of the final field correlation would be written during this period. It would also allow time for checking the adequacy of the proposed correlation and collection of additional data when needed.

(d) Increased emphasis on regional and inter-regional soil studies to improve soil series concepts and revise series descriptions. Leadership for inter-regional studies should be assumed by the Washington correlation staff, and leadership of regional studies should be with the Principal Correlator's office. To achieve the above goal it is recommended that the above staffs be increased. First priority should be for increasing the staff of the Principal Correlator.

(e) A punch card system of filing and sorting descriptions, ie., numerous descriptions of the same soil series, was discussed by Mr. Reiske. The committee suggested that Mr. Reiske continue to test this procedure and make a report at the next conference.

3. Form of presentation

The form of presentation of correlations is not. uniform in the Northeast. This does not appear to be a problem so no suggestions for improving current procedures were made.

4. Common deficiencies an? possibilities for eliminating deficiencies.

Causes of delay in soil correlation listed by the 1963 National Work Planning Conference were discussed. The committee was in general agreement that delays in correlation could be explained by the items listed in the national report.

A regional proposal. that the Washington correlation staff direct its activities tc the series level and depend on state and regional staffs for phase decisions was discussed. Discussion brought out the fact that the Wa shington staff examined phases on a sample basis and this was not a major time consuming item for most surveys. No changes in present operating procedures were recommended.

Washington:

(1) Examination review and approval of all series descriptions. This would be a continuing process - undertaken where a series description is submitted and not tied to any specific correlation. These are the real standards for control of correlation work. Checking of the field work against these standards can be done at levels below Washington.

(2) Approve and change if necessary - nomenclature of mapping units. This is needed if we are to maintain any uniformity in nomenclature.

(3) Make special field studies of duplication or overlapping soil series.

(4) Consult with and instruct Principal Soil Correlators on use and recognition of soil series not common to his correlation area.

(5) Spot check and review work of the Principal Correlator to see that he maintains concepts of soil series expressed in official series descriptions.

(6) Work with Principal Correlators involved in any changes in concept for established series or for proposed new series.

Principal Correlator's Office

(1) Examine all descriptions of taxonomic units and mapping units for survey areas for consistence with standards established by approved series descriptions.

(2) Check nomenclature of mapping units and be sure that adequate information is passed to Washington to serve as basis for final. determination of nomenclature.

(3) Join Washington office in special studies of overlapping series or needed changes in concepts of approved series.

(4) Work with states on information needed to prepare documents needed in correlation.

State Level.:

No changes in duties, but changes in timing of activities.

I believe that some changes in our present procedures are needed to prevent delays, avoid duplication of effort and to remove the need for rewriting survey reports where there is a considerable change in correlations - from the Field to the Final Correlation. 1 believe my proposals have some merit along this line.

2/ Suggestions by A. H. Paschall, Chairman, not reviewed by committee.

2/ Northeastern Work Planning Conference - Committee on Soil Correlation

A. H. Paschall, Chairman

If it were possible to have nearly all series descriptions approved in a relatively short time (3 to 6 months) and have all duplicating or overlapping series noted and listed. 3 believe that some alterations of correlation procedures would shorten the time between completion of a survey and the preparation of an "approved correlation."

The starting point for these alterations would be the scheduled time for the work we now call Field Correlation. This might be moved up to one year before the estimated completion date for the survey. Steps involved here would be:

1. Submit to the Principal Correlator's office for his examination the descriptive legend and supporting documents now required for the Field Correlation (at least 3 months before a field review is to be scheduled).,

2. The Principal Correlator would examine these, raise questions and participate in a field review of questionable points.

3. Recommendations made as result of this field review and examination of supporting documents then becomes the Intermediate Correlation and is to be checked for usability during the completion of the survey.

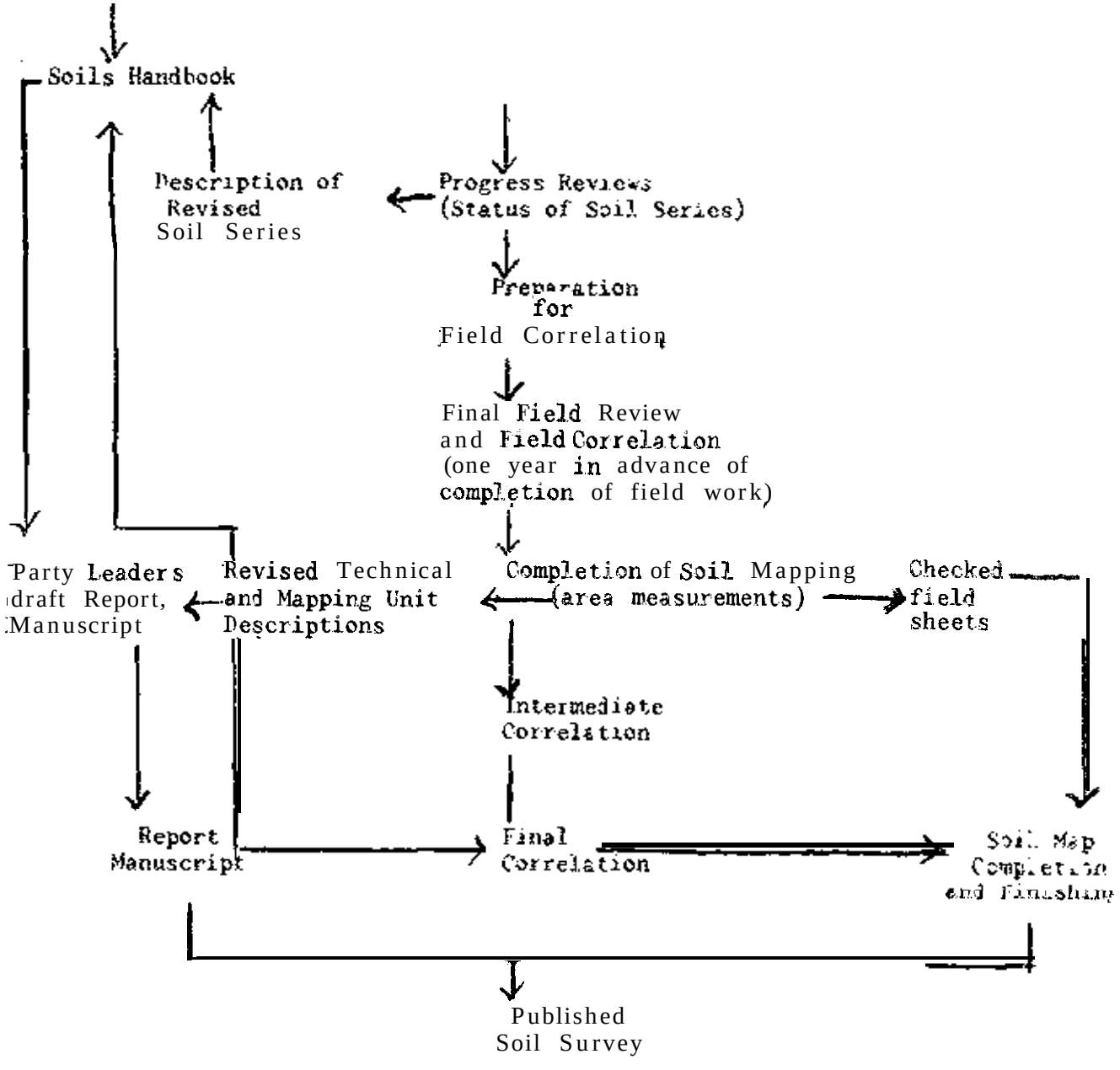
4. Upon completion of the survey another field or office review will be scheduled. This will involve a representative from the Principal Correlator's office and will be for the purpose of making additions or correcting weaknesses that show up as a result of the one-year test. The document prepared as a result of this step would be the Final Correlation.

5. The Final Correlation would be submitted to the Washington office for preparation of the "Approved Correlation," by
   (a) checking and approving or correcting concepts of series not normally occurring in the correlation area of concepts which have been questioned by the Principal, Correlator, State Soil Scientist, or cooperating agency; and
   (b) checking nomenclature of mapping units
   (Note that checking of proposed series is not mentioned - such series should be checked with the Washington office during the preparation of the Intermediate Correlation, and either approved or dropped).

It is much easier to outline these steps than it is to set up the logistics to carry them out. These suggestions would alter procedures and emphasis on various phases of the work. I don't think it alters any responsibility or authority at any level. As I see it, the special emphasis at the various levels would be:

(OVER)

1/ Adjustment of Program Steps for a S O I L S U R V E Y



1/ If final field correlation is made one year in advance of completion of field work.

5. It was recommended that the committee be continued.

Membership of Committee:

* M. G. Cline, Vice Chairman

* L. J. Cotnoir

M. Howard, Jr.

R.L. Marshall, Acting Chairman

R. P. Matelski

* A. H. Paschall, Chairman

B. J. Patton, Secretary

G. A. Quakenbush

R. F. Reiske

* E. J. Rubins

* Absent.

Visitors - Roy W. Simonson and Frank Veira

The committee report was discussed by the conference and accepted.

Attachments

(OVER)

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

1964

REPORT OF THE COMMITTEE ON LABORATORY CHARACTERIZATION OF SOILS

The charge to this committee as outlined by the executive committee of the NESSWPC was:

To examine laboratory procedures for characterization of soil for their adequacy and the comparison of data by different methods.

To review methods and procedures of sampling of soils to be analyzed, for adequacy and reliability of the samples.

To review requirements of field descriptions to accompany laboratory data for its interpretation, including any deficiencies and recommendations for meeting the needs,

To review interpretation of laboratory data, including any possible means to extend the interpretation and to assure its soundness.

To examine integration of analyses for characterisation with analyses for other specific purposes.

To make recommendations for improving laboratory data, its use and methods of obtaining it.

After reviewing the National Committee's report on laboratory characterization and discussing the charge, this committee recommended and the Northeast Regional Committee approved the following:

1. That a report be made at the next NE meeting of a review of the laboratory methods used by the Soil Survey Laboratory and other laboratories, such as those in the Experiment Station. These to particularly include:

   a. Cation exchange capacity
   b. Bulk density
   c. Determination of coarse fragments
   d. pH
   e. Type of clay

It was brought out by Dr. Simonson that a reason for determining pH with the 1N KCl solution was that a comparison of data could be made with that obtained in Europe.

