

U. S. DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Water Resources Division Well Schedule Form
MASTER CARD

COUNTY HWY.

Record by D. AARONSON Source of data FILE Date 6/16/65 Map 1:63,360

State 10WA County 116 (or town) CHEROKEE Sequential number 118

Latitude: 42° 42' 45" N Longitude: 095° 26' 18" W

Lat-long accuracy: 2 T. 91 S. R. 39 Sec 10 NW 1/4 NW 1/4 SE 1/4 5

Local well number: 09133W10d6b1b Other number: W-0696

Local use: 00696 37CITY Owner or name: CITY OF AURELIA

Ownership: County, Fed Gov't, City, Corp or Co, Private, State Agency, Water Dist M

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

Use of well: (A) Anode, (D) Drain, (S) Seismic, (O) Obs, (P) Oil-gas, (R) Recharge, (S) Spring, (T) Test, (U) Unused, (W) Windmill, (X) Waste, (Z) 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: INTERMITTENT Pumpage inventory: yes 1 no, period: 0

Aperture cards: 0

Log data: GEOLOGIST LOG

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 305 ft. 305 Meas. 6

Depth cased: 280 ft. 280 Casing type: STEEL accuracy 12 in 12

Finish: (C) porous concrete, (F) gravel w. concrete, (G) gravel w. (screen), (H) horiz. open perf., (I) screen, (J) ad. pt., (K) shored, (L) open hole, (M) other P

Method: (A) air bored, (B) cable, (C) dug, (D) hyd jetted, (E) air rot., (F) reverse, (G) trenching, (H) driven, (I) drive wash, (J) other 0

Date drilled: 1937 9:37 Pump intake setting: 252 ft. 252

Driller: RASMUSSEN BROS. (RED CARSON) SILOUX CITY, IOWA

Lift: (A) air, (B) bucket, (C) cent, (D) jet, (E) multiple, (F) multiple, (G) multiple, (H) multiple, (I) multiple, (J) multiple, (K) multiple, (L) multiple, (M) multiple, (N) multiple, (O) multiple, (P) multiple, (Q) multiple, (R) multiple, (S) multiple, (T) multiple, (U) multiple, (V) multiple, (W) multiple, (X) multiple, (Y) multiple, (Z) multiple 0

Power: (A) diesel, (B) elec, (C) gas, (D) gasoline, (E) hand, (F) gas, (G) wind, (H) P. 5 Trans. of meter no. 0

Descript. MP LSD 0 ft above 1st, Alt. MP 1389

Alt. LSD: 1389 11383 Accuracy: REPORTED

Water Level: 205 ft. above MP; 205 ft. below 1st Accuracy: REPORTED

Date: 2-11-38 2:38 Yield: 300 spm 300 Method 0

Drawdown: 37 ft. 37 Accuracy: REPT. 6 Pumping period: 29 hrs 29

QUALITY OF WATER DATA: Iron 0.06 Sulfate 309 Chloride 0.50 Hard. 288

Sp. Conduct 590 K x 10⁶ 590 Temp. 0 Date sampled 8-15-61 8:61

Taste, color, etc. 0

Well Number 42, 42.45 ⑧ 095, 26, 18

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD

Physiographic Province: CENTRAL LOWLAND 1:2 Section: WESTERN

LAKE B Drainage Basin: 3:6:C Subbasin: 5

Topo of well site: (D) local depression, flat surface, hilltop, hillside, terrace, valley flat, HILLSIDE 5

MAJOR AQUIFER: CRETACEOUS, LOWER K:1 DAKOTA SANDSTONE D:1

Lithology: FINE SANDSTONE 2:V Origin: MARINE 6 Aquifer Thickness: 27 ft

2:7 Length of well open to: 25 ft 2:5 Depth to top of: 278 ft 2:7:8

MINOR AQUIFER:

Lithology: Origin: Aquifer Thickness: ft

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

Intervals Screened: 280 - 305

Depth to consolidated rock: 278 ft 2:7:8 Source of data: WELL CUTTINGS C

Depth to basement: ft Source of data:

Surficial material: Infiltration characteristics: POOR 4

Coefficient Trans: spd/ft Coefficient Storage:

