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EXTENSION BULLETIN E-1550
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SOIL ASSOCIATION MAP
OF MICHIGAN

Produced by the:

Michigan State University

Cooperative Extension Service and Agricultural Experiment Station

and the

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Soil Conservation Service

US DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

MICHIGAN STATE UNIVERSITY
AGRICULTURAL EXPERIMENT STATION
COOPERATIVE EXTENSION SERVICE
EXTENSION BULLETIN E-1550

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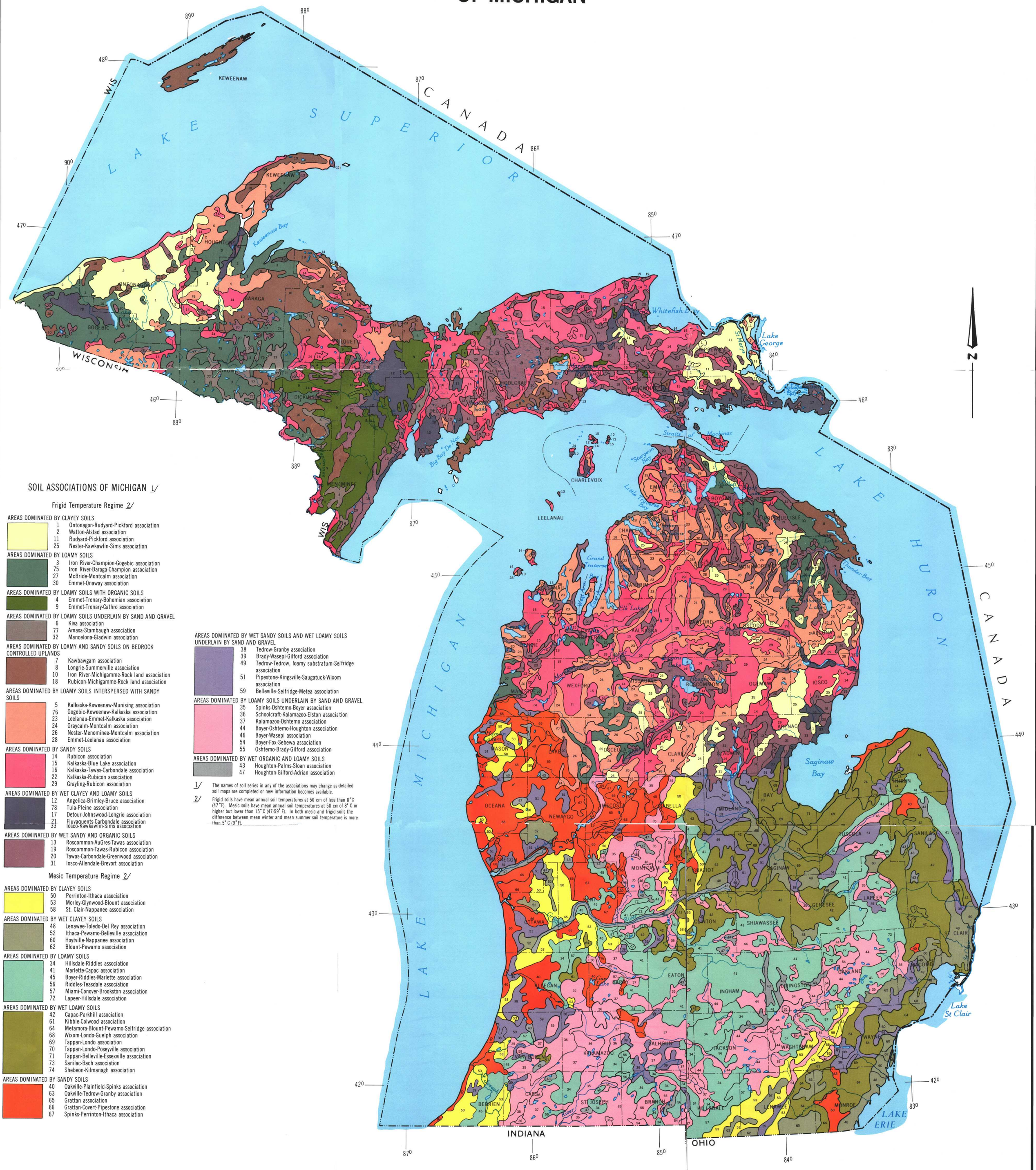

SOIL ASSOCIATIONS OF MICHIGAN 1/

Frigid Temperature Regime 2/

AREAS DOMINATED BY CLAYEY SOILS
- 1 Ontonagon-Rudyard-Pickford association
- 2 Watton-Alstad association
- 11 Rudyard-Pickford association
- 25 Nester-Kawkawlin-Sims association

AREAS DOMINATED BY LOAMY SOILS
- 3 Iron River-Champion-Gogebic association
- 75 Iron River-Baraga-Champion association
- 27 McBride-Montcalm association
- 30 Emmet-Onaway association

