

University of Wisconsin-Extension

GEOLOGICAL AND NATURAL HISTORY SURVEY  
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MAPS PREPARED AS OVERLAYS FOR PROPOSED GOLF COURSE AND  
FACILITIES NORTH OF VERONA

by

P.G. Olcott

Open-File Report 75-2

1 p. + 22 plates (plates companion to 74-3)

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1975

Titles of Maps Prepared as Overlays for Proposed Golf Course and  
Facilities (North of Verona) Scale 1:24,000

1. ?
2. Land Surface Topography
3. Land Slope
4. Bedrock Geology
5. Bedrock Topography
6. Thickness of Unconsolidated Deposits and Areas of Shallow Bedrock
7. Surficial Materials
8. Soils
9. Flood Prone Areas for the 100 Year Flood
10. Elevation of the Water Table and Areas of Shallow Groundwater
11. Groundwater Recharge and Discharge Areas and Areas with Greatest Potential for Groundwater Pollution
12. Factors Affecting Land Use for Construction of ROADS, Buildings, and Structures, Utility Routing, Sanitary Landfill and Septic Tank Sewage Systems
13. Factors Affecting Development of Domestic Water Supply Wells Tapping the Bedrock Aquifer
14. Factors Affecting the Development of Domestic Water Supply Wells Tapping the Glacial Drift Aquifer
15. Areas with Potential for Sand and Gravel Deposits
16. Areas with Potential for Shallow Dolomite Bedrock
17. Areas with Potential for Shallow Sandstone Deposits
18. Factors Affecting the Growing of Crops
19. Suitability for Utility Routing and Construction of Roads, Buildings and Structures
20. Suitability for Sanitary Landfill
21. Suitability for Mineral Extraction
22. Suitability for a Domestic Water Supply from the Bedrock Aquifer
23. Suitability for Developing a Domestic Water Supply from the Unconsolidated Glacial Aquifer
24. Suitability for Cropland

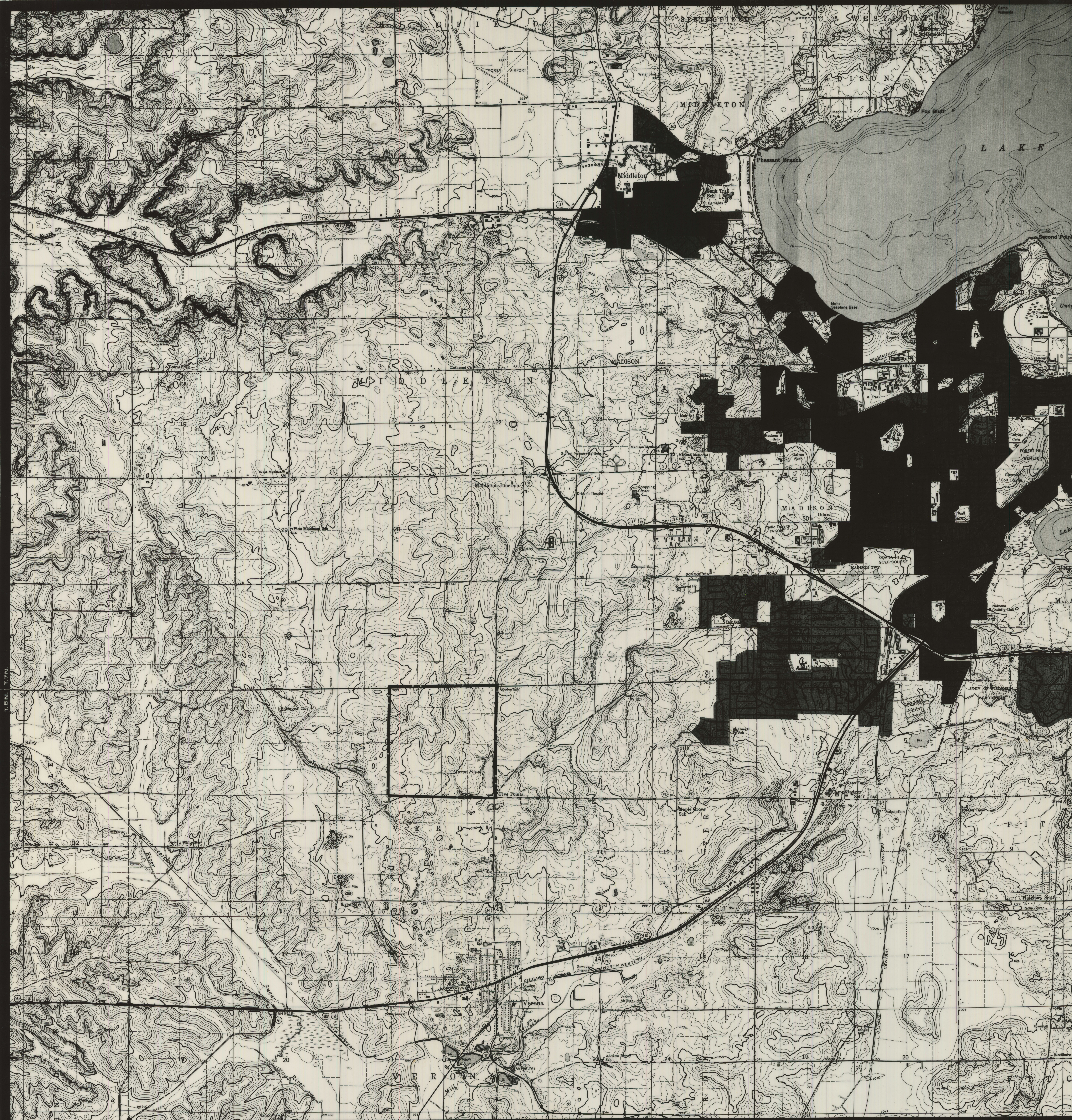
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1975



**ENVIRONMENTAL  
AWARENESS  
CENTER  
AND DEPARTMENT OF  
LANDSCAPE ARCH.**

UNIVERSITY OF WISCONSIN MADISON, WISCONSIN  
COLLEGE OF AGRICULTURAL AND LIFE SCIENCES  
SCHOOL OF NATURAL RESOURCES 1974



SCALE 1:24000  
CONTOUR INTERVAL 10'

BASE MAP SOURCE: U.S. GEOLOGICAL SURVEY  
7.5 MINUTE SERIES, PHOTOREVISED 1969  
DATA SOURCE:

DATA BY: ORIGINAL  
WOPR 75-2  
DRAWN BY:  
CHECKED BY:  
APPROVED BY:

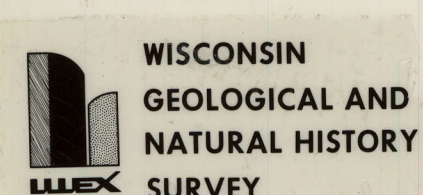
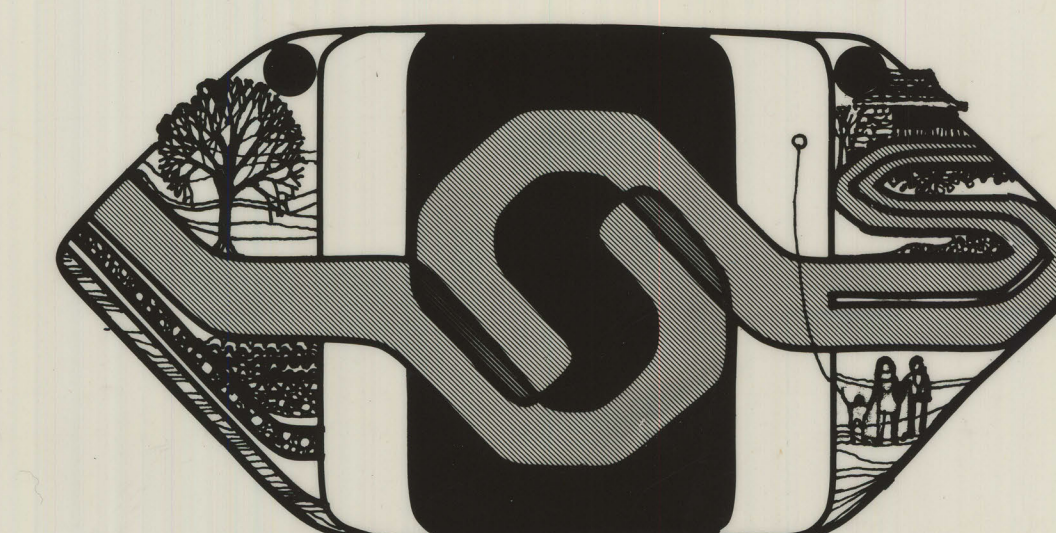


FIGURE 2 LAND SURFACE TOPOGRAPHY

**PROPOSED GOLF COURSE & FACILITIES**  
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**ENVIRONMENTAL ASSESSMENT STUDY**  
OFF-SITE DATA AND ANALYSIS



