Punched FCH

WRD Exp. (GW)
Aug. 1964

U. S. DEPARTMENT OF THE INTERIOR — GEOLOGICAL SURVEY

Water Resources Division Well Schedule Form

MASTER CARD

Record by R. W. COBLE Source of data [illegible] Date 6/8/65 Map COUNTY HWY 1:63,360

State IOWA [16] County (or town) GUTHRIE

Latitude: 41 30 __ (deg, min, sec) N/S Longitude: 094 19 __ (degrees, min, sec) Sequential number: 1

Lat-long accuracy: T 78 (N) S, R 30 E W, Sec 33, SW ¼, SW ¼, SW ¼ 5 B & M

Local well number: C 78 __ W 33 C C C Other number: W-0080

Local use: [illegible] 16 C I [illegible] Owner or name: CITY OF STUART

Owner or name: IØWA Address: STUART, IOWA

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

Use of water: (A) Air cond, (C) Comm, (D) Dewatering, (F) Fire, (H) Dom, (I) Irr, (N) Ind, (P) 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 [1] Freq. W/L meas.: IRREGULAR [I] Field aquifer char.

Hyd. lab. data:

Qual. water data; type: COMPLETE

Freq. sampling: IRREGULAR [I] Pumpage inventory: yes (no) period:

Aperture cards: yes

Log data: GEOLOGIC AND DRILLERS

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 3021 ft Meas. rept accuracy: DRL

Depth cased: (first perf.) 1938 ft [938] Casing type: ; Diam. 12 in

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

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

Date Drilled: 1916 Pump intake setting: ft

Driller: THORPE WEL (name), DES MOINES, IOWA (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

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

Descrip. MP LSD ft above/below lsd, Alt. MP [illegible]

Alt. LSD: 1205 Accuracy: (source)

Water Level 345 ft above/below MP; Ft above/below lsd [345] Accuracy: DRL

Date meas: 1916 Yield: 212 gpm [212] Method determined

Drawdown: 52 ft Accuracy: DRL Pumping period 24 hrs [2]

QUALITY OF WATER DATA: Iron 0.24 ppm Sulfate 800 ppm Chloride 230 ppm [3] Hard. 658 ppm

Sp. Conduct 2550 K x 10^6 Temp. 76 °F [76] Date sampled 4/25/62 [4]

Taste, color, etc.

30W-33CC

Well Number 41, 3[illegible], 15 (N) S 094, 19, 04
d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19)

Physiographic Province: CENT. [illegible] PLAINS [22] (20–21)

Section: S. T[illegible]

Drainage Basin: RACCOON [23–25]

Subbasin: ____ [26]

Topo of well site: local depression (D), flat surface (F), hilltop (H), hillside (S), terrace (T), valley flat (V), ____ [27]

MAJOR AQUIFER: CAMBRIAN (system), UPPER (series) [28–29] JORDAN SANDSTONE (aquifer, formation, group) [30–31]

Lithology: FINE SANDSTONE [2] (32–33) Origin: MARINE [6] (34) Aquifer Thickness: 84 ft

[ ] (35–37) Length of well open to: 84 ft [4] (38–40) Depth to top of: 2716 ft [7] (41–43)

MINOR AQUIFER: ORDOVICIAN (system), LOWER (series) [ ] (44–45) PRAIRIE DU CHEIN (aquifer, formation, group) [L P] (46–47)

Lithology: [illegible] DOLOMITE [ ] (48–49) Origin: MARINE [6] (50) Aquifer Thickness: ____ ft

[2] (51–53) Length of well open to: 328 ft [8] (54–56) Depth to top of: 2385 ft [ ] (57–59)

Intervals Screened: OPEN HOLE 1938 ? 3021

Depth to consolidated rock: ____ ft [ ] (60–63) Source of data: DRL [ ] (64)

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

Surficial material: [illegible] [ ] (70–71) Infiltration characteristics: POOR [ ] (72)

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

Coefficient Perm: ____ gpd/ft^2; Spec cap: .41 gpm/ft; Number of geologic cards: ____ [ ] (79)

GPO 844-225

MOORE'S MODERN METHODS

9/29/46

Stuart: GUTHRIE Co. Thorpe 1916.

Gravel pack - E. town. 1/2 E 1/4 S

Deep well: Drilled 1916

Depth 3021'
Curb El. 1205'

Casing

old		new	
12"	- 305'	16"	260'
10"	- 260 - 785	8"	460'
8"	690 - 1285	6"	550'
6"	1185 - 1938	4"	890'

Pumping test:

24 hrs. 212 gpm. D.D. 52'

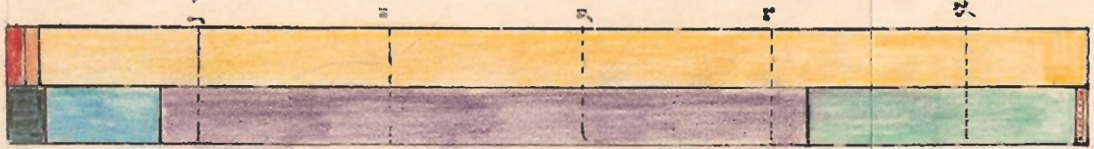
Apr 3. 43 - June 25. 43
Shallow well: #2 Drilled 1935?
Redue. 1943.

Depth: 255'
Size hole 12" top finished 4"

gpm 200
S.W. 184'
D.D. 202'

1st H2O 232'

Stuart Well Old Well Guthrie Co Total depth 3021' Prod. Horizon: Jordon

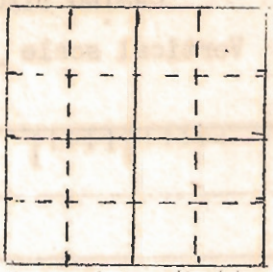


14/1023

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

IW-0080

RECORD OF WELL


W. of electric light plant back of city hall

Location:

Town: Stuart (N E S W); County Guthrie E.

SW/c sec. 33 T. 78 N., R. 30 W. Stuart Twp.

Well name and number Town Well

Owner Town of Stuart Address

Tenant Address

Contractor Thorpe Bros. Well Co. Address

Drillers

Drilling dates Completed in 1916

Well data:

Elevations: Drilling curb 1206 feet; Land surface feet

Determined by K.E. Anderson 3/10/93

Topographic position Upland

Total depth: Reported 3021 feet; Measured feet

Drilling method Cable tool

Hole and casing data 305' of 12" casing from 0-305'; 525' of 10" casing from 260'-785'; 595' of 8" casing from 690'-1285'; 753' of 6" casing from 1185-1938'

(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 345 ft. above below Date

Original elevation of water level 861 ft.; Source of data

Sources of water: Principal Jordan ss 2734-2830; Others Glacial-small Pennsylvanian, St. Peter (see remarks)

Production data: Date _____

Static depth to water 345'; Measuring point _____

Pumping level less than 397' at 212 g.p.m. at T.D. of 3021

_____ _____

_____ _____

_____ _____

Specific capacity _____ g.p.m. per ft. drawdown; Temperature 63 °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 Public supply

WATER ANALYSES (in parts per million)

Date sampled	June 18, 1936	1940		
Sampled by	A.C. Tester	Mullinex		
Total solids	1764.0	1853.		
Insoluble matter	45.5	14.0		
Alkalinity (Meo)	172.0	176.0		
Alkalinity (Phn)	0.0	22.0		
pH	7.4	8.4		
$Fe_2O_3+Mn_2O_3+Al_2O_3$	10.0	7.0		
Alkali as sodium	275.95	605.8		
Calcium	186.50	7.9		
Magnesium	58.75	5.2		
Iron (unfiltered)	0.20	0.5		
Manganese	0.00	trace		
Nitrate	~~8.75~~ 3.3	~~8.80~~ 3.5		
Fluoride	2.0	1.4		
Chloride	236.0	250.0		
Sulphate	766.05	805.1		
Bicarbonate	209.84	187.9		
Hardness (ppm)	707.81	42.		
Hardness (gpg)		2.5		

Remarks _____

Laboratory data: Sample storage location _____

Sample range 1185 - 3016 No. spls. 292 No. dupls & cond. 12.5 p. to g.

Spls. prepared by _____ Washed range _____ by _____

Driller's log and cond. Yes

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

Microscopic study 1185 - 3016 Gulf W.C.S strip log Carmody May 1939, W.C. Schuldt

Gen. log ✓ Correl. by _____

WATER LEVEL DATA

Measuring point _____

Date	Depth to water	Altitude	Remarks

REMARKS

Water encountered — formation — W.L.

240 — Glacial sand

550 — Coal measures

2371-2410 — St. Peter — 345 — 8 gpm.

2736-2830 — Jordan ss — 345 — 212 gpm dd 52'

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Local Well No. 078-30W-33CCC
Aquifer Code(s) C35J 0ILP
Owner's Name STUART CITY WELL (1916)
W Number 00080

Water Quality
(ppm)

Card Q

State: IOWA (19) County: GUTHRIE (39) Town: STUART, IOWA

Well No. Latitude 413015N (5–11) Longitude 0941904 (12–18) Seq. No. 1 (19) Date M D Y 02 10 58 (20–25)

Sampling Depth 3021 (26–29) Type 1 (30) Kx10⁶ 3480 (31–35) pH 7.6 (36–38) Temp. °F (39–41)

SiO_2 10. (42–44) Ca 336. (45–49) Mg 90. (50–53) Na 372. (54–58) K 29. (59–61)

HCO_3 239 (62–65) CO_3 0 (66–67) SO_4 1480. (68–72) Cl 190. (73–78) Source No. 3 (79) Q (80)

Card R

Duplicate Columns 1-25 from Card Q

F 2.6 (26–28) NO_3 .4 (29–32) PO_4 (33–35) B (36–38) Al (39–41) Fe .43 (42–45)

Mn .05 (46–49) Cu (50–52) Pb (53–54) Zn (55–57)

Solids: Determined 2880 (58–63) Calc. (64–69)

Hardness: Ca,Mg 1210 (70–73) Non-Carb. 1014 (74–77)

Color (78–79) No. R (80)

Card S

Duplicate Columns 1-25 from Card Q

Br (26–28) I (29–31) Alk. as $CaCO_3$ 196 (32–35) Free CO_2 (36–38) SAR (39–41)

RSC (42–44) ABS (45–47) (48–50)

Alpha (pc/l) (55–57) Beta (pc/l) (58–60) Ra (pc/l) (61–63) U (ug/l) (64–66)

No. S (80)

Recorded by: D. AARONSON

Punched by: _____ Date: _____

Published: _____

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Water Quality
(ppm)

Local Well No. 078-30W-33 CCC
Aquifer Code(s) C3SJ ϕILP
Owner's Name STUART CITY WELL (1916)
W Number 00080

Card Q

State: IOWA (19) County: GUTHRIE (39) Town: STUART, IOWA

Well No. Latitude 413015N (5–11) Longitude 0941904 (12–18) Seq. No. 1 (19) Date M D Y 062552 (20–25)

Sampling Depth 3021 (26–29) Type 1 (30) Kx10⁶ 2690 (31–35) pH 7.0 (36–38) Temp. °F (39–41)

SiO_2 (42–44) Ca 202 (45–49) Mg 73. (50–53) Na 288. (54–58) K 32. (59–61)

HCO_3 224 (62–65) CO_3 0 (66–67) SO_4 918. (68–72) Cl 245. (73–78) Source No. 3 (79) Q (80)

