w184

TOWN OF DONNELLSON

DATE ---------- 1925
DEPTH ---------- 1095
TESTED ---------- 80 gallon per minute

DRILLED WELL - CASING RECORD
67 feet of 8"
285 feet of 6"
708 feet of 4-1/2"

DRILLERS LOG OF WELL:
61 feet of clay
6 feet of sand
struck rock at 67 feet
325 feet of shale
finished with 4½" hole at bottom (small)

068-06W-33 CCB

IOWA GEOLOGICAL SURVEY W-0184

In Cooperation with U. S. Geological Survey

RECORD OF WELL




Location:

Town: Donnellson (NE) (SW): County Lee,

NW-SW-SW sec. 33 T 68 N., R. 6 W. Franklin Twp.

Well name and number Town Well (1925)

Owner Town of Donnellson Address

Tenant Address

Contractor L. M. Schlicher Address Donnellsen

Drillers

Drilling dates 1925

Well data:

Elevations: Drilling curb 703 feet; Land surface 703 feet

Determined by WJB' H. Level

Topographic position Upland plain

Total depth: Reported feet, Measured 1095 feet

Drilling method

Hole and casing data 8 1/4" casing to 67'; 6" d. 285'; 4 1/2" d. 308'

This was to have been plugged in ~~the~~ June 1941

Original depth to water ft. above/below Date

Original elevation of water level ft.; Source of data

Sources of water: Principal St Peter; Others Mississippian

Galena-Platteville

Production data: Date _____

Static depth to water 80 Measuring point _____
Pumping level _____ at _____ g.p.m.

Specific capacity _____ g.p.m. per ft. drawdown; Temperature _____ °F.

Pump data: Type pump _____ Column Dia. _____ Length _____
Cylinder or bowls: Dia. _____ Length _____ Suction pipe _____

Power _____ Airline _____

Estimated rate of production: _____ g.p.m. for _____ hrs. a day

Use of water _____

WATER ANALYSES (in parts per million)

| | | | | |
|---|---|---|---|---|
| Date samples | Feb. 22, 1940 | | | |
| Sampled by | H.G. Hershey | | | |
| Total solids | 1774 | | | |
| Insoluble matter | 11.0 | | | |
| Alkalinity (Meo) | 394.0 | | | |
| Alkalinity (Phn) | 0.0 | | | |
| pH | 7.0 | | | |
| $Fe_2O_3$+ $Mn_2O_3$+$Al_2O_3$ | 6.0 | | | |
| Alkali as sodium | 94.8 | | | |
| Calcium | 305.1 | | | |
| Magnesium | 91.7 | | | |
| Iron (unfiltered) | 1.7 | | | |
| Manganese | Trace | | | |
| Nitrate | 0.0 | | | |
| Fluoride | Trace | | | |
| Chloride | 7.0 | | | |
| Sulfate | 875.9 | | | |
| Bicarbonate | 480.7 | | | |
| Hardness (ppm) | 1142 | | | |
| Hardness (gpg) | 66.8 | | | |

Remarks _____

Laboratory data: Sample storage location _____

Sample range 275-1095 No. spls. 85 No. dupls. & cond. _____

Spls. prepared by _____ Washed range _____ by _____

Driller's log and cond. _____

Insoluble residues: Prepared by _____ Studied by _____ Strip log _____

Microscopic study Huff & Harris strip log Huff & Harris

Gen. log _____ Correl. by Huff & Harris

W-0184
log

IOWA GEOLOGICAL SURVEY
Iowa City, Iowa

Well Log Record

Owner of well Donnelson city #1 County Lee

Tenant _____ Town Donnelson

Location NW-SW-SW sec. 33, T. 68 N., R. 6 E. W. Franklin Twp.

Curb elevation 709 ft. Present depth _____ ft. final depth _____ ft.

Static level: (Depth to water above / below curb) _____ ft. Pumping level _____ ft. at _____ gpm.