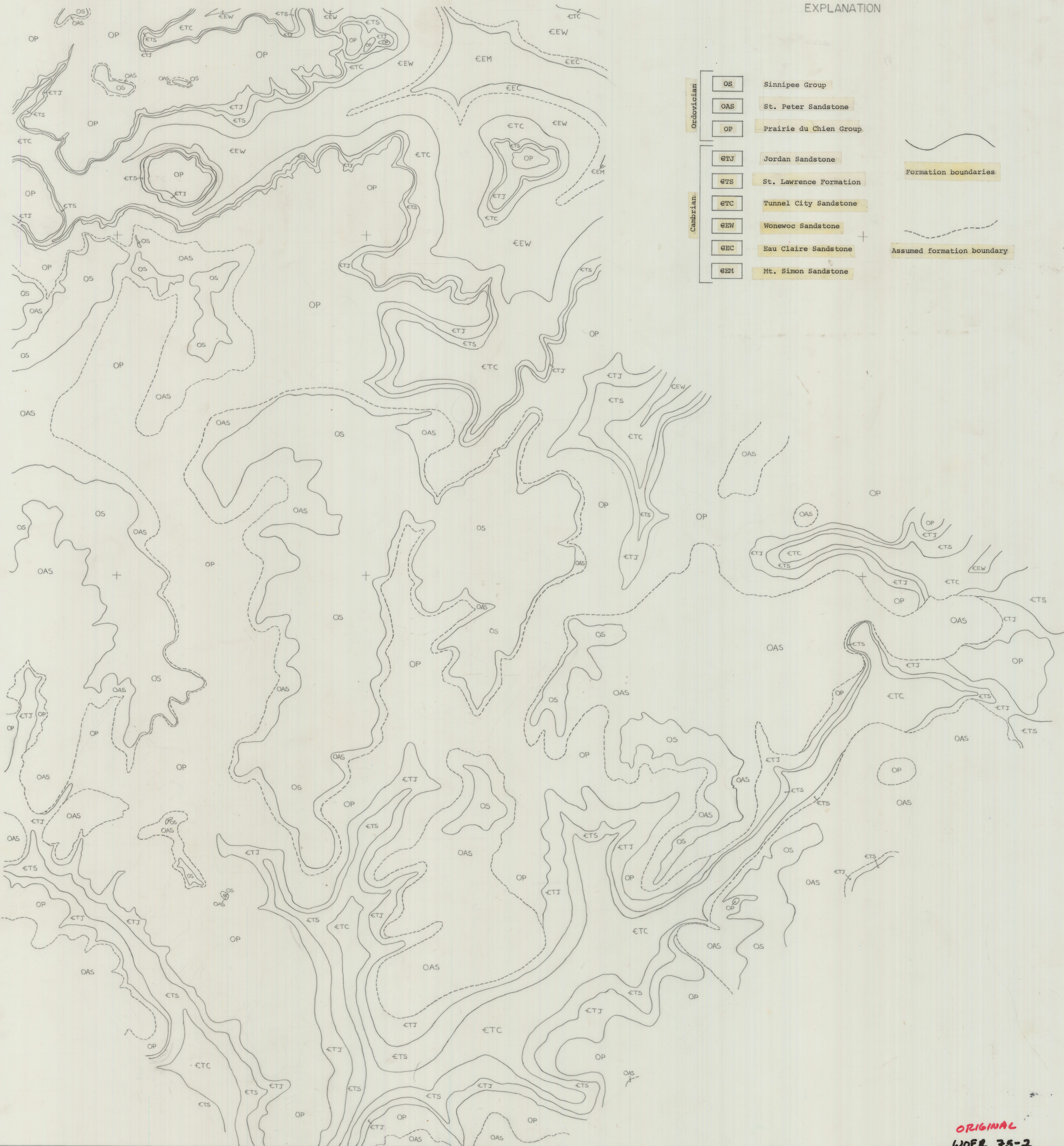




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FIGURE 3 LAND SLOPE





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FIGURE 4 BEDROCK GEOLOGY





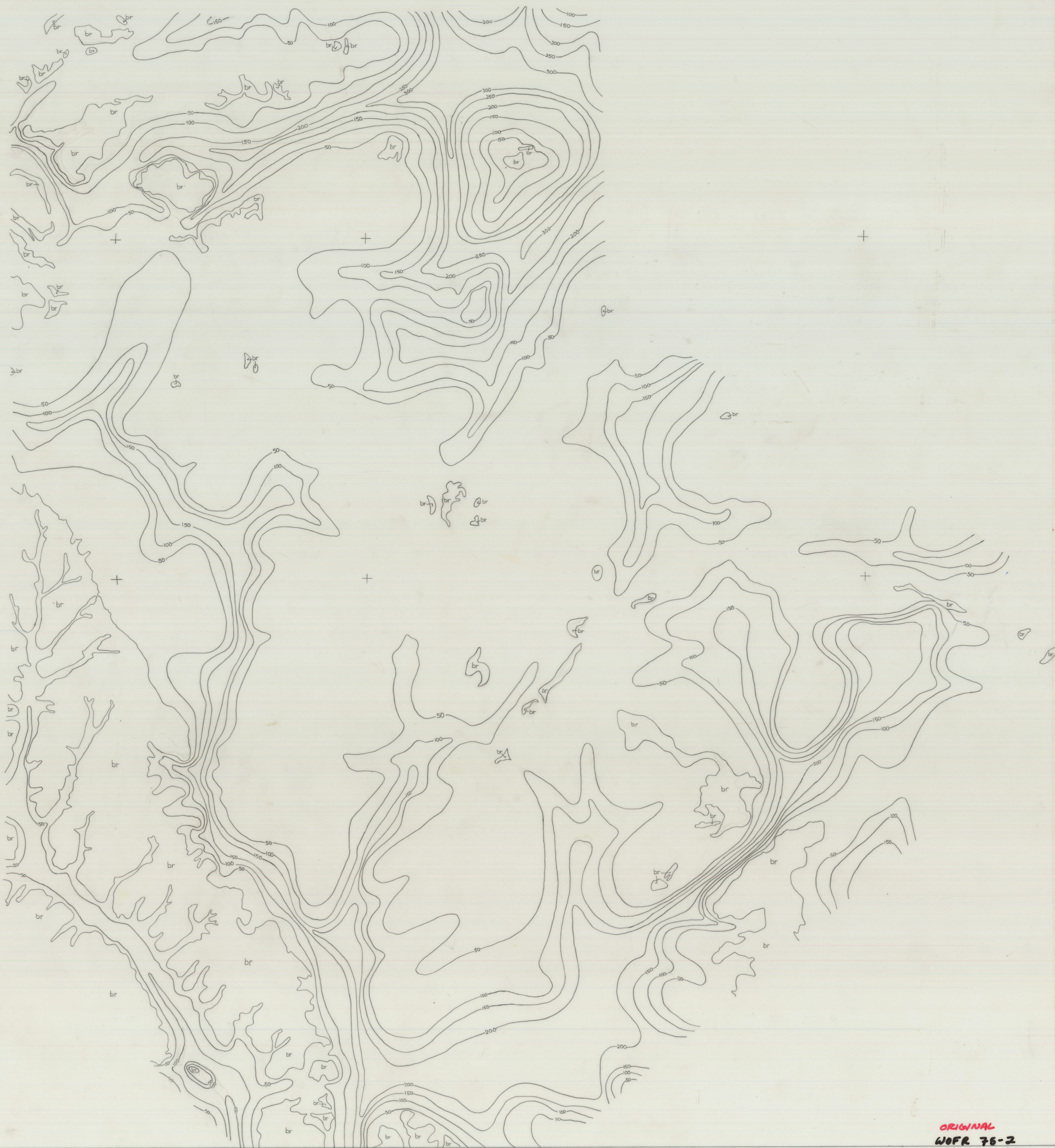
EXPLANATION

Line of equal elevation in feet above Mean Sea Level  
50 feet contour interval

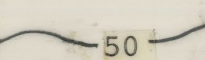

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FIGURE 5 BEDROCK TOPOGRAPHY





EXPLANATION

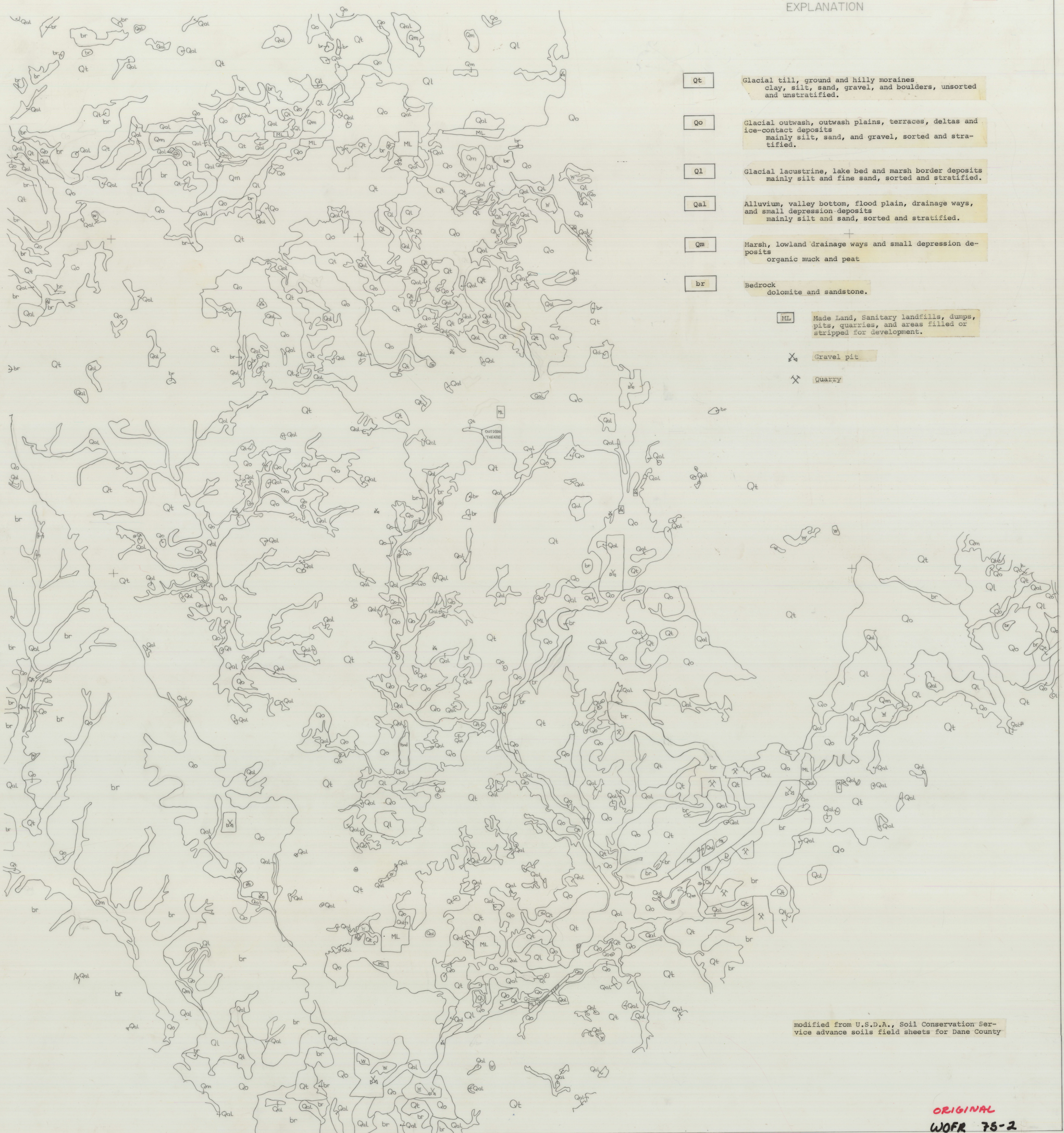
-  50 — Line of equal thickness of unconsolidated deposits  
50 feet contour interval.
-  Areas where bedrock is 5 feet or less from landsurface  
[Modified from U.S.D.A., Soil Conservation Service  
advanced soils field sheets for Dane County]

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FIGURE 6 THICKNESS OF UNCONSOLIDATED DEPOSITS AND AREAS OF SHALLOW BEDROCK





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# EXPLANATION

01	Houghton muck	204	Whalan loam
04	Houghton peaty muck	208	Whalan silt loam
015	Waubesa muck	210	Walkill silt loam
017	Palms muck	215	Ossian silt loam
046	Adrian mucky peat	223	Pecatonica silt loam
4	Marsh	226	Elburn silt loam
11	Alluvial land	233	Motherton silt loam
23	Worthen silt loam	255	Westville silt loam
25	Payette silt loam	258	Westville loam
26	Payette silt loam	271	Stronghurst silt loam
28	Tama silt loam	276	Boyer loamy sand
31	New Glarus silt loam	290	Colwood silt loam
31s	Dubuque silt loam	328	Washtenaw silt loam
33	Dunbarton silt loam	331s	Edmund silt loam
33s	Ashdale silt loam	331	Dodgeville silt loam
34	Dodgeville silt loam	354	Octagon silt loam
40	Gale silt loam	355	sandy loam substratum phase
41	Hesch silt loam	355	McHenry silt loam
42	Hesch sandy loam	356	Lapeer sandy loam
45	Rocky and Stony land	358	Lapeer loam
47	Northfield silt loam	362	Ossian silt loam
51	Hixton loam	458	thin solum variant
51	Ettrick silt loam	591	Casco loam
58	Hixton sandy loam	591	Griswold silt loam
61d	St Charles silt loam	592	Griswold loam
