

IOWA GEOLOGICAL SURVEY
 In Cooperation with U. S. Geological Survey
RECORD OF WELL

W10984

Location:

Town: WELLSBURG (NE) (SW) County GRUNDY

SW SW NW sec. 14 T. 88 N., R. 18 (W) Twp.

Well name and number _____

Owner CITY OF WELLSBURG #5 Address _____
 (1959-1960)

Tenant _____ Address _____

Contractor HOEG & AMES Address LINCOLN, IOWA

Drillers FINKE

Drilling dates MAY 5, 1959 - JAN. 15, 1960

Well data:

Altitudes: Drilling curb 1092 feet; Land surface 1089 feet

Determined by _____

Topographic position SLIGHT SLOPE

Total depth: Reported 2050 feet; Measured _____ feet

Drilling method CABLE TOOLS

Hole and casing data
153'6" OF 24" CASING 0-153'6"
297' OF 22" CASING 140'-436'
113' OF 20" CASING 817'-930'
125' OF 18" CASING 915'-1040'
169' OF 16" CASING 1211'-1480'
1536' OF 12" CASING 0-1536'

TOTAL OF 3880 SACKS OF CEMENT GROUT USED FROM SURFACE TO BOTTOM OF CASING
~~above~~

Original depth to water 215 ft. below _____ Date _____

Source of data _____

Sources of water: Principal PRAIRIE du CHIEN, JORDAN, ST-LAWRENCE

Others _____

PRODUCTION DATA

Date JAN. 15, 1960

Static water level 215

Pumping water level 294

Yield (g. p. m.) 829

Measuring point TEMP = 56° F

Duration of pumping _____

Specific capacity _____

LABORATORY DATA

SC4-1,2,3,4,5

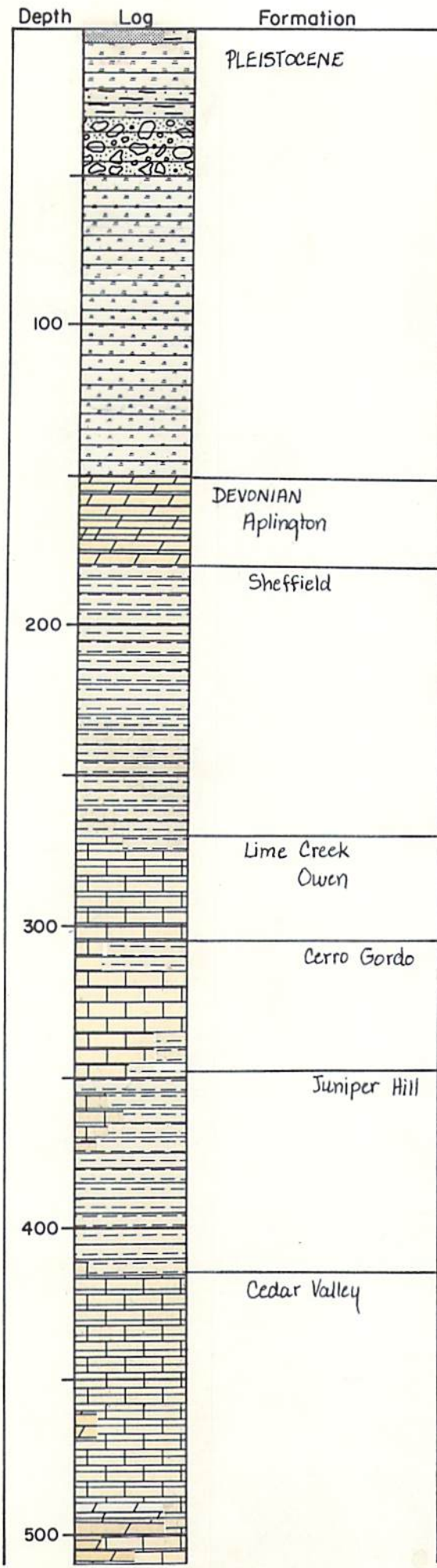
Well No. W10984 Sample range 0-2050 No. of samples 409

