

IOWA GEOLOGICAL SURVEY
In Cooperation with U. S. Geological Survey

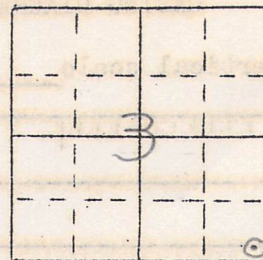
W-0035

RECORD OF WELL

Location:

Town: LAKE MILLS (N E)
(S W): County WINNEBAGO

SE/4 sec. 3 T 99 N., R. 23 W. Center Twp.



Well name and number Town Well

Owner _____ Address _____

Tenant _____ Address _____

Contractor _____ Address _____

Drillers _____

Drilling dates _____

Well data:

Elevations: Drilling curb 1266 feet; Land surface _____ feet

Determined by _____

Topographic position _____

Total depth: Reported 384 feet, Measured _____ feet

Drilling method _____

Hole and casing data _____

Original depth to water _____ ft. above _____ ft. below _____ Date _____

Original elevation of water level _____ ft.; Source of data _____

Sources of water: Principal Gakna; Others _____

Production data:

Date

Static depth to water _____ 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 _____

Sampled by _____

Total solids _____

Insoluble matter _____

Alkalinity (Meo) _____

Alkalinity (Phn) _____

pH _____

Fe₂O₃ + Mn₂O₃ + Al₂O₃ _____

Alkali as sodium _____

Calcium _____

Magnesium _____

Iron (unfiltered) _____

Manganese _____

Nitrate _____

Fluoride _____

Chloride _____

Sulfate _____

Bicarbonate _____

Hardness (ppm) _____

Hardness (gpg) _____

Remarks _____

Laboratory data:

Sample storage location _____

Sample range 122-384 No. spls. 26 No. dupls. & cond. 22 good

Spls. prepared by _____ Washed range _____ by _____

Driller's log and cond. _____

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

Microscopic study 122-384 IBC, gulf strip log 5/28/42 IBC, gulf

Gen. log ✓ yes Correl. by Carrier Carmody

Dr. M. A. Stainbrook's Notes

W-0035

Lake Mills (Winnebago)

City Well

- 122 Dolomite, crystalline, coarse
134 limestone, yellow, fine-grained
144 limestone, drab, fine-grained dolomitic. Fossil molds
154 dolomite, brown-gray, crystalline, coarse-grained. Fossil molds
164 same some fossil molds
174 dolomite, brown, crystalline, fine-grained similar
184 limestone, brown, fine-grained argillaceous looking, silty?
194 dolomite, brown, saccharoidal, granular
204 dolomite limestone, brown and brownish gray, fine-grained. shale, gray
214 dolomite light tan
224 dolomite, dark gray, medium-grained (Cedar Valley to here)
-
- 244 limestone, white, sublithographic (Davenport?)
-
- 254 dolomite, gray-black, fine-grained
264 dolomite, light gray, fine-grained. chert (fossil mold?)
274 dolomite, coarse-grained, tannish-brown
-
- 284 dolomite, tannish gray, coarse-grained. Much chert, white, clear, some chalky (Silurian?)
294 dolomite, tan, gray. (some chert, white) gypsum? crystals (Silurian?)
304 dolomite, brown, gray, medium-grained
314 dolomite, brown and gray. Chert, white and gray
324 dolomite, white. Chert, much, white, chalky. Shell fragments
334 dolomite, brown, coarse-grained. Much chalky chert
344 dolomite as above fine-grained some chalky chert
354 dolomite, coarse-grained in powder. Some chert
364 same
374 dolomite, coarse-grained, gray, chert, brownish-white, chalky Crinoid Joint Maquoketa type

Beds thoroughly dolomitized. No fossils preserved

- 122-224 Cedar Valley
244-284 Wapsipinicon?
284-324 Silurian?
324-374 Maquoketa

Both Silurian and Wapsipinicon present, or only one ???

