



WATER-RIGHT DOCKET

Petersburg National Battlefield

Docket No: 3

POPLAR GROVE CEMETARY WATER SYSTEM.

Preliminary Docket Information

00-00-0000: index of docket #3, poplar grove cemetery water system

PETERSBURG NATIONAL BATTLEFIELD

Docket # 3

Poplar Grove Cemetery Water System

I N D E X

PART I - INVESTIGATION

1. Water System Data collected July 11, 1961.
2. Memorandum to Superintendent, Petersburg National Battlefield, from Assistant Regional Director, Operations, Southeast Region, National Park Service, dated April 23, 1964.
3. Water Well Completion Report - (Well # 1).
4. Water Well Completion Report - (Well # 2).
5. Letter to Mr. Alfred Vick, III, Hydraulic Engineer, National Park Service, Richmond, Virginia, from Mr. Carlton T. Sumsion, Geologist, U. S. Geological Survey, Raleigh, North Carolina, dated November 27, 1964.
6. Drawdown chart.
7. Geologic Log.

PART II - WATER RIGHT

WATER SYSTEM DATA

DATE
 AREA Petersburg NMP COLLECTED 11 July 1961 COLLECTED BY GEE

1. Name of System: Poplar Grove Water System*

2. Location: State Virginia County Dinwiddie General Area Nat. Cemetery
 Reference to permanent landmark 440 ft. West of Cem. Monument

3. Source of Supply: Well (Shallow)** Capacity Unknown
 (Well, Spring, Stream, Impoundment, etc.) gph

4. Type of System: Pumped (Pneumatic)
 (Pumped, Gravity, etc.)

5. Treatment: None
 (Filtration, Chlorination, Airation, etc.)

6. Distribution Mains: Size 3/4" Length 180' ; Size Length
 Size Length ; Size Length
 Size Length ; Size Length
 Fig

7. Pump Unit: Make Deming ; Type Reciprocating ; ~~NO. 1890~~ No. 1890 Marvel
 Serial No. 1890-2454 ; Outlet 1" in. ; Inlet 1 in.
 (Size) (Size)

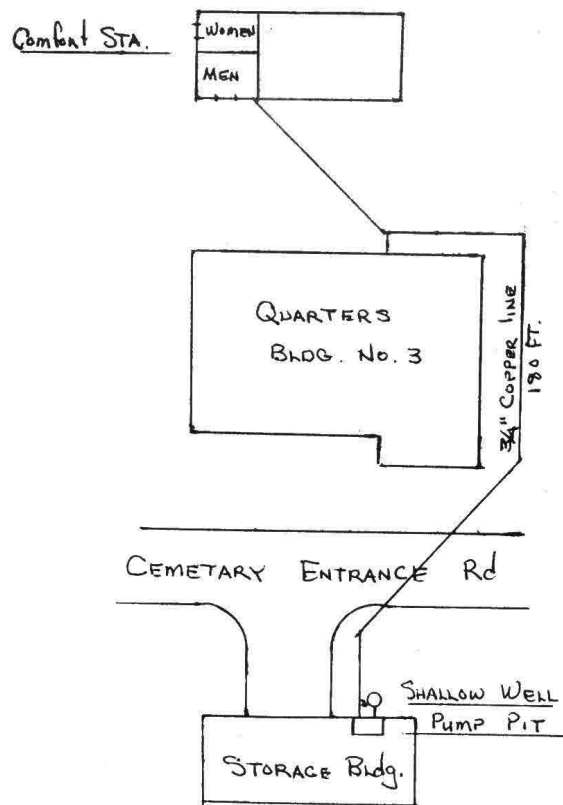
8. Power Source: Electric Motor: Make Deming ; HP 1/4 ;
 (Elec., Gas, Generator)
 Serial No. G-54 ; Voltage 115 ; Amps 4.2 ;
 RPM 1725 ; Type CS ; Phase Single ;
 Cycles 60 ; Others Model A8171 ;

9. Control: Automatic Pressure*** ; Manual - - ;
 (Float, Electrobe, Pressure, Time)
 Other
 (Explain)

*See reverse side for layout.