No. of dupls. and cond. 402 Good Washed range 280-2050

Samples prepared by Koch & Fishwild Date 7/20/59 - 1/10/60

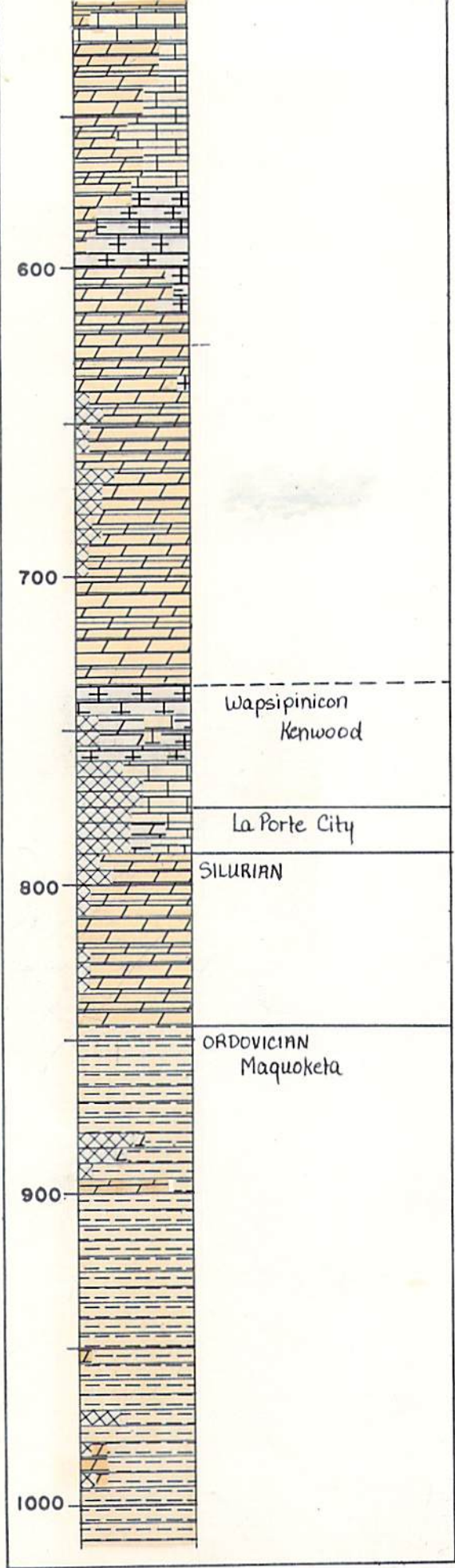
Logged by NORTHUP Date JULY 1959 - JAN. 1960

