



WATER-RIGHT DOCKET

Wilson's Creek National Battlefield

Docket No: 1

HEADQUARTERS'S WELL. ABANDONED

Preliminary Docket Information

00-00-0000: water docket information

WATER DOCKET INFORMATION

AREA WILSON'S CREEK BATTLEFIELD NP

DOCKET NO. 1

APPLICATION NO. _____

PERMIT NO. _____

CERTIFICATE NO. _____

TITLE OF DOCKET HEADQUARTERS WELL

PRIORITY _____

REMARKS: _____

**THE DIVISION OF HEALTH
OF MISSOURI**

REPORT ON PLANS AND SPECIFICATIONS FOR A WATER SUPPLY WELL
United States Department of Interior
National Park Service
October 14, 1965

INTRODUCTION

Plans and specifications for a water supply well to serve Wilson's Creek Battlefield National Park near Springfield, Missouri, were submitted for review and approval by the Midwest Regional Office of the National Park Service, Omaha, Nebraska.

BRIEF DESCRIPTION

It is anticipated that the well will be drilled to a total depth of 700 feet into the Robidoux Formation. The drill hole will be 10 inches in diameter to the casing point and 6 inches from the bottom of the casing to the total depth of the well. Determination for the point for setting of the casing will be by the Missouri Division of Geological Survey and Water Resources, after the examination of the drill cuttings.

The annular space between the 6-inch casing and drill hole will be sealed by forcing neat cement grout upward from the bottom of the casing until it emerges at the surface of the ground. At the completion of construction a pump test will be made to determine the yield and drawdown characteristics of the well. After disinfection samples will be collected for both bacteriological and chemical analyses.

COMMENT

The details for the well construction are provided in the specifications and also in a separate letter dated October 6, 1965, submitted by George A. Baggle, Associate Regional Director. Installation of the distribution system is not included. The contract and subsequent final plans for the remainder of the facilities will be completed after a satisfactory supply of water has been obtained from the well development.

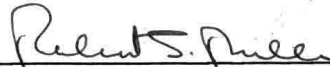
APPROVAL OF PLANS

The plans and specifications described above were examined as to sanitary features of design which may affect the operation of the sanitary works, including size, capacities of the units, and factors which may affect the efficiency and ease of operation. Approval of the plans and specifications as regards these points is hereby given.

Approval of these plans and specifications is given with the understanding that final inspection and approval of the completed works shall be made by the Division of Health before same is accepted and placed in operation. This approval terminates two years from the date appearing on this report unless construction is begun on the described work prior to that date or unless extension of the approval is secured in writing from the Division of Health.

In the examination of plans and specifications, the Division of Health does not examine the structural features of design or efficiency of mechanical equipment. This approval does not include approval of these features.

The Division of Health reserves the right to withdraw the approval of these plans and specifications at any time it is found that additional treatment or alterations are necessary to assure reasonable operating efficiency and to afford adequate protection to public health.



Robert S. Miller, P.E.
Chief, Water Supply

9-285
(Jan. 1927)UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES BRANCHHeadquarters Area
(ABANDONED)

RECORD OF WELL

#1

R 23E		
	23	
	X well	
		T 28N

1. Location: State Missouri County Greene
 Nearest P. O. Brookline Sta. Direction from P. O. _____
 Distance from P. O. 4.2 miles; SW $\frac{1}{4}$ sec. 23, T. 28 N., R. 23-E
at Wilson's Creek Battlefield National Park
~~at Wilson's Creek Battlefield National Park~~
2. Owner: National Park Service Supt., George Washington Carver Nat'l M.
 Address Diamond, Missouri
 Driller: Sill Drilling Co. Address Springfield, Mo.
3. Situation: Is well on upland, in valley, or on hillside? Upland
4. Elevation of top of well: 1226 ft. above the level of Sea
 (Above or below) (Sea, depot, lake, or stream)
5. Type of well: drilled; kind of drilling rig used rotary (air)
 (Dug, driven, bored, or drilled) (Solid tool, jetting, rotary, etc.)
6. Depth of well: 420 ft.; year in which well was finished 1965
 Does well enter rock? yes; if so, at what depth? 18 ft.; kind of rock Limestone
7. Diameter: At top 12 $\frac{1}{2}$ inches; at bottom 6 $\frac{1}{2}$ inches.
8. Principal water bed: *See back of form
 (Gravel, sand, clay, or rock. If rock, state kind)
 Depth to principal water bed _____ ft.; thickness of bed _____ ft.
 If other water supplies were found, give depth to each _____
9. Casings: Kind steel; size 10"; length 75 ft.; between depths of 0 and 75 ft.
 Kind _____; size _____; length _____ ft.; between depths of _____ and _____ ft.
 Kind _____; size _____; length _____ ft.; between depths of _____ and _____ ft.
- Packers (if any): Depth at which packers were used None; kind _____
- Screen or Strainer: Was well finished with screen? No; kind of screen _____;
 length of screen _____ ft.; diameter _____ inches; size of openings _____
10. Head: Does well at present overflow without pumping? No; did it overflow when new? _____;
 if flowing, give pressure _____ lb. per sq. inch; or height water will rise in a pipe _____ ft. above surface;
 original pressure or head _____; if not flowing, give water level in well _____ ft. below surface.
11. Pump: Is the well pumped? No; kind of pump _____;
 size or capacity of pump _____; kind of power _____
12. Yield: Natural flow at present (if any) None gallons per minute; original flow _____ gallons per minute;
 well has been pumped at _____ gallons per minute continuously for _____ hours;
 quantity of water ordinarily obtained from well _____ gallons per day.
13. Use: For what purpose is the water used? Not used
14. Quality of the water: _____; is there an analysis? _____
15. Cost of well, not including pump: \$1,206.00 (Hard or soft, fresh or salty, etc.) Temperature of water _____ ° F.
 Name of person filling blank Ernest Lee
 Date October 1965 Address P.O. Box 1075, Springfield, Mo.

On the back of this sheet give the record of the beds through which the well passes and any other facts not given above.

6-9042

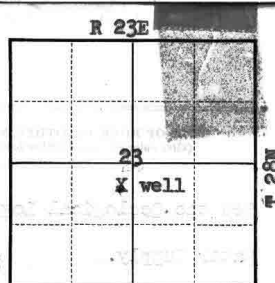
9-255
(Jan. 1927)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES BRANCH

Headquarters
Supply Well

RECORD OF WELL

#1A



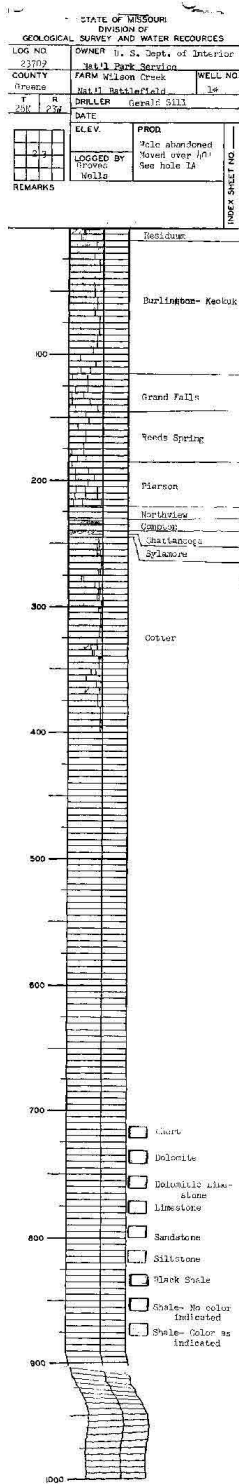
Locate well on plat of section.

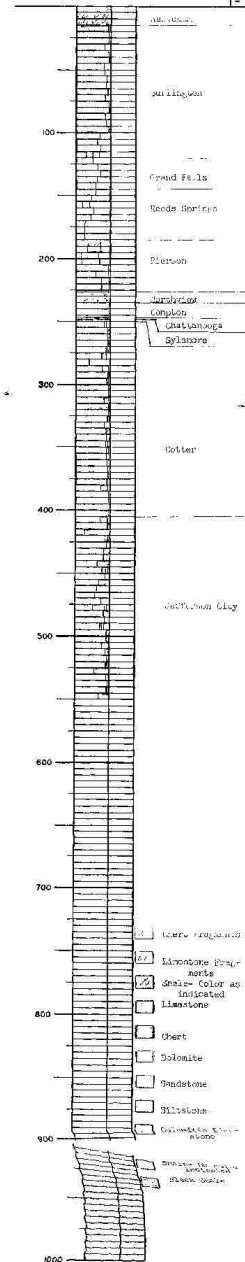
- Location: State Missouri County Greene
Nearest P. O. Brookline Sta. Direction from P. O. SE
Distance from P. O. 4.2 miles; SW $\frac{1}{4}$ sec. 23, T. 28N, R. 23-E
~~if in city, give street and number~~ at Wilson's Creek Battlefield
National Park
- Owner: U. S. Department of the Interior Supt., George Washington Carver Nat'l M.
National Park Service Address Diamond, Missouri
Driller: Sill Drilling Co. Address Springfield, Mo.
- Situation: Is well on upland, in valley, or on hillside? upland
- Elevation of top of well: 1228 ft. above the level of Sea (Sea, depot, lake, or stream)
- Type of well: drilled (Above or below); kind of drilling rig used rotary (air) (Solid tool, jetting, rotary, etc.)
- Depth of well: 550 ft.; year in which well was finished 1965
Does well enter rock? yes; if so, at what depth? 8 ft.; kind of rock Limestone
- Diameter: At top 10 1/2 inches; at bottom 6 1/2 inches.
- Principal water bed: Jefferson City Formation - Limestone (Gravel, sand, clay, or rock. If rock, state kind)
Depth to principal water bed 500 ft.; thickness of bed 11 ft.
If other water supplies were found, give depth to each 372', 425', 465', 528', 534'
- Casings: Kind steel; size 6"; length 300 ft.; between depths of 0 and 300 ft.
Kind _____; size _____; length _____ ft.; between depths of _____ and _____ ft.
Kind _____; size _____; length _____ ft.; between depths of _____ and _____ ft.
- Packers (if any): Depth at which packers were used none; kind _____
- Screen or Strainer: Was well finished with screen? No; kind of screen _____
length of screen _____ ft.; diameter _____ inches; size of openings _____
- Head: Does well at present overflow without pumping? No; did it overflow when new? No;
if flowing, give pressure _____ lb. per sq. inch; or height water will rise in a pipe _____ ft. above surface;
original pressure or head _____; if not flowing, give water level in well 125 ft. below surface.
- Pump: Is the well pumped? Yes ~~No~~; kind of pump Submersible;
size or capacity of pump 25 gpm; kind of power Electric
- Yield: Natural flow at present (if any) _____ gallons per minute; original flow _____ gallons per minute;
well has been pumped at _____ 57 gallons per minute continuously for 7 hours;
quantity of water ordinarily obtained from well 11,500 gallons per day.
- Use: For what purpose is the water used? Domestic
- Quality of the water: Soft, Fresh (Hard or soft, fresh, brackish, etc.); is there an analysis? Yes
- Cost of well, not including pump: \$7,295 Temperature of water 46° F.
Name of person filling blank Ewald Lee
- Date October 1965 Address P.O. Box 1075, Springfield, Mo.

On the back of this sheet give the record of the beds through which the well passes and any other facts not given above.

6-9042

U. S. GOVERNMENT PRINTING OFFICE 6-9642





Wilson's Creek Battlefield.
Time - R very Data.

Sept. 1965

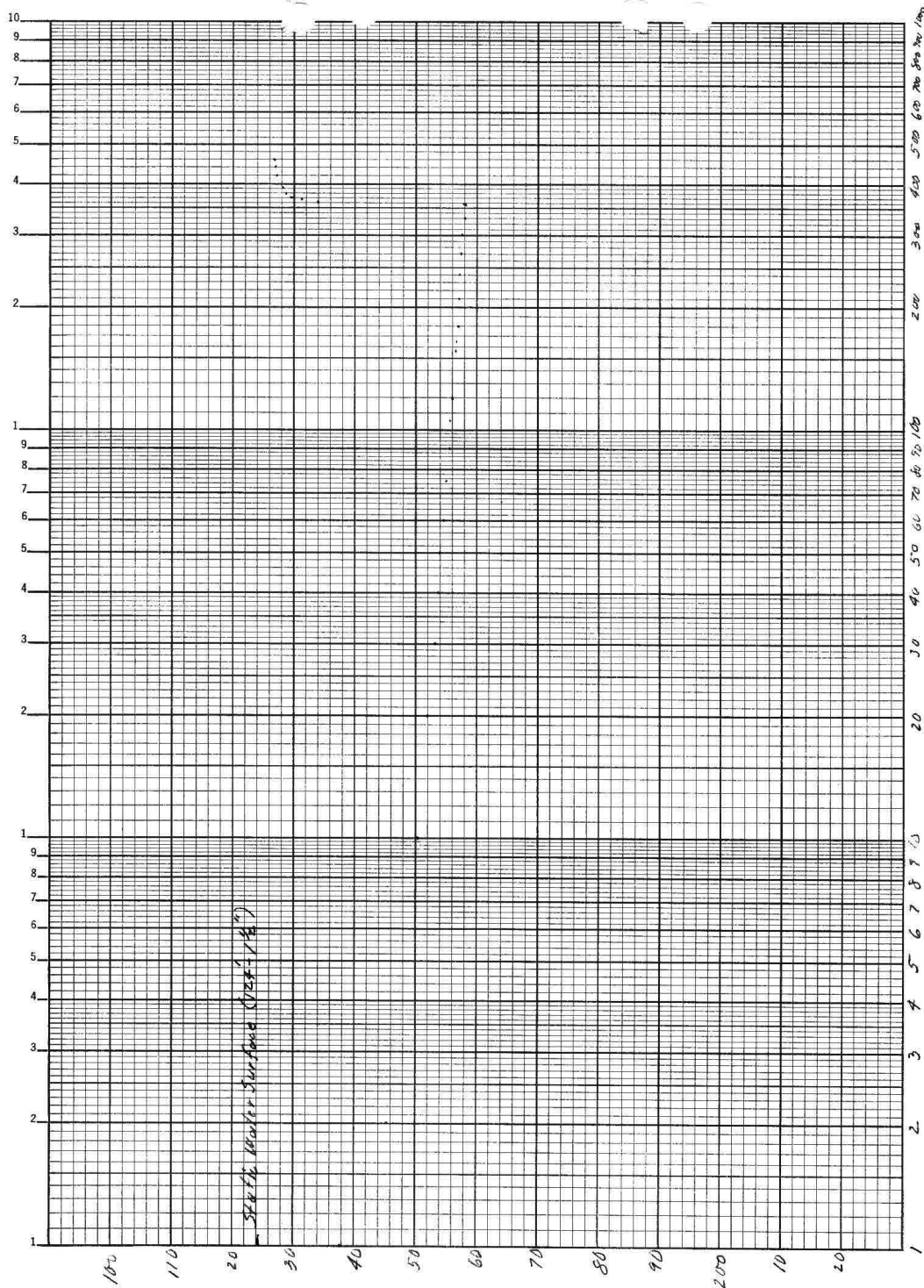
Time since pumping started. t - min	Time since pump stopped. t' - min	Ratio $\frac{t}{t'}$	Depth to water. ft.	Residual Drawdown s - ft.
--	--	-------------------------	---------------------------	-----------------------------------

360	0	~~5~~	158	33.04
361	1	361	141	16.04
362	2	181	134	9.04
363	3	121	132	7.04
364	4	91	131.3	6.34
365	5	73	130.9	6.06
366	6	61	130.6	5.64
367	7	52	130.3	5.34
368	8	46	130.06	5.10
369	9	41	129.98	5.02
370	10	37	129.81	4.85
375	15	25	129.25	4.29
380	20	19	128.83	3.87
385	25	~~26~~ 15.4	128.54	3.58
390	30	13	128.29	3.30
412	52	8	127.42	2.48
420	60	7	127.25	2.29
440	80	5.5	126.9	1.94
460	100	4.6	126.62	1.66

Static Water Surface 124'-1/2"

Q = 35 g.p.m.