Contractor _____ Date drilled _____

| Description* | FEET | | | Description* | FEET | | |
|---|---|---|---|---|---|---|---|
| | Thick | From | To | | Thick | From | To |
| Wapsie | | | 838 | | | | |
| Upper buff | | 838 | 880 | | | | |
| Drab | | 880 | 980 | | | | |
| "grayish" | | 980 | 990 | | | | |
| Oilrock | | 990 | 1000 | | | | |
| Platteville | | 1000 | 1035 | | | | |
| Glenwood? | | 1035 | 1095 | cored galena dolomite & chert at 1090 | | | |
| | | | | | | | |
| | | | | | | | |

*Abbreviate descriptions; use one line for each formation.

Remarks on water zones and casings _____

Temperature: Air _____ °F., Water _____ °F. at _____ A.M. / P.M. _____ 19__.

Record obtained from Paul Herbert Recorded by _____

## DONNELLSON, LEE COUNTY

(Altitude 703 feet)

A deep well was drilled for this town in 1925 by J. M. Schlicher, who furnished the facts given together with samples of the cuttings. The depth is 1095 feet, the diameters are 8¼, 7 5/8, 6 and 4½ inches. The chief water bed is the Saint Peter sandstone. Water was found also at 136 feet in Mississippian sandstone and at 720 feet in Silurian or Devonian limestone. The lower 50 feet of the Galena and Platteville limestones are also water bearing.

The water struck at 720 feet had a static level of 150 feet below the curb. At 990 feet water began to rise in the drill hole, and the water from the Saint Peter sandstone lifted the level to 80 feet below the surface of the ground.

The well is cased with 8¼ inch casing to 67 feet, 6 inch to 285 feet, and 4½ inch to 708 feet.

The discharge is equal to the capacity of the pump, viz., 80 gallons per minute. This drill hole was put down in an old well 275 feet deep at a cost of $3226. The casing cost $1137 in addition.

### Chemical Analysis

| Probable Combinations | Grains per U.S. Gallon |
|---|---|
| Silica | 0.607 |
| Oxides of iron and aluminum | 0.186 |
| Calcium carbonate | 2.350 |
| Calcium sulphate | 54.783 |
| Magnesium carbonate | 18.880 |
| Sodium and potassium sulphate | 33.099 |
| Sodium and potassium chlorides | 1.020 |
| Total Solids | 110.960 |

### Record of Strata

| | Depth in feet |
|---|---|
| Pleistocene and Recent (67 feet thick; top 696 feet above sea level): | |
| "Clay" | 0-61 |
| "Sand" | 61-67 |

| | Depth in feet |
|---|---|
| **Mississippian:** | |
| Meramec and Keokuk (208 feet thick; top 629 feet above sea level) | |
| "Limestone" | 67-136 |
| "Sandstone" | 136-138 |
| "Limestone" | 138-150 |
| "Shale, blue" | 150-275 |
| Burlington group (93 feet thick; top 421 feet above sea level) | |
| Limestone, whitish, macrocrystalline, soft in large flakes | 275-290 |
| Limestone, whitish, crystalline-earthy; much blue-gray chert and chalcedonic silica | 306 |
| Chert; earthy whitish limestone; some gray shale | 320 |
| Chert, blue-gray | 330 |
| Limestone, whitish and blue-gray, macrocrystalline-earthy, in large thin chips | 348,360 |
| Kinderhook shale (325 feet thick; top 328 feet above sea level) | |
| Shale, greenish and blue, calcareous, in concreted masses | 368,380 |
| Sandstone, gray, argillaceous, slightly calcareous, grains largely microscopic, in small chips | 392, 400 |
| Shale, bluish, in concreted masses | 408 |
| Sandstone, as at 392 | 419,430 |
| Shale, bluish, in concreted masses | 440 |
| Shale, blue-gray, calcareous, highly quartzose | 448,460 |
| Shale, blue, in concreted masses; 6 samples | 465-515 |
| Shale, brownish drab, burns white with slight empyreumatic odor | 520 |
| Shale, drab, fissile | 530 |
| Shale, blue-gray | 540 |
| Shale, drab | 550 |
| Shale, blue; 10 samples | 560-650 |
| Shale, brownish drab, with pyrite | 660 |
| Shale, blue-gray | 670-680 |
| **Devonian (and Silurian ?) (140 feet thick; top 3 feet above sea level):** | |
| Limestone, blue-gray, highly argillaceous and arenaceous, grains minute, ill-rounded, in chips | 693 |
| Limestone, as above, somewhat arenaceous; pyrite | 700 |
| Limestone, yellow-gray, brisk effervescence in cold dilute HCl, in fine sand | 711 |
| Shale, blue, in chips; some limestone | 720 |
| Limestone, blue, argillaceous, soft, crystalline-earthy, rapid effervescence, in small flakes | 730,740 |

