



WATER-RIGHT DOCKET

Natchez Trace Parkway

Docket No: 10

ROCKY SPRINGS PARK

Supporting Hydro Data

08-19-1970: letter to district chief from supervisory hydraulics engineer regarding additional comments for test drilling and well cor

593 10-20-70

L54 ESC-LW

October 19, 1970

Mr. Lamar E. Carroon
District Chief, Water Resources Division
U. S. Geological Survey
P. O. Box 2052
Jackson, Mississippi 39205

Dear Mr. Carroon:

We have received and reviewed the report, "Test Drilling and Well Construction at Rocky Springs Park, Claiborne County, Mississippi 1970," by J. A. Callahan, and would like to take this opportunity to present some additional comments.

Page 3, par. 1, 2nd sentence - We are unable to find the reference in Thomson's (1969) report.

Page 3, Table

Wells D-7, -9, -11 - Was the static water level noted before the test hole was abandoned?

Well D-8, -13 - Need some comment in the Remarks Section. May we suggest production well for Well D-8 and observation well for Well D-13.

Page 4, par 1, 1st sentence - We are unable to find the reference in Thomson's (1969) report.

With reference to your response to review by the National Park Service, we have the following comments:

Page 3, par. 2 - Name of driller and contract number are important to this Service as the report being prepared will serve as part of our permanent records.

Page 9, par. 1 and page 9 summary - We are interested in having the yields in which we can expect partial dewatering and excessive drawdown below the top of screens.

Your cooperation and assistance are appreciated.

Sincerely yours,

(Sgd.) Richard W. Ketcham

**Richard W. Ketcham
Supervisory Hydraulic Engineer
Office of Land Acquisition and
Water Resources, ESC**

cc:

Director, Southeast Region

Superintendent, Natchez Trace

Chief, Division of Water Resources, WASO

583-10-10-70
WR copy

USGS
rept. file

7/11 9/18
Reed Air
Burt M

L54 ESC-LW

September 17, 1970

Memorandum

To: Chief, Division of Water Resources, WASO

From: Chief, Office of Land Acquisition and Water Resources, ESC

Subject: U. S. Geological Survey report, "Test Drilling and Well Construction at Rocky Springs Park, Claiborne County, Mississippi, 1970," Natchez Trace

In response to your memorandum of September 7 relative to subject, we have enclosed the latest revisions of subject report by the U. S. Geological Survey (Mississippi). It appears that all inconsistencies mentioned in your memorandum have been corrected in an earlier letter from the U. S. Geological Survey with a request for permission to release this report to the open file. With your concurrence we will respond affirmatively to their request.

Your early reply will be appreciated.

Richard L. Stanton

Enclosure



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Water Resources Division
430 Bounds Street
Jackson, Mississippi 39206

Herzog
of Monroe

August 27, 1970

Mr. Richard L. Stanton, Chief
Office of Land Acquisition and Water Resources, ESC
United States Department of the Interior
National Park Service
Eastern Service Center
4228 Wisconsin Avenue, NW
Washington, D. C. 20242

Dear Mr. Stanton:

Thank you for your review of the report "Test Drilling and Well Construction at Rocky Springs Park, Claiborne County, Mississippi, 1970," by J. A. Callahan. A copy of the revised report and the author's replies to your notes and marginal comments are attached.

In reply to your questions on page 11: When Rocky Springs Lake is completed, there is a possibility of a hydraulic connection between the lake and the shallow aquifer. The deeper aquifers will not be affected. The lenticular sands occurring in the zone from 100 feet to 230 feet in test well DL3 are present to the north of the park and may occur at other locations in the park. Few deep wells have been drilled in the area and the extent of the sand to the east and west is not known.

Your cooperation and assistance are appreciated.

Sincerely yours,

Lamar E. Carroon

Lamar E. Carroon
District Chief

Attachment

cc: Robert C. Haraden, NPS
Tupelo, Miss. (w/attach)

Response to Review by National Park Service

P. 2, fig. 1.--Well D9 was added to earlier revision. Other test wells are not shown. The section "Purpose and Scope" explains that this report is concerned only with work performed during the report period.

P. 3, par. 2.--Name of driller and control number is not pertinent in this type report.

P. 3, unnumbered table.--Wells D1, D2, D3, D6, and D12 are privately owned. For well D9, remark "no electric log made" added. Test hole elevations are shown on figure 2.

P. 4, par. 2.--Details of well construction are not necessary.

P. 4, last paragraph.--Yield is based on a conservative estimate of permeability and on sand thickness. Representatives of the National Park Service stated that about 120 gpm will supply the projected needs of the park.

P. 8, table 1.--Well D10, analysis for water now being used. The statement on page 4 refers to well D13. Water having a color value of 20 is suitable for general use when better water is not available. The U.S. Public Health Service standards are recommendations that apply to "carriers and others subject to Federal quarantine regulations" and are "limits which should not be exceeded whenever more suitable supplies are, or can be made, available at reasonable cost."

P. 9, par. 1.--Test data is attached for your information. The pumping level in well D8 was below the top of the screen. Measurements were not possible owing to turbulence.

P. 9, par. 2.--Aquifer test results show that sustained pumping will probably result in partially dewatering of the aquifer.

P. 9, par. 2.--Well AH-1 is not involved in this work. An aquifer test was not made on well D13.

P. 9, par. 2.--The screen will probably be affected by encrustation resulting from precipitation of iron.

P. 9, Summary.--Aquifers have very low transmissibility (2,600 gpd/ft). The existing wells draw down below the tops of screens during sustained pumping.

P. 11, "ample."--Informal discussions with park personnel indicated that the projected maximum water needs are perhaps 120 gpm. A large well (6-inch or 8-inch screen diameter) constructed at the site of test hole D13 can yield several hundred gpm.

*Do not
revised standard
if in pertinent*

*legally correct
but used by
NPS as
standard*

at what rate?

at what rate?

