WRD Exp. (CW)
Aug. 1964

Verified ERC Punched FCH

089-28W-19CACC

U. S. DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY

Water Resources Division Well Schedule Form

MASTER CARD

Record by D. AARONSON Source of data FILE Date 1/19/66 Map FT. DODGE, QUAD. 1:62,500

State IOWA [16] County (or town) WEBSTER [94]

Latitude: 42 deg 30 min 18 sec N [2] Longitude: 094 12 01 (12 degrees 15 min sec 18) Sequential number: 1 [19]

Lat-long accuracy: 2 T 89 N S, R 28 E W, Sec 19, SWSW¼, NE ¼, SW ¼ 5

Local well number: 089 28W 19CACC Other number: W-0216

Local use: 00216 CITY 9 Owner or name: CITY WELL #9

Owner or name: FT DODGE Address: FT. DODGE, IA

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

Use of water: (A) Air cond, (C) Comm, (D) Dewatering, (F) Fire, (H) Dom, (I) Irr, (N) Ind, (P) S, (S) Stock, (T) Instit, (U) Unused

Use of well: (A) Anode, (D) Drain, (G) Seismic, (O) Obs, (P) Oil-gas, (R) Recharge, (S) Spring, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed

DATA AVAILABLE: Well data 4 Freq. W/L meas.: NONE N Field aquifer char.

Hyd. lab. data:

Qual. water data; type: COMPLETE C

Freq. sampling: IRREGULAR (1927) I Pumpage inventory: yes / no, period:

Aperture cards: yes

Log data: GEOLOGIST LOG G

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 553 ft 553 Meas. / rept. accuracy 6

Depth cased: (first perf.) 258 ft 258 Casing type: STEEL Diam. 16 in 16

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

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other C

Date Drilled: AUG 1931 931 Pump intake setting: ft

Driller: THORPE WELL CO. (name), DES MOINES, IA (address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, (T) turb, (Z) other Deep / Shallow D

Power (type): diesel, elec, gas, gasoline, hand, gas, wind; nat, LPG; H.P. Trans. or meter no.

Descrip. MP LSD ft above / below lsd, Alt. MP 984.49

Alt. LSD: 984 984 Accuracy: (source) INSTRUMENT 0

Water Level ft above / below MP; Ft above / below lsd F Accuracy: DRILLER'S LOG D

Date meas: Yield: 500 gpm Method determined

Drawdown: ft Accuracy: Pumping period hrs

QUALITY OF WATER DATA: Iron 1.7 ppm 5 Sulfate 147 ppm 4 Chloride 4 ppm 0 Hard. 456 ppm 7

Sp. Conduct K x 10⁶ Temp. °F Date sampled 8/16/34 834

Taste, color, etc.

Well Number 42 30 18 N 094 12 01 (d m s S d m s)

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD Physiographic Province: CENTRAL LOWLAND 12 Section: WESTERN

LAKE B Drainage Basin: DES MOINES 258 Subbasin:

Topo of well site: (D) local depression, (F) flat surface, (H) hilltop, (S) hillside, (T) terrace, (V) valley flat, V

MAJOR AQUIFER: MISSISSIPPIAN (system) LOWER (series) M1 MAYNES CREEK FM (aquifer, formation, group) KY

Lithology: CHERTY DOLOMITE QD Origin: MARINE 6 Aquifer Thickness: ft

Length of well open to: 33 ft 33 Depth to top of: 520 ft 520

MINOR AQUIFER: system, series aquifer, formation, group

Lithology: Origin: Aquifer Thickness: ft

Length of well open to: ft Depth to top of: ft

Intervals Screened: NONE

Depth to consolidated rock: ft Source of data:

Depth to basement: ft Source of data:

Surficial material: Infiltration characteristics:

Coefficient Trans: gpd/ft Coefficient Storage:

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

CASING:

69' OF 20" PIPE FROM 7' TO 76'

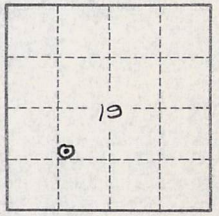
239'7" OF 16" CASING FROM 4' TO 243'7"

85' OF 12" CASING FROM 192'6" TO 277'6"

48' OF 8" CASING FROM 275' - 323'

PERFORATED FROM 258' TO 275' AND

313' TO 321'.



