

Sheet No. 1 Name of Well Stanhope City #3 (Hamilton Co.) Survey No. W-0820

Location SW 1/4, NW 1/4, Sec. 5, T86N, R25W Date Drilled Summer 1938 Analyst Schuldt

Curb elev. 1119

5/2/39

00	Soil, blk, leached, sdy, silty,
	Drift, buff, oxidized, slightly calc., silty, sdy, fine pebbly.
10	Drift, gray, silty text, calc. sdy, fine pebbly, Ig. mat. common
	Drift, " , " " , " , " , " " , " " " "
20	Drift, " , " " , " , " , " " , " " " "
	Drift, " , " " , " , " , " " , " " " "
30	Drift, " , " " , " , " , " " , " " " "
	Drift, " , " " , " , " , " " , " " " "
40	Drift, " , " " , " , " , " " , " " " "
	Drift, " , " " , " , " , " " , " " " "
50	Drift, " , " " , " , " , " " , " " " "
	Drift, " , " " , " , " , " " , " " " "
60	Drift, " , " " , " , " , " " , " " " "
	Drift, " , " " , " , " , " " , " " " "
70	Drift, " , " " , " , " , " " , " " " "
	Drift, " , " " , " , " , " " , " " " "
80	Drift, " , " " , " , " , " " , " " " "
	Drift, " , " " , " , " , " " , " " " "
90	Drift, " , " " , " , " , " " , " " " "
	Drift, " , " " , " , " , " " , " " " "
00	

Location _____ Date Drilled _____ Analyst Schuldt

100	Drift, gray, silty text, calc., lg. mat. common (sd & granules)
	Drift, " , " " , " , " " V. " (" " ") 9 buff ls. frag.
110	Drift, " , " " , " , " " V. " (sd. to sm. pebbles) 9 buff ls. frag.,
	Drift, " , " " , " , " " V. " (" " " ") 9 " " "
120	Drift, " , " " , " , " " V. " (" " " ") " " " "
	Sh, med. gray, soft, unctuous, micac., With 20% ls. & lg granules (cave or extran.)
130	sh, lt. to med. gray, hrd, with consid. crse sd. & granules; entirely as well mud
	sh, med. gray, soft, unctuous, non-calc., micac., with 10% ls & lg granite
140	
	ss, gray, hrd, calcite cem, ang, med gr., With 20% buff, fine text. dol. frag. & 5% caved lg. mat.
148	
50	ss, gray, fine gr., ang, well sorted, as loose sd, With 25% buff dol. & lg. crse sd & granules
153	
	ss, br. gray, fine " , " as loose sd. With 40% crse sd to granules buff dol. & lg. mat. (cave?)
157	
	Sh, blk. to v. drk. gray, micac., non-calc. good shaly structure. 2 sm. buff dol. pebbles (cave)
160	
	Sh, " " " " " , " , " - " , " " " , { 5% sm. " " " (" ?)
	sh, " " " " " , " , " - " , good shaly struct., hrd, 10% abraded & lg mat. & buff ls (extran)
170	
	Sh, yellow gray, v. micac., in part hrd from dissem. v. fine pyrite, With 15% blk sh, & 20% granules buff ls & lg. mat.
174'	
176	ss, gray, med. gr., poorly sorted, as sd, With 10% crse sd to granules abraded lg. mat. or buff ls. sh, blk, as chips, & mud 30%
	sh, blk, firm, micac., non-calc., with 5% buff ls.
180	
	sh, " , " , " , " - " , " 5% buff ls frag. (abraded)
	sh, " , " , " , " - " , " 2% " " " (")
190	
	Sh, lt. & drk gray interbanded, non-calc., silty text., with 3% buff ls frag.
	ss, gray, fine gr., ang., poor sorting, with gray silt & sh, & 15% blk sh frag (cave) & 5% crse lg. sd gr.
200	

Location _____ Date Drilled _____ Analyst Schuldt

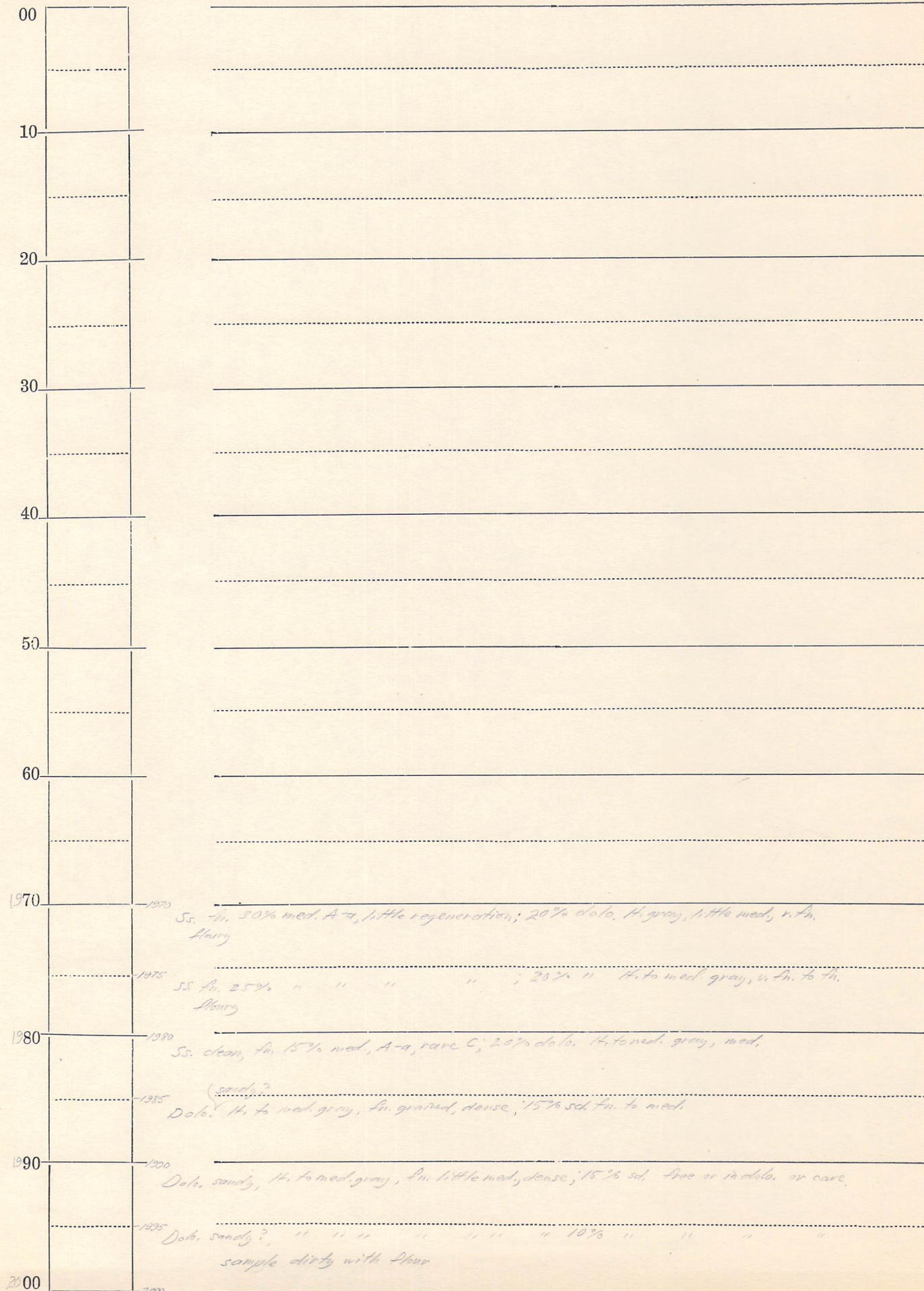
200		sls to finess, gray, shaly, non-calc.,
Penn. Miss.		ls, lt. buff, & br. buff, extremely fine xline, hrd, foss. (?),
210		ls, " " glt. br. " , " " " " to lith. sdy. in prts, (15% sd) sev. frag. covered blk. sh
		ls, lt. br buff, dol, lith. text, hrd, foss (?), Tr aragonite, <1% covered ig. mat.
220		ss to sls, lt. gray, lime cemented, ang. to subang., shaly, ss v. fine.
		ls, lt. buff & lt. gray fine to coarse sdy, lith. text, 20% fine sd sim. to above, rare az xtals, Tr pyrite Tr grn shor Glauc.
230		ls, ^{dol.} gray to drk gray, v. fine xline, hrd, ^{sd in prts} grn gray & perous in prts, 2% eolitic chrt, <2% pyrite
		Dol, fine xline, in prt calc., gray, with 5% lt. gray porcelain text. chrt & eolitic chrt, Tr. py
240		Sh, gray, soft, micaceous, slightly unct., non-calc.,
		Dol, br. gray, fine xline, hrd, with blk. foss. mat., 1 crinoid stem, occas. az xtals, 5% wh. weath. eolitic chrt.
250		Dol, " to " , " " soft, shaly, with lg. masses opaline az & chalcedony & xtal aggregates of az " " " " blue, 50%
		ls, lt. gray, lithographic, hrd, with sm % soft wh. lime.
260		ls, " " , " " , " " , <1% blue chrt, lg foss.
		ls, v. lt. buff, subxline, hrd, to floury text.,
270		ls, " " " , floury text., soft,
		Dol, br., hrd, fine xline, vitreous,
280		Dol, " , " , " " , " " , 50%
		Dol, lt. buff, to lt. gray, sub lith., hrd 50%
		Sh, lt. gray to grn. gray, hrd, highly calc., with 10% br. dol.
288		Dol, lt. br., fine xline saccharoidal texture, weak
290		Dol, sdy, ^{text.} shaly, lt. gray, non-calc., weak, entirely as mud, sd. fine
293		
298		Dol, v. lt. gray br., fine xline saccharoidal text., weak
300		(To 302)