K&E SEMI-LOGARITHMIC 359-71
 KEUFFEL & ESSER CO. NEW YORK, N.Y. U.S.A.
 3 CYCLES X 70 DIVISIONS



Time - Minutes.

9/30/65

Time	W.S. below Top of Casing (D-D)	Q - gpm.	Head (H)	Remarks.
9/30/65				Static W.S. after pump was reset = 124'-1 1/2"
9:00 A.		35	36"	
9:01	137-9	35	36"	
9:04	145-6	35	36"	
9:07	149-3 1/2	35	36"	
9:10	150-3"	35	36"	
9:13	151-0	35	36"	
9:15	151-3"	35	36"	
9:20	151-11 1/2	35	36"	
9:25	152-5 1/2	35	36"	
9:30	153-1 1/4	35	36"	
9:40	153-8"	35	36"	
9:50	153-9 3/4	35	36"	
10:00	154-7 1/4	35	36"	
10:15	155-1"	35	36"	
10:30	155-5 1/4	35	36"	
10:45	155-8 1/2	35	36"	
11:00	156-0	35	36"	
11:17	156-2 1/2	35	36"	
11:32	156-5 1/2	35	36"	
11:45	156-7 1/2	35	36"	
Time	D-D	Q	H.	
12:00	156-11 1/2	36	37"	
12:15	157-2 1/4	36	37	
12:30	157-1"	35	36	Adjusted to 36"
12:45	157-2	35	36	
1:00	157-3 3/4	35	36	
1:15	157-5	35	36	
1:30	157-6 3/4	35	36	
1:45	157-8 1/4	35	36	
2:00	157-9 1/4	35	36	
2:15	157-10 3/4	35	36	
2:30	158-1 1/2	35	36	
2:45	158-1"	35	36	
2:58	158-2"	35	36	

Send Record of Well Forms to

Troy Carr

Accomplished

CMT

Page 5

Sept 30, 1965

Time	D-D	Q	Time since Pump shut-off Hrs
3:00 PM. ³⁶⁰			
3:01 ³⁶¹	140'-7"	0	1
3:02 ³⁶²	134'-0"	0	2
3:03 ³⁶³	132'-1"	0	3
3:04 ³⁶⁴	131'-4"		4
3:05 ³⁶⁵	130'-11"		5
3:06 ³⁶⁶	130'-7 1/4"		6
3:07 ³⁶⁷	130'-4"		7
3:08 ³⁶⁸	130'-3 3/4"		8
3:09 ³⁶⁹	129'-11 3/4"		9
3:10 ³⁷⁰	129'-9 3/4"		10
3:15 ³⁷⁵	129'-3"		15
3:20 ³⁸⁰	128'-10"		20
3:25 ³⁸⁵	128'-6 1/2"		25
3:30 ³⁹⁰	128'-3 1/2"		30
3:52 ⁴¹²	127'-5"		52
4:00 ⁴²⁰	127'-3"		60
4:20 ⁴⁴⁰	126'-10 3/4"		80
4:40 ⁴⁶⁰	126'-7 1/2"	0	100

Stopped Pump ~~when~~ ^{when} Q = 35 gpm.

Recovery 35 gpm ^{9/30/65}
 Pump Shut off at 158'-2" W.S.

3:01	140'-7"
2	134'-0"
3	132'-1"
4	131'-4"
5	130'-11"
6	130'-7 1/4"
7	130'-4"
8	130'-3 3/4"
9	129'-11 3/4"
10	129'-9 3/4"
15	129'-3"
20	128'-10"
25	128'-6 1/2"
30	128'-3 1/2"
3:52	127'-5"
60 (4:00)	127'-3"
80 (4:20)	126'-10 3/4"
100 (4:40)	126'-7 1/2"

M-Scope

Fisher

Palo Alto

Calif.

Sheet -1

Test Pumping Data - Wilson's Creek Battlefield - Headquarters Well 1-A,

9/29/65-

Time	Drawdown below Top casing	Q	Head on orifice inches	Discharge Drif. orifice	
8:15 AM		28	25		Static Water Level = <u>123'</u>
8:45	165'	28	25		opened Valve Full to drawdown to about 165'
8:52	165'	25	20		Set Q @ 25 gpm.
9:08	150' 9"	25	20	1 1/4"	
9:30	151' 3"	27	22	1 1/4"	
9:46	150' 9"	25	20	1 1/4"	
10:04	151' 1/2"	25	20	1 1/2"	
10:10	151' 1/2"	25	20	1 1/4"	
10:20	151' 2 3/4"	25	20	1 1/4"	
10:50	151' 9"	25	20	1 1/4"	
11:25	151' 9 1/2"	25	20	1 1/4"	
11:35	151' 11 3/4"	25	20		Opened Valve to 35 gpm, put on 1 1/2" orifice.
11:56	170' 9 3/4"	35	18"	1 1/2"	
12:02	167' 3"	35	36"	1 1/4"	Replaced Orifice to project discharge stream.
12:26	166' 4 1/2"	35	36	1 1/4"	
12:38	166' 7"	35	36	1 1/4"	
12:45	166' 9"	35	36	1 1/4"	
1:00	166' 11 1/4"	35	36	1 1/4"	
1:12	167' 1/2"	35	36	1 1/4"	opened to 40 gpm for 15 Sec.
1:20	167' 1/2"	35	36	1 1/4"	
1:40	167' 2"	35	36	1 1/4"	Opened Valve & Reset at 35 gpm to let recover.
1:50	167' 1"	35	36	1 1/4"	
1:57	167' 2 1/4"	35	36	1 1/4"	Reset Q = 45 gpm.

Page-2.

9/29/65

Abandoned Well 56' to top of cement.

On 9/28/65 60 gpm. 232' depth to W.S.

Time	D-D	Q	Head inches	
9/29/65				
2:10 PM	185'-0"	45	60"	1.25"
2:20	185'-4 1/2"	45	60"	1.25"
2:35	185'-9 3/4"	45	60"	1.25"
2:50	186'-1 1/4"	45	60"	1.25"
3:15	186'-6"	45	60"	1.25"
3:22	187'-5"	45	60"	1.25"
4:00	186'-6"	45	60"	1.25"
4:15	186'-8"	45	60"	1.25"
4:30	186'-9 1/2"	45	60"	1.25"
4:37	186'-10"	45	60"	1.25"
5:05	187'-2"	45	60"	1.25"
5:10		58	20.5	1.75" Changed orifice
5:18	231'-3"	57	20.0	1.75"
5:27	232'-3"	57	20.0	1.75"
5:36	233'-1"	57	20	1.75"
5:45	230'-6 1/2"	56	19 1/2"	1.75" Cut Head to 19 1/2"
6:00 PM	230'-8 1/2"	56	"	1.75" Varied Head up or down 1/4" & W.S. reacted accordingly
Stopped Pump @ 7:05 P.M.				
7:05	230'-8 1/2"	Recovery Test.		
7:06	192'-0"			
7:07	166'-0"			
7:08	151'-0"			

Pressure		5-6-3 p.m.
1" min	192	
2	166	5' up Pump
3	151	2 7/8' up
4	142.5	
5	139.5	
6	136.7	
7	135.8	
8	135.1	
~~9~~		
10	133.1 - 10"	
15	132.1 - 8"	
20	131 - 11"	
25	131 - 3	
30	130 - 9 1/4	
45	129 - 9	
60	129 - 1 1/2	
80	128 - 2 1/2	
100	127 - 11 1/2	

Time	D-D
7:09	142'-5"
7:16	138-5
7:11	136-8
7:12	135-8
7:13	135-1
7:14	missed reading
7:15	133-10
7:20	132-8
7:25	131-11
7:30	131-3
7:35	130-9½
7:50	129-9
8:05	129-1½
8:25	128-2½
8:45	127-11½
9/30/65	W.S. static = 124'. After the Contractor had pulled the Test Pump.
7:35 AM	Told the Contractors men to replace the test pump for continued test.

TEST PUMPING DATA - WILSON'S CREEK BATTLEFIELD - HEADQUARTERS WELL 1-A
(Step Test Data)

September 29, 1965				
Time	Drawdown Below Top Casing	Q	Head on Orifice Inches	Dia. of Orifice
8:15 a.m.		28	25	Static Water Level = 123'
8:45	165'	28	25	Opened Valve Full to drawdown to about 165'
8:52	165'	25	20	Set Q @ 25 g.p.m.
9:08	150'9"	25	20	1 1/4"
9:30	151'3"	27	22	1 1/4"
9:40	150'9"	25	20	1 1/4"
10:04	151'-1 1/2"	25	20	1 1/4"
10:10	151'-1 1/2"	25	20	1 1/4"
10:20	151'-2-3/4"	25	20	1 1/4"
10:50	151'-9"	25	20	1 1/4"
11:15	151'-9 1/2"	25	20	1 1/4"
11:35	151'-11-3/4"	25	20	1 1/4"
11:56	170'-9-3/4"	35	18"	Opened Valve to 35 g.p.m., put on 1 1/2" Orifice.
12:02	167'-3"	35	36"	1 1/4" Replaced Orifice to project discharge stream.
12:20	166'-4 1/2"	35	36	1 1/4"
12:30	166'-7"	35	36	1 1/4"
12:45	166'-9"	35	36	1 1/4"
1:00	166'-11 1/4"	35	36	1 1/4"
1:12	167'-1 1/2"	35	36	1 1/4" Opened to 40 g.p.m., for 15 Sec.
1:20	167'-1 1/2"	35	36	1 1/4"
1:40	167'-2"	35	36	1 1/4" Opened Valve & Reset at 35 g.p.m., to let recover.
1:50	167'-1"	35	36	1 1/4"
1:57	167'-2 1/4"	35	36	1 1/4" Reset Q = 45 g.p.m.

Test Pumping Data - Wilson's Creek Battlefield

Headquarters Well 1-A

(Step Test Data)

On September 28, 1965

60 g.p.m.

232' depth to, Water Surface

					September 29, 1965
Time	Drawdown Below Top Casing	Q	Head on Orifice Inches	Dia. of Orifice	
2:10 p.m.	185' -0"	45	60"	1.25"	
2:20	185 -4½"	45	60"	1.25"	
2:35	185 -9-3/4"	45	60"	1.25"	
2:50	186 -1¼"	45	60"	1.25"	
3:15	186 -6"	45	60"	1.25"	Opened Valve to lower Water Surface for 1 Min., and reset to 45 g.p.m.
3:22	187' -5"	45	60"	1.25"	
4:00	186' -6"	45	60"	1.25"	
4:15	186 -8"	45	60"	1.25"	
4:30	186 -9½"	45	60"	1.25"	
4:37	186 -10"	45	60"	1.25"	
5:05	187 -2"	45	60"	1.25"	
5:10		58	20.5	1.75"	Changed Orifices
5:18	231' -3"	57	20.0	1.75"	
5:27	232 -3"	57	20.0	1.75"	
5:36	233 -1"	57	20	1.75"	
5:45	230 -6½"	56	19½"	1.75"	Cut Head to 19½"
6:00	230 -8½"	56	"	1.75"	Varied Head up or down ¼" & Water Surface reacted accordingly.
Stopped Pump @ 7:05 P.M.					
7:05	230 -8½"	Recovery Test.			
7:06	192' -0"				
7:07	166' -0"				
7:08	151' -0"				

Recovery Test - Well 1-A

<u>Time</u>	<u>Drawdown Below Top Casing</u>	<u>September 29, 1965</u>
7:09 p.m.	142' -5"	
7:10	138 -5	
7:11	136 -8	
7:12	135 -8	
7:13	135 -1	
7:14	Missed Reading	
7:15	133 -10	
7:20	132 -8	
7:25	131 -11	
7:30	131 -3	
7:35	130 -9 $\frac{1}{4}$	
7:50	129 -9	
8:05	129 -11 $\frac{1}{2}$	
8:25	128 -2 $\frac{1}{2}$	
8:45	127 -11 $\frac{1}{2}$	

September 30, 1965 Water Surface Static = 124' After the Contractor had pulled the Test Pump.

7:35 a.m. Told the Contractor's men to replace the test pump for continued test.