AREAS DOMINATED BY LOAMY SOILS WITH ORGANIC SOILS
- 4 Emmet-Trenary-Bohemian association
- 9 Emmet-Trenary-Cathro association

AREAS DOMINATED BY LOAMY SOILS UNDERLAIN BY SAND AND GRAVEL
- 6 Kiva association
- 77 Amasa-Stambaugh association
- 32 Mancelona-Gladwin association

AREAS DOMINATED BY LOAMY AND SANDY SOILS ON BEDROCK CONTROLLED UPLANDS
- 7 Kawbawgam association
- 8 Longrie-Summerville association
- 10 Iron River-Michigamme-Rock land association
- 18 Rubicon-Michigamme-Rock land association

AREAS DOMINATED BY LOAMY SOILS INTERSPERSED WITH SANDY SOILS
- 5 Kalkaska-Keweenaw-Munising association
- 76 Gogebic-Keweenaw-Kalkaska association
- 23 Leelanau-Emmet-Kalkaska association
- 24 Graycalm-Montcalm association
- 26 Nester-Menominee-Montcalm association
- 28 Emmet-Leelanau association

AREAS DOMINATED BY SANDY SOILS
- 14 Rubicon association
- 15 Kalkaska-Blue Lake association
- 16 Kalkaska-Tawas-Carbondale association
- 22 Kalkaska-Rubicon association
- 29 Grayling-Rubicon association

AREAS DOMINATED BY WET CLAYEY AND LOAMY SOILS
- 12 Angelica-Brimley-Bruce association
- 78 Tula-Pleine association
- 17 Detour-Johnswood-Longrie association
- 21 Fluvaquents-Carbondale association
- 33 Iosco-Kawkawlin-Sims association

AREAS DOMINATED BY WET SANDY AND ORGANIC SOILS
- 13 Roscommon-AuGres-Tawas association
- 19 Roscommon-Tawas-Rubicon association
- 20 Tawas-Carbondale-Greenwood association
- 31 Iosco-Allendale-Brevort association

Mesic Temperature Regime 2/

AREAS DOMINATED BY CLAYEY SOILS
- 50 Perrinton-Ithaca association
- 53 Morley-Glynwood-Blount association
- 58 St. Clair-Nappanee association

AREAS DOMINATED BY WET CLAYEY SOILS
- 48 Lenawee-Toledo-Del Rey association
- 52 Ithaca-Pewamo-Belleville association
- 60 Hoytville-Nappanee association
- 62 Blount-Pewamo association

AREAS DOMINATED BY LOAMY SOILS
- 34 Hillsdale-Riddles association
- 41 Marlette-Capac association
- 45 Boyer-Riddles-Marlette association
- 56 Riddles-Teasdale association
- 57 Miami-Conover-Brookston association
- 72 Lapeer-Hillsdale association

AREAS DOMINATED BY WET LOAMY SOILS
- 42 Capac-Parkhill association
- 61 Kibbie-Colwood association
- 64 Metamora-Blount-Pewamo-Selfridge association
- 68 Wixom-Londo-Guelph association
- 69 Tappan-Londo association
- 70 Tappan-Londo-Poseyville association
- 71 Tappan-Belleville-Essexville association
- 73 Sanilac-Bach association
- 74 Shebeon-Kilmanagh association

AREAS DOMINATED BY SANDY SOILS
- 40 Oakville-Plainfield-Spinks association
- 63 Oakville-Tedrow-Granby association
- 65 Grattan association
- 66 Grattan-Covert-Pipestone association
- 67 Spinks-Perrinton-Ithaca association

AREAS DOMINATED BY WET SANDY SOILS AND WET LOAMY SOILS UNDERLAIN BY SAND AND GRAVEL
- 38 Tedrow-Granby association
- 39 Brady-Wasepi-Gilford association
- 49 Tedrow-Tedrow, loamy substratum-Selfridge association
- 51 Pipestone-Kingsville-Saugatuck-Wixom association
- 59 Belleville-Selfridge-Metea association

AREAS DOMINATED BY LOAMY SOILS UNDERLAIN BY SAND AND GRAVEL
- 35 Spinks-Oshtemo-Boyer association
- 36 Schoolcraft-Kalamazoo-Elston association
- 37 Kalamazoo-Oshtemo association
- 44 Boyer-Oshtemo-Houghton association
- 46 Boyer-Wasepi association
- 54 Boyer-Fox-Sebewa association
- 55 Oshtemo-Brady-Gilford association

AREAS DOMINATED BY WET ORGANIC AND LOAMY SOILS
- 43 Houghton-Palms-Sloan association
- 47 Houghton-Gilford-Adrian association

1/ The names of soil series in any of the associations may change as detailed soil maps are completed or new information becomes available.

2/ Frigid soils have mean annual soil temperatures at 50 cm of less than 8°C (47°F). Mesic soils have mean annual soil temperatures at 50 cm of 8° C or higher but lower than 15° C (47-59° F). In both mesic and frigid soils the difference between mean winter and mean summer soil temperature is more than 5° C (9° F).

