

12035

Name Moulton town well (1960)
 Loc. NW SW SW. 14-68N-16W Appanoose Co
 T.D. 2377'
 Drilled Thorpe April 1960 - March 1961
 Log W-12035 Northrup
 Casing 525' of 12 3/4" csg; 1778' of 8" csg. 0-1778' perforated 1713-1736'

Prod. data

Remarks: Well completed in St. Lawrence fm. at 2377'

<u>Elev.</u>	<u>992'</u>		
<u>Formation</u>	<u>Depth</u>	<u>Top</u>	<u>Base</u>
Ste. Gen.	425	567	25
St. Louis	450		135
Warsaw	585		40
Keokuk	625		125
Burlington	750		141
Hampton	891		24
Maynes Crk.	915		50
Chouteau	965		60
Maple Mill	1025		30
Dev.			
Line Creek	1045		

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR

GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

MASTER CARD

Record by D. AARONICAL Source of data FILE Date 1/7/67 Map 1:63,360 COUNTY HWY.

State IOWA County APPANOOSE (or town) 04

Latitude: 40 41 03 N Longitude: 09 24 04 0 Sequential number: 1

Lat-long accuracy: 2 T 68 S, R 16 Sec 14, NW 1/4, SW 1/4, SW 1/4, SW 1/4

Local well number: 06816W14CCB Other number: W-12035

Local use: 12035 60CITY Owner or name: MOULTON TOWN WELL (1960)

Owner or name: MOULTON IOWA Address: MOULTON, IOWA

Ownership: (C) County, (F) Fed Gov't, (M) City, Corp or Co, (N) Private, (P) State Agency, (S) Water Dist M

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (G) Dox, (H) Irr, (I) Med, (J) Ind, (K) P-S, (L) Rec, (M) Stock, (N) Instit, (O) Unused, (P) Reprssure, (Q) Recharge, (R) Desal-P S, (S) Desal-other, (T) Other P

Use of well: (A) Anode, (B) Drain, (C) Seismic, (D) Heat Res, (E) Obs, (F) Oil-gas, (G) Recharge, (H) Test, (I) Unused, (J) Withdraw, (K) Waste, (L) Destroyed W

DATA AVAILABLE: Well data 1 Freq. W/L meas.: INVENTORY Field aquifer char. 0

Hyd. lab. data: 0

Qual. water data; type: COMPLETE

Freq. sampling: IRREGULAR (1/4/61) Pumpage inventory: I yes no, period: 0

Aperture cards: 0 yes 0

Log data: GEOLOGIST-DRILLERS LOG G.D

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 2377 ft 2377 Meas. rept DRILLER'S LOG accuracy 3

Depth cased: 1713 ft 1713 Casing type: STEEL; Diam. 8 in 8

Finish: porous concrete, gravel w. (per.), gravel w. (screen), horiz. gallery, open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) other X

Method: (A) air rot, (B) bored, (C) cable, (D) dop, (E) hyd jetted, (F) air rot., (G) percussion, (H) rotary, (I) reverse, (J) trenching, (K) driven, (L) wash, (M) other H

Date Drilled: MARCH 1961 961 Pump intake setting: 0 ft 0

Driller: THORPE WELL CO. DES MOINES, IA.

Lift (type): (A) air, (B) bucket, (C) cent, (D) jet, (E) multiple, (F) multiple, (G) none, (H) piston, (I) rot, (J) submerg, (K) turb, (L) other D Deep Shallow 0

Power (type): (A) diesel, (B) elec, (C) gas, (D) gasoline, (E) hand, (F) gas, (G) wind; (H) P. 0 Trans. or meter no. 0

Descrip. MP LSD above ft below LSD, Alt. MP 992

Alt. LSD: 992 992 Accuracy: (source) ALTIMETER 7

Water Level: 355 ft above below MP; above below LSD 355 Accuracy: DRILLER'S LOG D

Date mess: MARCH 1961 361 Yield: 455 gpm 455 Method determined 0

Drawdown: 80 ft 80 Accuracy: 3 Pumping period 0 hrs 0

QUALITY OF WATER DATA: Iron 1.4 ppm 5 Sulfate 338 ppm 7 Chloride 215 ppm 3 Hard. 292 ppm 6

Sp. Conduct 1870 K x 10⁶ 5 Temp. 76 °F 76 Date sampled AUG. 29, 1961 861

Taste, color, etc. VERY SLIGHTLY CLOUDY WITH YELLOW COLOR ON RECEIPT IN LAB.