Card R

Duplicate Columns 1-25 from Card Q

F 3.2 (26–28) NO_3 0. (29–32) PO_4 (33–35) B (36–38) Al (39–41) Fe .5 (42–45)

Mn 0. (46–49) Cu (50–52) Pb (53–54) Zn (55–57)

Solids Determined 1990 (58–63) Calc. (64–69) Hardness Ca,Mg 804 (70–73) Non-Carb. 620 (74–77)

Color (78–79) No. R (80)

Card S

Duplicate Columns 1-25 from Card Q

Br (26–28) I (29–31) Alk. as $CaCO_3$ 184 (32–35) Free CO_2 (36–38) SAR (39–41)

RSC (42–44) ABS (45–47) (48–50)

Alpha (pc/l) (55–57) Beta (pc/l) (58–60) Ra (pc/l) (61–63) U (ug/l) (64–66)

No. S (80)

Recorded by: D. AARONSON

Punched by: _____ Date: _____

Published: _____

078-30W-33CC

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

W-0080

Water Quality
(ppm)

Card Q

State: IOWA (16) County: GUTHRIE (39) Town: STUART

Well No. Latitude 413015N (5–11) Longitude 0941106W (12–18) Seq. No. 1 (19) Date M 04 D Y 72 (20–25)

Sampling Depth 31.2 (26–29) Type (30) $Kx10^6$ 2550 (31–35) pH 7.5 (36–38) Temp. °F (39–41)

SiO_2 11. (42–44) Ca 162 (45–49) Mg 91. (50–53) Na 312. (54–58) K 39. (59–61)

HCO_3 236 (62–65) CO_3 0 (66–67) SO_4 800. (68–72) Cl 230. (73–78) Source No. 3 (79) Q (80)

Card R

Duplicate Columns 1-25 from Card Q

F 2.6 (26–28) NO_3 .4 (29–32) PO_4 (33–35) B (36–38) Al (39–41) Fe .27 (42–45)

Mn .05 (46–49) Cu (50–52) Pb (53–54) Zn (55–57)

Solids Determined 860 (58–63) Calc. (64–69) Hardness Ca,Mg 63 (70–73) Non-Carb. 77 (74–77)

Color (78–79) No. (80)

Card S

Duplicate Columns 1-25 from Card Q

Br (26–28) I (29–31) Alk. as $CaCO_3$ 165 (32–35) Free CO_2 (36–38) SAR (39–41)

RSC (42–44) ABS (45–47) (48–50)

Alpha (pc/l) (55–57) Beta (pc/l) (58–60) Ra (pc/l) (61–63) U (ug/l) (64–66)

No. 5 (80)

Verified PMJ

Recorded by: D AARONSON

Punched by: Punched FCH Date:

Published:

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Local Well No. 078-30W-33 CCC
Aquifer Code(s) C35J ØILP
Owner's Name STUART CITY WELL (1916)
W Number 00080

Water Quality
(ppm)

Card Q

State: IOWA (19) County: GUTHRIE (39) Town: STUART, IOWA

Well No. Latitude 41 30 15 N (5–11) Longitude 094 19 04 (12–18) Seq. No. 1 (19) Date M D Y 02 24 49 (20–25)

Sampling Depth 3021 (26–29) Type 1 (30) Kx10⁶ (31–35) pH 8.0 (36–38) Temp. °F (39–41)

SiO_2 (42–44) Ca 146. (45–49) Mg 59. (50–53) Na +K 321. (54–58) K .C (59–61)

HCO_3 200 (62–65) CO_3 12 (66–67) SO_4 750. (68–72) Cl 252. (73–78) Source No. 3 (79) Q (80)

Card R

Duplicate Columns 1-25 from Card Q

F 2.4 (26–28) NO_3 0. (29–32) PO_4 (33–35) B (36–38) Al (39–41) Fe .35 (42–45)

Mn .0 (46–49) Cu (50–52) Pb (53–54) Zn (55–57)

Solids Determined 1700 (58–63) Calc. (64–69) Hardness Ca,Mg 608 (70–73) Non-Carb. 434 (74–77)

Color (78–79) No. R (80)

Card S

Duplicate Columns 1-25 from Card Q

Br (26–28) I (29–31) Alk. as $CaCO_3$ 174 (32–35) Free CO_2 (36–38) SAR (39–41)

RSC (42–44) ABS (45–47) (48–50)

Alpha (pc/l) (55–57) Beta (pc/l) (58–60) Ra (pc/l) (61–63) U (ug/l) (64–66)

No. S (80)

Recorded by: D. AARONSON

Punched by: T Date:

Published:

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Water Quality
(ppm)

Local Well No. 078-30W-33 CCC
Aquifer Code(s) C355 ØILP
Owner's Name STUART CITY WELL (1916)
W Number 00080

Card Q

State: IOWA (19) County: GUTHRIE (39) Town: STUART, IOWA

Well No. Latitude 41301 5N (5–11) Longitude 094190 4 (12–18) Seq. No. 1 (19) Date M 08 D 25 Y 53 (20–25)

Sampling Depth 3021 (26–29) Type 1 (30) Kx10⁶ 2000 (31–35) pH 8.0 (36–38) Temp. °F 75 (39–41)

SiO_2 (42–44) Ca 202. (45–49) Mg 67. (50–53) Na 318. (54–58) K 32. (59–61)

HCO_3 201 (62–65) CO_3 0 (66–67) SO_4 955. (68–72) Cl 228. (73–78) Source No. 3 (79) Q (80)

Card R

Duplicate Columns 1-25 from Card Q

F .3 (26–28) NO_3 0. (29–32) PO_4 (33–35) B (36–38) Al (39–41) Fe 2.2 (42–45)

Mn 0. (46–49) Cu (50–52) Pb (53–54) Zn (55–57)

Solids Determined 2040 (58–63) Calc. (64–69) Ca,Mg 780 (70–73) Hardness Non-Carb. 615 (74–77)

Color (78–79) No. R (80)

Card S

Duplicate Columns 1-25 from Card Q

Br (26–28) I (29–31) Alk. as $CaCO_3$ 165 (32–35) Free CO_2 (36–38) SAR (39–41)

RSC (42–44) ABS (45–47) (48–50)

Alpha (pc/l) (55–57) Beta (pc/l) (58–60) Ra (pc/l) (61–63) U (ug/l) (64–66)

No. S (80)

Recorded by: D AARONSON

Punched by: T Date:

Published:

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Water Quality
(ppm)

Local Well No. 078-30W-33ccc
Aquifer Code(s) C355 ØILP
Owner's Name STUART CITY WELL (1916)
W Number 00080

Card Q

State: IOWA (19) County: GUTHRIE (39) Town: STUART, IOWA

Well No. Latitude 4130154N (5–11) Longitude 094190 4 (12–18) Seq. No. 1 (19) Date M D Y 06 18 36 (20–25)

Sampling Depth 3021 (26–29) Type 1 (30) Kx10^6 (31–35) pH 7.4 (36–38) Temp. °F 71 (39–41)

SiO_2 (42–44) Ca 186 (45–49) Mg 59 (50–53) Na +K 276 (54–58) K .C (59–61)

HCO_3 210 (62–65) CO_3 (66–67) SO_4 766 (68–72) Cl 236 (73–78) Source No. 3 Q (79–80)

Card R

Duplicate Columns 1-25 from Card Q

F .20 (26–28) NO_3 .8 (29–32) PO_4 0. (33–35) B (36–38) Al (39–41) Fe .20 (42–45)

Mn .0 (46–49) Cu (50–52) Pb (53–54) Zn (55–57)

Solids Determined 1760 (58–63) Calc. (64–69) Ca,Mg 708 (70–73) Hardness Non-Carb. 536 (74–77)

Color (78–79) No. R (80)

Card S

Duplicate Columns 1-25 from Card Q

Br (26–28) I (29–31) Alk. as $CaCO_3$ 172 (32–35) Free CO_2 (36–38) SAR (39–41)

RSC (42–44) ABS (45–47) (48–50)

Alpha (pc/l) (55–57) Beta (pc/l) (58–60) Ra (pc/l) (61–63) U (ug/l) (64–66)

No. S (80)

Recorded by: D. AARONSON

Punched by: Date:

Published:

IOWA GEOLOGICAL SURVEY
Iowa City, Iowa

STUART, GUTHRIE COUNTY
(Altitude 1205 feet)

The deep well completed in 1916 for the city of Stuart by the Thorpe Bros. Well Company of Des Moines has the distinction of being the deepest well in Iowa, with its depth of 3021 feet. Water was found at 240 feet in glacial sands, and at 550 feet in the Coal Measures, but in inconsiderable amounts. The Saint Peter yielded little water and a test made when the drill had reached its base gave but 8 gallons a minute with a 550 foot pipe.

The chief water beds were found between 2736 and 2800 feet where the cuttings were washed away by the flow. The head of the Saint Peter water had been 325 below the curb. From 2736 to 2830 feet it stood at 345 feet, rising slightly at the last named depth. No further fluctuations in the static level were observed and there is no evidence that any additional water beds were struck. The final test when the well had reached its present depth, lasting eighty hours with 397 feet of pipe, of which 52 feet were submerged, failed to bring the draw down below the bottom of the pipe and for the last twenty-four hours averaged 212 gallons per minute.

The diameters of the well are indicated by the casings:

12 inch.....0-305
10 inch.....260-785
8 inch.....690-1285
6 inch.....1185-1938

Chemical analyses

	Parts per million deep well	Old city well 90 feet deep
Silica (SiO_2)	11.8	....
Iron and alumina	2.8	....
Calcium	107.1	90.
Magnesium	65.9	27.
Sodium	343.4	32.
Potassium	.....	2
Carbonate radicle (CO_3)	107.4	
Bicarbonate radicle (HCO_3)	.....	408.
Sulfate radicle (SO_4)	826.0	18.
Chlorine radicle (Cl)	257.6	2.
Dissolved solids, by evaporation	1785.0	390.

Record of Strata and Driller's Log

	DEPTH IN FEET
Pleistocene and Recent (251 feet thick; top 1205 feet above sea level):	
Soil and yellow clay	0-40
Sand, fine, mixed with clay	40-41
Clay, blue, with many boulders	41-82
Sand, medium fine, 10 to 15 gallons of water per minute	82-86
Clay, yellow	86-116
Hardpan, yellow, cemented	116-119
Clay, blue, numerous small pebbles	119-141
Sea mud, very fine, drab, no pebbles	141-196
Clay, blue, no pebbles	196-211
Sea mud, as at 141, some sand mixed	211-225
Sand, fine, grading into above	225-241
Sand, coarse, 15 to 20 gals. per minute	241-251
Pennsylvanian (564 feet thick; top 954 feet above sea level):	
Clay shale, blue	251-264
Limestone, blue	264-271
Slate, with hard sulphur bands	271-287
Boulder fromation, very hard	287-289
Slate, with limestone bands	289-321
Limestone, hard, blue	321-328
Slate, hard, black	328-330
Boulder formation	330-331
Slate, black, very soft	331-332
Boulder formation, hard	332-333
Slate, hard, black	333-339
Coal	339-341
Fire clay	341-342
Limestone, blue	342-345
Slate, blue	345-353
Rock, blue	353-355
Shale, red	355-360
Limestone, blue	360-368
Shale, blue	368-371
Boulder formation	371-375
Shale, blue, with hard bands	375-401
Limestone, blue	401-404
Slate, blue	404-410
Flint rock	410-411
Shale, red and blue, hard bands	411-424
Limestone, blue, hard	424-430
Shale, blue	430-441
Shale, red	441-453
Hard gray rock	453-455
Slate, blue	455-477
Blue boulder	477-481

Shale red	481-487
Flint band	487-489
Shale, gray, sulphur band	489-505
Limestone, gray	505-513
Shale, gray	513-533
Slate, black, mixed with lime rock	533-541
Shales with limestone, shales soft and caving	541-765
Shale, light colored, calcareous	765-815
Mississippian (405 feet thick; top 390 feet above sea level):	
Chert and shale	815-980
Limestone, brown	980-1022
Limestone, gray, effervescence rapid	1022-1083
Bands of chert mixed with lime, hard to drill	1083-1106
Limestone, brown	1106-1126
Lime and chert, mixed gray, bands hard, then soft	1126-1177
Shale (Kinderhook) greenish, with hard bands of lime	1177-1218
Sample of cuttings; shale, blue-gray, calcareous, in plastic concreted masses, with some grains of limestone of rapid effervescence in cold dilute HCl at	1185, 1195, 1203, 1213

IOWA GEOLOGICAL SURVEY
Generalized log, based on detailed
Description of Drill Cuttings

Name of Well Stuart City Well Survey No. W- W - 0080

Location

Drilled by Thorpe Bros. Well Co., Des Moines Date 1916

Total Depth 3021 ft, Curb Elevation 1205 ft, Static level ft.