Date 3-13-70 Formation POCONO County CLAIRBORNE 46.78Well observed #2 D8 Owner NATCHEZ TRACT PROP.Well pumped #4 D10 Average discharge 19.5 by CL. D. 1. 1. 1.Radius 110' Pump on 1430 Pump off 1530M.P. Top of aquifer 2.0 ft above bed
Subsidence 17 ft to top of bed below bed

Time	t (Mins.)	t' (Mins.)	Tape held	Wetted	Water level	Diff	corr	Corr'd		
Pumped down run		920 to	45	+1.78	46.78			+		
1303			45	+1.72	46.72				Pump off @ 1303	
1310			60	-0.92	59.08	Change	El. from	75 gal	19.5 gpm	
1424			60	-1.78	58.22			15.1 m		
1429			60	-1.84	58.14					
1430			60	-1.86	58.14				Pump on	
1431	1		60	-1.84	58.16	.02	.01	.03		
1433	3		60	-1.72	58.28	.14	.03	.17		
1435	5		60	-1.54	58.46	.32	.06	.38		
1437	7		60	-1.48	58.52	.58	.10	.48		
1439	9		60	-1.29	58.71	.57	.11	.68		
1441	11		60	-1.20	58.80	.66	.12	.79		
1443	13		60	-1.14	58.86	.72	.14	.86		
1445	15		60	-1.09	58.91	.77	.16	.93		
1447	17		60	-1.05	58.95	.81	.18	.99		
1450	20		60	-0.98	59.02	.88	.22	1.10		
1455	25		60	-0.88	59.12	.98	.23	1.21		
1500	30		60	-0.80	59.20	1.06	.26	1.32		
1505	35		60	-0.73	59.27	1.13	.30	1.43		
1510	40		60	0.71	59.29	1.15	.32	1.47		
1515	45		60	0.65	59.39	1.26	.34	1.59		
1520	50		60	0.60	59.40	1.26	.38	1.64		

Page 1

Date 3-13-70 Formation MIOCENE County CLAIPORE

Well observed D 8 Owner NATCHER TRACE

Well pumped # 4 D10 Average discharge 19.5 gpm by Stop watch & bucket

Radius 110' Pump on 1430 Pump off 1530

M.P. top of casing 20 ft above bed

Time	t (Mins.)	t' (Mins.)	Tape held	Wetted	Water level	Dist.	Corr	Corr ₂₀		
1525	5 ^s		60	0.57	59.43	1.29	.40	1.69		
1530	6 ⁰		60	0.57	59.43	1.29	.42	1.71	pump off	
	1'									
	2		60	0.57	59.43	0	.02	.02		
	3		60	0.63	59.37	.06	.02	.08		
	4		60	0.70	59.30	.13	.03	.16		
	5		60	0.77	59.23	.20	.03	.23		
	6		60	0.82	59.18	.25	.04	.29		
	7		60	0.90	59.10	.33	.05	.38		
	8		60	0.94	59.06	.37	.05	.42		
	9		60	0.97	59.03	.40	.06	.46		
	10		60	1.03	58.97	.46	.06	.52		
	11		60	1.05	58.95	.48	.06	.54		
	12		60	1.10	58.90	.53	.07	.60		
	13		60	1.14	58.86	.57	.07	.64		
	14		60	1.15	58.85	.58	.08	.66		
	15		60	1.20	58.80	.63	.08	.71		
	20		60	1.30	58.70	.73	.11	.84		
	25		60	1.37	58.63	.80	.13	.93		
	30		60	1.43	58.57	.86	.16	1.02		
	35		60	1.49	58.51	.92	.19	1.11		
	40		60	1.54	58.46	.97	.21	1.18		
	45		60	1.57	58.43	1.00	.22	1.22		
	50		60	1.61	58.39	1.04	.25	1.29		

Page -- 5

TEST DRILLING AND WELL CONSTRUCTION AT ROCKY SPRINGS PARK,
CLAIBORNE COUNTY, MISSISSIPPI, 1970

By

J. A. Callahan

Administrative Report

Prepared in cooperation

with the

~~U.S.~~ National Park Service

Natchez Trace Parkway



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
Jackson, Mississippi

June 1970

TEST DRILLING AND WELL CONSTRUCTION AT ROCKY SPRINGS PARK,
CLAIBORNE COUNTY, MISSISSIPPI, 1970

by

J. A. Callahan

PURPOSE AND SCOPE

The enlargement of facilities at Rocky Springs Park near Port Gibson on the Natchez Trace Parkway will require the development of an additional water supply. The U.S. Geological Survey was requested to provide technical assistance to the National Park Service during test drilling for new water-supply wells and to prepare a summary report of the results of test drilling, electric logging, sampling, and aquifer testing in the area. This report describes six test holes drilled in 1970 and gives background data on a test hole drilled in 1963 and on the two production wells in use.

LOCATION

The study area is at Rocky Springs Park on the Natchez Trace Parkway in northeastern Claiborne County, Miss. (fig. 1). Rocky Springs is about 16 miles northeast of Port Gibson and 20 miles south of Vicksburg.

PREVIOUS REPORTS

The Rocky Springs Park area has been included in several earlier reports dealing with geology and water resources. The most recent is "Memorandum on the Ground-Water Resources of Rocky Springs Park, Claiborne County, Mississippi" (Thomson, 1969), an open-file report summarizing the geology, ground-water conditions, and initial test drilling at Rocky Springs.

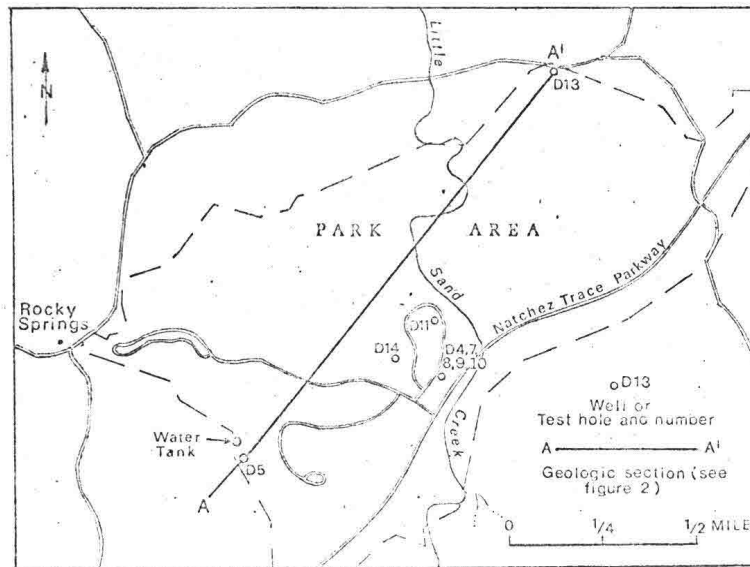
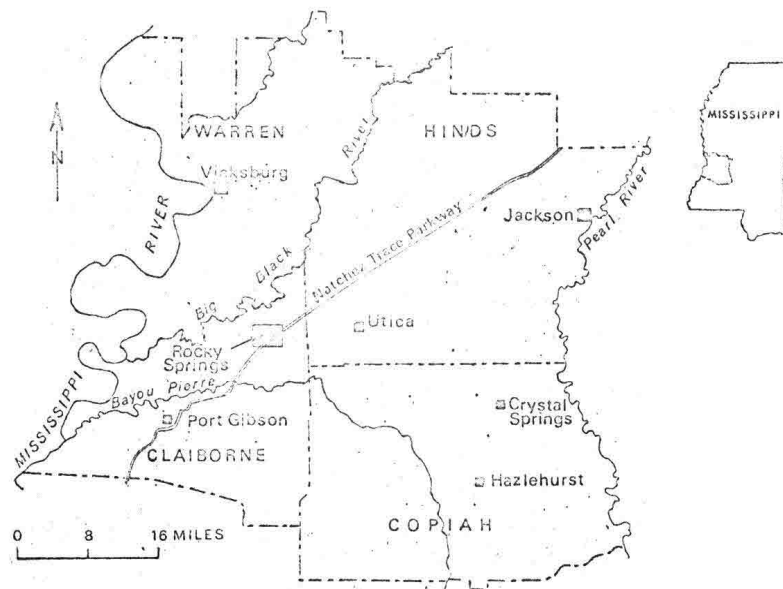