SCALE 0 10 20 30 40 50 60 70 80 MILES
0 20 40 60 80 100 120 KILOMETERS

SOURCE:
SCS FAMILY OF MAPS DRWG.
5,S-32,577 (7-26-74) AND
INFORMATION FROM SCS FIELD PERSONNEL
ALBERS EQUAL AREA PROJECTION

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SOIL ASSOCIATIONS OF MICHIGAN

1. **ONTONAGON-RUDYARD-PICKFORD ASSOCIATION**
Deep, well drained to poorly drained, clayey soils on nearly level to strongly sloping topography. They have medium available water capacity and moderately slow to very slow permeability. Present uses include forestry, general farming, and recreation. Minor soils include Froberg, Bohemian, Allendale, and Manistee.

2. **WATTON-ALSTAD-ASSOCIATION**
Deep, well drained to somewhat poorly drained silty soils on nearly level to moderately steep topography. They have high available water capacity and moderately slow permeability. Present uses include forestry, general farming, and recreation. Minor soils include Ontonagon, Ubly, Gogebic, Lupton, Loxley, and Markey.

3. **IRON RIVER-CHAMPION-GOGEBIC ASSOCIATION**
Moderately deep, moderately well drained loamy soils with fragipans on nearly level to strongly sloping topography. They have low or moderate available water capacity and moderately slow or slow permeability. Present uses include forestry, general farming, and recreation. Minor soils include Baraga, Munising, Skanee, Tula, Onota, and Amasa.

4. **ONAWAY-TRENARY-BOHEMIAN ASSOCIATION**
Deep, well drained and moderately well drained loamy and silty soils on nearly level to strongly sloping topography. They have moderate or high available water capacity and moderate or moderately slow permeability. Present uses include general farming, forestry, and recreation. Minor soils include Emmet, Longrie, Mackinac, Brimley, Lupton, Loxley, and Markey.

5. **KALKASKA-KEWEENAW-MUNISING ASSOCIATION**
Deep and moderately deep, well drained and moderately well drained loamy and sandy soils on nearly level to strongly sloping topography. They have low to moderate available water capacity and rapid to moderately slow permeability. Present uses include forestry, recreation, and general farming. Minor soils include Gogebic, Bohemian, Blue Lake, and Karlin.

6. **KIVA ASSOCIATION**
Deep, well drained loamy soils with gravel and sand substrata on nearly level to steep topography. They have very low available water capacity and have moderate over very rapid permeability. Present uses include forestry and recreation. Minor soils include Alpena, Mancelona, East Lake and Epoufette.

7. **ONOTA-KAWBAWGAM ASSOCIATION**
Moderately deep, well drained to somewhat poorly drained loamy soils underlain by sandstone bedrock on nearly level to strongly sloping topography. They have low available water capacity and moderate or moderately rapid permeability. Present uses include forestry and recreation. Minor soils include Deerton and Munising.

8. **LONGRIE-SUMMERVILLE ASSOCIATION**
Moderately deep and shallow, well drained or moderately well drained loamy soils underlain by limestone bedrock on nearly level to gently sloping topography. They have low or very low available water capacity and moderate or moderately rapid permeability. Present uses include forestry and recreation. Minor soils include Sundell, Nahma, Onaway, and St. Ignace.

9. **EMMET-TRENARY-CATHRO ASSOCIATION**
Deep, well drained to very poorly drained loamy and organic soils on nearly level to strongly sloping topography. The loamy soils have high available water capacity and moderate or moderately slow permeability. Present uses are general farming and forestry. Organic soils have rapid over moderate permeability and are presently used for forestry. Minor soils include Angelica, Emmet, Charlevoix, Mackinac, Tacoosh, and Carbondale.

10. **IRON RIVER-MICHIGAMME-ROCK LAND ASSOCIATION**
Deep, well drained and moderately well drained loamy soils, shallow loamy soils over granitic bedrock, and rock outcrops on gently sloping to very steep topography. They have low available water capacity and moderate to slow permeability. Present uses include forestry and recreation. Minor soils include Champion, Gogebic, Baraga, Munising, and Allouez.

11. **RUDYARD-PICKFORD ASSOCIATION**
Deep, somewhat poorly drained and poorly drained clayey soils on nearly level to gently sloping topography. They have moderate available water capacity and very slow permeability. Present uses include general farming and forestry. Minor soils include Ontonagon, Munuscong, and Bruce.

12. **ANGELICA-BRIMLEY-BRUCE ASSOCIATION**
Deep, somewhat poorly drained to very poorly drained loamy and silty soils on nearly level to gently sloping topography. They have high available water capacity and moderate or moderately slow permeability. Present uses include forestry and general farming. Minor soils include Tula, Gogebic, Mackinac, Ensley, Munuscong, Cathro, and Tacoosh.

13. **ROSCOMMON-AUGRES-TAWAS ASSOCIATION**
Deep, somewhat poorly drained to very poorly drained sandy soils and organic soils underlain by sand on nearly level topography. The sandy soils have low available water capacity and rapid permeability. Permeability of the organic soil is moderately rapid to moderately slow. Present uses include forestry and recreation. Minor soils include Eastport, Angelic, Loxley, Tawas, and Lupton.

