W-0335

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

RECORD OF WELL

Location:

Town: BONDURANT (½N E. S. 3W); County Polk E.

SE/c NE sec. 28 T. 80 N., R. 23 W. Douglas Twp.

Well name and number Bolton & Hay Dairy Farm

Owner L. Bolton Address 216 2nd St. Des Moines

Tenant Floyd Klauenberg Address RFD Bondurant

Contractor McCutcheon Well Co. Address

Drillers

Drilling dates Oct. 1935

Well data:

Elevations: Drilling curb 962 feet; Land surface feet

Determined by A.C. Tester

Topographic position plain

Total depth: Reported 487 feet, Measured feet

Drilling method cable tool

Hole and casing data 214'7" of 6-inch casing from 0 to 214'7";
(Give amount, size, kind, and depth of all casing; type and
159'3" of 4-inch casing from 183'6" to 342'9";
position of seals and packers; cementing; how finished--perforated pipe, screen,
160'4" of 3-inch casing from 326'8" to 487' perforated
gravel pack, open hole, etc.)
in bottom joint

Original depth to water 150 ft. above below Date

Original elevation of water level 812 ft.; Source of data driller

Sources of water: Principal Mississippian (Keokuk) 450-487'; Others

Production data: Date _____

Static depth to water 150 Measuring point _____

Pumping level _____ at 7 g.p.m.

Specific capacity _____ g.p.m. per ft. drawdown; Temperature 53½ * °F. probably higher

Pump data; Type pump cylinder Column Dia. _____ Length 220

Cylinder or bowls: Dia. _____ Length _____ Suction pipe 0

Power Electric Airline _____

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

Use of water Private domestic - livestock

WATER ANALYSES (in parts per million)

Date sampled	Jan 1, 1937			
Sampled by	A.C. Tester			
Total solids	1662.0			
Insoluble matter	21.0			
Alkalinity (Meo)	320.0			
Alkalinity (Phn)	0.0			
pH	7.4			
Fe_2O_3+ Mn_2O_3+Al_2O_3	9.0			
Alkali as sodium	469.0			
Calcium	52.0			
Magnesium	25.0			
Iron (unfiltered)	1.6			
Manganese	0.00			
Nitrate	0.00			
Fluoride	6.0			
Chloride	35.0			
Sulfate	831.4			
Bicarbonate	390.4			
Hardness (ppm)	236.0			
Hardness (gpg)				

Remarks _____

Laboratory data: Sample storage location _____

Sample range 0-487 No. spls. 102 No. dupls. & cond. 88 f to 9

Spls. prepared by _____ Washed range 0-487 by Gulf

Driller's log and cond. Yes good

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

Microscopic study 0-487 Talley strip log Dec. 10, 1941

Gen. log _____ Correl. by Talley

IOWA GEOLOGICAL SURVEY
Driller's Log

Bolton and Hay Well
SE corner NE¼, Sec. 28, T80N, R23W.
Bondurant, Polk County

Curb elevation = 962

	Thick	From	To
PLEISTOCENE SYSTEM			
Top soil	5	0	5
Yellow clay	5	5	10
Blue sandy drift	5	10	15
Blue drift	25	15	40
Yellow sandy drift	30	40	70
Dark sandy gray drifts	129	70	199
Sand	6	199	205
PENNSYLVANIAN SYSTEM			
Light gray shale	9	205	214
Sand rock dark	1	214	215
Dark gray shale, hard bands	5	215	220
Light gray shale, sand rock bands	15	220	235
Dark gray shale, sand rock bands	5	235	240
Light gray shale, sand rock bands	20	240	260
Dark gray shale, lime rock bands	60	260	340
MISSISSIPPIAN SYSTEM			
Sandy lime rock	15	340	355
Light gray shale	5	355	360
Sand rock	10	360	370
Lime rock	5	370	375
Light gray shale	5	375	380
Brown lime rock	15	380	395
Light gray shale	5	395	400

BOLTON & HAT WELL

	Thick	From	To
Lime rock	15	400	415
Sandy lime rock, dark color	30	415	445
Sandy lime rock, light color	42	445	487

- 962'

WELL RECORD

'ell is located 3 miles in a West ½ North direction from Bondurant in Iowa, in the
(Post office) (State)

¼ ¼ sec. T. R.