Location _____ Date Drilled _____ Analyst Schuldt

300	ls, lt. buff, lithographic, hrd, sub-conch fract.
302	
306	ls, " " , " " , " " , " "
310	ls, lt. buff, floury text., oolitic, foss. ; Tr. py.
	ls, " " , " " , v. highly oolitic
320	ls, " " , " " , " " , " "
	ls, lt. buff, oolitic
330	ls, lt. buff, oolitic, & ls, lt. buff, lithographic
	ls, " " , " "
340	ls, lt. buff, highly oolitic, Tr. py.
	ls, " " , " " , " "
350	ls, " " , " " , " "
	ls, lt. buff to lt. gray, oolitic, with 3% lt. gray chalcedonic chrt
360	ls, lt. buff, highly oolitic, Tr. py.
	ls, lt. buff, " "
370	ls, " " , " " , foss.
	ls, " " , v. " " , " "
380	ls, " " , v. " " , " "
	ls, " " , v. " " , " "
390	ls, " " , v. " " , " " occas sm. frag, lt. gray chalced
	ls, " " , v. " " , " " Tr. chalced. & chrt.
400	

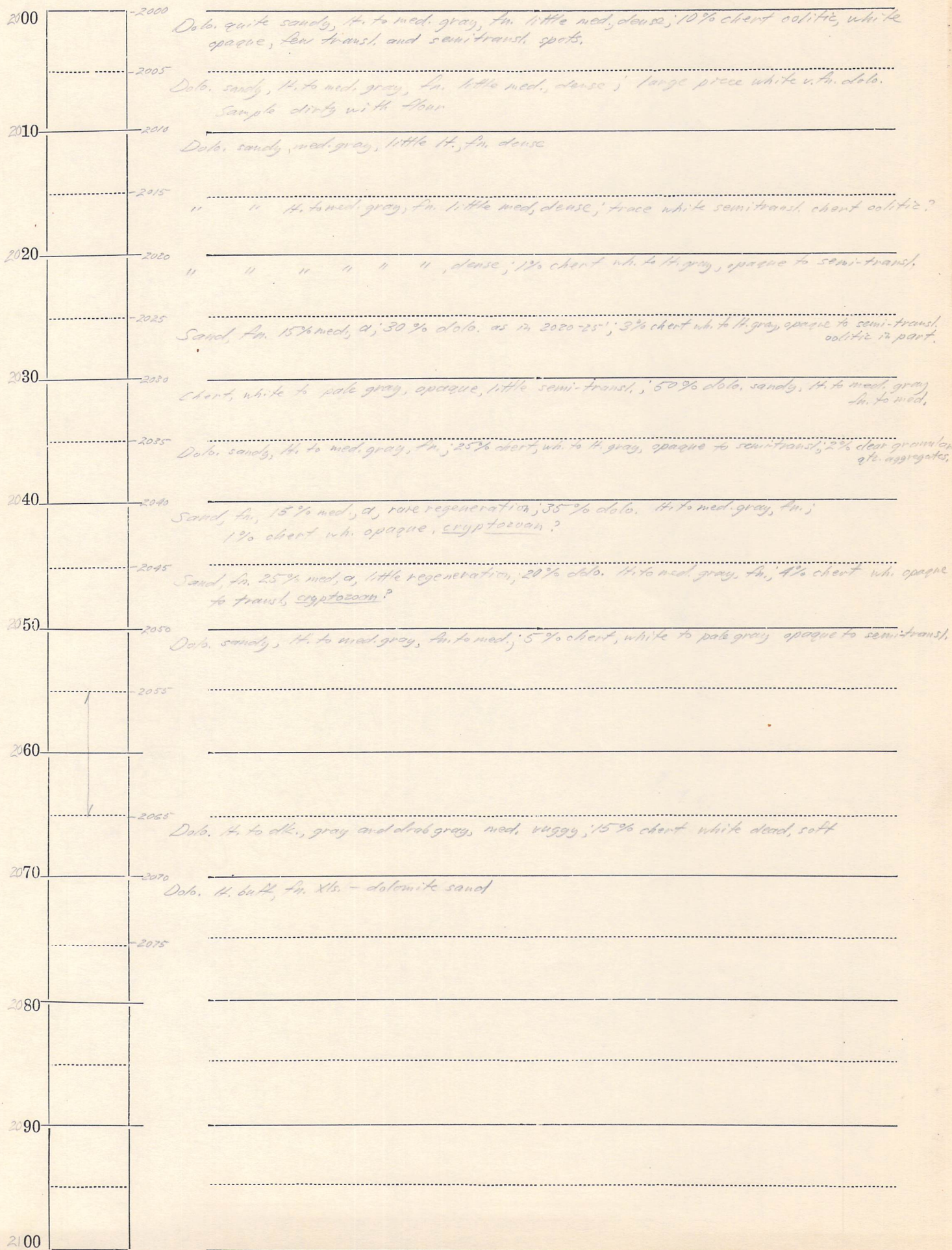
Sheet No. Name of Well Stanhope City #3 Survey No. W-0820

Location Hamilton Co. Date Drilled Analyst M. Elias



Sheet No. Name of Well Stanhope City #3 Survey No. W-2820

Location Hamilton Co Date Drilled Analyst M. Elias



GW Stanhope well
Folder Hamilton Co.

March 3, 1965

Mr. Frank Flores
Layne-Western Company
South Duff Avenue
Ames, Iowa

Dear Mr. Flores:

Thank you for your letter of March 1 detailing the construction of the Stanhope town well No. 3 which you deepened last year. Such information is always useful to us.

We are unable to locate the samples of the deepened portion of the hole. Perhaps they will turn up someplace. We will let you know if we uncover them here. In the meantime, if you should locate them at Stanhope, we will appreciate your forwarding them to us.

Thanks again.

Very truly yours,

H. G. Hershey

HGH/pjh
m



Layne-Western Company

WATER WELL DRILLING
EXPLORATION BORINGS AND TEST SURVEYS
LAYNE TURBINE PUMPS

2

OFFICES
KANSAS CITY, MISSOURI
WICHITA, KANSAS
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TELEPHONE CEDAR 2-3563

March 1, 1965

IOWA GEOLOGICAL SURVEY

MAR 2 1965

SOUTH DUFF AVENUE

AMES, IOWA

IOWA GEOLOGICAL SURVEY

MAR 2 1965

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

Dear Sir:

This is in response to your letter of February 25, regarding Town well 3 at Stanhope, Iowa.

We are enclosing herewith two drawings detailing the construction features of this well before reconstruction and after reconstruction.

You will note that we actually drilled only about 70' of new hole. In discussing this with our driller, he states that he did save the samples from this new drilling and he is positive that these were sent to you. You will note that there would only be ten or twelve of these samples. If you cannot locate them, please let us know and we will ask the people at Stanhope to search the pump house and we will keep our eyes open for them here. However, we are quite certain that these were sent to you.

Very truly yours,

LAYNE-WESTERN COMPANY

Frank H. Flores

FHF/blo
Enc.



1

Stanhope, Hamilton Co.

New well - just NE of business district

July 20, 1938

McCutcheon Well Co drilling. Martin on rig.

Curb elev. = 1119' $\pm$ 1

Topographic position = Upland.

Drillers log to date:

	Thick	From	To
Top soil & yellow clay	30	0	30
Blue clay	96	30	126
Blue-black shale (tough)		126	140 ⁺ pd.

Open 12" + hole at present; 140' of 12" pipe on job.
Top of solid, i.e. Miss ls., expected at 190 $\pm$

To go 250'

HAMILTON



2

Stanhope, Hamilton - City Well No 3

Nov. 9, 1938

SW $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 5, T86 N R 25 W, Clear Lake Twp.

S.W.L. 110.22 at top of 10" casing 2'4" above ground.

Bottom of cylinders of old wells 150'±

Pumping 15 hrs per day for 5-6000 gpd.

\$100.00 per mo. for electricity



3

Stonhope, Hamilton Co.