Pumping Test 24 Hours -- Min, Gal. per Min. 212, Drawdown 52' ft. in -- min.

Casing Data 12" casing 0-305', 10" casing 260-785', 8" casing 690-1285', --

6" casing 1185-1938'

Description of Formations

No.	Rock Unit	Thick.	From (feet)	To
	MISSISSIPPIAN OR DEVONIAN SYSTEM			
	Maple Mill or Sheffield Formation			
1.	Shale, light green gray to gray, soft, fair shaly structure, slightly calcareous, no spores, but shale badly mashed during drilling	33'	1180'	1213'
	DEVONIAN SYSTEM			
2.	Limestone, buff to light brown, very fine crystalline to subcrystalline, with rare authigenic quartz crystals	7'	1213'	1220'
3.	Dolomite, light brown, coarse fine crystalline translucent	7'	1220'	1227'
4.	Limestone, buff, extremely fine crystalline, to sub-crystalline, translucent to floury textured, with occasional selenite fragments	9'	1227'	1236'
5.	Dolomite, brown drab, fine to medium crystalline, hard, compact	12'	1236'	1248'
6.	Limestone, light buff to white, very fine crystalline to subcrystalline, moderately hard	21'	1248'	1269'
7.	Limestone, light buff and Dolomite, brown to drab, interbedded, limestone much predominant	15'	1269'	1284'
8.	Limestone, light drab, subcrystalline, moderately hard, slightly pyritic	12'	1284'	1296'

Notes:

Description of Formations

No.	Rock Unit	Thick	From (feet)	To
9.	Shale, gray-brown, calcareous, as 20% of sample representing 7'	2'	1296'	1298'
10.	Dolomite, brown, fine crystalline, translucent, hard, calcareous in upper 5', slight amounts of green and gray shale throughout, 10% gray shale at 1368 and 5% brown shale at 1347'	77'	1298'	1375'
11.	Dolomite, light drab to buff, very fine sugary texture, with 15% brown to green shale at 1382' and 10% green shale at 1396' and 1403'	28'	1375'	1403'
	Cedar Valley Formation			
12.	Limestone, very light drab, very fine crystalline, translucent, 5% green shale at 1417'	17'	1403'	1420'
13.	Dolomite, light brown, fine to medium crystalline, translucent, compact, slightly pyritic at top, with 0-5% of selenite fragments throughout	32'	1420'	1452'
14.	Dolomite, brown, fine to medium crystalline, slightly sugary textured, with 0-5% Selenite crystal fragments, with 3% greenish shale at 1481' and 10% green gray shale at 1490'	64'	1452'	1516'
	Wapsipinicon Formation			
15.	Dolomite, slightly reddish brown, fine crystalline	14'	1516'	1530'
16.	Limestone, red brown, and dolomite, reddish brown, in alternate beds and equivalent proportions, limestone has somewhat flaky texture	21'	1530'	1551'
17.	Limonite, yellow brown, highly calcareous, grading down into dolomite	34'	1551'	1585'
18.	Dolomite, brown-drab to gray, mottled in part, very fine to subcrystalline, compact, hard, becoming drab, lithographic in lower 5'	24'	1585'	1609'
19.	Dolomite, light brown drab, fine crystalline, very fine sugary texture	19'	1609'	1628'
20.	Dolomite, buff, lithographic to subcrystalline, gypsiferous, with 5% medium grained quartz sand in lower 6'	12'	1628'	1640'

Description of Formations

No.	Rock Unit	Thick	From (feet)	To
21.	Dolomite, buff, very fine crystalline, very fine sugary texture at top, grading down to fine to coarse crystalline dolomite which drills to dolomite sand. 20% gypsum and 15% green shale at 1682'	49'	1640'	1689'
22.	Gypsum, white, drills to flour containing approximately 30% dolomite crystals	5'	1689'	1694'
23.	Dolomite, light brown fine to subcrystalline, with 5-15% green shale and 5-15% gypsum	45'	1694'	1739'
24.	Dolomite light buff, fine to medium crystalline,	54'	1739'	1793'
25.	Dolomite, light brown, fine to medium crystalline, with 5-15% green shale fragments and 5-15% gypsum	46'	1793'	1839'
26.	Dolomite, dark brown to dark red brown, fine to sub-crystalline, with 5-10% green shale and 2-5% gypsum	8'	1839'	1847'
27.	Dolomite, light brown, very fine to subcrystalline, translucent	12'	1847'	1859'
28.	Sandstone, red (from red shale), medium grained, curvilinear, frosted	3'	1859'	1862'
SILURIAN				
29.	Chert, light drab, translucent, chalcedonic	2'	1862'	1864'
ORDOVICIAN				
	Maquoketa Formation			
30.	Dolomite, white, fine to medium crystalline, in upper 10' to very fine crystalline below, hard translucent with 5-20% white fresh opaque chert between 1884' and 1896'	112'	1864'	1976'
31.	Dolomite, very light buff to white, very fine to subcrystalline	16'	1976'	1992'
32.	Dolomite, white, fine to medium crystalline, drills to dolomite sand or rock flour	38'	1992'	2030'
33.	Dolomite, very light buff, fine to medium crystalline, with 15-30% white to light buff, opaque to partially chalcedonic chert	26'	2030'	2056'

Description of Formations

No.	Rock Unit	Thick	From (feet)	To
	Galena Formation			
34.	Dolomite, light buff fine to medium crystalline, drills to dolomite sand, 5-10% chert from 2056-2080'	44'	2056'	2100'
35.	Dolomite, light brown to buff, fine to medium crystalline, hard, translucent, with 0-15% light buff opaque to subtranslucent chert, slightly sandy in parts and with 15% medium quartz sand at 2112'	62'	2100'	2162'
36.	Sandstone, fine to medium grained, curvilinear, well frosted (as 35% of sample)	1'	2162'	2163'
37.	Dolomite, light brown, fine to medium crystalline, with 1-2% green and brown shale throughout, slightly sandy in parts	28'	2163'	2191'
	Decorah-Platteville Formations			
38.	Dolomite, very light buff to light gray; fine crystalline to fine textured, translucent to opaque, slightly pyritic, with 35% gray green, slightly pyritic, fossiliferous shale, also 15% rounded, medium quartz sand	5'	2291'	2296'
39.	Dolomite, calcareous, light buff, very fine crystalline to floury texture, weak, with green, interbedded shale, dense fossiliferous, also some stringers medium to coarse grained sandstone. Occasional thin bands brown or gray noncalcareous dolomite	66'	2296'	2362'
	Glenwood Formation			
40.	Shale, green, dense, compact, hard, fossiliferous (with Brachiopod shell fragments)	2'	2362'	2364'
	St. Peter Formation			
41.	Sandstone, light buff to white, medium grained fairly well sorted, curvilinear, well frosted, with considerable secondary growth. Band of brown very sandy dolomite at 2380'	24'	2364'	2388'
	Willow River Formation			
42.	Dolomite, light brown, fine to medium crystalline, slightly to moderately sandy in parts, small percentages white opaque oolitic chert in parts	38'	2388'	2426'

Description of Formations

No.	Rock Unit	Thick	From (feet)	To
43.	Dolomite, white, fine to medium crystalline, translucent, slightly fine to medium sandy, 1-5% white opaque chert	44'	2426'	2470'
44.	Dolomite, light buff to white, fine to medium crystalline, traces white opaque chert	42'	2470'	2512'
	New Richmond Formation			
45.	Sandstone, light buff, medium grained grading to fine in upper part, to coarse in middle and to fine again in lower part, well sorted, well frosted, curvilinear	28'	2512'	2540'
	Oneota Formation			
46.	Dolomite, light brown, fine to medium crystalline, translucent, with much sand, 0-5% white oolitic chert	12'	2540'	2552'
47.	Dolomite, light buff, very fine crystalline, with 0-10% subangular to curvilinear partially frosted sand (possibly cave), 3' dark green dense fossiliferous shale at 2572'	56'	2552'	2608'
48.	Dolomite, light buff, fine to medium crystalline, translucent, with 20-30% light buff translucent chert, sandy in lower part	20'	2608'	2628'
49.	Dolomite, light buff, fine to medium crystalline, translucent, sandy in upper part, traces chert	24'	2628'	2652'
50.	Sandstone, light buff, fine to medium grained, curvilinear, well frosted, strong secondary growth	3'	2652'	2655'
51.	Dolomite, light buff, fine to medium crystalline, translucent, with small percentage quartz sand	61'	2655'	2716'
	CAMBRIAN SYSTEM			
	Trempealeau Formation			
	Jordan Member			
52.	Sandstone, light buff to white, fine to medium grained fairly well sorted, dolomite cemented in part and with band of dolomite at 2726'. Considerable secondary growth in upper part	16'	2716'	2732'
53.	No sample	68'	2732'	2800'
	St. Lawrence Member			
54.	Dolomite, light buff, fine to medium crystalline, translucent, with slight traces quartz sand and with very slight trace glauconite at 2828'	48'	2800'	2848'

Description of Formations

No.	Rock Unit	Thick	From (feet)	To
55.	Dolomite, light buff, fine to medium crystalline, translucent, slightly to moderately glauconitic, throughout traces quartz sand in parts	56'	2848'	2904'
	Franconia Formation			
56.	Sandstone, light buff, fine grained, angular, very slightly frosted, moderately glauconitic, moderately to strongly calcite cemented. Upper 15' actually sandy dolomite	48'	2904'	2952'
57.	Limestone, light buff, fine textured, glauconitic, slightly sandy	29'	2952'	2981'
58.	Sandstone, light buff, fine grained, angular, very slightly frosted, moderately glauconitic, moderately to strongly calcite cemented	35'	2981'	3016'