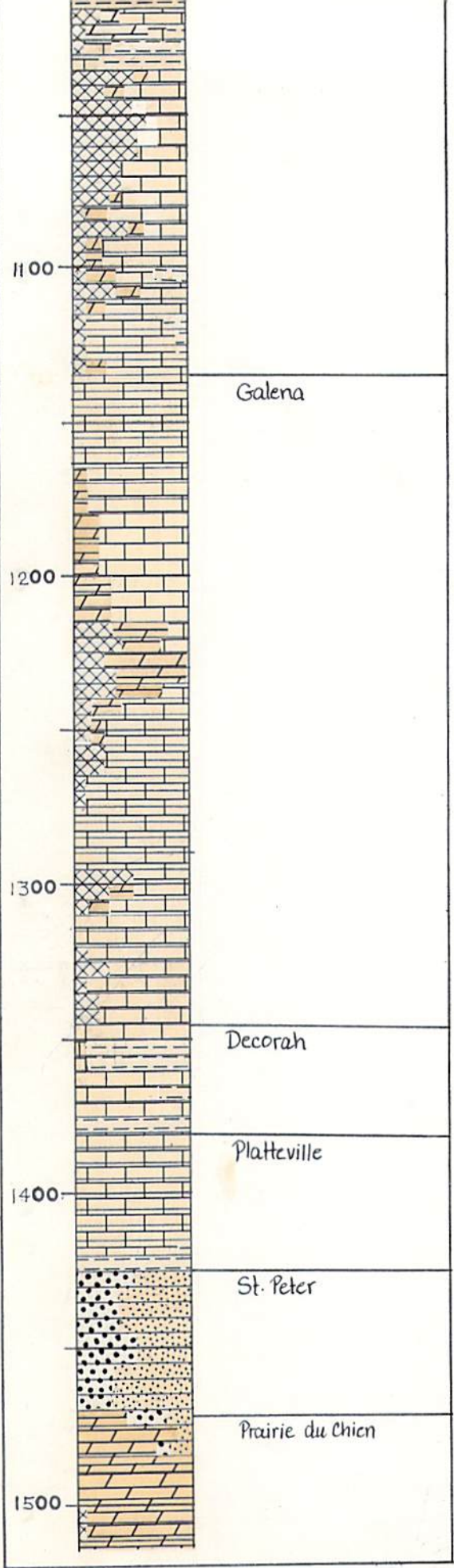
Correlations by _____ Date _____

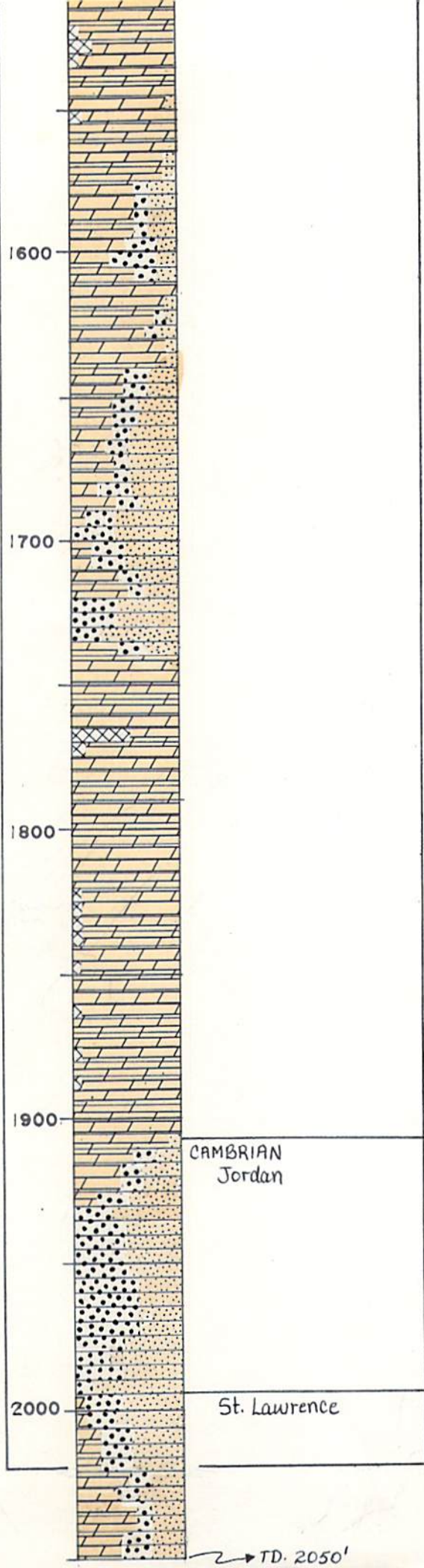


IOWA GEOLOGICAL SURVEY In Cooperation with U. S. GEOLOGICAL SURVEY Iowa City, Iowa		
Name <i>Wellsburg Town Well #5</i>	State <i>Iowa</i>	
Town <i>Wellsburg</i>	County <i>Grundy</i>	
Loc. <i>SW SW NW</i>	Sec. <i>14</i>	
Contractor <i>Hoeg & Ames - Finke</i>	Driller	
Drilling Dates <i>May 5, 1959 - Jan. 15, 1960</i>	Sec. <i>14</i>	
Drilling Dates	T. <i>88 N., R. 18 W.</i>	
Casing Record <i>153'6" of 24" csg., 0-153'6"</i> <i>297' of 22" csg., 140'-436'</i> <i>113' of 20" csg., 817'-930'</i> <i>125' of 18" csg., 915'-1040'</i> <i>169' of 16" csg., 1311'-1480'</i> <i>1536' of 12" csg., 0'-1536'</i> <i>3898 sacks of cement grout used from surface to bottom of casing</i>		
S.W.L. <i>215</i>		G.P.M. <i>829</i> D.D. <i>79'</i>
Remarks <i>56" Temp.</i>		
Elev. <i>1089'</i>		
T.D. <i>2050'</i>		
Logged By <i>Northup</i>		
I.G.S. No. <i>W-10984</i>		

- Explanation of Colors
- Soil
 - Loess, ~~Silt or Siltstone~~
 - Drift
 - Sand & Gravel
 - Shale
 - Sandstone
 - Limestone
 - Dolomite
 - Chert
 - Gypsum or Anhydrite
 - No Samples









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HOEG & AMES, Inc.

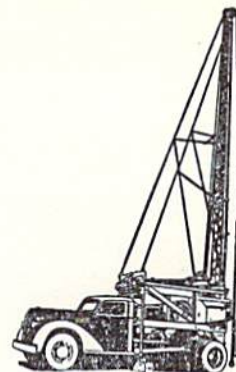
WELL CONTRACTORS

WELL SUPPLIES

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LINCOLN, IOWA

LOG OF WELL



5

TOWN OF WELLSBURG - WELL NO. 5

Started drilling - May 5, 1959
Finished drilling - January 8, 1960

Total depth of well - 2050 ft.
Static water level - 215 ft.
825 gal. per min. at 298 ft.
410 gal. per min. at 260 ft.
Test pumped well - 46½ hrs.

<u>Formation:</u>	Black drift	0-5	Ft.
	Yellow clay	5-20	Ft.
	Sandy blue clay	20-149	Ft.
	Rock and shale	149-173	Ft.
	Gray shale	173-187	Ft.
	Gray shale	187-271	Ft.
	Gray limestone	271-285	Ft.
	Brown limestone	285-295	Ft.
	Gray limestone and shale	295-412	Ft.
	Gray limestone	412-418	Ft.
	Shale	418-423	Ft.
	White limestone	423-490	Ft.
	Brown limestone and dolomite	490-845	Ft.
	Brown shale	845-880	Ft.
	Gray shale and some limestone	880-1420	Ft.
	Shale	1420-1430	Ft.
	St. Peter sandstone	1430-1480	Ft.
	Dolomite	1480-1915	Ft.
	Jordan sandstone	1915-1995	Ft.
	Dolomite and sandstone	1995-2050	Ft.

Pipe Record:

153 ft. 6 in. of 24 in. O.D. set surface to 153 ft. 6 in.
297 ft. of 22 in. O.D. set, bottom 436 ft., top 139 ft.
113 ft. of 20 in. O.D. set, bottom 930 ft., top 817 ft.
125 ft. of 18 in. O.D. set, bottom 1040 ft., top 915 ft.
169 ft. of 16 in. O.D. set, bottom 1480 ft., top 1311 ft.
1536 ft. of 12 in. I.D. set, bottom 1536 ft. to surface.

