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SURFICIAL MATERIALS MAP, WAUKESHA COUNTY

by

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EXPLANATION for 1:24,000 SURFICIAL MATERIALS MAPS
of DANE and WAUKESHA COUNTIES

R. J. Olmstead, 1972

Map Symbol	Geologic Term	Texture	Composition	Topography	Geologic Remarks
1	Till	Unsorted, Coarse	Clay, silt, sand, gravel and/or boulders	Steep slopes	Hilly moraine, till soils steeper than 20% slope forming steep terrace escarpments. Particularly common on some drumlins.
3	Till	Unsorted	Clay, silt, sand,gravel and/or boulders	Upland areas	Old glacial drift soils.
3E	Till	Unsorted	Clay,silt, sand,gravel and/or boulders, silt cover	Upland areas	Old glacial drift soils with silt cover of 2-4 feet, most likely loess.
3EW	Till	Unsorted	Clay, silt, sand,gravel and/or boulders, silt cover	Upland areas	Wet or poorly drained old glacial drift soils with a cover of either water-laid or wind-blown silt.
4G 4P 4R 4Y	Till	Unsorted	Clay,silt, sand,gravel and/or boulders	Hilly,some steep slopes	Glacial till, most commonly ground and hilly moraine. till colors: G-gray P-pink, lt-brown R-reddish-brown Y-yellowish-brown
4GW 4PW 4RW 4YW	Till	Unsorted	Clay,silt, sand,gravel and/or boulders	Lowlands, drainage-ways	Wet or poorly drained glacial till without a silt cover. This category does not commonly occur. till colors: G-Gray P-pink,lt-brown R-reddish-brown Y-yellowish-brown

Map Symbol	Geologic Term	Texture	Composition	Topography	Geologic Remarks
4GE 4PE 4RE 4YE	Till	Unsorted	Clay, silt, sand, gravel and/or boulders, silt cover	Level to rolling	Glacial till with an average 2-4 feet of silt cover, probably loess. Common to flatter areas of hilly and ground moraine. till colors: G-gray P-pink, lt-brown R-reddish-brown Y-yellowish-brown
4GEW 4PEW 4REW 4YEW	Till	Unsorted	Clay, silt, sand, gravel and/or boulders, silt cover	Lowlands, drainage-ways	Wet or poorly drained glacial till with a cover of either water-laid or wind-blown silt. till colors: G-gray P-pink, lt-brown R-reddish-brown Y-yellowish-brown
4G(1) 4P(1) 4R(1) 4Y(1)	Till	Unsorted, coarse	Clay, silt, sand, gravel and/or boulders	Steep slopes	Glacial till where average slope exceeds 20%, most probably coarse material
7	Outwash	Sorted, stratified	Sand and gravel	Level to rolling, some steep slopes	Glacial outwash, most commonly occurring as outwash plains, terraces and deltas. Pitted outwash and ice contact deposits associated with this category.
7W	Outwash	Sorted, stratified	Sand and gravel	Level to gently sloping, lowlands, drainage ways	Wet or poorly drained glacial outwash occurring on outwash plains, stream terraces, and deltas.
7E	Outwash	Sorted, stratified	Sand and gravel, silt cover	Level to gently sloping, rolling	Glacial outwash with an average of 2-4 feet of silt cover, most probably loess. Generally occurs as outwash plains, terraces and deltas.

Map Symbol	Geologic Term	Texture	Composition	Topography	Geologic Remarks
7EW	Outwash	Sorted, stratified	Sand and gravel, silt cover	Level to gently sloping, lowlands, drainage-ways	Wet or poorly drained glacial outwash with an average 2-4 feet of silt cover, either water-laid or wind-blown. Commonly found as low lying stream terraces, outwash plains and deltas.
7sd	Outwash	Sorted, stratified, fine to medium	Sand	Level to gently sloping	Glacial outwash sands occupying outwash plains, terraces and escarpments. Generally very well sorted uniform sand.
7sdw	Outwash	Sorted, stratified, fine to medium	Sand	Depressions, drainage-ways	Wet, poorly drained glacial outwash sand generally found in depressions and drainage ways of outwash plains.
7(1)	Outwash, ice-contact	Slightly sorted, coarse	Sand, gravel and boulders	Steep slopes, hilly to hummocky	Coarse glacial outwash and ice-contact deposits where average slope exceeds 20%. Eskers, crevase fillings and kettle-kame complexes usually defined by this category. Typical kettle-moraine. Steeper terrace escarpments are also usually well defined by this category.
9GP ⚒	Gravel pit				Generally found in sand and gravel deposits but at times are located in till areas underlain by sand and gravel. The pit may be active or abandoned.