14. **RUBICON ASSOCIATION**
Deep, excessively drained sandy soils on nearly level to steep topography. They have low available water capacity and rapid permeability. Present uses include forestry and recreation. Minor soils include Kalkaska, Grayling, Rousseau, Croswell, Loxley, Dawson, and Tawas.

15. **KALKASKA-BLUE LAKE ASSOCIATION**
Deep, somewhat excessively drained sandy soils on nearly level to moderately steep topography. They have low available water capacity and rapid permeability. Present uses include forestry and recreation. A few areas are used for general farming. Minor soils include East Lake, Rubicon, Karlin, Tawas, and Lupton.

16. **KALKASKA-TAWAS-CARBONDALE ASSOCIATION**
Deep, somewhat excessively drained sandy soils and very poorly drained organic soils on nearly level to moderately steep topography. Sandy soils have low available water capacity and rapid permeability. Organic soils have high available water capacity and moderately slow to moderately rapid permeability. Present uses include forestry and recreation. Minor soils include Rubicon, Roscommon, Lupton, and Rifle.

17. **DETOUR-JOHNSWOOD-LONGRIE ASSOCIATION**
Deep and moderately deep, well drained to somewhat poorly drained loamy soils on nearly level to strongly sloping topography. They have low to moderate available water capacity and moderate or moderately slow permeability. Present uses include forestry and recreation. Minor soils include Hessel, Summerville, and Tawas.

18. **RUBICON-MICHIGAMME-ROCK LAND ASSOCIATION**
Deep, excessively drained sandy soils, shallow well drained loamy soils over granitic bedrock, and rock outcrops on moderately sloping to very steep topography. Present uses include forestry and recreation. Minor soils include Champion and Peshekee.

19. **ROSCOMMON-TAWAS-RUBICON ASSOCIATION**
Deep, poorly drained sandy soils and very poorly drained organic soils on nearly level topography, and excessively drained sandy soils on strongly sloping to very steep topography. Sandy soils have low available water capacity and rapid permeability. Organic soils have high available water capacity and moderately rapid to moderately slow permeability. Present uses include forestry and recreation. Minor soils include Dawson, Greenwood, Rousseau, Eastport, Lupton and Rifle.

20. **TAWAS-CARBONDALE-GREENWOOD ASSOCIATION**
Deep, very poorly drained organic soils on nearly level topography. They have very high available water capacity and moderately rapid to moderately slow permeability. Present uses include forestry and recreation. Minor soils include Tacoosh, Roscommon, Rifle, Kinross, and Lupton.

21. **FLUVAQUENTS-CARBONDALE ASSOCIATION**
Deep, poorly drained and very poorly drained alluvial and organic soils subject to flooding. Fluvaquents vary from sandy to clayey. Present uses include forestry and recreation. Minor soils include Evart, Colonville, Lupton, and Bowstring.

22. **KALKASKA-RUBICON ASSOCIATION**
Deep, somewhat excessively and excessively drained sandy soils on nearly level to steep topography. They have low available water capacity and rapid permeability. Present uses include forestry and recreation. A few areas are used for general farming. Minor soils include Rousseau, Croswell, Grayling, Tawas, and Loxley.

23. **LEELANAU-EMMET-KALKASKA ASSOCIATION**
Deep, somewhat excessively and well drained loamy and sandy soils on strongly sloping to steep topography. They have low or moderate available water capacity and rapid to moderate permeability. Present uses include forestry and recreation. Minor soils include Blue Lake, Rubicon, Charlevoix, and Croswell

24. **GRAYCALM-MONTCALM ASSOCIATION**
Deep, somewhat excessively drained and well drained sandy soils on gently sloping to moderately steep topography. They have low available water capacity and rapid permeability. Present uses include forestry, recreation, and general farming. Minor soils include Rubicon and Grayling.

25. **NESTER-KAWKAWLIN-SIMS ASSOCIATION**
Deep, well drained to very poorly drained loamy soils on nearly level to strongly sloping topography. They have high available water capacity and moderately slow or slow permeability. Present uses include general farming, pasture, and woodland. Minor soils include Menominee, Montcalm, Iosco, Brevort, Isabella, and Twining.

26. **NESTER-MENOMINEE-MONTCALM ASSOCIATION**
Deep, well drained or moderately well drained loamy soils, and sandy over loamy soils on nearly level to steep topography. They have low to high available water capacity and slow to rapid permeability. Present uses include general farming, woodland, and recreation. Minor soils include Rubicon, Graycalm, Kawkawlin, and Iosco.

27. **MCBRIDE-MONTCALM ASSOCIATION**
Deep, well drained or moderately well drained sandy and loamy soils on gently sloping to steep topography. They have low available water capacity and rapid to slow permeability. Present uses include general farming, woodland, and recreation. Minor soils include Emmet and Graycalm.