Owner Bolton + Hay

Address

Contractor

Address

Well begun , 193 ; completed , 193

Rig used—cable, rotary, jet, or

Maker

Diameter of well at mouth 6" (Inches); at bottom 3 (Inches)

Depth of well 487 (Feet); Length and size of casing 214-7 of 6"

159-3 of 4" set at 342-9 160-4 of 3" set at 487

Water at 150 from ground ft. (Depths in feet)

Main supply at from 450 down 487 ft.

Water head 120 ft ft.

Is well pumped? yes ; Yield 7 gal (Gallons per minute)

Recorded by

Address

Sample No.	DEPTH		THI
	From	To	
1	0	5	5
2	5	10	5
3	10	15	5
4-5-6-7 8 9-10-11	15	40	25
12-13-14	40	70	30
15 to 40	70	199	129
41-44	199	205	6
45-46	205	214	9
47	214	215	1
48-	215	220	5
49-51	220	235	15
52	235	240	5
53 56	240	260	20

DESCRIPTION OF BEDS

D OF ROCK, COLOR, HARD OR SOFT WATER, ETC.

istocene System

op Soil

Yellow Clay

Blue Sandy Drift

Blue Drift

Yellow Sandy Drift

Dark Sandy Gray Drift

Sand.

Pennsylvanian System

Lite Gray Shale

Sand Rock Dark.

Dark Gray Shale Hard Bands

lite Gray Shale Sand Rock Bands

Dark Gray Shale L.R.B.

Lite " " L R B

Sample No.	DEPTH		THI
	From	To	
57 72	260	340	6
73-74	340	355	15
75-7	355	360	5
76-77	360	376	16
78	370	375	5
79	375	380	5
80-82	380	395	15
83	395	400	5
84-86	400	415	15
87-92	415	445	30
93-101	445	487	42

DESCRIPTION OF BEDS

) OF ROCK, COLOR, HARD OR SOFT WATER, ETC.

ark Gray shale Lime Rock Band
Mississippian
Sandy Lime Rock
Light Gray shale
Sand Rock
Lime Rock
Light Gray shale
Lime Rock
Light Gray shale
Lime Rock
Sandy Lime Rock Dark Color
Sandy Lime Rock Lit Color
Soft Water

Sheet No. 1 Name of Well Bolton and Hay Dairy Farm Survey No. W-0335

Location Bondurant, Iowa (3 mi. North 1 mi. West) Date Drilled Oct 1935 Analyst Talley

Elev. 962'

Curb Elev. 962'