**Dug well 33 ft. deep, 30 ft. T. C. Casing, STATIC level 16 ft.

***Pressure Switch, Square D, Pumptrol Pressure Switch, Class 9013 F5G2
 Setting 20 - 40 lbs.



LAYOUT PLAN POPLAR GROVE WATER SYSTEM

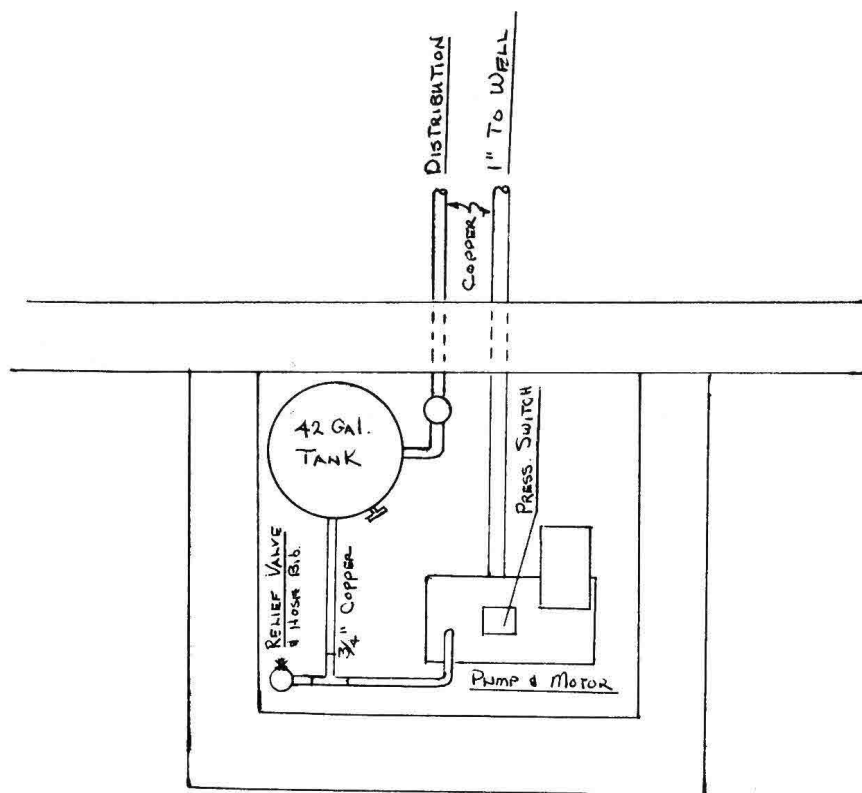
NO SCALE

10. Pump Design: Capacity - - gpm 4.5 gpm
(Actual) (Design)
Head 108.4 ft 110 ft
(Actual) (Design)
11. Pump Housing: * Type Const. Brick ; Plywood ; Size 5' x 4'
(Walls) (Roof)
12. Storage: Pneumatic Tank ; Type Const. Steel
(Pneumatic, Elevated, Underground, etc.) (Concrete, Wood, Steel)
Size 16" x 48" ; Capacity 42 gal. ; Inlet - - ft. 1" in. ;
(Elev) (Size)
Outlet - - ft. 3/4" in. ; Pressure Setting 40 - 20 lbs.
(Elev) (Size) (if pneumatic)
13. Distribution: Water Closets - - ; Lavatory - - ; Urinal - - ;
Drinking Fountain - - ; Hose Bibs Two ; Residences One ;
Other One Comfort Station** ;
14. Metered or Nonmetered: None ; No. - ; Size -
No. - ; Size -
No. - ; Size -
15. Fire Protection: Fire Hydrants None ; Yard Hydrants None
16. Water Analysis: (If Available) Water Analysis not Available. Bacterial Samples
are submitted monthly and latest reports are satisfactory.
-
-
17. Condition of System: Operates satisfactorily and functions as designed.
(Repairs needed itemize)
-
-
-

-2-

*Pump Housing constructed inside of STORAGE BLDG. See reverse side for layout plan.