Well No. 068-16W-14CCB

Well No. 068-16W-14CCB

Latitude-longitude 40 41.03 N 092 40.40.1
d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD Physiographic Province: CENTRAL LOWLAND 112 Section: DISSECTED

TILL PLAIN E Drainage Basin: FABIUS 25 J Subbasin: 26

Topo of well site: (D) depression, stream channel, dunes, flat, hilltop, sink, swamp, (E) (H) (K) (L) (O) offshore, pediment, hillside, terrace, undulating, valley flat UPLAND FLAT 27 F

MAJOR AQUIFER: CAMBRIAN system UPPER series C 3 28 29 JORDAN SS. aquifer, formation, group S J 30 31

Lithology: COARSE SS. & DOL 4 V 32 33 Origin: MARINE 6 34 Aquifer Thickness: 35 ft

3 S 35 Length of well open to: 35 ft 38 39 3 S 40 Depth to top of: 2285 ft B 2 B 41 43

MINOR AQUIFER: ORDOVICIAN system MIDDLE series O 2 44 45 ST. PETER SS aquifer, formation, group M P 46 47

Lithology: FINE SANDSTONE 2 V 48 49 Origin: MARINE 6 50 Aquifer Thickness: 30 ft

3 O 51 Length of well open to: 29 ft 54 55 2 9 56 Depth to top of: 1707 ft A 7 1 57 59

Intervals Screened: NONE

Depth to consolidated rock: 400 ft 60 4 0 0 63 Source of data: WELL CUTTINGS C 64

Depth to basement: ft 65 66 Source of data: 69

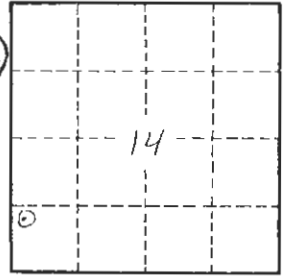
Surficial material: NONCALC. LOESS N R 70 71 Infiltration characteristics: POOR 72 4

Coefficient Trans: gpd/ft 73 74 Coefficient Storage: 76 78

Coefficient Perm: gpd/ft²; Spec cap: 5.68 gpm/ft; Number of geologic cards: 79

CASING:

525 FT. OF 12 3/4" CASING.
1778 FT. OF 8" CASING 0-1778 FT (PERFORATED FROM 1713'-1736')



PL. 440 FT @ 240 GPM BEFORE ACIDIZING.
PL. 435 FT @ 455 GPM AFTER ACIDIZING.

Well No. 068-16W-14CCB

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

WI 2035

Location:

Town: MOULTON (NE)
(SW) County APPANOOSE
(E)
NW SW SW sec. 14 T. 68 N., R. 16 (W) Twp.

Well name and number _____

Owner MOULTON TOWN WELL #1 Address MOULTON, IOWA
(1760)

Tenant _____ Address _____

Contractor THORPE WELL Address DES MOINE IOWA

Drillers VARBOROUGH GARDEN EVCI OSKALOOSA, IOWA

Drilling dates APRIL 16, 1961 MARCH 10, 1961

Well data:

Altitudes: Drilling curb _____ feet; Land surface 992' feet

Determined by _____

Topographic position FLAT

Total depth: Reported 2377' feet; Measured _____ feet

Drilling method TAPY 0-1545' - CABLE TOOLS 1545'-2377' TD

Hole and casing data 525' OF 12 3/4" CASING - CEMENTED

1778' OF 8" CASING 0-1778'

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

Source of data _____

Sources of water: Principal PRAIRIE du CHIEN, JORDAN, ST-LAWRENCE

Others _____

PRODUCTION DATA

Date MARCH 10, 1961

Static water level 355'

Pumping water level 440' @ 240 GPM. - BEFORE ACIDIZING

Yield (g.p.m.) 435' @ 455 GPM. - AFTER ACIDIZING

Measuring point _____

Duration of pumping _____

Specific capacity _____

LABORATORY DATA

TL4-50, 51, 52, 53, 54

Well No. W12035 Sample range 2375 No. of samples 465

No. of dupls. and cond. 458 7- Washed range 425-2375

Samples prepared by Kirk Campbell, Cabill Valente Date 5/20/60 - 2/17/61

Logged by NORTHUP Date 1960-61

Correlations by _____ Date 1960-61

PUMPING TEST OF THE MOULTON TOWN WELL
NO. 1

A representative of the Thorpe Well Company informed Mr. Northup that a production test was being made of the new well by personnel of the Thorpe Well Company. This information was received some hours after the test was started. (12:00 noon - March 9, 1961)

The well was pumped and surged intermittently over a period of 24 hours. The well was produced at an average of 240 gallons per minute for a period of 1 hour. The data obtained shows a drawdown of 85 feet from a static water level of 355 feet to a pumping level of 440 feet. This is a specific capacity of 2.8 g.p.m. per foot at a pumping rate of 240 g.p.m.