28. **EMMET-LEELANAU ASSOCIATION**
Deep, well and moderately well drained sandy and loamy soils on gently sloping to steep topography. They have low to moderate available water capacity and rapid to moderate permeability. Present uses include general farming, orchards, woodland, and recreation. Minor soils include Menominee, Kalkaska, Charlevoix, Tawas, and Lupton

29. **GRAYLING-RUBICON ASSOCIATION**
Deep, excessively drained sandy soils on nearly level to steep topography. They have very low or low available water capacity and rapid permeability. Present uses include woodland and recreation. Minor soils include AuGres, Tawas, and Loxley

30. **EMMET-ONAWAY ASSOCIATION**
Deep, well drained or moderately well drained loamy soils on gently sloping to strongly sloping topography. They have moderate or high available water capacity and moderate or moderately slow permeability. Present uses include general farming, orchards, and woodlands. Minor soils include Mackinac, Angelica, and Carbondale.

31. **IOSCO-ALLENDALE-BREVORT ASSOCIATION**
Deep, somewhat poorly to very poorly drained sandy over loamy or sandy over clayey soils on nearly level to gently sloping topography. They have low available water capacity and rapid over slow to moderate permeability. Present uses include woodland, recreation, and general farming. Minor soils include Pinconning, Pickford, Kawkawlin, AuGres, Roscommon, Finch, Tawas, and Carbondale.

32. **MANCELONA-GLADWIN ASSOCIATION**
Deep, somewhat excessively to somewhat poorly drained sandy soils underlain by gravelly sand on nearly level to gently sloping topography. They have low available water capacity and moderately rapid permeability. Present uses include woodland, recreation, and general farming. Minor soils include Wheatley, Epoufette, Tawas, and Carbondale.

33. **IOSCO-KAWKAWLIN-SIMS ASSOCIATION**
Deep, somewhat poorly to very poorly drained sandy over clayey soils and clayey soils on nearly level or gently sloping topography. They have low or moderate available water capacity and rapid to moderately rapid over moderately slow or slow permeability. Present uses include general farming and woodland. Minor soils include Brevort, Wisner, and Twining.

34. **HILLSDALE-RIDDLES ASSOCIATION**
Deep, well drained loamy soils on nearly level to steep topography. They have moderate or high available water capacity and moderate permeability. Present uses include general farming and woodland. Minor soils include Hillsdale, Barry, Oshtemo, Spinks, Crosier, and Brookston.

35. **SPINKS-OSHTEMO-BOYER ASSOCIATION**
Deep, well drained loamy and sandy soils on nearly level to strongly sloping topography. They have low or moderate available water capacity and moderately rapid or rapid permeability. Present uses include general farming and woodland. Minor soils include Hillsdale, Gilford, Wasepi, Brady, Oakville, and Chelsea.

36. **SCHOOLCRAFT-KALAMAZOO-ELSTON ASSOCIATION**
Deep, well drained loamy soils on nearly level to moderately sloping topography. They have moderate available water capacity. Kalamazoo and Schoolcraft soils have moderate over rapid permeability. Elston soils are moderately rapidly permeable. Present use is mainly general farming with some woodland. Minor soils include Oshtemo, Boyer, Sunfield, Matherton, and Sebewa.

37. **KALAMAZOO-OSHTEMO ASSOCIATION**
Deep, well drained loamy soils on nearly level to moderately sloping topography. They have moderate available water capacity. Kalamazoo soils have moderate over rapid permeability. Oshtemo soils are moderately rapidly permeable. Present uses include general farming and woodland. Minor soils include Sunfield, Matherton, Sebewa, Boyer, Hillsdale, Bronson, Brady, and Spinks.

38. **TEDROW-GRANBY ASSOCIATION**
Deep, somewhat poorly, poorly and very poorly drained sandy soils that are dominantly nearly level but range to gently sloping. They have low available water capacity and are rapidly permeable. Present uses include general farming with some being in hay or pasture, woodland, and idle land. Minor soils are Oakville, Spinks, Arkport, and Ottokee.

39. **BRADY-WASEPI-GILFORD ASSOCIATION**
Deep, somewhat poorly and very poorly drained loamy soils that are nearly level. They have low or moderate available water capacity and moderately rapid permeability. Present uses include general farming and woodland. Minor soils are Boyer, Perrin, Brady, Oshtemo, and Sebewa.

40. **OAKVILLE-PLAINFIELD-SPINKS ASSOCIATION**
Deep, moderately well to excessively drained sandy soils on nearly level to very steep topography. They have low available water capacity and rapid permeability. Present uses are mainly pasture, woodland, and idle land. Minor soils include Tedrow, Brems, Boyer, and Adrian.

41. **MARLETTE-CAPAC ASSOCIATION**
Deep, well to somewhat poorly drained loamy soils on nearly level to strongly sloping topography. They have high available water capacity and moderate or moderately slow permeability. Present use is mainly general farming with some woodland. Minor soils include Parkhill, Wixom, Metamora, Selfridge, Owosso, and Metea.