Time - Drawdown Test
(Constant Discharge 35 gpm)
Well 1-A

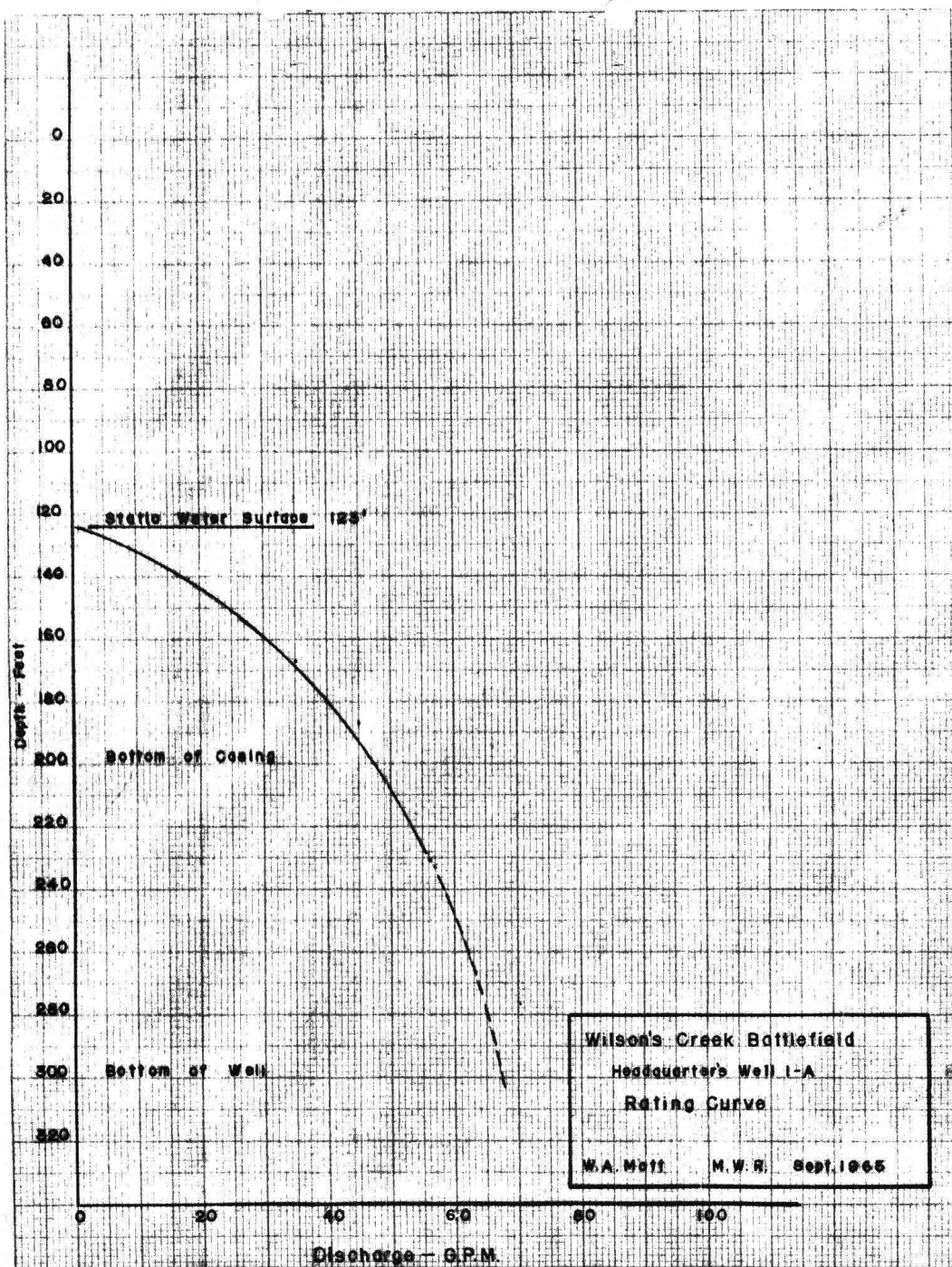
September 30, 1965

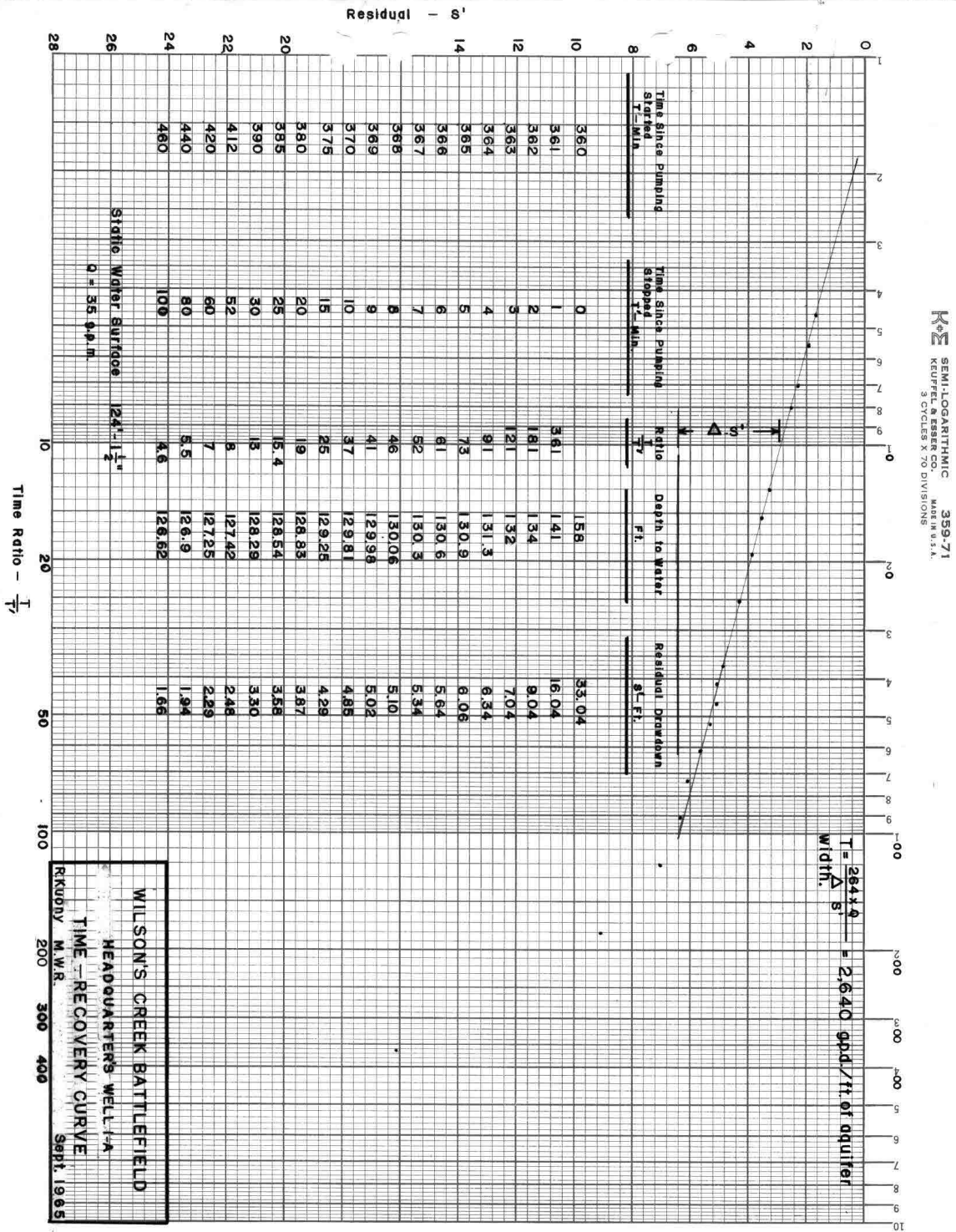
Time	Drawdown Below Top Casing	Q	Head on Orifice Inches	REMARKS			
				Time	Drawdown	Q	H
9:00 a.m.		35	36"	Noon			
9:01	137 -9	35	36"	12:00	156 -11½"	36	37"
9:04	145 -6	35	36"	12:15	157 -2¼"	36	37
9:07	149 -3½	35	36"	12:30	157 -1"	35	Adjusted to 36"
9:10	150 -3"	35	36"	12:45	157 -2"	35	36
9:13	151 -0	35	36"	1:00	157 -3-3/4"	35	36
9:15	151 -3"	35	36"	1:15	157 -5"	35	36
9:20	151 -11½	35	36"	1:30	157 -6-3/4"	35	36
9:25	152 -5½	35	36"	1:45	157 -8¼"	35	36
9:30	153 -1¼	35	36"	2:00	157 -9¼"	35	36
9:40	153 -8"	35	36"	2:15	157 -10-3/4"	35	36
9:50	153 -9-3/4"	35	36"	2:30	158 -½"	35	36
10:00	154 -7¼	35	36"	2:45	158 -1"	35	36
10:15	155 -1"	35	36"	2:58	158 -2"	35	36
10:30	155 -5¼	35	36"				
10:45	155 -8½	35	36"				
11:00	156 -0	35	36"	Send Record of Well Forms to Troy Carr			
11:17	156 -2½	35	36"				
11:32	156 -5½	35	36"				
11:45	156 -7½	35	36"				

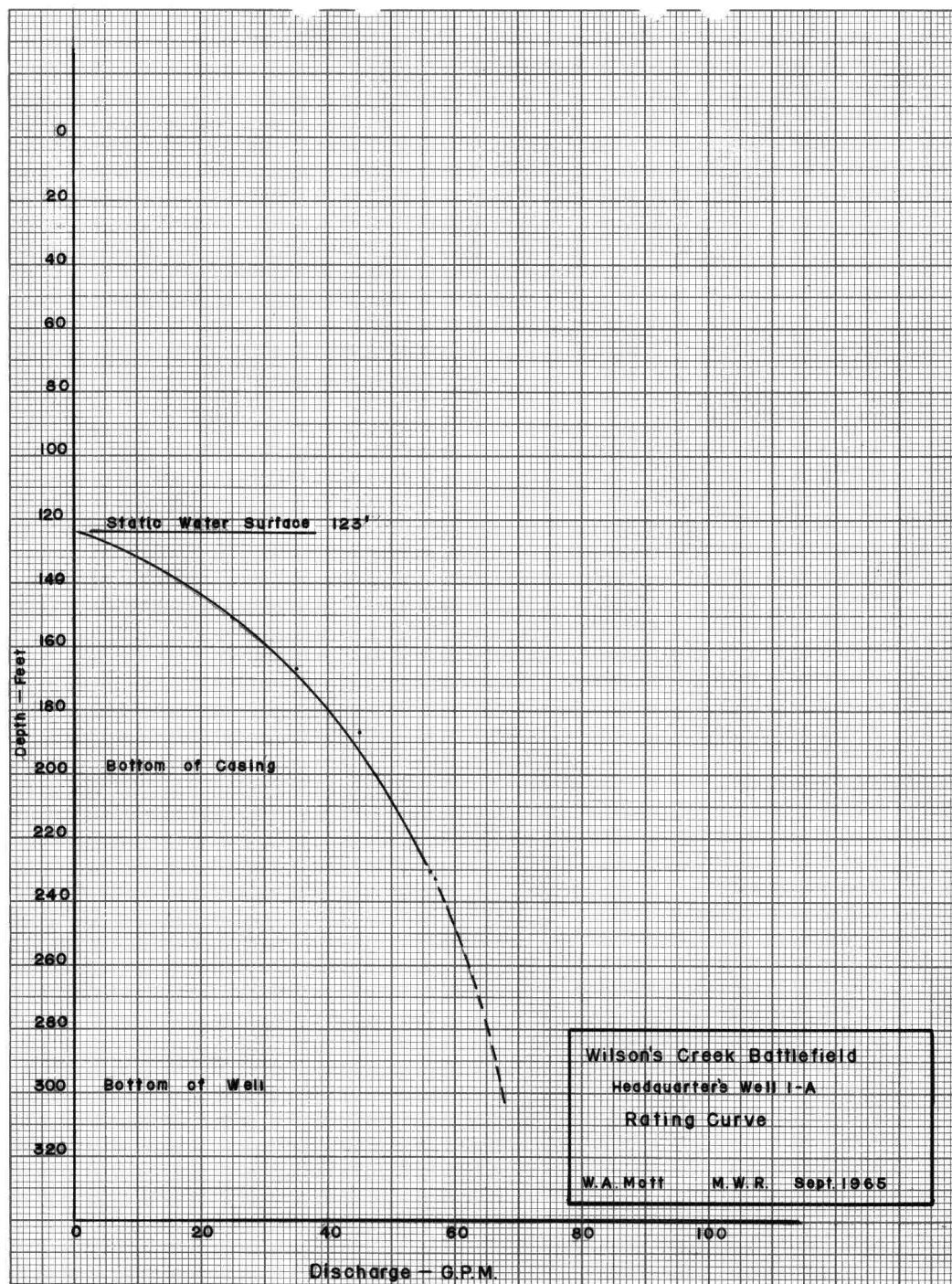
Time - Recovery Test
Well 1-A

September 30, 1965

<u>Time</u>	<u>Drawdown Below Top Casing</u>	<u>Q</u>	<u>Head on Orifice Inches</u>
3:00 p.m.			Stopped Pump when Q = 35 g.p.m.
3:01	140' -7"	0	
3:02	134' -0"	0	
3:03	132' -1"	0	
3:04	131' -4"	0	
3:05	130' -11"	0	
3:06	130' -7 $\frac{1}{4}$ "	0	
3:07	130' -4"	0	
3:08	130' -3 $\frac{1}{4}$ "	0	
3:09	129' -11-3 $\frac{1}{4}$ "	0	
3:10	129' -9-3 $\frac{1}{4}$ "	0	
3:15	129' -3"	0	
3:20	128' -10"	0	
3:25	128' -6 $\frac{1}{2}$ "	0	
3:30	128' -3 $\frac{1}{2}$ "	0	
3:52	127' -5"	0	
4:00	127' -3"	0	
4:20	126' -10-3 $\frac{1}{4}$ "	0	
4:40	126' -7 $\frac{1}{2}$ "	0	



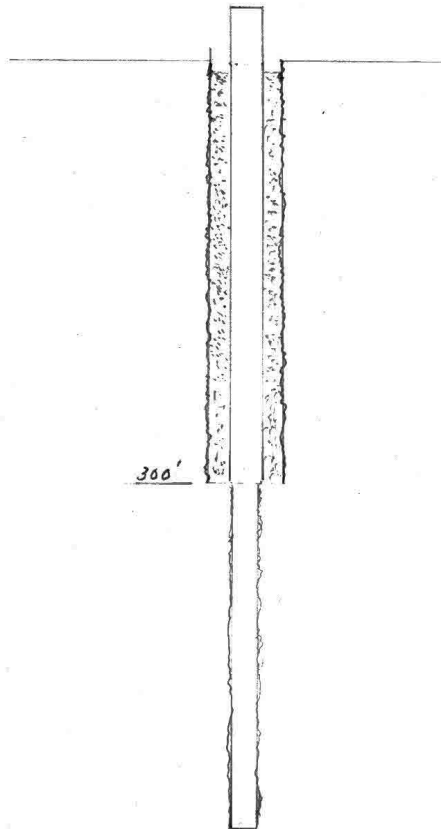




Test Well

Sept 18, 1965

Wilson's Creek Battlefield
Headquarters Test Well.



