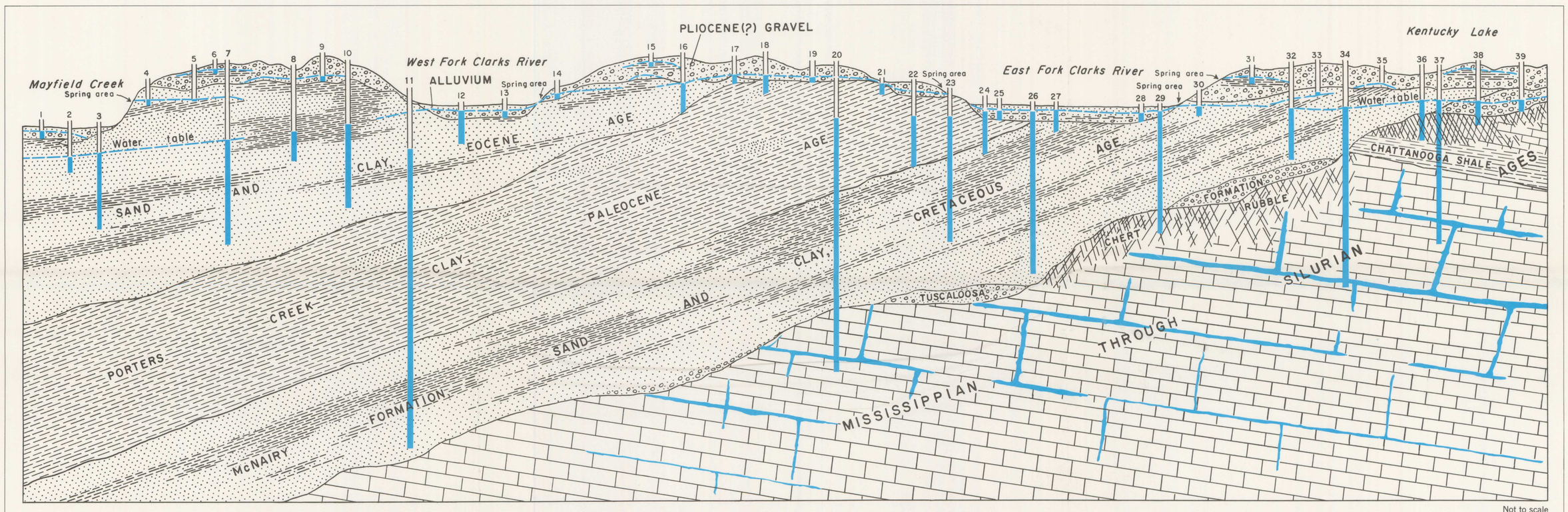
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH
THE COMMONWEALTH OF KENTUCKY, UNIVERSITY OF KENTUCKY
KENTUCKY GEOLOGICAL SURVEY
WALLACE W. HAGAN, DIRECTOR AND STATE GEOLOGIST

WATER-SUPPLY PAPER 1987
PLATE 1



Not to scale

EXPLANATION

LITHOLOGY

- Sand and gravel
- Clay
- Sand
- Chert, limestone, and dolomite

IDEALIZED GEOHYDROLOGIC SECTION FROM MAYFIELD CREEK TO NEAR KENTUCKY DAM SHOWING THE OCCURRENCE OF GROUND WATER AND TYPES OF WATER WELLS

TYPES OF WELLS AND AQUIFERS

(Wells with well numbers shown in heavy type are likely to yield sufficient water for industrial requirements)