42. **CAPAC-PARKHILL ASSOCIATION**
Deep, somewhat poorly and poorly drained loamy soils on nearly level to gently sloping topography. They have high available water capacity and moderate or moderately slow permeability. Present use is mainly general farming with some woodland. Minor soils include Conover, Wixom, Metamora, Marlette, Selfridge, and Palms.

43. **HOUGHTON-PALMS-SLOAN-ASSOCIATION**
Deep, very poorly drained organic and loamy soils on nearly level or depressional topography on floodplains. They have very high or high available water capacity and moderately slow to moderately rapid permeability. Much is in pasture, woodland, or has marsh vegetation. Some is cropped. Minor soils include Shoals, Cohoctah, and Kerston.

44. **BOYER-OSHTEMO-HOUGHTON ASSOCIATION**
Deep, very poorly and well drained loamy and organic soils on depressional to steep topography. They have low to very high available water capacity. Boyer and Oshtemo soils have moderate or moderately rapid permeability. Houghton soils have moderately rapid to moderately slow permeability. Present uses include general farming and woodland. Minor soils include Hillsdale, Spinks, Palms, and Kidder.

45. **BOYER-RIDDLES-MARLETTE ASSOCIATION**
Deep, well and moderately well drained loamy soils on nearly level to steep topography. They have low to high available water capacity and have moderately slow to moderately rapid permeability. Present uses include general farming and woodland. Minor soils include Spinks, Oshtemo, Perrin, Gilford, Capac, Metea, and Hillsdale soils.

46. **BOYER-WASEPI ASSOCIATION**
Deep, well and somewhat poorly drained loamy soils on nearly level to strongly sloping topography. They have low available water capacity and moderately rapid over very rapid permeability. Present uses include general farming, woodland, and permanent pasture. Minor soils include Gilford, Oshtemo, Brady, and Fox.

47. **HOUGHTON-GILFORD-ADRIAN ASSOCIATION**
Deep, very poorly drained organic and loamy soils that are on nearly level or depressional topography. They have low to very high available water capacity and moderately slow to moderately rapid permeability. Present uses include growing grain and truck crops. Some is in native vegetation or marsh grasses and shrubs, remains idle, or provides recreation. Minor soils include Palms, Wasepi, and Sebewa.

48. **LENAWEE-TOLEDO-DEL REY ASSOCIATION**
Deep, somewhat poorly to very poorly drained loamy and clayey soils on depressional to gently sloping topography. They have moderate or high available water capacity and are moderately slowly or slowly permeable. Present use is mainly growing row crops. Minor soils include Brookston, Colwood, Hoytville, Blount, and Pewamo.

49. **TEDROW-TEDROW, LOAMY SUBSTRATUM-SELFRIDGE ASSOCIATION**
Deep, somewhat poorly drained sandy soils on nearly level and gently sloping topography. They have low or moderate available water capacity and have rapid over moderate to slow permeability. Present uses include general farming and woodland. Minor soils include Oakville, Spinks, Ottokee, Granby, Del Rey, Fulton, Blount, Conover, and Brookston.

50. **PERRINTON-ITHACA ASSOCIATION**
Deep, well to somewhat poorly drained loamy soils on nearly level to strongly sloping topography. They have high available water capacity and moderately slow permeability. Present uses include general farming and woodland. Minor soils include Marlette, Sims, Selfridge, and Metea.

51. **PIPESTONE-KINGSVILLE-SAUGATUCK-WIXOM ASSOCIATION**
Deep, somewhat poorly and poorly drained loamy and sandy soils on depressional to gently sloping topography. They have low to moderate available water capacity and rapid permeability except for Saugatuck soils which are slowly permeable. Present uses include general farming, specialty crops, and idle land. Minor soils include Covert, Tedrow, Granby, Selfridge, and Adrian.

52. **ITHACA-PEWAMO-BELLEVILLE ASSOCIATION**
Deep, somewhat poorly to very poorly drained sandy to loamy soils on depressional to gently sloping topography. They have moderate or high available water capacity and have mainly moderately slow or slow permeability, except that Belleville soils are rapidly permeable in the upper part. Present uses include general farming and some woodland. Minor soils include Blount, Glynwood, Tedrow, and Selfridge.

53. **MORLEY-GLYNWOOD-BLOUNT ASSOCIATION**
Deep, well to somewhat poorly drained loamy and clayey soils on nearly level to strongly sloping topography. They have moderate or high available water capacity and moderately slow or slow permeability. Present uses include general farming and woodland. Minor soils include Metea, Selfridge, and Marlette.

54. **BOYER-FOX-SEBEWA ASSOCIATION**
Deep, well and poorly or very poorly drained loamy soils underlain by sands and gravels. They are on depressional to steep topography. They have low or moderate available water capacity and permeability is moderate or moderately rapid over rapid. Present uses include general farming, permanent pasture, and woodland. Minor soils include Ionia, Matherton, Perrin, Gilford, Wasepi, Lapeer, Miami, and Hillsdale.