1. Startic W.S. (including Upper aquifer) = 75' below Surface
2. Spacers on bottom section then every second one following.
3. Driller removed top 7' section to place plug at bottom of casing.
4. Plug set @ 3:10 P.M. 9/18/
Rig shut-off @ 3:15 P.M.
5. Halliburton 10:20 A.M. arrived.
6. Started pumping 11:50 A.M.
7. Plug at 282' in casing.
8. Dismantling @ 12:55 P.M.

TH/XJ

20¢

Date
Fuller.
Mo Geol Survey
Elec Log
Operator.

9/27/65

Well #1

Static W.S. (Abandoned Well) 3:10 P.M. = 49'

Well #2

9/27/65 Static W.S. 121'-8 1/2"

(Well #1A) 290' ←

(Well #1)
Top Swan Cr. 275'

To

Formation Limits obtained by
Telephone Call to Robert D Knight
to determine requirements to seal the
Jeff. City water supply.

Bottom Swan Cr. 285'

6" casing (lost in well)

285' Bottom Swan,

295' Dolomite

405' Top Jeff City

Top Jeff City 405'

425'

Old M^cKeel Well 236' deep. Approx. 4 g.p.m.

364-1752 off. Dale Fuller.

364-2752 Res

Sacks

Vol of cement mixture per foot (1.1 cu.ft./sack)

Lost Casing 84' long

15.32 ✓

Borefoot Bore 130' long

25.18

Between 6 5/8" O.D. casing & 10" Bore, 84' x .2782

23.37

Vol 10" Bore Hole: 147' x .5151

75.72 ✓

Vol 10" I.D. Casing, = .2394 x 11' =

2.63 ✓

Total Sacks used = 108

10" Bore above 215' level: - 75.72

32.28

Inside 6" casing =

15.32

16.96

23' between 6" Casing & 10" Bore =

16.96

0.00

TEST PUMPING DATA - WILSON'S CREEK BATTLEFIELD - HEADQUARTERS WELL 1-A
(Step Test Data)

September 29, 1965				
<u>Time</u>	<u>Drawdown Below Top Casing</u>	<u>Q</u>	<u>Head on Orifice Inches</u>	<u>Dia. of Orifice</u>
8:15 a.m.		28	25	Static Water Level = 123'
8:45	165'	28	25	Opened Valve Full to drawdown to about 165'
8:52	165'	25	20	Set Q @ 25 g.p.m.
9:08	150'9"	25	20	1 1/2"
9:30	151'3"	27	22	1 1/2"
9:40	150'9"	25	20	1 1/2"
10:04	151'1 1/2"	25	20	1 1/2"
10:10	151'1 1/2"	25	20	1 1/2"
10:20	151'-2-3/4"	25	20	1 1/2"
10:50	151'-9"	25	20	1 1/2"
11:15	151'-9 1/2"	25	20	1 1/2"
11:35	151'-11-3/4"	25	20	1 1/2"
11:56	170'-9-3/4"	35	18"	Opened Valve to 35 g.p.m., put on 1 1/2" Orifice.
12:02	167'-3"	35	36"	1 1/2" Replaced Orifice to project discharge stream.
12:20	166'-4 1/2"	35	36	1 1/2"
12:30	166'-7"	35	36	1 1/2"
12:45	166'-9"	35	36	1 1/2"
1:00	166'-11 1/2"	35	36	1 1/2"
1:12	167'-1 1/2"	35	36	1 1/2" Opened to 40 g.p.m., for 15 Sec.
1:20	167'-1 1/2"	35	36	1 1/2"
1:40	167'-2"	35	36	1 1/2" Opened Valve & Reset at 35 g.p.m., to 1st recover.
1:50	167'-1"	35	36	1 1/2"
1:57	167'-2 1/2"	35	36	1 1/2" Reset Q = 45 g.p.m.

Test Pumping Data - Wilson's Creek Battlefield
Headquarters Well 1-A
(Step Test Data)

On September 28, 1965		60 g.p.m.	232' depth to Water Surface		September 29, 1965
Time	Drawdown Below Top Casing	Q	Head on Orifice Inches	Dia. of Orifice	
2:10 p.m.	185' -0"	45	60"	1.25"	
2:20	185' -4½"	45	60"	1.25"	
2:35	185' -9-¾"	45	60"	1.25"	
2:50	186' -1½"	45	60"	1.25"	
3:15	186' -6"	45	60"	1.25"	Opened Valve to lower Water Surface for 1 Min., and reset to 45 g.p.m.
3:22	187' -5"	45	60"	1.25"	
4:00	186' -6"	45	60"	1.25"	
4:15	186' -8"	45	60"	1.25"	
4:30	186' -9½"	45	60"	1.25"	
4:37	186' -10"	45	60"	1.25"	
5:05	187' -2"	45	60"	1.25"	
5:10		58	20.5	1.75"	Changed Orifices
5:18	231' -3"	57	20.0	1.75"	
5:27	232' -3"	57	20.0	1.75"	
5:36	233' -1"	57	20	1.75"	
5:45	230' -6½"	56	19½"	1.75"	Cut Head to 19½"
6:00	230' -8½"	56	"	1.75"	Varied Head up or down ½" & Water Surface reacted accordingly.
Stopped Pump @ 7:05 P.M.					
7:05	230' -8½"	Recovery Test.			
7:06	192' -0"				
7:07	166' -0"				
7:08	151' -0"				

Recovery Test - Well 1-A

<u>Time</u>	<u>Drawdown Below Top Casing</u>	<u>September 29, 1965</u>
7:09 p.m.	142' -5"	
7:10	138 -5	
7:11	136 -8	
7:12	135 -8	
7:13	135 -1	
7:14	Missed Reading	
7:15	133 -10	
7:20	132 -8	
7:25	131 -11	
7:30	131 -3	
7:35	130 -9½	
7:50	129 -9	
8:05	129 -1½	
8:25	128 -2½	
8:45	127 -11½	

September 30, 1965 Water Surface Static = 124' After the Contractor had pulled the Test Pump.

7:35 a.m. Told the Contractor's men to replace the test pump for continued test.

Time - Drawdown Test
(Constant Discharge 35 gpm)
Well 1-A

September 30, 1965

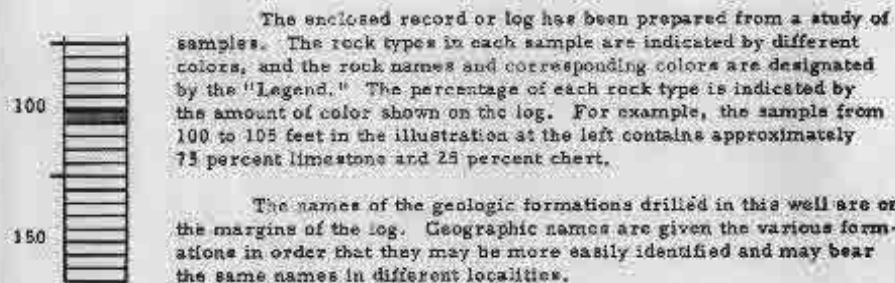
Time	Drawdown Below Top Casing	Q	Head on Orifice Inches	REMARKS			
				Static Water Surface after pump was reset = 124' - 1 1/4"	Time	Drawdown	H
9:00 a.m.		35	36"		12:00	156 - 11 1/2"	36
9:01	137 -9	35	36"		12:15	157 - 2 1/2"	36
9:04	145 -6	35	36"		12:30	157 - 1"	35
9:07	149 -3 1/2	35	36"		12:45	157 - 2"	35
9:10	150 -3"	35	36"		1:00	157 - 3 - 3/4	35
9:13	151 -0	35	36"		1:15	157 - 5	35
9:15	151 -3"	35	36"		1:30	157 - 6 - 3/4	35
9:20	151 -11 1/2	35	36"		1:45	157 - 8 1/2	35
9:25	152 -5 1/2	35	36"		2:00	157 - 9 1/2	35
9:30	153 -1 1/2	35	36"		2:15	157 - 10 - 3/4	35
9:40	153 -8"	35	36"		2:30	158 - 1/2"	35
9:50	153 -9 - 3/4	35	36"		2:45	158 - 1"	35
10:00	154 -7 1/2	35	36"		2:58	158 - 2"	35
10:15	155 -1"	35	36"				
10:30	155 -5 1/2	35	36"				
10:45	155 -8 1/2	35	36"				
11:00	156 -0	35	36"	Send Record of Well Forms to Troy Carr			
11:17	156 -2 1/2	35	36"				
11:32	156 -5 1/2	35	36"				
11:45	156 -7 1/2	35	36"				

Time - Recovery Test
Well 1-A

September 30, 1965

<u>Time</u>	<u>Drawdown Below Top Casing</u>	<u>Q</u>	<u>Head on Orifice Inches</u>
3:00 p.m.			Stopped Pump when Q = 35 g.p.m.
3:01	140' -7"	0	
3:02	134' -0"	0	
3:03	132' -1"	0	
3:04	131' -4"	0	
3:05	130' -11"	0	
3:06	130' -7 $\frac{1}{2}$ "	0	
3:07	130' -4"	0	
3:08	130' -3 $\frac{1}{4}$ "	0	
3:09	129' -11-3 $\frac{1}{4}$ "	0	
3:10	129' -9-3 $\frac{1}{4}$ "	0	
3:15	129' -3"	0	
3:20	128' -10"	0	
3:25	128' -6 $\frac{1}{2}$ "	0	
3:30	128' -3 $\frac{1}{2}$ "	0	
3:52	127' -5"	0	
4:00	127' -3"	0	
4:20	126' -10-3 $\frac{1}{4}$ "	0	
4:40	126' -7 $\frac{1}{2}$ "	0	

EXPLANATION OF RECORD



Other Supporting Information



IN REPLY REFER TO:

United States Department of the Interior

PHS/NPS ENVIRONMENTAL SANITATION PROGRAM
NATIONAL PARK SERVICE

NATIONAL CAPITAL PARKS

1100 OHIO DRIVE SW.
WASHINGTON, D.C. 20242

Memorandum

To: Superintendent, George Washington Carver National Monument

From: Public Health Service Consultant, Washington

Subject: Water Supply System Classification

Enclosed is the final 1975 Water Supply System Classification form for George Washington Carver National Monument. No problems were noted. If any questions arise, please contact me.

Ronald R. Speedy

Enclosure



[illegible]

Department of Public Health and Welfare of Missouri
DIVISION OF HEALTH

REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES
Membrane Filter Technique

Samples collected by - Schumerth
Date of collection - 2/18/70
Place - Wilsons Creek, Republic
Date Reported - 2/24/70



Laboratory Number	Source of Sample	Number of Coliform Organisms Per 100 ml. portion
11710	tap, bldg. #4	less than 1
11711	bldg. #6	less than 1

To meet Division of Health bacteriological standards a public water supply shall conform to the following:

The arithmetic mean coliform density of all standard samples examined per month shall not exceed one per 100 ml. Coliform colonies per standard sample shall not exceed four per hundred milliliter in:

- (a) Two consecutive samples;
- (b) More than one standard sample when less than 20 are examined per month or;
- (c) More than five per cent of the standard samples when 20 or more are examined per month.

The above examinations were made by the Division of Health Laboratories in accordance with the latest edition of Standard Methods for the Examination of Water and Waste Water.

By direction of the director, Division of Health

hw
Wilsons Creek
District No. 5
Greene County Health Dept.

L. F. Garber, Director
Bureau of Environmental Services

2-27-70

Copy to SSC - Mr. Gerard Witucki

Department of Public Health and Welfare of Missouri
DIVISION OF HEALTH

REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES
Membrane Filter Technique



Samples collected by - Schumerth
Date of collection - 2/2/70
Place - Wilsons Creek, Republic
Date Reported - 2/5/70

Laboratory Number	Source of Sample	Number of Coliform Organisms Per 100 ml. portion
10846	well, utility bldg. #4	less than 1
10847	res., bldg. #6	less than 1
~~W118X~~		

To meet Division of Health bacteriological standards a public water supply shall conform to the following:

The arithmetic mean coliform density of all standard samples examined per month shall not exceed one per 100 ml. Coliform colonies per standard sample shall not exceed four per hundred milliliter in:

- (a) Two consecutive samples;
- (b) More than one standard sample when less than 20 are examined per month or;
- (c) More than five per cent of the standard samples when 20 or more are examined per month.

The above examinations were made by the Division of Health Laboratories in accordance with the latest edition of Standard Methods for the Examination of Water and Waste Water.

By direction of the director, Division of Health
hw
Wilsons Creek
District No. 5
Greene County Health Dept.

L. F. Garber

L. F. Garber, Director
Bureau of Environmental Services

2-9-70
Copy to: SSC,

ATTN: Mr. [unclear]
E 2.07D - Rev. 11/67





Department of Public Health and Welfare of Missouri
DIVISION OF HEALTH

REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES
Membrane Filter Technique

D5039



Samples collected by - Schumert
Date of collection - 1/21/70
Place - Wilsons Creek, ~~Republic~~ Republic
Date Reported - 1/26/70

Laboratory Number	Source of Sample	Number of Coliform Organisms Per 100 ml. portion
10263	bldg. #6, res.	less than 1
10264	tap, utility bldg. #4	less than 1

To meet Division of Health bacteriological standards a public water supply shall conform to the following:

The arithmetic mean coliform density of all standard samples examined per month shall not exceed one per 100 ml. Coliform colonies per standard sample shall not exceed four per hundred milliliter in:

- (a) Two consecutive samples;
- (b) More than one standard sample when less than 20 are examined per month or;
- (c) More than five per cent of the standard samples when 20 or more are examined per month.

The above examinations were made by the Division of Health Laboratories in accordance with the latest edition of Standard Methods for the Examination of Water and Waste Water.

By direction of the director, Division of Health
hw
Management Assistant, Wilsons Creek
Dept. of HEW
District No. 5
Greene County Health Dept.

L. F. Garber
L. F. Garber, Director
Bureau of Environmental Services

2-3-70
Copy to: SSC, Attn: Mr. Gerald Witucki

Department of Public Health and Welfare of Missouri
DIVISION OF HEALTH

REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES
Membrane Filter Technique

DSC39

Wick



Samples collected by - Schumerth
Date of collection - 1/6/70
Place - Wilsons Creek, Republic
Date Reported - 1/9/70

Laboratory Number	Source of Sample	Number of Coliform Organisms Per 100 ml. portion
9528	bldg. #6, res.	less than 1
9529	bldg. #4, utility bldg.	less than 1

To meet Division of Health bacteriological standards a public water supply shall conform to the following:

The arithmetic mean coliform density of all standard samples examined per month shall not exceed one per 100 ml. Coliform colonies per standard sample shall not exceed four per hundred milliliter in:

- (a) Two consecutive samples;
- (b) More than one standard sample when less than 20 are examined per month or;
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By direction of the director, Division of Health

hw
Wilsons Creek
Dept. of HEW
District No. 5
Greene County Health Dept.