Sheet No. 12 Name of Well Stuart City Well # (2) Survey No. W-0080

Location ..... Date Drilled 1/16 Analyst Schuldt

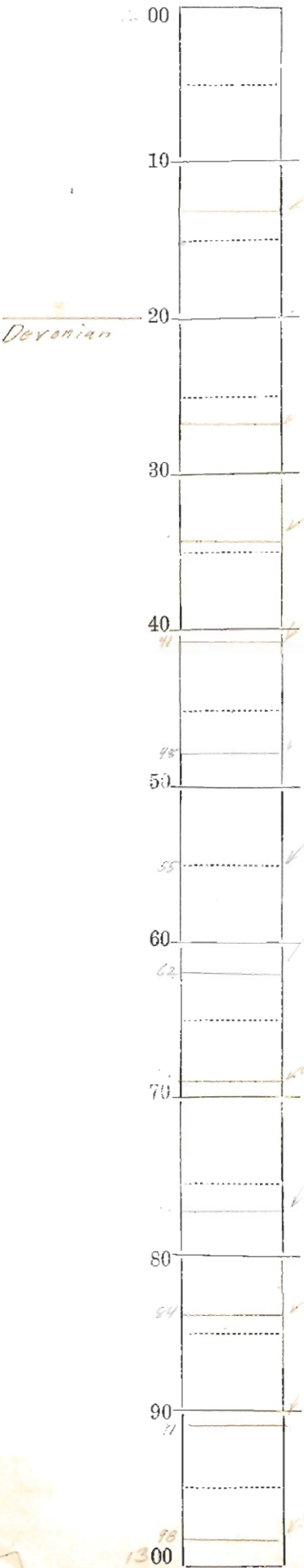
Curb Elev. 1205 Oct 5-139 - Oct 24/39

11 00		
10		
20		
30		
40	No Spls	
50		
60		
70		
11 80		Sh. K pale grn gray, st. greasy, sl. harsh (Str. 2), sl. calc. soft. fair sh. struct. No spores but looks like Maple Mill
90		Sh. same as above
12 00		

Sheffield or Maple Mill (2)

Sheet No. ..... Name of Well Stuart City Well Survey No. W-0080

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



Sh, lt. gray, sim. to unit #975, calc; no spores

Ls, buff, drab, & lt. brn, v. fine to subxline, hrd, compact. Rare Auth Qz xtals, sl. sdy (cave?) 2% drk brn sh, sl. pyritic, Tr. blk & wh. cht (cave?)

Devonian

lt. brn, cr-sm fine xline, hrd, compact, transl., with 10% lt. brn fine o subxline Ls. occas Qz or some clear calcite.

Ls, buff, extremely fine to subxline, mod. hrd, Transl. to flour, text, occas sdy gr.

Ls, buff, sim to #1234, 60%
Dol, lt. brn, sim. to #1227, 40%

Dol. Brn drab, fine to med xline. hrd. compact, with 2-3% clear calcite

Ls, lt. buff to wh, v. f. gr. to subxline, mod hrd, 2% cl. calcite, trace Auth, 2% glassy to metallic cindery Mat.

lt. buff to lt. buff, Ls. soft, entirely as vf. gr. to mud.

lt. buff to wh, sim. to spls #1255' but comp. of vague col. struct. 1% Brn gray argill. Ls.

Ls, lt. buff, sim. to spls #1255', 85 %
Dol, brn to drab, f-m. xline, hrd, transl, pyritic, 15% sm. % clear calc

Ls, lt. buff, sim. to spls #1255', 80
Dol, brn to drab, sim. to spls #1277, "

Ls, lt. drab, subxline, subtransl, mod. sl. pyritic, sl. % clear calcite

Ls, lt. drab, subxline, sim. to Ls spls #1281, 80 %
Sh, Gray brn, calc, nitreous (?) (or greasy), 20%

Sheet No. 14 Name of Well Stuart City Well Survey No. W-0080

Location Date Drilled Analyst Schuldt

1300

Dol, calc, to ls, dol, brn, med. xline, hrd, Transl, sl. pyritic, <1% grn sh
ls, 15%, lt. buff to drab, subxline, hrd.

05

brn, f. xline, hrd, in prt. transl, 3% gray

10

11

Dol. brn, f xline, hrd, transl, and Dol, brn, fine xline transl, calc.
occas cindery frags

19

20

Dol, same as sple 1319

26

30

same as sple 1319 99% Rock flour

33

" " , 90% 10% gray fine xline dol, Tr. grn sh

40

Dol. Brn, fine xline, hrd, compact, transl. sl. calc. sugary text.
5% brn sh

47

50

Dol, brn, same as sple 1347 less calc

54

Dol. rock flour

60

61

Dol. brn. " " " " 50% Mud, 10% gray sh. calc micac,

70

99%

75

80

Dol, lt. drab to bf, v. sugary text., 15% Brn to grn

82

as sple 1382, no sh. recog.

89

90

" 10% Brn sh

96

1400

Sheet No. 15 Name of Well Stuart City Well Survey No. W-0080

Location Date Drilled Analyst Schuldt

00

C. Valley 03

Dol, lt. drab to buff, v.f. xline, sugary text. 10%

drab xline, hk, Transl, much flour

10

Ls, lt. brn to lith to subxline, sim. to sple. 5% Green to gray sh

17

20

Ls, lt. brn to drab, lith to subxline, sim. to sple 1410, 50%
Dol, " " " " f-M xline, Transl, compact, 50% 2% pyrite, 1-2% Gyp

30

31

Dol, lt. brn, f. M xline, Transl, 85 5% Wh. gyp
Ls, lt. brn Lith. 10%

Dol, same as sple # 1431, 3% brn to grn sh
Ls, lt. brn, lith, ?%

40

lt. brn, f. xline, compact, Transl, Tr. gyp

50

52

Dol, same as sple # 1445

Dol, xline, hrd, sl. sugary with 5% gyp

59

60

Dol, 1459

66

70

Dol, brn, sim to sple # 1459 2% Gyp

74

Dol. brn, " # 1459, 5% Gyp, 3% gray-greenish sh.

80

81

" " " # 1459, ov 70, dol, lt. brn, transl, med. xline, flaky text., 40%; Tr. grnsh,
5% Gyp

88

90

Dol, brn to lt. brn, f-M. xline, compact to porous, Transl, 85 % Sh, Grn gray, mod. hrd, 10%
5% Gyp

15 00

Sheet No. 16 Name of Well Stuart City Hall Survey No. W-0080

Location Date Drilled Analyst Schuldt

1500 00
1502 Dol, lt. brn drab, f.-m xline, transl, hrd, 5% Gyp, rare qz gr, sl. py

lt. br sub Xline, transl, Rare

10

99% as flour in washed sple

Wapsipinicon (?) 16

20

Dol, reddish brn, fine xline, 99% well flour

23

v. well flour

30

40

Ls, red. brn, f xline, flaky text, 50%; Dol, lt. brn, fine to subxline 50%; 5% grn gray py sh

50
51 Ls & dol sim. to sple 1549

60

67 Limonite, yellow brown highly calc calcareous, ~~poss~~ out of place

70
Limonite " highly

73

monite,

79
80

85 Dol, lt. drab, med. xline highly limonitic, frags. friable ~~poss~~.

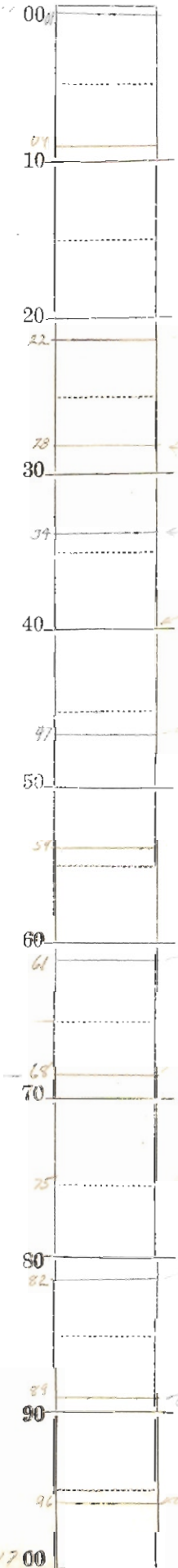
90
91 Dol, gray mottled, v.f. -subxline, comp

Dol, brn & Gray compact, hrd

00 Dol, drab, lith, com. by flour from drilling

Sheet No. 17 Name of Well Stuart City Well # Survey No. W-0080

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



Dol, lt. brn drab, lith, rare

Dol, lt. brn, fine xline, v. fine sugary text, 15% coal (extran)

Dol, sim to spls. 1615'

" " 1615' Predom. lt. flour

Dol, " " Dol, lithographic, sucr; Rare sl. rded qz agg., 2% Gyp

Dol, buff, lithog to sublithog, w. 15% Gyp & 5% qz sd (crrl, frosted mod. gr)

Dol, buff, as lt. flour,

" "

buff, v. f. x line, v. f. sugary text, — 10-15% Gyp.

" buff, sublithog (? or coarse x line breaking down to fines on drilling) 15% Gyp