Figure 1.--Location of Rocky Springs Park.

OCCURRENCE OF GROUND WATER

Fresh ground water occurs in the Catahoula Sandstone and the Forest Hill Sand at Rocky Springs Park, but that in the Forest Hill Sand is highly colored. Previous testing near the present water-supply wells (D4 and D14) indicated that water of suitable quality occurs only in the shallow sand beds which lie at depths of 40 to 80 feet (Thomson, 1969). The texture of the sand is very fine (grain size 1/8 mm to 1/16 mm) and wells developed in it yield only 10-15 gpm (gallons per minute). Test drilling in 1970 revealed that suitable water can be obtained from coarser sand in the "200-foot" zone of the Catahoula about three quarters of a mile northeast of supply well D14.

Did they
and
disper?
Yes

TEST DRILLING AND WELL CONSTRUCTION

78
443
5
Six test holes were drilled during February and March 1970. Five test holes (D7, 8, 9, 10, 11) were drilled near the existing water-supply wells (D4, D14) and the sixth (D13) was drilled 0.8 mile to the northeast near the park boundary (fig. 1). The following table describes test holes drilled and wells completed during this work and also the previous test and production wells.

Well No.	Test hole depth (ft)	Diameter (in.)	Screen interval (ft below lsd)	Water level (ft below lsd)	Yield (gpm)	Remarks
D4	80	6x4	70-80	46	14	Production well.
D5	758	6x4	457-518	211.7	100	Test hole, 1968.
D7	106	—?	—	—	—	Test hole, abandoned.
D8	105	6x4	44-69	41	19	Production well
D9	110	—	—	—	—	Test hole, abandoned.
D10	105	6x4	54-72	41	19	No electric log made.
D11	148	—	—	—	—	Test hole, abandoned.
D13	372	4	200-210	112.8	—	—
D14	102	6x4	88-103	92	5	Production well.

give data

3 Why no yield figure?

Previous investigations (Thomson, 1969) indicated that water suitable for public use without extensive treatment does not occur below a depth of about 100 feet in the vicinity of wells D7-D11. ^{even didn't say this} Test drilling has shown that subsurface conditions in the area change considerably within a short distance; therefore, unsuccessful testing at one site did not indicate that the entire area was without potential aquifers.

Electric logs (fig. 2) of the test holes near the existing supply well (D4) show the irregularity of the shallow sands. Potential aquifers were not identified in test holes (D7, D9, D11), and the holes were filled. Water-supply wells were completed in test holes D8 and D10.

Well D13 was drilled through the base of the Catahoula Sandstone because that formation was unexplored between the D7-D11 site and a private water well about 1 mile to the northeast. (See fig. 3.) The electrical log indicated water-bearing sands at depths of 118-128 feet and 180-228 feet. Two sieve analyses show the 180-228 foot sand to be medium to coarse grained (fig. 4) and to have a uniformity coefficient (average slope of sand curve between 90 percent and 40 percent particle sizes) of 2 and 1.4, respectively. A water sample obtained from the 210-220 foot depth interval showed that the water, although slightly colored (20 units) is of good quality and suitable for general use without treatment (table 1). A well constructed with 20 feet of 4-inch-diameter screen in the 180-228 foot zone at this location should produce 150 gpm or more and supply the present and the projected needs of the park.