0–5	Soil - dk. brwn. leached, oxidized, silty, sandy; containing root stems and organic matter
5–10	Loess - ylw-bf. unleached, oxidized, sandy;
10–15	Drift - med. gry. unleached unoxidized, micaceous; sand, coarse, and pebbles. up to 4 mm., 10% ±
15–20	Drift - similar to 10-15
20–25	Drift - med. gry. unleached, unoxidized, micaceous; Sand, coarse, and pebbles, up to 8 mm. 5-10%
25–30	Drift - med. gry. unleached, unoxidized, micaceous; Sand, coarse, and pebbles up to 4 mm. 5-10%; hematite, tr.
30–35	Drift - med. gry. unleached, unoxidized. micaceous; Sand, coarse, and pebbles up to 4 mm. 5-10%
35–40	Drift - bf. leached, oxidized, micaceous; Glacial sand, coarse, and pebbles up to 8 mm. 5-10%
40–45	Drift - bf. unleached, oxidized. micaceous; Glacial sand, coarse, and pebbles up to 8 mm. 5-10%.
45–50	Drift - similar to 40-45
50–55	Drift - bf unleached, oxidized. micaceous; Glacial sand, and pebbles up to 4 mm. 10%
55–60	Drift - bf. unleached, oxidized, micaceous; Glacial sand, and pebbles up to 16 mm. 10%
60–65	Drift - similar to 55-60
65–70	Drift - bf. unleached, oxidized, micaceous; Glacial sand, coarse, and pebbles up to 16 mm, 10% gypsum, tr.
70–75	Drift - med. gry. unleached, unoxidized, micaceous; Glacial sand, coarse, and pebbles up to 8 mm. 10%
75–80	Drift - med. gry. unleached, unoxidized, micaceous; Glacial sand, coarse, and pebbles up to 8 mm 10%.
80–85	Drift - med gry. unleached, unoxidized, micaceous; Glacial sand, coarse and pebbles up to 4 mm 10%
85–90	Drift - med. gry. unleached, unoxidized, micaceous; Glacial sand, coarse, and pebbles up to 4 mm 10%
90–95	Drift - similar to 85-90
95–100	Drift - med gry. unleached, unoxidized, micaceous; Glacial sand, coarse, and pebbles, up to 4 mm. 10% ±

Sheet No. 2 Name of Well Bolton and Hay Dairy Farm Survey No. W-0335

Location Bondurant, Iowa (3 mi. North, ½ mi. West) Date Drilled Oct. 1935 Analyst Talley

Depth	Description
100	Drift- med. gry. unleached, unoxidized, micaceous; Glacial sand, coarse, and pebbles up to 16mm., 10%
105	Drift- med. gry. unleached, unoxidized, micaceous; Glacial sand, coarse, and pebbles up to 16 mm. 10%
110	Drift- med. gry. unleached, unoxidized, micaceous; Glacial sand, coarse, and pebbles up to 16 mm. 10%
115	Drift- med gry similar to 110-115
120	Drift. med. gry. unleached, unoxidized; micaceous; Glacial sand, coarse, and pebbles up to 16mm 10-15%
125	Drift- med gry. unleached, unoxidized, micaceous; Glacial sand, coarse, and pebbles up to 8mm 10-15%
130	Drift- similar to 130-135
135	Drift- med gry. unleached, unoxidized, micaceous; Sand, coarse, and pebbles up to 16mm 10-15%
140	Drift. med gry. unleached, unoxidized, micaceous; Sand, coarse, and pebbles up to 8mm 10-15%
145	Drift- med. gry. unleached, unoxidized, micaceous; Sand, coarse, and pebbles, up to 8mm., 15-25%
150	Drift- med gry. similar to 145-150
155	Drift- med. gry. unleached, unoxidized, micaceous; Sand coarse, and pebbles up to 8mm. 10-15 %
160	Drift- similar to 155-160
165	Drift. med. gry unleached unoxidized, micaceous; Glacial sand, coarse and pebbles up to 8 mm. 10%
170	Drift - Similar to 165-170
175	Drift- med. gry. unleached, unoxidized, micaceous; Glacial sand, coarse, and pebbles up to 8mm. 5-10%
180	Drift- med gry. unleached, unoxidized, micaceous; Glacial sand, and pebbles up to 16mm. 5-10%
185	Drift - med. gry. unleached, unoxidized, micaceous; Glacial sand, and pebbles up to 16 mm - 5-10%
190	Drift- med. gry., unleached, unoxidized, micaceous; Glacial sand, coarse, and pebbles up to 16mm. 5-10%
195	Drift- med gry. unleached, unoxidized, micaceous; Glacial sand, coarse, and pebbles, up to 16. mm. 10-15%
199	Sand.- Area. maj. gr. ½-¼, prim. sub. 1-½; Silt and clay as cement 15-20% ±
200	

