WRD Exp. (GW)
April 1966

Well No. 085-11W-29 DAA

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

MASTER CARD

Record by R. KARSTEN Source of data FILE Date 9/5/69 Map BENTON CO. HWY

State IOWA [16] County (or town) BENTON [06]

Latitude: [42083 7 N] Longitude: [092084 3] Sequential number: [1]

Lat-long accuracy: [2] T. 85 S, R 11 W, Sec 29, NE ¼, NE ¼, SE ¼ 5 S & M

Local well number: [085 11W29DAA] Other number: W-0758

Local use: [00758] Owner or name: GARRISON CITY WELL

Owner or name: [GARRISON CITY] Address: GARRISON, 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, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Med, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other [U]

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

DATA AVAILABLE: Well data [1] Freq. W/L meas.: [Ø] Field aquifer char. [ ]

Hyd. lab. data: [ ]

Qual. water data; type: [C]

Freq. sampling: [I] Pumpage inventory: yes / no, period: [ ]

Aperture cards: yes [ ]

Log data: GEOLOGIST - DRILLERS [GD]

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 104 ft [104] Meas. rept accuracy [3]

Depth cased: (first perf.) 42'2" ft [42] Casing type: STEEL; Diam. 10 in [10]

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (Ø) open end, (P) perf., screen, sd. pt., (S) shored, (T) 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: 1938 [38] Pump intake setting: ft [ ]

Driller: name MCCUTCHEON, address DES MOINES, IA

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 [ ]

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

Descrip. MP LSD ft above/below LSD, Alt. MP 870

Alt. LSD: 870 [870] Accuracy: (source) ACT [7]

Water Level 16'2" ft above/below MP; Ft above/below LSD [16] Accuracy: [D]

Date meas: 1938 [38] Yield: 40 gpm [40] Method determined [4]

Drawdown: 64 ft [64] Accuracy: [3] Pumping period hrs [ ]

QUALITY OF WATER DATA: Iron ppm [ ] Sulfate ppm [ ] Chloride ppm [ ] Hard. ppm [ ]

Sp. Conduct K x 10^6 [ ] Temp. °F [ ] Date sampled [ ]

Taste, color, etc.

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Latitude-longitude 42 d 08 m 37 s D S 092 d 08 m 43 s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD [1–19]

Physiographic Province: CENT. LOWLANDS [20–21] 12

Section: DISS. TILL PLAIN [22] E

Drainage Basin: CEDAR [23–25] 25E

Subbasin: [26]

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (Ø) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat [27]

MAJOR AQUIFER: DEV system, MID series, D 22 [28–29] CV aquifer, formation, group, A C [30–31]

Lithology: DOL LS [32–33] DL Origin: MARINE [34] 6 Aquifer Thickness: 62 ft

[35–37] 62 Length of well open to: ft [38–40] Depth to top of: ft [41–43]

MINOR AQUIFER: system, series [44–45] aquifer, formation, group [46–47]

Lithology: [48–49] Origin: [50] Aquifer Thickness: ft

[51–53] Length of well open to: ft [54–56] Depth to top of: ft [57–59]

Intervals Screened: NONE

Depth to consolidated rock: 39 ft [60–63] 39 Source of data: [64] C

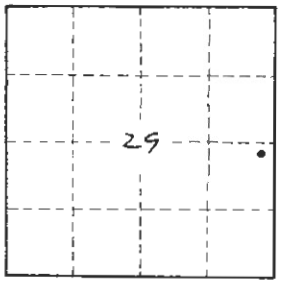
Depth to basement: ft [65–68] Source of data: [69]

Surficial material: NON CAL LOESS [70–71] N 9 Infiltration characteristics: POOR [72] 4

Coefficient Trans: gpd/ft [73–75] Coefficient Storage: [76–78]

Coefficient Perm: gpd/ft^2; Spec cap: gpm/ft; Number of geologic cards: [79]

CSG:
2' ABOVE GROUND 44' 2"
OF 10"



Well No. 085- 11W- 29 DAA

GPO 857-709

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

W-0758

RECORD OF WELL

Location:

Town: GARRISON (N E S W); County BENTON

NE/c SE ¼ sec. 29 T. 85 N., R. 11 W. JACKSON Twp.

Well name and number GARRISON CITY WELL

Owner Town of Garrison Address

Tenant Address

Engineer Howard Green, Cedar Rapids

Contractor McCutcheon Well Co Address Des Moines

Drillers " "

Drilling dates Spring 1938

Well data:

Elevations: Drilling curb 5?6' feet, Land surface 870' feet

Determined by HAND LEVEL KEA

Topographic position

Total depth: Reported 104' feet, Measured feet

Drilling method

Hole and casing data Total amount of casing from 2' above ground
(Give amount, size, kind, and depth of all casing; type and
44'2". 10" std wt vas pipe with heavy drive shoe on
position of seals and packers; cementing; how finished--perforated pipe, screen,
bottom
gravel pack, open hole, etc.)

Original depth to water 20 ft. ~~above~~ below curb Date

Original elevation of water level ft.; Source of data

Sources of water: Principal Cedar Valley; Others

Production data: Date April 1938

Static depth to water 16' 2" Measuring point 870' curb el

Pumping level 54 at 30 g.p.m.