The 12 in. pipe was cemented from 1536 ft. to surface, Holland Well Service did the cementing.

Material used: 3898 sacks cement.
73 sacks bentonite
2 sacks seal flakes

HOEG & AMES, Inc.

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JAN 21 1960



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LINCOLN, IOWA

PUMPING RECORD

TOWN OF WELLSBURG - WELL NO. 5
January 14, 1960

<u>TIME</u>	<u>AIRLINE READING</u>	<u>INCHES IN WEIR</u>	<u>DRAWDOWN</u>	<u>WATER LEVEL</u>	<u>GAL. PER MIN.</u>	<u>REMARKS</u>
9:55 A.M.	145			215		
10:00	103	2 1/2	42	257	280	Very dirty.
10:05	94	3	51	266	365	Very dirty.
10:10	94	3 1/2	51	266	410	
10:15	100		45	260		
10:20	99		46	261		Water very dirty.
10:30	91	3	54	267	365	
10:40	83		62	277		
10:50	80	2 3/4	65	280	322	
11:00	80		65	280		Pumping sand.
11:10	85	2 1/2	60	275	280	Temperature 56°
11:30	91	2 3/4	54	269	322	
11:45	91		54	269		
12:00 P.M.	90		55	270		
12:15	95	2 1/2	50	265	280	Pumping sand.
12:30	99	2 1/2	46	261	280	
12:45	99	2 1/2	46	261	280	
1:00	99	2 1/2	46	261	280	
1:30	95	2 3/4	50	265	322	Temperature 56°
2:00	93	2 3/4	52	267	322	
2:30	93	2 1/2	52	267	280	
3:00	103	2 1/2	42	257	280	Temperature 56° Well is developing.
3:30	103	2 1/2	42	257	280	
4:00	109	2 1/2	42	257	280	Increased rate.
4:30	45		100	315		
5:00	45		100	315		
5:15	47		98	313		
5:30	49	4 1/2	96	311	665	
6:00	80	3 3/8			430	
6:10		5 3/8			850+	
6:20	15		130	335		
6:30	20		125	340	850+	
7:20						Engine failed Shut down. Recovery.
8:02	120					
8:10	123					
8:20	127					
8:30	130					Pump started.
8:31	80	5	65	280	775	
8:32	65		80	295		
8:33	60		85	300		



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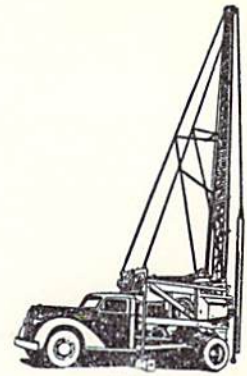
HOEG & AMES, Inc.

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LINCOLN, IOWA



<u>TIME</u>	<u>AIRLINE READING</u>	<u>INCHES IN WEIR</u>	<u>DRAWDOWN</u>	<u>WATER LEVEL</u>	<u>GAL. PER MIN.</u>	<u>REMARKS</u>
8:34 P.M.	49		96	311		
8:35	42		103	318		
8:37	31		114	329		Pumping.
8:40	25		120	335		Very much sand.
8:45	40		105	320		
8:50	47		98	313		
8:55	51		94	309		
9:06	43		102	317	829	
9:15	33		112	327		
9:30	52		93	308		
9:45	56		89	304		
10:00	59	4 3/4	86	301	718	
11:00	60	5	85	300	775	Pumping sand.
12:00 A.M.	70	4 3/4	75	290	718	
1:00	59	5 1/2	86	301	866	
2:00	57	5 1/2	88	303	866	Water sandy.
3:00	57	5 1/2	88	303	866	
4:00	57	5 1/2	88	303	866	Water clear.
5:00	62	5 1/2	83	298	829	
6:00	62	5 1/2	83	298	829	
7:00	62	5 1/2	83	298		
8:00	62	5 1/2	83	298	825	
9:00	63		82	297		Tested for Hardness 20 grain.
10:00	64	5 1/2	81	296	825	
10:30	66		79	294		
11:00	63		82	297		Water temperature 56°
12:00 P.M.	62	5 1/2 +	83	298	830	
1:00	63		82	297		
2:00	63	5 1/2	82	297	825	Water clear.
3:00	63	5 1/2	82	297	825	
4:00	63	5 1/2	82	297	825	Motor off Shut down rate.
4:30	92	3 1/2	53	268	410	
5:00	97		48	263		
6:00	100	3 1/2	45	260	410	
7:00	100	3 1/2	45	260	410	
8:00	100	3 1/2	45	260	410	
9:00	100	3 1/2 +	45	260	410	No sand
10:00	100	3 1/2 +	45	260	410	Very clear
11:00	100	3 1/2 +	45	260	410	
12:00 A.M.	100	3 1/2 +	45	260	410	
1:00	100	3 1/2 +	45	260	410	
2:00	100	3 1/2 +	45	260	410	No sand