2. That the recommendation of the National Committee which states:

   <u>Recommendation</u>: The committee recommends that the sample taken to the laboratory should contain all material smaller than 3/4 inch (19 mm.) in diameter - excluding roots. A detailed estimate of the volume of material larger than 3/4 inch should be made and recorded in the profile description.

be approved, While this recommendation is incomplete it is an improvement over the present no-sieving of coarse fragments between 2 mm. and 3/4 inch. However, Dr. A. J. Baur questioned the use of the 3/4 inch sieve since it did not sieve out the 3/4 to 3 inch fragments. Perhaps the ½ inch sieve should be used, since it is the upper limit of fine gravel in the Soil Survey Manual. It was also suggested by S. J. Zayach that the ½ and 3/4 inch sieves be used to assist in the determination of the engineering characteristics.

The committee also recognized the recommendation of the National Committee on "Soil Texture; Coordination of Textural Classes and Grain Sizes" which states --

> RECOMMENDS that the percentage by weight of fine gravel and coarse gravel be determined by the necessary sieving and weighing in the field, unless the sample is large enough to include all the gravel.

This recommendation needs to be reconciled with the National Committee's "Laboratory Characterization of Soils" recommendation.

3. This committee recommended that the profile description accompany the published laboratory data and that it also contain information on the site; such as, slope, aspect, macro- and micro-topography, present vegetation, etc.

4. The committee recommended that the guide to the use of characterization data being prepared by the Soil Survey Laboratory be circulated in the near future. The committee was acquainted with Dr. C. E. Kellogg's publication on this subject.

5. The committee recommended the interchange of pertinent analyses. It further recommended that those performing analyses receive the data on similar samples made in other laboratories.

   The committee studied the recommendations for continually improving laboratory data, its use and methods of obtaining it. The following were considered:

   - free iron oxide determination
   - extractable aluminum determination
   - the coordination with bench mark soils
   - a time table for laboratory characterization
   - laboratory guidelines for the soil surveyor
   - representation from the soil survey laboratory
   - procedures for characterizing organic soils

6. The committee recommended that its functions be continued.

Membership of this committee:

M. G. Cline	A. H. Paschall
L. J. Cotnoir, V. Chm.	*B. J. Patton
*M. Howard, Jr.	*R. F. Reiske
*R. L. Marshall	**E. J. Rubins
*R. P. Matelski, Chm.	

Visitors participating in all or part of the committee sessions:

R. W. Simonson
F. Vieira

*Present at meeting
*Present at report of committees

NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

1964

REPORT OF COMMITTEE ON SOIL MOISTURE

I. Definition of water tables

Definitions as proposed by the national report were considered. There was considerable discussion on the merits of "free" versus "true" as adjectives. "Freedom" of water is a question of freedom of movement in response to atmospheric pressures.

Inasmuch as the nomenclature of hydrologic professionals should have preference in order to avoid confusion, several specialists were contacted. As a rule, they themselves follow Meinzer's classic definitions and question the accuracy and the need of the definitions presented by Dr. Miller. The need for and validity of the terms "artesian" and "perched" water tables is generally recognized. One hydrologist prefers "artesian water surface" for our artesian water table concept.

A list of current definitions among hydrologists is attached as Appendix I.

Dr. Emerick, groundwater geologist, Penn. Dept. of Health, has commented "that 'virtual water table' is not really a water table and using the term needlessly complicated the nomenclature. Because of the capillary fringe and the effect of gravity, the point of zero tension is not at the surface of the water. Miller may have had this in mind when he referred to a level that can be computed, but, as written, it is not clear." The same hydrologist pointed out that "the definition of perched water table as defined would apply to a water table over a less permeable stratum which is saturated and which, in turn, is over an artesian aquifer with insufficient head to hold the former level. In other words, the water table would fall, but it would merge with an artesian water table."

"Virtual water table" is a difficult concept which needs to be illustrated es well as defined. The committee suggests two illustrations: (a) en organic soil consisting of well decomposed muck over peat does not drain because of a break in capillary flow; (b) silt loam or loam soils over gravelly or coarse sandy substrata show accumulation of carbonates or of iron and manganese in the zone, where pores become coarser indicating a capillary discontinuity.

"Perched water table" and "artesian water table" were thought to be adequately defined in the national report,

There is a need for considering slope limits where the ordinary concepts of watertable apply. In mountainous areas there are flowing waters which appear in cuts or as springs at the surface which may be

outside of the definition of the various kinds of groundwater discussed in the national committee report. A statement should be included to cover these conditions.

Recommendation

1. Recognize priority rights of hydrologists in the matter of water table nomenclature.

2. Soil scientists should be specific in describing kind of water table, Thus, we prefer the use of "apparent water table" to "water table" in the national report.

3. In each instance where watertable is described, the method of determination should be listed.

4. Favor change from "true" to "free" if choice is open.

5. The definition of virtual water table should be provided with specific examples for clarification.

6. The special case of water table in sloping land should be recognized.

II. Depth to water table

The committee concurred with the national report, and found the 30 and 60 inch breaks especially convenient for engineering and sanitation interpretations. However, the relatiou to the control section in a revised 7th approximation is appreciated. For forestry and certain agronomic uses a precise description of water table depth is desirable. For two examples of continuous measurement of water table depth see Appendix II-III.

Recommendations

1. The setting of water table limits should be deferred until a final decision on the control section is reached.

2. Depths in the "very shallow" range should be precisely described or measured rather than that more classes are added in this critical range.

III. Duration of water table

A full description of water table would require measurement of its duration at specific depths. Two examples of water table fluctuations are shown in Appendix II-III as observed by A. E. Shearin in Sutton fsl and Walpole sl over periods of 18 and 12 months, respectively, at Tolland and Windsor, Conn. A detailed description follows:

Sutton soils are moderately well drained. They have developed in glacial till derived from schist and gneiss. The soil at the site is in the lower range of moderately well drained or in-regrading to somewhat poorly drafned. The surface layer is very dark gray fsl underlain by yellowish brown fol B_{21} horizon ranging in depth from a few inches to about 10 inches. The underlying horizons are strongly mottled. Slope o-s percent to east-southeast. Area idle at present but was used for hay and pasture.

Walpole soils are poorly drained. hey have developed in moderately coarse textured flwial deposits over sand and gravel or sand. The surface soil is very dark gray to black over mottled subsurface horizons. This particular site is a small pocket associated with somewhat excessively and excessively drained soils. The area is tile drained with the outlet, in a deep open ditch. The area is nearly level, and had been used for tobacco, vegetables and other crops.

A summary of the data for the Sutton soil shows that when using the 1963 classification, depth and duration over one year period are related as follows:

3 months (in two periods)	very shallow
3 months (in four periods)	shallow
3 months (in three periods)	mod. shallow
3 months (in one period)	mod. deep

Recommendations

1. A fluctuating water table needs to be described in terms of depth, duration and season of occurrence.

2. The first class "vary brief" needs to be defined in terms of specific durations as these may be related to the tolerance limits of specific crops, or to the performance limits of highways in winter and functioning of septic tanks during any time of the year.

IV. Available soil moisture

The committee discussed reliability of available soil moisture classes for specific texture classes. Specific correlations for northeastern soils are attached to the report as Appendix IV A, IV B, end IVC. The data ware segregated for low and high humus contents.

Recommendations

1. In view of disagreement on methodology or definition of available moisture, method of analysis should always be reported vith the data.

2. In volume-basis moisture analysis a correction for coarse fragmenta needs to be made.

V. Soil aeration and drainage classes

The committee felt that more precise description of depth, duration, season, and kind of water table in soil description is preferable and would eventually reduce or eliminate the need for specific classes.

Recommendation

1. The study of kind, depth, duration and season of water table should preferably be concentrated in related soils of specific drainage catenas.

IV. Soil permeability

The relative merits of the Uhland core method and the FHA auger hole method were discussed. The core method registers slower permeability and there is need for comparing the two methods, on the saw site. For soil characterization we should adopt a method result6 of which can be duplicated and which is largely independent of time of test, environment and other changeable factor-a. The auger hole method is limited in it6 application. It is an empirical test of probable performance of a septic tank distribution field under similar weather conditions. The Uhland core method is a measure of vertical hydraulic conductivity through a plane under standard conditions. It is recognized that both method6 have high standard error6 because of the variability of the relatively small area6 sampled.

Recommendations

1. The two conventional methods for permeability measurement deserve comparison on the same site.

2. The committee favors 5 permeability classes a8 listed in the national report. Tha committee is aware that for specific uses fewer classes would suffice but submit6 this proposal a5 a compromise serving widest usefulness.

3. Subclasses are not recommended. However, specific values can be listed in the "slow" and "rapid" classes where such refinement is desired.

The committee finally recommends that it be continued.

Absent: W. J. Lyford
A. R. Midgely
R. S. Struchtemeyer
J. C. F. Tedrow
D. van der Voet

The committee
A. J. Baur
R. S. Bell
F. G. Loughry
G. A. Quakenbush
A. E. Shearin
F. Veiera
W. A. van Bck, Chmn.

DEFINITIONS ON GROUND WATER

Ground Water: Phreatic water, q.v. That part of the subsurface water which is in the zone of saturation. (Meinzer, USGS WSP 489, p. 38, 1923).

Ground Water: Referred to without further specification is commonly understood to mean water occupying all voids within a geologic stratum. (Todd, David K., Ground Water Hydrology).

Ground Water Level: The level below which the rock and subsoil, down to unknown depths, are full of water. (Chamberlin, vol. 1, p. 67).

Ground Water Surface: This level, below which the rock and subsoil (down to unknown depths, are full of water, is known as the ground-water level, ground-water surface, or water table. (Chamberlin and Salisbury, Textbook, vol. I, p. 71, 1909).

Water Table: The upper surface of a zone of saturation. No water table exists where that surface is formed by an impermeable body (Meinzer, 1923, p. 22).

Water Table: The upper surface of the zone of saturation, or phreatic surface; the surface of atmospheric pressure. (Todd, David K., Ground Water Hydrology).

Water Table: The level at which pore water pressure is equal to atmospheric pressure.

Water Table: The surface of a body of ground water where the hydrostatic pressure equals the atmospheric pressure.