L. F. Garber
L. F. Garber, Director
Bureau of Environmental Services

1-15-70
Thermopex to: SSC, attn Mr. Gerard Witucki
✓

Department of Public Health and Welfare of Missouri
DIVISION OF HEALTH

REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES
Membrane Filter Technique



Samples collected by - Schumert
Date of collection - 12/2/69
Place - Wilsons Creek, Republic
Date Reported - 12/8/69

Laboratory Number	Source of Sample	Number of Coliform Organisms Per 100 ml. portion
8014	utility bldg, bldg. 4	less than 1
8015	bldg. #6	less than 1

To meet Division of Health bacteriological standards a public water supply shall conform to the following:

The arithmetic mean coliform density of all standard samples examined per month shall not exceed one per 100 ml. Coliform colonies per standard sample shall not exceed four per hundred milliliter in:

- (a) Two consecutive samples;
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By direction of the director, Division of Health

hw
Management Assistant
Wilsons Creek
Dept. of HEW
District No. 5
Greene County Health Dept.

L. F. Garber
L. F. Garber, Director
Bureau of Environmental Services

December 11, 1969

Thermofax to: SSC, ATN: Mr. Gerald White

Department of Public Health and Welfare of Missouri
DIVISION OF HEALTH

REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES
Membrane Filter Technique



Samples collected by - Schumerth
Date of collection - 11/17/69
Place - ~~W~~ Wilsons Creek, Republic
Date Reported - 11/21/69

Laboratory Number	Source of Sample	Number of Coliform Organisms Per 100 ml. portion
7203	bldg. #6	less than 1
7204	bldg. #1	less than 1

To meet Division of Health bacteriological standards a public water supply shall conform to the following:

The arithmetic mean coliform density of all standard samples examined per month shall not exceed one per 100 ml. Coliform colonies per standard sample shall not exceed four per hundred milliliter in:

- (a) Two consecutive samples;
- (b) More than one standard sample when less than 20 are examined per month or;
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By direction of the director, Division of Health

hw
Wilsons Creek
Dept. of HEW
District No. 5
Greene County Health Dept.

L. F. Garber
L. F. Garber, Director
Bureau of Environmental Services

December 2, 1969 -

Thermofax to: SSC, ATTN: Mr Gerard Witucki

D 5031

Department of Public Health and Welfare of Missouri.
DIVISION OF HEALTHREPORT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES
Membrane Filter Technique

RECEIVED		WATER		NOV 10 1969	
ACT.	INFO.	INITIALS	DATE		
		WITUCKI, G.			
		CHAVEZ, D.			
REMARKS					



Samples collected by - Robert Schumerth
 Date of collection - 10/29/69
 Place - Wilsons Creek, Republic
 Date Reported - 11/3/69

Laboratory Number	Source of Sample	Number of Coliform Organisms Per 100 ml. portion
6386	employee res., bldg. #6	less than 1
6387	hdqs/ area, bldg. #4	less than 1

To meet Division of Health bacteriological standards a public water supply shall conform to the following:

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- (a) Two consecutive samples;
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By direction of the director, Division of Health
 hw
 Management Assistant, Wilsons Creek
 Dept. of HEW
 District No. 5
 Greene County Health Dept.

L. F. Garber
 L. F. Garber, Director
 Bureau of Environmental Services

Nov. 7, 1969-

Therimofax to - SSC - attn: Mr. Gerard Witucki

Department of Public Health and Welfare of Missouri
DIVISION OF HEALTH

REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES
Membrane Filter Technique

Samples collected by - Schumerth
Date of collection - 10/6/69
Place - Wilsons Creek, Republic
Date Reported - 10/9/69



Laboratory Number	Source of Sample	Number of Coliform Organisms Per 100 ml. portion
5218	outside hydrant, house trailer	less than 1
5219	hydrant, utility	less than 1



To meet Division of Health bacteriological standards a public water supply shall conform to the following:

The arithmetic mean coliform density of all standard samples examined per month shall not exceed one per 100 ml. Coliform colonies per standard sample shall not exceed four per hundred milliliter in:

- (a) Two consecutive samples;
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By direction of the director, Division of Health

hw
Wilsons Creek
Dept. of HEW
District No. 5
Greene County Health Dept.

L. F. Garber
L. F. Garber, Director
Bureau of Environmental Services

October 13, 1969

ThermoFax to: SSC - Attn. Mr. Gerard Witucki

RECEIVED			
WATER			
OCT 15 1969			
ACT.	INFO.	INITIALS	DATE
	W. TUCKER G.		
	ROBERTS, J.		
	CHAVEZ, D.		
	FILE		
REMARKS			

Department of Public Health and Welfare of Mississippi
DIVISION OF HEALTH

REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES
Membrane Filter Technique

1720

RECEIVED			
WATER			
DATE		9/22/1969	
ACT.	INFO.	INITIALS	DATE
		fw	9/22
		FILE	
REMARKS: <i>water docket</i>			

Samples collected by - Davison
Date of collection - 7/31/69
Place - Wilsons Creek, Republic
Date Reported - 8/6/69

Laboratory Number	Source of Sample	Number of Coliform Organisms Per 100 ml. portion
1775	faucet by pressure tank	less than 1
1776	faucet in office	less than 1

To meet Division of Health bacteriological standards a public water supply shall conform to the following:

The arithmetic mean coliform density of all standard samples examined per month shall not exceed one per 100 ml. Coliform colonies per standard sample shall not exceed four per hundred milliliter in:

- (a) Two consecutive samples;
- (b) More than one standard sample when less than 20 are examined per month or;
- (c) More than five per cent of the standard samples when 20 or more are examined per month.

The above examinations were made by the Division of Health Laboratories in accordance with the latest edition of Standard Methods for the Examination of Water and Waste Water.

By direction of the director, Division of Health

hw
Wilsons Creek
Dept. of HEW
District No. 5
Greene County Health Dept.

L. F. Garber
L. F. Garber, Director
Bureau of Environmental Services

9-19-69
Thermafax to:
SSC - A.M.D. Mrs. Lena A. White

Department of Public Health and Welfare of Missouri
DIVISION OF HEALTH

REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES
Membrane Filter Technique

Samples collected by - Davison
Date of collection - 7/6/69
Place - Wilsons Creek, Republic
Date Reported - 7/10/69

<u>Laboratory Number</u>	<u>Source of Sample</u>	<u>Number of Coliform Organisms Per 100 ml. portion</u>
421	office trailer	less than 1
422	pressure tank	less than 1

To meet Division of Health bacteriological standards a public water supply shall conform to the following:

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- (a) Two consecutive samples;
- (b) More than one standard sample when less than 20 are examined per month or;
- (c) More than five per cent of the standard samples when 20 or more are examined per month.

The above examinations were made by the Division of Health Laboratories in accordance with the latest edition of Standard Methods for the Examination of Water and Waste Water.

By direction of the director, Division of Health
hw
Management Assistant, Wilsons Creek
Dept. of HEW
District No. 5
Greene County Health Dept.


L. F. Garber, Director
Bureau of Environmental Services

Thermofax to.

SFC- ANN. - Mr Gerard Witucki

7-16-69

RECEIVED	
San Francisco Planning and Service Center	
Office of Land and Water Rights	
NATIONAL PARK SERVICE	
JUL 18 1969	
ACT. INFO.	INITIALS DATE
CHIEF	
ASS'T CHIEF	
Coord & Contr	
APPRAISAL	
ACQUISITION	
EXCHANGE	
FILE	

S. Davis *7/18/69*

Department of Public Health and Welfare of Missouri
DIVISION OF HEALTH

REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES
Membrane Filter Technique

Samples collected by - Wilsons Creek Battlefield
Date of collection - 5/27/69
Place - Wilsons Creek, Republic
Date Reported - 6/3/69



Laboratory Number	Source of Sample	Number of Coliform Organisms Per 100 ml. portion
16801	residence	less than 1
16802	office trailer	less than 1

To meet Division of Health bacteriological standards a public water supply shall conform to the following:

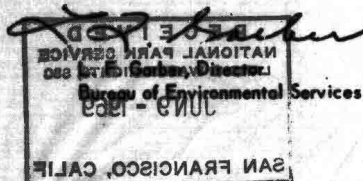
The arithmetic mean coliform density of all standard samples examined per month shall not exceed one per 100 ml. Coliform colonies per standard sample shall not exceed four per hundred milliliter in:

- (a) Two consecutive samples;
- (b) More than one standard sample when less than 20 are examined per month or;
- (c) More than five per cent of the standard samples when 20 or more are examined per month.

The above examinations were made by the Division of Health Laboratories in accordance with the latest edition of Standard Methods for the Examination of Water and Waste Water.

By direction of the director, Division of Health

EW
Wilsons Creek
Dept of H&W
District No. 5
Greene County Health Dept.



Thermofax to:

SFC - ATTN - MR Gerald Witucki
6-6-69

RECEIVED		
San Francisco Planning and Service Center Office of Land and Water Rights NATIONAL PARK SERVICE		
JUN 9 - 1969		
ACT. INFO.	INITIALS	DATE
CHIEF		
ASST. CHIEF		
Coord. & Contn.		
APPRAISAL		
ACQUISITION		
EXCHANGE		
☒ WATER RIGHTS ☒ FILE		

Docket

REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER
Membrane Filter Technique
DIVISION OF HEALTH
Department of Public Health and Welfare of Missouri

Samples collected by - Wilsons Creek Battlefield
Date of collection - 5/27/69
Place - Wilsons Creek, Republic
Date Reported - 6/1/69

Laboratory Number
Source of Sample

Residence
Office Address

To meet Division of Health bacteriological standards a public water supply shall conform to the following:
The arithmetic mean coliform density of all standard samples examined per month shall not exceed one per 100 ml. Coliform colonies per standard sample shall not exceed four per hundred milliliters in:
(a) Two consecutive samples;
(b) More than one standard sample when less than 20 are examined per month;
(c) More than five per cent of the standard samples when 20 or more are examined per month.
The above examinations were made by the Division of Health Laboratories in accordance with the latest edition of Standard Methods for the Examination of Water and Waste Water.
By direction of the director, Division of Health

RECEIVED	
NATIONAL PARK SERVICE LAND AND WATER RIGHTS Bureau of Environmental Services	
JUN 9 - 1969	
SAN FRANCISCO, CALIF	

Missouri Health Dept.
Division of Health
Bureau of Environmental Services
Land and Water Rights

2-2-69 Mr. Geron
Witlock

Department of Public Health and Welfare of Missouri
DIVISION OF HEALTH

REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES
Membrane Filter Technique

Samples collected by - Maier Ct.
Date of collection - 5/5/69
Place - Wilson's Creek Battlefield National Park, Republic, Missouri
Date Reported - 5/13/69

<u>Laboratory Number</u>	<u>Source of Sample</u>	<u>Number of Coliform Organisms Per 100 ml. portion</u>
15615	office (256)	less than one
15616	residence (1956)	less than one

To meet Division of Health bacteriological standards a public water supply shall conform to the following:

The arithmetic mean coliform density of all standard samples examined per month shall not exceed one per 100 ml. Coliform colonies per standard sample shall not exceed four per hundred milliliter in:

- (a) Two consecutive samples;
- (b) More than one standard sample when less than 20 are examined per month or;
- (c) More than five per cent of the standard samples when 20 or more are examined per month.

The above examinations were made by the Division of Health Laboratories in accordance with the latest edition of Standard Methods for the Examination of Water and Waste Water.

By direction of the director, Division of Health

AR

Managerment Assistant
Dept. of Health, Education & Welfare
District #5
Greene Co. Health Dept.

L. F. Garber
L. F. Garber, Director
Bureau of Environmental Services

thermofax to:

SFC - Attn. Mr. Gerard Witucki ✓

ac
Docket Material

RECEIVED	
San Francisco Planning and Service Center	
Office of Land and Water Rights	
NATIONAL PARK SERVICE	
MAY 21 1969	
ACT. INFO.	INITIALS/DATE
CHIEF	
ASS'T CHIEF	
Coord & Contr	
APPRAISAL	
ACQUISITION	
EXCHANGE	
WATER RIGHTS	<i>[Signature]</i> 5/23
FILE	



IN REPLY REFER TO:

L54 WSC-OLW

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
WASHINGTON PLANNING AND SERVICE CENTER
1730 NORTH LYNN STREET
ARLINGTON, VIRGINIA 22209

March 13, 1969

RECEIVED	
Jan. Feb. Mar. Planning and Service Center	
Office of Land and Water Rights	
NATIONAL PARK SERVICE	
MAR 17 1969	
ACT. INFO.	INITIALS DATE
CHIEF	
1 ASST. CHIEF	/
TAPP ASST.	
22 & Contn	
APPRAISAL	
ACQUISITION	
EXCHANGE	
13 WATER RIGHTS	/
3 FILE	8/7

Memorandum

To: Chief, Office of Land and Water Rights, SSC
Attention: Supervisory Hydraulic Engineer

From: Chief, Office of Land and Water Rights, WSC

Subject: Water Right Docket No. 1 - Headquarters Well
Wilson Creek Battlefield National Park

Enclosed is subject file for your information and files.


Richard L. Stanton

Enclosure

Department of Public Health and Welfare of Missouri
DIVISION OF HEALTH

REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES
Membrane Filter Technique

Samples collected by - C. T. Meier
Date of collection - 1/69
Place - Wilsons Creek, Republic
Date Reported - 2/4/69

Laboratory Number	Source of Sample	Number of Coliform Organisms Per 100 ml. portion
10746	trailer	less than 1
10747	res. #6	less than 1

To meet Division of Health bacteriological standards a public water supply shall conform to the following:

The arithmetic mean coliform density of all standard samples examined per month shall not exceed one per 100 ml. Coliform colonies per standard sample shall not exceed four per hundred milliliter in:

- (a) Two consecutive samples;
- (b) More than one standard sample when less than 20 are examined per month or;
- (c) More than five per cent of the standard samples when 20 or more are examined per month.

The above examinations were made by the Division of Health Laboratories in accordance with the latest edition of Standard Methods for the Examination of Water and Waste Water.

By direction of the director, Division of Health

hw
Management Assistant, Wilsons Creek
Dept. of HEW
District No. 5
Greene County Health Dept.