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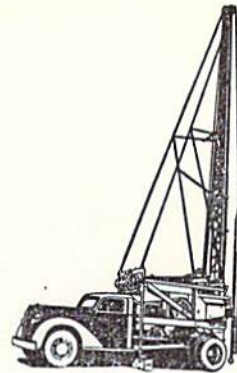
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WELL CONTRACTORS

WELL SUPPLIES

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LINCOLN, IOWA



<u>TIME</u>	<u>AIRLINE READING</u>	<u>INCHES IN WEIR</u>	<u>DRAWDOWN</u>	<u>WATER LEVEL</u>	<u>GAL. PER MIN.</u>	<u>REMARKS</u>
3:00 A.M.	100	3 $\frac{1}{2}$	45	260	410	Clear
4:00	100	3 $\frac{1}{2}$	45	260	410	
5:00	100	3 $\frac{1}{2}$ +	45	260	410	
6:00	100	3 $\frac{1}{2}$	45	260	410	
7:00	100	3 $\frac{1}{2}$ +	45	260	410	
8:00	101	4 $\frac{1}{2}$	44	259	410	Few grains of sand
8:30	101	3 $\frac{1}{2}$	44	259	410	Stopped pump.

RECOVERY

1	Min.	125
2	"	120
3	"	122
5	"	125
7	"	127
10	"	128
15	"	130
20	"	131
30	"	132
60	"	137

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1*

Pumping Test at Wellsburg, Iowa

January 14-16, 1960

Well No. 5

A pumping test was performed on the new deep well at Wellsburg, Iowa on January 14, 15, 16 by Hoeg and Ames. The Geological Survey cooperated in obtaining rate of discharge data and making water level measurements from the pumping well.

The well was pumped for forty-six and one-half hours with the discharge varying between 280 and 866 gpm. The test started with a pumping rate of 280 gpm which fluctuated upward to 400+ gpm. This rate was maintained for 8 hours when the rate was increased between 700 gpm and 866 gpm for the next 22 hours. A fairly constant rate of 410 gpm was pumped during the final 16 hours of the test with a drawdown of 45 feet. This gives a specific capacity of 9+ gpm/ft.

The well recovered to within 7 feet of static in one hour.

Pumping and water-level records should be kept when the well is put into production in order to aid any future planning.

TABLE I

**Pumping Test at Welleburg Iowa
January 14-16, 1960
Well No. 5**

Location: SW $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 14, T. 98 N., R. 18 W., Grundy County

Total depth: 2050 feet

Elevation of land surface datum: 1089 feet

Contractor: Hoeg and Ames

Driller: Erv Fink

Date Drilled: May 5, 1959 - January 15, 1960

**Casing data: 153' 6" of 24" O. D. casing set 0 to 153' 6"
297' of 22" O. D. casing set 139' to 436'
113' of 20" O. D. casing set 817' to 930'
125' of 18" O. D. casing set 915' to 1040'
169' of 16" O. D. casing set 1311' to 1480'
1536' of 12" I. D. casing set 0 to 1536'**

The 12" pipe was sealed with cement grout from 0 to 1536' using 3898 sacks of cement, 73 sacks of bentonite, and 2 sacks of seal flakes.

Water level: static water level was 215'

Test pump: Turbines powered directly by gas engine and auxiliary engine with belt drive. Bowls set at 387', no tail pipe

Aquifer: Prairie du Chien-Jordan-St. Lawrence

Measurements: Water level measurements by airline which was set at 360'. Discharge determined by measuring crest of a rectangular weir in the side of a large rectangular steel tank.

January 26, 1960

*Grundy
Co
Wellsburg
10*

TO: H. G. Hershey
FROM: Russell Campbell & Leon Steele
RE: Pumping test of Wellsburg Jordan well, 15-16 January 1960

The pumping test began at 9:55 a.m. Thursday January 15, 1960 under the direction of Whitey Rhodes. The enclosed data was collected during the 24-hour period of our visit. It is their plan to continue pumping for at least another 24 hours or however long it takes to clear the well of sand. At the end of our visit the well was still developing and discharging sand causing a highly variable yield.

Other data collected at this time are listed below:

Location: SW $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 14, T. 88 N., R. 18 W., Grundy Co.;
in city park on E side of Highway 214, across highway
from water tower.

Elevation: 1089 T. D. 2050

Casing Record: 153'6" of 24" casing 0' - 153'6"
297' of 22" casing 140' - 436'
113' of 20" casing 817' - 930'
125' of 18" casing 915' - 1040'
169' of 16" casing 1211' - 1480'
1536' of 12" casing 0' - 1536' sealed with cement
grout 0-1536, using 3880 sacks of cement.
Open hole 1536' - 2050' (T.D.)

Pump: Centrifugal, powered by 2 gasoline engines, set at
387', no tail pipe.

Water level measurement by airline set at 360', determined by
gage calibrated to show feet of water above base of airline.