Water Plane: In geology, the upper surface of a bed of water, as of ground water. (Standard).

Perched Ground Water: Ground water separated from an underlying body of ground water by unsaturated rock. Its water table is a perched water table. (After Meinzer, USGS WSP 494, p. 40, 1923).

Perched Ground Water: Body of ground water separated from the underlying body of ground water by unsaturated rock.

Perched Water Table: If the underlying bed is of small extent but impervious it will force water contained in overlying porous material to the surface. In many places such water lies far above the ordinary water table and constitutes what is called a perched water table. (Veatch, A. c., USGS Water Supply Paper 44, p. 57, 1906). See perched ground water.

Perched Water Table: A ground water body separated from the main ground water by a relatively impermeable stratum and by a zone of aeration above the main body of ground water, (Todd., David K., Ground Water Hydrology).

Perched Water Table: Phreatic water table of limited dimensions, found at a higher level than the continuous phreatic level.

Artesian water: Ground water that is under sufficient pressure to rise above the level at which it is encountered by a well, but which does not necessarily rise to or above the surface of the ground. (After Sayre, USGS WSP 678, p. 33, 1936).

Summary of Available Moisture Calculated from Soil Profile Characterization Data for the New England States*

Table Cl. Summary of all Soil Horizons

Texture Class	Ho. Samples	Mean Available H20 (1/3-15 atm.) in. /in.	Range
cos	3	.02	.01 - .03
fs	4	.05	.04 - .08
vfs	1	.07	----
lcos	2	.09	.09 - .09
ls	6	.09	.06 - .13
lfs	10	.11	.03 - .20
sl	6	.16	.11 - .21
fsl	45	.17	.06 - .31
vfsl	16	.15	.04 - .30
1	50	.22	.10 - .30
Sil	70	.26	.12 - .36
cl	7	.17	.16 - .19
sicl	8	.21	.18 - .30
sic	12	.23	.14 - .34
c	9	.18	.14 - .19

*Available moisture calculated from soil horizon data from the characterization reports of the Soil Survey Laboratories, S.C.S. for:

Aroostook & Pennobscot Counties, Me., 1959
Aroostook & Pennobscot Counties, Me., 1961
Franklin & Hampshire Counties, Mass., 1960
Grand Isle County, Vt., 1960
Hartford & Tolland Counties, Conn., 1961
Litchfield County, Conn., 1957
Merrimac, Rockingham 6 Strafford Counties, N. H., 1960
Merrimac & Strafford Counties, N. H.
Tolland County, Conn.
Washington 6 Rent Counties, R. I.
Worcester, Franklin and Hampshire Counties, Mass., 1960

Data provided by Mr. A. R. Shearin.

Table #2. Summary of Available Moisture in Soil Horizons*

with More than 1.16% Organic Carbon

Texture Class	No. Samples	Mean Available H_2O (1/3-15 atm.) in/ft.	Range
co6	0		
fs	0		
vfs	0		
lcos	0		
ls	0		
lfe	2	.12	.10 - .15
sl	2	.16	.15 - .18
fsl	13	.17	.10 - .26
vfsl	1	.30	
1	14	.24	.10 - .29
sil	26	.26	.12 - .34
Cl	1	.17	...
sicl	2	.21	.18 18 - .23.25
sic	2	.19	
C	1	.16	

with Less than 1.16% Organic Carbon

cs	3	.02	.01 - .03
fs	4	.05	.04 - .08
vfs	1	.07	
lcos	2	.09	.09 - .09
ls	6	.09	.06 - .13
lfs	8	.10	.03 - .20
sl	4	.17	.11 - .21
fsl	32	.17	.06 - .31
vfsl	15	.15	.04 - .26
1	36	.22	.15 - .30
Sil	44	.25	.14 - .36
cl	6	.18	... -
sicl	6	.25	.19 16 - .19.30
SIC	10	.23	.14 - .34
C	8	.18	.15 - .23

* Same soils as listed on Appendix IV A. Data provided by Mr. A. E. Shearin.

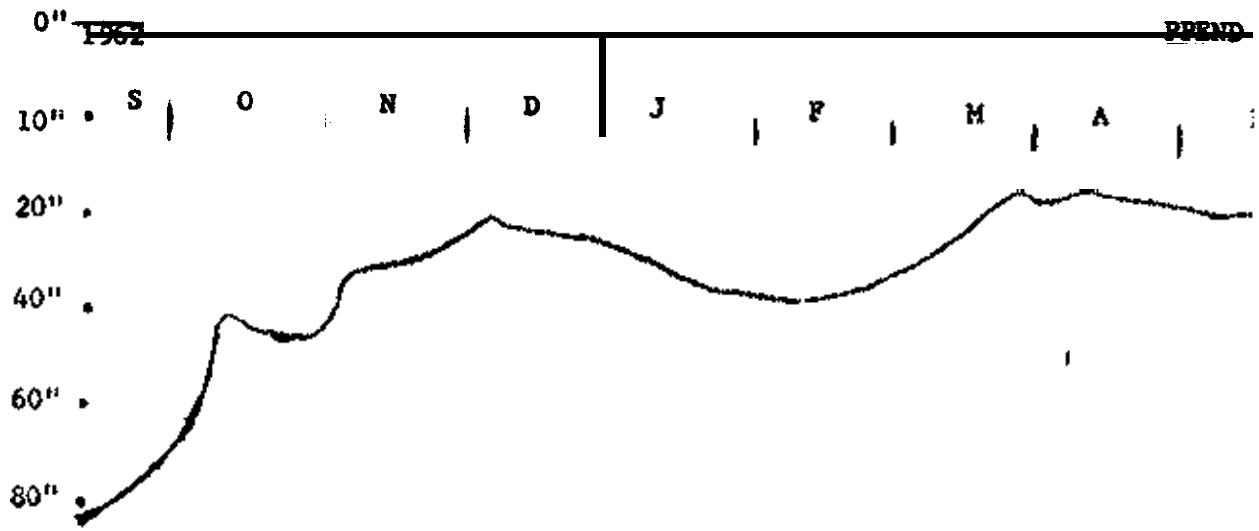
APPENDIX IV C

AVERAGE AVAILABLR MOISTURE (113 - 15 AIM.) BY SOIL TEXTURE CLASS

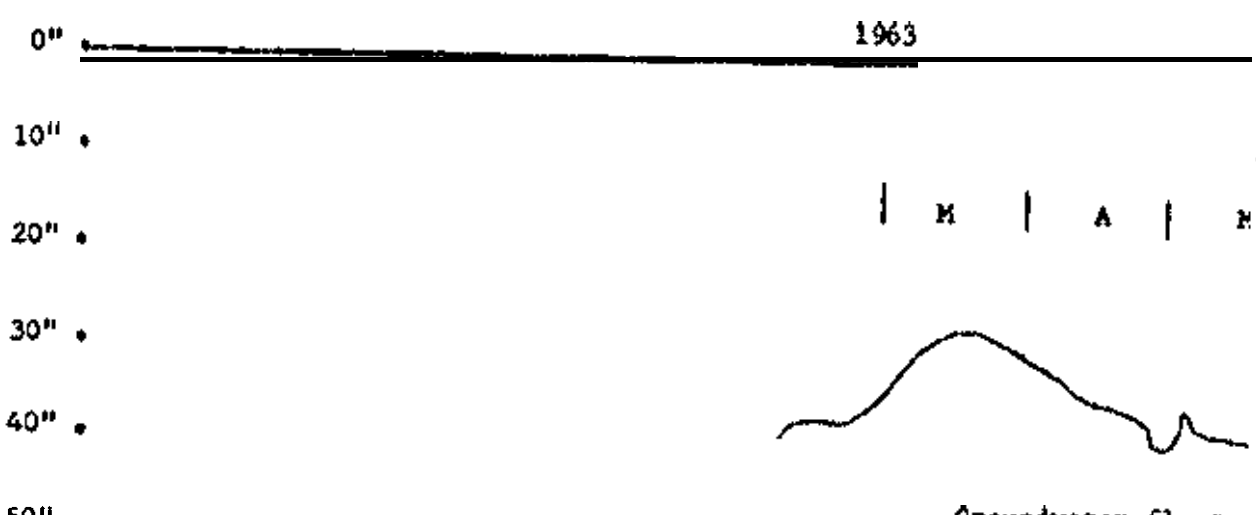
Pennsylvania Data 1957-1963 *

Soil Texture	Percent organic Carbon	Number of Samples	Moisture Mean Percent	Standard Deviation	Inches of Water per Inch of Soil
Sandy loam	< 1.2 -	30	9.5	5.6	.14
Fine sandy loam	< 1.2	13	10.1	2.5	.15
Loam	< 1.2	84	9.4	3.6	.15
	> 1.2	15	13.7	3.0	.17
all samples		39	10.1	3.e	.15
Silt loam	< 1.2	187	12.6	3.8	.19
	> 1.2	69	15.6	3.4	.20
all samples		256	13.4	4.4	.19
Silty clay loam	< 1.2	108	10.0	3.9	.15
	> 1.2	11	16.5	3.3	.21
all samples		119	10.6	4.3	.15
Sandy clay loam	< 1.2	12	8.6	5.9	.10
Clay loam	< 1.2	39	8.3	3.0	.12
Silty clay	< 1.2	17	8.2	3.6	.13
Clay	< 1.2	10	8.2	3.5	.12
TOTAL		595			

* Data prepared by Mr. John Carey and submitted by Mr. F. G. Loughry.



Groundwater level
Sutton fel (Tollan



Groundwater fluctu
Walpole sl (draine

Northeast Cooperative Foil Survey Work Planning Conference
New York City, January 20 and 21, 1964

REPORT OF THE COMMITTEE ON TECHNICAL SOIL MONOGRAPHS

The Committee report of 1962 defined geographic areas of the Northeast for which monographs are to be developed, established priorities and target dates, proposed authors, and presented a tentative outline. For the record, the pertinent recommendations of areas, target dates, and authors are repeated here:

Area NE-l--New England, Eastern New Pork Uplands, and Adirondack Mountains--W. H. Lyford, A. E. Shearin, and K. W. Flaoh--Target date April,1967.