Map Symbol	Geologic Term	Texture	Composition	Topography	Geologic Remarks
9LS ⚒ 9DOL	Quarry				Limestone or dolomite quarry found in shallow bedrock or exposed bedrock areas. The quarry may be active or abandoned.
9S ⚒	Quarry				Sandstone quarry. Quarry may be active or abandoned. This category is not too common.
9PT	Peat Pit				Peat excavation, generally found in low marshy areas. The excavation may be active or abandoned.
11	Alluvium	Stratified	Silt, sand, gravel and organic debris	Floodplains, drainageways	Alluvial deposits found along major river bottoms and tributary streams.
11W	Alluvium	Stratified	Silt, sand gravel, and organic debris	Floodplains drainageway	Wet or poorly drained alluvial land. Generally occurs along major river bottoms and tributary streams.
11E	Alluvium	Stratified	Silt, sand and some gravel and organic debris, silt cover	Floodplains drainageways, lower slopes	Silty alluvium, generally found on lower slopes and along drainageways and floodplains.
11EW	Alluvium	Stratified	Clay, silt, sand and some gravel and organic debris, silt cover	Floodplains, drainageways, depressions	Wet or poorly drained silty alluvial deposits occupying major floodplains, upland drainage ways and depressions.
12W	Marsh		Organic and some inorganic material	Lowlands generally bordering lakes, and streams, drainageways	Very poorly drained marsh areas in wet lowlands along lakes and streams.

Map Symbol	Geologic Term	Texture	Composition	Topography	Geologic Remarks
12pW	Marsh		Organic material, peat and muck	Lowlands, drainage-ways, lake basins and depressions	Wet, poorly drained marshy areas in lowlands and along drainage ways. Commonly occupy old shallow lake basins and depressions. Often found at bottom of kettles.
13sd	Dunes, Eolian sand	Fine, sorted	Sand	Level to gently sloping, lower slopes	Eolian deposits of fine sand generally found at bases of slopes in upland morainic areas. Found on outwash plains and stream terraces also. Beach sands may be included in this category.
14	Lacustrine	Stratified, fine to medium	Silt and sand	Level to moderately steep slopes, broad basins, depressions and drainage-ways	Lacustrine silts and fine sand occurring in glacial lake basins, stream terraces, and morainic areas, usually on slopes.
14W	Lacustrine	Stratified, fine to medium	Silt and sand	Level to gently sloping broad basins, depressions, and drainage-ways	Wet or poorly drained lacustrine deposits found in glacial lakes and river basins.
14E	Lacustrine	Stratified, fine to medium	Silt and sand, silt cover	Level to gently sloping, broad basins, depressions, drainage-ways	Lacustrine silts and fine sands with silt cover averaging 1-2 feet thick. Occurs in glacial lake basin depressions, stream terraces, and morainic areas. Portions of areas may be poorly drained.

Map Symbol	Geologic Term	Texture	Composition	Topography	Geologic Remarks
14EW	Lacustrine	Stratified, fine to medium	Clay, silt and some fine sand, silt cover	Broad level basins and drainageways	Wet and poorly drained lacustrine silts and clays with an average 1-2 feet of silt cover. Generally occurs in large nearly flat areas of old glacial lake basin and broad floodplains.
14sd	Lacustrine, Beach sand	Stratified	Sand	Level to gently sloping	Lacustrine sand loams on old beach lines of lake basins.
14sdW	Lacustrine	Stratified	Sand	Level to gently sloping, depressions	Wet, poorly drained lacustrine sand in depressional areas of old lake basins.
15	Glaciated bedrock	Consolidated	Bedrock covered with thin drift	Gentle to moderately steep slopes	Bedrock covered with thin glacial drift or exposed bedrock. Generally found on hill slopes in areas of ground moraine.
15W	Glaciated bedrock	Consolidated	Bedrock covered with thin drift	Gentle to moderately steep slopes	Wet or poorly drained bedrock covered with thin drift or exposed bedrock. Generally found near bases of slopes. Category seldom occurs.
15E	Glaciated bedrock	Consolidated	Bedrock covered with thin drift. silt cover	Gentle to moderately steep slopes	Bedrock covered with thin glacial drift and/or silt cover. Cover is probably loess and ranges from 1-4 feet thick. Usually found on hillsides and capping hills in till uplands and till plains.