Discharge determined by measuring crest of a rectangular steel
tank (the same tank used at the Paper Mill at Tama). *wier in the side of a large rectangular*

Water samples were collected at 10:30 January 16 for mineral and
radiological analysis at point of discharge from 6" pipe, 60' from pump.
Temperatures recorded during test rose slowly from 54 $\frac{1}{2}$ ⁰ F. at start of test
to 56⁰ F. at the time the samples were taken, just before we returned to Iowa
City.

The following persons have asked for copies of the log and mineral analysis:

- 1) Hollis Ryken (Engineer)
Ackley, Iowa
- 2) John T. Reikena
City Clerk
Wellsburg, Iowa

Mr. Ryken, the Engineer, did not present himself during the test, however, Mr. Rhodes promised to give us a copy of data collected during the remainder of the test.

Holt Ames

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

File No. { Washington _____ 3
District _____

page 1 of 4 pages

Wellsburg Town Well, drilled 5 May 59 - 15 Jan 60, pumping test 15-16 Jan 60

Time	airline reading (feet water in tube)	Water Level	Crest in wier (inches)	Discharge Rate (gpm)	Elapsed Time (min.)	Draw-down (feet)						
9:54	145	215										static water level
9:55					0	0						start pump
9:57	110	250			2	35						
9:58	109	251			3	36						
9:59	106	254			4	39						
10:00	105	255	2 $\frac{1}{2}$	280	5	40						
10:01	104	256			6	41						
10:02	104	256			7	41						
10:03	104	256			8	41						increase pumping rate
10:04	98	262			9	47						
10:05	98	262	3	365	10	47						
10:07	94	266			12	53						Temp 54°, water very muddy
10:09	100	260			14	45						
10:11	99	261			16	46						
10:13	99	261	3 $\frac{1}{4}$	410	18	46						Temp 54 $\frac{1}{2}$ °, water muddy
10:15	100	260			20	45						
10:20	99	261			25	46						
10:25	96	264			30	49						Temp 55 $\frac{1}{2}$ °, clearing slightly
10:30	91	269			35	54						
10:35	89	271	3	365	40	56						
10:40	83	277			45	62						
10:45	81	279	2 $\frac{3}{4}$	322	50	68						Temp 55 $\frac{1}{2}$ °, water milky
10:51	79	281			56	66						
10:55	78	282			60	67						
11:00	80	280			65	65						
11:15	89	271	2 $\frac{1}{2}$	280	80	56						Temp 56, pumping much sand
11:30	91	269	2 $\frac{5}{8}$	300 ±	95	54						water clear - much sand
11:45	91	269	2 $\frac{5}{8}$	300 ±	110	54						
12:00	90	270			125	55						
12:15	95	265	2 $\frac{1}{2}$	280	140	50						
12:30	99	261	2 $\frac{1}{2}$	280	155	46						
12:45	99	261	2 $\frac{1}{2}$	280	170	46						

Noon
P.M.

Rate of discharge measured by rectangular wier in steel tank
Water level measured by airline; feet-of-water gage; airline set at 360'

**UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY**

File No. { Washington _____
District _____

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page 2 of 4 pages

Pumping test of Wellsburg town well (Jordan) 15-16 Jan 1960

Time	Airline (feet of water in tube)	Water Level	Crest in Wier (inches)	Disch. Rate (gpm)	Elapsed Time (min.)	Draw- down (feet)						
1:00	99	261	2 1/2	280	185	46						
1:30	95	265	2 3/4	322	215	50						
2:00	93	267	2 3/4	322	245	52						
2:30	93	267	2 1/2	280	275	58						
3:00	103	257	2 1/2	280	305	42						
3:30	103	257			335	42						
4:00	103	257	2 1/2	280	365	42						
4:01					366							
4:03	60	300			368	85						
4:05	40	320	4 1/2	665	340	105						
4:07	29	331			342	116						
4:09	15	345			344	130						
4:11	0	360+			346	145+						
4:13	0	360+			348	145+						
4:15	0	360+			350	145+						
4:20	15	345			355	130						
4:25	40	320			360	105						
4:30	45	315			365	100						
4:45	30	330			380	115						
5:00	45	315			395	100						
5:15	47	313	4 1/2	665	410	98						
5:30	49	311			425	96						
6:00	80	280	3 3/8	430	455	65						
6:04					459							
6:10			5 3/8	850 ±	465							
6:15	15	345			470	130						
6:30	20	340			485	125						
6:34				100 ±	489							
6:35	60	300			490	85						
6:36	76	284		800 ±	491	69						
6:37	38	322			492	107						
6:38	30	330			493	115						

*Temp 56°, pumping much sand
increase pumping rate*

water below airline

increase pumping rate

engine trouble - pumping rate dropped

rate increased

UNITED STATES DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY page 3 of 4 pages