55. **OSHTEMO-BRADY-GILFORD ASSOCIATION**
Deep, well to very poorly drained loamy soils on depressional to steep topography. They have moderate available water capacity and moderately rapid permeability. Present uses include general farming, permanent pasture, and woodland. Minor soils include Hillsdale, Bronson, Granby, Wasepi, Perrin, and Adrian.

56. **RIDDLES-TEASDALE ASSOCIATION**
Deep, well and somewhat poorly drained, loamy soils on nearly level to strongly sloping topography. They have high available water capacity and moderate permeability. Present uses are mainly general farming and woodland. Minor soils include Crosier, Brookston, Miami, Metea, Hillsdale, and Barry.

57. **MIAMI-CONOVER-BROOKSTON ASSOCIATION**
Deep, well to very poorly drained loamy soils on depressional to strongly sloping topography. They have high available water capacity and moderate or moderately slow permeability. Present uses include general farming and woodland. Minor soils include Metea, Selfridge, Belleville, Owosso, and Metamora.

58. **ST. CLAIR-NAPPANEE ASSOCIATION**
Deep, well to somewhat poorly drained clayey soils on nearly level to strongly sloping topography. They have moderate or high available water capacity and slow or very slow permeability. Present use is mainly general farming. Minor soils include Hoytville, Seward, and Rimer.

59. **BELLEVILLE-SELFRIDGE-METEA ASSOCIATION**
Deep, well to very poorly drained sandy soils underlain by loamy material. They are on nearly level to strongly sloping topography. They have low or moderate available water capacity and rapid over moderate or moderately slow permeability. Present uses include general farming and woodland. Minor soils include Owosso, Brookston, Hillsdale, Tedrow, Thetford, Granby, and Corunna soils.

60. **HOYTVILLE-NAPPANEE ASSOCIATION**
Deep somewhat poorly to very poorly drained clayey soils on nearly level to gently sloping topography. They have moderate available water capacity and moderately slow to very slow permeability. Present use is mainly general farming. Minor soils include St. Clair, Rimer, and Wauseon.

61. **KIBBIE-COLWOOD ASSOCIATION**
Deep, somewhat poorly or poorly drained, stratified loamy soils on nearly level to gently sloping topography. They have high available water capacity and moderate permeability. Present use is mainly general farming. Minor soils include Tuscola, Bixler, Conover, Brookston, and Palms.

62. **BLOUNT-PEWAMO ASSOCIATION**
Deep, somewhat poorly to very poorly drained clayey soils on slightly depressional to gently sloping topography. They have moderate or high available water capacity and moderately slow or slow permeability. Present use is mainly general farming with the emphasis on row crops. Minor soils include Morley, Glynwood, Lenawee, Del Rey, Selfridge, and Belleville.

63. **OAKVILLE-TEDROW-GRANBY ASSOCIATION**
Deep, well to very poorly drained sandy soils on nearly level to steep topography. They have low or very low available water capacity and rapid or very rapid permeability. Present uses include general farming, woodland, and idle land. Minor soils include Spinks, Plainfield, Selfridge, and Belleville.

64. **METAMORA-BLOUNT-PEWAMO ASSOCIATION**
Deep, somewhat poorly to very poorly drained loamy and clayey soils on depressional to gently sloping topography. These soils have moderate or high available water capacity and have slow or moderately slow permeability, except that Metamora soils are moderately rapid in the upper part. Present use is mainly general farming with an emphasis on row crops. A few areas are in woodland. Minor soils include Corunna, Owosso, Nappanee, Hoytville, and Palms.

65. **GRATTAN ASSOCIATION**
Deep, excessively drained sandy soils on nearly level to steep topography. These soils have low available water capacity and have rapid permeability. Present use is mainly woodland and recreation. Some areas are used for pasture or cropland. Minor soils include Covert, Plainfield, and Pipestone.

66. **GRATTAN-COVERT-PIPESTONE ASSOCIATION**
Deep, excessively to somewhat poorly drained sandy soils on nearly level to gently sloping topography. They have low available water capacity and rapid permeability. Present uses include woodland, recreation, idle cropland, or pasture. Minor soils include Plainfield, Brems, Tedrow, Saugatuck, Kingsville, or Granby.

67. **SPINKS-PERRINTON-ITHACA ASSOCIATION**
Deep, well to somewhat poorly drained sandy and loamy soils on nearly level to steep topography. They have very low to high available water capacity and slow to rapid permeability. Present uses include general farming, and woodland. Minor soils include Marlette, Thetford, Boyer, and Owosso.

68. **WIXOM-LONDO-GUELPH ASSOCIATION**
Deep, well to somewhat poorly drained sandy and loamy soils that are on nearly level to moderately sloping topography. They have moderate or high available water capacity and moderate to slow permeability, except that Wixom soils have rapid permeability in the upper part. Present uses include general farming and woodland. Minor soils include Marlette, Poseyville, Capac, and Selfridge.

69. **TAPPAN-LONDO ASSOCIATION**
Deep, somewhat poorly and poorly drained loamy soils on depressional to gently sloping topography. They have high available water capacity and moderate or moderately slow permeability. Present use is mainly general farming; with corn, sugar beets, and field beans being important crops. Minor soils include Parkhill, Londo, and Corunna.