GPO 844-225

Sheet No. (1) Name of Well. (Webster) F.K. Dodge #9 Survey No. W-0216

Location ..... Date Drilled ..... Analyst Heyden

200
210
220
230
240
250
260
270
280
290
300

No Samples.

277. Dol. lt. gr. buff, vvv finely xlu. 85
Sand med rounded frosted. 15

280 Sand, white, fine, med, ∂ Sb, rounded ∂ frosted. 90
dk. 109.
lt. med. gray.
(pyrite ∂ coal cavs)

297

300

Sheet No. (2) Name of Well ..... Survey No. .....

Location ..... Date Drilled ..... Analyst .....

00

SS. fine to med, white. 85

dol med br, dense & vvv fine x/ln. (trace chalcedony)

trace glauc

dol 40 trace glauc trace dk. (white)

dol. 70

SS. 30

10

Dol lt. br, vv. fine x/ln to gran. trace glau.

SS. 10 trace white gr. dk — chal?

Dol. as above. trace chalcedony (white,

trace glau. dol. — dk br. x/ln.

20

dol a.a.

clear & brown massive qtz little.

phenocrystic glauc. leached dol 80

+ phenocrystic lt br. non-leached dol 20.

30

lt grayish buff silty dol — dol fine med & co. (JD)

dol as above (JD) crin and frag.

Dol — med gr, v fine x/ln. 30

Dol ls, med br, v. fine x/ln, (trace med sd & stylolite) 70

40

Dol aa JD

Dol ls. aa slight porosity developed. JD suggestion) phenocrystic

Dol ls. lt br, poorly to good phenocrystic.

50

a.a trace chal.

aa JD little sand, coarse? fine & med.

dol ls, lt buff, vvv fine graining trace chal & clear qtz

60

dol ls. lt buff, vvv fine graining — little SS, coarse? fine to med.

trace chal.

glauconitic

ls. lt br, dense. trace chal, little SS. coarse?

70

ls. lt br, dens. JD

oolitic and forams JD

algal & oolitic ls. 10 little leached

dense 90

80

oolitic algal JD some lt leached.

dense JD

algal & oolitic ls — leached ls.

90

a, a.

a. a.

00

Sheet No..... Name of Well..... #9 ..... Survey No..... W-0216

Location ..... Date Drilled..... Analyst.....

400

oolitoidal ls, - slightly leached.
white larger & better formed.

a_a.

410

a_a.

white smaller & poorer.

420

a_a.

non leached, ls as above

430

leached.

leached, as above — oolitoidal broken.
V. fine & v. poor.

440

a_a. ~~white, large~~

a_a. but white larger & better.

500

a a — sand cave?

a a. — sand cave?

600

Dolomite, med br, fine xln. 50%
ls a.a. 50

Imp Falls.

Dol. a.a. 60
oolitoidal ls. a.a. 30

700

ls oolitoidal, slightly leached. a.a. (?) 100

ls. a.a. 90
dol, as below. 10

800

Imp falls?
?

Dol, dk br, fine to med xln. 100

a.a.

900

a a

dol a.a. 50
ls, vaguely oolitoidal, slightly leached 50

E.C.?

1000

Sheet No..... Name of Well..... Survey No.....

Location ..... Date Drilled..... Analyst.....

00

Ls, lt brn, hard, dense appearing, algal & oolitic in ls.

Ls. a.a., appears more algal?

10

ls. lt br.

a.a.

20

Magnus anh.

Dol. lt br, v. fine Xln. + chT 20% lt gray, br, gray porous & N.F. fined br. mottled with indurations.
+ v. little calc. dol.

calc. dol. a.a. + chT. a.a. 20%

30

a.a. 20% chT.

Dol. lt med gray vvv fine Xln

40

Calc. Dol. lt. br, vv fine Xln. chT a.a. very little.

a.a.

50

a.a.

53 T.D.?

60

70

80

90

00

Webster Co.