Sheet No. 3 Name of Well Bolton and Hay Dairy Farm Survey No. W-0335

Location Bondurant Iowa (3 mi. North ½ mi. West) Date Drilled Oct. 1935 Analyst Talley

Elev. 757' Pleist. / Penn

Depth	Description
200 (199)	See previous page.
202	Sand. A to a, maj. gr. ½-¼, prin. sub 1-½, max. gr. 8-4;
203–204	Sand – A to a, maj. gr. ½-¼, prin. sub 1-½, max. gr. 4-2.. Silt and clay as cement 15-20%
204–205	Sand: A to A, maj. gr. 2-1, prin. sub 1-½, max. gr. 4-2;
205	Sls. 98% lgt. gry. non-calc. firm, containing small lenses of very fine (1/8-1/16) sand.
10 (210)	Sls. 98% lgt. gry. calc. 3-5% sol. firm, containing small lenses of very fine (1/8-1/16) sand.
214	Sls. 95% med. to dk. gry. calc. 3-5% sol. tough, firmly cemented, "tight"; pyrite, 5%± in xline masses.
215	Sh. 98% dk. gry to blk. carb. non-calc. micaceous, firm.
20 (220)	Sls. 70% lgt. gry. non-calc. firm; Ss. 20% a to C. maj. gr. ¼-1/8, prin. sub 1/8-1/16, thinly laminated; Sh. 10% gry. calc. 2-3% sol. soft, friable (may be caved)
225	Sls. 70% Similar to 220-225
30 (230)	Sh. 98% med. to dk. gry. non-calc. soft friable.
235	Sls. 98% med. to dk. gry. calc. 3-5% sol. firm, in part shaly.
40 (240)	Sls. 98% med. to dk. gry. calc. 3-5% sol. firm, in part shaly; containing lenses of very fine (1/8-1/16) sand.
245	Sls. 98% similar to 240-245
50 (250)	Sls. 90% lgt. gry. calc. 3-5% sol., soft, friable. Sh. 10% dk. gry to blk. carb. non calc. firm.
255	Sh. 98% dk. gry to blk., carb. calc. soft, friable;
60 (260)	Sh. 98% dk. gry. to blk. carb. calc., 3-5% sol. soft, friable, pyrite 1%
265	Sh. 90% dk. gry to blk. carb. calc. 3-5% sol: soft - friable; Sls. 10% lgt. gry. non-calc. firm.
70 (270)	Sh. 90% dk. gry to blk., carb. calc. 5-10% sol., soft, friable;
275	Sh. 90% dk. gry to blk. carb. calc. 5-10% sol. soft, friable; Qtz, chert, and igneous rock pebbles, a to r, 10% (Cong.??)
80 (280)	Sh. similar to 275-280
285	Sh. 95% med. to dk. gry. calc. 5-10% sol. firm. silty Qtz pebbles, 5% a to C up to 4 mm.
90 (290)	Sh. 95% similar to 285-290
295	Sh. 90% med. to dk. gry. calc. 5-10% sol. firm. silty; Qtz, chert, and abraded sls. pebbles: 10%±
00 (300)	

Sheet No. 4 Name of Well. Bolton and Hay Dairy Farm Survey No. W-0335

Location Bondurant, Iowa Date Drilled Oct. 1935 Analyst Talley

00 300 Sh. 80% med. to dk. gry. calc. 5-10% sol. soft, friable; Qtz., chert. pebbles 20%, up to 16%

305 Sh. Similar to 300-305

10 310 Sh. 80% med. to dk gry. calc. 5-10% sol. firm, silty; Qtz. and chert pebbles up to 8mm 19%; pyrite, 1%

315 Sh. 80% Similar to 310-315

20 320 Sh. 98% dk. brnh gry. non-calc. firm, tough "slaty;"