Information from Martin, driller

J. H. Mackey, Mayor.

Sept 3, 1938

T.D = 601'

SWL = 109

175' of 10" casing from +2'4" to 172'8" perforated 143 to 157'

235' to bottom of pump 20' suction. 2 3/4" cylinder

Yellow clay	0	35	
Blue clay	35	125	✓
Black shale	125	143	✓
Sandstone	143	157	✓
Black shale	157	175	✓
Limestone	175	177	✓
Black shale	177	195	✓
Brown sandy shale	195	205	✓
Lime with little sh (streaks)	205	220	✓
Lime & sh	220	250	✓
Gray lime	250	265	✓
Brown lime	265	270	✓
" "	270	280	✓
Gray sh	280	284	✓
" lime	284	289	✓
" sh	289	294	✓
Shale & lime	294	300	✓
Brown lime	300	315	✓
" "	315	340	✓
✓ Limestone	340	380	✓
"	380	400	✓
Sandy lime	400	460	✓
Brown lime	460	490	✓
Limestone (Brown)	490	560	✓
" v. dark gray	560	575	✓
Gray sh	575	580	✓
Lighter gray & red sh	580	585	✓
Bluish green sh	585	601	✓

Water SWL 100'

Water raised to 90'

Water (?) Head started falling

Water (?)

Water

Water head dropped

Water "

SWL. 109

Old city wells do not effect.

J. E. Martin.



4

Stanhope, Hamilton Co. Pumping test

Sept. 3, 1938

Reference point 2'10" above ground, top of 6" blocks above 10" casing

Time Water Level

4:30	110		
4:45	153' 11"	1' 9"	22 1/2 gpm
4:50	155' 8"	5' 1"	
4:55	160' 9"	7' 8"	7 1/2 gals in 18 secs
5:00	168' 5"	7' 7"	
5:05	175' 0"	2' 2"	Air 87 Water 50 3/4°
5:10	177' 2"	4' 4"	
5:15	181' 6"	3' 4"	7 1/2 gals in 18 secs
5:20	184' 10"		
5:25	187' 6"		
5:35	189' 4"		7 1/2 gals in 22 secs
5:40	191' 3"		Pump speeded to 22 1/2 gpm at 5:37
5:45	193' 11"		Air 85 Water 51°
5:50	194' 0"		Pump stopped 5:50
5:55	196' 8"		
6:00	201' 4"		7 1/2 gals in 17 secs

Sept. 5

Nov. 9 4:00 p. 110.22 from top of 10" 2' 4" above ground

1938



5

Stanhope, Hamilton Co

Dec. 21, 1939

Ed. Newell & R.O. Mendenhall for C.W. Varner

Blue shale	605	605
Gray shale	605	625
Gray lime	625	643
Brown "	643	654
Gray "	654	667
Brown "	667	689
Blue "	689	698
Gray	698	703
Brown	703	713
Gray	713	722
Brown	722	742
Blue shale	742	743
Gray lime (broken)	743	747
Gray shale	747	755
Gray lime	755	765
Brown "	765	770
Gray "	770	775
Gray shale	775	792
Gray lime	792	796
Gray shale	796	803
" slate	803	819
" lime (shale cave)	819	894
Brown "	894	900
Gray limestone	900	946
Brown "	946	982
Gray "	982	994
Gray shale	994	999
" limestone	999	1003
Gray shale	1003	1023
" " + brown lime	1023	1026
" "	1026	1028
Brown lime	1028	1075
Black lime	1075	1077
" " + brown lime	1077	1080
Brown " (Shale streak?)	1080	

165' of 10'

Shale caving badly - Maple Mill !



6

Stanhope, Hamilton Co

Feb. 12, 1940

Brown lime (-	1090	1122
" " + shale	1122	1125
" " + cave	1125	1194
Gray "	1194	1213
" dolom. + lime	1213	1220
" lime	1220	1244
Brownish lime	1244	1250
Gray lime	1250	1280
Sandy lime	1280	1282
Sand + lime	1282	1284
Sandy lime	1284	1285
Sandrock	1285	1287
Shale (bluish gray	1287	1297
Brown limet + shale	1297	1299
Brown + gray lime	1299	1303
* Gray lime - very hard (at top)	1203	1351
" " + dolom	1351	1392
Brown ls hard	1392	1394
" " + dolom (hard	1394	1404
Brown dolom. very hard	1404	1408
" lime + dolom	1408	1428
Gray lime + dolomite	1428	1442
" " sandy	1442	1447
" "	1447	1448
Brown " + dolom	1448	

* 1350' of 8' ss coupling Water well Special pipe set at 1350' which was bottom of hole

Water bailed to 260 where it has remained until present.

Ed. Newell + R.O. Mendenhall on rig (24W.



Stanhope City Well

Mar. 26, 1940

W.C. Schuldt

Elevation:

Time	Read.	Location
9 46	32.70	Depot (1.5' below top of rail)
9 50	32.72	Ground elev. at well (1' below Top of casing)
9 58	32.67	Depot
10 07	32.64	Depot
10 11	32.67	Ground elev. at well

Diff = +3' ; Elev. of depot 1119' ; -1.5' corr. at depot

$$1119 + 3 - 1.5 = \underline{1120.5'} = \text{Elev. ground at well}$$

Casing Record:

175' of 10" casing with bottom two joints perforated
 1356' of 8" " (with lead seal set above perforations
 → Top 1' above ground. in 10" casing
 71' of 6" casing from 1705 to 1776'

Notes:

1. Driller repts. St. Peter was very muddy when drilled.
2. Static level = 83.03' ^{Below top 8" casing} Meas. with water level instrument.
 3 readings (accurate)
 82.03' below natural ground level.
3. Bot. of bowls at 300', bot. of drop pipe 320
4. started pumping at 4:05, in 5 min water had dropped to bot. of pump line after which flow varied with regularity from 15-20 gpm to 0. Water very muddy at start, became less dense but still v. muddy after 15-20 min. Pump shut off at approx. 5:00'clock with water still v. muddy
5. Fore casted Top N. Rich. at 1930 (50' thick) and top of Jordan at 2180 (35' thick) as per Dr. Hershey

Note: Above report result of Schuldt's visit to Stanhope for pumping test on St. Peter which failed.



Stanhope

Apr. 28, 1940

3.57	110
4.00	
4.00 1/2	175
4.01	173
4.02	170
4.05	167
4.10	167
4.15	172
4.30	172
4.45	175

well pumped for 5 hours at approx 80 gpm
 max about 120 min about 50

At 80 gpm the pumping level was 195 feet
 below the surface which represents a dd
 of 105 feet from a SWL of 90 feet

Temp after 5 hrs pumping was 57°



Stanhope, Hamilton Co.

Final pumping test.

City Well T.D. 2200'

Apr. 26, 1940.

Time	Gauge reading	Water level below surface	Monometer tube reading	Production in GPM	Temperature		Remarks
					Air	Water	
10:54	200	90					
10:55 a.							Pump started
10:55 1/2	135	155	8	93			
10:56	121	169	8	93			
10:56 1/2	115	175					
10:57	112	178	8	93			
10:58	106	184					
10:59	98	192					
11:00	95	195	7	88			
11:05	88	202	6 1/2	85			
11:10	88	202	6	82			
11:20	91	199	4 1/2	75			
11:25	90	200	5	78			Production variable
11:30	90	200	5	78			
11:35	89	201	5 1/2	79	51	54	
11:45	92	198	4 1/2	76			
11:55	92	198	4 3/4	77			
12:05	91	199	5	78			
12:20	93	197	4	75	52	56	
1:05	105	185	4	75			
2:05	64	226	9	99			
3:04							Pump shut off
3:05	170	120					
3:07							Pump started
3:18	95	195	4 1/2	76			
3:25	95	195	4 1/2	76	49	57	
3:57	110	180			49	57	Pumping ended.
4:00							
4:00 1/2	175	115					
4:01	173	117					
4:02	170	120					
4:05	167	123					
4:10	167	123					
4:15	172	118					
4:30	172	118					
4:45	175	115					
Apr. 29	180	110					Measured level 108

Total depth = 2200 feet = depth at time of test

All readings questionable because of wide fluctuation in production

Bottom of air line 290' throughout test.