**Comfort Station includes tow (one each mens and womens side), frost proof water closets only.



PLAN POPLAR GROVE PUMP HOUSE
NO SCALE

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
DIVISION OF MINERAL RESOURCES
Box 3667, University Station, Charlottesville, Virginia

WATER WELL COMPLETION REPORT

OWNER: National Park Service Mailing Address: P. O. Box 10008
TENANT: Poplar Grove Cemetary Mailing Address: Richmond, Virginia 23240
DRILLER: Charles H. Helmick Mailing Address: Walkerton, Virginia
WELL LOCATION: County Dinwiddie Approx. 1 Mi. East US Rt. 1 ft. miles
(direction) of And about 3 Mi. Southwest Of Petersburg, Virginia

(Give direction and distance in feet or tenths of mile from two reference points - roads, towns, rivers, etc. - on county highway or other map.)

WATER CONDITIONS

DEPTH
STATIC WATER LEVEL 16' Below Ground Level

WATER ZONES (fissures or formations supplying water)

115 (from) ft. 125 (to) ft. (from) ft. (to) ft.
ft. ft.

QUANTITY OF WATER

WELL PUMPED (or bailed) at 1 1/2 Gal. per Min. with
104 feet DRAWDOWN after 7 HOURS PUMPING.

FLOW (natural) _____ G.P.M. HEAD _____ ft. (above ground) W

REMARKS: _____

QUALITY OF WATER

COLOR _____ TASTE _____

ODOR _____ OTHER _____

ANALYSIS: AVAILABLE - Yes ☐ No ☒ ATTACHED Yes ☐ No ☒

TEMPERATURE _____

WATER (from) ft. (to) ft.
(salt, brackish, iron, sulfur, acid, other)

USE OF WATER: Domestic ☐ Town ☐ Industry ☐ Farm ☐ Public ☐

CONSTRUCTION

RIG TYPE (or method) Rotary
(rotary, cable, bored, driven, etc.)

DATE: Started April 6, 1964 Completed April 23, 1964

TOTAL DEPTH 132 ft.

BEDROCK at 98 ft. Hardrock

GROUTING INFORMATION

METHOD USED _____

GROUTING MATERIAL _____

DEPTH OF GROUTING _____

REMARKS: The maximum capacity of the well was determined to be 1 1/2 gallons per minute. With such a low yield, the test well was abandoned.

HOLE SIZE

9 1/8 (diam) in. 0-132 (from) ft. (to) ft.

CASING SIZE

6 (diam) in. 0-10 (from) ft. (to) ft.
4 in. 10-132 ft.

SCREEN (or perforations)

4 (diam) in. 115 (from) ft. 125 (to) ft. 25 slot (opening size)

PUMP (installed)

TYPE Sub Cap. (gpm) 25

H.P. 1 Depth of intake 115 ft.

Log of well (over)

LOG

FURNISHED BY Charles H. HelmickDATE May 4, 1964

DEPTH (feet)		TYPE OF SOIL OR ROCK PENETRATED (gravel, clay, etc., hardness, color, etc)	REMARKS (water, caving, shot, screen, sample, etc)
FROM	TO		
0	5 FT	Yellow Clay	
5	30	Red Clay, Sand and Gravel	
30	70	Blue Clay and traces of shell	
70	98	Shell	
98	132	Hard sand and Shell Rock	
		Drilled as little as 2 inches Per hr.	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
DIVISION OF MINERAL RESOURCES
Box 3667, University Station, Charlottesville, Virginia

WATER WELL COMPLETION REPORT

OWNER: National Park Service Mailing Address: P. O. Box 10008, Richmond, Va.
TENANT: Ponlar Grove Cemetery Mailing Address: Petersburg, Virginia
DRILLER: MITCHELL'S WELL & PUMP COMPANY Mailing Address: Route #1, Box 110, Colonial Heights
WELL LOCATION: County Dinwiddie Approx. 5 miles ft. miles
S. W. (direction) of Petersburg in National Military Park on Vaughan Road
(Give direction and distance in feet or tenths of mile from two reference points—roads, towns, rivers, etc.—on county highway or other map.)

