

STATE OF IOWA
IOWA GEOLOGICAL SURVEY
GEOLOGY ANNEX
IOWA CITY

Results of Pumping Test at
Clinton Water Works Company Well 8
at
Clinton, Iowa
September 22-24, 1944

Name: Clinton Water Works Company Well 8
Location: SW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 29, T. 82 N., R. 7 E.
Elevation: Land surface, 589.5 feet above sea level.
Top of drilling platform elevation: 591.9 feet above sea level.
Owner: Clinton Water Works Company.
Contractor: C. W. Varner, Dubuque, Iowa
Driller: Mel Reedy
Drilling dates: Started, April 3, 1944; Finished, September, 1944.
Depth: 2100 feet
Casing and hole sizes¹
32 feet of 26-inch liner to 34 1/2 feet.
209 feet of 16-inch casing from 1 1/2 to 210 1/2 feet below drilling platform.
2 1/2 feet of 12 to 16-inch swedge from 210.5 feet to 213 feet below drilling platform.
706 feet of 12-inch casing from 213 feet to 921 feet below drilling platform.
Casing cemented with neat cement from 0 to 921 feet.
24 1/2-inch hole from 34 to 320 feet.
23 1/2-inch hole from 320 to 330 feet.
22 1/2-inch hole from 330 to 334 feet.
21 1/2-inch hole from 334 to 355 feet.
20-inch hole from 355 to 900 feet.
19 1/2-inch hole from 900 to 948 feet.
13 1/4-inch hole from 948 to 2100 feet.
Principal producing horizons: Sandstones of Cambrian age.
Test pump: Turbine, 150 feet of 8-inch column and 8 feet of 12-inch bowls and 17 feet of suction pipe. Powered with 100 h.p. motor.
Discharge measurements: Measurements made using 6-inch orifice in 8-inch pipe.
Discharge line about 60 feet in length.
Measuring points: Low point of 4-inch hole in 16-inch nipple, 3.5 feet above land surface, 1.08 feet above drilling platform and 593.0 feet above sea level.

¹ From driller.

<u>Time</u>	<u>Depth to water in feet</u>	<u>Discharge Gallons per minute</u>	<u>Remarks</u>
Sept. 22, 1944			Data for September 22 obtained from driller.
5:00 p.m.	2+		
5:30		1100+	Pumping started, water dirty.
9:30	150+		Pumping stopped.
Sept. 23, 1944			
9:10 a.m.	9.32 tape		
9:16			Pumping started.
9:23	108 air line	1000	
9:25	109.5 air line		
9:30	114 air line	1000	Water cloudy.
9:33	116		Water dirty, trace of sediment.
9:37	117.5 air line	1000	Water temperature 69.75°F.
9:40	119 air line	1000	
9:42	120 air line	1000	Water temperature 69.75°F.
9:45	120.5 air line		
10:01	123 air line	1000	Water clear, trace of sand.
10:12	126 air line	1000	Water clear, trace of sand.
10:12	126.50	1000	
10:25	128.84		
10:30	128.92	1000	
10:50	130.10		Water temperature 69.75°F., trace of sand.
11:02	130.84		
11:17	131.75	1000	Water temperature 70°F.
11:30	132.3		
11:45	132.92		
11:58	133.95		
12:17 p.m.	134.30		
12:31	134.70		Water temperature 70°F., water clear, trace of sand.
12:52	135.0		
1:10	135.33		
1:25	135 air line	1000	
1:40	135.40	1000	
2:00	135.50		
2:25	137.68		Water temperature 70°F., water clear, trace of sand.
2:45	138.33		
3:00	138.42		
3:15			pH 7.2+
3:20	138.75		
3:38	138.92		
4:30	139.16		
4:47	139.33		
5:37	139.75		
6:42	140.42		
7:42	142.16		
8:11	142.30		
9:03	142.50		
9:15	142.62	1000	
9:17			Discharge increased.