66	Maumee sandy loam	600	Lapeer-Hennepin complex
72	Fox loam	620	Ringwood silt loam
73	Fox silt loam	635	Northfield loam
75	Rodman sandy loam	636	Elk mound sandy loam
82	Chaseburg silt loam	698	Rodford silt loam
91d	Plano silt loam	704	Sylvester silt loam
111	Wet Alluvial land	724	Tedrow loamy sand
119	Warsaw silt loam	748	Boyer sandy loam
125	Schultz silt loam	749	Other (Sawmill)
149	Rockton silt loam	752	Troxel silt loam
149G	Elburn silt loam	753	Plano silt loam
176	gravelly substratum phase	755	gravelly substratum
176	Will silt loam	755	Waukechon sandy loam
178d	Kendall silt loam	758	Arland loam
181b	Spinks loamy fine sand	761	Warsaw silt loam
		763	silty variant
		763	Perinda silt loam
		765	sandstone substratum
		765	Dresden silt loam
		766	silty variant
		766	Batavia silt loam
		767	gravelly substratum
		771	Grays silt loam
		771	Maumee sandy loam
		772	lacustrine substratum
		772	Salter sandy loam
		773	acid variant
		773	Hebron silt loam
		776	Kibble sandy loam
		842	Kendall silt loam
		842	gravelly substratum

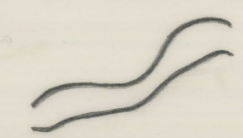
source: U.S.D.A., Soil Conservation Service  
advanced soils field sheets for Dane County.

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EXPLANATION



Approximate boundaries of flood-prone areas  
There is, on the average, about 1 chance  
in 100 that the designated areas will be  
inundated in any year.

source: map of flood-prone areas, Verona, Madison West,  
and Middleton quadrangles, 1973: U.S. Geological Survey  
in cooperation with the U.S. Dept. of Housing and Urban  
Development, Federal Insurance Administration, and un-  
published maps by the U.S. Geological Survey.

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FIGURE 9 FLOOD-PRONE AREAS FOR THE 100-YEAR FLOOD





# EXPLANATION

- 875 —  
Lines of equal elevation of the watertable above mean sea level.
- Areas where watertable is 10 feet or less below land surface.
- 53  
High capacity well.  
Number is Geological and Natural History Survey well number
- Approximate ground water divide