Dol, " " coarse x line, 1-2% Gyp

Dol, " " " " " " , 20% Gyp, 15% Green Sh

" " " " " 10% " , 5% Grn Sh

Gypsum, wh, as silt, with 30% dol xtals

Sheet No. 1? Name of Well Stuart City Well # Survey No. W-0080

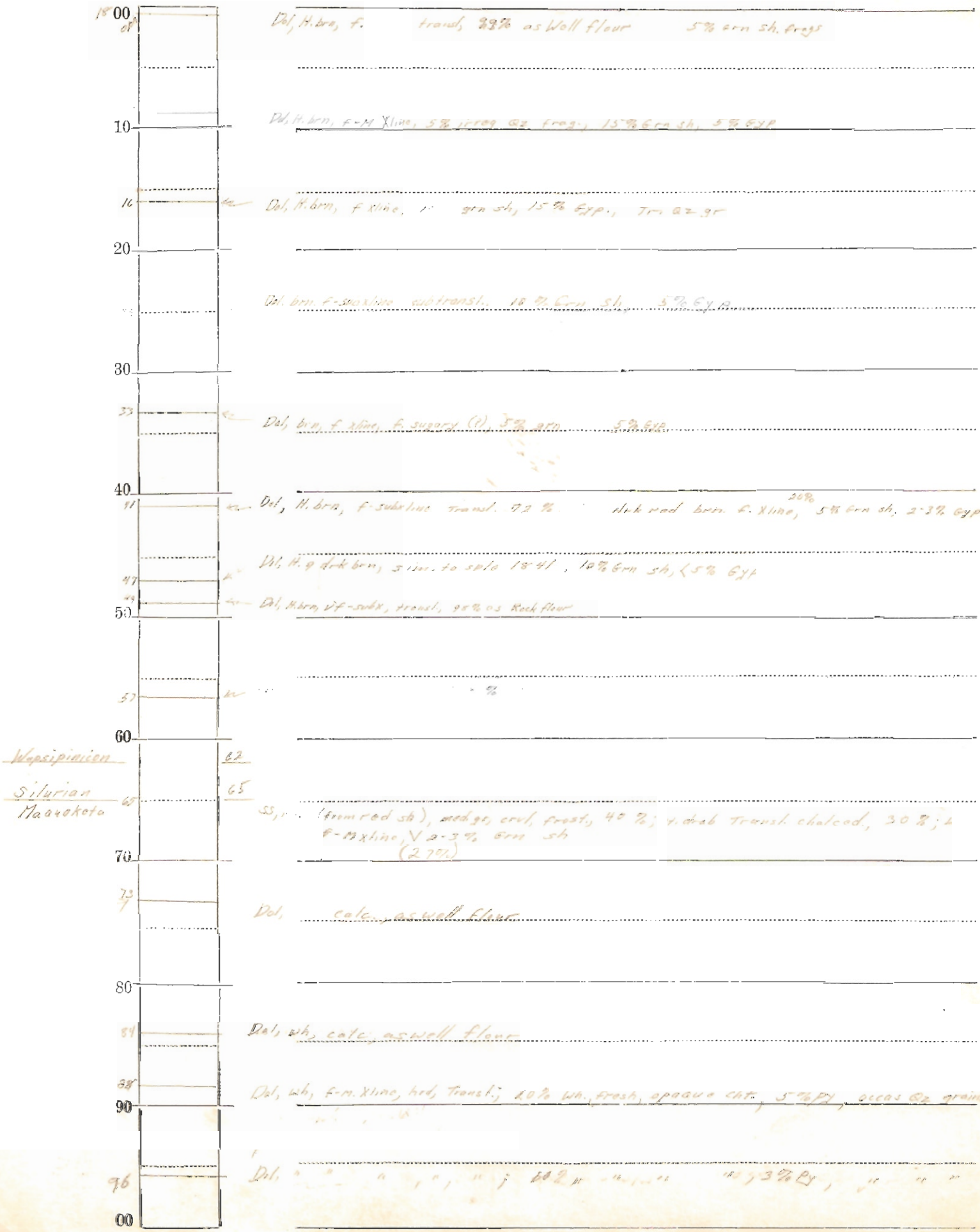
Location Date Drilled Analyst Schaldt

Depth	Description
00	
03	Dol. & Gyp., 50% each
10	Dol., lt. buff ... text. 5% Qz Gr
17	Dol., " ", ... xline, 5% Qz Gr (irreg.), sm. % drk sh, 15% cinders, 1-2% Gyp
20	
24	Dol. " ", ... 3% Gyp., ... Qz gr
30	
40	Dol., brown, fine xline, fine sugary text, 5% Gyp
	Dol. lt. buff xline, as dol. sd, with 10% brn sugary dol.
50	
52	Dol., " " " ", 2-5% Gyp
59	Dol., buff to grayish v.f. xline, compact,
60	
66	lt. buff, fine xline., transl
70	
	Pred. as dol. flour
80	5% Gyp
87	
90	
94	lt. brn to lt. fine xline (?), as hrd frags of Well flour, slightly silty
1800	

Circ Pet

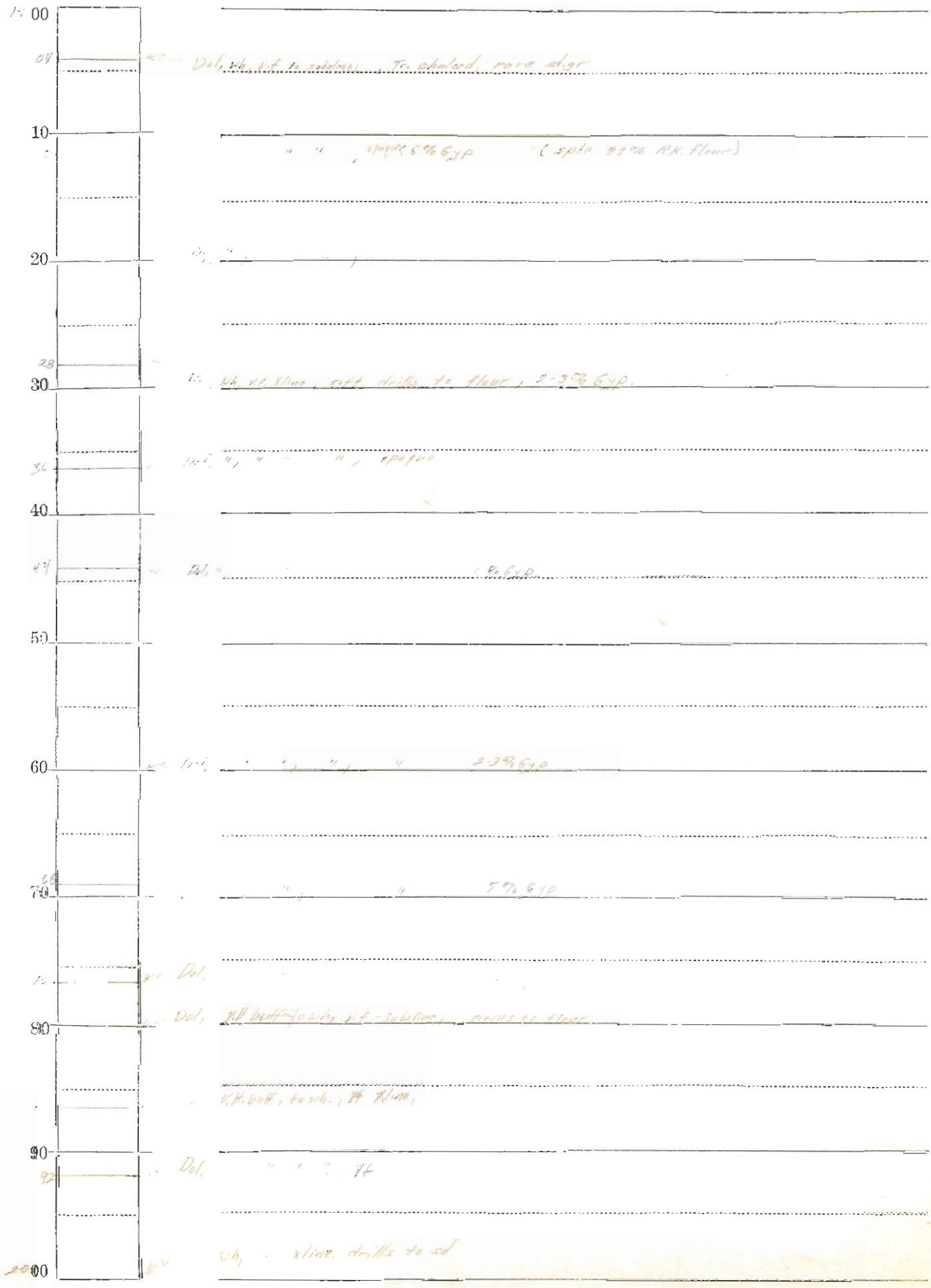
Sheet No. 11 Name of Well Stuart City Well Survey No. M-0080

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



Sheet No. 20 Name of Well Stuart City Well # Survey No. W-0080

Location Date Drilled Analyst Schuldt



Sheet No. [illegible] Name of Well *Stuart City Well* Survey No. *W-0080*

Location Date Drilled Analyst *Schuldt*

00

Dol, ... M Xline, drills to sd

10

Dol ... drills to flour

20

30

... H. buff, F-M Xline, drills to sd, 15% Wh. ... buff, opaque to porcy chalcedonic cht

F-M " ... flour; 20% ... " ... "

40

50

Ma Q / *Galena (?)*

H. buff F-M Xline, drills ... Wh. to H. buff opaque to transl.

60

70

F-M " ... 0% Wh. to H. buff opaque to trans

" " " 5-10% " " " " " " "

80

... chert

90

Galena 00

Sheet No. 2 Name of Well Stuart City Well # Survey No. W-0080

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

00
04
10
20
28
30
37
40
46
50
60
64
70
72
80
82
90
91
00

Sheet No. .... Name of Well ..uart City Well.................. Survey No. W-0080

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

00

5 3% Qz sd (M-F G.

10 Dol, lt. brn, f-M Xline, chalk to flour g sd, Tr. cht

35
50
15

15

20 Cht, wh to lt. buff, opaque, 10 %

25

30

35 Dol, lt " ", f-M " No cht

36 Dol, " ", f-M " 2% cht

40 ", f-M ", 2% cht, lt. buff

45 Dol, prob. same as above, buff, wholly as ... flour Tr. cht?

50 Dol. " " " , " " Tr. brn sh

2-3% cht

60

63 Dol, lt. brn, vf. Xline to subxline, foss, transl. to floury text.; Sd, f-M Gr., ... frosted, 35%; 2-3% Py.

70

71 Transl., rare Qz gr., 1-2% brn sh

75 Dol, lt. brn, f-M Xline, ... Tr. cht

76 Dol, " ", f-m " ... Qz frag, sl. rded), 1% brn. sh. frags

80

81

Dol, 1-2% ... rded & frosted)

90

" ", f-m ", 2-3% sd. gr, (irreg Qz frag. sl. rded)

94

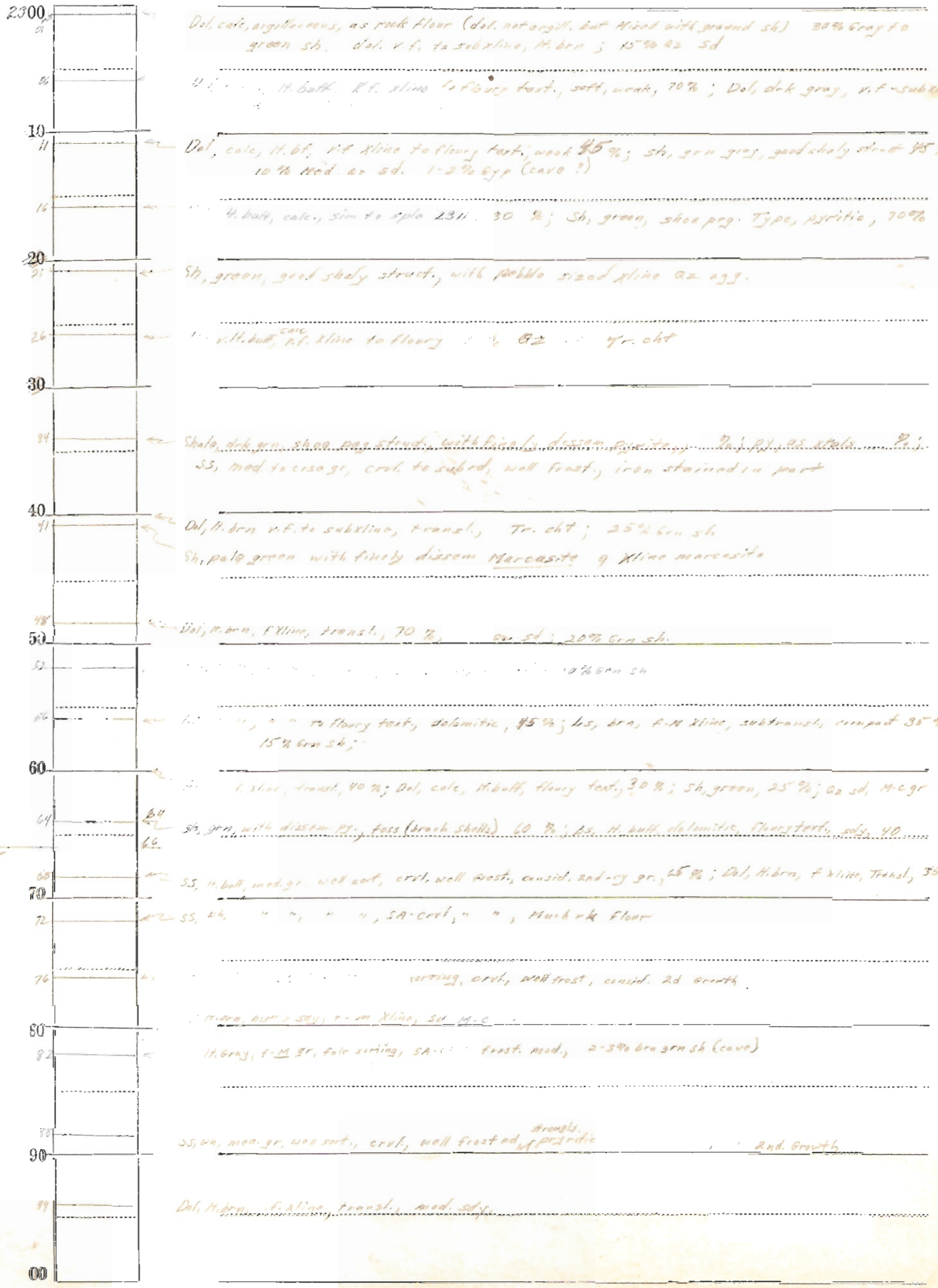
Platteville

96 V. lt. buff to lt. gray, f Xline to fine text. to subxline, transl. to opaque, sl. pyritic; sh, med. gray green, sl. pyritic, foss (Brach shells) 35 %; sd, med. gr, rded & frosted, 15 %

00

Sheet No. 22 Name of Well Stuart City Well Survey No. W-0080

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



Sheet No. ___ Name of Well *Stuart City Well* Survey No. *W 0080*

Location ___ Date Drilled ___ Analyst *Schuldt*

2400

10 — Dol, lt. ... f-M xline, sl. to ... sdy.