<u>Time</u>	<u>Depth to water in feet</u>	<u>Discharge Gallons per minute</u>	<u>Remarks</u>
Sept. 23, 1944			
9:50 p.m.	156.5	1120	
10:02	157.42	1120	
10:13	157.50	1120	Water temperature 70°F., water clear, mere trace of sand.
10:28	157.66	1120	Air temperature 53°F.
Sept. 24, 1944			
8:10 a.m.		1100	Water temperature 70°F., mere trace of sand.
9:30			pH 7.3-
11:40			Decrease discharge.
11:55	146.84	1000	
12:24 p.m.	148.20	1000	
12:47	148.08	1000	
2:35	148.33	1000	pH 7.2+. Water clear, temperature 70°F.
2:39:30			Reduce pumping rate.
2:41	113.00	590	
2:43	105.50		
2:45	103.00		
2:47	101.60		
2:49	101.00		
2:51	100.56		
2:53	99.80	590	
2:56	99.14	600	
3:00	98.55		
3:05	97.37		
3:10	97.04		
3:15	97.04	600	
3:16:30			Increase pumping rate.
3:18	132	1000	
3:19	135.6		
3:20	139		
3:21	140.3		
3:22	141.58		
3:24	142.75		
3:28	144.20		
3:38	145.5		
3:49	146.33		
3:57	146.75		
4:00			Pumping stopped.
4:00:20	100.00		Recovery measurements.
4:00:52	70.00		
4:01:37	60.00		
4:03	51.66		
4:04	48.33		
4:05	46.00		
4:06	44.42		
4:07	43.20		
4:08	42.15		
4:09	41.20		
4:10	40.48		

<u>Time</u>	<u>Depth to water in feet</u>	<u>Discharge Gallons per minute</u>	<u>Remarks</u>
Sept. 24, 1944			
4:11 p.m.	39.82		
4:12	39.22		
4:14	38.33		
4:16	37.42		
4:18	36.86		
4:20	36.25		
4:25	35.33		
4:30	34.50		
4:35	33.75		
4:42	32.85		
4:50	32.02		
5:00	31.16		
5:30	29.22		
5:47	28.35		
6:01	27.80		
6:30	26.80		

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Results of Pumping Test at
Clinton Water Works Company Well 8
at Clinton, Iowa

~~January~~ ^{February} 5-7, 1945

Name: Clinton Water Works Company Well 8
Location: SW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 29, T. 82 N., R. 7 E.
Elevation: Land surface, 589.5 feet above sea level
Top of drilling platform elevation: 591.9 feet above sea level.
Owner: Clinton Water Works Company
Contractor: C. W. Varner, Dubuque, Iowa
Driller: Mel Ready
Drilling dates: Started, April 3, 1944; Finished, September, 1944.
Depth: 2106 feet.
Casing and hole size:¹ 32 feet of 26-inch liner to 34 1/2 feet.
209 feet of 16-inch casing from 1 1/2 to 210 1/2 \pm feet below drilling platform.
2 1/2 feet of 12 to 16-inch swedge from 210.5 \pm feet to 213 feet below drilling platform.
708 feet of 12-inch casing from 213 feet to 921 feet below drilling platform.
Casing cemented with neat cement from 0 to 921 feet.
24 1/2-inch hole from 34 to 320 feet.
23 1/2-inch hole from 320 to 330 feet.
22 1/2-inch hole from 330 to 334 feet.
21 1/2-inch hole from 334 to 355 feet.
20-inch hole from 355 to 900 feet.
19 1/2-inch hole from 900 to 948 feet.
13 1/4-inch hole from 948 to 2106 feet.
October, 1944: The well was shot with dynamite in an effort to increase the yield of the well. 300 pound charges were set off at 1910 and 1860 feet. 200 pound charges were set off at 1815, 1500 and 1460 feet. Several cubic yards of sand were removed from the well in the course of cleaning out operations.
Principal producing horizon: Sandstones of Cambrian age.
Test pump: Turbine, 203 feet of 8-inch column. Powered by 100 h.p. electric motor.
Discharge measurements: measurements made using 6-inch orifice in 8-inch pipe.
Discharge line about 60 feet in length.
Measuring point: Top of 6-inch outlet in 16-inch nipple, 0.9 foot above top of 16-inch casing, 2.4 feet above land surface and 591.9 feet above sea level.