File No. { Washington _____
District _____ 5

Time	Airline (feet of water in tube)	Water level	Crest in wier (inches)	Disch. Rate (gpm)	Elapsed Time (min.)	Draw- down (feet)						
6:41	30	330			496	115						
7:20					535							
8:02	120	240			577	25			Engines Failed			
8:04	121	239			578	24			Recovery			
8:06	121	239			581	24						
8:10	123	237			585	22						
8:15	125	235			590	20						
8:20	127	233			595	18						
8:30	130	230			605	15			pump started			
8:31	80	280			606	65						
8:32	65	295			607	80						
8:33	60	300	5	775	608	85						
8:34	49	311			609	96						
8:35	42	318			610	103						
8:37	31	329			612	114						
8:40	25	335			615	120			Temp 56°			
8:45	40	320			620	105			pumping much sand - pumping rate decreased			
8:50	47	313			625	98						
8:55	51	309			630	94						
9:00					635				less sand - rate increasing			
9:06	43	317	5 1/2	829	641	102						
9:16	33	327			651	112						
9:30	52	308			665	83						
9:45	56	304			680	89						
10:00	59	301	4 3/4	718	695	86						
11:00	60	300	5	775	755	85						
Mid night	12:00	70	290	4 3/4	718	815	75					
A.M.	1:00	59	301	5 1/2	866	875	86					
	2:00	57	303	5 1/2	866	935	88					
	3:00	57	303	5 1/2	866	995	88					
	4:00	57	303	5 1/2	866	1055	88					
	5:00	62	298	5 1/4	829	1115	83					

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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
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File No. { Washington _____
District _____

Time	Airlinc (feet of water in tube)	Water Level	Crest in Wier (inches)	Disch. Rate (gpm)	Elapsed Time (min.)	Draw- down (feet)						
6:00	62	298	5 1/4	829	1175	83						
7:00	62	298			1235	83						
8:00	62	298			1295	83						
8:30			5 1/8	800 ±	1325		Temp 56° - pumping some sand					
8:35	63	297			1330	82						
9:00	63	297			1355	82						
10:00	64	296	5 1/2	829	1415	81						
10:30	66	294			1445	79	collect water samples					

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

File No. { Washington _____
District _____

TIME	AIRLINE (FEET OF WATER IN TUBE)	WATER LEVEL	GREST IN WIER (INCHES)	DISCH. RATE (GPM)	ELAPSED TIME (MIN)	DRAW- DOWN (FEET)						
6:00	62	298	5 1/4	829	1175	83						
7:00	62	298			1235	83						
8:00	62	298			1295	83						
8:30			5 1/8	800 ±	1325							
8:35	63	297			1330	82						
9:00	63	297			1355	82						
10:00	64	296	5 1/4	829	1415	81						
10:30	66	294			1445	79						
COLLECTED WATER SAMPLES												
FOLLOWING DATA COLLECTED BY DRILLER												
11:00	63	297			1475	82						
12:00M	62	298	5 1/4	830	1535	83						
1:00P	63	297			1595	82						
2:00	63	297	5 1/4	825	1655	82						
3:00	63	297	5 1/4	825	1715	82						
4:00	63	297	5 1/4	825	1775	82						
MOTOR OFF - SHUT DOWN RATE												
4:30	92	268	3 1/4	410	1805	53						
5:00	97	263			1835	48						
6:00	100	260	3 1/4	410	1895	45						
7:00	100	260	3 1/4	410	1955	45						
8:00	100	260	3 1/4	410	2015	45						
9:00	100	260	3 1/4 ⁺	410	2075	45						
NO SAND												
10:00	100	260	3 1/4 ⁺	410	2135	45						
VERY CLEAR												
11:00	100	260	3 1/4 ⁺	410	2195	45						
12:00M	100	260	3 1/4 ⁺	410	2255	45						
1:00A	100	260	3 1/4 ⁺	410	2315	45						
2:00	100	260	3 1/4 ⁺	410	2375	45						
NO SAND												
3:00	100	260	3 1/4	410	2435	45						
CLEAR												
4:00	100	260	3 1/4	410	2495	45						
5:00	100	260	3 1/4 ⁺	410	2555	45						
6:00	100	260	3 1/4	410	2615	45						
7:00	100	260	3 1/4 ⁺	410	2675	45						

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

File No. { Washington _____
District _____

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TIME	AIRLINE (FEET OF WATER INTUBE)	WATER LEVEL	CREST IN WIER (INCHES)	DISCH. RATE (GPM)	ELAPSED TIME (MIN)	DRAW DOWN (FEET)									
8:00	101	259		410	2735	44									
8:30	101	259	3/4	410	2765	44									
RECOVERY															
	125				2766										SWL 215'
	120	240			2767										
	122	238			2768										
	125	235			2770										
	127	233			2772										
	128	232			2775										
	130	230			2780										
	131	229			2785										
	132	228			2795										
	137	223			2825										

IOWA GEOLOGICAL SURVEY
Iowa City, Iowa
WELL OR WATER SAMPLE DATA

Bottle No. _____

I.G.S. Well No. W-10984

TOWN Wellsburg COUNTY Grundy

LOCATION Sub Sub North sec. 14 T. 88 N., R. 18 E. Twp. _____

OWNER OF WELL Town of Wellsburg WELL NO. 3 (Jordan)

USE OF WATER: Municipal supply(); Private-domestic(); Public drinking(); Live-stock(); Industrial(); School supply(); Air conditioning(); Cooling(); _____ ().