1. Bored or dug wells in water perched in alluvium by Eocene clay
2. Bored or jetted wells in water of saturated Eocene sand beneath perched water zone.
3. Jetted or drilled wells in water of saturated Eocene sand beneath dry alluvium.
4. Bored or dug wells in water perched in Eocene sand by Eocene clay.
5. Bored wells in water perched in Eocene sand beneath shallower perched water zone in Pliocene(?) gravel.
6. Bored or dug wells in water perched in Pliocene(?) gravel by cemented gravel or Pliocene(?) clay.
7. Drilled wells in water of saturated Eocene sand beneath two shallower perched water zones.
8. Drilled wells in locally confined water in saturated Eocene sand beneath perched water zone.
9. Bored or dug wells in water perched in Pliocene(?) gravel by Eocene clay.
10. Drilled wells in locally confined water in saturated Eocene sand.
11. Drilled wells in confined water in underlying McNairy sand beneath Porters Creek Clay.
12. Bored or jetted wells in water in saturated Eocene sand beneath saturated alluvium.
13. Bored or dug wells in water in saturated alluvium above saturated Eocene sand.
14. Bored or dug wells in water in saturated terrace deposits of Pliocene(?) gravel.
15. Bored or dug wells in water perched high in Pliocene(?) gravel by Pliocene(?) clay
16. Bored or drilled wells in water in relatively thin saturated Eocene sand.
17. Bored or dug wells in water in saturated Pliocene(?) gravel and Eocene sand.
18. Bored or drilled wells in water in sand lenses in Porters Creek Clay.
19. Bored or dug wells in water in thin saturated Pliocene(?) gravel above Porters Creek Clay.
20. Drilled wells in confined water in Paleozoic rocks.
21. Bored or dug wells in Porters Creek Clay that store very thin water film flowing on clay surface.
22. Bored or drilled wells in sand in basal Porters Creek Clay or uppermost McNairy Formation.
23. Drilled wells in confined water in McNairy sand beneath exposed Porters Creek Clay.
24. Bored or drilled wells in water in McNairy sand beneath Porters Creek Clay and saturated alluvium.
25. Bored or dug wells in water in saturated alluvium above Porters Creek Clay.
26. Drilled wells in water in gravelly sand in McNairy Formation.
27. Bored or jetted wells in water in saturated McNairy sand beneath saturated alluvium.
28. Bored or dug wells in water in saturated alluvium above saturated McNairy sand.
29. Drilled wells in chert rubble developed on Paleozoic rock surface.
30. Bored or dug wells in water in saturated McNairy sand.
31. Bored or dug wells in water perched in Pliocene(?) gravel by cemented gravel or Pliocene(?) clay.
32. Drilled wells in water in staurated McNairy sand beneath perched water zone in McNairy sand.
33. Bored or dug wells in water perched in McNairy sand by McNairy clay.
34. Drilled wells in water in Paleozoic rocks.
35. Bored or dug wells in water perched in Pliocene(?) gravel by McNairy clay.
36. Drilled wells in water in chert rubble beneath relatively thin saturated McNairy sand.
37. Drilled wells in water in Paleozoic rocks beneath Chattanooga Shale.
38. Drilled wells in water in chert rubble below thin saturated gravel in McNairy Formation.
39. Bored or drilled wells in water in relatively thin saturated gravel in basal McNairy Formation.

Spring areas occur where the land surface intersects the water table or perched water zones.

EXPLANATION

Map shows the expected range of yields of individual wells in each area. Near the edges of each area yields may be more similar to the adjacent areas. Maximum yield data was obtained from the hydrologic atlases that cover the Purchase region (see fig. 2 for locations of atlases)

1 — More than 1,000 gpm (gallons per minute)
Wells near the Mississippi, Ohio, and Tennessee Rivers obtain water from gravel or gravelly sand deposits; in the rest of the area, wells tap sands of the Claiborne Group

2 — 500 to more than 1,000 gpm
Wells generally obtain water from sands of the McNairy Formation; at places in the western part of the area, shallower sands in the Claiborne Group can supply large yields

3 — 250–1,000 gpm
Wells obtain water from gravelly sand of the Ohio and Mississippi River alluvium. Yield based on estimated thickness of saturated alluvium

4 — 100–1,000 gpm
Wells obtain water from sands of the Claiborne Group. The larger yields are obtainable in the southern part of the area where the sands are thicker

5 — 100–500 gpm
Wells obtain water from gravel. Larger yields may be available from wells tapping the deeper Paleozoic rocks (see below)