¹ From driller.

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Results of Pumping Test at
Clinton Water Works Company Well 8
at Clinton, Iowa
January 5-7, 1945

<u>Time</u>	<u>Depth to water in feet</u>	<u>Discharge g.p.m.</u>	<u>Temperature ° F.</u>	<u>Remarks</u>
Feb. 5, 1945				
9:45 a.m.	6.45			
4:00 p.m.	6.35			
5:15	6.28			
7:30	6.25			
8:31				Static water level.
8:34	51.90			Pumping started.
8:35	51.00	500+		
8:36	50.90			
8:37	51.16			
8:38	51.75			
8:39	52.10			
8:40	52.80			Water very dirty, red color, slight odor.
8:44	54.50			
8:50	59.18			
8:52	61.50			
8:54	63.72			
8:57	67.35			
9:00	69.60			
9:05	70.60			
9:06	70.15		69	Water dirty gray.
9:11	66.15	500		
9:17	63.00	500	69	Water dirty gray.
9:20	61.20			
9:25	59.75			
9:31	57.58	500	70½	Water dirty gray.
9:38	56.62			
9:44	56.05	500		Water dirty gray.
9:50	55.60			
10:00	55.45	500	70½	Water clearing slightly.
10:07	55.48			
10:16	55.40	500		
10:23	55.48	500	70½	
10:31	55.52			
10:35		500	70½	Water dirty, but clearing slightly.
10:58	55.50	500		
11:19	55.50	500	70½	Water dirty, but clearing slightly.
11:25				Pumping rate increased.
11:30	75.88	800		
11:31	77.42			
11:33				Pumping rate increased.

<u>Time</u>	<u>Depth to water in feet</u>	<u>Discharge G.P.M.</u>	<u>Temperature ° F.</u>	<u>Remarks</u>
Feb. 5, 1945				
11:35 p.m.	96.57	1000		
11:37	97.50			
11:40	98.28			
11:43	98.30			
11:50		990	70½	Water very dirty.
11:51	97.75			
11:58	97.55			
Feb. 6, 1945				
12:05 a.m.		980		
12:06	97.57			
12:08				Pumping rate increased.
12:14	121.0			
12:17	121.6	1280		
12:22				
12:24	125.65	1339		
12:30	126.63			
12:31	127.98			
12:42	129.2	1339	70½	Water clearing. (About one-half teaspoon sand per gallon.)
12:51	129.92			
1:03	130.83			
1:14	131.47	1339	70½	Water clearing. (one-half teaspoon sand per gallon.)
1:24	131.94	1339		
8:00	138.45			
8:27	138.70	1330	70½	Water clear, some sand.
8:55	138.94			
9:24	139.22			
9:50	139.51			
10:00		1330	70½	Water clear, some fine sand.
10:27	139.85			
11:26	140.35			
11:35				Pumping stopped.
11:37	58.00			
11:39	55.75			
11:41	52.48			
11:43	50.15			
11:45				Pumping started.
11:50	132.05			
11:58	136.30			
12:01 p.m.	137.40			
12:07		1348		Water cloudy, some sand.
12:13 p.m.	138.86			
12:15				Pumping stopped.
12:16	65.45			
12:17	60.97			
12:18	57.72			