IOWA GEOLOGICAL SURVEY
Generalized Log Based on Detailed
Description of Drill Cuttings

Name of Well Lake Mills City Well Survey No. W-0035
Location SE/c 3, 99 N., 23 W. - Winnebago County
Drilled by _____
Total Depth 385 ft. Curb Elevation 1266 ft. Static Level _____ ft.
Pumping Test _____ Hours _____ Min; Gal. per min. _____ Drawdown _____ ft. in _____ min.
Casing Data _____

No.	Rock Unit	Description of Formations	Thick.	From (feet)	To
1.	No sample		±120(?)	0	±120(?)
DEVONIAN SYSTEM					
	Shell Rock (?) formation				
2.	Dolomite, light buff, coarse-grained, dense, soft, calcareous, translucent		± 2(?)	±120(?)	122
	Cedar Valley formation				
3.	Dolomite, light medium yellowish brown, fine-grained, dense, granular, with strong trace embedded and free, clear coarse calcite crystals. Sand trace, loose, medium to coarse, angular unfrosted, to sugangular frosted by fine pits and coarse grooves		12	122	134
4.	Dolomite, light medium brownish gray mottled medium gray, fine-grained, granular, moderately porous, with strong trace sand embedded and free, coarse, subangular, well frosted		20	134	154
	Wapsipinicon (?) formation				
5.	Dolomite, light medium drab to medium brown, fine-grained, granular, dense to porous, argillaceous and silty from 154 to 164 feet. Trace selenite crystals, free, clear, acicular		20	154	174

Notes:

Survey No. W-0035

<u>No.</u>	<u>Rock Unit</u>	<u>Thick</u>	<u>From</u>	<u>To</u>
6.	Dolomite, light medium buffish drab mottled dark gray, fine-grained, dense with traces of sand and selenite crystals as in 154 to 174 feet	10	174	184
7.	Dolomite, medium brown, medium- to coarse-grained, porous in part, with sand and selenite crystals as in 174 to 184 feet	10	184	194
8.	Dolomite, light buff and brown to light medium brown, dense, subtranslucent, slightly saccharoidal, silty in part, with 15 % limestone, light gray, medium-grained, subtranslucent, subsaccharoidal from 204 to 214 feet. Shale trace 194 to 204 feet, light green noncalcareous, nonfissile. Sand 5% to 10%, cave in part. Selenite, trace	20	194	214
9.	Dolomite, medium grayish drab, fine-grained, saccharoidal in part, slightly silty and argillaceous, with trace embedded sand	10	214	224
10.	Limestone, very light to light gray and buff, sublithographic, dense, pure, with calcite crystals strong trace, loose and embedded, clear, coarse. One sample	20	224	244

ORDOVICIAN SYSTEM

Maquoketa formation

11.	Dolomite, light buff slightly grayish and drabish mottled dark brown and gray in part, fine-grained, saccharoidal, slightly argillaceous and silty, with embedded white fossil fragments 254 to 264 feet. Chert trace 264 to 274 feet, white, dull, dense, conchoidal, opaque. Selenite crystals trace, as above	30	244	274
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Ft. Atkinson member

12.	Dolomite 70%, light medium brownish drab, fine-grained, granular, soft, slightly argillaceous and silty. Chert 30%, pale bluish gray, vitreous, dense, conchoidal, translucent, botryoidal surfaces, chalcedonic, with strong trace quartz and selenite crystals	10	274	284
13.	Dolomite, light medium drabish brown to drab with few black and brown specks, fine-grained, granular, slightly porous, argillaceous and silty, with trace chert, light gray, dull to vitreous, granular, conchoidal, free and embedded in dolomite. Trace crystalline quartz and selenite	20	284	304
14.	Dolomite, light medium drabish gray, fine-grained, granular, silty, and argillaceous, with trace embedded medium sand. Chert 15%, white to smoky gray, subvitreous, dense, conchoidal, subtranslucent to opaque. Sand 10%, free, medium-grained, subangular to curvilinear, well frosted	10	304	314

Survey No. W-0035

<u>No.</u>	<u>Rock Unit</u>	<u>Description</u>	<u>Thick</u>	<u>From</u>	<u>To</u>
Galena formation					
15.	Limestone, pale buff and drab, fine-grained, with traces embedded coarsely crystalline black fossils (brachiopods and crinoid stems). Sand trace, as in 304 to 314 feet.		10	314	324
16.	Dolomite, medium brown, fine-grained, granular, subsaccharoidal in part, cherty. Chert 15%, grading downward to 5%, very light gray, dull, granular, botryoidal, opaque, slightly oolitic. Limestone 10% 344 to 364 feet, light drabish gray, very fine-grained, dense		40	324	364
17.	Limestone, light buff, mottled dark gray by fossil fragments, and light reddish brown by dolomite rhombs, fine-grained, with few coarsely crystalline fossil fragments embedded, strong trace loose, clear, coarse calcite crystals		10	364	374
18.	No sample		10	374	384
Total depth					384

Notes on Lake Mills City Well
Winnebago County
Survey No. W-0035

Samples are not complete. The first one is labeled 122 feet, apparently the bottom of interval, leaving a gap above ± 120 feet. All samples are taken at 10 foot intervals except one (224' to 244'). There is no sample for the bottom 10 feet of the hole.