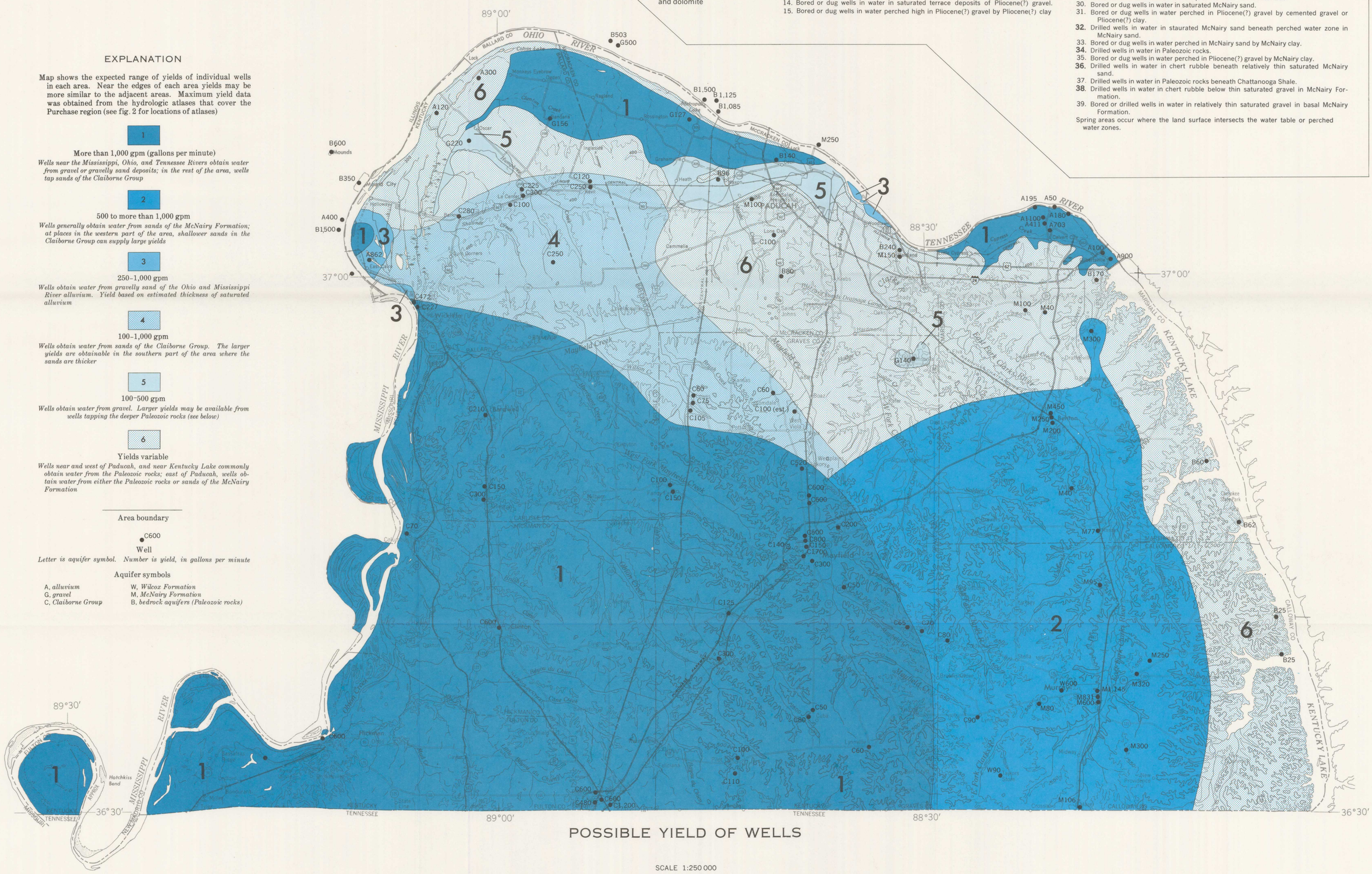
6 — Yields variable
Wells near and west of Paducah, and near Kentucky Lake commonly obtain water from the Paleozoic rocks; east of Paducah, wells obtain water from either the Paleozoic rocks or sands of the McNairy Formation

Area boundary

C600 — Well
Letter is aquifer symbol. Number is yield, in gallons per minute

Aquifer symbols

A, *alluvium*
G, *gravel*
C, *Claiborne Group*
W, *Wilcox Formation*
M, *McNairy Formation*
B, *bedrock aquifers (Paleozoic rocks)*



POSSIBLE YIELD OF WELLS

SCALE 1:250 000

5 0 5 10 15 20 25 MILES

5 0 5 10 15 20 25 KILOMETERS

CONTOUR INTERVAL 100 FEET
WITH SUPPLEMENTARY CONTOURS AT 50-FOOT INTERVALS
DATUM IS MEAN SEA LEVEL

Base from U.S. Geological Survey
Roads as of 1970

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D.C.—1973—W70360

MAP SHOWING POSSIBLE YIELDS OF WELLS AND IDEALIZED GEOHYDROLOGIC SECTION SHOWING OCCURRENCE OF GROUND WATER, JACKSON PURCHASE REGION, KENTUCKY