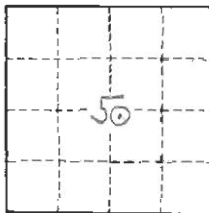
Coefficient Perm: spd/ft²; Spec cap: 8.1 gpm/ft; Number of geologic cards:

CASING:

12" - 0-280'

10" 275'-305'

PERF. 280'-305'



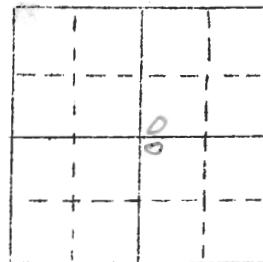
IOWA GEOLOGICAL SURVEY
In Cooperation with U. S. Geological Survey

W-0696

RECORD OF WELL

Location:

Town: Aurelia (N E)
(S W); County Cherokee
NW 1/4 SE sec. 10 T. 91 N., R. 39 W. Pitcher Twp.



Well name and number City Well #2

Owner Town of Aurelia Address _____

Tenant _____ Address _____

Contractor Rasmussen Address Sioux City

Drillers Howard Rasmussen

Drilling dates Fall & Winter 1937

Well data:

Elevations: Drilling curb 1387 feet; Land surface _____ feet

1377 - Tapper

Determined by T.W. Robinson

Topographic position Upland Slope

Total depth: Reported 305 feet, Measured 305 feet

Drilling method _____

Hole and casing data 280' of 12" standard set at 280'. 30' of
(Give amount, size, kind, and depth of all casing; type and
10" perforated pipe 5' into 12" from 275 to 305'
position of seals and packers; cementing; how finished--perforated pipe, screen,
gravel pack, open hole, etc.)

Original depth to water 205 ^{above} ft. below curb Date _____

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

Sources of water: Principal Dakota 35,278-305; Others _____

Production data:

Static depth to water 205

Date _____

Pumping level 242 1/2Measuring point 1389at 300 g.p.m.Specific capacity _____ g.p.m. per ft. drawdown; Temperature 52 °F.

Pump data; Type pump Turbine Column Dia. _____ Length 241' 2"
 Cylinder or bowls: Dia. _____ Length 11 Suction pipe 10"
 Power Electric Airline _____
 Estimated rate of production: 300 g.p.m. for 24 hrs. a day
 Use of water City Supply

WATER ANALYSES (in parts per million)

Date sampled	<u>Oct. 17, 1939</u>			
Sampled by	<u>T.W. Robinson</u>			
Total solids	<u>890</u>			
Insoluble matter	<u>10.5</u>			
Alkalinity (Neo)	<u>280.0</u>			
Alkalinity (Phn)	<u>0.0</u>			
pH	<u>7.3</u>			
Fe ₂ O ₃ + Mn ₂ O ₃ + Al ₂ O ₃	<u>5.0</u>			
Alkali as sodium	<u>9.8</u>			
Calcium	<u>87.2</u>			
Magnesium	<u>24.3</u>			
Iron (unfiltered)	<u>0.1</u>			
Manganese	<u>Trace</u>			
Nitrate	<u>0.00</u>			
Fluoride	<u>1.2</u>			
Chloride	<u>5.0</u>			
Sulfate	<u>65.4</u>			
Bicarbonate	<u>341.6</u>			
Hardness (ppm)	<u>318</u>			
Hardness (gpg)				
Remarks				

Laboratory data:

Sample storage location _____

Sample range 15-305 No. spls. 60 No. dupls. & cond. 0Spls. prepared by _____ Washed range 115-305 by Gulf

Driller's log and cond. _____

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

Microscopic study 15-305 Conselman strip log July 1939Gen. log Schuldt Correl. by Conselman

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

Name of Well: Aurelia City Well Survey No. W- 0696
Drilled by: Rasmussen Bros. Well Company Date Fall & Winter, 1937
Total Depth: 305 ft; Curb Elevation: 1377 ft; Static Level: -205 ft.
Casing Data: 280 ft. of 12 inch casing set at 280 ft. 30 ft. of 10
inch perforated. Lapping 5 ft. into 12 inch.
Pump and Screen Data: _____

Pumping Test: 24 Hours _____ Min; Gal. Per Min. 300; Drawdown 37½ ft. in _____ min.