L. F. Garber
L. F. Garber, Director
Bureau of Environmental Services

Thermofax to:
WSC - Arlington, VA.
Attn: Dick Hetchum
E 2.07D - Rev. 11/67 2-10-69

RECEIVED	
San Francisco Planning and Service Center	
Office of Land and Water Rights	
NATIONAL PARK SERVICE	
FEB 19 1969	
ACT. INFO.	INVEST. DATE
1	CHIEF
	ASST CHIEF
	SST.
	APPROVAL
	ACQUISITION
	EXCHANGE
✓ 3	WATER RIGHTS
	FILE

File - Water Rts.

Department of Public Health and Welfare of Missouri
DIVISION OF HEALTH

REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES
Membrane Filter Technique

Samples collected by - Meier
Date of collection - 1/7/69
Place - Wilsons Creek, Republic
Date Reported - 1/14/69

Laboratory Number	Source of Sample	Number of Coliform Organisms Per 100 ml. portion
9556	res. #6	less than 1
9557	office trailer	less than 1

To meet Division of Health bacteriological standards a public water supply shall conform to the following:

The arithmetic mean coliform density of all standard samples examined per month shall not exceed one per 100 ml. Coliform colonies per standard sample shall not exceed four per hundred milliliter in:

- (a) Two consecutive samples;
- (b) More than one standard sample when less than 20 are examined per month or;
- (c) More than five per cent of the standard samples when 20 or more are examined per month.

The above examinations were made by the Division of Health Laboratories in accordance with the latest edition of Standard Methods for the Examination of Water and Waste Water.

By direction of the director, Division of Health

hw
Management Assistant, Wilsons Creek
Dept. of HEW
District No. 5
Greene County Health Dept.

L. F. Garber
L. F. Garber, Director
Bureau of Environmental Services

ThermoFax to:
WSC-Arlington, Va.
Attn: Dick Ketchum
E 2.07D - Rev. 11/67 2-10-69

Ketichan

Water Resources Division
P.O. Box 340
Rolla, Missouri 65401

August 22, 1968

Superintendent
National Park Service
George W. Carver National Monument
Diamond, Mo. 64840

Dear Sir:

Enclosed, for your information, is a copy of the results of a chemical analysis made on a water sample collected from the well at the Wilson Creek Battlefield National Park, Missouri.

Very truly yours,

Anthony Homyk
District Chief

Enclosure

cc: Garland Moore ✓
Washington Service Center
National Park Service
Arlington, Va. 22200
w/enclosure

REVISED

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

2GW

WATER ANALYSIS

28N-23W-Sec. 26

Location Wilson Creek Battlefield National Monument, Missouri, / County Greene
 Source Drilled well Depth (ft) _____ Diam (in.) _____
 Cased to (ft) _____ Date drilled _____ Point of coll. _____
 Owner U. S. National Park Service
 Treatment _____ Use _____
 WBF _____ WL _____ Yield _____
 Temp _____ Appear. when coll. clear
 Collected January 16, 1968 By P. W. Cross
 Remarks _____

	mg/l	me/l		mg/l	me/l
Silica (SiO ₂)	7.0		Bicarbonate (HCO ₃)	206	3.38
Aluminum (Al)			Carbonate (CO ₃)	0	.00
Iron (Fe)	1.3				
Manganese (Mn)	.04		Sulfate (SO ₄)	17	0.35
			Chloride (Cl)	1.2	.03
			Fluoride (F)	.4	.02
Calcium (Ca)	41	2.04			
Magnesium (Mg)	18	1.48	Nitrate (NO ₃)	.2	.00
Sodium (Na)	2.5	.11	Phosphate (PO ₄)	.00	
Potassium (K)	3.3	.08			
Total		3.71	Total		3.78

	mg/l		
		Specific conductance (micromhos at 25° C)	343
Dissolved solids:		pH	8.1
Calculated	193	Color	1
Residue on evaporation at 180°C	186		
Hardness as CaCO ₃	176		
Noncarbonate	7		

Lab. No. 36915

Field No.

Project



IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
WASHINGTON PLANNING AND SERVICE CENTER
1730 NORTH LYNN STREET
ARLINGTON, VIRGINIA 22209

L54 WSC-OLW

July 26, 1968

Memorandum

To: Chief, Office of Land and Water Rights, SSC
Attention: Supervisory Hydraulic Engineer

From: Chief, Office of Land and Water Rights, WSC

Subject: Transfer of responsibility

In accordance with Director Hartzog's memorandum of May 13 we are forwarding under separate cover our files for the areas that are now serviced by your office. We are enclosing the replies received in this office for preliminary water resources studies and acquisition of water rights program 1970 - 1978 F.Y.

Richard L. Stanton

Enclosures

Separate cover:

Water Rights Docket Files -
✓ Effigy Mounds NM
✓ George Washington Carver NM
✓ Grand Portage NM
✓ Pipestone NM
✓ Wilson Creek Battlefield NP

Correspondence Files -

✓ Effigy Mounds NM
✓ George Washington Carver NM
✓ Grand Portage NM
✓ Herbert Hoover NHS
✓ Wilson Creek Battlefield NP

cc:

Chief, Branch of Water Resources, WASO
Regional Director, Midwest

*George Washington Carver NM
Grand Portage NM
Pipestone NM
Wilson Creek Battlefield NP
Herbert Hoover NHS
Effigy Mounds NM*

158
154 WSC-OLW

July 25, 1967

INITIAL AND DATE	
Reg. Director	
Mrs. Howe	
Operations	
Administration	
Pub. Aff. F&SA	
Prog. Coord.	
Arch. Res.	
Actn. Tkn. & Date	
File	

Memorandum

To: Regional Director, Midwest
From: Chief, Office of Land and Water Rights, WSC
Subject: Water Right Docket No. 1, Wilson Creek

By copy of this memorandum, this office is assigning a number to the subject water right docket and distributing copies to the offices which keep a file of these water rights instruments. Four copies are available for this purpose, one is being retained in our file and the other distributions are to your Office, the Superintendent's Office, and to the Design and Construction Office in Philadelphia.

An available extra copy of the contents is also being sent, by copy of this memorandum, to the San Francisco Planning and Service Center, Office of Land and Water Rights for their indulgence regarding the closing paragraph of the Superintendent's transmittal memorandum, dated December 2, 1966. They may add any useful additional material they see fit to the present contents which consist of:

1. Superintendent's memorandum of December 2, 1966
2. Narrative report by Troy F. Carr, Project Supervisor
3. Copy of Contract No. 14-10-0232-1062

ONVHV' WEWY2KV
MILLONAT 548K ZEWAIKE

1967 JUL 31 PM 1 58

Richard L. Stanton

Enclosure

cc:
 Superintendent, Wilson Creek
 SAC, OLW
 Chief, SAC, FSC

REGIONAL OFFICE
MIDWEST
RECEIVED



IN REPLY REFER TO:

L54

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
GEORGE W. CARVER NATIONAL MONUMENT
DIAMOND, MISSOURI - 64840

December 2, 1966

NATIONAL PARK SERVICE	
DEC 3 1966	
1 Chief	2/5
Asst. Chief	
Realty	
Appraisal	
Water Rights	
Cartographic	
File	

Memorandum

To: Chief, Office of Land and Water Rights, WSC
From: Superintendent, George Washington Carver
Subject: Test well drilling, Wilson's Creek

In response to Mr. Dick Ketchum's telephone request of December 1, we are enclosing one copy of the Narrative Report, Driller's Log, Form 10-194 Unit Price Contract, and three pictures, all of which will ultimately be a part of the Completion Report covering the construction and installation of utility systems at the interim headquarters of Wilson's Creek Battlefield National Park. This well is located approximately 75 feet west of the northwest corner of the utility building, see Drawing No. NB-WC-3014 for further information.

This material relates to the subject of Mr. E. W. Reed's memorandum of November 23, and we have been further advised by Mr. Harvey Reynolds of the Midwest Regional Office that the files relating to this particular contract are all in the San Francisco Service Center.

David L. Hieb
David L. Hieb
Superintendent

Enclosure

cc:
Regional Director, Midwest, w/o enc.

DEC 2 3 1966

NARRATIVE

**EXPLORATORY TEST WATER WELL
WILSON'S CREEK BATTLEFIELD NATIONAL PARK
SPRINGFIELD, MISSOURI**

**CONTRACT NO.
14-10-0232-1062**

**GERALD SILL DRILLING CO.,
INC., SPRINGFIELD, MO.,
CONTRACTOR**

Bids were opened July 13, 1965 for construction of Exploratory Test Water Well with Gerald Sill Drilling Company, Inc. submitting the low bid of three bids.

Construction began on August 26, 1965 and progress was good until September 8, when, after reaching a depth of 425 feet and having installed 300 feet of 6" casing, 80 feet of which was lost in the hole, the contractor elected to start a new one. This abandoned hole was filled with cement grout as suggested by Mr. Knight of the Missouri Geological Survey, using 136 bags of cement.

A new site was picked on September 9 and drilling began anew; and a well was completed to a depth of 550 feet, with 300 feet of 6" ID casing cemented in place, on October 1, 1965; using 83 bags of cement.

CHANGE ORDERS

No. 1 consisted of reaming and installing 10" ID casing from 0 - 75 feet. This change was necessary, due to a cave being encountered at 57 - 68 feet below ground surface, thereby preventing the proper grouting of the 6" casing.

Materials Used

6" ID Casing

**Harry Cooper Supply Co.
Springfield, Mo.**

10" ID Casing

**Harry Cooper Supply Co.
Springfield, Mo.**

Portland Cement

**Halliburton Co.
Duncan, Okla.**

**Troy F. Carr
Project Supervisor**

U.S. DEPARTMENT OF PUBLIC HEALTH AND WELFARE
DIVISION OF HEALTH

GOV-Fed-Interior-Wilson's
Creek Battlefield
National Park

REPORT OF CHEMICAL ANALYSIS OF WATER SAMPLE

PARTS PER MILLION

*Headquarter
Supply Well 1-A.*

Place Wilson's Creek Battlefield
National Park, Diamond Date 10/11/65 Lab. No. R-10664
9/30/65 National Park Service
Date Collected no information Collected By no information Analysis By _____

Source of Sample (give detailed information such as, direct from well, distribution system, treated water, etc.) _____

new well No. 1-A (Headquarters Area); Sample obtained from well after disinfecting
and during Test Pumping operations; Untreated Supply

Turbidity None Odor: (Cold) 46 degrees Color Clear

Carbon Dioxide (CO₂) _____ pH 7.7

Alkalinity (CaCO₃) _____

Phenolphthalein 0

Total 162.0

Bicarbonates (HCO₃) 196.8

Carbonates (CO₃) 0

Hydroxide (OH) _____

Insoluble _____

Silica (SiO₂) _____

Iron and Aluminum Oxides (Al₂O₃Fe₂O₃) _____

Iron (Fe) _____

Total 0.1

Dissolved _____

Precipitated _____

Aluminum (Al) _____

Manganese (Mn) 0

Sodium (Na) 3.1

Potassium (K) 2.0

Calcium (Ca) 42.4

Magnesium (Mg) 16.0

Nitrate (NO₃) 0.32 ✓

Sulfates (SO₄) low

Chlorides (Cl) 4.7

Fluorides (F) 0.5

Residue on Evaporation

Total _____

Dissolved _____

Suspended _____

Loss on Ignition _____

Total Hardness (CaCO₃) 172.0

Carbonate Hardness (CaCO₃) 162.0

Non-Carbonate Hardness (CaCO₃) 10.0

Special Determinations:

Remarks:

as

William A. Mott

District No. 5

L. F. Garber

L. F. GARBER, Chief
ENVIRONMENTAL SERVICES

NATIONAL BANK
 CLEEK BATTLEFIELD
 COAL-BED-INTERIOR-MITCHELL



DIVISION OF GEOLOGICAL SURVEY AND WATER RESOURCES
DEPARTMENT OF BUSINESS AND ADMINISTRATION
BUEHLER PARK ROLLA MISSOURI 65401 314-364-1752

WILLIAM C. HAYES STATE GEOLOGIST AND DIRECTOR

October 4, 1965

Our file: Greene County
Sec. 23, T. 28 N., R 23 W
Wilson Creek Battlefield
Log No. 23756

Mr. William A. Mott, Engineer
National Park Service
1709 Jackson Street
Omaha 2, Nebraska

Dear Mr. Mott:

Enclosed are five prints of the self potential, resistivity and gamma logs which we ran October 1, 1965 in the new Park Service well at the above location.

The self potential and resistivity was run on one trip and the gamma was run on another trip. The total depth reported by the driller as being 550 feet was confirmed. Several feet of soft "mud" is in the bottom of the hole. Bottom of casing was at 300 feet. These depths were measured from ground surface.

A single point electrode is most valuable for making lithological interpretations. To make calls of points at which water is entering the hole is riskier from such data. Because you asked for this interpretation the following tabulates possible point and zones of water production: 372', 425', 465', 500-511', and 528-534 feet.

Yours very truly,

A handwritten signature in cursive script, appearing to read "Dale L. Fuller".