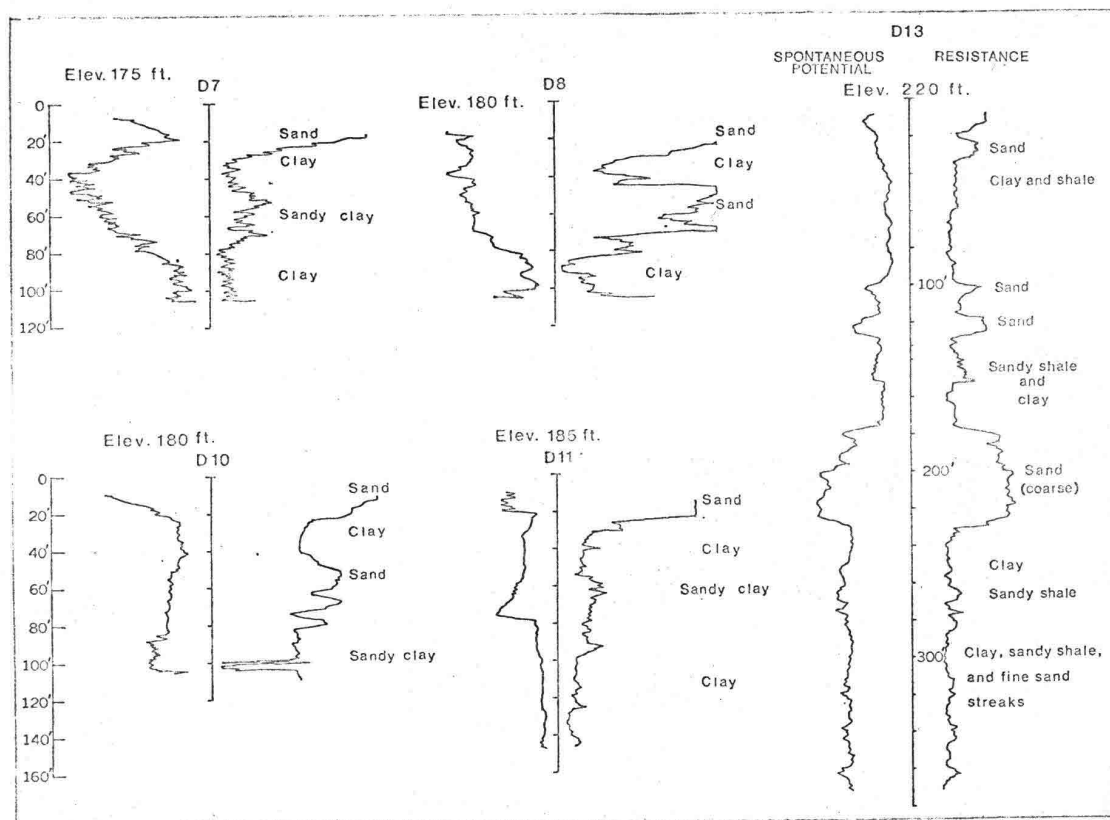


Figure 2.—Electric logs of test holes D7, D8, D10, D11, and D13,

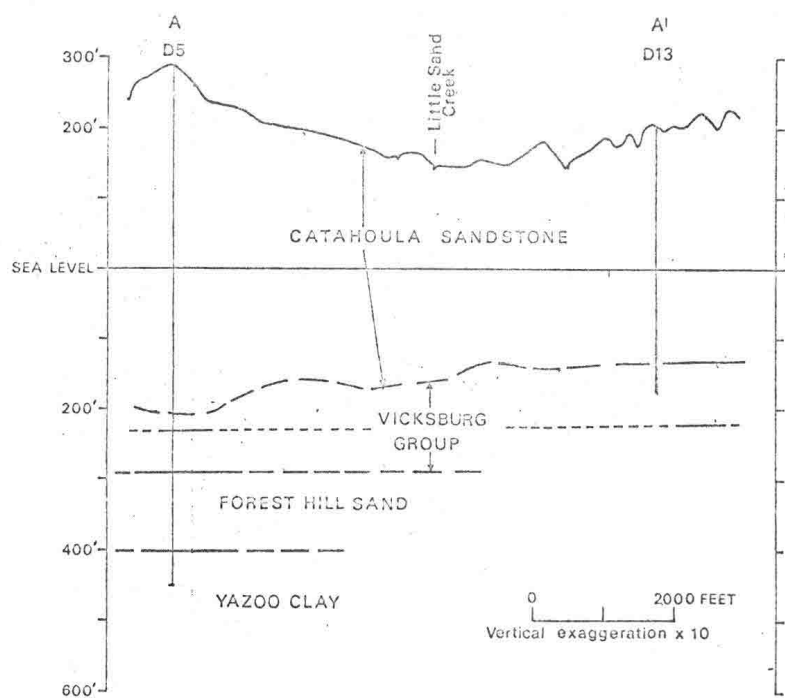


Figure 3.--Section A-A' through Rocky Springs Park.



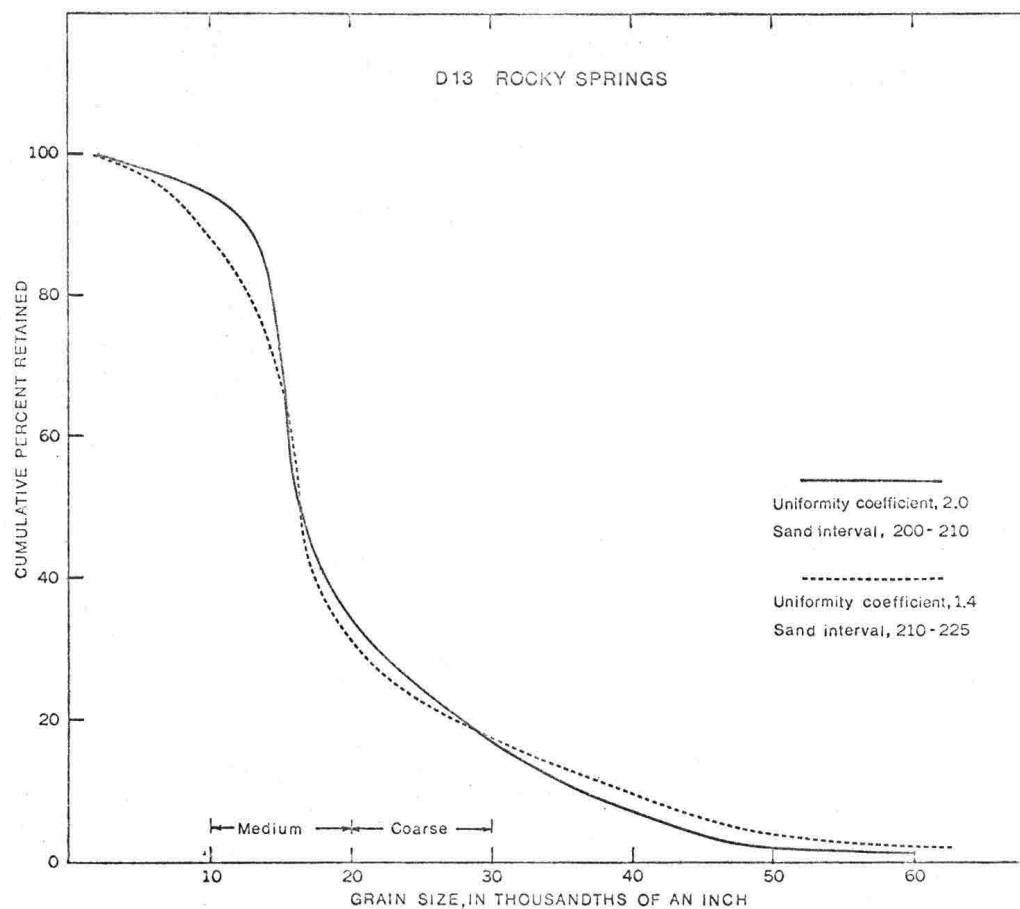


Figure 4.--Sieve analyses of sand samples, test hole D13, Rocky Springs Park.