Stanhope, Hamilton Final Pumping Test City Well

Apr. 25, 1940

290' of airline

SWL = 90-95

Start 10:55 SWL = 90' by airline

Copied

Time	Gauge Read	SWL	Mon Tube	G.P.M.	
10:55 1/2	135		8		
10:56	121		8		
10:56 1/2	115				
10:57	112		8		
10:58	106				
10:59	98				
11:00	95		7		
11:05	88		6 1/2		
11:10	88		6		
11:20	91		4+		Very dirty
11:25	90		5		Production v. static
11:30	90		5		
11:35	89		5+		A 51 W 54
11:45	92		4 1/2		
11:55	92		4 3/4		
11:57	96		5		Line pumped up
12:05	91		5+		
12:20	93		5±		
1:05	105		4		A 52 W. 56
2:05	64		9		
3:04					
3:05	170				
3:07					Start
3:18	95		4 1/2		
3:25	95		4 1/2		A 49 W 57

)

Pump and Screen Data: _____

No.	Rock Unit	Description of Formations	Thick.	From (Feet)	To
PLEISTOCENE SYSTEM					
1.	Soil, dark gray, leached, sandy, silty		5	0	5
2.	Drift, buff, oxidized, slightly calcareous, silty, sandy, fine pebbly		120	5	125
PENNSYLVANIAN SYSTEM					
Des Moines Series					
3.	Shale, medium gray, unctuous, micaceous, non-calcareous		15	125	140
4.	Sandstone, gray, medium grained and calcite cemented in upper half and fine grained in lower half, angular, fairly well sorted.		17	140	157
5.	Shale, dark gray to black, micaceous, non-calcareous		13	157	170
6.	Shale, yellow gray, very micaceous, in part hard because of disseminated pyrite		5	170	175
7.	Sandstone, gray, medium grained, poorly sorted, with 10% coarse sand to granules		2	175	177
8.	Shale, black, firm, micaceous, non-calcareous		13	177	190
9.	Shale, light and dark gray interbanded, non-calcareous, silty textured		5	190	195
10.	Sandstone, fine grained, to very silty in lower 5', gray, angular, poorly sorted, shaly		10	195	205
MISSISSIPPIAN SYSTEM					
Meramec Series					
<u>St. Louis Formation</u>					
11.	Limestone, light buff to light brown, very fine crystalline to lithographic, hard, sandy in central part, with occasional dolomite bands, fossiliferous		15	205	220
12.	Sandstone, to siltstone, light gray, calcareous		5	220	225
13.	Limestone, light buff, lithographic textured, fine to coarse sandy		5	225	230

1. Carbon sent to E. F. Smith, Currie Eng. Co., Webster City, Iowa

Generalized Log of Stanhope City Well #3 - Page two.

<u>No.</u>	<u>Rock Unit</u>	<u>Description of Formations</u>	<u>Thick</u>	<u>From</u> <u>(Feet)</u>	<u>To</u>
14.		Dolomite, gray, fine crystalline, porous and sandy in parts, with 5% gray oolitic chert	10	230	240
15.		Shale, gray, soft, micaceous, non-calcareous	5	240	245
16.		Dolomite, brown to gray, with black fossiliferous fragments, occasional crystalline quartz aggregates, with 50% bluish opaline chert in lower 5'	12	245	257
17.		Limestone, light gray, lithographic, hard, fossiliferous	18	257	275
18.		Dolomite, brown, hard, translucent	10	275	285
19.		Shale, light gray to green gray, hard, slightly calcareous	3	285	288
20.		Dolomite, light brown, fine crystalline, saccaroidal	5	288	293
21.		Dolomite, light gray, weak, entirely as mud	5	293	298
22.		Dolomite, light gray brown, fine sandstone-like texture	5	298	302
<u>Gilmore City Formation</u>					
23.		Limestone, light buff, lithographic, hard, subconchoidal fracture	8	302	310
24.		Limestone, light buff, highly oolitic, with floury textured matrix	120	310	430
<u>Kinderhook Series</u>					
<u>Hampton Formation</u>					
<u>Iowa Falls Member</u>					
25.		Dolomite, brown, fine crystalline, translucent	19	430	449
<u>Eagle City Formation</u>					
26.		Limestone, dolomitic, light buff, very fine crystalline	5	449	454
27.		Dolomite, brown, fine crystalline, translucent	6	454	460
28.		Limestone, dolomitic in upper part, fine crystalline, translucent, light brown, with opaline silica and crystalline quartz aggregates	28	460	488
29.		Dolomite, brown, fine crystalline, porous	7	488	495
<u>Maynes Creek Member</u>					
30.		Dolomite, light brown, very fine crystalline, cherty (buff), compact	15	495	510
31.		Limestone, dolomitic and dolomite, calcareous, interbanded, with 4% oolitic chert between 525-530 feet, and occasional aggregates, crystalline quartz throughout	35	510	545
32.		Limestone and dolomite, similar to unit #31 but with 10-30% chert	25	545	570

Generalized Log of Stanhope City Well #3 -- Page three.

<u>No.</u>	<u>Rock Unit</u>	<u>Description of Formations</u>	<u>Thick</u>	<u>From</u> <u>(Feet)</u>	<u>To</u>
33.	Chapin Member (?)	Dolomite and limestone, brown, sugary textured, 10% of pyrite	5	570	575
34.	<u>Maple Mill Formation (?) or Sheffield</u>	Shale, light green gray and light pink interbanded, soft, non-calcareous, micaceous	25	575	600

	Thick	From	To
green Shale, light gray, non-calcareous, slightly waxy appearance, fair shaly structure, trace black shale in lower part, possibly with bands brown, fine to medium crystalline translucent dolomite, shale carries irregular quartz crystal aggregates and some pyrite	9'	600'	609'
Dolomite, light drab, fine to medium crystalline, translucent, drills to rock flower flour, with some thin interbeds of brown shale	11'	609'	620'
<u>Cedar Valley Formation</u> Shale, light green gray, fair shaly structure, pyritic	5'	620'	625'
Limestone, very light cream, very fine to subcrystalline, hard, sub-translucent, slightly sandy in parts and with occasional crystalline quartz masses or aggregates of tiny quartz crystals, moderately pyritic (marcasite) some green shale (cave or interbands) thruout	25'	625' 625'	650'
Limestone, light cream to very light buff, predominantly sub- crystalline, but with some fine to medium crystalline fragments, characterized by presence of brown calcite rhombs, pyritic, occasional crystalline quartz masses	30'	650'	680'
Dolomite, light gray, fine sugary sugary texture, moderately hard	3'	680'	683'
Limestone, light cream to very light buff, subcrystalline but with some fine to medium crystalline fragments, occasional calcite rhombs, pyritic thruout, occasional quartz aggre- gates, some green shale in upper part 15', fossiliferous (Brachiopod shell fragments) between 715-720'	32'	683'	715'
Limestone, light buff, fine crystalline, grading to gray, sugary textured and to light brown translucent, pyritic, occasional crystalline quartz masses and aggregates	22'	715'	737'
Dolomite and shale interbanded, dolomite light gray, fine to medium crystalline, translucent, shale light gray, yellow at the top	15'	737'	752'
Dolomite, variable, light gray drab to light brown, fine to medium crystalline, translucent, pyritic, becoming cal- careous at at base	18'	752'	770'
Shale, light gray in-upper-1-to-light-green-g very shaly in megascopic appearance but composed in large part of fine dolomite crystals	10'	770'	780'
Dolomite, light gray to brown-drab, fine to medium crystalline,	2'	780'	782'
Shale, light green gray, soft,	8'	782'	790'
Dolomite, gray drab to brown, fine to medium crystalline, trans- lucent, medium sandy in upper 5' and with thin interbands of fine sand between 800' and 805'	24'	790'	814'
Shale, light green gray, non-calcareous,	4'	814'	818'

Stanhope City #3 contin.

	Thick	From	To
Dolomite, light drab, medium to fine crystalline, subtrans-luscent, porous, pyritic	12'	818'	830'
Shale, light green gray, to dolomite, very	3'	8 ³ 20 '	8 ³ 23 '
Dolomite, light buff, te in upper 15' to buff below, fine crystalline, in parts fine sugary textured, with a thin dark green shale band near the top	17'	8 ³ 23 '	850'
Dolomite, light to medium brown, fine to medium crystalline, translucent, with thin bands light gray dolomitic shale in lower part	25'	850'	875'
Dolomite, very light gray drab to light buff, fine crystalline to fine sugary texture, somewhat porous, with some light gray dolomite in lower part	18'	875'	893'
Dolomite, medium brown, medium to coarse crystalline, trans-luscent, and light brown fine crystalline interbanded,	22'	893'	915'
Dolomite, light brown, very fine to subcrystalline, translucent	15'	915'	930'
Dolomite, light to medium brown, medium to coarse crystalline, translucent	10'	930'	940'
<u>Wapsipinicon Formation</u> to medium			
Dolomite, light brown, fine crystalline, translucent, with traces of brown shale minor percentages light green-gray non-calcareous shale in central portion of unit, traces of gypsum in parts	60'	940'	1000'
Shale, green to brown, non-calcareous	2'	1000'	1002'
Dolomite, brown, very fine crystalline, hard, with 5-15% white compact gypsum	16'	1002'	1018'
Shale, green-gray, soft, non-calcareous, 10-15% gypsum (cave?) slightly medium sandy	6'	1018'	1024'
Dolomite, brown, very fine crystalline, with small percentage of yellow green shale, silty	5'	1024'	1029'
Shale, green-gray, non-calcareous, with occasional quartz crystal aggregates,	6'	1029'	1035'
Dolomite, brown, fine to medium crystalline, hard, translucent, with a thin band of hard green silty dolomitic shale between 1040' and 1045'	20'	1035'	1055'
Dolomite, brown, very fine crystalline, with 30% green non-calcareous shale and 15-30% white compact gypsum	20'	1055'	1075'
Dolomite, brown, very fine crystalline, and dolomite, brown, fine to medium crystalline, translucent, interbanded, with 10-60% white fine crystalline to compact gypsum	²⁵ 20 '	1075'	¹¹⁰⁰ 1095 '