325 Sh. 98% med. gry. non-calc. soft, friable; pyrite, 1%

30 330 Sh. 90% lgt. to med gry. non-calc. soft, friable; chert, and qtz. pebbles 9%, up to 8mm.; pyrite, 1%

335 Sh. 90% similar to 330-335

40 340 Pyrite. 65%, in xline masses; Chert, 10% dk. brwn. and med gry; Sand 15% A to a, medium; Sh. and sls. gry. red, bf., in small chips 10%

345 Sand 50% A to a, maj. gr. 1/2-1/4, prin. sub 1-1/2; Chert 10% bf and dk. brwn; Sh. and Sls. 20% bf, lgt. and dk. gry; Ls 18% bf. earthy texture soft friable; pyrite, 2% ±

50 350 Sh. 70% dk gry to blk. carb calc 10-15% sol. soft friable; Ls. 30% bf to lgt. gry. earthy texture, soft, argillaceous, friable.

Elev. 608' Penn Miss 354'

355 Ls. 90% bf to lgt brwn. earthy texture, soft, friable, argillaceous; Sand. 25% A to a, maj. gr. 1/2-1/4, prin. sub 1-1/2; Chert, 4% wh and lgt. gry. pyrite, 1%

60 360 Ls. 90% bf. to lgt. brwn. earthy, texture, soft, friable, argillaceous; (insol. res. 35-45% ±); Sh. 9% dk. gry. to blk non. calc (may be caved); pyrite, 1%

365 Ls. 85% lgt. to med. brwn. med. xline, granular, porous, friable; Sand 14% maj. gr. 1/4-1/8, prin. sub. 1/2-1/4; pyrite, 1%; glauconite, tr. Sh. probably caved, 5% ±

70 370 Ls. 75% lgt. to med. brwn. earthy texture, slightly argillaceous, soft, friable; Chert, 15% wh. and lgt. gry; Sand, 9% A to a, maj. gr. 1/4-1/8, prin. sub. 1/2-1/4; pyrite, 1%; glauconite tr.

375 Sh. 98% lgt gry calc. 15-25% sol. Soft. friable;

80 380 Ls. 90% med to dk. brwn, earthy texture, argillaceous, friable, porous; Chert. 9% wh. dk. brwn., and lgt. gry; pyrite, 1%

385 Ls. 90% Similar to 385-390

90 390 Ls. 70% med to dk brwn. earthy texture; argillaceous, friable; Sls 19% bf. non. calc. firm; pyrite, 1% ± Chert 10% wh. med brwn. and lgt gry.

395 Sh. 60% lgt. gry calc. 25-35% sd., firm; Ls. 38% lgt. gry. earthy texture, argillaceous. friable; Chert. 2% wh. and lgt. gry.