Table 1.--Chemical-quality data
(Constituents are in milligrams per liter)

Well No.	D10	D13
Depth (in feet)	72	210
Date of collection	3-13-70	3-13-70
Silica (SiO ₂).....	20	57
Iron (Fe).....	.93	.09
Manganese (Mn).....	--	--
Calcium (Ca).....	7.9	5.0
Magnesium (Mg).....	2.7	1.3
Sodium (Na).....	115	130
Potassium (K).....	5.5	6.5
Bicarbonate (HCO ₃).....	306	316
Carbonate (CO ₃).....	0	5
Sulfate (SO ₄).....	16	23
Chloride (Cl).....	11	10
Fluoride (F).....	.2	.4
Nitrate (NO ₃).....	.0	.3
Dissolved solids		
Calculated.....	329	394
Residue on evaporation at 180°C.....	362	407
Hardness as CaCO ₃	31	18
Noncarbonate hardness as CaCO ₃	0	0
Alkalinity as CaCO ₃	--	--
Specific conductance (micromhos at 25°C).....	520	562
pH.....	7.2	8.3
Color.....	5	20

AQUIFER TEST

An interference test was made by pumping well D8 and using well D10 (distance, 110 ft) as an observation well. These wells are screened in the shallow (less than 100 ft) Catahoula Sandstone.

Depth to static water level at beginning of test	41.1 ft
Average discharge during test	19 gpm
Pumping time	60 min.
Recovery time	60 min.
Coefficient of transmissibility	2,600 gpd per ft
Coefficient of permeability	104 gpd per ft ²
Storage coefficient	0.0003

The drawdown and recovery of the water level in observation well D10 is shown on figure 5.

Owing to the low transmissibility of the aquifer and static water level near the top of the screens, sustained pumping may result in lowering of the water level below the top of the screen and thus promote chemical changes affecting the screen and, possibly, the water quality.

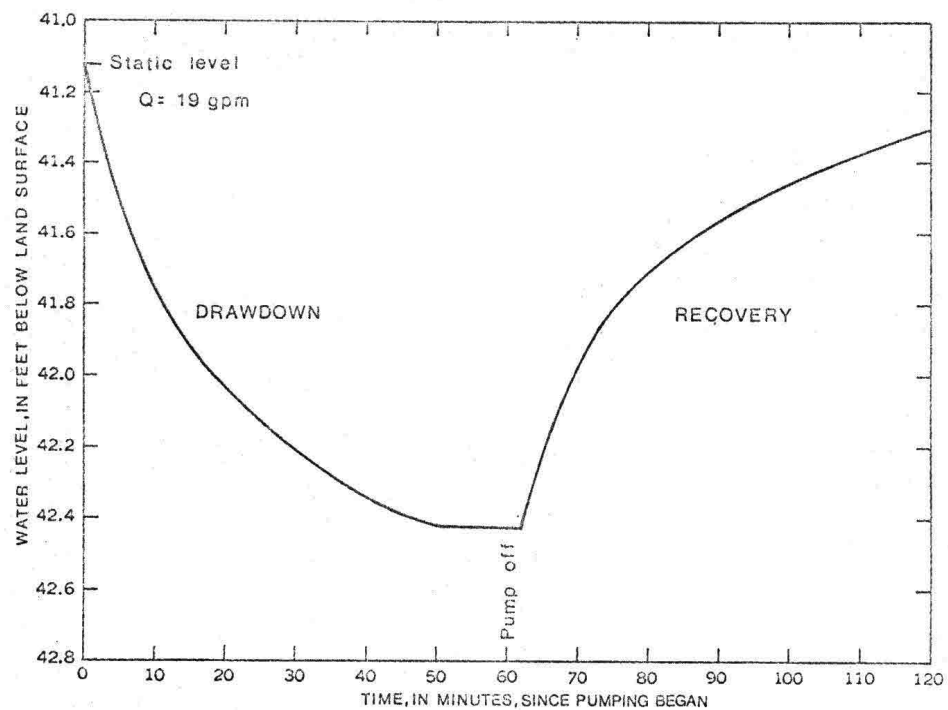


Figure 5.--Water levels in observation well D10 during and following pumping of well at Rocky Springs Park, March 13, 1970.

SUMMARY

Six test holes were drilled in the Rocky Springs Park area in February and March 1970. Five were drilled in the vicinity of the present supply well (D4), and one was drilled at the park boundary 0.8 mile to the northeast. Two wells (D3 and D10) were made in the supply area. This increased the present water supply to about 60 gpm. Owing to the low transmissibility of the sand in the Catahoula Sandstone, and with little or no available drawdown, sustained pumpage may result in lowering the water level below the top of the screen and promote chemical changes affecting the screen and possibly the water quality.

In test hole D13, water-bearing sands were logged in the 118-126 and 180-223 foot intervals. The deeper sand is capable of producing 150 gpm or more of water of excellent quality to meet present and projected parkway needs.

L54-MW

SEP 7 1970

USGS
Report file

7/9/70
2/2/70
Baxter

Memorandum

To: Supervisory Hydraulic Engineer, ESC
From: Chief, Division of Water Resources
Subject: USGS report, "Test Drilling and Well Construction at Rocky Springs Park, Claiborne County, Mississippi, 1970," Natchez Trace

This will acknowledge receipt of a marked-up copy of the above report and Mr. Stanton's memorandum of July 30 returning it to the Survey for consideration of comments and deferring approval for release to the open file.

Mr. Moore discussed this report informally with this office, and we concurred in the decision to return the report. Review of the report here confirms the wisdom of this action and we have a few additional comments as follows:

Title page - Title should include a reference to Natchez Trace Parkway.

Page 3, paragraph 1 - States that water of suitable quality occurs only from 40 to 80 feet, but, on page 4, paragraph 1, the lower limit is given as 100 feet. Both figures are quoted from Thomson, 1969. Perhaps Thomson is inconsistent, also. Further, on page 11, it is stated that water bearing sand is found at 118-128 and 180-228. These inconsistencies should be cleared up.

Page 3, paragraph 2 - This paragraph does not satisfactorily explain why the test holes were destroyed or abandoned. "Significant sands" should be defined in quantitative hydrologic terms.

We shall be interested in seeing the revised report.

(Sgd) MANUEL MORRIS

Manuel Morris

cc:
✓ MW

EWReed:rmb 9/8/70

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

154 (BLUE ENVELOPE)

TO : Gary Moore, Hydraulic Engineer, WSC

DATE: March 26, 1969

FROM : Chief of Maintenance, Natchez Trace

SUBJECT: Water Resources, Rocky Springs

Enclosed are copies of all available information that we have on the first test well drilling that was done at Rocky Springs Park in 1964. Also enclosed are four copies of a map of Rocky Springs Park, with the locations of all test well drilling marked on it. We are gathering all well drillers' logs on test well drilling at other locations on the Parkway, and will send you copies of these within the next two weeks.