<u>Time</u>	<u>Depth to water in feet</u>	<u>Discharge G.P.M.</u>	<u>Temperature ° F.</u>	<u>Remarks</u>
Feb. 6, 1945				
12:19 p.m.	55.00			
12:21	51.60			
12:23	49.16			Pumping started.
12:35	136.80			
12:40				Pumping stopped and started every 2 minutes.
1:00				Pumping started.
1:05	132.68			
1:09		1383		Water slightly cloudy. Some sand.
1:15	137.72			
1:31		1374	70	Water slightly cloudy. Trace sand.
1:32	139.85			
1:40				Pumping stopped and started every few minutes.
2:00				Pumping started.
2:04	130.32			
2:11				Pumping stopped.
2:50				Pumping started.
3:03	131.28	1392		
3:15	134.68			
3:23	136.42			Water almost clear, some sand.
3:33	137.76	1380		
3:51	139.10			Water clear, some sand.
4:11	140.18			
4:21	140.54	1374		Water clear, some sand.
4:22				Discharge decreased.
4:27	117.10	1000		
4:29	115.46			
4:32	114.30			
4:36	112.51	1000	70	
4:41	111.67			Water clear, trace sand.
4:44	111.33			
4:46	111.16			
4:55	110.60			
5:00	110.40	1000		
5:07	110.20	1000		
5:18	109.88	1000		
5:24	109.77	1000	70	Water clear, trace sand.
5:33	109.72			
5:41	109.60			
6:00	109.49			
6:15	109.39			
6:30	109.34			
6:51	109.29			
7:03	109.25			
7:47	109.25	1000	70	
7:54	109.25			Water clear, trace sand.
8:11	109.32			
8:27	109.33	1000		
8:58	109.33			

Clinton Water Works Well 8

-4-

<u>Time</u>	<u>Depth to water in feet</u>	<u>Discharge G.P.M.</u>	<u>Temperature °F.</u>	<u>Remarks</u>
Feb. 6, 1945				
9:20 p.m.	109.28			
9:45	109.34			
10:00	109.28			
10:18	109.28	1000		
10:40	109.28			
11:03	109.28			
Feb. 7, 1945				
12:45 a.m.	109.2	1000		
1:40	109.2	995		
3:30	109.5	1000		
7:34	110.0			
8:21	110.05	1000	70	Mere trace of sand.
8:35	110.10			
8:52	110.11			
9:08	110.15			
9:33	110.10			
9:55	110.19			
10:14	110.27	995	70	Water clear, trace of sand.
10:34	110.51	1000		
10:49	110.51			
11:25	110.52	1000	70	Water clear, mere trace of sand.
12:00	110.52			
12:30 p.m.	110.52			
12:38	110.58			
1:10	110.50			
1:40	110.58			
1:50	110.70	1000		Water clear, trace of sand.
2:30	110.70	1000		
3:10	110.80	1000	70	Water clear, trace of sand.
3:35	110.81			
3:47	110.86			
4:11	110.89			
4:33	110.95			
5:30	111.09	1000		
5:55	111.13			
6:21	111.15			
6:41	111.17			
7:10	111.20			
7:40	111.36			
7:57	111.33	1000	70	Water clear, mere trace of sand.
8:11	111.33			
8:23	111.36			
8:30	111.39	1000	70	
8:31				Pumping stopped.
8:32	60.00			Recovery measurements.
8:32:30	57.00			
8:33	55.20			
8:34	52.60			

<u>Time</u>	<u>Depth to water in feet</u>	<u>Discharge K.D.M.</u>	<u>Temperature °F.</u>	<u>Remarks</u>
Feb. 7, 1945				
8:35 p.m.	50.70			
8:36	49.42			
8:37	48.20			
8:38	47.20			
8:39	46.40			
8:40	45.61			
8:41	44.95			
8:42	44.38			
8:43	43.82			
8:44	43.32			
8:45	42.92			
8:46	42.51			
8:47	42.19			
8:49	41.53			
8:50	41.26			
8:52	40.72			
8:54	40.31			
8:56	39.95			
8:58	39.67			
9:00	39.50			
9:05	38.98			
9:10	38.42			
9:15	37.95			
9:20	37.43			
9:30	36.62			
9:40	35.94			
9:50	35.31			
10:00	34.81			
10:30	33.57			
10:50	32.91			
11:00	32.61			
11:15	32.17			
11:30	31.83			
11:45	31.46			
12:00	31.14			
Feb. 8, 1945				
8:10 a.m.	26.52			