CONSTRUCTION OF WELL: Drilled: Cable tool() , Rotary(); Gravel-pack type(); Driven(); Dug(); Bored(); Jetted(); _____ ().

CONTRACTOR Hoeg & Ames DATE STARTED 5 May 59
DATE FINISHED 15 Jan 60

CASING OR CURBING DATA: (Show by diagram on opposite side of sheet the kind, length and depth of top and bottom of each size of pipe, the amount of overlaps, position of seals or packers, pipe perforation and screens, etc.)
153' of 24" casing 0'-153'6"; 297' of 22" casing 140'-436"; 113' of 20" casing 817'-930';
123' of 18" casing 915'-1040'; 169' of 16" casing 1211'-1480'; 1536' of 12" casing 0'-1536';
scaled with cement grout 0'-1536' with 3880 sacks of cement.
Open hole 1536'-2050' (T.D.)

WELL DATA Present Final
Curb Elevation 1089 Ft. Depth _____ Ft. Depth 2050 Ft.

Ground Elevation 1089 Ft. Topographic Position side hill

Static Level (Depth to water (above) curb) 215 Ft. Level 294 Ft.
(below)

Amount of Drawdown 79 Ft. pumping at 550-830 g.p.m. in 24 hrs. _____ minutes.

Specific Capacity _____ g.p.m. per ft. drawdown in _____ hours.

Type of Pump centrifugal Power 2 gasoline engines

Depth of Bottom of Pump 387 ft. with _____ ft. of suction pipe.

TEMPERATURE: Air 34 °F.; Water 56 °F., measured after well had pumped 24 hours and _____ mins. at 550-830 g.p.m.; 60 ft. from pump after water had passed through the following pipe 60' of 6" pipe Time 10:30 (A.M.) (P.M.)

SOURCE OF WATER:
Principal producing formation Jordan sandstone 1410 ft. to 2050 ft.

Other producing formations Root Valley 1140 ft. to 1740 ft.

REMARKS: (Taste, odor, and appearance) pumping much sand; water clear

Sample taken for: Mineral analysis (); Sanitary analysis (). Argon
Data collected by Campbell Date 15 Jan 60

Copies to: Iowa Geological Survey, Iowa City, Iowa

Leon S.

IOWA GEOLOGICAL SURVEY
Water Analysis Report
Iowa City, Iowa

County Grundy Date Sampled January 15, 1960
Town Wellsburg Sampled by R. B. Campbell
Location of well SW $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 14, T. 88 N., R. 18 W. Twp. (Jordan)
Owner Wellsburg Well No. 3 (1959) Depth 2050 ft.
City Supply
Type of well Drilled Static water level (below surface) 215 ft. Elevation of well 1089 ft.
Producing Formation(s) Jordan-St. Lawrence Depth Range 2050

Notes on condition of well, casing, or formations: 153' of 24" casing 0-153'6"; 297' of 22" casing 140'-436'; 113' of 20" casing 817'-930'; 125' of 18" casing 915'-1040'; 169' of 16" casing 1211' -1480'; 1536' of 12" casing 0'-1536'. Sealed with cement grout 0'-1536' with 3880 sacks of cement. Open hole 1536-2050 (T.D.)
(See Remarks)

Dissolved constituents and properties (in parts per million except as indicated):

Silica (SiO ₂)	<u>8.8</u>	Dissolved solids	<u>605</u>
Iron (Fe)	<u>0.36</u>	Hardness (calc. as CaCO ₃)	
Manganese (Mn)	<u><0.05</u>	Total	<u>347</u>
Calcium (Ca)	<u>83</u>	(as grains per gallon)	<u>20.3</u>
Magnesium (Mg)	<u>34</u>	Carbonate	<u>314</u>
Potassium (K)	<u>22</u>	Noncarbonate	<u>33</u>
Sodium (NA)	<u>72</u>	Alkalinity (as CaCO ₃)	<u>314</u>
Carbonate (CO ₃)	<u>2.4</u>	pH	<u>8.1</u>
Bicarbonate (HCO ₃)	<u>378</u>	Specific Conductance	<u>920</u>
Sulfate (SO ₄)	<u>168</u>	(Micromhos at 25°C.)	
Chloride (Cl)	<u>11</u>	Temperature (°F.)	<u>56°</u>
Fluoride (F)	<u>1.1</u>	*****	
Nitrate (NO ₃)	<u><.44</u>	Analysis No.	<u>1670 (1890)</u>
		Date analyzed	<u>2/18/60</u>
		I. G. S. Well No.	<u></u>

Remarks: Well pumped 24 hrs. at 350-830 g.p.m. having a drawdown of 79 ft. Pumping Level 294 ft.; Centrifugal pump -- power two gasoline engines. Depth of bottom of pump 387 ft.; pumping much sand--water clear