Glenn C. Farrar
Glenn C. Farrar

Enclosures



5010-108

ENCLOSURE 3

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan



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MISSISSIPPI GEOLOGICAL ECONOMIC
& TOPOGRAPHICAL SURVEY

FREDERIC F. MELLEN, DIRECTOR & STATE GEOLOGIST
2525 N. WEST STREET
P. O. BOX 4915

JACKSON, MISSISSIPPI 39216

June 26, 1964

Mr. Glenn Farrar
Natchez Trace Parkway
Tupelo, Mississippi

Dear Mr. Farrar:

Attached is a copy of our sample description on the water well drilled at Rocky Springs in Claiborne County together with some notes on interpretation of the available data on this well and recommendations for future sampling and logging should you need to call on us in the future. Also attached is an electrical log of this well to the depth of 302 feet. We understand that the total depth of the well was 657 feet. Any other information that you have on this well including driller's log or water sample analyses would be a valuable addition to our file.

We regret that we were unable to render you better service on this project, but I believe that we could have logged the hole had we had access to it immediately after it was drilled.

Please feel free to call on us again but keep in mind that we need the samples on the well from the grass roots down in order to give you our best interpretation on the electrical log or on the formations penetrated by that well.

We appreciate your assistance in this matter and also the assistance of the Ground Water Division of the U. S. Geological Survey.

Very truly yours,

MISSISSIPPI GEOLOGICAL SURVEY

A handwritten signature in cursive script, reading "Frederic F. Mellen", is written over the typed name.

Director and State Geologist

FFM:mw
Attachments
cc Mr. Joe W. Lang

TEST WELL NO 1

Natchez Trace Water Well
Rocky Springs, Claiborne Co., Miss.

Samples examined 6/19 & 22/64 by F. F. Mellen

- 0-21 Sand, f-to crse-gr ang to sub-rded oxidized; few chips and granules of chert; silt, med-tan (loess)
- 21-42 Sand, as above; incr in gravel; also, 50% sdst, f-gr white to lt-tan kaolinitic (Catahoula)
- 42-63 Sandstone, f-gr silty wh to lt-tan sl mica kaolinitic; small amt (ca.1%) med-tan-gy silty clay; 35% uphole materials
- 63-84 Sand, v-f to f-gr silty lt-gy ang to sub-rded sl argillaceous
- 84-105 Sandstone, v-f to f-gr silty lt-gy v argil; small amt sdy clay; 25% small gravel and chert chips from above; com pyrite
- 105-126 Same as 84-105, but incr in clay, f-sdy lt-grn-gy to med-tan-gy
- 126-147 Clay, v sl silty v-lt-grn-gy; small amt sdst, as above; tr gy clay
- 147-168 Same as 126-147; incr in f-gr wh silty sd
- 168-189 Clay, as above; 5% clay, lt-grn-gy hackly to splintery; 10% siltst, f-sdy argillaceous
- 189-210 Clay, lt-grn-gy hackly to splintery; clay, med-tan-gy sl carb; 50% sdst & siltst, lt-gy argillaceous sl mica
- 210-231 Same as 189-210
- 231-252 Same
- 252-273 Same, but clays are sandier than above
- 273-294 Sand, v-f-med-gr lt-gy sl argillaceous; small amt clay, as above
- 294-317 Sand, f-med-gr ang to sub-ang lt-gy; com dk minerals; small com pyrite; small amt clay, as above
- 317-340 Sand, f-gr ang to sub-ang lt-gy, in part loosely cemented; com dk mineral grains
- 340-361 Same, but sl coarser

- 361-383 Sand, as above
- 383-406 Same
- 406-429 Same (sand appears to be cleaner and better sorted)
- 429-451 Sand, f-med-gr lt-gy ang to sub-ang; com dk mineral grains;
tr pyrite
- 451-455 Same; also com fossil frags including echinoid shell, bryozoan,
Lepidocyclina, and a few calcareous foraminifera (prob. Vicks-
burg)
- 567 Clay, med-tan to med-brn sl lignitic; com lt-med-grn clay,
possibly in part bentonite; com shell frags & chips lt-gy
fos glauc marl; com pyrite
- 588 Same; but 25% f-gr sd
- 609 Sand, f-med-gr lt-gy, com glauc & crse-gr sd from above?; incr
in lig; clays, as above
- 630 Same (sample poor)
- 657 Same as 630, but about 75% sand, mostly f-med-gr

Notes: After two attempts to run an electrical log on this well, Monday, June 22, M.G.S. Staff Geologist W. H. Moore secured a log to the depth of 302 feet. This was less than half the total depth of the well. The hole had been drilled several weeks earlier and not much information on the well was available to us. Twenty-two samples representing the interval 0 to 455 feet were furnished by the Ground Water Division (U.S.G.S.) five additional samples representing the interval 567-657 feet were brought in by Mr. Moore. About 100 feet (455-567) of samples in a critical position for correlation (through the Vicksburg lime section) were missing.

The Catahoula formation appears in the sample 21-42 and extends through the sample 429-451. The sample 451-455 contains Vicksburg fossils and, from samples, it appears that Catahoula sediments rest on Vicksburg where the Bucatunna clay and Byram marl have been eroded. This is unusual, but other examples of this are known. Confirmation of this relationship by electrical logging would be desirable. Samples below 455 feet are not very good or definitive. Assuming the Catahoula-Vicksburg contact at 451 feet, and using another log in the same township which has a

similar relationship, we would project the following:

Top of Forest Hill clay-sand	506 feet
Top of Yazoo clay	626 feet

The intervals vary but it is reasonable to believe that this well is bottomed in the Yazoo clay and the next possible water sand would be some hundreds of feet deeper.

The Survey is anxious to secure good samples on wells drilled for water or other purposes; and we are glad to run electrical logs on these wells where there is no evidence of eliminating private enterprise and where the data are needed by the Survey. But we wish to emphasize:

1. We must have good continuous samples and other data on the well, and
2. We need to log the hole immediately after it is drilled if at all possible.

The Survey will be pleased to furnish cloth sample bags for cuttings.