The test was witnessed from 11:00 a.m. to 2:00 p.m. March 10, 1961.

M. A. J. Smith

52. Appanoose County
Moulton

CB

January 26, 1961

MOULTON CITY WELL

<u>Time</u>	<u>G.P.M.</u>	<u>Pumping Level</u>	<u>Water</u>	<u>Temp. F.</u>	<u>Remarks</u>
6:00 a.m.	60	470'	Clear		S.W.L. 350'
6:30 "	25	470'	Cloudy		P.L. 466'
7:00 "	13	470'	"		
7:30 "	19	470'	Muddy		
8:00 "	19	470'	"	67°	
8:30 "	20	469'	"		
9:00 "	20	465'			
9:30 "	20	462'			
10:00 "	20	464'		68°	
10:30 "	20	466'	Cloudy		
11:00 "	20	466'	"	69°	
					Recovered to 440' in 20 minutes.

Remarks:

Set and cemented 8-5/8" from 0' to 1778' with 100 sax of cement. Pressure cemented. Perf. 1713' - 1736'.

Pumping test made on the 4th of January, 1961, by the Thorpe Well Company. Data copied from the driller's log on the 19th of January, 1961.

H. GARLAND HERSHEY
DIRECTOR AND STATE GEOLOGIST
CHARLES N. BROWN
ASSISTANT STATE GEOLOGIST

STATE OF IOWA
IOWA GEOLOGICAL SURVEY
GEOLOGICAL SURVEY BUILDING
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AUDITOR OF STATE

Feb

February 6, 1961

TO: Dr. H. G. Hershey
FROM: Richard C. Northup
SUBJECT: Moulton town well.

Oran Atchison, Thorpe Well Company, phoned Monday morning to report that drilling had reached 2275' at Moulton. According to our original forecast the Jordan was expected from 2225' to 2275' and as it has not showed up yet, they were wondering where they were in the section. A while back, after the well was through the St. Peter, we revised our estimate downward so that as of now I would expect the Jordan to come in at about ~~2315~~²³¹⁵' and the St. Lawrence at ~~2360~~²³⁶⁰' or ~~2395~~²³⁹⁵'. Mr. Atchison is having the driller ship us the samples today from 1890' to 2275'. I will run them as soon as they arrive, and then call them collect with the information. The contract depth of the well is 2375' (just 100' deeper than now). Mr. Atchison said that Thorpe will carry the well a bit further, though, at no extra cost to the town if they are not into or through the Jordan at that point. I feel confident that they will pick it up at around 2355', though of course there is a chance that it is not present this far south. However, Keosauqua, Russell, Albia, and Ottumwa have all had good Jordan sections, and this is not too far from any of these points.

RCN

February 10, 1961

TO: Dr. H. G. Hershey
FROM: Richard C. Northup
SUBJECT: Moulton town well.

Samples have come in from Moulton down to 2290', the last five feet from 2285-2290 being the top beds of the Jordan or at least the transitional beds between the Oneota and Jordan. My calls below the St. Peter are Willow River 1743, Root Valley 1965, Oneota 2045 and Jordan (or transitional beds) at 2285. I phoned Mr. Atchison this morning at Thorpe Well Company who reports that drilling has now reached 2338'. He is again having the driller send us the samples to date, and they should be here by Monday. Our anticipated thickness for the Jordan is around 50', so that they are probably through it or nearly so by now. This will give them some of the St. Lawrence section before reaching contract depth of 2575'. It looks like the end is in sight at last on this one.

RCN

D. W. Apperson

February 13, 1961

Mr. Oran Atchison
Thorpe Well Company
2340 Sixth Avenue
Des Moines, Iowa

Dear Mr. Atchison:

We would like to confirm our findings from the sample studies for the Moulton city well mentioned in our phone discussion this afternoon. To the best of our knowledge, the Jordan sandstone was reached at approximately 2285'. The section was sandstone and very sandy dolomite from 2285' to 2300', sandstone from 2300' to 2320, sandstone and sandy dolomite from 2320' to 2330' and gray sandy dolomite from 2330' to 2340'. The top of the St. Lawrence dolomite, or at least the transition beds between the Jordan and St. Lawrence is probably about 2340'. It is our feeling that a good well can be developed from the section now open from the upper part of the Prairie du Chien through the Jordan and into the upper St. Lawrence to 2375', the contract total depth.

Acidizing might be advisable if by some chance adequate water is not produced or if the city should want more water than previously desired. If so, an increase would probably be most likely from fractures in the Oneota dolomite (lower Prairie du Chien) from the sandy dolomite and dolomitic sandstones in the Root Valley member of the Prairie du Chien, and from the Jordan itself.