No.	Rock Unit	Description of Formations	Thick.	From (Feet)	To
PLEISTOCENE SYSTEM					
1.	No sample		15	0	15
2.	Clay--gray and buff, calcareous, sandy, pebbly (dolomite, limestone, quartz, granite, and dark igneous material)		15	15	30
3.	Clay--buff gray, sandy, pebbly, calcareous		5	30	35
4.	Clay--medium dark gray, pebbly, strongly calcareous		5	35	40
5.	Clay--yellow gray, leached, sandy, pebbly, very calcareous		5	40	45
6.	Sand and pebbles--clay bound		5	45	50
7.	Clay--medium dark gray, strongly calcareous; 15% sand and small pebbles		10	50	60
8.	Clay--dark brown gray, hard, strongly calcareous; occasional pebbles; one gastropod shell fragment		5	60	65
9.	Clay--buff, strongly calcareous, sandy and pebbly; 2' gray shale at top		25	65	90
10.	Clay--medium dark gray, strongly calcareous, pebbly and sandy		30	90	120
11.	Sand--glacial, gray, coarse, very poorly sorted, angular. Buff limestone and igneous material present.		5	120	125
12.	Clay--smoke gray, silty textured; occasional limestone and dark igneous pebbles		55	125	180
13.	Clay or shale--light and medium gray, finely mottled, strongly calcareous, shell fragments		5	180	185
14.	Clay--light yellow gray, silty textured, non-calcareous, containing organic remains; pebbles rare		20	185	205
15.	Clay--pinkish buff, silty textured, non-calcareous		25	205	230
16.	Clay--pinkish gray, silty textured, non-calcareous		20	230	250
17.	Sand--buff gray, fine grained, angular, dark igneous grains, fair sorting		28	250	278

Notes:

		<u>Thick.</u>	<u>From</u> <u>(Feet)</u>	<u>To</u>
CRETACEOUS SYSTEM				
<u>Upper Dakota sandstone</u>				
18.	Sandstone--very pale buff, fine grained, angular, well sorted, micaceous, cemented in upper 2'.	10	278	288
19.	Sandstone--reddish brown, fine grained, angular, micaceous, well sorted	2	288	290
20.	Sandstone--very pale buff, fine grained, well sorted, micaceous, angular	15	290	305

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

091-39W-10 DBBB

KDD

W-0696

Water Quality
(ppm)

Card Q

State: 10WA 1.6 County: CHEROKEE 1.8 Town: AURELIA

Latitude Longitude Seq. No. Date

Well No. 424245N 0952618 1 081561

Sampling Depth 305 Type 1 Kx10⁶ 590 pH 7.4 Temp. °F

SiO₂ 35.0 Ca 78.4 Mg 22.1 Na 14.1 K 2.2

HCO₃ 334 CO₃ 0 SO₄ 40.1 Cl 0.5 Source No. 3Q

Card R

Duplicate Columns 1-25 from Card Q

F 0.3 NO₃ 0.9 PO₄ B Al Fe 0.06

Mn 0.05 Cu Pb Zn

Determined 372 Solids Ca, Mg 288 Hardness Non-Carb. 14

Color No. R

Card S

Duplicate Columns 1-25 from Card Q

Br I Alk. as CaCO₃ 279 Free CO₂ SAR

RSC ABS

Alpha (pc/l) Beta (pc/l) Ra (pc/l) U (ug/l)

No. 5
80

Recorded by: D. AARONSON

Verified PMJ
Punched by: Punched FCH Date:
Published:

UNITED STATES DEPARTMENT OF THE INTERIOR

Geological Survey
Water Resources Division

Local Well No. 091-39W-10DBBB

Aquifer Code(s) KID1

Water Quality
(ppm)

Owner's Name AURELIA CITY (1937)