WATER CONDITIONS

DEPTH

STATIC WATER LEVEL 20'

WATER ZONES (fissures or formations supplying water)

(from)	(to)	(from)	(to)
ft.	ft.	ft.	ft.
ft.	ft.	ft.	ft.

QUANTITY OF WATER

WELL PUMPED (or bailed) at 15 Gal. per Min. with

88 feet DRAWDOWN after 5 HOURS PUMPING.

FLOW (natural) _____ G.P.M. HEAD _____ ft. (above ground) W

REMARKS: _____

QUALITY OF WATER

COLOR clear TASTE good

ODOR none OTHER _____

ANALYSIS: AVAILABLE—Yes ☐ No ☐ ATTACHED Yes ☐ No ☐

TEMPERATURE _____

WATER (from) _____ ft. (to) _____ ft.
(salt, brackish, iron, sulfur, acid, other)

USE OF WATER: Domestic ☐ Town ☐ Industry ☐ Farm ☐ Public ☐

CONSTRUCTION

RIG TYPE (or method) cable
(rotary, cable, bored, driven, etc.)

DATE: Started 10/30/64; Completed 11/16/64

TOTAL DEPTH 175 ft.

BEDROCK at 94 ft.

GROUTING INFORMATION

METHOD USED Pumped in

GROUTING MATERIAL cement & water

DEPTH OF GROUTING 56'

HOLE SIZE

(diam.)	(from)	(to)	(diam.)	(from)	(to)
7"	0	56	6"	0	10

CASING SIZE

(diam.)	(from)	(to)	(diam.)	(from)	(to)
6"	0	10	8"	97	175

SCREEN (or perforations)

(diam.)	(from)	(to)	(opening size)
in	ft.	ft.	

PUMP (installed)

TYPE _____ Cap. (gpm) _____

H.P. _____ Depth of intake _____ ft.

REMARKS: _____

LOG

FURNISHED BY: MITCHELLS WELL & PIPE COMPANY DATE: November 18, 1964

DEPTH (feet)		TYPE OF SOIL OR ROCK PENETRATED (gravel, clay, etc., hardness, color, etc)	REMARKS (water, caving, shot, screen, sample, etc)
FROM	TO		
0	1	top soil	
1	5	red clay	
5	10	red mud	
10	15	yellow mud	
15	20	brown mud	
20	25	brown mud and sand	
25	30	yellow mud, sand and gravel	
30	35	brown mud and sand	
35	40	"	
40	45	blue marl and gravel	
45	55	blue marl and shells	
55	65	blue marl, some shells	
65	75	"	
75	85	"	
85	95	marl, shells and rock	
95	105	rock	
105	110	"	
110	115	"	
115	125	"	
125	130	"	
130	135	"	
135	145	"	
145	155	"	
155	165	"	
165	170	"	
170	175	"	

Samples given to an official of National Park Service



MITCHELL'S WELL & PUMP COMPANY

ARTESIAN WELL DRILLING AND WATER CONTRACTORS
PUMPS FOR EVERY PURPOSE

COLONIAL HEIGHTS, VIRGINIA

TEST PUMP RECORD FOR: POPLAR GROVE CEMETERY
PETERSBURG NATIONAL BATTLEFIELD, PETERSBURG, VIRGINIA

Starting Time: 12:30 P. M. Tuesday, November 17, 1964

Test Pump Set: 154'2", Airline 143'22"