CITY OF FORT DODGE, IOWA
DEPARTMENT OF MUNICIPAL UTILITIES
JOHN W. PRAY, MGR.
FORT DODGE, IOWA

November 19, 1946

NOV 20 1946

Dr. H. G. Hershey
Iowa Geological Survey
Geology Annex
Iowa City, Iowa

Dear Dr. Hershey:

Thorpe started today to set up over Well No. 9 and install a pump for testing.

As indicated to Mr. Hale a short time ago, we propose to test for draw down flow etc., both Well No. 9 and No. 8. He indicated that he would like to come to Fort Dodge during this test. We should be ready to pump on Monday or Tuesday of next week and would like to have Hale here if possible.

Very truly yours,

DEPARTMENT OF UTILITIES
By

John W. Pray
Manager

JWP:dmh

This was taken care of by attending Production test of Nov. 23, 24 & 25th. 1946

W.E.H.

Date changed to this Friday & Saturday

(COPY)

Webster

CITY OF FORT DODGE, IOWA
Department of Municipal Utilities
John W. Pray, Mgr.
Fort Dodge, Iowa

November 19, 1946

Dr. H. G. Hershey
Iowa Geological Survey
Geology Annex
Iowa City, Iowa

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Very truly yours,

DEPARTMENT OF UTILITIES
By
(Signed) John M. Pray
Manager

JWP:dmh

(written in pencil)

This was taken care of by attending production test on Nov. 23, 24, and 25th 1946.

WEH

Date changed to this Friday and Saturday

R-1-B

THORPE WELL COMPANY

2340 SIXTH AVENUE
DES MOINES, IOWA

Drilled for City of Ft. Dodge *at* Ft. Dodge, Iowa

Well is located _____ *miles N-E-S-W and* _____ *miles N-E-S-W from* _____

in the _____ ¼ _____ ¼ *Section* _____ *Township* _____ *Range* _____

Drilling started _____ *19*____ *Completed* 11/12/38 *19*____

Well No. 9 *Kind of Well* _____ *Depth* Started 277' 553' *Size hole started* 10 *in.*

Finish 10 *G. P. M.* 500 *Static head* Flow *Drawdown* _____

Water was first encountered at 334 *in* Limestone *Approx. Amt.* 350GPM *Temp.* _____

Remarks Increase in flow about 150GPM more from 361' to 498'
From 498 to 553' no increase in flow

RECORD OF PERMANENT PIPE					TEMPORARY PIPE	
SIZE PIPE	AMOUNT OF PIPE	DEPTH TO BOTTOM OF PIPE	DEPTH TO TOP OF PIPE	MAKE OF PIPE	SIZE PIPE	AMOUNT
20"	69'	76'	7'			
16	239'7"	243'7"	4'			
12	85'	277'6"	192'6"	5 burlap packers		
8"	48'	323'	275'	2 burlap packers		

Driller _____ *From Surface to* _____ *feet*

Driller _____ *From* _____ *feet to* _____ *feet*

Driller _____ *From* _____ *feet to* _____ *feet*

AMOUNT IN FEET	KIND OF SOIL OR FORMATION (BE SPECIFIC)	TOTAL DEPTH FEET
277	Botton of old #9 well, all measuremeents taken from 4' abpve old 16" coupling	277
13	Sandy limestone	290
3	Green shle- cavey	293
4	Limestone	297
64	" very hard	361
137	"	498
55	" hard	553
	Bottom length of 12" perforated from 258' to 275'	
	Bottom length of 8" liner perforated from 313 to 321'	

R-1-B

THORPE BROTHERS WELL COMPANY

2340 Sixth Avenue

DES MOINES, IOWA

Drilled for City of Ft. Dodge *at* Ft. Dodge, Ia

Drilling started _____ 19 ____ *Completed* to 277' Aug. 1931 to 553' Nov. 1938 19 ____

Well No. 9 *Kind of Well* Drilled *Depth* 553' *Size hole started* 20 *in.*

Finish 10" *G. P. M.* 500 *Static head* Flow *Drawdown* _____

Water was first encountered at 334' *in* Limestone *Approximate Amount* 350GPM

Remarks Increase in flow about 150gallons per minute more from 361' to 498'- No increase in flow from 498' to 553'