W Number 00696

Card Q

State: IOWA 1 9 County: CHEROKEE 1 8 Town: AURELIA, IOWA

Well No. 4 2 4 2 4 5 N Latitude Longitude Seq. No. 1 Date 1 0 1 7 3 9

Sampling Depth 3 0 5 Type 1 Kx10⁶ 3 1 3 5 pH 7 3 Temp. °F 5 6

SiO₂ 4 2 4 Ca 8 7 Mg 2 4 Na 1 0 K C

HCO₃ 3 4 2 CO₃ 6 5 SO₄ 6 5 Cl 5 0 Source No. 3 Q

Card R

Duplicate Columns 1-25 from Card Q

F 1 2 NO₃ 0 PO₄ 3 3 B 3 6 Al 3 9 Fe 1 1

Mn 4 6 4 9 Cu 5 0 5 2 Pb 5 3 5 4 Zn 5 5 5 7

Determined 3 9 0 Solids 3 1 8 Hardness Non-Carb. 3 8

Color 7 8 No. R

Card S

Duplicate Columns 1-25 from Card Q

Br 2 6 4 2 I 2 9 3 1 Alk. as CaCO₃ 2 8 0 Free CO₂ 3 6 3 8 SAR 3 9 4 1

RSC 4 2 4 2 ABS 4 5 4 7 4 8 5 0

Alpha (pc/l) 5 5 5 7 Beta (pc/l) 5 8 6 0 Ra (pc/l) 5 1 6 3 U (ug/l) 6 4 6 6

No. S
80

Recorded by: D. AARONSON

Punched by: T Date: 4/1

Published:

UNITED STATES DEPARTMENT OF THE INTERIOR

Geological Survey
Water Resources DivisionLocal Well No. 091-39W-10DBBBAquifer Code(s) KID1Water Quality
(ppm)Owner's Name AURELIA #2 (1937)W Number 00696

Card Q

State: IOWA 19 County: CHEROKEE 18 Town: AURELIA, Iowa

Well No. 424245N 0952618 Seq. No. 1 Date 092958

Sampling Depth 305 Type 1 Kx10⁶ 540 pH 7.6 Temp. °F

SiO₂ 31 Ca 71 Mg 24 Na 13 K 3.6

HCO₃ 325 CO₃ 0 SO₄ 42 Cl 40 Source No. 3 Q

Card R

Duplicate Columns 1-25 from Card Q

F 3 NO₃ 4 PO₄ B Al Fe 05

Mn 05 Cu Pb Zn

Solids Hardness

Determined 345 Calc. Ca, Mg 276 Non-Carb. 10

Color No. R

Card S

Duplicate Columns 1-25 from Card Q

Br I Alk. as CaCO₃ 266 Free CO₂ SAR

RSC ABS

Alpha (pc/l) Beta (pc/l) Ra (pc/l) U (ug/l)

No. S
80Recorded by: D. AARONSONPunched by: T Date: 10/1Published:

UNITED STATES DEPARTMENT OF THE INTERIOR

Geological Survey
Water Resources DivisionLocal Well No. 091-39W-10DBBB
Aquifer Code(s) KID1
Owner's Name AURELIA CITY #2 (1937)
W Number 00696Water Quality
(ppm)

Card Q

State: IOWA 19 County: CHEROKEE 18 Town: AURELIA, IOWA

Well No. 424245N 0952618 Seq. No. 1 Date 022167

Sampling Depth 305 Type 1 Kx10⁶ 570 pH 7.4 Temp. °F 52

SiO₂ 34 Ca 80 Mg 22 Na 13 K 21

HCO₃ 355 CO₃ 0 SO₄ 35 Cl 5 Source No. 3 Q

Card R

Duplicate Columns 1-25 from Card Q

F 2 NO₃ 5 PO₄ 1 B 1 Al 1 Fe 11

Mn 05 Cu 1 Pb 1 Zn 1

Solids 344 Calc. 1 Ca, Mg 292 Hardness Non-Carb. 1

Color 1 No. R

Card S

Duplicate Columns 1-25 from Card Q

Br 1 I 1 Alk. as CaCO₃ 291 Free CO₂ 1 SAR 1

RSC 1 ABS 1 1

Alpha (pc/l) 1 Beta (pc/l) 1 Ra (pc/l) 1 U (ug/l) 1

No. S
80Recorded by: D. AARONSONPunched by: T Date: 11

Published: _____