<u>TIME</u>	<u>CONTAINER GALLONS</u>	<u>SECONDS</u>	<u>GAUGE</u>	<u>GALLONS PER MINUTE</u>
12:30	5	22	20'	13.6
12:33		20	55	15
12:35			70	
12:37			80	
12:39			75	
12:42		20	90	15
12:50		20	96	15
1:00		20	103	15
1:10		20	105	15
1:20		20	105	15
1:30			105	
1:40		20	105	15
1:50		20	106	15
2:00			106	15
2:30			105	15
3:00			106	15
3:30			106	15
4:00			106	15
4:30			108	15
5:00			108	15

Verified by:

C. T. Sumsion
U. S. Geological Survey
P. O. Box 689
Greenville, N. Carolina

R.F.D. 1, BOX 110, COLONIAL HEIGHTS, VA.

DIAL REGENT 2-3671



Mitchell's Well & Pump Company

Artesian Well Drilling and Water Contractor

PUMPS FOR EVERY PURPOSE

November 20, 1964

National Park Service
Southeast Regional Office
400 N 8th Street, P. O. Box 10008
Richmond, Virginia 23240

Drilling Well, Poplar Grove Cemetery Petersburg National Military Park, Petersburg, Va	
175'	drilling @ \$7.00 per foot
97'1"	black steel casing @ \$1.67 per foot
10'	6" casing, plus cutting and welding, unit price
56'	grouting, Unit price
4 1/2'	hours testing @ \$10.00 per hour
	moving equipment to well site, setting up and removing same, unit price
	\$ 1,225 00
	162 13
	67 50
	125 00
	45 00
	25 00
	\$ 1,649 63
2% discount, 10 days	
1% discount, 20 days	

OWNER: National Park Service
 Poplar Grove Cemetery #2
 DRILLER: Mitchell's Well & Pump Company
 COUNTY: Dinwiddie

VDMR #1194
 WWCR # 25
 TOTAL DEPTH: 175'

GEOLOGIC LOG

Columbia Group (0-10')

- 0-1 Sand - dark grayish-brown, extremely argillaceous, sand poorly sorted and poorly rounded, some plant material and coal (contamination?).
- 1-5 Clay - yellowish brown, mottled reddish brown, sandy, ferruginous (limonitic), some plant material and coal (contamination).
- 5-10 Clay - brownish-yellow, very sandy.

Chesapeake Group (10-95')

- 10-15 Sand - brown, with orange cast, very argillaceous, small amount subangular granules, sand poorly sorted, subangular and irregular, small amounts of muscovite and epidote.
- 15-20 Clay - pink, coherent, sandy, sand poorly sorted, angular to subangular, some muscovite.
- 20-25 Sand - brown, with purple cast, very argillaceous, small amount small gravel (subangular quartz and subrounded feldspar), sand poorly sorted, subangular and irregular, arkosic (abundant, white, moderately decomposed microcline, small amounts muscovite, epidote, trace of nodular phosphates).
- 25-30 Sand - buff, moderately argillaceous, small amount small gravel (subangular quartz and a little feldspar), sand medium to very coarse grained, fairly well sorted, subangular to subrounded, irregular, arkosic (abundant, white, relatively fresh microcline), traces of muscovite and epidote.
- 30-35 Sand - yellow, slightly argillaceous, abundant small gravel (up to 10 mm) subangular to subrounded quartz and a little feldspar, sand coarse to very coarse grained, well sorted, subangular to subrounded, moderately arkosic (fresh to moderately decomposed white, subrounded microcline), small amounts muscovite and epidote.