SUMMARY OF TEST WELLS DRILLED
FROM MAY 1964 THROUGH DECEMBER 1964
AT ROCKY SPRINGS PARK
NATCHEZ TRACE PARKWAY
CLAIBORNE COUNTY, MISSISSIPPI

TEST WELL NO. 1 (TOTAL DEPTH 655 FT.)

Formation Log

<u>Depth</u>	<u>Description</u>
0-18	Clay and chalk
18-26	Sand and gravel
26-75	Rock and chalk
75-95	Sand
95-290	Chalk
290-325	Sand
325-330	Chalk and Sand
330-455	Sand
455-655	?

TEST WELL NO. 2 (TOTAL DEPTH 105 FT.)

No log

TEST WELL NO. 3 (TOTAL DEPTH 383 FT.)

Formation Log

<u>Depth</u>	<u>Description</u>
0-79	Chalk and shale (some slight sand streaks)
79-103	Sand
103-363	Chalk and shale
363-383	Sand
383	Shale

TEST WELL NO. 4 (TOTAL DEPTH 94 FT.)

No log

TEST WELL NO. 5 (TOTAL DEPTH 103 FT.)

No log
Developed well

TEST WELLS DRILLED - ROCKY SPRINGS PARK (CONT.)

TEST WELL NO. 6 (TOTAL DEPTH 100 FT.)

Formation Log

<u>Depth</u>	<u>Description</u>
0-7	Topsoil
7-14	Gravel (creek bed)
14-30	Chalk and rock
30-33	Streak sand
33-40	Rock
40-65	Chalk and streaks of sand
65-90	Sand and streaks of rock
90-95	Rock
95-100	Chalk and streaks of rock

MISSISSIPPI STATE CHEMICAL BORRY

State College, Mississippi

M. P. Etheredge
State Chemist

June 16, 1964

Analysis No. 346,999

TEST WELL NO.

Analysis of WATER

Marked: New Well (20 mi. NE/Port Gib

Received on 6/11/64

from Glen Farrar, ~~Director~~
Natchez Trace Headquarters

Address Tupelo, Mississippi

RESULTS:

Dear Mr. Farrar:

We now have completed our analysis of your water sample and list our findings below.

	PARTS PER MILLION
pH	8.65
Total Solids	731.20
Loss on Ignition	38.00
Carbonate Radical, CO_3	12.00
Bicarbonate Radical HCO_3	614.90
Chloride Radical, Cl	30.00
Nitrite Nitrogen	0.00
Nitrate Nitrogen	0.00
Ammonia Nitrogen	0.78
Albuminoid Nitrogen	0.29
Total Hardness as CaCO_3	14.30
Free Carbon Dioxide, CO_2	0.00
Iron, Fe	1.20

The total solids are somewhat large and consist principally of sodium bicarbonate, with smaller amounts of sodium carbonate and sodium chloride. The water does contain small amounts of nitrogenous matter, but it is free of nitrate nitrogen. The hardness, which is slightly less than a grain per gallon, is due to the presence of a small amount of iron and calcium.

The water does contain some organic matter due to its being slightly on the alkaline side. We found that this could be removed by acidification and filtration. Of course, the pH would have to be adjusted back above 7.0. As discussed by telephone, we would suggest that you consult a firm that specializes in water treating equipment.

Sincerely yours,

(Sgd.) M. P. Etheredge
State Chemist

Please Give Number When Referring To This Analysis

C O P Y

Mississippi State Chemical Laboratory

State College, Mississippi

July 1, 1964

Old Location (455 ft.)
 New Location (100 ft.)
 New Location (383 ft.)
 New Location - later sample
 (383 ft.)

Analysis No. 3-1, 414-25-26-27-28

Analysis of FIVE WATERS

Marked: Templeton (80 - 100 ft.)

Received on 6/25/64

from Glen Farrar, Director
 Natchez Trace Headquarters

Address Tupelo, Mississippi

Dear Mr. Farrar:

RESULTS:

We have completed our examination of the five water samples which you brought to us, and we list our findings below.

	TEST WELL				
	NO. 1 OLD LOC. (455 ft.)	NO. 3 NEW LOC. (100 ft.)	NO. 3 NEW LOC. (383 ft.)	NO. 3 (later sample) NEW LOC. (383 ft.)	TEMPLETON (80-100 ft.)
pH	8.60	8.00	8.55	8.55	7.00
Total Solids	733.20	2,442.00	665.20	659.20	314.40
Loss on Ignition	28.40	136.00	23.20	26.40	24.40
Carbonate Radical, CO ₃	24.00	0.00	28.80	28.80	0.00
Bicarbonate Radical, HCO ₃	588.00	83.00	553.90	551.40	285.50
Chloride Radical, Cl	29.00	24.00	39.00	38.00	27.00
Nitrite Nitrogen	0.25	0.00	0.00	0.00	0.00
Nitrate Nitrogen	0.00	0.12	0.00	0.00	0.10
Ammonia Nitrogen	0.50	0.29	0.71	0.70	0.00
Albuminoid Nitrogen	0.07	0.48	0.29	0.34	0.00
Total Hardness as CaCO ₃	14.30	48.60	16.90	16.90	182.80
Free Carbon Dioxide, CO ₂	0.00	8.00	0.00	0.00	33.00
Iron, Fe	0.90	- - -	0.90	0.90	0.00

In the case of the old location, the results we obtained were essentially the same as for the previous sample. You will note that there has been some decrease in the bicarbonate, the ammonia and albuminoid nitrogen, and the iron content of the water.

In the case of the new location (100 ft.), the total solids (after filtering the water through paper) were fairly high due to the colloidal suspension of silty matter. The bicarbonate and chloride are both low in amount. The water does contain a small amount of nitrate, ammonia and albuminoid nitrogen. The hardness is approximately 3 grains per gallon. Obviously, the analysis of the water in its present state will not be too representative in some respects.

In the case of new location (383 ft.), you will note that the results are very similar to those obtained for the samples marked old location. The analysis on the later sample from the same location is seen to be about the same also.

In the case of the water marked Templeton, the total solids are small to medium in amount.

D. P. Ethelberg
 State Chemist

PLEASE GIVE NUMBER WHEN REFERRING TO THIS ANALYSIS

Mr. Glen Farrar
Lab. Nos. 347, 924-28
Page 2
July 1, 1964

and consist principally of calcium and sodium bicarbonate, with a small amount of sodium chloride. The hardness, due to the presence of calcium, is approximately 11 grains per gallon. The water also contains a small amount of nitrate.