Area NE-2--Erie, Ontario, Mohawk, St. Lawrence, and Champlain plains--M. G. Cline, R. L. Marshall, and A. H Paschall--Target date April,1965.

Area NE-3--Glaciated Allegheny Plateau--A. J. Baur, R. L. Marshall, and. F. G. Loughry--Target date April, 1967.

Area NE-4--Unglaciated Allegheny Plateau--F. G. Loughry, R. P. Matelski, and B. J. Patton--Target date April, 1966.

Area NE-5--Northern Appalachian Ridges and Valleys--F. G. Loughry, R. P. Matelski, John Noll, Southeastern States Representative, and Laboratory Representative--Target date open.

Area NE-b-Northern Piedmont--3. A. Pomerening, John Cady, and Southeastern States Representative--Target date April, 1964.

Area NE-7--Northern Coastal Plain--J. A. Pomerening, E. J. Pederson, and J. C. F. Tedrow--Target date April, 1967.

The 1962 committee stressed that a senior author must expect to devote time equivalent to a significant part of a year to complete any single monograph. It also stressed that it is necessary for responsible administrative officers to take action in releasing personnel from regular duties if monographs are to be completed.

The 1963 National work planning conference reviewed the report of the committee of the Northeast, as well as others, and made recommendations for outlines and other details. These were not entirely consistent with the recommendations of the Northeastern committee, but neither were they of a nature that would affect significantly the proposals for the Northeast in terms of progress.

Since 1963, the project has been mainly inactive in the Northeast, though contributing studies have proceeded in the normal course of work and continue to assemble data that are the essential bases of the monographs.

No attempt is made here to enumerate these sources of information, but they are substantial. Mr. Marshall has enumerated 13 major sources of information for the areas inwhioh he works, and others could equal or exceed that number. Nevertheless, the fact remains that each member of the committee has reported no progress on actual development of the monograph with which he is concerned.

In each case, committee members report the same reason for lack of progress. It is simply that work loads in the course of normal operations constantly increase, and the monographs have not been given priorities by administrators that would justify laying aside other work in their favor. Neither have they had personal priorities in the minds of the individuals concerned that would compel authors to saorifioe personal affairs or professional activities in their favor outside of working hours.

Soil Conservation Service policy relative to the monographs is clearly stated in Soil Survey Memorandum 39 dated March 1961. If that polioy is to be implemented insofar as Soil Conservation Servioe. Personnel are involved, it will be necessary that administrative action be taken at a high level to free authors from some other duties. The Conference is urged to authoriee its Chairman to transmit a recommendation for action to appropriate administrative offioers of the Soil Conservation Servioe at the Washington level.

No policy statement relative to the monographs on the part of the various State agencies concerned exists to the knowledge of the Committee. The Conference is urged to authoriee its chairman to inform the Northeastern Soil Research Committee at its meeting January 22 of the problem and to solicit its good officers in urging the State Administrative personnel concerned to make necessary provision for partioipation of the individuals on their staffs in authorship.

The Committee cannot visualize how it, as a committee, oan oontribute toward further progress. As the Committee is composed of potential authors, this is perhaps a refleotion of Inability to discipline itself to the task before it. Certainly there are few among its members who could not if they willed it make some progress during nights, Saturdays and Sundays at the expense of personal affairs. The faot that they have not must mean that the prospect of future professional recognition and personal satisfaotion inherent in authorship is less valuable to the individuals concerned then the aggregate of other personal satisfactions out of office hours.

W. H. Lyford
R. L. Marshall
A. J. Baur
F. G. Loughry
R. P. Matelski
J. A. Pomerening
M. G. Cline, Chairman

(B)

CONFERENCE ACTION - Technical Soil Monographs

Due to Dr. Cline's absence the above report, prepared by him, was presented to the conference by A. J. Baur. The Conference took the following actions:

1. Chairman Quakenbush was directed to transmit a request to the SCS Administrator, through proper channels, asking for administrative action aimed at making available qualified personnel for writing monographs.

2. Chairman Quakenbush was also direoted to write Experiment Station Directors about the need and importance of monographs, assignment of authors and target dates, and ask them to consider making individuals on their staffs available for this work.

3. Dr. N. K. Peterson was requested to explain the topic of soil monographs and problems of authorship to the Northeast Soil Research Committee. (He later informed the group that this was done January 22, 1963).

4. The committee on monographs is a continuing committee.

DISCUSSION - Technical Soil Monographs

General agreement that if monographs are to be written men must be released from other duties so that continuous time can be devoted to the job.

Pomerening: Would like to do the job, but can't see how time will be assigned. Would like to be relieved of senior authorship for area Nos. 6 and 7.

Matelski: Opposed to the proposal that Experiment Station personnel do the job of writing because other responsibilities such as teaching take precedence.

Marshall: The same problem faces SCS men. Regular operations and special jobs like soil survey report writing get high priority.

Quakenbush: Writing will take 6 months to one year. Administrative decisions and actions are required to get the job done.

Baur: Monographs present an area of soil survey in which Agricultural Experiment Stations can make a real contribution to the cooperative soil survey. The Stations have personnel with qualifications and skills at a level required for this kind of work.

(C)

Van Eck: Experiment Station personnel can best operate within their own states; have limitation on travel, etc.

Baur: Precedents have been established for regional work, - examples: regional soil research projects, publication of soil characterization data for Northeast by New Hampshire Agricultural Experiment Station.

Baur: Monographs will be published by SCS in a USDA series.

Eimonson: Monographs are one means of presenting soil survey information - should be useful in areas like teaohing, researoh planning and land. resource inventory. Need to present soils information at different levels.

Baur: Target dates and authors listed on page 1 of the Committee Report (as of 1962) are now not entirely valid. Need to re-evaluate the situation.

Notes by Dr. G. Olson

NATIONAL COOPERATIVE SOIL SURVEY
NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE

1964

REPORT OF COMMITTEE ON SOIL SURVEYS IN URBAN-FRINGE AREAS

The committee on Soil Surveys in Urban-Fringe Areas was established and met for the first time in January 1962. The membership of the committee at this conference is new, except for two members, from that in 1962. All members were present, except L. E. Garland and D. E. Hill. Dr. Hill was at the conference but was sick when the committee met.

The committee was charged to review and initiate a response to the many items contained in the 1963 report of the national committee. Lack of time prevented the review and discussion of about half the items. The following are the items reviewed and the action taken by the committee.

A. Soil Corrosivity (Attachment A - 1/10/64)

1. Untreated Steel Pipes

a. The criteria for each class of corrosiveness is somewhat vague and should be clarified. It is uncertain whether one, two, or all soil properties or qualities must be considered to place soils into classes.

b. It appears that the criteria used to separate classes are not comparable with the information in the publication "Underground Corrosion," Circular 579, U. S. Department of Commerce. National Bureau of Standards (basis for the five soil corrosivity classes) and a technical paper presented by B. J. Whiteley, Jr. of the Tennessee Gas Pipeline Company. Both of these sources indicate that electrical resistivity is quite variable in any given soil. Moisture content, overburden pressure, and particularily temperature can cause a great variation in resistivity throughout the year for a soil at given site.

It appears that the differential in resistivity from one point to another along a pipeline is more significant than the actual electrical resistivity at any one point in the soil along the pipeline. The information in Circular 579 indicates that total acidity is variable and does not appear to be a good indicator for placement of soils into classes.

c. The information in the guide (Attachment A) seems to stress textures of the B horizon and subsoil. It also states that the corrosivity will be determined for each soil horizon to the depth of pipe installation. This is somewhat confusing when trying to place soils into classes. Is the corrosivity of the B horizon, the substratum, or the layer where the pipe is installed the basis for placement of soils into classes? Pipes are generally installed at depth5 greater than 3 feet from the surface. Why is there such an emphasis on the B horizon and subsoil when their characteristics are not diagnostic of the character of the substratum in many soils?

d. The committee feels that the data and our present knowledge of soil corrosivity warrant only 3 classes instead of five.

2. Concrete Tile

a. The second sentence in the first paragraph on page 1 of Attachment A refers to "metal or concrete pipe." However, this section on page 4 is headed "Concrete tile." The committee suggests the heading be changed to "Concrete conduits." In fact, the interpretation could be expanded to include all concrete structures imbedded in soil material.

b. The committee suggests that source or sources of information be indicated for the criteria on sodium and magnesium sulphate.

B. Presumptive Bearing Values

The guide attached to Advisory Notice W-402, dated July 3, 1963. was not reviewed. The national committee feels that some revisions are needed before the guide is sent out for review and comments.

C. Research Needs for Interpreting Soils for Urban Uses

Research for non-agricultural uses of soils differs from that for agricultural uses, primarily in the interpretation and relative importance of the soil factors involved. The cost per unit of area involved is high in soil interpretation5 for non-agricultural uses as compared to agricultural uses. Therefore, errors in interpretation can be much more costly. Research

for non-agricultural purposes should make for greater use of data on soil permeability. percolation, infiltration, chemical reactions, coarse fragments, frost susceptibility, water table levels, etc.

Data are needed on behavior of septic tank filter fields, especially for dispersal and filtration of sewage effluent through a given kind of soil, and the effect of organic colloidal complexes on the continued satisfactory functioning of disposal systems. At the present time, soil scientists must make interpretations based on inadequate basic data and understanding of the factors involved. This inadequacy or weakness applies to many other non-agricultural interpretations. Sometimes these estimates are no better than educated guesses. The soil scientists would like to have greater precision in such interpretations. The information is needed to give guidance to planning boards, planning commissions, planning consultants, and other individuals, groups, and agencies for making wise land use decisions.

The problems mentioned above are of mutual interest to the Soil Conservation Service and the Experiment Stations. They are the main groups making interpretations based on soil properties or qualities. The committee wishes to bring to the attention of the Experiment Stations in the Northeast the research needs for interpreting soils for non-agriculture1 uses. It is suggested that these needs be examined as practical areas for study and that high priority be given to them. The research should be done on the benchmark soils to provide a better basis for interpreting and predicting the behavior of other similar soils. A well coordinated program would eliminate research on any given soil in more than one State. This does not preclude doing research on other than benchmark soils that are of particular interest in the various States. First priority should be given to the review, assembly, and dissemination of existing basic data.