80 40

Specific capacity 1/2 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 sampled	April 16 1941			
Sampled by	E.G. Fiala			
Total solids	347			
Insoluble matter	9.5			
Alkalinity (Meo)	248.0			
Alkalinity (Phn)				
pH	7.2			
Fe_2O_3+ Mn_2O_3+Al_2O_3	1.5			
Alkali as sodium	8.1			
Calcium	86.			
Magnesium				
Iron (unfiltered)				
Manganese	0.			
Nitrate	18.1			
Fluoride	Tr			
Chloride	0			
Sulfate	42.8			
Bicarbonate	302.6			
Hardness (ppm)	306			
Hardness (gpg)				

Remarks

Laboratory data: Sample storage location W03

Sample range 0 - 164' No. spls. 11 No. dupls. & cond.

Spls. prepared by Washed range by

Driller's log and cond.

Insoluble residues: Prepared by Studied by Strip log

Microscopic study Yes SEH strip log JAN 13, 1943

Gen. log Correl. by S.E. HARRIS

Benton

November 13, 1947

Mr. S. R. Ames
Hoeg & Ames
Lincoln, Iowa

Dear Mr. Ames:

In response to your letter of November 10, requesting ground-water information for the town of Garrison, we have prepared the following forecast from data in the open files of the Geological Survey.

Garrison is located in parts of sections 28 and 29, T. 85 N., R. 11 W., Benton County. The present city well is located in the NE/c SE¼ section 29, at an elevation of 870 feet above sea level. We have based the tabular forecast on this elevation.

Formation and Description	Thickness (feet)	From (feet)	To (feet)
Pleistocene system (sandy clay and sand)	40±	0	40±
Devonian system			
Cedar Valley formation (limestone and dolomite)	160	40±	200
Independence horizon (calcareous shale)	25	200	225
Wapsipinicon formation (dolomite)	75	225	300
Silurian system (dolomite and chert)	215	300	515
Ordovician system			
Maquoketa formation (shale)		515	

In the present town well thin shale streaks were reported at 60 feet which did not require casing. The Independence horizon consists of thin calcareous shale beds and probably will not cave.

The present well was finished at a depth of 104 feet in the Cedar Valley formation. It is reported to have produced 40 gallons per minute with a drawdown of 66 feet from a static level of 16 feet.

Most of the farm wells in this vicinity are drilled to a depth equivalent to 300 feet at Garrison and produce approximately 1 gallon per foot of drawdown.

A city well at Shellsburg is reported to have produced 70 gallons per minute from the Silurian dolomites with a drawdown of 9 feet. At Blairstown 150 gallons per minute was obtained from the Silurian dolomites with a drawdown of 13 feet.

It appears quite probable that 100 to 150 gallons per minute can be obtained above the Maquoketa shale at Garrison.

The mineralogical quality of the water obtainable from the Devonian and Silurian rocks is shown on the attached comparison sheet.

I hope this information will be helpful to you. If we can be of further service, please let us hear from you.

Very truly yours,

H. G. Hershey

HGH:MCP:AEH
ENC. 1

IOWA GEOLOGICAL SURVEY
Water Analysis Comparison

Town _____ County: _____ Location _____ Sec. _____ T. _____ N., R. _____ E. W.

Owner _____ Contractor: _____ Date Started: _____

	1	2	3	4	5	6
Well Number or Location	Garrison	Blowstown	Blowstown			
Depth of Sample						
Formation Source	Cedar Valley	Dev. – Silurian	Silurian			
Water Level Below Curb	14	103.6	103.5			
How Sampled						
Sampled by						
Date Sampled	4/16/41	11/19/43	10/4/41			
Total Solids	341	1291	1685			
Dissolved Solids						
Insoluble Matter	9.5	145	5.6			
Alkalinity (MeO)	248.0	274.0	196.0			
Nitrite (NO_2)						
Nitrate (NO_3)	4.0	Trace	1.4			
Sodium (Na) & Potassium (K)*	8.1	221.1	189.9			
Calcium (Ca)	86.8	154.1	198.7			
Magnesium (Mg)	21.5	56.6	90.2			
Iron (Fe)		4.07				
Iron (Unfiltered)**	0.5		0.3			
Manganese (Mn)	0.00	Trace	0.00			
Aluminum (Al)						
Fluorine (F)	Trace	1.3	1.8			
Chlorine (Cl)	10.0	79.0	9.0			
Sulphates (SO_4)	42.8	772.0	479.5			
Bicarbonates (HCO_3)	302.6	334.0	239.1			
Phosphates (PO_4)						
Borates (BO_3)						
Calculated Hardness***	306	609	869			
Water Lab. Number	17.9	35.6	50.8			

*Na and K not separated, calculated as Sodium (Na): **Includes iron precipitated or flocculated after sample collected: ***Calculated as $CaCO_3$.

Completed Depth _____ ft.; Final Static Water Level _____ ft.; Production _____ GPM; Draw-down _____ ft., at _____ GPM; Gallons per foot draw-down _____. Date Completed _____ 194__.

Remarks: _____