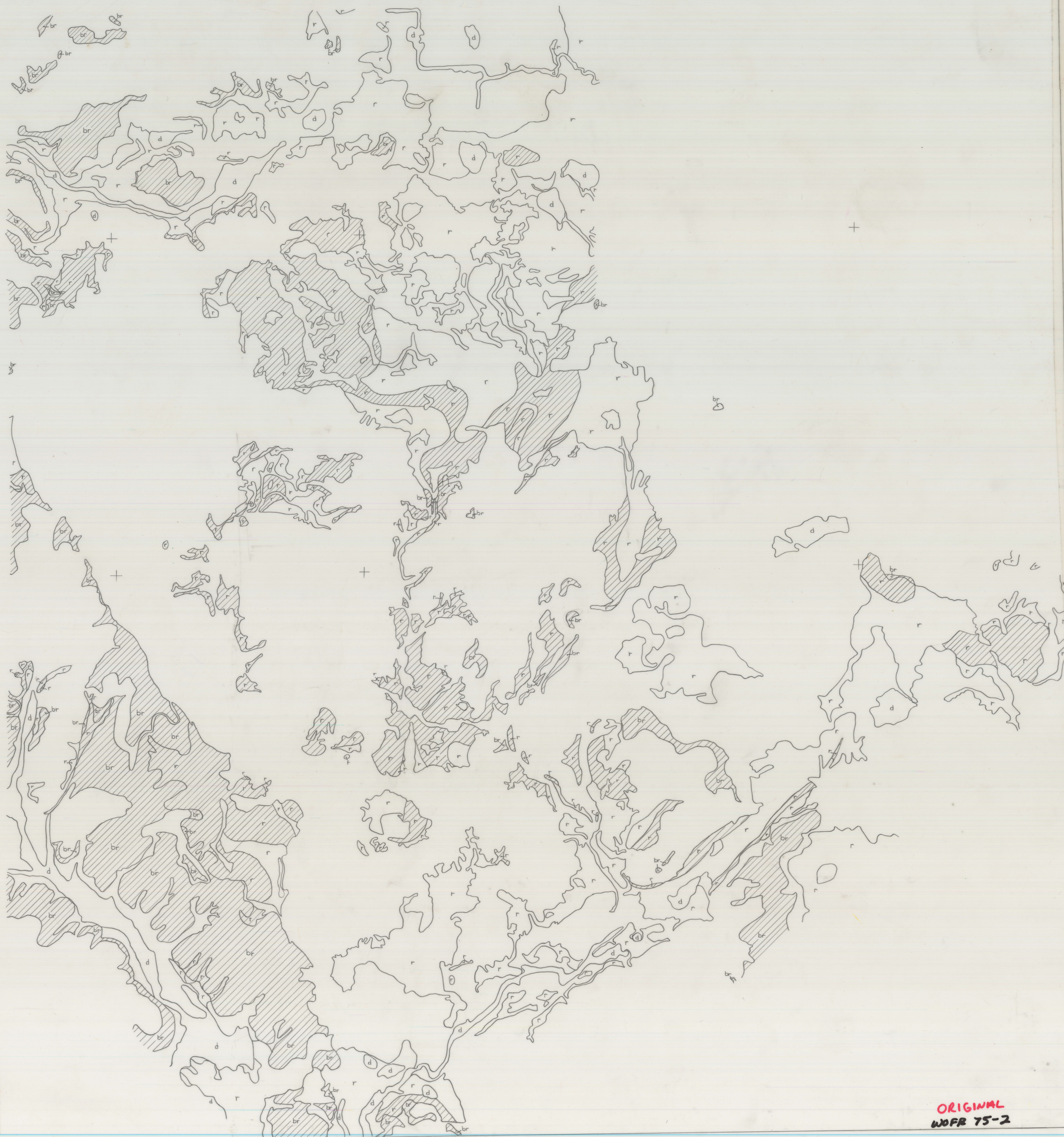
source: watertable contours from unpublished map in the files of the U.S. Geological Survey.

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FIGURE 10 ELEVATION OF THE WATERTABLE AND AREAS OF SHALLOW GROUNDWATER





EXPLANATION

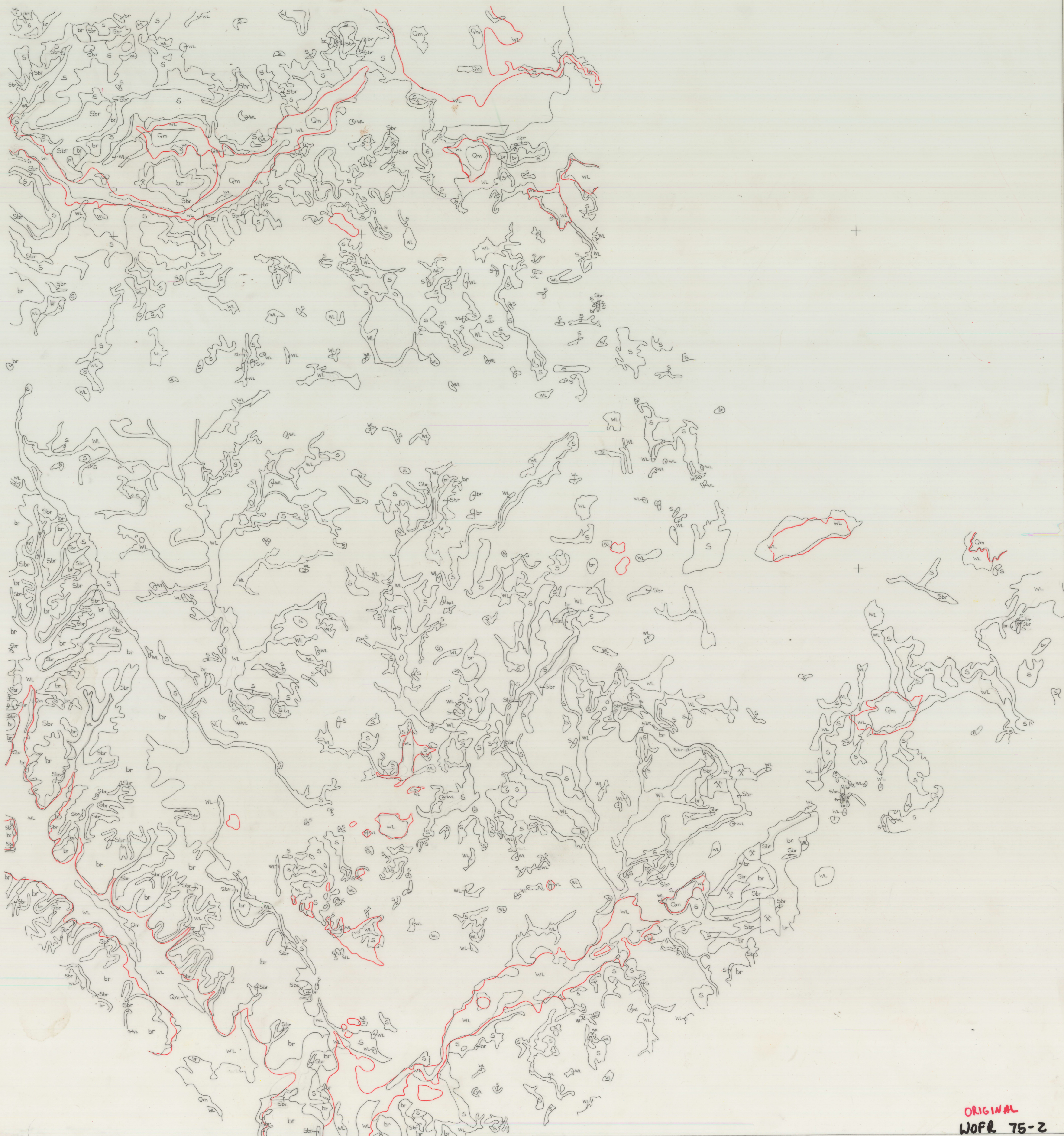
- d Principal ground-water discharge areas
- r Areas of best ground-water recharge potential underlain by outwash sand and sand and gravel with permeabilities of 6.3 to 20.0 inches per hour. Permeability of overlying loessial soils about .63 to 2.0 inches per hour
- Areas of moderate ground-water recharge potential underlain by glacial till, lacustrine deposits, and bedrock with permeabilities of .05 to 2.0 inches per hour. Permeability of overlying loess about .63 to 2.0 inches per hour
- br Areas with dolomite bedrock at or within 5 feet of the land surface
- Areas with the greatest potential for ground-water pollution underlain by very shallow, fractured bedrock and very permeable sand and gravel

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FIGURE 11 GROUND-WATER RECHARGE AND DISCHARGE<sup>+</sup> AREAS AND AREAS WITH THE GREATEST POTENTIAL FOR GROUND-WATER POLLUTION