To relterate, the committee suggests the need for basic data on such items as:

1. Permeability, percolation, and infiltration.

2. Water table levels and their fluctuations throughout the year.

3. Sulphetes, chlorides, and other chemical, biological, and physical characteristics and qualities of soils as related to corrosion potential.

4. A procedure for estimating coarse fragments in soils and their effects on interpretations for various uses.

5. Disposal and filtration of sewage effluent through soils and their relationsiip to size of house lots.

6. The effect of organic colloidal complexes caused by sewage effluent on the satisfactory functioning of on-site disposal systems.

7. Frost susceptibility of soils a5 related to foundation stability, septic tank disposal systems, road construction etc.

D. Training Programs and Outlines for Soil Scientists Mapping and Interpreting Soils for Urban Uses

The committee did not spend much time on this item and did not come up with an outline for training soil scientists. Two members of the committee submitted their comments on training of soil scientists as follows:

1. Develop criteria for all the various interpretations for urban-fringe uses and correlate within region5 and then nationally. This includes rationale and assumptions.

2. Practice sessions in applying these criteria to soils in the survey area, using benchmark soils a5 guidelines.

3. Compile a comprehensive list of reference material.

4. Training needed in development and presentation of soil interpretations.

5. Training relative to the requirement5 of Health and Sanitation Boards, Public Health Service, Federal Housing Administration, etc.

6. Modus operandi for dealing with governing bodies, planning boards, planning consultants, tax evaluators, etc. Training is also needed for these people in the understanding and use of soil interpretations.

7. A symposium on the subject having representatives of different organization5 discuss the various aspects of soils in urban-fringe development.

8. More training is needed in the AASHO and Unified classification systems.

E. General Soil Maps for Use in Directing Expansion of Communities

Soil factors to be considered In developing map units are:

1. Natural soil drainage.
2. Soil permeability and/or percolation
3. Depth to horizons that retard downward movement of water, such as fraglpens, silts and clays, etc.
4. Slope
5. Degree of rockiness and depth to bedrock
6. Depth to seasonal water table
7. Stream overflow (flooding)
8. Degree of stoniness

The llmltatlon use-ratings of each general soil area should be expressed in general terms to conform with the make-up of the map units. The map units can be interpreted for such uses as

1. Residential
2. Commercial
3. Industrial
4. Recreational
5. Agricultural
6. Woodland

The committee felt that the specifications as to scale, size, legends, etc. of a general soil map were too variable to make specific recommendations.

F. Septic Tank Filter Fields (Attachment B - 1/10/64)

The committee feels that assumptlons are needed relative to density of housing before the criteria on permeability and percolation can be evaluated and applied in this guide. It recommends to the national committee that such assumptions be stated.

The comnlttee questioned the range of permeability (1.0 to 0.63 inches per hour) in the moderate limltetlon class. A percolation rate slower than 1 inch in 60 minutes (approximate permeability is less than 1 inch per hour) is unsuitable for any type of soil-absorption disposal system according to the "Manual of Septic-Tank Practice" by U. S. Department of Health, Education, and Welfare. Furthermore, the allowable range for the moderate limitation class is only 0.37 inches per hour. The committee feels the range is much too narrow for practical use.

G. Future Status of Committee

It is recommended that the committee be continued.

Commlttee:

R. A. Farrlngton	J. A. Pomerenlng
L. E. Garland	W. J. Steputis
D. E. Hill. Vice-Chairman	M. E. Weeks
M. F. Hershberger	K. P. Wilson
N. Peterson	s. J. Zayach, Chairman

Visitors participating in part of the committee meeting:

B. Isgur
R. W. Simonson
S. C. Tlnsley

Dlscusslon of the report of the Urban-Fringe Areas Committee by the conference

Soil Corrosivity

In Connecticut the corroslvlty problems to date are of private individuals or contractors rather than of public officials. They feel that in developments they are dealing with deep substrata, 5 to 10 feet from the surface.

The cost of anodes is high in laying pipelines by the Niagra-Mohawk Power Company in New York. They will use any information that will reduce costs. The Company states that if the Soil Conservation Service will supply the soils information, they will make the interpretations. Furthermore, they will make a soil survey of the area involved if the Service does not do it. They feel that the soil association and topographic relationships are very important.

It was the consensus of the conference that there are some soils which are obvious problems and some which have few problems. These represent the narrow extremes. The range between these two extremes is broad. The criteria for subdividing this broad range are not well established and are contradictory. Rating soils within the broad, middle range is on shaky ground. The committee and the conference recommends the use of only three classes with the middle class being quite broad. They also recommend that the field soil scientists work on the problem.

No comments were made on concrete tile.

General Soil Maps for Use iii Directing Expansion of Communities

The conference reiterated caution on the use of general soil maps for operational planning, even though considerable explanation has been made to users that such maps are useful only for general planning. It was also brought out by the conference that emphasis should be placed on the proportion of non-conforming inclusions as well as percentage of dominant soils in the general soil areas.

NATIONAL COOPERATIVE SOIL SURVEY
NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE
1964
Review and Notes on Subjects from National Conference
not Covered by Committees

ORGANIC SOILS

Review of the March 1963 Report of the National Committee on Organic Soils

By A. J. Baur

Dr. J. E. Dawson presented to the 1963 National Committee an outline of major kinds of horizons and layers found in organic soils. These are:

1. Genetic A horizons. Horizons that contain more than 50% organic matter, have fine aggregate structure, and other evidence of advanced stages of decomposition.

2. Genetic A horizons which contain inorganic material. Main features are dry color values more than 5 and loss on ignition values of less than 50%.

3. Genetic B horizons. Contain illuvial material derived from A horizons.

4. Layers of Histosols.

   a. Layers composed of plant material.

      1. Sphagnum
      2. Other layers of plant material with a coarse system of voids.

   b. Layers composed of fine to very fine secondary particles.

      1. Sedimentary peat, A cohesive disintegrated layer,
      2. Disintegrated peat

   c. Disintegrated layers of Histosols containing inorganic materials.

      1. Peat-mineral layer
      2. Peat-diatom layer
      3. Peat-calcium carbonate layer (marl)

Dr. Rouse Farnham presented to the 1963 National Committee a proposed system for classifying organic soils. His system is built on recognition of three diagnostic master horizons based on degree of decomposition of organic remains and one non-master horizon.

Organic Soils -

Four important ground rules are:

1. The upper12 inches of organic soil, if drained, or the upper 18 inches, undrained, are not used as diagnostic horizons. (These thinknesses are excluded from the top levels of the system down through the Subgroup level. It may be that they can be used at the family or series level or outside the, system at the type 'or phase level).

2. A diagnostic master horizon must be at least 12 inches thick in drained and 18 inches thick in undrained Histosols.

3. If there are two diagnostic horieons in a soil the most decomposed has precedence for classifying the soil.

4. Thickness of the control section in organic soils is 40 inches if drained and 60 inches if undrained. Where organic horizons are less than 40 or 60 inches, respectively, and there is no lithic contact, the control section extends into the underlying mineral soil. (Intermediate thicknesses are used for organic soils that have been drained to depths of less than one meter).

The three kinds of master horizons are:

1. Fibric. Fibrous structure, formerly peat. L. f ibra, fiber.
2. Lenic . Semi-fibrous structure, formerly peaty muck and mucky peat. L. lenis, soft.
3. Sapric. Amorphous, formerly muck. Gr. sapros, rotten..

These horizons are the basis for classification at the Order, and Suborder levels.

Non master hor iron,:

1. Limnic. Includes both organic and inorganic material deposited in water: marl, diatomaceous earth; sedimentary peat, bog iron and possibly others. Separation based on these kinds of material are made at the family level.

Temperature, reaction, lithic contact, presence of limnic horizon, sphagnum moss and a few other selected features are used for separation at the Great Group and Subgroup levels,

Suggested family criteria are:

1. Nature of limnic horizon, example marl, diatomaceous earth, bog iron, sedimentary peat,
2. Texture of mineral horieons that are within the control section.
3. Sulphurous family for pH 3.5 or less, drained.

organic Soils

4. Distinctions in Fibriats and Lenista according to the botanic composition of the plant remains should be made et the series level for the most part. However, distinctions between woody materials and fine fibrous materials such as sedges, tule, mosses, etc. may be useful at the family level. Thia would be particularly true in Fibriata where the woody materials behave somewhat as do coarse fragments in mineral soils. For those Fibrists that are more than half wood, families designated as woody may be useful.

Suborders of Hiatoaola:

10.1 Hiatoaols having a aapric horizon within the control section.

Sapriats

10.2 Other Hiatosola having a lenic horizon within the control section.

Leniata

10.3 Other Hiatosola having fibric horizon.

Fibrista

10.4 Other Histosols lacking master horizons.

Leptiats

Mr. Frank Vieira reports that a trial of Dr. Farnham's system was made at four sites of organic soils in New Hampshire. Three of these fell in the Typic Dysleniat subgroup. The fourth site had a dense layer of logs at about 36 inches. It was Typic Dyaleniat, but would be separated from the other three at the series or phase level,

Mr. Walter Steputia reported that he and Mr. A. H. Paschal1 examined one site in Maine. It also fell into the Typic Dyaleniat subgroup.

Notes by Walter Steputis and M. F. Hershberger

Climate In Relation to Soil Classification and Interpretation

The Northeest States are continuing work on establishment and testing of a climatic line for determining capability classifications and crop predictions. It was reported that Lloyd Garland has not completed work on a climate line. He is working with climatologists. Information is not ready for publication;' Present line is based on 120-day frost free growing season. The new line is to be based on growing degree days, with 50°F as a base, However, it is being worked on, it is not developed nor concluded as definite. No action by the conference was found to be necessary.

Phasing of Soils on Micro-Climate

Ray Marshall suggested a climate line for grapes around lakes. There was some discussion on the problems to be encountered if micro-climate is made a mapping factor. No conclusions or action was taken by the group.

Criteria for Series. Types and Phases

Discussion was brief on this subject. It was confined mainly to the suggestion to use 10 to 30 inches for control section of mineral soils that lack argillic, natric, or spodic horizons:. There was some question as to why cambric was not included in the above exclusions. Different situations were discussed relative to classification in the 7th approximation. The northeast is mainly concerned with Entisols end Inceptisols.

The 10-30 inch control section was accepted by the group as satisfactory after applying criteria to several series in question.