OWNER: National Park Service - Poplar Grove Cemetery #2 (Continued)

- 35-40** Sand - yellowish brown, moderately argillaceous, moderately abundant small gravel (up to 10 mm) sub-rounded quartz and a little feldspar, sand medium to very coarse grained, fairly well sorted, subangular to subrounded, moderately arkosic (fresh to moderately decomposed white feldspar), small amounts of muscovite, epidote, and tourmaline.
- 40-45** Clay - gray, coherent, sandy, pebbly, clay predominantly gray, with small amounts of pink and yellow (limonitic) clays, sand slightly arkosic (moderately decomposed white feldspar), moderately abundant gravel (up to 20 mm) sub-rounded to rounded quartz, minor epidote, moderately abundant shell fragments (pelecypods).
- 45-55** Clay (shell marl) - gray, fairly coherent, slightly sandy, extremely fossiliferous (pelecypods predominant, a few gastropods, including Turitella), small amount of chitino-phosphatic shell fragments and worm tubes.
- 55-65** As above.
- 65-75** As above.
- 75-85** Sand - gray, argillaceous, sand fine to medium grained, well sorted, subangular, moderate amount of phosphate (mostly phosphatic plates and shell fragments, but some small nodules and sand-size grains), trace of garnet, very fossiliferous (pelecypods, echinoid spines, gastropods, including Turitella, worm tubes, scaphopods, foraminifera, and ostracods).
- 85-95** Sand - gray, very argillaceous, sand very fine to very coarse grained, poorly sorted, subangular, moderate amount of phosphate, small amounts of muscovite and glauconite, fossiliferous (pelecypods, a few foraminifera).

Petersburg Granite (95-175')

- 95-105** Granite - gray, with purplish cast, microcline-biotite-muscovite granite with abundant pyrite and magnetite and some plagioclase and pink garnet, weathered, with high quartz/feldspar ratio, and much of the biotite altered to chlorite, quartz marked by patches of iron stain that surround altered magnetite inclusions.

OWNER: National Park Service - Poplar Grove Cemetery #2 (Continued)

105-110	Granite - gray, speckled brown, as above, but with more and fresher white feldspar, increase of magnetite, scattered grains of green glauconite (fissure deposit ?).
110-115	Granite - gray, microcline-biotite-muscovite granite, relatively fresh biotite and white to gray feldspar, abundant magnetite, some pyrite and plagioclase, small amount green glauconite and pink garnet; trace of rutile.
115-125	As above, but with abundant orange-pink microcline and small amount of pale green clay.
125-130	Granite - gray, microcline-biotite-muscovite granite, pyrite, magnetite, plagioclase, small amount of pale green clay, abundant pelecypod fragments, some coal, and a small amount of plant material (pollution).
130-135	As above - but less polluted.
135-145	Granite - gray, microcline-biotite-muscovite granite, pyrite, magnetite, sodic plagioclase, small amount pale green clay.
145-155	Granite - gray, microcline-biotite-muscovite granite, pyrite, magnetite, sodic plagioclase, small amounts pale green clay, a few grains of green glauconite, and a trace of pink garnet.
155-165	Granite - gray, microcline-biotite-muscovite granite, sodic plagioclase, magnetite, pyrite, much of the feldspar in pale orange, some rock fragments have gneissic aspect.
165-170	As above.
170-175	As above - but with more magnetite, less pyrite.

GEOLOGIC SUMMARY

	<u>ROCK UNIT</u>	<u>TIME ROCK UNIT</u>
0-10	Columbia group	Quaternary
10-95	Chesapeake group	Miocene
95-175	Petersburg granite	Paleozoic

Virginia Division of Mineral Resources
Robert H. Teiske, Geologist
December 22, 1964

Other Supporting Information



LS4

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Post Office Box 2857
Raleigh, North Carolina

IN REPLY REFER TO:

SOUTHEAST REGION	
NOV 30 1964	
Regional Director	
Asst. Reg. Dir., (A)	
Asst. Reg. Dir., (CA)	
Asst. to Reg. Dir., (PA)	
Asst. to Reg. Dir., (D)	
Resource Studies Adv.	