	<u>Thick</u>	<u>From</u>	<u>To</u>
Dolomite, brown, coarse fine crystalline, transluscent, hard, with 0-15% white compact gypsum	30'	1100'	1130'
Dolomite, light brown, fine to medium crystalline, transluscent, hard, with 10-15% white compact and crystalline gypsum	25'	1130'	1155'
Dolomite, light brown, fine to medium crystalline, transluscent, with traces brown lithographic limestone, with dolomite rhombs at the top, dolomite becomes sugary textured in this unit, gypsum present only as traces, probably cave.	44'	1155'	1199'
Limestone, light buff, lithographic with dolomite rhombs, light gray, blue mottled, sugary textured, fossiliferous; considerable authigenic quartz and less than 5% white, transluscent chert, trace brown and green shale between 1220' and 1230', thin band brown dolomitic shale at base, limestone becoming fine crystalline toward base	16' 51'	1199'	1215' 1250'
Limestone, light buff, fine crystalline, moderately fine to medium sandy, minor % gray to <u>black</u> chert, 30-40 percent crystalline and compact gypsum, 40% chert in bottom sample	30'	1250'	1280'
Limestone, light buff, fine crystalline, fine to medium sandy, with 20% white compact gypsum and 30-40% black and white chert	6'	1280'	1286'
Sandstone, white to light buff, fine to medium grained, fair sorting, subangular to curvilinear	1'	1286'	1287'
Shale, light green gray, fine to coarse sandy, strongly calcareous	3'	1287'	1290'
<u>ORDOVICIAN SYSTEM</u>			
<u>Maquoketa Formation</u>			
Dolomite, light green gray, fine to coarse sandy, resembles hard shale	7'	1290'	1297'
Dolomite, light brown, medium crystalline, transluscent, sandy; sand medium to coarse grained	2'	1297'	1299'
Sandstone, light buff, medium grained, fairly well sorted, curvilinear	3'	1299'	1302'
Chert, very pale buff, dolomitic, and in part grading to siliceous dolomite. Lower 15' show increase in % of dolomite, and dolomite and chert show black tracings (Bryozoans)	43'	1302'	1345'
Dolomite, soft, fine crystalline, possibly shaly, drills to rock flour bearing strong resemblance to shale, petrographic analysis shows only carbonate	45'	1345'	1390'
<u>Galena Formation</u>			
Dolomite, brown, medium crystalline, transluscent, hard, drills to dolomite sand, pyritic	10'	1390'	1400'

	<u>Thick</u>	<u>From</u>	<u>To</u>
Limestone, brown to drab, fine to medium crystalline, translucent, with 35% white chalky limestone, drills to flour except in upper 15'	33'	1400'	1433'
Limestone, gray, fine textured and shot thru with small disseminated brown dolomite crystals, 60-70% white to gray opaque fresh porcelain textured chert	17'	1433'	1450'
Dolomite, very light buff, fine textured and shot thru with small disseminated dolomite rhombs, dolomite 50-90% gray to white fresh opaque chert, dolomite in part siliceous	20'	1450'	1470'
Dolomite, very light buff, with 10-50% chert, dolomite in part siliceous, in part calcareous	20'	1470'	1490'
Dolomite, light brown-drab, fine to medium crystalline, drills to dolomite sand	5'	1490'	1495'
Limestone, light buff, fine textured, dolomitic, with 25% gray shale in upper 5', lower five feet becoming fine to medium crystalline, drilling to sand in upper 10'; predominantly flour below	15' 95'	1495' 1495'	1505' 1590'
Limestone, light brown, fine crystalline, translucent, hard, with 40% pale brown-buff porcelain textured chert, and a band of green-gray shale near 1600'	14'	1590'	1604'
<u>Decorah Platterville</u> Dolomite, brown drab, fine crystalline, translucent, fossiliferous, grading in lower half to floury textured limestone with disseminated dolomite crystals in parts amounting to over 50%	21'	1604'	1625'
Limestone, light buff, floury textured to subcrystalline, opaque, flaky textured	20'	1625'	1645'
Limestone, brown-drab to light brown, fine granular, translucent and somewhat dolomitic in upper 5', grading to subcrystalline, translucent below	15'	1645'	1660'
Shale, light green, soft, structureless, very calcareous	4'	1660'	1664'
Limestone, light buff buff, fine crystalline to floury textured, somewhat flaky fracture	31'	1664'	1695'
Shale, green, soft, calcareous, fossiliferous, with a 2-3' band of dolomite-in-center limestone in center	15'	1695'	1710'
Limestone, light buff, fine textured	18'	1710'	1728'
<u>Glenwood Formation</u> Shale, green, hard, noncalcareous, shoe-peg type	7'	1728'	1735'

	<u>Thick</u>	<u>From</u>	<u>To</u>
No sample	5'	1735'	1740'
Shale, green, hard, non-calcareous, with thin limestone bands and one brown shale band	10'	1740'	1750'
Shale, green-gray, hard, sandy; sand medium to coarse grained, curvilinear	10'	1750'	1760'

St. Peter Formation

Sandstone, white, medium to coarse grained in upper 5', grading to fine to medium grained in upper half, becoming predominantly medium grained in lower half. Sand, medium to coarse curvilinear to subround, well frosted, pyritic, dirty and silty in parts	57'	1760'	1817'
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PRAIRIE DU CHIEN GROUP

Willow River Formation

Dolomite, light buff, very fine texture, very soft, in part argillaceous argillaceous, drills to flour	8'	1817'	1825'
No sample	5'	1825'	1830'
Sandstone, medium to coarse grained, curvilinear to subround, well frosted, dolomite cemented	4'	1830'	1834'
Marl or rock flour, dolomite, white, very fine dolomite and limestone flour, quartz silty, minor percentage medium to coarse grained sand	11'	1834'	1845'
Dolomite, light brown, fine crystalline in upper half grading to fine to medium crystalline in lower, soft in upper part to hard in lower, moderately sandy, sand medium grained, unit carries as much as y- 60% caved Glenwood shale in upper part	55'	1845'	1900'

New Richmond Formation

Sandstone, white to pale buff, fine to medium grained, sub-angular to curvilinear, frosted, with much incipient secondary growth, dolomite cemented	5'	1900'	1905'
Dolomite, light brown, fine crystalline, translucent, moderately hard, sandy and grading to sandstone in part	15'	1905'	1920'
Dolomite, very pale buff to white, drills to dolomite sand, with 20% fine to medium quartz sand	6'	1920'	1926'
Sandstone, light buff, coarse to medium grained, curvilinear, frosted, slightly secondary growth, dolomite cemented	34'	1926'	1960'
Sandstone, white, fine to medium grained, angular to subangular, slightly frosted, sprinkling coarse grained, slight development of secondary growth	10'	1960'	1970'

Sandstone, white, fine to medium grained, angular to sub- 15' 1970-1985
angular, little secondary growth, with 20% dolomite, light to
medium gray, fine grained.

Dolomite, sandy, light to medium gray, fine little medium 40' 1985-2025
grained, dense, with 10% chert white opaque, few semi-
translucent spots, oolitic, from 2000-2005'. Trace white
opaque to semi-translucent chert from 2015-2025'.

Sandstone, white, fine to medium, subangular; 30% dolomite 5' 2025-2030
light to medium gray, fine grained; 3% chert white to pale
gray, opaque to semi-translucent, oolitic in part.

Dolomite, sandy, light to medium gray, fine little medium 10' 2030-2040
grained, dense; 25 to 50% chert, white to pale gray, opaque
to semi-translucent

Sandstone, fine to medium, sub-angular, little secondary 10' 2040-2050
growth; with 20-35% dolomite, light to medium gray, fine
grained, dense; with up to 4% chert, white opaque to
translucent, cryptocon?

Dolomite, sandy, light to medium gray, fine to medium gray; 5' 2050-2055
with 5% chert, white to pale gray, opaque to semi-translucent

No Sample
Oneota formation 10' 2055-2065

Dolomite, light to dark, gray and drab gray, medium grained, vuggy; 5' 2065-2070
with 15% chert white dead soft

Dolomite sand, light buff. fine saccharoidal crystals 5' 2070-2075

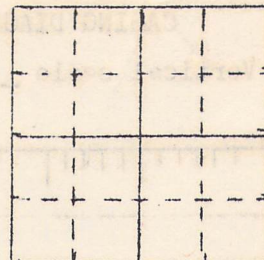
7 1/2' Stanhope Quad

IOWA GEOLOGICAL SURVEY

W-087a

421723 0934742
086-25W-5 BCCC

1980 field located by D. Karsten
Location: RECORD OF WELL



(N E)
Town: Stanhope (S W); County Hamilton
E.

S W SW-NW sec. 5 T. 86 N., R. 25 W. Clear Lake Twp.