It was recommended that classes of rockiness be redefined. Classification of rockiness was included with stoniness for study by a special Committee-in-4ction. This Committee is to make its first report by January 31, 1965.

Soil Morphology

A check was made to determine how many persons from the Northeast states had made any field trial tests of the proposed standard classification of clay films es proposed in the 1963 report of the "National Technical Work Planning Conference of the Cooperative Soil Survey". No testing was reported in any of the states, Some use has been made of the frequency classes.

There was some discussion as to whether more than three classes will be needed. The ability of the field Soil Scientist to determine the thickness of clay films for the five classes, was questioned. It was agreed that this should 'be field tested,

Dr. Baur requested that'the State Soil Scientists test this classification in, the field and report the results to A. H. Paschall during the current year.

Shape of Soil Areas

This committee recommended in the National report that some tests be conducted to see how to estimate or calculate most. efficiently in a survey area the division of total acreages into two parts:

(1) Acreage of areas so large or so situated with respect to other soils that they can andprobably will be used so as to achieve the technologically maximum production; and

(2) Acreage of areas so small or irregular in shape, and field dominated by soils of lower potential productivity, that they will be used less intensively and therefore will produce less than would be technologically possible.

The conference agreed that this was a good recommendation and could be used as a good tool in improving mapping unit descriptions, and interpretations'with respect to the units. Although, it has been used to some extent in unit descriptions, It has not been used to its fullest extent.

Dr. W. A. VanEck recommended that any recommendations of the National Committee or directions from the Washington Office of the Soil Survey, should include examples, illustrations, and emphasize the use of 'block diagrams, relative to size and shape of soil areas.

Soil Texture

The Conference group discussed criteria proposed for grouping soil series into family data on the bases of soil textures tentatively identified as light loamy, light silty, heavy loamy and heavy silty. The "light" is to be differentiated from the "heavy" on the basis of clay content, the light having less 'than 18 percent clay, the heavy more than 18 percent clay. The National committee had 'recommended that the grouping of soil series into families be tested using 18 percent clay content as the critical limit for separating light loamy from heavy loamy soils and light silty from heavy silty soils. This committee had recommended that a test be made of the accuracy with which the additional textural classes can be determined by the manual field method.

Dr. Metelski reported: that the "Pennsylvania laboratory work shows that' the field designations of texture differ considerably from that of the laboratory. Field designations of light loams, light silt Loams and light sandy loams would not have a high order of accuracy for the A-4 soils in the ASSHO classification." He furnished the following illustration.

Soil	Horizon	% Clay	Textural Class Field	Textural Class Lab
Drifton very stony loam	Al	0.4	Loam	fine sandy loam
	A2	16.5	loam	loam
	B1	16.3	loam	loam
	B21	14.7	silt loam	loam
Watson silt loam	Ap	14.7	silt loam	loam
	B1	26.9	light silty clay loam	loam
	B21	26.7	light silty clay loam	loam
	B22g	19.5	silty clay loam	silt loam
	B23g	19.6	silty clay loam	loam
	B24g	23.2	light silty clay loam	loam
	B3	23.2	silt loam	loam
	Cl	19.4	light silt loam	loam
Montevallo channery silt loam	AP	16.9	silt loam	loam

He suggested that we can improve on the pipette method of determining textural analysis.

Ray Marshall reported that a field test was made in New York and it was concluded that they could not determine with accuracy in the field, the texture of soils which are high in silt or clay proportions.

Dr. Pomerening referred to a test, by field men in Maryland, in determining the clay content of soil samples with known clay content, The results of this test are shown in the attached Table I.

The National Committee recommended that a study be made of the set of soil survey grain-size limits to determine which changes can be made to obtain closer agreement with other physical systems without significant impairment to mapping, characterisition, and interpretation of soils by the soil survey.

Also, the committee recommended that research be undertaken to develop guidance for textural designation for soils high in allophane as well as for soils that contain Kaolinite pseudomorphs of other minerals.

The, conference, group recommended that research be conducted on these recommendations in agreement with thoee of the National committee.

TABLE I

Comparison between estimates of clay percentages and clay contents determined by Mechanical Analyses.
1962 Soil Scientist Training Session, College Park, Maryland

Sample	Mechanical Analysis Sand %	Silt %	Clay %	Textural Class	Times T. Class Correctly Estimated no.	1	2	3	4	5	6	7	8	9	10	11	12	13	Mean of Estimates
						Estimates* of percent clay by 13 individuals													
1	13	67	20	sil	6		20	20	10	30	28	35	25	28	16	6	10	25	21
2	7	61	32	sicl	4		-	30	32	50	35	33	8	45	30	28	-	30	32
3	60	27	13	Sl	12		-	10	13	30	12	12	15	18	6	-	15	10	13
4	57	13	30	scl	4		-	22	20	25	23	20	12	28	10	-	10	20	19
5	35	42	23	1	4		-	25	22	25	20	22	10	28	10	28	20	30	22
6	29	37	34	cl	5	35	38	22	40	40	36	28	15	35	25	1	35	40	30
7	26	21	53	c	2	35	60	32	36	35	45	52	20	50	30	9	30	40	37
8	9	45	46	sic	8	35	53	50	50	30	75	42	60	60	45	40	60	45	50
9	89	5	6	s	10	5	2	3	5	5	8	3	2	3	5	0	1	0	3
10	85	3	12	ls	7	10	8	5	18	7	8	5	21	0	11	0	1	2	7

*Dash indicates an estimate was not made.

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NATIONAL COOPERATIVE SOIL SURVEY

NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE
1964

UNITED STATES DEPARTMENT OF AGRICULTURE
Forest Service - Northeastern Region

Classification of Stoniness
Discussion - Analysis - Proposal

Robert F. Reiske

Gentlemen. for the benefit of those in the conference who are not familiar with the soils program of the Forest Service in Region 7, I should like to take a minute or two to tell you something about it.

lt started five years ago and consists of two parts - soil survey and soil management. Our first survey was in cooperation with the Soil Conservation Servide on the Monongahela National Forest, West Virginia. The survey area consisted of some 300,000 acres of which approximately one third is administered by the Forest Service. The remainder is in private ownership. At present we are on the Cumberland National Forest in Kentucky, working on a" area approaching one million acres. Approximately fifty percent of this survey is on private land. All surveys to date have been of medium intensity and are being mapped at a scale of 4 inches to the mile.

The soil management program consists of what we call "hotspotting" on areas where a soil problem exists or where management could contribute to deterioration of the soil; for example, reforestation projects, timber sales, locating roads, impoundments and other engineering structures, etc. In addition we have been called on by our Division of State and Private Forestry to assist in their program with the State8 throughout the Region. If anyone has any questions about our program I would be more than willing to answer them after this session or any free time during the conference. In order that you may have sufficient time to cross examine me about my topic, I had better get on with the presentation.

As all of you know, the increased pressure for land use is resulting in the need for more accurate soil surveys. Evidence of this is apparent from the interpretations being developed for standard soil survey reporte. Interpretations are being made, not only for land use classification for agriculture, but also for engineering and forestry. Some reports have interpretations for wildlife management, urban planning, irrigation, watershed management, etc. Standard soil surveys are fast becoming multipurpose inventories of the soil resource to be used by all land managers.

In the past, determination of mapping units, which may be referred to as phases of taxonomic units, has been guided primarily by agricultural use. Areas not suitable for crops or improved pasture received the minimum of attention. As already mentioned, this situation is quickly changing. With these changes, we need to more accurately classify segments of the landscape formerly not considered suitable or likely to be used for agriculture. Therefore, we may find it necessary to re-define slope classes, stony and bouldery classes, miscellaneous land types, etc., not generally considered important to agriculture, but very important to other land uses.

The following discussion is limited to stony and bouldery classes, and because miscellaneous land types are closely associated. it is necessary to include them also. The use of coarse fragments in this discussion includes the mineral fraction larger than two millimeters. All references, unless stated otherwise, will be found in the Soil Survey Manual, USDA Handbook No. 18.

On Page 205, Paragraph 5, Item 3 of the Handbook, coarse fragments larger than 10 inches in diameter are not considered pert of the soil profile. I believe that all. fragment.6 are as much of a soil taxonomic unit as slope, aspect, and other features of the total landscape and the soil profile, because they have a direct influence on soil genesis and soil behavior. The use of coarse fragments between two millimeters and 10 inches is fairly well defined objectively in the Manual by size and volume. However, fragments larger than 10 inches are classified only subjectively, with a single use in mind, namely, agronomic land use.

As already mentioned, miscellaneous land types are closely associated with stony and bouldery classes and I feel that there is much confusion, as they are now defined in the Manual. For example, on Page 310, Stony land includes segments of the landscape with a stone and/or boulder cover of 15 to 90 percent. On Page 222, Table 5, Class 3, Stoniness is classified as having 3 to 15 percent stone cover and may be classified as one of the following:

Stony land
Extremely stony phase of a soil type
Stony land (series) soil material

According to this definition, Stony land could be interpreted as areas with more than three percent stone cover rather than 15 to 90 percent. I think that most of you will agree that three percent atone cover is not significant enough to delegate a soil to a miscellaneous land type. The. same is also true for 15 percent.. I'll say more about this later on in this discussion.

On Page 219 of the Manual, the above is defined further. "Distinctions between soil series and the miscellaneous land type, Stony land, usually come between classes 2 and 3, but may come between Classes 3 and 4 if

the soil is otherwise unusually responsive to management practices for improved pasture, or for forestry. If difference8 in potential use for wild pasture, or for forestry, related to the parent material, exist among kinds of soil having Class 3 stoniness, Class 3 stoniness may be called Stony land. (series name) material. If the distinction between Class 3 and Class 4 stoniness has no significance, all the land of both classes should be included as one unit, Stony land. But, if land with Class 3 stoniness is separated, from that with Class 4 stoniness, either as an extremely stony phase, or as Stony land (series name) material, or if a real difference exists of importance to grazing or forestry, Class 4 is called Very stony land."