Map Symbol	Geologic Term	Texture	Composition	Topography	Geologic Remarks
15EW	Glaciated bedrock	Consolidated	Bedrock covered with thin drift, silt cover	Nearly level to gently sloping, drainageways	Wet or poorly drained bedrock covered with thin glacial drift and/or silt cover. Generally found on lower slopes and in drainage ways of shallow bedrock areas in till uplands and till plains.
16LS	Limestone	Consolidated	Limestone or dolomite	Moderate to steep upland slopes	Limestone bedrock found on sloping uplands in driftless areas.
16LSE	Limestone	Consolidated	Limestone or dolomite, silt cover	Level to steep upland slopes	Limestone bedrock found in driftless upland areas. Silt cover, most probably loess, ranges up to 5 feet thick.
16LSEW	Limestone	Consolidated	Limestone or dolomite, silt cover	Lower slopes, drainageways	Wet or poorly drained limestone bedrock in driftless areas. Silt cover may be up to 5 feet thick. This category is not too common.
16LS(1)	Limestone	Consolidated	Limestone or dolomite	Steep slopes	Limestone bedrock in driftless areas where average slope exceeds 20%. Outcrops are common.
16S	Sandstone	Consolidated	Sandstone	Moderate to steep upland slopes	Sandstone bedrock in upland driftless areas.
16SE	Sandstone	Consolidated	Sandstone, silt cover	Level to steep upland slopes	Sandstone bedrock in driftless areas with a silt cover of up to 4 feet thick, may be loess.
16SEW	Sandstone	Consolidated	Sandstone, silt cover	Lower slopes, drainageways	Wet or poorly drained sandstone bedrock in driftless areas. Possible silt cover of up to 4 feet thick. This category is not too common.

Map Symbol	Geologic Term	Texture	Composition	Topography	Geologic Remarks
16S(1)	Sandstone	Consolidated	Sandstone	Steep slopes	Sandstone bedrock in driftless areas where average slope exceeds 20%. Outcrops are common.
16SH	Shale	Consolidated	Shale	Upland slopes	Shale bedrock found in driftless areas.
16SHE	Shale	Consolidated	Shale, silt cover	Nearly level to slightly sloping uplands	Wet, poorly drained shale bedrock found in driftless area. Has silt cover which is probably loess.
16SHEW	Shale	Consolidated	Shale, silt cover	Nearly level slopes, drainageways	Wet, poorly drained shale bedrock in driftless areas. Several feet of silt cover, probably loess.
16SH(1)	Shale	Consolidated	Shale	Steep slopes	Shale bedrock in driftless areas where average slope exceeds 20%.
16BL	Bedrock	Consolidated, stoney, broken land	Bedrock	Steep upland slopes	Steep, stoney upland rock and soils in driftless area. Numerous bedrock outcrops. Used where bedrock is undefined by soil type or lack of soil.
16BL(1)	Bedrock	Consolidated, stoney, broken land	Bedrock	Very steep slopes	Very steep upland rock and shallow soils in driftless areas. Numerous bedrock outcrops. Slopes are from 20-60%. Used where bedrock is undefined by soil type or lack of soil.
21W	Undrained pit				Manmade pit that has flooded
ML	Made land				May include land fill areas or areas where the soil has been stripped away.

Map Symbol	Geologic Term	Texture	Composition	Topography	Geologic Remarks
D	Dump				Dump
/	One type of deposit overlying another				Used where one type of deposit overlies another type. The surface material may be up to 5 feet thick.
or	Either type of deposit				Used where the origin of the deposit is questionable. The texture and composition is basically the same for both categories.

Summary of Symbols Used for 1:24,000 Surficial Materials Maps

Numbers, letters and other designations are used in combination with each other to form surficial material map symbols. Numbers, however, may appear separately as distinct categories. Gravel pits and quarries too small to map as areas are shown by the appropriate symbols.

Number Designations

1 Glacial till - steep slopes forming terrace escarpments
3 Glacial till - old glacial drift
4 Glacial till - clay, silt, sand, gravel, boulders
9 Gravel pits, quarries
11 Alluvium - silt, sand and gravel
12 Marsh - organic deposits
13 Dunes, wind-blown sand - sand
14 Lacustrine - clay, silt and sand
15 Bedrock with thin glacial drift cover - bedrock
16 Bedrock
21 Undrained pit

Letter Designations

E Silt cover
W Wet or poorly drained
sd Sand
LS Limestone (dolomite)
S Sandstone
SH Shale
BL Bedrock (Broken Land)
ML Made land
GP Gravel pit
PT Peat pit
P (subscript) Peat or muck
D Dump
G Gray color
P Pink, light-brown color
R Reddish-brown color
Y Yellowish-brown color

Other Designations

/ One type of material overlying another
or Either type of material
(1) Average slope greater than 20%
⚔ Gravel pit
⚒ Quarry