Dale L. Fuller
Senior Geologist

DLF:ar

Enclosures

Form 10-194
(Rev. 9-60)UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE**Wilson's Creek Battlefield NP**

(Park)

Check One:

Monthly
Estimate ☐Final
Estimate ☒

UNIT PRICE CONTRACT

ESTIMATE NO. 1 - Final	FOR (Period) Contract Period	DATE 10/8/65
CONTRACT NO. 14-10-0232-1062	COMPLETION DATE 10/1/65	EXTENDED DATE 10/11/65
CONTRACTOR Gerald Sill Drilling Company, Inc.		ORIGINAL CONTRACT \$ 12,812.00
PROJECT Exploratory Test Water Well, Wilson's Creek NHP		CHANGE ORDERS* \$ 1,206.00
LOCATION Wilson's Creek NHP, Springfield, Missouri		TOTAL CONTRACT \$ 3,501.00

ITEM NO.	CONTRACT QUANTITY	DESCRIPTION	QUANTITY TO DATE	UNIT PRICE	AMOUNT TO DATE
1	1 LS	Moving all equipment including auxiliary power plant if required, and construction materials on and off the site in order to complete the work in conformance with the specifications and drawings.	100%	LS	900.00
2	825 LF	Drilling from surface to 530' a test hole suitable to allow placement of a 6" ID casing if necessary.	530'	4.00	2,200.00
3	1 LS	Electric logging of the well hole 0' to 530'	0	LS	0
4	2 Installations	Furnish, set and dismantle test pump and pertinent equipment	2	500.00	1,000.00
5	150 LF	Reaming test hole 0' - 150' in unconsolidated formations to an inside diameter large enough to allow the subsequent installation of 6" ID casing and 2" minimum grout ring	150'	6.00	900.00

RECOMMENDED (Project Supervisor) roy P. Carr	SUMMARY
APPROVED (Contracting Officer) W. L. Hieb, Superintendent	TOTAL TO DATE \$ 3,501.00
DATE	LESS RETAINED AMOUNT 0.00
	NET \$ 3,501.00
	LESS PREVIOUS PAYMENTS 0.00
	LESS LIQUIDATED DAMAGES 0.00
	DUE THIS ESTIMATE \$ 3,501.00
	% COMPLETED TO DATE 100%

*Show Breakdown on Reverse

(See Reverse for Distribution)

Form 10-194a
(12 61)UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

UNIT PRICE CONTRACT CONTINUATION SHEET

Contract No. 14-10-0232-1042		Contractor Gerald Sill Drilling Company, Inc.			
ITEM NO.	CONTRACT QUANTITY	DESCRIPTION	QUANTITY TO DATE	UNIT PRICE	AMOUNT TO DATE
5a	300 LF	Reaming test hole 150' - 450' in rock formations to an inside diameter large enough to allow the subsequent installation of 6" ID casing and 2" minimum grout ring (See Addendum No. 1).	150'	6.00	900.00
6	450 LF	6" ID casing only furnished and installed.	300'	4.50	1,350.00
7	205 Sacks	Furnish and install cement and most grout entire length of casing with 2" minimum ring.	83	3.00	249.00
8	12 Hr.	Furnish all equipment and crew for development and experimental work as directed.	8	8.00	64.00
9	8 Hr.	Standby time for crew and equipment.	0	4.00	0
10	24 Hr.	Test pumping and determination of available potential yield.	22	6.00	132.00
11	100 LF	Plugging test well hole which has been abandoned by direction of the Government through no fault of the contractor.	0	1.00	0
CHANGE ORDER NO. 1					
1	75 LF	Furnish all labor, equipment, and material to room in unconsolidated and weak formations large enough to allow the subsequent installation of approximately 75 ft. of 10" ID, 32.75 lbs. per ft. casing and furnish and install above casing.	75'	16.08	1,206.00



DIVISION OF GEOLOGICAL SURVEY AND WATER RESOURCES
DEPARTMENT OF BUSINESS AND ADMINISTRATION
BUEHLER PARK ROLLA MISSOURI 65401 314-364-1752

WILLIAM C. HAYES STATE GEOLOGIST AND DIRECTOR

October 4, 1965

Our file: Greene County
Sec. 23, T. 28 N., R 23 W
Wilson Creek Battlefield
Log No. 23756

Mr. William A. Mott, Engineer
National Park Service
1709 Jackson Street
Omaha 2, Nebraska

Dear Mr. Mott:

Enclosed are five prints of the self potential, resistivity and gamma logs which we ran October 1, 1965 in the new Park Service well at the above location.

The self potential and resistivity was run on one trip and the gamma was run on another trip. The total depth reported by the driller as being 550 feet was confirmed. Several feet of soft "mud" is in the bottom of the hole. Bottom of casing was at 300 feet. These depths were measured from ground surface.

A single point electrode is most valuable for making lithological interpretations. To make calls of points at which water is entering the hole is riskier from such data. Because you asked for this interpretation the following tabulates possible point and zones of water production: 372', 425', 465', 500-511', and 528-534 feet.

Yours very truly,

A handwritten signature in cursive script, appearing to read "Dale L. Fuller".

Dale L. Fuller
Senior Geologist

DLF:ar

Enclosures

Department of Public Health and Welfare of Missouri
 DIVISION OF HEALTH
 District # 5 Laboratory
REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES

Samples collected by - Earl White
 Date of collection - 9/29/65 10:15
 Place - Battlefield Greene County
 Date reported - Oct. 4, 1965

Laboratory Number	Source of Sample	Number of Coliform Organisms Per 100 ml. portion
3976	U.S. Park Service Tap At well Well #1A Drilled Well Municipal	< 5

Based upon Division of Health bacteriological standards, the above results indicate that, at the time the sample was collected, this water was Safe for drinking purposes.

The safety of a water supply depends upon proper construction and protection against contamination. A favorable bacteriological analysis alone should not be accepted as conclusive evidence of the safety of a water supply unless a survey of the supply indicates no sanitary defects. It is recommended that a water supply used for drinking purposes be analyzed routinely.

The above examinations were made by the Division of Health Laboratories in accordance with the latest edition of Standard Methods for the Examination of Water, Sewage, and Industrial Waste.

By direction of the Director, Division of Health.


 L. F. GARBER, Chief
 ENVIRONMENTAL SERVICES

REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES

LABORATORY OF THE ARMY

Sample No.

Date

Location

Remarks

Col. A. J. D. S.

NATIONAL PARK SERVICE
OMAHA, NEBRASKA

1965 OCT 8 AM 10 00

RECEIVED
MIDWEST
REGIONAL OFFICE

U.S. Park Service

Field Station

Field Office

Field Office

Field Office

The water sample was collected from the battlefield area on October 8, 1965, at approximately 10:00 AM. The sample was collected from a shallow well in the battlefield area.

The water sample was analyzed for total coliforms, fecal coliforms, and fecal streptococci. The results of the analysis are as follows: Total coliforms: 100 per 100 ml; Fecal coliforms: 10 per 100 ml; Fecal streptococci: 10 per 100 ml.

The water sample was found to be contaminated with coliform bacteria, which may indicate the presence of fecal matter. The results of the analysis are as follows: Total coliforms: 100 per 100 ml; Fecal coliforms: 10 per 100 ml; Fecal streptococci: 10 per 100 ml.

Department of Public Health and Welfare of Missouri
 DIVISION OF HEALTH
 District #5 Laboratory
REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES

Samples collected by - Earl White
 Date of collection - 9/29/65 10:15
 Place - Battlefield Greene County
 Date reported - Oct. 4, 1965

Laboratory Number	Source of Sample	Number of Coliform Organisms Per 100 ml. portion
3976	U.S. Park Service Tap At well Well #1A Drilled Well Municipal.	< 5

Based upon Division of Health bacteriological standards, the above results indicate that, at the time the sample was collected, this water was Safe for drinking purposes.

The safety of a water supply depends upon proper construction and protection against contamination. A favorable bacteriological analysis alone should not be accepted as conclusive evidence of the safety of a water supply unless a survey of the supply indicates no sanitary defects. It is recommended that a water supply used for drinking purposes be analyzed routinely.

The above examinations were made by the Division of Health Laboratories in accordance with the latest edition of Standard Methods for the Examination of Water, Sewage, and Industrial Waste.

By direction of the Director, Division of Health.


 L. F. GARBER, Chief
 ENVIRONMENTAL SERVICES

Department of Public Health and Welfare of Missouri
 DIVISION OF HEALTH
 District # 5 Laboratory
REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES

Samples collected by — Earl White
 Date of collection — 9/29/65 10:00
 Place — Battlefield Greene Co.
 Date reported — Oct. 4, 1965

Laboratory Number	Source of Sample	Number of Coliform Organisms Per 100 ml. portion
3965	U.S. Park Service Tap at Well #1A Bored Well Municipal	< 5

Based upon Division of Health bacteriological standards, the above results indicate that, at the time the sample was collected, this water was Safe for drinking purposes.

The safety of a water supply depends upon proper construction and protection against contamination. A favorable bacteriological analysis alone should not be accepted as conclusive evidence of the safety of a water supply unless a survey of the supply indicates no sanitary defects. It is recommended that a water supply used for drinking purposes be analyzed routinely.

The above examinations were made by the Division of Health Laboratories in accordance with the latest edition of Standard Methods for the Examination of Water, Sewage, and Industrial Waste.

By direction of the Director, Division of Health.


 L. F. GARBER, Chief
 ENVIRONMENTAL SERVICES

STATE OF
MISSOURI

DIVISION OF GEOLOGICAL SURVEY AND WATER RESOURCES
DEPARTMENT OF BUSINESS AND ADMINISTRATION
BUEHLER PARK ROLLA MISSOURI 65401 314-364-1752

WILLIAM C. HAYES STATE GEOLOGIST AND DIRECTOR

September 15, 1965

Our file: Greene County
sec. 23, T. 28N, R. 23W

Mr. Troy Carr
U. S. Department of Interior
Nashville Park Service
Wilson Creek National Battlefield Park
P.O. Box 486
Brookline, Missouri

Dear Mr. Carr:

We have received and examined cuttings to a depth of 505 feet in the well being drilled by you for the Wilson Creek Battlefield.

It is believed the satisfactory casing depth has been reached at 300 feet. I suggest that upon completion of the setting of this casing that a copy of the casing record be sent to us in order that we can complete the log.

If we can be of any further service, please feel free to call on us.

Yours truly,

Robert D. Knight
Senior Geologist

RDK:ljs

Enclosures: 4

cc: Mr. Earl White
Mr. Lewis F. Garber
Mr. Glen Harwell

Well #1-A

J.F.C.

GERALD "L" DRILLING CO., INC.
S & D DRILLING EQUIPMENT & SUPPLY CO.

Rotary and Churn Drilling Myers Pumps Complete Well and Pump Service
 Box 1075 Commercial St. Station Phone UN 6-7341-UN 6-5009
JOPLIN SPRINGFIELD SEYMOUR

DRILLERS REPORT AND WELL LOG

CUSTOMER		National Park Service, Wilson's Creek Battlefield NP	
LOCATION		Springfield, Mo. -- on "ZZ" Highway	
DATE STARTED		9-9-65	DATE FINISHED 9-24-65
Well Depth	Casing	6-1/4 Cemented	REAMING
850'	300'	83 socks Halliburton	300' 10"
Static	GPM	Draw Down	Size Hole
123'	72'		Start Finish
FROM	TO	SOIL AND ROCK DESCRIPTION	
0	8	Clay & Boulders	
8	55	White Limestone w/White Flint	
55	89	White Limestone w/Gray & White & Brown Flint	
89	90	Broken Flint w/Brown Returns, Little Mud.	
90	95	White Limestone w/Gray & White Flint	
95	97	White Limestone w/Gray & Brown Flint w/little ^{corrosive} Rock	
97	105	Gray Limestone w/Brown Flint w/little Shale Strks.	
105	130	White and Gray Flint	
130	210	Gray Limestone w/Blue & Gray & Brown Flint	
210	225	Gray Limestone w/Gray Flint	
225	235	Gray Limestone w/Shale	
235	267	Gray Limestone w/Gray & White Flint	
267	251	Broken Formation	
251	280	Gray Limestone w/Gray & Blue & White Flint	
280	295	Gray Limestone w/Sand	
295	415	Gray Limestone w/Gray & White & Brown Flint	
415	430	Gray Limestone w/Blue & Gray Flint	
430	515	Gray Limestone w/Gray & White Flint	
515	525	Red Limestone	
525	550	Gray Limestone w/Gray & Brown & Blue Flint	

DRILLER NAME	REMARKS
	Sharpened Bit @220'
	Changed to Tricone @430'
	Changed Bit @505'
RIG #	FUEL
1	
	OIL
	GREASE

NARRATIVE

EXPLORATORY TEST WATER WELL WILSON'S CREEK BATTLEFIELD NATIONAL PARK SPRINGFIELD, MISSOURI

**CONTRACT NO.
14-10-0232-1062**

**GERALD SILL DRILLING CO.,
INC., SPRINGFIELD, MO.,
CONTRACTOR**

Bids were opened July 15, 1945 for construction of Exploratory Test Water Well with Gerald Sill Drilling Company, Inc. submitting the low bid of three bids.

Construction began on August 24, 1945 and progress was good until September 8, when, after reaching a depth of 425 feet and having installed 300 feet of 6" casing, 80 feet of which was lost in the hole, the contractor elected to start a new one. This abandoned hole was filled with cement grout as suggested by Mr. Knight of the Missouri Geological Survey, using 135 bags of cement.

A new site was picked on September 9 and drilling began anew; and a well was completed to a depth of 350 feet, with 300 feet of 6" ID casing cemented in place, on October 1, 1945, using 83 bags of cement.

CHANGE ORDERS

No. 1 consisted of reaming and installing 10" ID casing from 0 - 75 feet. This change was necessary, due to a cave being encountered at 57 - 68 feet below ground surface, thereby preventing the proper grouting of the 6" casing.

Materials Used

6" ID Casing	Harry Cooper Supply Co. Springfield, Mo.
10" ID Casing	Harry Cooper Supply Co. Springfield, Mo.
Portland Cement	Halliburton Co. Duncan, Okla.