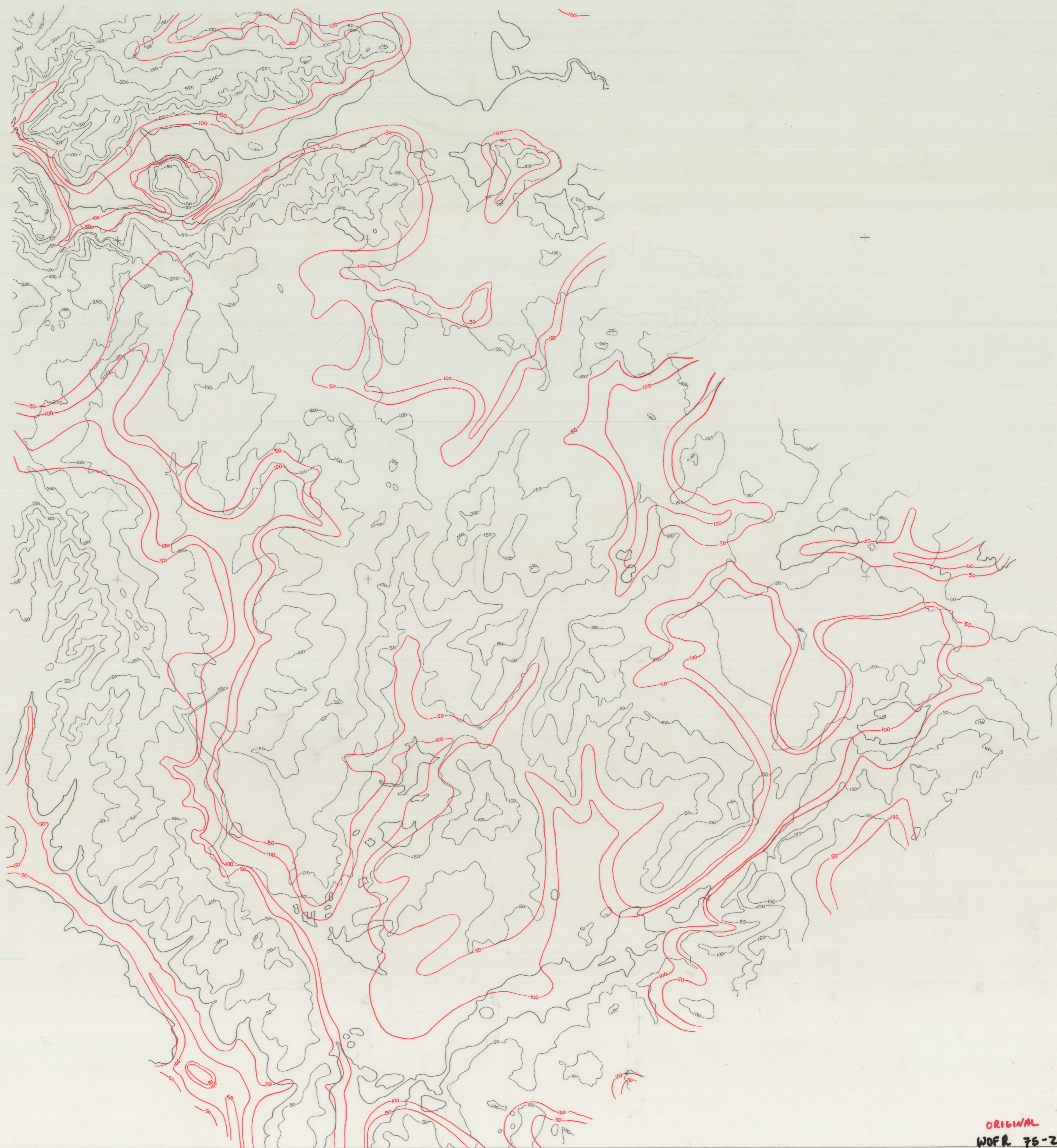
## EXPLANATION

ment  
 than 10 feet below landsurface,  
 feet below land surface,  
 than 12 percent, bearing capacities  
 tons per square foot, and frost hazard and  
 shrink-swell potential low

Natural limitations to development

- ☐ Gm Marsh, muck, and peat, watertable at or near land surface  
☐ br Bedrock at or within 5 feet of landsurface  
☐ S Land slope in excess of 12  
☒ W Water table at or within 10 feet of landsurface (Marsh, flood-prone areas, and several small areas of shallow bedrock also fall within this category)  
☐ WL Lacustrine and alluvial deposits and wet till areas with some limitations to construction (Bearing capacities range from 1 to 2 tons per square foot, shrink-swell potential is low to moderate, and frost heave potential is high)





# EXPLANATION

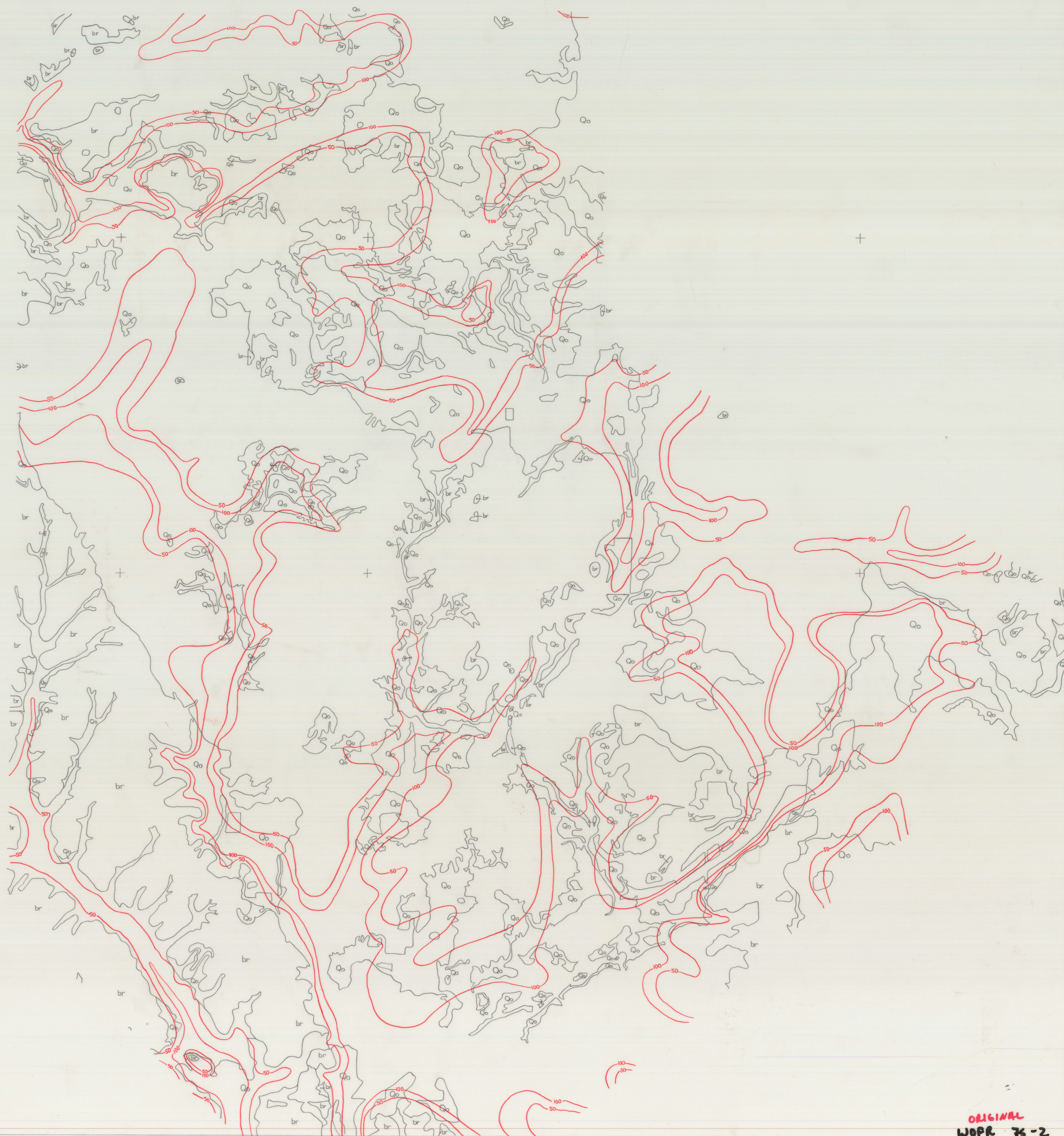
- Areas where water table is 10 feet or less from the land surface
- Contours showing approximate depth to water table from land surface. Contour interval 50 feet
- Contours showing thickness of unconsolidated materials that require well casing depths of less than 50 feet, 50 to 100 feet, and more than 100 feet

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FIGURE 13 FACTORS AFFECTING DEVELOPMENT OF DOMESTIC WATER SUPPLY BUILDINGS AND STRUCTURE WELLS TAPPING THE BEDROCK AQUIFER SEPTIC TANK SEWAGE SYSTEMS





# EXPLANATION

- Areas of permeable surficial materials with the best potential for obtaining a water supply (water table is within 25 feet of land surface in most of this area)
- br Areas with bedrock at or near land surface (Glacial drift aquifer is missing and/or unsaturated in this area)
- Qo Areas of surficial deposits with low permeabilities with a poor potential for obtaining a water supply
- 50 — Contours showing where glacial deposits are less than 50 feet, 50 to 100 feet, and greater than 100 feet in thickness
- 100 —

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FIGURE 14 FACTORS AFFECTING DEVELOPMENT OF DOMESTIC WATER SUPPLY WELLS TAPPING THE GLACIAL DRIFT AQUIFER