RECORD OF PERMANENT PIPE					TEMPORARY PIPE	
SIZE PIPE	AMOUNT OF PIPE	DEPTH TO BOTTOM OF PIPE	DEPTH TO TOP OF PIPE	MAKE OF PIPE	SIZE PIPE	AMOUNT
20"	69'	76'	7'			
16"	239'7"	243'7"	4'			
12"	85'	277'6"	192'6"	Std seamless 70#	5 burlap packers	
8"	48'	323	275	Extra heavy	2 burlap packers	
	10" shoe on top of 8" liner with swage nipple from 10" to 8"- 2' long screwed to 8" liner lapped up into 12" liner 2'6"					

Driller _____ *From Surface to* _____ *feet*

Driller _____ *From* _____ *feet to* _____ *feet*

Driller _____ *From* _____ *feet to* _____ *feet*

AMOUNT IN FEET	KIND OF SOIL OR FORMATION	TOTAL DEPTH FEET
20	Black soil & yellow clay	20
10	Fine gravel & sand	30
46	Blue & black shale	76
4	Limestone	80
22	Shaley limestone	102
18	Black shale	120
59	Shaley limestone	179
3	Limestone	182
24	Yellow-red- green shale mixture	206
5	Limestone	211
4	Red shale	215
4	Limestone	219
8	Green shale	227
6	Red shale	233
7	Green shale	240
21	Limestone	261
6	Sandstone	267
23	Sandy limestone	290
3	Green shale- cavey	293
4	Limestone	297
37	" very hard	334
164	"	498
55	" hard	553
	Steel shoes top & bottom on 12" liner bottom length perforated from 258' to 275'	
	Steel shoe top & bottom 8" liner- bottom length perforated 313' to 321'	

IOWA GEOLOGICAL SURVEY
Water Well Data Sheet

Survey Number W-0216 E.

Town Ft. Dodge County Webster T. 89 N., R. 28 W. Cooper

Name City Well No 9 Location SW¼ NE¼ ¼ SW ¼, Sec. 19

Contractor Thorpe Well Co Driller Ben Bergesen Use City Supply

Construction Drilled Drilling Dates Deepened Oct. - Nov. 1938 Drilling Depth

Topog. Flood plain D.M. River Curb Elev. 984.49 Ref. City Total Depth 553

Final Static Level ____ above / below curb Pumping Level ____ Draw down ____ gpm ____ Time pumped ____ Date ____

Depth to bot. pump ____ ft. with ____ ft. suction pipe. Calc. g/ft. drawdown ____ Prin. Prod. ____

Producing Horizons ____

Water levels and pumping tests on various horizons during drilling:

Depth Range	Stat. Level	Pump Level	Draw down	gpm.	Temp.	Producing horizons	Producing formations	Formations cased out

Additional information

Laboratory Data

Sample range 277 - 553 Number samples 54 Number Duplicates 53 Cond. Fair to Good

Log Yes / No, Cond. Good Driller's. Boxed Yoho Range 277-553 Date Sept. 12, 1939

Washed Yoho 277-553 Sept. 12, 1939.

Remarks W-0216 was originally assigned to a water works well at Preston (Jackson) for which the Survey has no samples.
See Vol. 36 IGS. for log of upper strata penetrated in Ft. Dodge well #9.
These spls. were saved from deepening of the old well, drilled in 1931.

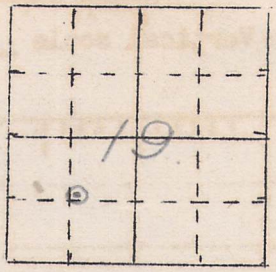
Microscopic Study Range ____ Strip Log ____ Gen. Log ____ Blue Print ____ Samples Washed 54

Insol. Res. Study Range ____ Strip Log ____ Gen. Log ____ Insol. Res. Prepared ____ Well Corel. ____

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

W-0216

RECORD OF WELL



Location:

Town: Ft. Dodge (N E / S W); County Webster

SW/c NE SW sec. 19 T. 89 N., R. 28 W. Cooper Twp.