14 — ... as rk. flour, 20% qz sd, f-M gr.

18 — Dol, lt. buff, ... SS lt. buff, f-M gr, crvl, mod. frosted, %; wh. to lt. buff oolitic opaque cht

20

25 — Dol, lt. buff, v.f. xline, transl, ... % sd, wh, med. to f. gr., consid. rnd. gr., 25%

26 — Dol, lt. brn, f " as rk. flour; 10% sd, 5% cht 10% wh. to lt. buff cht

30

38 — Dol, wh, f-m xline, transl, f-m sdy (consid. rnd. gr.) 10% wh. cht

40

42 — Dol, ", ... v. sl. ... 10% wh. to lt. buff cht

46 — Dol, ", ... sdy

50 — Dol, " ... mod. to highly sdy, 5% wh. opaque cht.

58 — Dol, wh, wholly as rk flour

60 — SS, white, f-m, crvl, some rnd. gr. well frost, strongly

... m-f ... " "

66 — Dol, wh, m-f xline, as rk. flour, mod. sdy (fine) (poss. cave sd.)

70 — Dol, " " " " " " " (") (")

74 — Dol, lt. buff, f-M xline, as rk. flour, sdy (cave?)

78 — Dol, " ", f-M

80

82 — Dol, " ", f-m ... sdy (cave)?

84 — Dol, " " to wh, f-m

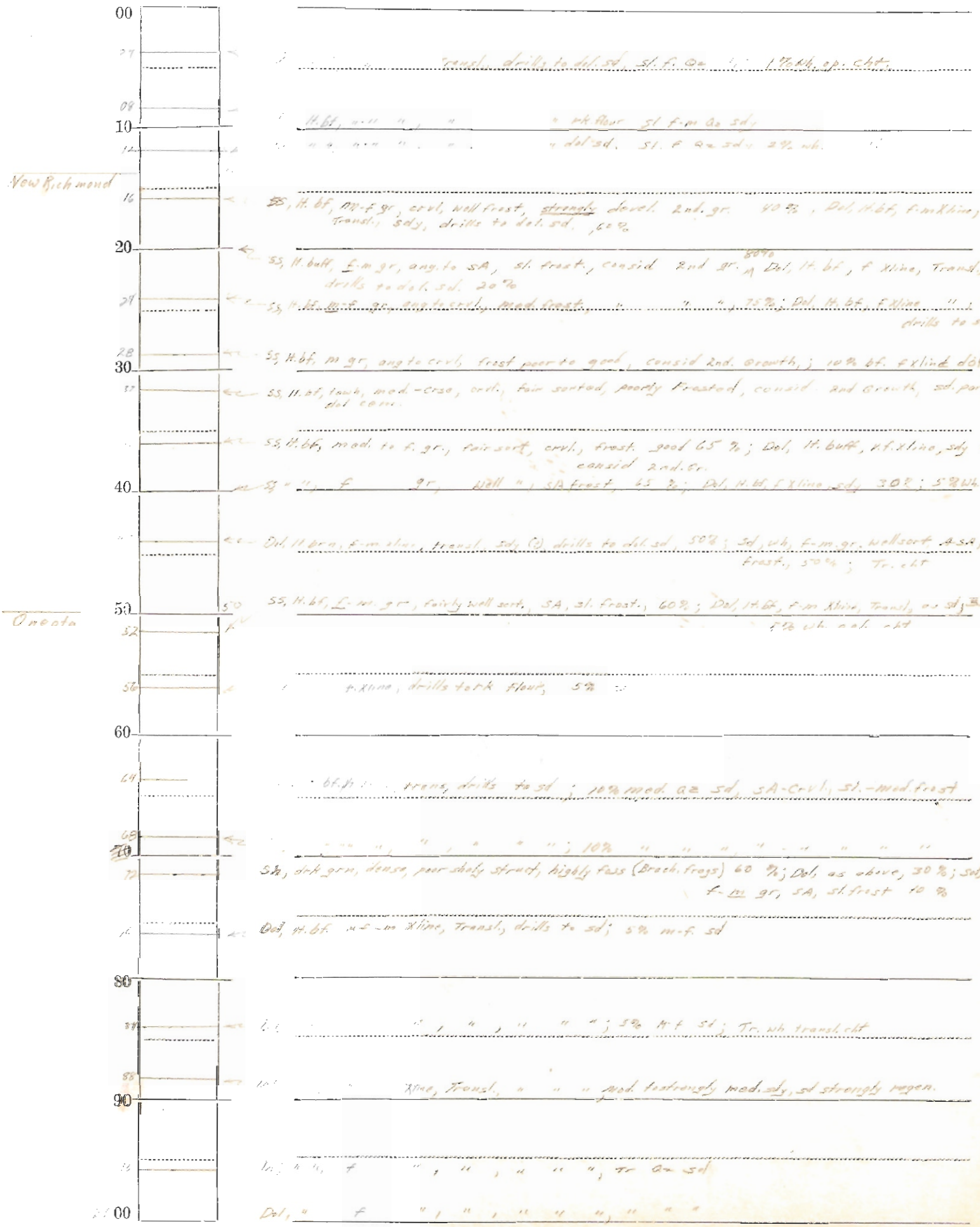
86 — Dol, " " to wh, f-m drills to dol. sd; <1% wh. opaque chert

90 — ... f-m " ... " ", sl. sdy, <1% wh. op. cht

2500 — Dol, " " f-m, " " " ", sl. sdy.

Sheet No. 26 Name of Well Stuart City Well Survey No. W-0080

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



Sheet No. 21 Name of Well Stuart City Well # Survey No. W-0080

Location Date Drilled Analyst Schuldt

00

04 Dol, H. bf, f-m Xline, drills t. 5% med. Qz.

10

; Cht, lt. bf., Transl., fresh, 25%

16

20%

20 30%

Sh, drk grn dense foss (brachs) 10%; sd, Qz, m-gr, crvl, w. frost 20% sple strongly Iron stained

28 Dol, H. bf, Transl, drill 15% m-f 15% H. bf to wh. Transl. cht (sple Fe stained)

30

32 10% m-f 5% " " " " "

sh. (cave)

40 (sple iron stained)

44

48 Dol, f-m say, (sple strongly iron stained)

50

Dol, f-m

f-m gr, crvl, w. frost, strong 2nd growth, 60%; Dol, lt. bf., f-m Xline, Transl, drills

60 f-m Xline, Transl., drills to sd, 5% euhed. Qz gr

64 Rk flour

70

76 Dol, v lt. bf. to wh, f-m Xline, drills to dol. sd, 5% f-m Qz. sd, crvl, w frost, consid. regrowth

80 f-m 5% f-m

84 2% f. Qz sd consid. 2nd gr. (cave?)

88 f-m Tr. Qz sd

90 f-m Tr Qz

96 Dol. f-m 5% Qz sd, f-gr., strong recryst

00

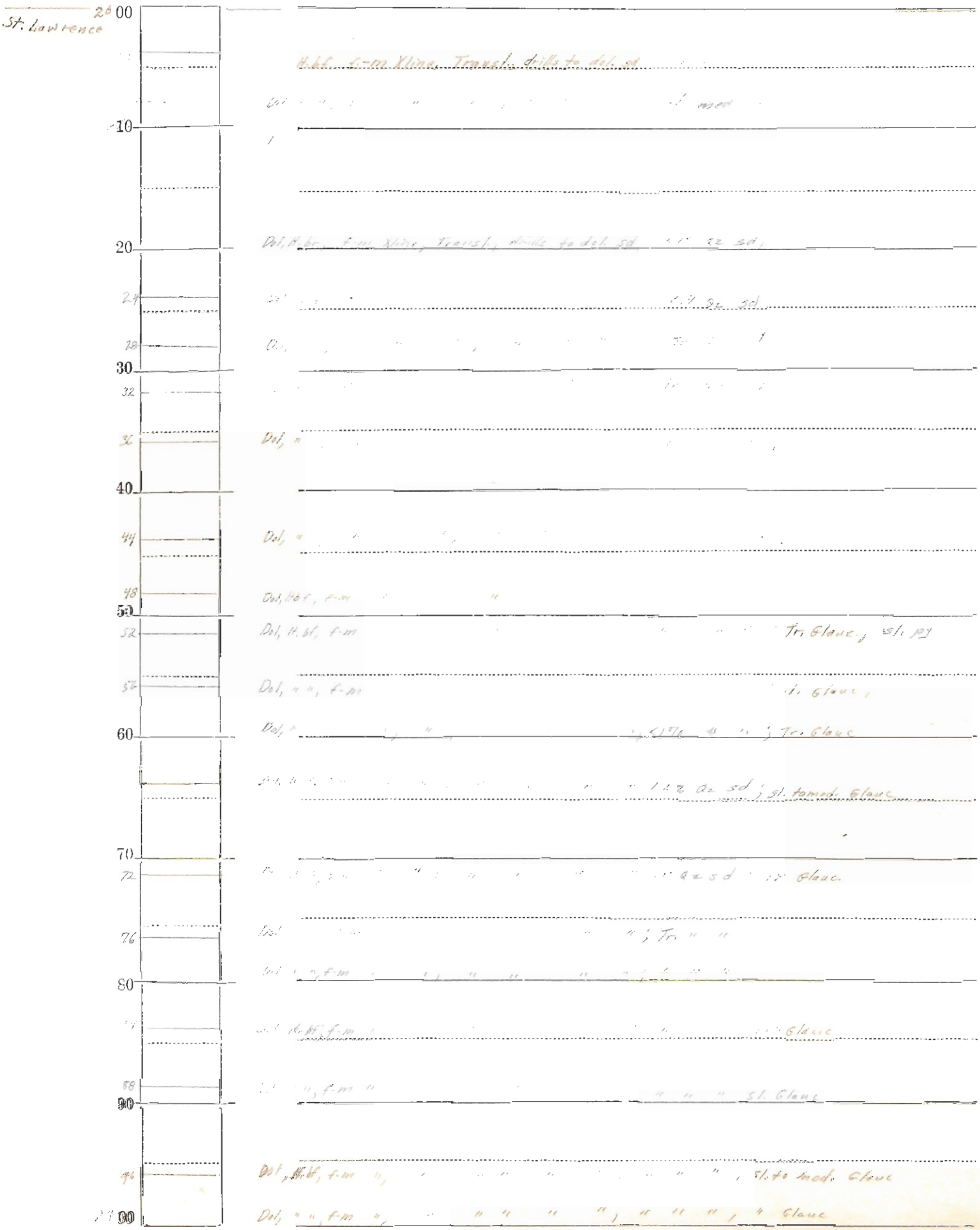
Sheet No. 28 Name of Well Stuart City Well Survey No. W-0080

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

Depth	Description
00	4. bf, f-m Xline, Transl, drills to dol. sd. sdy ; 25 % sd, f-m gr, consid 2nd. Gr
09	Tr Qz sd
	Tr Qz sd
10	
16 (Jordan)	Dol, " ", f-m ", " " " " ", fine Qz sdy, some regro
20	SS, lt. bf, M-f gr, poorly sorted, dol. cem. in prts, sd crvl. to subang, w. frost, strongly regen, 85 %; Dol, lt. bf, f-m Xline, Transl, 15 %, sdy
24	SS, Wh, f-m Gr, well sorted, SA - crvl, med. frost, consid 2nd gr, dol. cem in part
26	Dol, bf, f-m Xline, transl., drills to dol. sdy rk flour, with 10 % Qz sd
30	
32	SS, bf, med. gr, fair sort, SA - crvl, mod. frost, sl. 2nd gr., dol. cem. in prt
40	
50	N S
60	
70	
80	
90	
00	

Sheet No. 29 Name of Well Stuart City Well Survey No. W-0080

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



Sheet No. Name of Well *Stuart City Well #* Survey No. *W-0080*

Location Date Drilled Analyst *Schuldt*

00

St. Lawrence / Franconia — *Dol, lt. bf, f-m Xline, transl, drills to dol. ... Tr. Glauc.*

10 — *f-m ... sl.-mod. Glau, sl. fine sdy, ang.*

f-m ... mod. Glauc ... mod. fine sdy, ang.

mod. fine sdy, ang.