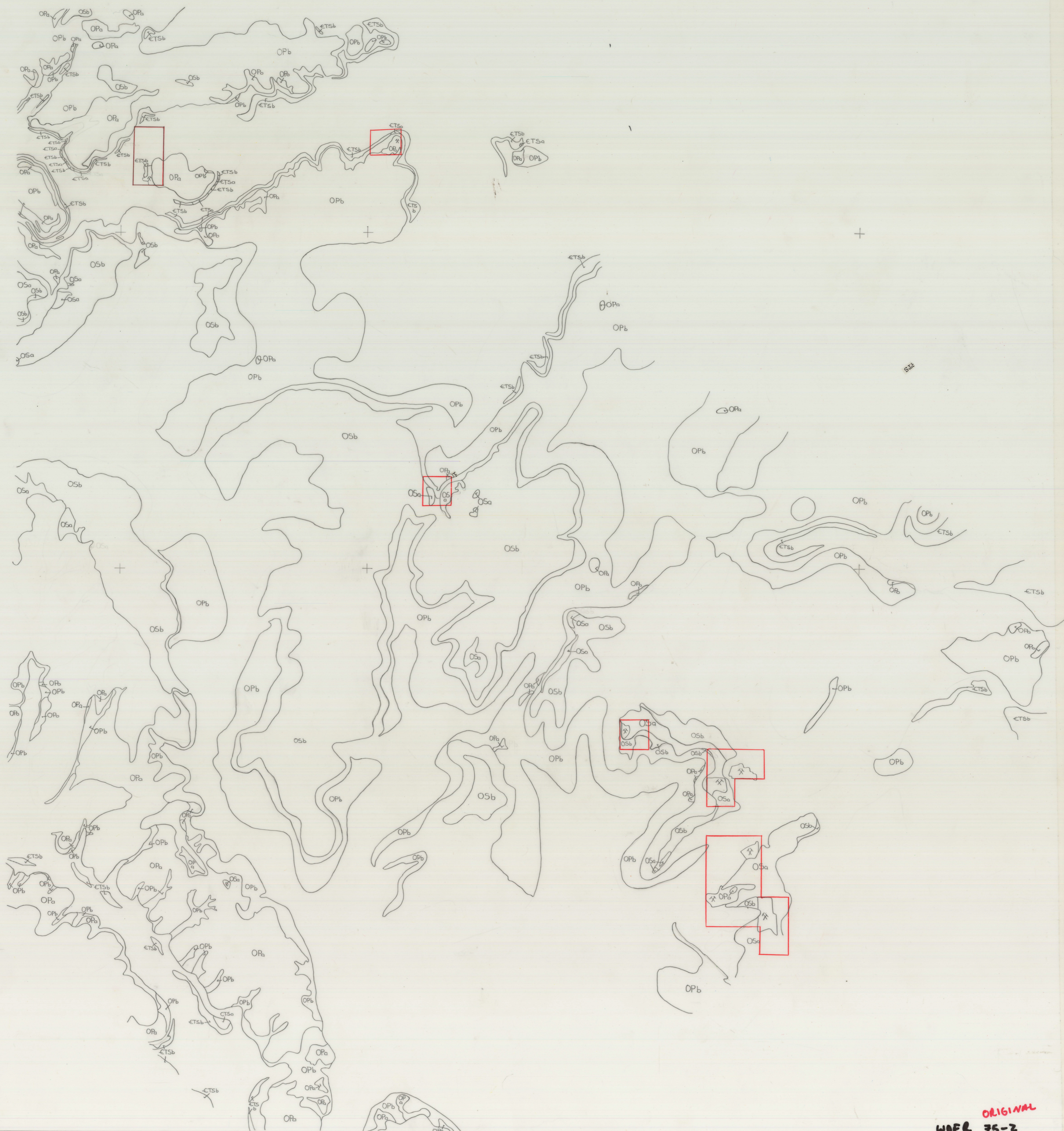


# EXPLANATION

- A Areas with the best potential as a source of well sorted gravel (outwash deposits most likely to contain gravel suitable for coarse aggregate).
- B Areas with moderate potential as a source of well sorted gravel (ice-contact stratified drift deposits, may contain well sorted gravel but subject to abrupt changes in grain size).
- Areas where sand and gravel is present which are zoned for mineral extraction by the Dane County Zoning Board.
- X Existing gravel pits.

FIGURE 15 AREAS WITH POTENTIAL FOR SAND AND GRAVEL DEPOSITS





EXPLANATION

OS Sinnipee Group

OSa areas with less than 10 feet of overburden

OSb areas with 10 to 50 feet of overburden

OP Prairie du Chien Group

OPa areas with less than 10 feet of overburden

OPb areas with 10 to 50 feet of overburden

ETS St. Lawrence Formation


ETSa areas with less than 10 feet of overburden

ETSb areas with 10 to 50 feet of overburden

Red rectangle: Areas where dolomite is present which are zoned for mineral extraction by the Dane County Zoning Board

X: Existing quarry

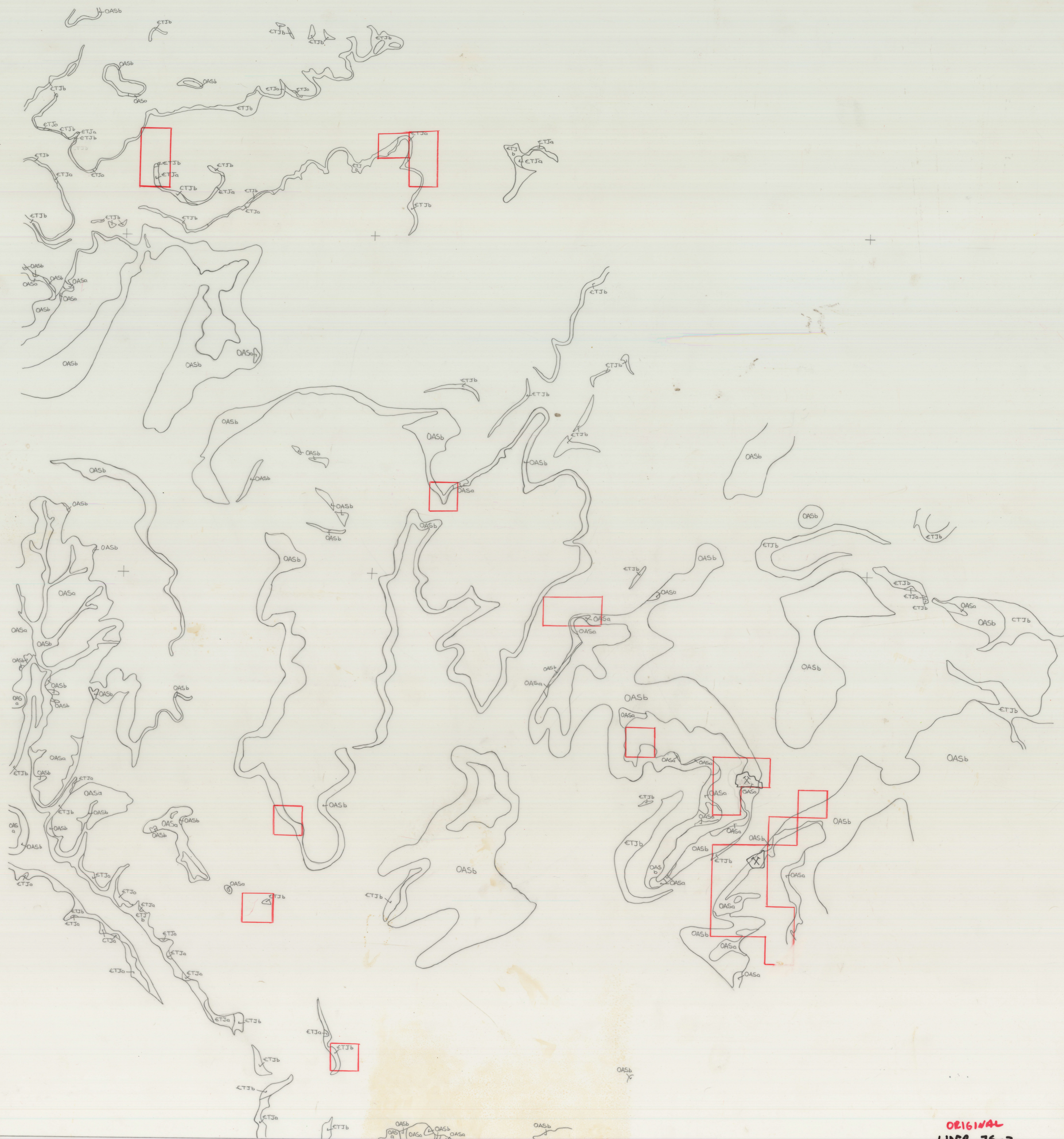
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FIGURE 16 AREAS WITH POTENTIAL FOR SHALLOW DOLOMITE BEDROCK