November 27, 1964

Mr. Alfred Vick, III
Hydraulic Engineer
National Park Service
Southeast Region
Post Office Box 10008
Richmond, Virginia

Dear Mr. Vick:

As requested by the National Park Service, the U. S. Geological Survey conducted a pumping test on the well completed November 16, 1964 at the Poplar Grove Cemetery, Petersburg National Battleground, Virginia. This well was drilled to a depth of 175 feet and cased to 107 feet with 4-inch steel casing. The bottom of the casing is set in granitic rock of the metamorphic complex which occurs about 100 feet below the top of the casing. Water is obtained from fracture zones in the granitic rock at depths of 120 feet, 140 feet, and 170 feet.

The well was pumped for five hours at a rate of 15 gpm. Prior to pumping, the static water level stood at a depth of 20 feet below the top of the casing. At the end of five hours pumping, the water level stood at 129 feet. The attached semi-logarithmic graph shows the changes in water level caused by pumping at a rate of 15 gpm. As shown on the graph, the pumping level after six hours pumping would be about 130 feet. The respective pumping levels after 24 hours and 48 hours pumping at the same rate would be about 135 feet and 138 feet. Accordingly, this well should produce the specified 10 gpm with pumping levels of about 87 feet after 6 hours pumping, 90 feet after 24 hours pumping, and 92 feet after 48 hours pumping. If we can furnish additional information, please contact us.