20 — *f-m ... mod. to highly sdy, ang*

SS, gr ... mod. to strongly Calcite Cem., mod. Glauc.

SS

30

40

50

SS, f

f-m Xline, mod. Glauc, sl. sdy.

60

70 — *sh*

80

SS gr ... mod. to strongly Calcite Cem., mod. Glau.

90

rare to occas med Qz sd. gr.

00 — *SS f*

Sheet No. 31 Name of Well ... Well Survey No. W-0080

Location Date Drilled Analyst Schuldt

Depth	Description
00	
04	Dol, lt. bf, f-m Xline, tr. ... sd, sl. to mod. gran.
08	... " Tr. med Qz sd
10	
11	..., f-m ... "
16	... f-m ... occas med Qz sd ...
20	
30	
40	
50	
60	
70	
80	
90	
00	

W-0080

curb 1205'

Name of Well Stuart Sheet No. 1

Depth Range 1195 - 1200 Scale: 1 inch=10 feet.

Note, these samples were extremely finely pulverized, making distinction between calc-shales and shaly-limestones difficult as far as estimating the insoluble clay residue in acid.

Miss. (23')

1195

Sh, pale gray-green; plastic non-calc. Composed of fine colloidal clay.

Sh, gray to gray-green; thinly laminated to blocky, highly calc.

1200

W-0080

Name of Well Stuart Sheet No. 2

Depth Range 1200-1300 Scale: 1 inch=10 feet.

See previous page.

1213 — ls. wh. to light buff, finely xln, rapidly soluble

Dev. (155') ~~(207')~~

1220 — ls, wh. to light buff; finely xln, easily soluble

1241 — ls, wh, entirely soluble. (Pulverized entirely).

1262 — ls, wh. finely grained, pure, soluble.

1269 — ls, wh, fine- to med-grained. No sulfides present.

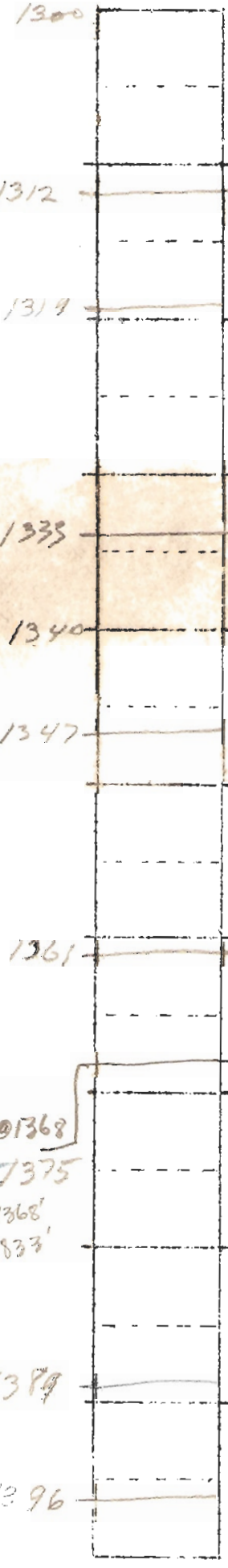
1284 — ls, wh, pure fine grained, 10% apple-green fissile shale.

1298

W-0080

Name of Well Stuart Sheet No. 3

Depth Range 1300-1400 Scale: 1 inch=10 feet.



1300 dolo. and ls. deep buff to brown, 10% black, carbonaceous silty shales interbedded.

1312 dolo. and sh. buff to brown dolo, xln. massive; 20% gray calc. shale.

1319 dolo and shale: dolo, massive, xln, granular; shale, gray calc. about 30%

1335 dolo interbedded gray and buff, coarsely granular; massive, xln.

1340 dolo, buff, granular, xln massive interbedded with 5% gray and green sh. Iron stained. Pyrite and sulfides 1-3%.

1347 Sh and ls 60% gray sh; 40% buff ls. rapidly soluble.

1361 Sh and ls; gray silty sh with 10% buff ls. interbedded

1375 ls, white, granular, (finely pulverized by drill), slightly shaly. 2% apple-green fissile shale

1389 ls, wh xln, granular, sugary texture; Slightly stained by green silicate.

1396

W-0080

Name of Well Stuart Sheet No. 4

Depth Range 1400 - 1500 Scale: 1 inch=10 feet.

1400

wh, granular, 5% green and gray shale

1403

ls, wh, finely grained, massive; 2% green-gray sh.

1417

ls, buff and wh, interbedded; granular; slightly limonite stained.

1466

ls, wh and buff; interbedded, granular, xln. massive. Sulfides rare. Selenite frag's common.

1495

Name of Well Stuart W-0082 Sheet No. 5

Depth Range 1500-1600 Scale: 1 inch=10 feet.

1500

ls, wh. to buff, granular, xln, massive. Iron-oxide stains.

1516

ls, wh. to buff, granular, xln, massive;

1523

dolo, buff, coarsely xln, granular massive, barely Sphalerite in fragments 1mm and in fine sand size grains in dolo. Green silicates in dolo

1530

ls and ss interbedded; 40% fine grn sand; heavy coating and staining of limonite and limonite scales either from casing or from concretionary masses.

1527

sh, brown; heavily colored by limonite. 5% sand; Highly calc

1573

ls and ss, limonite coated, brown; 40% fine sand and coarse silt cemented by limonitic limestone.

1585

ls, wh to light buff, granular, massive, heavily iron-stained from weathered iron sulfides ~~10% to white chert.~~

1591

ls and dolo, wh. to buff, granular, massive. Iron stained.

1595

ls and dolo, buff, iron-stained.

1601

W-0080

Name of Well Stuart Sheet No. 6

Depth Range 1600 - 1700 Scale: 1 inch=10 feet.

1601 ls, wh. fine grained, shaly, 5% coarse silt. Highly iron-oxide stained.

1609 dolo, buff, coarse grained, massive, iron-stained.

1622 dolo, wh. and buff, fine-grained; 5% gray shale interbedded, 2% ¼-½ mm. qtz. C-shaped sand. Coal fragments present

1640 dolo, wh. to light buff; iron-oxide stained; abundant selenite fragments. Slightly shaly

1654 Sh; gray to tan; blocky, plastic, highly calcareous residue of colloidal clay.

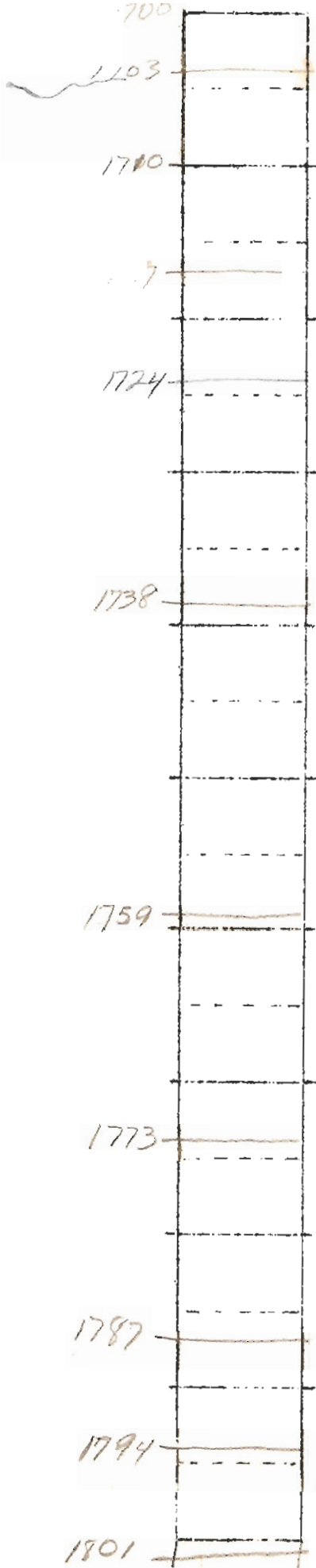
1696

See next page

W-0080

Name of Well Stuart Sheet No. 7

Depth Range 1700-1 Scale: 1 inch=10 feet.



Sh, [illegible] gray, highly calc

ls, wh and buff interbedded 5% gray-green sh interbedded.

ls, wh and buff. Same as 1710

ls, wh and buff, iron-oxide stained; small selenite fragments common

dolo, buff, coarsely xln, massive; Selenite fragments very abundant.

ls, wh and buff, xln, fine-grained, 10% green-gray dolo interbedded.

ls, and sh, wh xln ls. interbedded with 20% gray shale. Limonite concretionary bodies ½-inch diameter.

ls, and sh, wh xln ls, gray-brown sh, disintegrates to colloidal clay. Iron oxide concretions common in ls.

ls, and sh, buff ls interbedded with 10% colloidal clay shale. 5% fine gtz sand and coarse silt.

ls, buff, (finely pulverized), 10% shale interbedded 5% gtz sand and gtz silt.

W-00080

Name of Well Stuart Sheet No. 8

Depth Range 1800-1900 Scale: 1 inch=10 feet.

1800
1801

dolo, buff, coarsely granular, interbedded with white dolo. 5% apple green fissile shale fragments, Selenite fragments.

Sil. (2')

Miss. (95')

1833

Sh, bright hematite red; 20% wh. xln ls, 15% a.-c. shaped qtz. sand ½-2mm

1865

Sh, gray to white; highly calcareous.