Shall Rock (?). The upper sample consists of light buff, coarsely crystalline, calcareous dolomite. Inasmuch as the lithology is not typically Cedar Valley and differs markedly from the samples below, this dolomite may be Shell Rock.

Cedar Valley - Wapsipinicon. The boundary between Cedar Valley and Wapsipinicon may be much too high. It was placed there on the evidence of change in lithology from a calcareous dolomite with traces of embedded sand above, to a silty argillaceous dolomite below. The limestone in the 224 to 244 feet interval is believed to be the one directly overlying the Maquoketa in Mason City wells and the Hampton City Well in Franklin County.

Maquoketa. Below the limestone occurs ± 80 feet of silty and argillaceous limestone with minor amounts of chalcedonic chert, traces of authigenic quartz and small needles of selenite. This is believed to represent the Maquoketa.

Galena. Top sample of Galena is a pale buff and drab fine crystalline slightly phenoclastic limestone with typical large fat crinoid stem plates; the "doughnut" type. Below the limestone is mostly light medium brown fine crystalline, with scattered small amounts of very light gray, granular, opaque chert.

Sheet No. 1 Name of Well City Well Survey No. W0035

Location Lake Mills - Winnebago Co. Date Drilled Analyst Carrier 5/27/42

100

10

20

30

40

50

60

70

80

90

200

First Sple marked "122" - assumed to be lowermost depth of interval. - J.B.C.

Dolomite, lt bf, crse xln, dense, soft, medium calcareous, translucent.

Dol. - lt med yellowish-brn, fn xln, dense granular with tr clear coarse xln calcite emb. v strong tr free.

Sd. loose, med. to coarse, A to d. - a grains med frsted. by fn. pits + coarse grooves. - trace

Tr. red stained grains, non-calc. prob pink stained qtz - tr.

Dol. silty calc., lt med brnsh-gr mott med gr. fn xln gran, medium porous with tr emb coarse, d, well frsted sd., + strong tr of same sd. loose.

Glacial sd. cave - tr

Sple ditto 134-144. but silty darker.

Dol. lt med drb, fn xln, gran, porous, med arg & silty

Dol. med brn. fn xln. dense gran to porous semi-druzy

Sand loose med. d, well frsted. solution ? pits + grooves.
Selenite ex. - clear - tr.

Dol. lt med bf-drk mott dk. gr. fn xln, dense

Sd. as ab. - faint tr

Tr. glacial cave

Selenite xls aa - strong tr.

Dol. med brn, med to crse xln porous in pt.

Sd. med to coarse A to d - fully frsted, - strong tr

Glacial sand-cave - tr.