Sincerely,

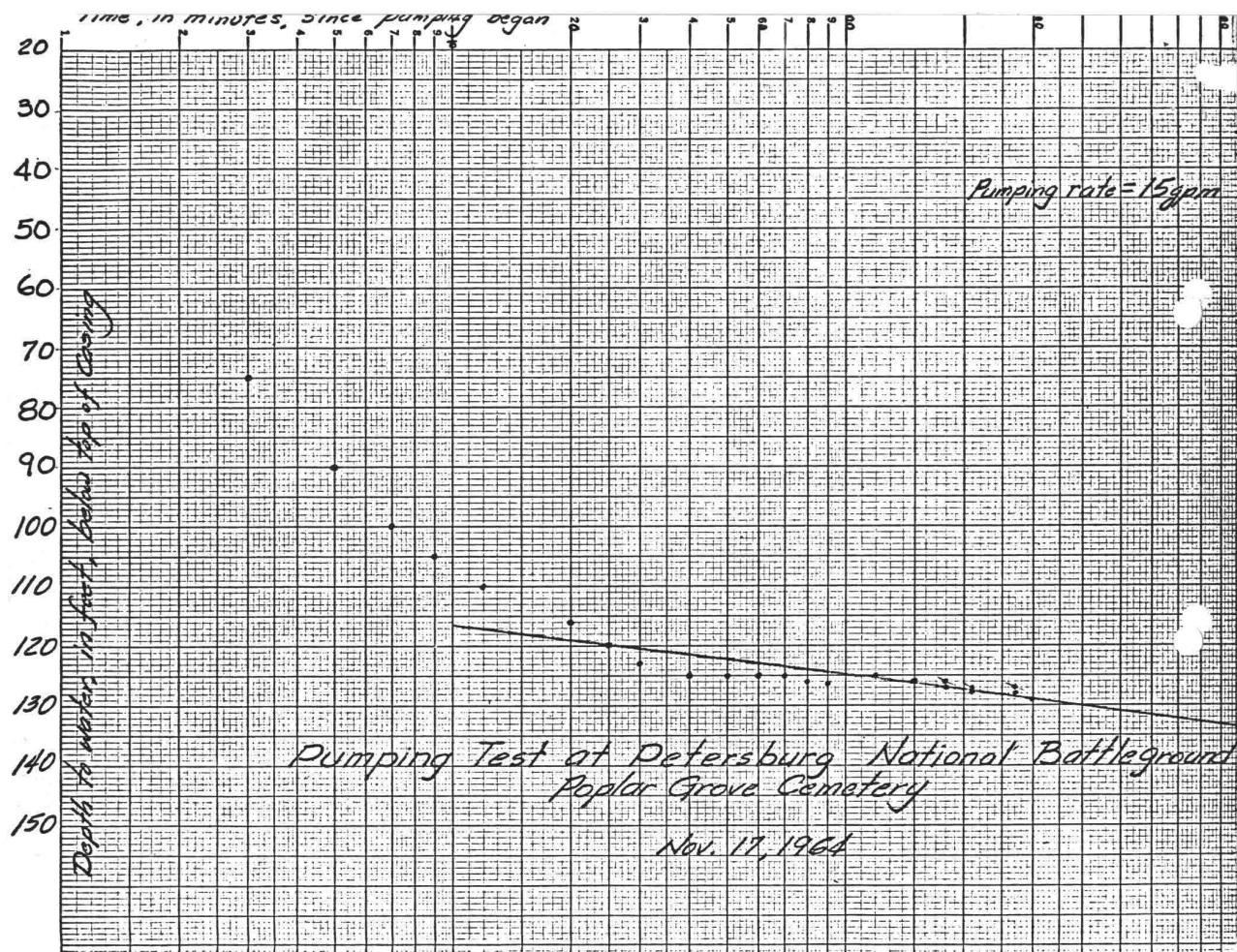
Carlton T. Sumsion

Carlton T. Sumsion
Geologist

Attachment

For Granville G. Wyrick
District Geologist

(by nps)



L54 SER(OLW)

APR 23 1964

Memorandum

To: Superintendent, Petersburg
From: Assistant Regional Director, Operations, Southeast Region
Subject: Drilling of test well - Poplar Grove Cemetery, Petersburg
National Battlefield

The subject test well was drilled, developed and pump tested by C. H. Helmick Well Drilling Company of Walkerton, Virginia, during the period April 6 through April 22.

The test well was drilled to a depth of 132' by a hydraulic rotary rig with a mud pump attachment. The well driller collected soil samples at each 5-foot intervals and a small portion of the geologic material was placed in sample bags. These samples have been shipped to the State Geologist, Mineral Resources Division, Virginia Department of Conservation and Development, Charlottesville, Virginia, for a complete soil analysis. The results of this analysis will be forwarded to you at a later date.

After completing the drilling operation, the next step was to insert the casing and screen into the uncased hole. A stainless steel screen, 10' in length, was placed so the top of the screen was 117' below land surface and the bottom at 127'. The contractor filled around the screen with No. 2 graded gravel after which the well was surged with water for a total of nine (9) hours to properly develop the well. A pump test lasting two (2) hours was conducted to obtain well capacity information. The bottom of the test pump intake was placed at the top of the screen. The maximum capacity of well was determined to be 1 gallon per minute. With such a low yield, it was decided to abandon the well on April 22.

The contractor has completed the following bid items in the quantity as shown. We have also shown the unit price and total cost of the project.

<u>Item</u>	<u>Description</u>	<u>Actual Quantity</u>	<u>Unit Price</u>	<u>Total</u>
1	For drilling a 10-inch diameter test hole including collection of samples, furnishing driller's log, providing necessary water and drilling clay for all drilling operations.	132 ft.	\$3.00	\$396.00
5	Developing and pump testing.	11 hrs.	\$10.00	\$110.00
Under Paragraph 10 of General Specifications, Contractor is entitled to \$100.00 for cost of setting, dismantling equipment, and removing casing if well is abandoned.				\$100.00
TOTAL				\$606.00

Geologist Ramsey, Virginia Division of Water Resources, and Mr. Vick of this office will make another water resources investigation at Poplar Grove Cemetery and select a second test well site.

(SIGNED)

E. M. Lisle

cc:
Director

AVick;jt 4/23/64

Poplar Grove - 24' dug well
30" T.C casing
Surface to W.D. 16'
Pump Drawing Shallow Well
250 gal per hour -
Serial 1975-3319 -
Motor Drawing $\frac{1}{6}$ HP -
Single phase -
150V Storage 30 gal
pneumatic

Docket Information

Number of Documents in Docket 19

Documents Dated from 7/11/1961 to 11/27/1964

Docket Compiled: 6/7/2011