# EXPLANATION

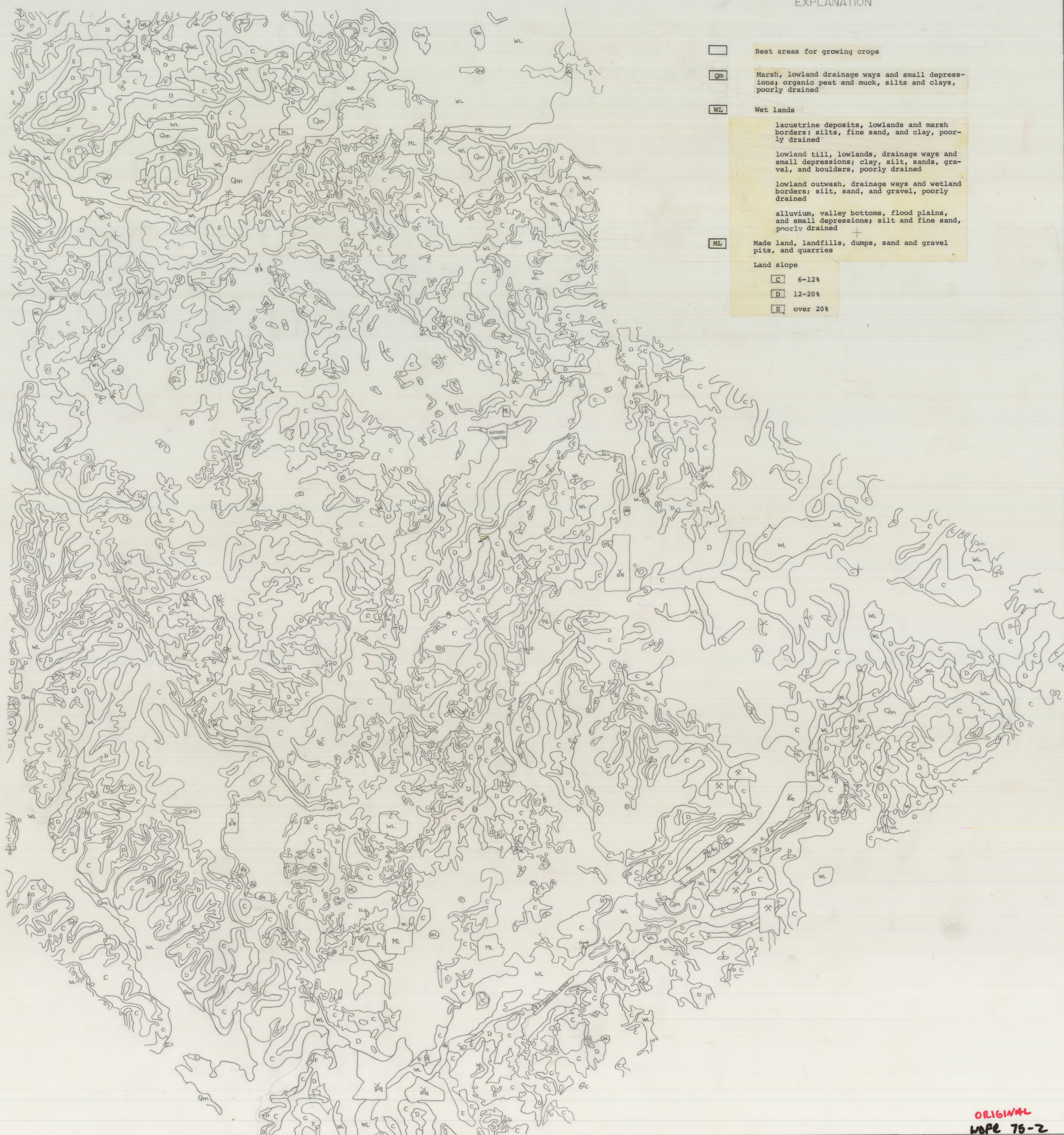
- St. Peter Sandstone
- OASa areas with less than 5 feet of overburden
  - OASb areas with 5 to 50 feet of overburden
- Jordan Sandstone
- ETJa areas with less than 5 feet of overburden
  - ETJb areas with 5 to 50 feet of overburden
- X Existing quarry
- Red box Areas where sandstone is present which are zoned for mineral extraction by the Dane County Zoning Board

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FIGURE 17 AREAS WITH POTENTIAL FOR SHALLOW SANDSTONE DEPOSITS





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FIGURE 18 FACTORS AFFECTING THE GROWING OF CROPS





# EXPLANATION

- Areas with few limitations**  
 Bedrock and water table greater than 10 feet from land surface, slopes less than 12%, low frost hazard, and moderate to high bearing capacities
- Areas with moderate limitations**  
 Including one or more of the following;  
 Bedrock is within 5 feet and/or water table is within 10 feet or less from land surface, slopes in excess of 12%, moderate to high frost hazard, and low bearing capacities
- Areas with severe limitations**  
 Including one or more of the following;  
 marsh areas, water table at or near land surface, very low bearing capacities, and flood prone areas

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FIGURE 19 SUITABILITY FOR UTILITY ROUTING AND CONSTRUCTION OF ROADS, BUILDINGS, AND STRUCTURES





# EXPLANATION

- Areas with few limitations

Bedrock greater than 5 feet and dolomite bedrock greater than 50 feet from land surface, water table greater than 10 feet from land surface, unconsolidated deposits of moderate to low permeability, not subject to flooding
- Areas with moderate limitations

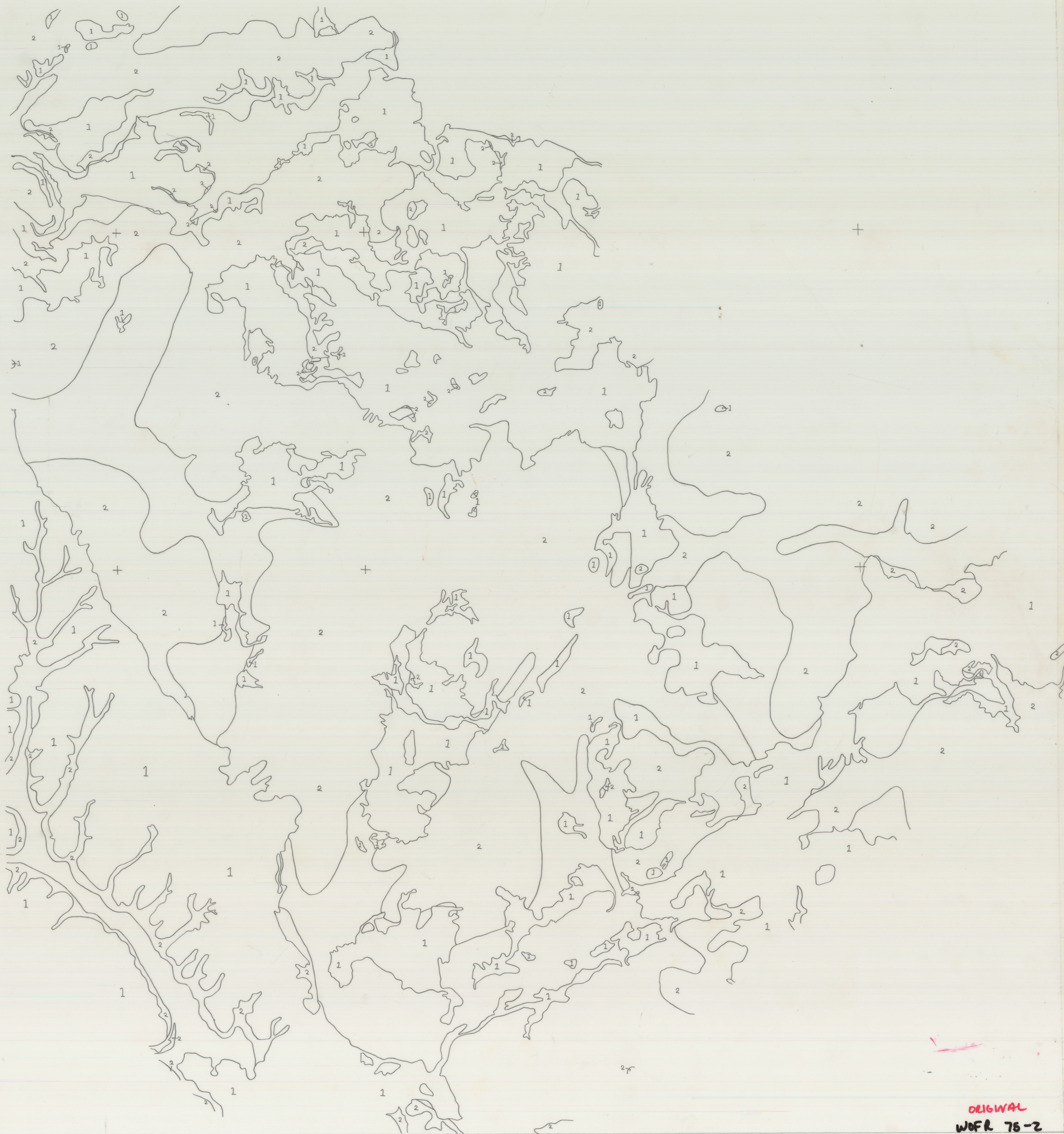
Highly permeable unconsolidated deposits and/or fractured dolomite bedrock at depths of 5 to 50 feet from land surface
- Areas with severe limitations

Bedrock at 5 feet or less, water table at less than 10 feet from land surface, and/or subject to occasional flooding