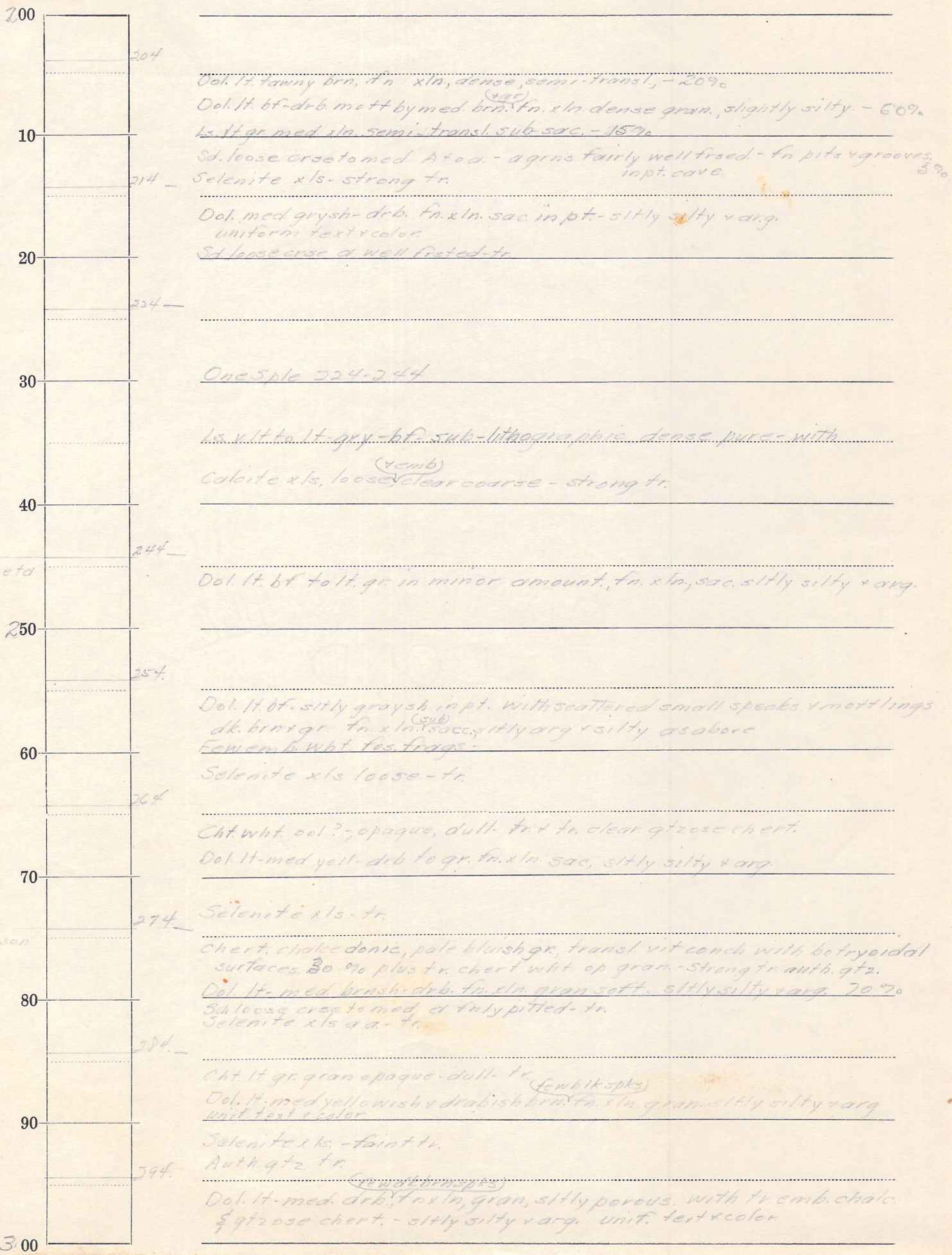
Selenite as ab. tr.

Dol. lt bf to lt med brn, fn xln dense to tr. ssc. - 90% 90%

Sd. loose v. crse to med. A to d. poorly frsted for most part. glacial cave, at least in part - 10%

Sh. lt grn soft non-calc, non-fissile - tr.

Location Lake Mills Winnebago Co. Date Drilled 5/21/42 Analyst Carrier



Location Lake Mills Winnebago Co. Date Drilled Analyst Carrier 5/28/42

300

304-

Chrt. chalcedonic, wht to med. smoky gr. mottled. opaque to semi-transl. mostly semi-vitreous. 15%
Dol. lt. med drbsh-gr, fn. xln gran, silty & arg. with tr. emb med sd.

10

Sd. med. w to C, well frsted by fn. pits & occasional small and il faces log.

314-

Galena

Ls. pale bf & drb. fn. xln. to sltly phenoclastic, foss. corals (Favosites?) brach. frags. & "doughnut" cri stem plates.

20

Sltly mott. blk. (Fos. frags)

Sd. coarse d. faintly frsted - tr.

324-

Chrt. w. lt. gr. gran op. sltly botry suggesting col. or crypt. few & small blk. spks conch in small pt. - 15%.

Dol. med. brn, fn. xln. gran to sub-sac. not porous. - sltly cherty.

30

Sd. frags above.

Calcite, coarse clear xls loose - strong tr.

334-

Chrt. gran et cas above - with little gtzose - 5%.

Dol. lt. med brn. fn. xln. gran et cas above. - 95%.

40

Sd. loose fn. d frsted. faint tr.

xln. calcite ar. - faint tr.

344-

50

Chert & dolomite as above - v. fnly. divided spls.

Ls. lt. drbsh. gr, v. fn. xln. dense, mottled. 10%.

354-

60

Spl. ditto 344-354.

364-

Ls. dolm (with fn. lt. brn. dol. rhombs emb. abundtly), lt. bf mott dk gr. by foss frags & lt red-brn. by dol rhombs. & some what iron stained yell-orange, fn. xln. sltly phenoclastic, scrappy, heterogeneous, with strong tr. clear, loose calcite xls.

70

374-

Note in Last spl box, "384' unable to get sample. Appeared to be shale & whitish clay."

80

384-

90

400