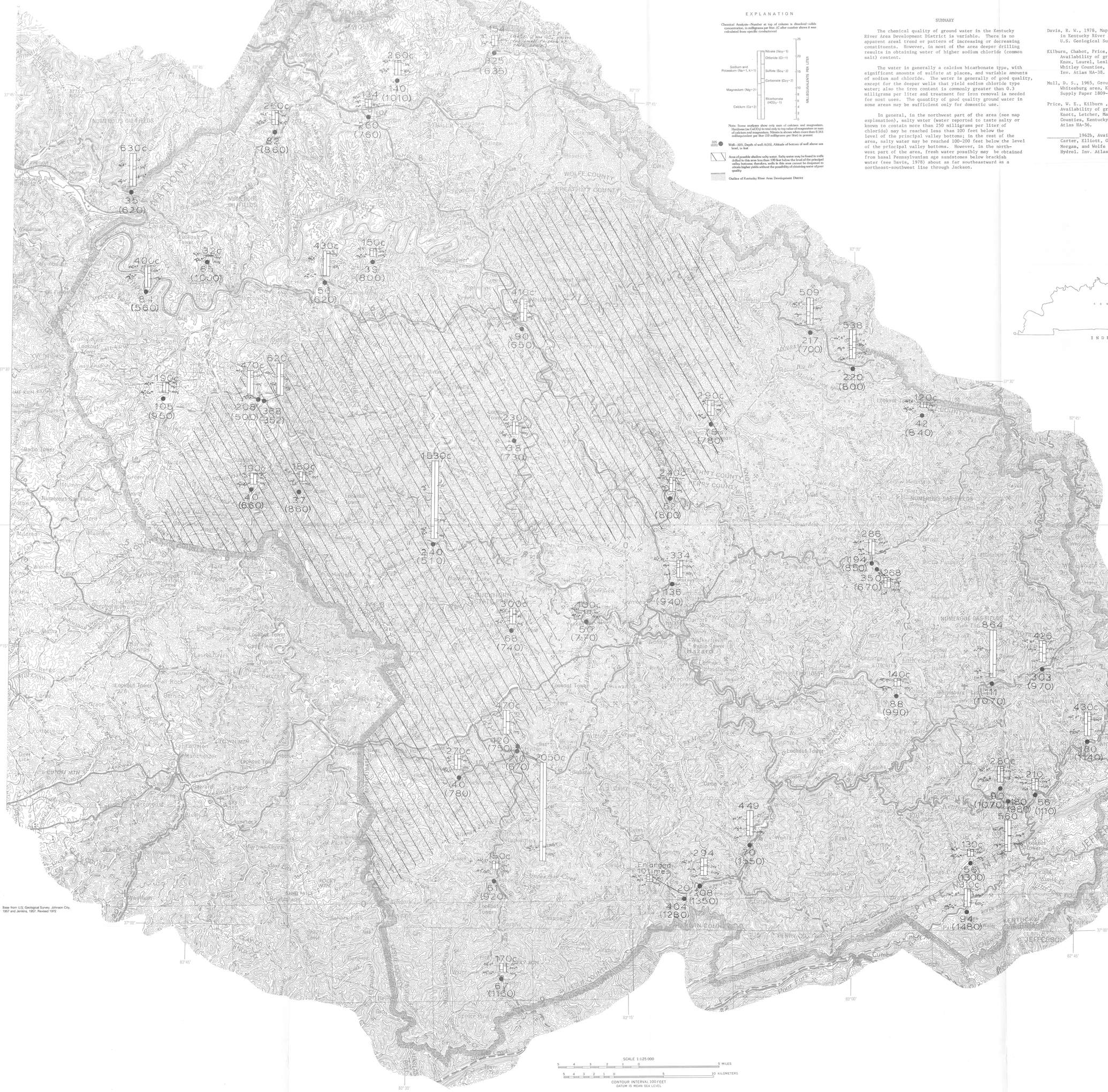
PREPARED IN COOPERATION WITH THE
APPALACHIAN REGIONAL COMMISSION



EXPLANATION

Chemical Analysis—Number at top of column is dissolved-solids concentration, in milligrams per liter. (C after number shows it was calculated from specific conductance)

Note: Some analyses show only sum of calcium and magnesium. Hardness (as $CaCO_3$) is read only to top value of magnesium or sum of calcium and magnesium. Nitrate is shown when more than 0.161 milliequivalent per liter (10 milligrams per liter) is present

325 (625) — Well—325. Depth of well, (625). Altitude of bottom of well above sea level, in feet

Area of possible shallow salty water. Salty water may be found in wells drilled in this area less than 100 feet below the level of the principal valley bottoms; therefore, wells in this area cannot be designed to obtain higher yields without the possibility of obtaining water of poor quality

Outline of Kentucky River Area Development District

SUMMARY

The chemical quality of ground water in the Kentucky River Area Development District is variable. There is no apparent areal trend or pattern of increasing or decreasing constituents. However, in most of the area deeper drilling results in obtaining water of higher sodium chloride (common salt) content.

The water is generally a calcium bicarbonate type, with significant amounts of sulfate at places, and variable amounts of sodium and chloride. The water is generally of good quality, except for the deeper wells that yield sodium chloride type water; also the iron content is commonly greater than 0.3 milligrams per liter and treatment for iron removal is needed for most uses. The quantity of good quality ground water in some areas may be sufficient only for domestic use.

In general, in the northwest part of the area (see map explanation), salty water (water reported to taste salty or known to contain more than 250 milligrams per liter of chloride) may be reached less than 100 feet below the level of the principal valley bottoms; in the rest of the area, salty water may be reached 100-200 feet below the level of the principal valley bottoms. However, in the northwest part of the area, fresh water possibly may be obtained from basal Pennsylvanian age sandstones below brackish water (see Davis, 1978) about as far southeastward as a northeast-southwest line through Jackson.

SELECTED REFERENCES

Davis, R. W., 1978, Map showing availability of ground water in Kentucky River Area Development District, Kentucky: U.S. Geological Survey Misc. Field Studies Map MF-865-D.

Kilburn, Chabot, Price, W. E., Jr., and Mull, D. S., 1962, Availability of ground water in Bell, Clay, Jackson, Knox, Laurel, Leslie, McCreary, Owsley, Rockcastle, and Whitley Counties, Kentucky: U.S. Geol. Survey Hydrol. Inv. Atlas HA-38.

Mull, D. S., 1965, Ground water resources of the Jenkins-Whitesburg area, Kentucky: U.S. Geol. Survey Water-Supply Paper 1809-A, 36 p., 2 pls.

Price, W. E., Kilburn , Chabot, and Mull, D. S., 1962a, Availability of ground water in Breathitt, Floyd, Harlan, Knott, Letcher, Martin, Magoffin, Perry, and Pike Counties, Kentucky: U.S. Geol. Survey Hydrol. Inv. Atlas HA-36.

_____1962b, Availability of ground water in Boyd, Carter, Elliott, Greenup, Johnson, Lawrence, Lee, Menifee, Morgan, and Wolfe Counties, Kentucky: U.S. Geol. Survey Hydrol. Inv. Atlas HA-37.

INDEX MAP

MAP SHOWING QUALITY OF GROUND WATER IN KENTUCKY RIVER AREA DEVELOPMENT DISTRICT, KENTUCKY

By
R. W. Davis

1978

INTERIOR—GEOLOGICAL SURVEY, RESTON, VA.—1979—L79479

For sale by Branch of Distribution, U.S. Geological Survey, 1200 South Eads Street, Arlington, VA 22202