This, I feel, is an attempt to define stony classes for other uses. However, we. need to ask ourselves the following questions:

1. What determines the lack of significance between Class 3 and Class 4 that permits them to be. lumped as one unit - Stony land? It doesn't seem possible that we would get the same soil and related sail behavior with a soil that: has 3 to 15 percent. stone cover, as one with 15 to 90 percent. Forest, research, although meager, shows that site productivity does not change considerably until stone cover consists of 40 to 60 percent, This was found to be true in our survey on the Monongahela National Forest in West Virginia and has also been found in other areas in the northeast.

2. How can we justify classifying the same unit, Class 3 stoniness, with 3 to 15 percent stone cover either

   (a) Gloucester extremely stony loam

   (b) Stony land

   (c) Stony land (Gloucester soil material) when the soil behavior is the same?

   Is it or isn't it. a land type? Is there a soil profile that can be identified?

   (2a) Gloucester extremely stony loam indicates there is

   (2b) Stony land indicates there is none

   (2c) Stony land (Gloucester soil material) is questionable.

3. Are we correct in saying, for Class 3 stoniness, 2(a), (b), or (c) above may be used depending upon parent material potential?

4. Can we continue to classify stony soils for multipurpose standard soil surveys, based upon an agricultural or forestry subjective use clsesification?

It is readily admitted in the Manual that the distinction between soil series at Class 2 and Class 3 stoniness is arbitrary and has a single land use in mind - agronomic land use. It is also implied in the Manual that land with more than three percent stone cover is unsuited for cultivation or for cultivated pasture, but may have some use for wild pasture or forests. If we are to make multipurpose standard soil surveys, these arbitrary decisions need to be expanded upon to include other uses. By using a miscellaneous land type for areas with more than 15 percent. stone cover and, in some cases, with more than three percent, we indicate that there is little, or no, natural soil to be classified or that the area is nearly inaccessible for orderly examination (miscellaneous land type definition, Page 306, Soil Survey Manual).

This tine of reasoning seems to be in error if it is used in connection with a standard detailed soil survey because

(1) Soils with more than 3 to 15 percent. coarse fragments (larger than 10 inches) on the surface, as well as throughout the profile, can be identified and classified.

(2) Frequently, the amount of stone on the surface is no indication of the amount of stone in the sol.1 profile. Often, this stone cover has accumulated as "mulch" on top of the soil and there are few coarse fragments within the soil profile,

Bawd upon the above analyses and discussion, the following suggestions are made:

1. The size:. amount and pattern of all coarse fragments on the surface as well as those in the soil profile need to be described for taxonomic units or phases thereof.

2. Stony phases for taxonomic units and phases should not be determined and described arbitrarily by a single land use. They should be described and reported as they occur on the landscape - average and range need to be included.

3. There is sufficient evidence that the break between a taxonomic unit (series) and a miscellaneous Land type should not be made between stone Classes 2 and 3 or Class 4, but rather, between Classes 4 and 5 of the present classification.

4. The present classification for stony classes and miscellaneous land type, Stony land, appears to be inadequate and needs to be re-defined so that it can be used more objectively to describe the soil landscape from a genetic soil behavior standpoint, rather than hy a subjective land use classification.

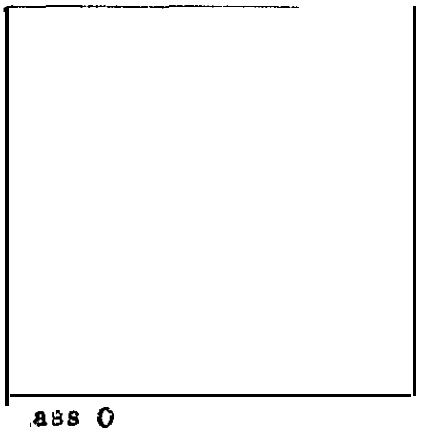
5. When developing interpretation for stony phases of taxonomic units, the limits of the phases need to be developed to meet the significant lend uses of the survey area and not only those of agriculture or forestry.

6. A committee be appointed to study present classification of "rockiness" classes. as well as "stoniness" presented in this discussion.

7. The attached proposed classification for stoniness classes is suggested as a beginning. It is not intended to he complete,

In. conclusion, Y would like to take this opportunity to thank you for your interest, in this discussion, and I hope that it may be of assistance in revising the Manual, as suggested by Dr. Kellogg in his talk at. the National Technical Work-Planning Conference of the Cooperative Soil Survey in Chicago last March.

PRESENT STONINESS CLASSIFICATION (1)



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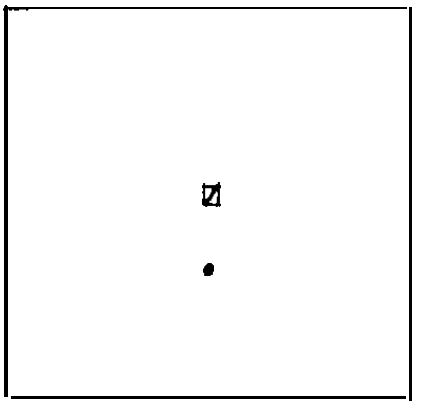
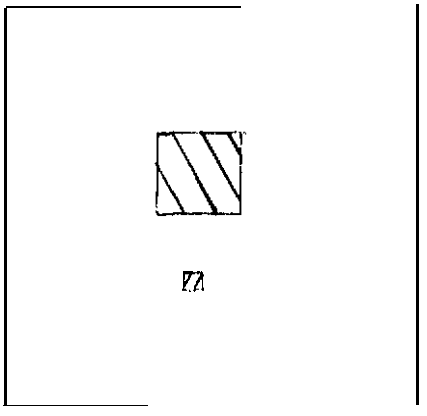
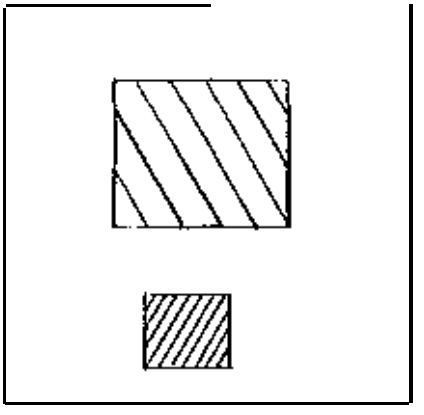


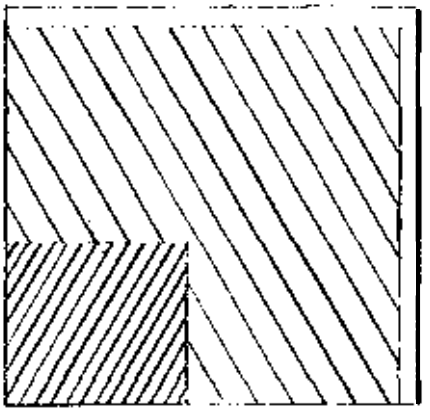
lass 1 (0.01 to 0.1%)
loucester Stony loam



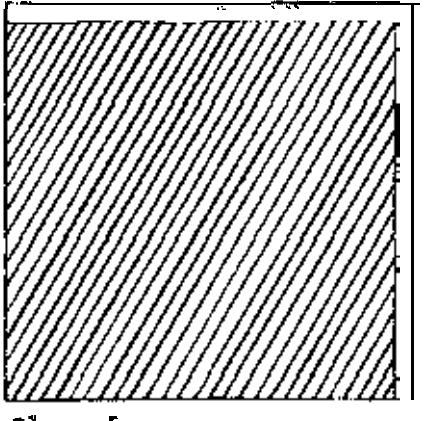
Class 2 (0.1 to 3%)
Gloucester Very Stony loam



Class 3 (3 to 15%)
Gloucester Extremely Stony loam
Stony land
Very Stony land



Class 4 (15 to 90%)
Stony land
Very Stony land

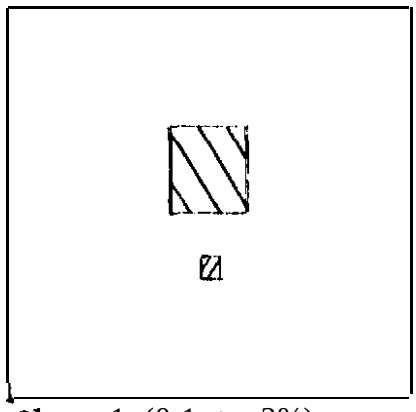


Class 5
Rubble land

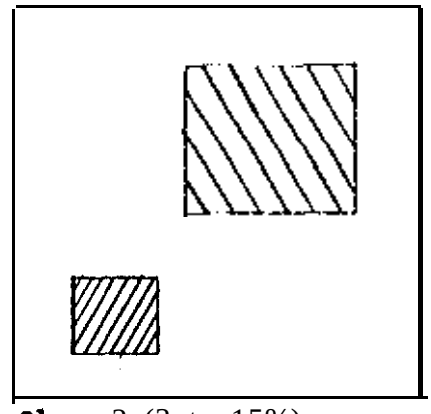
(1) Percent of stones and/or boulders.

Blocks represent 1 acre.

