IOWA GEOLOGICAL SURVEY
In Cooperation with U. S. Geological Survey
RECORD OF WELL

#14972

location change from topo map PJH

Location: 3 miles west (NE)
Town: Solon (SW) County Johnson (E)
N ½, SW¼ sec. 29 T. 81 N., R. 6 (W) Twp.

new quarters NENENWSW

Well name and number MacBride State Park

Owner MacBride State Park Address Solon, Iowa

Tenant _____ Address _____

Contractor Howard M. White Address Waterloo, Iowa

Drillers 27 June to 6 August 1963

Drilling dates _____

Well data:
Altitudes: Drilling curb _____ feet; Land surface _____ feet _____

_____

Determined by _____

Topographic position _____

Total depth: Reported 390 feet; Measured _____ feet _____

_____

Drilling method cable

Hole and casing data 0' to 20' - 16" / 20' to 180' - 12"
180' to 390' - 8"
180' 8" of 8" #28 pipe set from
2" below surface to 180' 10" above

Original depth to water _____ ft. below _____ Date _____

Source of data _____

Sources of water: Principal _____

Others _____

PRODUCTION DATA

Date _____

Static water level 52'

Pumping water level 73'

Yield (g.p.m.) 13.5

Measuring point _____

Duration of pumping _____

Specific capacity _____

LABORATORY DATA TL 5-16

Well No. # 14972 Sample range 0-390 No of samples 71

No. of dupls. and cond. 70 Good Washed range 10-390

Samples prepared by [illegible] Date 13 August 1963

Logged by Parker Date 8/26/63

Correlations by Parker Date 8/26/63

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TABULATION OF WATER ANALYSIS
(Dissolved constituents in parts per million)

Town - Well No Owner	Date of coll.	Depth (ft.)	Geol. source	°F	Diss. solids	Fe	Mn	Ca	Mg	K	Na	CO_3	HCO_3	SO_4	Cl	F	NO_3	Hardness cal. as $CaCO_3$ tot	carb	non-carb	pH	Cond
SUI Lake MacBride Recreation Area	6/14/62	517	Silurian	51	403	.24	<.05	87	29	2.3	4	0	387	61	0.5	.25	<0.1	338	317	21	7.8	660
Solon Town No. 2 (1960)	10/20/60	481	"	53	274	.08	<.05	74	18	1.9	4.4	0	310	9.1	2.	0.2	<0.1	258	254	4	7.6	—
North Liberty School	5/3/61	398	"	54	814	0.2	.05	149	45	6.5	37	0	381	314	<0.5	.35	<0.1	556	312	244	7.2	1120

NOTES:

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Ground-Water Conditions at a Proposed Information and Exhibit Building at Lake MacBride Johnson County, Iowa

The following statements represent an interpretation of the available hydrologic data in the files of the Iowa and Federal Geological Survey investigations.

The State Conservation Commission is contemplating a well for domestic water supply for a new Information and Exhibit Building and camp area residence at Lake MacBride State Park. The site is about 800 feet north of the main dam at Lake MacBride approximately in the N½SW¼, or S½NW¼ sec. 29, T. 81N., R. 6W., Johnson County. Based on a curb elevation of 750 feet above sea level the site apparently lies on the upland slope overlooking the lake and the dam. A generalized log of the formations expected to underlie this vicinity down to the top of the Maquoketa Shale is summarized in tabular form as follows (all depths are referred to an assumed starting elevation of 750 feet):

Formation	Thickness(ft.)	Depth Range(ft.)
Quaternary System		
Pleistocene Series (loess at top, underlain by pebbly glacial till, may contain some interbedded ~~or~~basal sands and gravels)	75-110±	0-90±
Devonian System		
Wapsipinicon Formation (dolomite, with silty, cherty, and shaly zone in middle or lower part)	40	90±-130
Silurian System		
Niagaran Series (dolomite)	180	130-310
Alexandrian Series (dolomite with considerable chert)	65	310-375
Ordovician System		
Maquoketa Formation (shale)		375-

Forecast was based on DOW's bedrock map.

These depth figures may have to be modified somewhat owing to local irregularities in the bedrock surface and structure and thickness of the formations.

The principal sources of water to wells in this area seem to be limestone and dolomite strata representing the Cedar Valley and Wapsipinicon Formations of Devonian age and the underlying dolomites of Silurian age. Pre-glacial channeling may have completely eroded the Cedar Valley Limestone beneath the proposed drilling location north of the dam. Some water might be encountered in sand and gravel layers within or at the base of the glacial materials. However, available well data indicate the Silurian dolomites between about 130 and 375 feet will comprise the most dependable source for a satisfactory supply of good drinking water. Below this the next promising water-yielding zones probably will be the

Galena or St. Peter Formations several hundred feet deeper or possibly the Jordan Sandstone as much as 1000 feet below the base of the Silurian.

In 1957 two wells penetrating the lower Silurian dolomites were drilled at the Park, one at the custodians's residence in the NE¼ NW¼ sec. 29, T. 81N., R. 6W., and the other for the U. S. Corps of Engineers in the SE corner SW¼ sec. 29. According to the driller these wells produced 20 and 30 gpm with only 5-6 feet of drawdown. From this it appears that considerably larger yields could be developed at these wells merely by increasing the pumping rate. The State University of Iowa Recreation Area well put down in 1962 about a mile to the southeast reportedly produced 105 gpm with 102 feet of drawdown from the same aquifer. At Solon the new town well also finished in the Silurian produced 392 gpm with 166 feet of drawdown. All these wells are cased from the surface into the upper part of the Silurian rocks: In addition, the S.U.I. Recreation Area well has the casing grouted in place with neat cement to further guard against any mixing of the upper and lower waters. Mineral analyses indicate the water to be acceptable for drinking and other domestic uses. Since the new Park well is to be located close to Lake MacBride and the Coralville Reservoir, provision should be made for extending the casing from the surface for about 50 feet below the top of the Silurian because during periods of heavy pumpage the water level may be lowered far enough to reverse the hydraulic gradient and cause lake water to flow into and contaminate the ground water reservoir in the vicinity of the well. It is also advisable that the casing be cemented in place for its full length. In general, the best results occur in wells penetrating the complete thickness of the Silurian although it may not be necessary to drill this far for a production of only 30 gpm. If the initial output is too low acidizing the water zones may appreciably increase the original yield.

To sum up, plenty of water for a well at the proposed Information and Exhibit Building at Lake MacBride normally can be expected by drilling into the Silurian rocks between a depth range of about 200 and 375 feet. It is recommended that the well be cased and grouted in place at least 50 feet below the top of the Silurian or to a depth of about 180-200 feet. The water should be acceptable for drinkinguand all other domestic purposes.

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