1873

Sh, buff to tan; interbedded blue, dark brown and yellow-green shales. 1% qtz. sand residue

1880

Sh, gray, highly calcareous, limonite stained; 10-15% residue of coarse siliceous silt.

to

1904'

Name of Well Stuart W-0080. Sheet No. 9

Depth Range 1900-2000 Scale: 1 inch=10 feet,

Sh, gray, Same as 1904, But no silt residue present.

ls, gray poorly xlized, shaly, silty;

Sh, gray to tan, highly calcareous; 1% fine silt.

ls, gray poorly xlized, shaly, 5% siliceous coarse silt.

ls, gray, highly calc, shaly,

ls gray to tan, highly calc, shaly. Selenite fragments

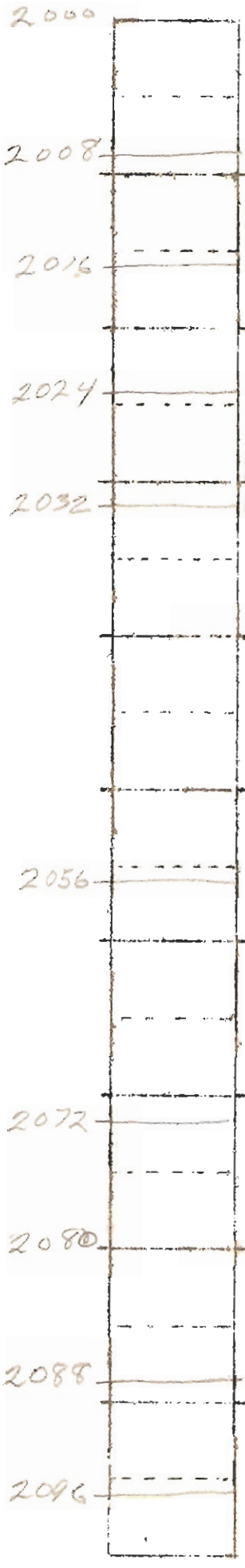
ls, gray to tan; highly calc, 10% gray calcareous clay shale. Selenite fragments.

ls, [illegible] to gray-tan, [illegible]% gray shale.

ls, wh, xln, finely grained pure, easily soluble.

Name of Well Stuart W-0080 Sheet No. 10

Depth Range 2000-2100 Scale: 1 inch=10 feet.



2000 ls, wh, finely x/n, easily soluble, pure.

2008 ls gray (finely pulverized) easily soluble. 5% gray shale.

2016 ls, wh, finely x/n, pure, soluble, No shale

2024 ls, wh, x/n, pure, easily soluble

2032 ls, wh. x/n. finely crystallized, soluble, 20% white and blue-white non-calc. chert.

2056 ls, wh. x/n. finely granular, soluble. No shale or residue.

2072 ls, wh, x/n. pure, soluble, 3% shale.

2080 ls. wh, x/n, soluble, 5% shale.

2088 ls, wh. to buff, pur. soluble.

2096 See next page

Name of Well Stuart W Sheet No. 11

Depth Range 2100 - 22 Scale: 1 inch=10 feet.

2100 ls, wh, finely x/n, pure. 5% milk-white chert.

2104 ls, wh. to buff, x/n, soluble, 5% r. shaped clear qtz sand ¼-½ mm. Pyrite rare.

2112 ls, wh, finely x/n, soluble, pure. 2% fine qtz. sand.

2120 ls, wh, x/n, pure; minute limonite fragments, easily soluble.

2128 ls, wh, x/n. Same as 2120

2137 ls, wh, x/n, Same as 2120

2146 ls, wh, x/n. Same as 2120

2164 ls, wh. x/n. Same as 2120

2173 ls, wh. x/n, Same as 2120 Pyrite rare.

2182 ls, wh. x/n, Same as 2120

2191 ls, wh, x/n. Same as 2120

2200

W-00

Name of Well Stuart Sheet No. 12

Depth Range 2200-2300 Scale: 1 inch=10 feet.

2200 ls, buff to white, 15% brown shale, of colloidal clay.

2205 ls, wh to buff. Identical to 2205.

2215. ls, wh. to buff, 5% gray-brown sh. of colloidal shale.

2220 ls, wh. to gray. pure, readily soluble. 2% gray shale

2225 ls, wh. to light buff, fine to med. granular, Minute limonite stains and cementer ls particles

2235 ls. same as 2232

2236 ls, wh, to light buff, easily soluble, 1% chert, ½% pyrite

2240 ls, wh to light buff, Same as 2235 except chert = 2%. and for presence of selenite fragments.

22 ls, wh, xln interbedded with 10% brown-gray shales.

2250 ls, wh, interbedded with 10-15% brown-gray shale. 3% gray to white chert.

2260 ls, wh. xln, fine-grained; 2% blue-white chert, 1% a.to C. qtz. sand.

2263 ls, wh, xln, 3% colloidal clay shale. Pyrite rare.

2271 ls, wh, xln, fine-grained. 5-8% blue-white chert. 1% pyrite and sulfides.

2275 ls, Same as 2275

2276 ls, wh. to buff, xln, soluble; 1% qtz sand ¼-½ mm.

2281 ls, wh. xln fine-grained, 5% shale.

2288 ls, wh, xln. fine-grained, 2% white chert, 1% pyrite and sulfides. 2% colloidal clay shale.

2291 ls, Sh, and ss, interbedded; 45% wh, xln ls; 45% fissile greensh; 10% ½-1mm a. to C. Shaped qtz. sand. 2% pyrite and sulfides.

2298 ls, SS, and Sh, interbedded; ls 50%; greensh, 20% qtz. SS 30%; ¼ mm±.

2301

W-0080

Name of Well Stuart Sheet No. 13

Depth Range 2300 - 2406 Scale: 1 inch=10 feet.

2301

ls. and sh, interbedded; 80% wh. x/u fine-grained 20% gray-green shale.

2306

ls, sh, and ss. interbedded, 60% wh. finely grained ls; 30% bright to drab-green sh; 10% ¼-½ mm qtz C. shaped sand.

2311

Sh and ls, interbedded; deep green and gray sh, 60% with 35% ls in powder; 5% C. qtz. sand and pyrite.

2316

Ss. and sh; wh. clear qtz. sand ¼-½ abraded C shaped, interbedded with 70% deep green, fissile shale. 10% pyrite and abundant darkly tarnished sulfides Notable for deep tarnish.

2334

ls. and sh; ls wh and buff, finely granular, and composes 70% of rx; 30% deep-green fissile sh.

2340

ls. and sh; pulverized ls, and 15% deep green sh. Pyrite present.

2348

ls. and sh Same as 2345.

2352

ls, wh. and buff, interbedded; finely grained; few calcite fragments, 3% pyrite, 2% ½-¼mm qtz. sand.

2356

ls, wh. (finely pulverized by drill). 5% ⅛-¼ mm qtz sand.

2360

Base Platteville @2361' 2362

ls. and sh 60% wh. finely crystallized ls. 40% deep drab-green, fissile shale; 2% chert; 2% qtz sand.

Top Glenwood 2364 (11')

ls and ss; 55% wh, x/u fine-grained; 45% ¼ - ⅛ mm abraded qtz. sand (⅛-¼ mm = 75%)

2368

ls. and ss Same as 2368 except ss = 40%±.

Base Glwd 2372

2373 Base Glwd.

St. P. @2373 (45')

ss, and ls; clear qtz sand 80% Maj Gr. ½-¼ mm 60-70%. P. Sub Gr. = ⅛-1/16 mm 20%. 20% of rx. is powdered wh. ls.

2382

Ss, clear qtz sand composes entire rock; Maj Gr 80% ⅛-¼; P. Sub 15% ⅛-1/16, 5% ¼-½ mm. Grains frequently secondarily enlarged. Some pyrite and sulfides present. all qtz. sand is markedly frosted or abraded Shapes dominantly a, but C. shapes frequent Lozenge shapes also common.

to 2406

Name of Well Stuart W-0080 Sheet No. 14

Depth Range 2400-2500 Scale: 1 inch=10 feet.

2400

See previous page.

2406

Ss, same as 2406 But Maj gr.= 50-60% ¼-⅛mm. 20% ¼-⅛mm

St. P. (48')

2418

Fr. du Ch.

ls, wh, xln, finely granular. 2% qtz sand as 2406.

2425

Sh, tan to gray, highly calc, no siliceous residue

2426

ls, wh. xln fine-grained. pure, easily soluble.

2438

ls, wh, fine grained iron-oxide coated. entirely soluble.

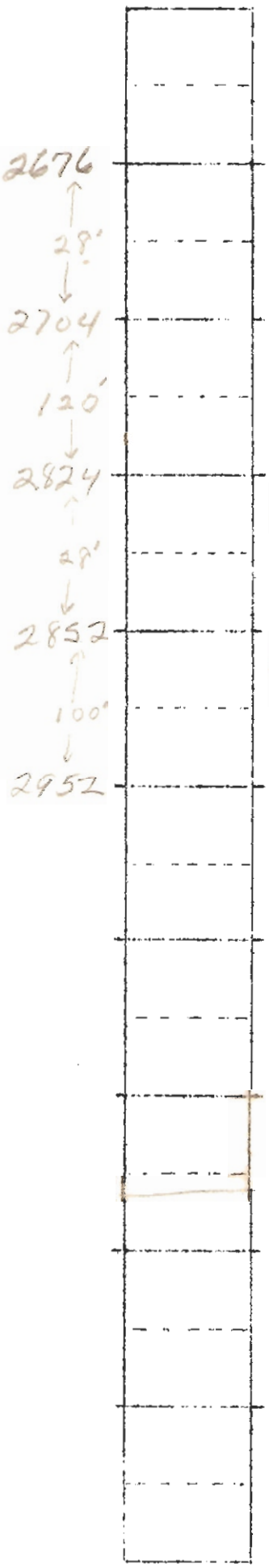
2452

Skip to 2676

W-008

Name of Well Stuart Sheet No. 10

Depth Range 2676 - 2952 Scale: 1 inch=10 feet.



ls, xln, wh. fine-grained, easily and wholly soluble

ls, xln, wh fine-grained wholly soluble

ls, wh. to buff. finely-xln. readily soluble 1% green sh. fragments

ls, wh, xln, fine-grained, readily soluble.

ls, wh, xln, fine-grained, easily soluble; 1% insoluble colloidal clay shale

W-0080

Town Stuart County Guthrie

Location —

Owner of well City well

Contractor — Date started 1916

Date completed 1916

No. of samples prepared: 95

Total depth range of prepared residues: 1185 - 2976

Sample range of residues

No rong, but samples are from a horizon. Depth interval is variable.

original amount of sample used

1185 ½ vial	1213 ⅓ vial	1780 - ½	2528 - 0	2884 - ½	2972 - 0
1227 - ⅓ vial			2532 - ½	2896 - 0	2976 - ½
1241 - ⅔	1567 - ½		2536 - 0	2904 - ½	2988 - 0
1326 - ⅔	1601 - ½		2540 - 0	2912 - 0	3004 - 0
1333 - ⅔	1634 ½	1865 - ½	2552 - ½	2920 - ½	3008 - 0
1361 - ⅔	1647 0	1873 0	2588 - 0	2940 - 0	3016 - 0
1368 - ⅔	1654 ½	1904 - ½	2596 - ½	2944 - ½	
1403 ½	1675 ½	1920 - ½	2600 - 0	2956 - ½	
1410 ½	1689 0	1936 - ½	2656 - ½	2960 - 0	
1498 ½	1717 ½	2032 - ½	2676 - 0	2964 - ½	
1502 ½	1724 ½	2144 - 0	2688 - ½	2968 - ½	
	1745 ½	2500 - 0			
	1759 - ½	2504 - ½			

Date residues prepared Thur NOV 21, '40 Tues. Dec. 3, '40
Sat NOV. 23, 1940
Tues NOV. 26, '40
MON. Dec. 2, '40

Storage location

Insoluble residue room. Drawer # D6

Remarks

From 1403' to 3016' we used either a full vial of sample, or a half vial, or none. (See - "original amount of sample used").