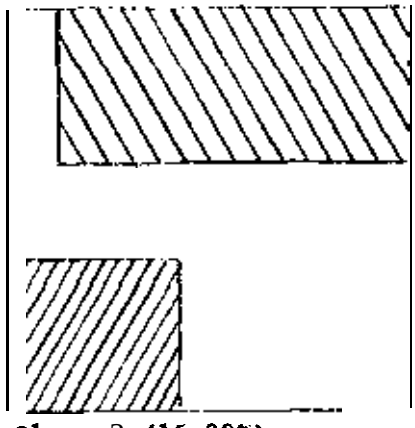
Lower limit (%) Upper limit (%)



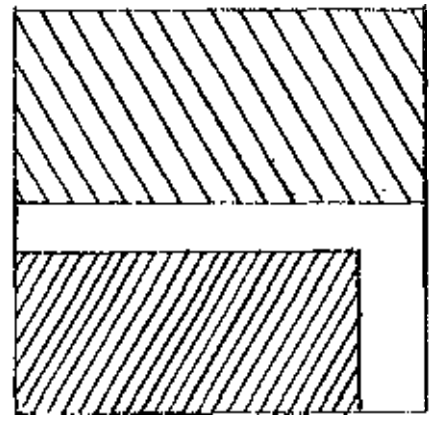
Class 1 (0.1 to 3%)
Gloucester Slightly Stony loam



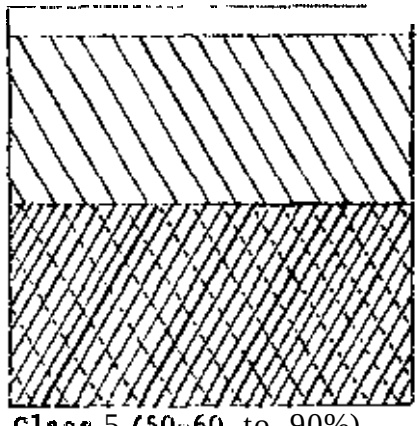
Class 2 (3 to 15%)
Gloucester Moderately Stony loam



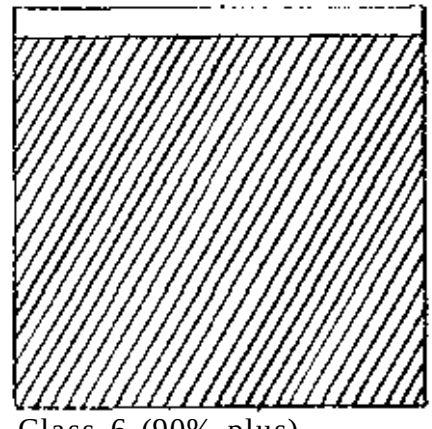
Class 3 (15-30%)
Gloucester Stony loam



Class 4 (30 to 50-60%)
Gloucester Very Stony loam



Class 5 (50-60 to 90%)
Gloucester Extremely stony loam



Class 6 (90% plus)
stony land

(1.) Percent of stones and/or boulders.

Blocks represent 1 acre.

Lower limit (%) Upper limit. (%)

CIASSIPICATION OF STONY SOILS (1)
(Comparison between Two Methods)
For Tucker end Northern Portion of Randolph Counties, West Virginia

Soil Series	Stony Condition: Model	Range	By the Manual	Proposed Revision Name and Class
Belmont	3	2-15	Claes 2 and 3* Very stony	Stony Class 2
Brinkerton & Nolo	10	5-20	3 possibilities Class 4	Stony Class 2 and 3
Brinkerton & Lickdale	45	20-80	Lend type Class 4	Extremely stony Class 4 and 5
Calvin	25	15-40	Land Type Class 2 and 3	Stony Class 2
Camp (Mench)	3	2-15	Very stony* Class 2 and 3	stony Class 2
Cookpor t	3	2-15	Very stony Class 3 and 4*	Stony Class 2
Dekalb	10	5-30	Class 3 and 4*	Stony Class 2 and 3
Dekalb	SO	30-80	Class 4 Land type	Extremely stony Class 4 and 5
Ernest	I.0	3-25	Class 3 and 4*	Stony Class 2 and 3
Ernest	50	30-80	Class 4 Land type	Rxtremely stony Class 4 and 5
Lickdale	3	2-15	Class 2 and 3*	stony Class 2
Leetonia	60	35-80	Class 4 Land type	Extremely stony Class 4 and 5
Leetonia Variant	60	40-80	Class 4 Land type	Extremely 8 tony Class 4 and 5
Teas	10	5-30	Class 3*	Stony Class 2 and 3

(1) Percent of stones on surface may also include boulders.
* May be classified as Extremely stony phase, Stony land, stony land series (soil material).

NATIONAL COOPERATIVE SOIL SURVEY
NORTHEAST SOIL SURVEY WORK PUNNING CONFERENCE
1964

Notes on general discussions of

Soil landscapes

Lithologic discontinuities

Uses of symbols for identification and nomenclature of soil horizons

Soil landscapes were discussed, with emphasis put on the definition of soil being a three-dimensional body with characteristic geomorphological features. When such geomorphological features are correctly interpreted and understood, they can be used to great advantage in soil surveys.

Lithological discontinuities and uses of symbols for identification and nomenclature of soil horizons were discussed, very briefly as outlined in the Supplement to Agricultural Handbook No. 18, Way 1962.

One correction to the supplement was noted: Page 183, x- Fragipan character, Paragraph 2, first sentence should read -"All lower case symbols except p and x follow the last arabic number used, as B3ca, A2g, A21g."

U. S. DEPARTMENT OF AGRICULTURE
Soil Conservation Service

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NORTHEAST SOIL SURVEY WORK PLANNING CONFERENCE
New York City - January 20 to 23, 1964

Phasing of Soils for Forestry, Construction, Urbanization and Agriculture
B. J. Patton, K. P. Wilson, R. F. Reiske and A. E. Shearin

Patton:

Aspect: Aspect is a phase. In new surveys I would be tempted to map two aspect phases. Aspect can be taken from soil survey maps. This can be done easier from soil survey field sheets using a steroscope than from published mosaics.

Aspect may be reflected in a thicker, darker A, or Ao but this will need some testing.

Slope position: Ridge phase or narrow upper ridges, on some soils, have a lower site index than the rest of the landscape. This is actually a depth difference.

Calluvial soils: Elimination of mode of origin and characteristic physiography as series criteria may require phasing, such as bench phases, on upper slopes.

Engineering: Kind of bedrock such as soft shale versus hard rock may be important enough to phase in places.

Flood hazard: Frequency of flooding phases needed in some alluvial soils.

Made land: Phase names should be as descriptive as possible, consistent with brevity .

Wilson:

In my opinion, (even after Simonson explained slops phasing and after having reread the manual), no phases should be recognized which cannot be determined objectively in the field by examining the soil and its substratum features affecting the uses in question.

I would like to apply this philosophy to slope phases, but because of the long history of slope mapping and because some insist that slope is part of the soil, an exception probably has to be made. Personally, I consider slope to be an environmental factor and not a soil characteristic. In practice slope phases are not tied closely to the individual soil series or type because the percent limits are kept the same for a very wide range of soils. This implies that slope is an independent variable.

If we do not establish some such iron-clad limitation on phases, their numbers could proliferate in all directions.

The use of climatic phases without distinctions in the soil itself constitutes the entering of another discipline to make an interpretive map. There La no law against making all tha interpretations you can, but don't make them soil phase criteria. Who can establish the field boundaries of mapping unit based solely on a climatic distinction?

If it is reflected in the profile as a within-series variation, and is clearly mappable, such a distinction is reasonable at the phase level. If not, it should be avoided.

In mapping marshland we have the same problem in determining salinity levels. Generally vegetation works by applying certain rules of plant-site association, however, the only safe criterion is the salinity of the soil solution. The vegetation may represent history. The same problem crops up with all vegetative criteria - woodland especially. We must distinguish clearly between soil phasing and mapping by vegetative or other non-soil criteria.

In urban-fringe areas any special soil conditions era better kept es special land type variations at the phase level but should reflect soil characteristics, not some interpretive evaluation for use. Let's not confuse basic soil surveying with interpretive mapping.

As I understand phasing Ln e natural or basic soil classification system, one should attempt to use only those phases which have significant effects on use and management for meny important uses - not just one.

Reiske:

Phasing for forestry is needed when the taxonomic unit does not reflect (accurate interpretations cannot be made) changes in tha following when they occur on the same unit.

a. Vegetative, major end minor, associations. Example: oak, northern hardwoods.

b. Significant difference in predicting potential which may be measured by site index. This may be reflected by slope position and/or aspect. Example: lower third, middle. third, upper third; N(NW-NE), E(NE-SE), S(SW-SE) end W(SW-NW).

c. Stony, boulder-y or rocky phases where they cover 40-50% or more of the surface.

d. Slope phases, 0-25% to 30%, angle of repose and above angle of repose.

Shearin:

In medium density surveys phasing for urbanization occur mainly Ln areas where the soils have been disturbed. These can be divided into two broad classes.

1. Areas where the diagnostic soil horieons have been obliterated over a large percentage of the areas.

2. Cut and fill area8 or otherwise disturbed to some extent but all the diagnostic soil horizons have not been obliterated over a large percentage of the areas.

It is suggested that in the first category mapping units established be based on texture, consistence, drainage, lithology, coarse skeleton, etc., depending on local conditions.

In the second category the soils may be classified as phases of soil series.

Examples of mapping units or phases of series in disturbed soil area8 were proposed in the 1962 committee report on "Improving Soil Survey Operations" of the Northeast Soil Survey Work Planning Conference.

In high density surveys in urban areas probably more depth phases over bedrock or fragipan would be desirable in places than are normally recognized in medium density surveys.

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Note6 on soil survey interpretations, urban areas, and experiences in Hanover Town; Plymouth County, Massachusetts.

Mr. S. J. Zayach distributed copies of a document entitled "Soil Interpretation for Community Planning", a case study for the Town of Hanover, Massachusetts prepared jointly by the Massachusetts Department of Commerce and the Soil Conservation Service. The lack of time prevented an evaluation of this document although comparisons were drawn between general form, scope of information, and map quality,

Notes on low-intensity standard survey in Vermont.

Mr. M. Howard distributed a document outlining the development of legends for low intensity standard surveys in extensive forested areas in Vermont. Legends have been developed in four counties and will be developed for six more in the near future. A brief discussion followed with no general conclusions or evaluations drawn.

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Notes on the discussion of Soil Series Descriptions lead by Dr. Roy Simonson and Dr. Arnold Baur.

The introductory statement or summary. A comparison is drawn between the series being described and its geographically and morphologically related associates. There are three types of associates:

1. Competing series - related morphologically but not geographically.
2. Related series - related morphologically and geographically.
3. Geographical series - related geographically but not morphologically.

The morphological characteristics of the series may be used in describing relationship5 between competing and related associates.

The profile description. A complete description, horizon by horizon, is given of the morphological characteristics of the profile. All characteristics are set apart by semi-colons. The range in thickness of each horizon is given and reflects the range for the series as a whole and not the range for the Individual profile being described. This information is set apart from the preceding descriptive terms by a period. The modal profile of a particular area or county need not be typical for each of the distinguishing characteristics of the official series description.

The range of characteristics. Descriptive characteristics that have been used in the introductory statement need not be repeated except for clarification and emphasis. An outline prepared by the Principal Correlator's Office for use as a guide for the "Range of characteristics" paragraphs for standard series descriptions was discussed.

Dr. Baur reviewed the atatus of profile description revisions in the Northeast. Lists of soil series were prepared by the principal Correlator's office, each categorizing the status of revised drafts, their circulation and duplication for distribution.