| | Depth in Feet |
|---|---|
| Limestone, blue-gray, calcilutite, laminated some surfaces of laminae dark brown, effervescence rapid, in flaky chips, with powder of blue shale | 745 |
| Limestone, as above, yellow-gray, but with no brown surface films | 750,760 |
| Limestone, blue-gray, calcilutite, some dark and irregularly surfaced laminae, reaction rapid, some chocolate brown shale | 770,780 |
| Limestone, mottled brown-gray, in thin flakes, rapid response, fossiliferous, crystalline-earthy, some dark surfaces as above | 790 |
| Limestone, light yellow-gray, fine-grained, rapid reaction; 4 samples | 800-830 |
| **Ordovician:** | |
| Maquoketa shale (5 feet thick, top 137 feet below sea level) | |
| Shale, light green-gray and blue-gray, fissile, somewhat calcareous, in chips and concreted masses | 833-838 |
| Galena and Platteville (202 feet thick; top 142 feet below sea level) | |
| Dolomite, gray, crystalline, in small chips | 840,850 |
| Dolomite, light buff and gray in crystalline sand; 14 samples | 860-990 |
| Dolomite, as above, with brown flint | 996,1000 |
| Dolomite, or magnesian limestone, buff and light brown, in crystalline sand and small chips, not so slow effervescence as LeClaire dolomite; 3 samples | 1010-1030 |
| Saint Peter sandstone (55 feet thick; top 344 feet below sea level) | |
| Dolomite, buff, highly arenaceous, with imbedded grains fine, moderately well rounded, some showing secondary enlargements | 1040 |
| Sandstone, light yellow in mass, grains as above but without secondary enlargements, wide range in size; a little buff dolomite | 1050 |
| Sandstone, as above, clean, larger grains up to 0.7 mm. in diameter; 4 samples | 1060-1090 |
| Prairie du Chien (Shakopee dolomite, entered at 399 feet below sea level | 1095 |

Notes. The Kinderhook shales are present at Donnellson in great force, as at Burlington, Fort Madison and Mount Clara. Their summit shows a fall of 141 feet from Mount Pleasant, and of 247 feet from Burlington, and a continued fall to Keokuk of 50 feet, while it is about the same level as the top of the Kinderhook at Fort Madison.

The laminated calcilutite limestones with dark surfaces struck at 745 feet are of a rather rare type, and at once suggest the Otis horizon of the Wapsipinicon stage of the Devonian.

The shale at 833 feet is assigned to the Maquoketa with much uncertainty although its position is that of the shale, also thin, placed with the Maquoketa at Fort Madison, and that of the much thicker shales of the same stratigraphical position at Burlington and Mount Pleasant.

The Galena-Platteville has its usual facies, but the basal shale which so commonly rests upon the Saint Peter sandstone is absent as at Mount Pleasant and Keokuk.

The sandstone at 1040 feet is assigned with considerable confidence to the Saint Peter, as it agrees closely in position with the sandstones referred to that formation in the deep well sections of southeastern Iowa. On a cross section from Burlington to Baring, Missouri, the gradient of the Saint Peter intersects at Donnellson the location of the sandstone in question. Lithologically, however, it departs somewhat from type.