Well name and number Stanhope City Well #3

Owner _____ Address _____

Tenant _____ Address _____

Contractor C.W. YORGER McCutcheon Address Dubuque

Drillers Ed Martin 0-600'

Drilling dates McCutcheon 1938 to 600' Varrier 10/26/39 to 4/30/40

Well data:

Elevations: Drilling curb 1122.2 feet; Land surface 1121.2 feet

Determined by _____

Topographic position Upland

Total depth: Reported 2203' 9" feet; Measured _____ feet

Drilling method cable tool

Hole and casing data 173' 8" of 10" casing from +1' to 172' 8" perforated from 143' to 157'
(Give amount, size, kind, and depth of all casing; type and
1353' of 8" casing from +1' to 1352'; 8" hole from 1352' to 1772';
position of seals and packers; cementing; how finished--perforated pipe, screen,
6" hole from 1772' to 2203' 9"; 71' of 6" casing from 1705' to 1776'
gravel pack, open hole, etc.)

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

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

Sources of water: Principal _____; Others _____

Production data:

Date April 28, 1940Static depth to water 195Measuring point top of 8" casing 1121.5' above s.l.Pumping level 290at 80 g.p.m.Specific capacity .78 g.p.m. per ft. drawdown; Temperature 57 °F.

Pump data; Type pump Turbine Column Dia. _____ Length 335
 Cylinder or bowls: Dia. _____ Length _____ Suction pipe 6
 Power Electric 10hp 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	<u>SEPT 5, 1938</u>	<u>April 25, 1940</u>	<u>Aug 26, 1944</u>
Sampled by	<u>H. G. Hershey</u>	<u>H. G. Hershey</u>	<u>W. E. Hole</u>
Total solids	<u>1037</u>	<u>2512</u>	<u>2467</u>
Insoluble matter	<u>38.5</u>	<u>10.0</u>	<u>25.0</u>
Alkalinity (Meo)	<u>352.0</u>	<u>240.0</u>	<u>254.0</u>
Alkalinity (Phn)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
pH	<u>11/4/38 7.0</u>	<u>8/23/40 7.1</u>	<u>10/19/44 7.0</u>
Fe ₂ O ₃ + Mn ₂ O ₃ + Al ₂ O ₃	<u>8.5</u>	<u>3.0</u>	<u>17.0</u>
Alkali as sodium	<u>90.3</u>	<u>107.0</u>	<u>57.8</u>
Calcium	<u>149.7</u>	<u>367.3</u>	<u>358.8</u>
Magnesium	<u>66.4</u>	<u>157.5</u>	<u>172.8</u>
Iron (unfiltered)	<u>1.7</u>	<u>0.0*</u>	<u>10.5</u>
Manganese	<u>0.10</u>	<u>0.00</u>	<u>0.05</u>
Nitrate	<u>0.44</u>	<u>1.30</u>	<u>0.44</u>
Fluoride	<u>1.5</u>	<u>2.2</u>	<u>2.5</u>
Chloride	<u>12.0</u>	<u>38.0</u>	<u>16.5</u>
Sulfate	<u>420.5</u>	<u>1476.5</u>	<u>1410.2</u>
Bicarbonate	<u>429.4</u>	<u>292.8</u>	<u>309.9</u>
Hardness (ppm)	<u>650</u>	<u>1565</u>	<u>1626</u>
Hardness (gpg)	<u>38.0</u>	<u>91.5</u>	<u>95.1</u>
Remarks	<u>Pennsylvanian</u>	<u>slight H₂S odor</u>	<u>*may be low</u>

Laboratory data:

Sample storage location _____

Sample range 0-2200 No. spls. 462 No. dupls. & cond. 462 parts to goodSpls. prepared by Yoho - Summerford Washed range _____ by _____Driller's log and cond. VcSInsoluble residues: Prepared by 1200-1510 Studied by _____ Strip log _____ K7Microscopic study 0-2200 wcs strip log W.C. SchuldtGen. log ✓ Correl. by Schuldt

WATER LEVEL DATA

Measuring point _____

Date	Depth to water	Altitude	Remarks
3/26/40	83.03	1038.47	St. Peter.
9/5/38	109.	1012.5	Pennsylvanian

REMARKS

Static Water Levels:

From	To	SWL	From	To	SWL
587	1280	112'	2055	2072	105
1280	1350	120	2072	2080	94
1350	1413	record	2080	2159	110
1413	1437	240	2159	2160	90
1437	1624	240	2160	2200	110
1624	1648	140			
1648	1669	135			
1669	1700	130			
1700	1710	115			
1710	1748	110			
1748	1760	100			
1760	1832	90			
1832	1983	95			
1983	1991	85			
1991	2023	95			
2023	2055	85			

3

April 9, 1940

Mr. C. W. Varner
907 Dubuque Building
Dubuque, Iowa

Dear Mr. Varner:

We have received and studied samples from the Stanhope well to a depth of 1970 feet. Below the St. Peter sandstone the material was characteristic Willow River dolomite to 1926 feet. We have placed the top of the New Richmond sandstone at 1926 and this formation continues as far as we have samples. The sandstone is dolomite cemented at least in part from 1926 to 1960. The last ten feet, however, appears to be entirely uncemented.

The New Richmond should continue to 1975-1985 feet and be underlain by light brown cherty dolomite of the Oneota formation. I believe that sufficient water for the Stanhope town supply occurs in the New Richmond, although it may be a good idea to drill a short distance into the Oneota to be assured of an adequate supply.

I will appreciate it if you will notify me as long in advance of the next pumping test as possible.

Very truly yours,

H. G. Hershey

HGH:N

2

C. W. VARNER
WELL CONTRACTOR

905 Dubuque Bldg.

Telephone 3691

DUBUQUE, IOWA.

April 17, 1940

Mr. H. G. Hershey,
Iowa Geological Survey,
Iowa City, Iowa.

Dear Mr. Hershey:

Thank you for your letter of April 9th with reference to the Stanhope well. I have been out of the city for over two weeks - hence the delay in replying.

I understand they are down about 2100' at Stanhope and in the dolomite. I am wondering if there is any use in drilling farther. I understand the static water level is about 85' and that the well will take about 50 G.P.M., that is, they can discharge about 50 GPM out of the fire hose into the well indicating somewhat that the well is still not too free of water bearing formations although there have been several times in the last 100 feet when they could not bail out any cuttings at all. The hole was entirely clean, indicating that the cuttings were getting away in broken formation.- It still seems to be quite hard drilling.

Do you think they will get any more water within a reasonable distance? It would appear to me that they would have to go considerably farther in order to get any more sandstone. Please advise me as soon as possible.

Yours very truly,


C. W. Varner.

CWV:AF

April 18, 1940

Mr. C. W. Varner
905 Dubuque Building
Dubuque, Iowa

Dear Mr. Varner:

Your letter of April 17 regarding the Stanhope well has been received.

Earlier this week we received samples from Stanhope to a depth of 2075. These samples have been studied and correlated. We have placed the base of the New Richmond sandstones and dolomites at 2000 feet. Between 2000 and 2070 feet the cuttings are typically Oneota sandy, cherty dolomite with two sand strata (2025-2030, 2040-2050) which are slightly abnormal to the section.

The lower part of this well has been following other wells in the vicinity very closely and from this I expect the Jordan to be approximately 30 feet thick with the top at about 2170 feet.

In my opinion the New Richmond is the best of the deeper aquifers at Stanhope. The Jordan will probably increase the production of the well, but it is questionable in my mind whether it would be worthwhile to drill through the Jordan for the additional water that it would contribute. On the other hand, if drilling has been carried much below 2100 feet it may be practicable to take advantage of the additional Jordan waters. Frankly, I feel that a decision either way would be entirely justifiable, although from a geological standpoint I am very much interested in knowing the exact depth to the top of the Jordan at Stanhope.

I will appreciate it if you will let me know what decision you make and also when the next pumping test will be held.

Very truly yours,

HGH:N

H. G. Hershey

CITY WELL - STANHOPE, IOWA

Date Started - 10-26-39

Date Completed - 4 - 30-40

Depth - 2203' 9"

Diameters - Casings - 175' of 10" steel; 10" hole from 175' to 1352'; 1352' of 8" steel; 8" hole from 1352' to 1772'; 6" hole from 1772' to 2203' 9"

Strata Record
Depth

<u>From</u>	<u>To</u>	<u>Thickness</u>	<u>Description</u>
Top	35	35	Yellow clay
35	125	90	Blue Clay
125	143	18	Black Shale
143	157	14	Sandstone
157	175	18	Black Shale
175	177	2	Limestone
177	195	18	Black Shale
195	205	10	Brown sandy shale
205	220	15	Limestone and some shale
220	230	10	Shale & Limestone bands (Old Hole to 230' - Drilled by
230	245	15	Shale blue (McCutcheon Well Co.)
245	587	342	Shale, dark blue
587	593	6	Shale blue
593	596 $\frac{1}{2}$	3 $\frac{1}{2}$	Shale, blue, mixed with red
596 $\frac{1}{2}$	605	8 $\frac{1}{2}$	Shale, blue
605	625	20	Shale, gray
625	643	18	Limestone, gray
643	654	11	Limestone, brown
654	667	13	Limestone, gray
667	689	22	Limestone, brown
689	698	9	Limestone, blue
698	703	5	Limestone, gray
703	713	10	Limestone, brown
713	722	9	Limestone, gray
722	743	21	Limestone, brown
743	744	1	Shale, blue
744	747	3	Limestone gray broken
747	755	8	Shale, gray
755	765	10	Limestone, gray
765	770	5	Limestone, brown
770	771	1	Limestone, gray
771	775	4	Limestone, gray, very hard
775	792	17	Shale, gray
792	796	4	Limestone, gray
796	805	9	Shale, gray
805	819	14	Slate, gray
819	894	75	Limestone, gray
894	900	6	Limestone, brown
900	946	46	Limestone, gray
946	982	36	Limestone, brown
982	994	12	Limestone, gray, hard
994	999	5	Shale, gray
999	1003	4	Limestone, gray
1003	1023	20	Shale, gray