00 400

Sheet No. 5 Name of Well. Bolton and Hay Dairy Farm Survey No. W-0335

Location Bondurant Iowa Date Drilled Oct. 1935 Analyst Talley

400	Ls.	90% lgt. to med. gry. earthy texture, argillaceous, friable porous; pyrite, 1%; Chert 9% wh. dk. brwn.
405	Ls.	90% lgt. to med gry-brwn earthy texture, argillaceous, friable, porous; pyrite, tr.; Chert 10% wh. and dk. brwn.
410	Ls.	Similar to 405-410
415	Ls.	90% med. to dk. brwn. earthy texture. argillaceous; Chert, 9% wh. dk. brwn. and lgt. gry; pyrite, 1%±;
430	Ls	95% med to dk gry. med. to fine xline, firm, slightly argillaceous. Chert, wh and gry. 5%; pyrite, tr.
425	Ls.	95% med. to dk. gry. med to fine xline firm; slightly argillaceous; chert 5% wh and gry; pyrite, tr; euhedral qtz xtals, tr.
430	Dol.	90% med. to dk. brwn med. xline, granular, friable, slightly argillaceous; Chert, 10% wh. and dk brwn. lfs; pyrite, tr.
435	Dol.	90% med. to dk. brwn. med. xline, granular friable, porous; slightly argillaceous; Chert, 9% dk. brwn.; pyrite 1%.
440	Dol.	70% med. to dk brwn. med. xline, granular, friable, porous, argillaceous; Sh. 20% lgt. to dk. gry. calc. 10-15% sol. soft. friable; Chert 9% wh. and dk. brwn; pyrite, 1%±
445	Dol.	80% med to dk. brwn. med. xline, granular, friable, porous. Argillaceous; Chert, 15% wh. and lgt gry.; Qtz, 5% in masses of euhedral xtals (cavity filling); pyrite, tr.
450	Dol.	80% similar to 445-450
455	Dol.	75% med to dk. gry med. xline, granular, porous friable; Chert 15% wh. and lgt. gry; qtz. 10% in xline masses as cavity fillings
460	Dol	75% Similar to 455-460
465	Dol	70% med. gry med to coarse xline, granular, friable porous; Chert 25% wh. and lgt. gry.; Qtz. 5% in xline masses; glauconite, tr
470	Dol.	65% med. gry. med. to coarse xline, granular, porous, friable; Chert, 25% wh. and lgt gry; Qtz. 8% in xline masses and euhedral xtals, pyrite 1%; glauconite, 1%.
475	Dol.	80% med gry. med. to coarse xline, granular, porous, friable, argillaceous; Chert 15% wh. and lgt. gry; Qtz, 4% in xline masses and euhedral xtals; pyrite 1%; glauconite, tr.
480	Dol.	60% med to dk. gry. med. to coarse xline, granular, porous, friable, argillaceous; Chert 20% wh. and lgt gry; Qtz. 10% in euhedral xtals and in xline masses; Sh. dk gry 20% firm calc.; glauconite, tr.
485	Dol	60% similar to 480-485
487	T. D.	

WARSAW ?

Thorpe Well Company
Bondurant (W. A. Bemis Farm)
½ mile North of Bolton and Hay and on east side of highway)
Probably NW/c 27-80N-23W
Elev. 962

Polk County
Elevation
Comm. 9-13-38
Comp. 9-30-38

Pleist?	3 feet	Soil
	90 feet	Clay
Penn?	280 feet	Mixed shale
	317 feet	Broken lime
	329 feet	Sand (Water)
Miss	400 feet	Lime, few shale bands
	489 feet	Lime

962
90
872

(Water - at 317 feet - 30 G. P. M.)

Total Depth - 489 feet

Checked AJR & W.C.S.

Folger
Doehms (Forest)
Hager (2)
Motor (AJR)
Bean
Mettner

IOWA GEOLOGICAL SURVEY
Driller's Log

Bolton and Hay Well
SE corner NE¼, Sec. 28, T80N, R23W.
Bondurant, Polk County

Curb elevation = 962

	Thick	From	To
PLEISTOCENE SYSTEM			
Top soil	5	0	5
Yellow clay	5	5	10
Blue sandy drift	5	10	15
Blue drift	25	15	40
Yellow sandy drift	30	40	70
Dark sandy gray drifts	129	70	199
Sand	6	199	205
PENNSYLVANIAN SYSTEM			
Light gray shale	9	205	214
Sand rock dark	1	214	215
Dark gray shale, hard bands	5	215	220
Light gray shale, sand rock bands	15	220	235
Dark gray shale, sand rock bands	5	235	240
Light gray shale, sand rock bands	20	240	260
Dark gray shale, lime rock bands	60	260	340
MISSISSIPPIAN SYSTEM			
Sandy lime rock	15	340	355
Light gray shale	5	355	360
Sand rock	10	360	370
Lime rock	5	370	375
Light gray shale	5	375	380
Brown lime rock	15	380	395
Light gray shale	5	395	400

	Thick	From	To
Lime rock	15	400	415
Sandy lime rock, dark color	30	415	445
Sandy lime rock, light color	42	445	487