Troy F. Carr
**Troy F. Carr
Project Supervisor**

G. L. S. L. DRILLING CO., INC.
S & D DRILLING EQUIPMENT & SUPPLY CO.

Rotary and Cased Drilling Myers Pumps Complete Well and Pump Service
 Box 1075 Commercial St. Station Phones UN 6-7341-UN5-5800
JOPLIN SPRINGFIELD KEYSBORO

DRILLERS REPORT AND WELL LOG

Headquarters - Well 1-A

CUSTOMER **National Park Service, Wilson's Creek Battlefield NP**
 LOCATION **Springfield, Mo. -- on "ZZ" Highway**
 DATE STARTED **9-9-65** DATE FINISHED **9-24-65**
 Well Depth **550'** Casing **6-1/4 Cementum** REAMING
300' **83 ccs. Halliburton** **300 - 10"**
 Static GPM Draw Down Size Hole Start Finish
125' **75 f**

FROM	TO	SOIL AND ROCK DESCRIPTION
0	8	Clay & Boulders
8	33	White Limestone w/White Flint
33	89	White Limestone w/Gray & White & Brown Flint
89	90	Broken Flint w/Brown Returns, Little Mud.
90	95	White Limestone w/Gray & White Flint
95	97	White Limestone w/Gray & Brown Flint w/little Cotton Rock
97	105	Gray Limestone w/Brown Flint w/little Shale Str.
105	150	White and Gray Flint
150	210	Gray Limestone w/Blue & Gray & Brown Flint
210	223	Gray Limestone w/Gray Flint
223	235	Gray Limestone w/Shale
235	247	Gray Limestone w/Gray & White Flint
247	251	Broken Formation
251	280	Gray Limestone w/Gray & Blue & White Flint
280	295	Gray Limestone w/Sand
295	415	Gray Limestone w/Gray & White & Brown Flint
415	430	Gray Limestone w/Blue & Gray Flint
430	515	Gray Limestone w/Gray & White Flint
515	525	Dark Limestone
525	550	Gray Limestone w/Gray & Brown & Blue Flint

DRILLER NAME	REMARKS
	Sharpened Bit @220'
	Changed to Tr:cons @430'
	Changed Bit @505'
RIG #	FUEL
	GREASE

Form 10-194
(Rev. 9/60)UNITED STATES DEPARTMENT OF INTERIOR
NATIONAL PARK SERVICE**Wilson's Creek Battlefield NP**

(Park)

Check One:

Monthly
Estimate☐Final
Estimate☒

UNIT PRICE CONTRACT

ESTIMATE NO. 1 - Final	FOR (Period) Contract Period	DATE 10/8/65
CONTRACT NO. 14-10-0232-1062	COMPLETION DATE 10/1/65	EXTENDED DATE 10/11/65
CONTRACTOR Gerald Sill Drilling Company, Inc.		ORIGINAL CONTRACT \$ 12,812.00
PROJECT Exploratory Test Water Well, Wilson's Creek BNP		CHANGE ORDERS* \$ 1,206.00
LOCATION Wilson's Creek BNP, Springfield, Missouri		TOTAL CONTRACT \$ 8,501.00

ITEM NO.	CONTRACT QUANTITY	DESCRIPTION	QUANTITY TO DATE	UNIT PRICE	AMOUNT TO DATE
1	1 LS	Moving all equipment including auxiliary power plant if required, and construction materials on and off the site in order to complete the work in conformance with the specifications and drawings.	100%	LS	500.00
2	825 LF	Drilling from surface to 550' a test hole suitable to allow placement of a 6" ID casing if necessary.	550'	4.00	2,200.00
3	1 LS	Electric logging of the well hole 0' to 550'	0	LS	0
4	2 Installations	Furnish, set and dismantle test pump and pertinent equipment	2	500.00	1,000.00
5	150 LF	Reaming test hole 0' - 150' in unconsolidated formations to an inside diameter large enough to allow the subsequent installation of 6" ID casing and 2" minimum grout ring	150'	6.00	900.00

RECOMMENDED (Project Supervisor)	SUMMARY
Ray F. Carr	TOTAL TO DATE \$ 8,501.00
APPROVED (Contracting Officer)	LESS RETAINED AMOUNT..... 0.00
David L. Hieb, Superintendent	NET..... 8,501.00
DATE	LESS PREVIOUS PAYMENTS..... 0.00
	LESS LIQUIDATED DAMAGES..... 0.00
	DUE THIS ESTIMATE..... 8,501.00
	% COMPLETED TO DATE: 100%

Form 10-194a
(12/61)UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

UNIT PRICE CONTRACT CONTINUATION SHEET

Contract No. 14-10-0232-1042		Contractor Gerald Hill Drilling Company, Inc.			
ITEM NO.	CONTRACT QUANTITY	DESCRIPTION	QUANTITY TO DATE	UNIT PRICE	AMOUNT TO DATE
5a	300 LF	Reaming test hole 150' - 450' in rock formations to an inside diameter large enough to allow the subsequent installation of 6" ID casing and 2" minimum grout ring (See Addendum No. 1).	150'	6.00	900.00
6	450 LF	6" ID casing only furnished and installed.	300'	4.50	1,350.00
7	205 Sacks	Furnish and install cement and most grout entire length of casing with 2" minimum ring.	83	3.00	249.00
8	12 Hr.	Furnish all equipment and crew for development and experimental work as directed.	0	8.00	64.00
9	8 Hr.	Standby time for crew and equipment.	0	4.00	0
10	24 Hr.	Test pumping and determination of available potential yield.	22	6.00	132.00
11	100 LF	Plugging test well hole which has been abandoned by direction of the Government through no fault of the contractor.	0	1.00	0
CHANGE ORDER NO. 1					
1	75 LF	Furnish all labor, equipment, and material to run in unconsolidated and rock formations large enough to allow the subsequent installation of approximately 75 ft. of 10" ID, 32.75 lbs. per ft. casing and furnish and install above casing.	75'	16.00	1,200.00

STATE OF
MISSOURI

DIVISION OF GEOLOGICAL SURVEY AND WATER RESOURCES
DEPARTMENT OF BUSINESS AND ADMINISTRATION
BUEHLER PARK ROLLA MISSOURI 65401 314-364-1752

WILLIAM C. HAYES STATE GEOLOGIST AND DIRECTOR

September 1, 1965

Our File: Greene County
Sec. 23, T. 28N, R. 27W
Wilson Creek Natl

Reg. Director	R
Mrs. Howe	E
Operations	T
Administration	U
Coop. Act.	R
Pub. Affairs	N
Development	T
Res. Stu.	O
Field Stn.	P
	I
	S
	P
	R
	O
	M
	P
	T
	L

Action taken
2-2-65
File 1-2-65

Mr. William A. Mott, P.E.
Hydraulic Engineer
National Park Service
1709 Jackson Street
Omaha 2, Nebraska

Dear Mr. Mott:

We have received and examined cuttings to a depth of 285 feet in the well being drilled by Sill & Dennis for the Wilson Creek National Battlefield.

The base of the Swan Creek is found to be at 285 feet, however, I suggested that the casing be set to 295 feet. The approved casing depth for this well is 295 feet.

It was nice seeing you again yesterday and will look forward to another visit with you very soon.

If we can be of further service to you at any time, please do not hesitate to call upon us.

Very truly yours,

Robert D. Knight
Robert D. Knight
Senior Geologist

RDK:jo

cc: Mr. Lewis F. Garber
Mr. Glen Harwell
Mr. Earl White
Sill & Dennis Drilling Company

UN 5-8261 FTS. Springfield, Mo.
865-8-51
Cummings 215-597-7008 9/2/65
WICR 417-(PE)732-2903. 2:10 P.M.
To: Cummings EODC
From: Mott - WICR.

Pitless Adapter, 4'

400
Jeff City

600

To: Regional Office. 9/2/65
From: Mott - WICR
Subject: Delay in Grouting Water Well.

Willie's Creek Battlef. Id.

Volume of Cement

Volume Casing - Bore ($6\frac{5}{8}$ " O.D. Casing) ($10\frac{1}{2}$ " Bore) Using $10\frac{1}{4}$ " Bore.

$$.3619 \text{ cu ft/ft}$$

$$.3336 \text{ cu ft/ft}$$

$$\text{Length} = 300 - 10' = 290'$$

$$290' \times .3619 = 104.95 \text{ Sacks,}$$

$$290' \times .3336 = 96.74$$

$$\text{Area } 15" \text{ Bore} = 176.71 \text{ sq. in.}$$

$$18" \text{ Bore} = 254.4690 \text{ sq. in.}$$

$$\begin{array}{r} 6\frac{5}{8} \\ = - 34.45 \\ \hline 142.26 \end{array}$$

$$\begin{array}{r} 254.4690 \\ - 34.45 \\ \hline 220.0190 \end{array}$$

$$\frac{142.26}{144} = .9879166 \text{ cu ft/ft.}$$

$$\frac{220.0190}{144} = 1.5279 \text{ cu ft/ft.}$$

$$.9879166 \times 7 = 6.915$$

$$1.5279 \times 7 = 10.6953$$

$$\text{Est'd Total sack} = 104.95 + 6.915 = 111.87 \text{ Sacks. } \underline{107 \text{ sacks}}$$

Use 115 Sacks.

Grade
Casing (H-40) = 20#/ft, $6\frac{5}{8}$ " O.D., 6.049" I.D.

$$\text{Area} = 28.2743 \text{ sq. in. or } \frac{28.2743}{144} = .196349 \text{ sq. ft. or } .19634 \text{ cu ft/ft.}$$

$$300 \times .1963 = 58.89 \text{ cu. ft. (Vol. I.S. Casing) for}$$

$$\text{Using 83 Sack Total } \frac{83}{.3336} = \underline{247'} \text{ outside casing}$$

$$\text{Using 90 Sacks Total } \frac{90}{.3336} = \underline{269'}$$

F.T.S. Call

10 min

Springfield, F.T.S. 865- 8361

9/20/65

To, Regional Office

From: Mott - WICR.

Subject: Change of Itinerary.

Joe Riha said they rejected Stanman's bid
on Deer Lodge Park TW.

Harlie Boulard hasn't received W.O. to WICR.
I said it has been issued and there is
sufficient money to cover the work.

Disinfection

Depth of Bare-foot Pore = 250' @ 6 1/4" dia.

$$\frac{30.6816 \text{ sq. in.}}{144} = .213 \text{ sq. ft.}$$

$$.213 \times 250 = 53.25 \text{ cu ft.}$$

$$53.25 \times 7.5 = \underline{399.38} \text{ gals. in Barefoot.}$$

Length of casing = 300'

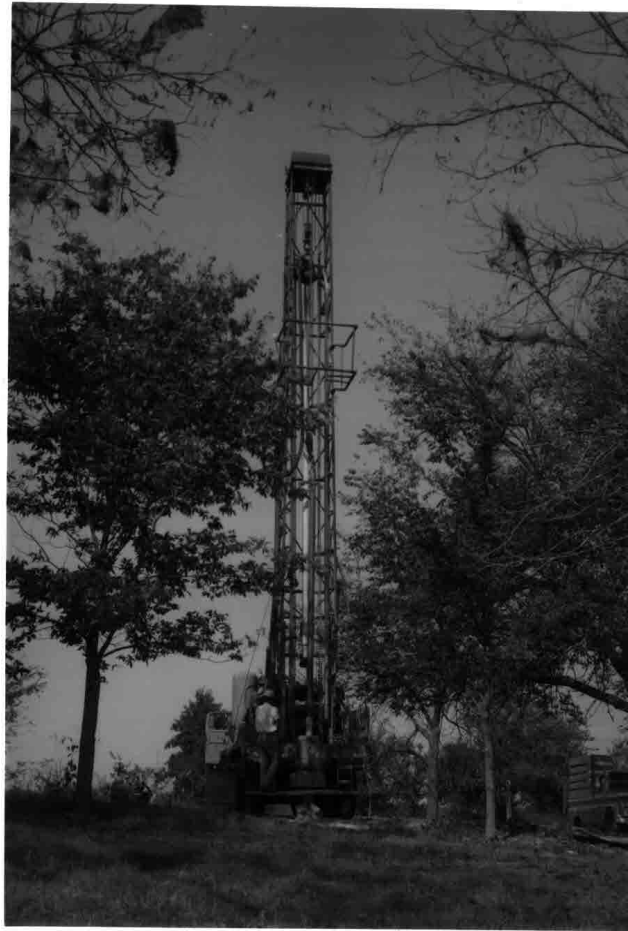
At 1.5306 gals/lin. ft.

$$1.5306 \times 300 = \underline{459.18} \text{ gals.}$$

$$\underline{\text{Total}} = 459.18 + 399.38 = \underline{\underline{858.56 \text{ gals.}}}$$

Using 10 oz Chlorox/1000 gal.

$$858.56 \text{ gal requires } \underline{\underline{8.58 \text{ oz}}}$$



Starting Wilson's Creek Well #1A



Drill at Wilson's Creek Well #1A, looking north



**Wilson's Creek Well #1A with grouting valve in place.
Looking east.**

Department of Public Health and Welfare of Missouri
 DIVISION OF HEALTH
 District # 5 Laboratory
REPORT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES

Samples collected by - Earl White
 Date of collection - 9/29/65 10:15
 Place - Battlefield Greene County
 Date reported - Oct. 4, 1965

Laboratory Number	Source of Sample	Number of Coliform Organisms Per 100 ml. portion
3976	U.S. Park Service Tap At well Well #1A Drilled Well Municipal	< 5

Based upon Division of Health bacteriological standards, the above results indicate that, at the time the sample was collected, this water was Safe for drinking purposes.

The safety of a water supply depends upon proper construction and protection against contamination. A favorable bacteriological analysis alone should not be accepted as conclusive evidence of the safety of a water supply unless a survey of the supply indicates no sanitary defects. It is recommended that a water supply used for drinking purposes be analyzed routinely.

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By direction of the Director, Division of Health.


 L. F. GARBER, Chief
 ENVIRONMENTAL SERVICES



DIVISION OF GEOLOGICAL SURVEY AND WATER RESOURCES
DEPARTMENT OF BUSINESS AND ADMINISTRATION
BUEHLER PARK ROLLA MISSOURI 65401 314-364-1752

WILLIAM C. HAYES STATE GEOLOGIST AND DIRECTOR

November 10, 1964

Our file: Greene County
sec.23, T.28N,R.23W

Mr. William A. Mott, P.E.
Hydraulic Engineer
National Park Service
1709 Jackson Street
Omaha 2, Nebraska

Dear Mr. Mott:

I have enclosed a copy of a log giving the formational names and rock that will be penetrated that is near your proposed well for the Park Service in Greene County.

As in our discussion of last January, I advised you to have the proposed well cased through the Swan Creek sandstone which is known to be contaminated in several parts of Greene County.

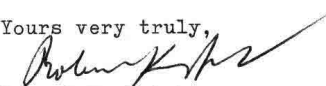
The copy of the log which is being sent to you and Mr. Cummings is the City well at Republic, which is near the Wilson Creek area.

Some of the drillers you requested that drill this type of well are; Ward Shelton & Son Drilling Co., Box 264, Ozark, Missouri; Herman Sill, Route # 5, Box 109, Joplin, Missouri; William E. Clark, Clark and Son Drilling Co., Box 153, St. Clair, Missouri; Clark and Clark Drilling Co., Fenton, Missouri; Robert W. Politte, Haverstick Well & Equipment Co., 500 S. 4th Street, DeSoto, Missouri; William Henderson Drilling Co., Warsaw, Missouri; Charles Stack Drilling Co., St. James, Missouri; Henry Honn Drilling Co., Route # 4, Clinton, Missouri; Layne Western Drilling Co., 1010 W. 39' Street, Kansas City, Missouri; W. R. Chisler, Box 102, Holden, Missouri; Warren Hoke, Route # 1, Box 26, Lebanon, Missouri; William R. Dunham, Route # 3, Osceola, Missouri; and Robert L. Clark, Sr. Route # 1, Mansfield, Missouri;

These are drillers that have cooperated with this office and are capable of doing this type of work. No doubt there are others, but this is the list of drillers that we have that are known to this office.

If we can be of further service in this matter please let us hear from you.

Yours very truly,


Robert D. Knight
Senior Geologist

RDK:jb

Docket Information

Number of Documents in Docket 91

Documents Dated from 1/15/1955 to 1/7/1976

Docket Compiled: 7/28/2011