70. **TAPPAN-LONDO-POSEYVILLE ASSOCIATION**
Deep, somewhat poorly and poorly drained loamy and sandy soils on depressional to gently sloping topography. They have high or moderate available water capacity and are moderately or moderately slowly permeable, except that Poseyville soils are rapid in the upper part. Present use is mainly general farming; with corn, sugar beets, and field beans being important crops. Minor soils include Parkhill, Capac, and Corunna.

71. **TAPPAN-BELLEVILLE-ESSEXVILLE ASSOCIATION**
Deep, poorly and very poorly drained sandy and loamy soils on nearly level topography. They have moderate or high available water capacity and moderately slow or moderate permeability, except Essexville soils are rapid in the upper part. Present use is mainly general farming with small areas in woodland. Minor soils include Metea, Selfridge, Corunna, Parkhill, Kingsville, and Granby

72. **LAPEER-HILLSDALE ASSOCIATION**
Deep, well drained loamy soils on nearly level to moderately steep topography. They have moderate or high available water capacity and moderate or moderately rapid permeability. Present uses include general farming and woodland. Minor soils include Teasdale, Barry, Oshtemo, Spinks, Gilford, Locke, Dryden, and Wasepi.

73. **SANILAC-BACH ASSOCIATION**
Deep, somewhat poorly to very poorly drained stratified silty soils on nearly level or gently sloping topography. They have high available water capacity and moderate or moderately slow permeability. Present use is mainly general farming; with corn, field beans, and sugar beets being important crops. Minor soils include Gagetown, Linwood, Tobico, and Tappan.

74. **SHEBEON-KILMANAGH ASSOCIATION**
Deep, somewhat poorly and poorly drained loamy soils that are on nearly level or gently sloping topography. They have high available water capacity and moderate or moderately slow over very slow permeability. Present use is mainly farming; with corn, sugar beets, and field beets being important crops. Minor soils are Grindstone, Aubarque, and Badaxe.

75. **IRON RIVER-BARAGA-CHAMPION ASSOCIATION**
Moderately deep, moderately well drained loamy soils with fragipans on nearly level to steep topography. They have low or medium available water capacity and moderately slow or slow permeability. Present uses include forestry and recreation. Minor soils include Allouez, Gogebic, Michigamme, and Witbeck.

76. **GOGEBIC-KEWEENAW-KALKASKA ASSOCIATION**
Moderately deep and deep, moderately well drained and well drained loamy and sandy soils on nearly level to steep topography. They have low available water capacity and moderately slow to rapid permeability. Present uses include forestry and recreation. Minor soils include Tula, Michigamme, Munising, and Steuben.

77. **AMASA-STAMBAUGH ASSOCIATION**
Deep, well drained or moderately well drained loamy soils with gravel and sand substrata on nearly level to moderately sloping topography. They have low to moderate available water capacity and moderate over rapid permeability. Present uses include forestry, general farming, and recreation. Minor soils include Newaygo, Mancelona, Tawas, and Lupton.

78. **TULA-PLEINE ASSOCIATION**
Deep, somewhat poorly drained and poorly drained loamy soils on nearly level to gently undulating topography. They have high or moderate available water capacity and have moderate or moderately slow permeability. Present uses include forestry and recreation. Minor soils include Gogebic, Brimley and Bruce.

SOIL ASSOCIATIONS OF MICHIGAN

Map compiled by the Cooperative Extension Service and Agricultural Experiment Station of Michigan State University and Soil Conservation Service, United States Department of Agriculture.

Introduction

Soil is the collection of natural bodies in the earth's crust that supports living plants. By natural bodies is meant that they were formed by natural processes rather than by artificial means. Soils have depth as well as width and length which can be observed at the land surface. Each of these natural bodies is a soil series. Soil series are groups of soil bodies which have similar physical, chemical, and biological properties. Each soil series is named for a town or other geographical feature near the place where the soil series was first recognized.

Soils differ because of five factors: (1) parent material; (2) topography and natural drainage; (3) natural vegetation; (4) climate; and (5) length of time of weathering. Soils are products of these factors, so wherever the factors are the same, the soils will be similar.

Several processes were involved in the formation of horizons in the soils of Michigan. The processes are (1) accumulation of organic matter, (2) leaching of carbonates (lime) and other bases, (3) reduction and transfer of iron, and (4) formation and translocation of silicate clay minerals. In most soils more than one of these processes have been active in the development of the horizons.

Michigan is covered with soils that vary widely in thickness, color, texture, chemical and mineralogical composition. It is impossible to show all of the many soil variations on a map of this scale.

This map shows the soil associations found in Michigan. A soil association is a landscape that has a distinctive proportional pattern of soils. It consists of several major soils and some minor soils, and is named for the major soils. The soils in one association may occur in another association in a different proportional pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one association differ from place to place in slope, depth, drainage, and other characteristics that affect management.

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