Well name and number City Well #9

Owner City of Ft Dodge Address

Tenant Address

Contractor Thorpe Well Co. Address 2340 Sixth Ave. Des Moines

Drillers Ben Bergesen

Drilling dates to 277' Aug. 1931. Deepened completed to 553' Nov. 1938

Well data:

Elevations: Drilling curb 984.49 feet; Land surface fe

Determined by

Topographic position Flood plain, Des Moines River

Total depth: Reported 553 feet; Measured fe

Drilling method cable

Hole and casing data 69' of 20-inch pipe from 7' to 76'. 239'7" of 16-inch casing from 4' to 243'7". 85' of 12-inch casing from 192'6" to 277'6"; 48' of 8" casing from 275 - 323' 10" shoe on top of 8" liner with swage nipple from 10" to 8" - 2' long screwed to 8" liner lapped up into 12" liner 2'6" (cont. on back page)

(Give amount, size, kind, and depth of all casing; type and position of seals and packers; cementing; how finished--perforated pipe, screen, gravel pack, open hole, etc.)

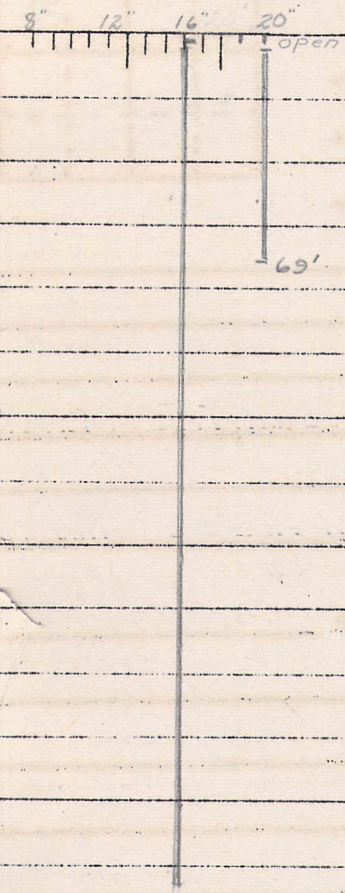
Original depth to water ft. above/below Date

Original elevation of water level ft.; Source of data

Sources of water: Principal ; Others

CASING DIAGRAM

Vertical scale 1" = 50'



LOG

0-20 Black soil & yellow clay
20-30 Fine gravel & sand
30-76 Blue & black shale
76-80 Limestone
80-102 Shaley limestone
102-120 Black shale
120-179 Shelly limestone
179-182 Limestone
182-206 Yellow-red-green shale mixture
206-211 Limestone
211-215 Red shale
215-219 Limestone
219-227 Green shale
227-233 Red shale
233-240 Green shale
240-261 Limestone
261-267 Sandstone
267-290 Sandy limestone
290-293 Green shale - cavey
293-297 Limestone
297-334 " very hard
334-498 "
498-553 " hard

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 City supply

WATER ANALYSES (in parts per million)

Date sampled				
Sampled by				
Total solids				
Insoluble matter				
Alkalinity (Meo)				
Alkalinity (Phn)				
pH				
$Fe_2O_3+Mn_2O_3+Al_2O_3$				
Alkali as sodium				
Calcium				
Magnesium				
Iron (unfiltered)				
Manganese				
Nitrate				
Fluoride				
Chloride				
Sulphate				
Bicarbonate				
Hardness (ppm)				
Hardness (gpg)				

Remarks _____

Laboratory data: Sample storage location _____

Sample range 277-553 No. spls. 154 No. dupls & cond. 153 F to G

Spls. prepared by Yoho Washed range 277-553 by Yoho

Driller's log and cond. Yes good

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

Microscopic study Haydon, Heathman strip log 4/30/43 T.A.H Sept '39 Heathman

Gen. log _____ Correl. by T.A. Heydon

WATER LEVEL DATA

Measuring point _____

Date	Depth to water	Altitude	Remarks

REMARKS

casing cont:- Steel shoes top & bottom on 12" liner bottom length perforated from 258-275'
Steel shoe top & bottom 8" liner - bottom length perforated 313-321'