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FIGURE 20 SUITABILITY FOR SANITARY LANDFILL





# EXPLANATION

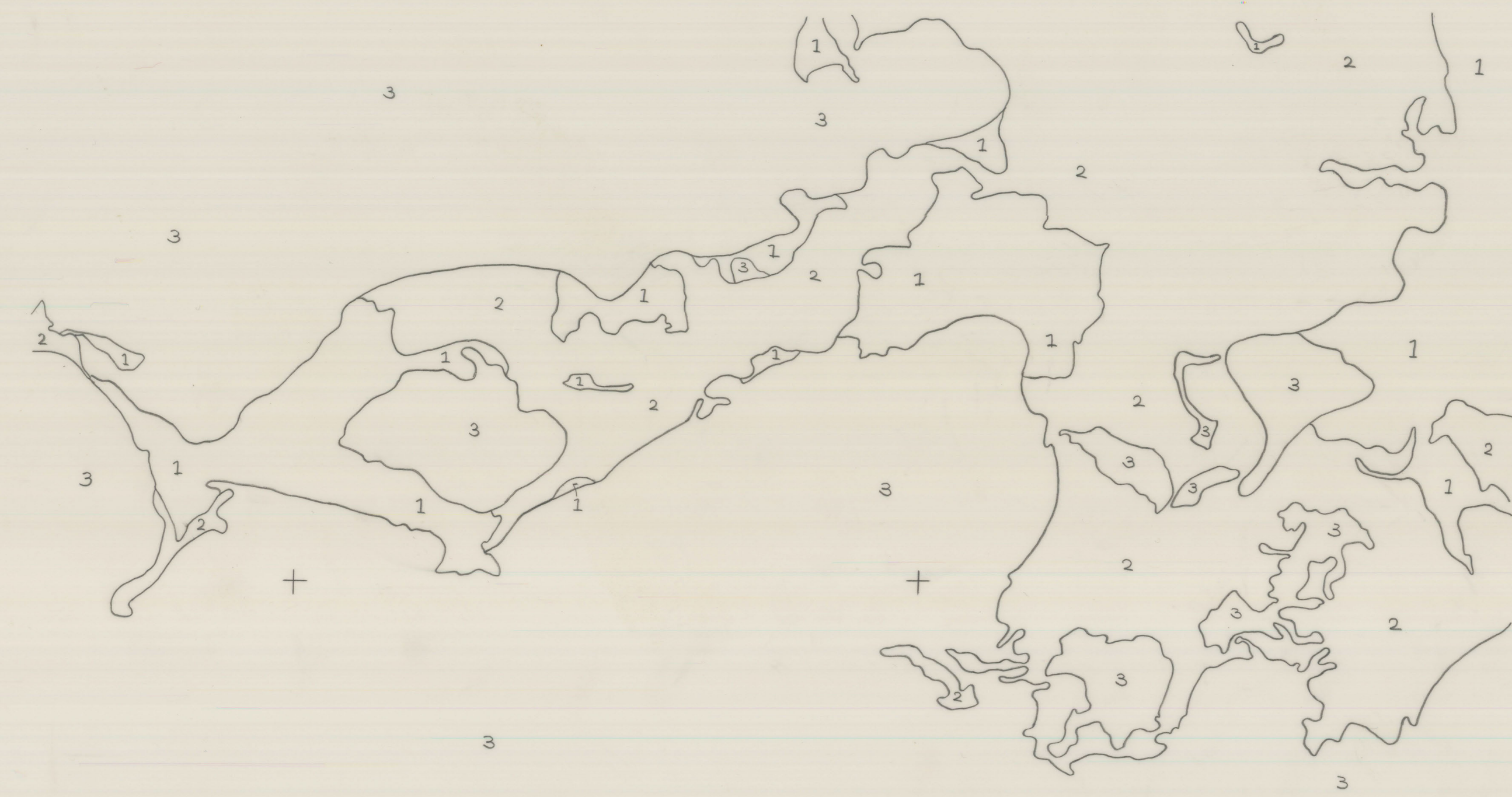
- 1 Areas where dolomite, sandstone, and sand and gravel occur at or near the land surface, and mineral extraction is most likely to take place
- 2 Areas where dolomite and sandstone occur at depths ranging from 5 to 50 feet from the land surface and there is some potential for mineral extraction
- Areas where dolomite, sandstone, and/or sand and gravel is not present or occurs at excessive depths and mineral extraction is not likely to take place

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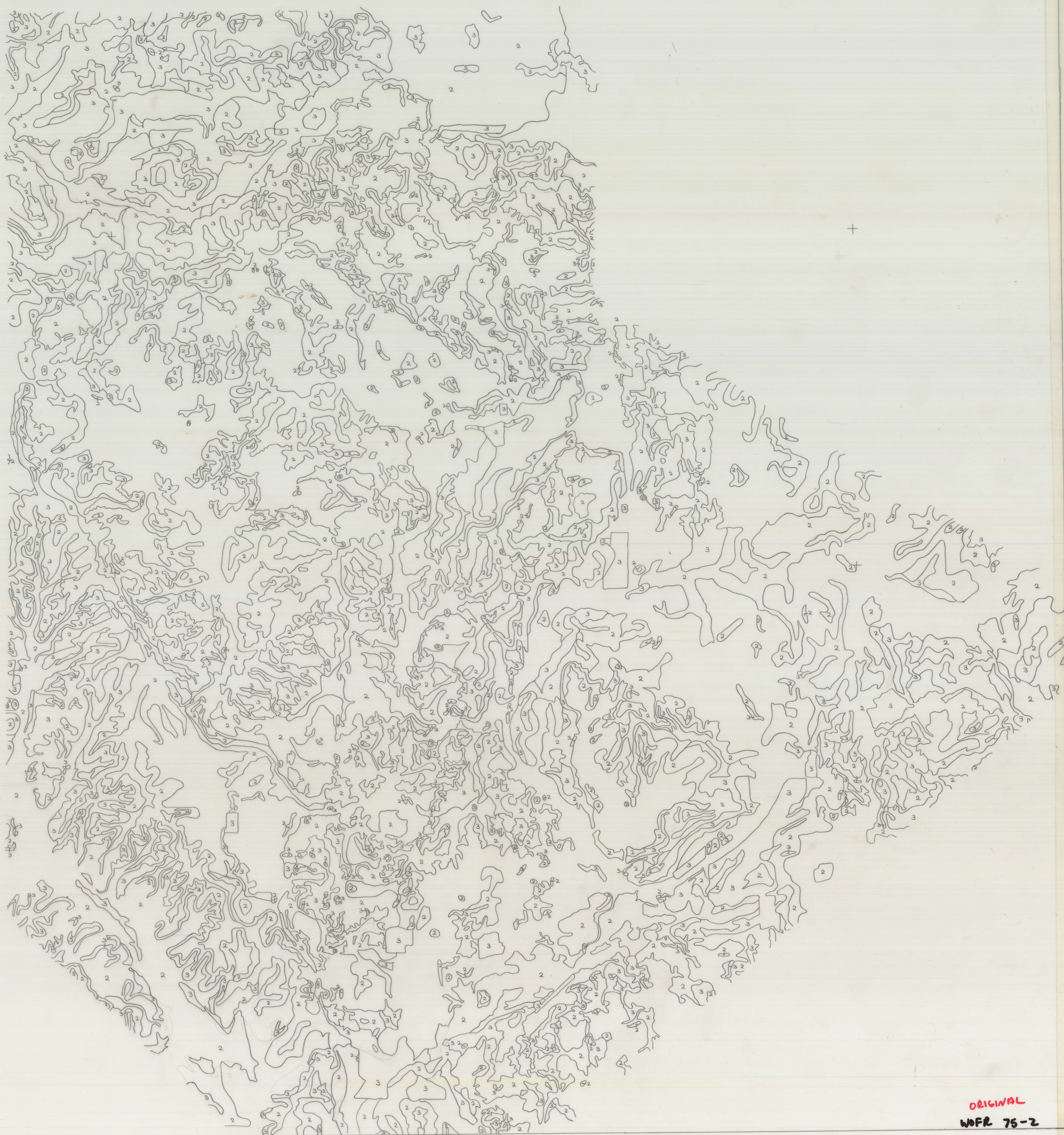
# EXPLANATION

- 1 Areas with best potential for developing a water supply  
Aquifer exceeds 50 feet in thickness in areas with permeable surficial deposits
- 2 Areas with moderate potential for developing a water supply  
Aquifer is less than 50 feet in thickness in areas with permeable surficial deposits or aquifer exceeds 50 feet in thickness in areas with surficial deposits of low permeability
- 3 Areas with least potential for developing a water supply  
Aquifer is less than 50 feet in thickness in areas with surficial deposits of low permeability



FIGURE 23 SUITABILITY FOR DEVELOPING A DOMESTIC WATER SUPPLY FROM THE UNCONSOLIDATED GLACIAL AQUIFER





# EXPLANATION

- 1 Areas with slight limitations  
Less than 6% slope, level through gently sloping well drained soils in silty and sandy loam till and outwash. Some areas with bedrock at or less than 5 feet from the land surface.
- 2 Areas with moderate limitations  
Includes one or more of the following: slope between 6 and 12%, high water table, some areas subject to flooding, poorly drained soils in lowlands, marsh borders, drainage ways and depressions.
- 3 Areas with severe limitations  
Includes one or more of the following: pits, quarries, and landfills, slope exceeds 12%, poorly drained muck and peat soils in wetlands, drainage ways and depressions.

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FIGURE 24 SUITABILITY FOR CROPLAND