<u>From</u>	<u>To</u>	<u>Thickness</u>	<u>Description of Beds</u>
1023	1028	5	Shale, gray and limestone, brown
1028	1075	47	Limestone, brown
1075	1077	2	Limestone, black
1077	1082	5	Limestone, black and brown
1082	1122	40	Limestone, brown
1122	1125	3	Limestone brown and shale
1125	1194	69	Limestone, brown
1194	1200	6	Shale, gray
1200	1213	13	Limestone, gray
1213	1220	7	Gray dolomite and limestone
1220	1244	24	Limestone, gray
1244	1248	4	Limestone, brownish-gray
1248	1260	32	Limestone, gray
1260	1284	4	Limestone, sandy
1284	1287	3	Sandrock and cave
1287	1297	10	Shale, bluish-gray
1297	1299	2	Shale and brown limestone
1299	1301	2	Limestone, brown
1301	1303	2	Limestone, brown and gray
1303	1304	1	Limestone, gray, very hard
1304	1351	47	Limestone, gray
1351	1376	25	Limestone, gray and dolomite
1376	1385	9	Dolomite, dark gray
1385	1392	7	Limestone and dolomite, gray
1392	1394	2	Limestone, brown, very fine and hard
1394	1398	4	Limestone, brown and dolomite
1398	1399	1	Limestone, brown and dolomite, hard
1399	1404	5	Limestone, brown, hard
1404	1408	4	Dolomite, brown very hard
1408	1413	5	Limestone, brown
1413	1419	6	Limestone, brown and dolomite
1419	1423	4	Limestone, brown
1423	1428	5	Limestone, brown and dolomite
1428	1437	9	Limestone, gray and dolomite
1437	1442	5	Limestone, gray
1442	1447	5	Limestone, gray, sandy
1447	1488	41	Limestone, gray
1488	1492	4	Limestone, brown
1492	1501	9	Limestone brown and dolomite
1501	1506	5	Limestone, gray
1506	1507	1	Limestone, brown and dolomite
1507	1517	10	Limestone, brown
1517	1528	11	Limestone, brown and dolomite
1528	1530	2	Limestone, brown
1530	1535	5	Limestone, gray
1535	1546	11	Limestone, brown and dolomite
1546	1559	13	Limestone, brown
1559	1576	17	Limestone, brown and dolomite
1576	1598	22	Dolomite, gray
1598	1602	4	Limestone, brown
1602	1607	5	Dolomite, gray
1607	1611	4	Limestone, brown, dolomite
1611	1613	2	Dolomite, gray
1613	1621	8	Limestone, gray and dolomite
1621	1624	3	Limestone, brown and dolomite
1624	1637	13	Gray dolomite and lime
1637	1641	4	Brown lime
1641	1644	3	Gray lime
1644	1648	4	Gray lime and dolomite

<u>From</u>	<u>To</u>	<u>Thickness</u>	<u>Description of Beds</u>
1648	1652	4	Shaley limestone brown lime
1652	1655	3	Shaley limestone blue shale brown lime
1655	1656	1	Blue shale and brown lime
1656	1660	4	Gray lime and shale
1660	1663	3	Lime, brown
1663	1666	3	Blue shale
1666	1669	3	Blue shale - some lime
1669	1672	3	Gray lime and shale
1672	1680	8	Limestone, gray
1680	1684	4	Limestone, brown
1684	1689	5	Limestone, gray with shale streaks
1689	1694	5	Limestone, gray
1694	1700	6	Limestone, gray and shale, blue
1700	1707	7	Blue shale, very little lime
1707	1710	3	Gray lime and shale
1710	1715	5	Blue shale
1715	1717	2	Brown lime
1717	1722	5	Gray lime
1722	1726	4	Gray lime and shale
1726	1731	5	Brown limestone
1731	1736	5	Brown limestone and blue shale
1736	1743	7	Bluish-green shale-sticky
1743	1746	3	Gray lime
1746	1748	2	Lime and shale
1748	1749	1	Green shale
1749	1752	3	Brown lime and green shale
1752	1755	3	Shale
1755	1758	3	Green shale
1758	1760	2	Green shale and sand
1760	1764	4	Green shale
1764	1766	2	Sand rock
1766	1768	2	Sand rock and shale
1768	1813	45	Sandstone
1813	1815	2	Sandstone showing gray lime
1815	1832	17	Gray dolomite hard
1832	1846	14	Sandy dolomite
1846	1860	14	Gray dolomite, very hard
1860	1881	21	Gray dolomite
1881	1885	4	Gray dolomite and lime
1885	1898	13	Gray dolomite
1898	1917	19	Gray dolomite, sandy
1917	1928	11	Gray dolomite
1928	1947	19	Sandstone and gray dolomite
1947	1974	27	Sandstone
1974	1978	4	Sandstone and lime
1978	1983	5	Limestone, fairly hard
1983	1987	4	Dolomite, sandy
1987	1999	12	Gray dolomite and lime
1999	2004	5	Gray lime, very hard
2004	2013	9	Gray lime
2013	2016	3	Gray lime, sandy
2016	2023	7	Gray lime
2023	2028	5	Gray lime, sandy

<u>From</u>	<u>To</u>	<u>Thickness</u>	<u>Description of Beds</u>
2028	2078	50	Gray Lime
2078	2080	2	Dolomite
2080	2090	10	Lime, gray
2090	2095	5	Dolomite
2095	2108	13	Brown dolomite
2108	2125	17	Gray dolomite
2125	2137	12	Brown dolomite
2137	2169	32	Gray dolomite
2169	2176	7	Brown dolomite and lime, very hard
2176	2181	5	Brown dolomite and sand
2181	2191	10	Sand rock
2191	2203'9"	12'9"	Sand and dolomite

Static Water Levels

<u>From</u>	<u>To</u>	<u>Level</u>
587	1280	112'
1280	1350	120
1350	1413	No Record
1413	1437	240
1437	1624	260
1624	1648	140
1648	1669	135
1669	1700	130
1700	1710	115
1710	1748	110
1748	1760	100
1760	1832	90
1832	1983	95
1983	1991	85
1991	2023	95
2023	2055	85
2055	2072	105
2072	2088	94
2080	2159	110
2159	2160	90
2160	2200	110

May 1, 1940

Charles Carter

Mr. C. W. Varner
905 Dubuque Building
Dubuque, Iowa

Dear Mr. Varner:

We have completed our preliminary study of the samples from your Stanhope well. The Oneota sandy dolomite continued to a depth of between 2175 and 2180 feet and was followed in depth by Jordan sandstone apparently quite tightly cemented with dolomite. It is rather doubtful that the drilling was carried completely through the Jordan, but was stopped either in an exceptionally tightly cemented zone or a zone of pure dolomite within the Jordan.

Our final report on this well should be completed in the near future and at that time we will send you a copy of our generalized log.

I will appreciate it if when you have completed your record you will send us a copy of your driller's log and the record of constructional features on this well.

Very truly yours,

H. G. Hershey

HGH:N

May 1, 1940

Charles Carter

Mr. C. B. Wing
City Clerk
Stanhope, Iowa

Dear Sir:

Inclosed are the results of my measurements on Stanhope City Well No. 3 during the pumping test of April 25, 1940. The monometer tube readings and the production in gallons per minute figured from the tube readings should not be considered accurate because during the test the water in the monometer tube fluctuated too greatly to get an accurate reading at all times.

It is my belief, however, that at 80 gallons per minute the pumping level was 195 feet below the surface.

The static water level is still somewhat in question. Before the test started the static level was 90 feet according to the air gauge. On the day after the test was completed I understand that the static level was 108 feet which probably represents a more accurate reading than does the one taken before the test started.

If you have any questions regarding this report, please feel free to call on me.

Very truly yours,

H. G. Hershey

HGH:N

Inc.

May 1, 1940

Charles Carter

Mr. C. W. Varner
905 Dubuque Building
Dubuque, Iowa

Dear Mr. Varner:

Attached are the readings which I obtained during the pumping test on Stanhope Well No. 3 on April 25, 1940. The monometer tube readings and the productions obtained from them are not trustworthy because of wide variations in the monometer tube readings.