We trust you will advise us as to the pumping test date so that we may have a Survey representative on hand.

Very truly yours,

H. G. Hershey

RCN/jsm

PUMPING TEST OF THE MOULTON TOWN WELL

NO. 1

March 9, 1961

<u>Time</u>	<u>Pumping Level</u>	<u>G. P. M.</u>	<u>Temp.</u>	
12:00	Neon Start Test			355 S. W. L.
12:15	408	170		Clear
12:30	410	170	74°	Cloudy
12:45	412	170		"
1:00	414	170		Clearing
1:15	415	170		"
1:25				Increase pump rate
1:30	435	205	76°	"
1:45	438	205		Cloudy
2:00	438	205		"
2:30	438	205		"
3:00	439	205	76°	Clearing
3:30	440*	205	77°	"
3:40				Stop Pump
				Surge well to 6:30 p. m.
				Pumped cloudy water
6:45	425	205		
7:00	430	205		
7:30	435	205		
8:00	435	205		Clear
				Surged with pump 8:00 a. m. to 9:00 p. m.
9:30	429	205		Clear
10:00	429	205		
				Surged from 10:00 to 11:00 p. m.
11:30	426	205		
12:00	426	205		Midnight
				Surged from 12:00 to 1:00 a. m.
				March 10, 1961
1:30	425	205		
2:00	425	205		
3:30	425	205		
4:00	425	205		Surged from 4:00 to 5:00
5:30	425	205		
6:00	425	205		
				Surged from 6:00 to 7:00 a. m.

*Bottom of bowls 440'

4" orifice plate at end of 80' of 6" pipe.

Time	Pumping Level	G.P.M.	TEMP.
7:30	425	205	
7:45			Increased rate of pump
8:00	440	240	
8:15	440	240	Cloudy
8:30	440	240	
9:00	440	240	
10:00	440	240	
12:00	440	240	Clear 12:15 cut back pump
12:30	396	100	74° Milky
1:00	396	100	5" on orifice guage
1:14	398		Stop pump
	372		Recover
	322		
	323		
1:15	332		
1:16	341		
1:17	348		
1:18	349		
1:19	353		
1:20	356		
1:21	350		
1:22	349		
1:23	350		
1:35	349		
1:45	350		
2:00	350		

Analysis by J. Clemons
 11:00 a.m. - March 10, 1961
 Fe - 0.7 ppm
 SO₄ - 425 ppm
 Cl - 210 ppm
 Ph - 8.5

*D.H. Appanose
County
Moulton*

March 10, 1961

TO: Dr. H. G. Hershey
FROM: Richard C. Northup
SUBJECT: Pumping test at Moulton

Thorpe's driller phoned at about 4:00 p.m. Thursday to advise that a pumping test at Moulton had started at noon. A previous test of an hour and a half duration had been conducted on Tuesday, March 7, but was not continued longer because of pump trouble. The driller gave me the data for the test starting at noon yesterday to date. After pumping for three hours the well was yielding 205 g.p.m. pumping level was 440' from original static water level of 355'. Water was reported clear with temperature 76°. A 24-hour test was planned, and Thorpe's man hoped someone would come down from the Survey today. Mark went down this morning to get a water sample and to get what data he can. They hoped to increase the yield last night by surging, but if it fails to develop, they will probably acidize, to improve the specific capacity. Mr. Atchison was interested in this possibility a while back, you may remember.

It is doubtful if we can get much useful data, since we do not have a good original static reading, and the figures obtained while surging will probably not be very useful. Thorpe seems to be following the same old pattern of not advising us in time to be on hand at the start of the test, so that more accurate data could be obtained.

RCN

PUMPING TEST
MOULTON, IOWA

March 10, 1961
Well No. 1

Location: SW $\frac{1}{4}$ - 14 - 68 - 16 N.

Total Depth: 2377 feet

Elevation: 991 feet G.L. datum

Contractor: Thorpe Well Company, Des Moines, Iowa

Date Drilled: Spudded April, 1960. Completed March 10, 1961.

Casing Record: 12 - 3/4" - B.E. 51 lb. welded - 0' - 525'. 8" liner from 1778' - 463' cemented with 28 sax. Slotted 1736' - 1713'.

Water Level: S.W.L. 355' below top of casing.

Aquifer: Prairie du Chien - Jordan.

Measurements: Water level measurements made with an air line. Discharge rate determined by periodic measurements of the flow through a 6" x 4" orifice plate.

Pump: A Fairbanks-Morse turbine pump with a rate capacity of 800 g.p.m. was powered by an International Harvester Co. type T.D.-24 diesel. Suction was set at 445'. Bottom of air line at 440'.