After observing pumping conditions at Stanhope I believe that at a production of 80 g.p.m. the pumping level was 195 feet below the surface which represents a drawdown of 105 feet from an original static water level of 90 feet. On the day after the test I understand that the static level was 108 feet.

The highest water temperature which I measured was 57° F. It is doubtful in my mind that this temperature represents that of Jordan water, but rather that it is either the temperature of water coming from higher in the hole or was caused by the fact that the well did not stabilize after about five hours of pumping.

If you have any questions regarding my figures on the pumping test, please let me hear from you.

Very truly yours,

H. G. Hershey

HGH:N

Inc.

IOWA GEOLOGICAL SURVEY
Iowa City, Iowa

Results of Pumping Test
on
STANHOPE WELL NO. 3

April 25, 1940

Time	Gauge reading	Water level below surface	Monometer tube reading	Production in G.P.M.	Temperature Air	Temperature Water	Remarks
10:54	200	90					Pump started.
10:55							
10:55½	135	155	8	93			
10:56	121	169	8	93			
10:56½	115	175					
10:57	112	178	8	93			
10:58	106	184					
10:59	98	192					
11:00	95	195	7	88			
11:05	88	202	6½	85			
11:10	88	202	6	82			
11:20	91	199	4½	75			
11:25	90	200	5	78			Production variable.
11:30	90	200	5	78			
11:35	89	201	5½	79	51	54	
11:45	92	198	4½	76			
11:55	92	198	4½	77			
12:05	91	199	5	78			
12:20	93	197	4	75	52	56	
1:05	105	185	4	75			
2:05	64	226	9	99			
3:04							Pump shut off.
3:05	170	120					
3:07							Pump started.
3:18	95	195	4½	76			
3:25	95	195	4½	76	49	57	
3:57	110	180			49	57	Pumping ended.
4:00							
4:00½	175	115					
4:01	173	117					
4:02	170	120					
4:05	167	123					
4:10	167	123					
4:15	172	118					
4:30	172	118					
4:45	175	115					
Apr. 29	180	110					Measured level 108

Total depth = 2200 feet = depth at time of test.

All readings questionable because of wide fluctuation in production.

Bottom of air line 290' throughout test.

Copies to: C. W. Varner, Dubuque
Town of Stanhope

GW
Stanhope well folder
Hamilton Co. 4

June 11, 1964

To: H. G. Hershey
From: L. L. Steele
Subject: Stanhope well No. 3 deepened

Town of Stanhope No. 3 well drilled by McCutchen and Varner, 1938-40, T.D. 2200' reworked by Layne-Western, September 1963-June 1964. The original well was reported caved in at the 500+-foot level. The present well was reworked to a T.D. of 2274' with 1820' of 8" welded pipe with shoe on bottom and 8" open hole from 1820' to 2274'. Samples were taken from 2200' to 2275' and will be sent to the office at Ames and forwarded to this office.

The SWL of this well was 187.70 at 1600 hours June 4, 1964. A pumping test of this well be conducted in the near future. The pumping rate will probably be quite low as the needs of this town are now being satisfied by a well pumping intermittently.

LLS

DETAILS OF WELL CONSTRUCTION FOR TOWN OF STANHOPE, IOWA WELL No. 3

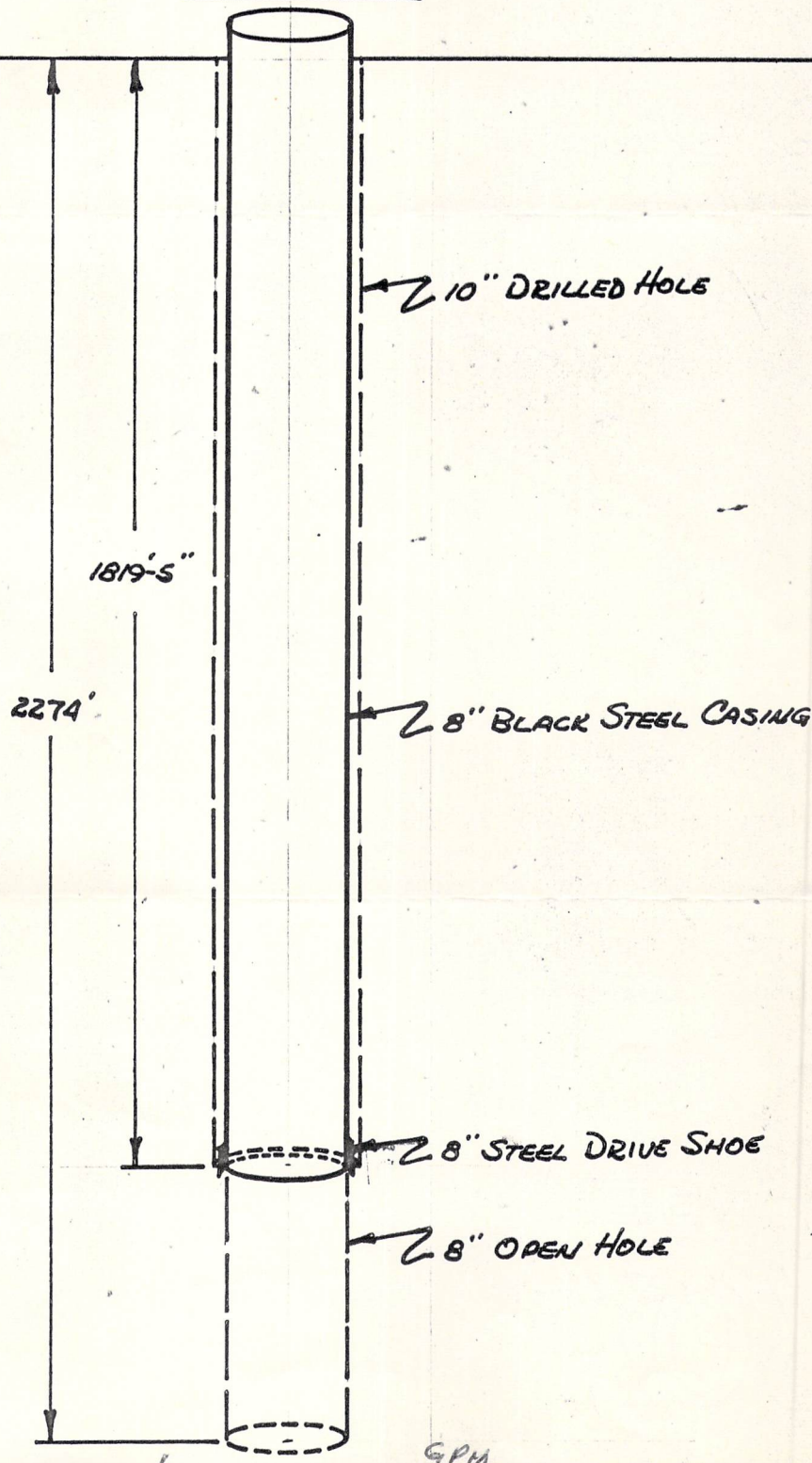
3

LAYNE-WESTERN COMPANY, AMES, IOWA

JULY 1964

AFTER RECONSTRUCTION
CONSTRUCTION

LOG



	DRIFT
140'	
205'	SHALE & SANDSTONE
	LIMESTONE & DOLOMITE
575'	
610'	SHALE
	LIMESTONE & DOLOMITE
820'	
	LIMESTONE & GYPSUM
1305'	
	LIMESTONE & DOLOMITE
1660'	
1758'	LIMESTONE & SHALE
1800'	SANDSTONE
	DOLOMITE
2175'	
2274'	JORDAN SANDSTONE

STATIC LEVEL-189' PUMPING RATE-56 GPM PUMPING LEVEL-230' DRAWDOWN-41'

820

Name Stanhope city well No. 3

Loc. SW 1/4 SW NW 5-86N-25W, Hamilton Co.

Drilling depth: 600' base Maple Mill.

Drilled: McCutcheon 1938, Varner 1940 600' to 2200'

Log: W-0820 Carmody.

Casing: 175' of 10" csg from + 2'4" to 172'8", perforated 143-157'

Prod. data

SWL 109' these prod. data are
 PWL 228' for Miss. aquifer
 Yield. 25 gpm for 5 ± hours at T.D. 601'

$$\begin{array}{r} 228 \\ 109 \overline{) 228} \\ \underline{119} \\ 25.0 \\ \underline{238} \\ 120 \end{array}$$

$$\begin{array}{r} 1119 \\ 109 \overline{) 1119} \\ \underline{109} \\ 1010 \end{array}$$

Analysis: No. 126,015 11/4/38

Remarks: Well was originally 601' deep 1938; deepened to 2200' to top
 St. Lawrence 1940

Elevation

curb 1119'

Formations	<u>Depth</u>	<u>Top</u>	<u>Base</u>	<u>Thick</u>
St. Louis	205	914	889?	25?
Warsaw-Kookuk?	230?	889?	817	72?
Gilmore City	302	817	689	128
Hampton	430	689	544	145
Maple Mill	575	544	519?	25

Dev.

Lime Creek 600±? 519?