Sincerely yours,



M. P. Etheredge
State Chemist

Mississippi State Chemical Laboratory

Box 1536
State College, MississippiM. P. ETHEREDGE
STATE CHEMIST

September 30, 1964



Analysis No. 350,756-57

Analysis of WATER (TWO SAMPLES)

Marked: See Below

Received on 9/23/64

from Glen Farrar
Natchez Trace Parkway

Address P. O. Box 948, Tupelo, Miss.

Dear Mr. Farrar:

RESULTS:

We have completed our analyses of the two samples of water which you brought to us recently and we list our findings below.

	Lab. No. 350,756 103' campnd--Rocky Springs	Lab. No. 350,757 80' pky. 230--Rocky Springs
pH - - - -	6.8	6.8
	TEST WELL NO. 5 DEVELOPED	PARTS PER MILLION TEST WELL NO. 6 DEVELOPED
Total Solids (Filtered)	328.80	627.60
Loss on Ignition	5.20	45.20
Carbonate Radical, CO_3	0.00	0.00
Bicarbonate Radical, HCO_3	300.10	312.30
Chloride Radical, Cl^-	19.00	21.00
Nitrite Nitrogen	0.00	0.00
Nitrate Nitrogen	0.00	0.00
Ammonia Nitrogen	0.32	0.40
Albuminoid Nitrogen	0.13	0.15
Total Hardness as CaCO_3	67.10	50.00
Free Carbon Dioxide, CO_2	64.00	68.00
Iron, Fe (Filtered)	0.00	3.1

As you will note, the two samples are essentially the same except for the large amount of silty matter that would not filter out of the sample marked 80' pky. 230. We also feel that the iron in this sample occurs in the suspended matter which does not filter out.

The total solids are small to medium in amount and consist of calcium and sodium bicarbonate in addition to a small amount of chloride. The waters are free of nitrite and nitrate nitrogen but do contain small amounts of ammonia and albuminoid nitrogen. In the case of the campground sample the hardness is approximately 4 grains per gallon and approximately 3 grains per gallon in the case of the other sample.

Sincerely yours,


M. P. Etheredge
State Chemist

PLEASE GIVE NUMBER WHEN REFERRING TO THIS ANALYSIS

Mississippi State Chemical Laboratory

State College, Mississippi

February 10, 1965

M. P. ETHEREDGE
STATE CHEMISTNATCHEZ TRACE PARKWAY
TUPALO, MISS.

RECEIVED

FEB 11 1965

Referred to	Referred to
Supl.	P.O.
Asst. Supl.	Prot.
Asst. Ch.	Intar.
Eng.	Reply

Analysis No. 354,486

Analysis of WATER

Received on 2/5/65

Address Box 948, Tupalo, Miss.

Marked: Rocky Springs - 100 Ft.

from Natchez Trace Parkway Headquarters

DEVELOPED

RESULTS:

Gentlemen:

We have analyzed the water which you last sent to our laboratory and we report our findings as follows:

pH - - - 6.9

PARTS PER MILLION

Total Solids	377.60
Loss on Ignition	6.80
Carbonate Radical, CO ₃	0.00
Bicarbonate Radical, HCO ₃	331.80
Chloride Radical, Cl	19.00
Nitrite Nitrogen	0.00
Nitrate Nitrogen	0.24
Ammonia Nitrogen	0.00
Albuminoid Nitrogen	0.00
Total Hardness as CaCO ₃	38.00
Free Carbon Dioxide, CO ₂	49.00
Iron, Fe	0.60

The dissolved solids are medium in amount and these consist principally of sodium bicarbonate together with lesser quantities of calcium bicarbonate and sodium chloride. There is also a very small amount of nitrates present but we do not believe that this would be particularly objectionable. The hardness is little more than two grains per gallon which also is not considered excessive.

Probably the worst thing with the water is the iron content. Even though there is only 0.6 parts per million this is in sufficient quantity to cause stains of a bathtub and should there be some organic matter present, which is indicative by the loss on ignition, the stains would be intensified. The sediment in the bottle was primarily silt and organic matter. In addition to this sediment, there seems to be some turbidity which is primarily caused by finely divided clay.

Sincerely yours,



State Chemist

PLEASE GIVE NUMBER WHEN REFERRING TO THIS ANALYSIS

Mississippi State Chemical Laboratory

State College, Mississippi

JAMES P. MINYARD, JR.
STATE CHEMIST

March 12, 1969

Natchez Trace Parkway	
Asst. Sup.	Fiscal
Asst. Dir.	Sundry
REC'D. MAR 13 1969	
3-13	BY
Range	Conserv.
Interp.	

Analysis No. 400,345

Analysis of WATER

Marked: Rocky Springs Streams -

Little Sand Creek

Received on 3/10/69

from Natchez Trace Parkway

Att: Glenn C. Farrar

Address Box 948, Tupelo, Miss.

cc: Gary
3/13/69
Ba

RESULTS:

Dear Mr. Farrar:

Our analytical results on the water sample that you sent us March 10 from the Rocky Springs Streams - Little Sand Creek are as follows:

Parts Per Million

pH	7.10
Total Solids (Filtered Sample)	87.20
Loss on Ignition	6.80
Bicarbonate Radical, CO_3^-	43.90
Chloride Radical, Cl^-	20.00
Nitrate Nitrogen	0.24
Total Soap Hardness as CaCO_3	26.00
Total Acidity as CO_2	8.00
Iron, Fe (Filtered Sample)	0.30

The total dissolved solids are small in amount, and consist principally of organic matter, sodium bicarbonate, sodium chloride, and calcium bicarbonate. The water is very slightly alkaline, and is soft, containing less than two grains per gallon hardness.

A small amount of dissolved iron is present, and this may cause some staining of the porcelain fixtures. Aside from this, the water appears to be an excellent one for cooking, drinking, and cleaning purposes.

Sincerely yours,

ENCLOSURE 1

James P. Minyard, Jr.
State Chemist

Mississippi State Chemical Laboratory

State College, Mississippi

JAMES P. MINYARD, JR.
STATE CHEMIST

March 5, 1969

NATCHEZ TRACE PARKWAY	
Supv. U.	Person's L.
Asst. Supv.	Fiscal
Adm. Off.	Supply
REC'D. MAR 6 1969	
Ex. Off.	D. & C.
Inventory	Conserv.
Action by	

Analysis No. 399,500

Analysis of WATER

Marked: Rocky Springs Stream

Received on 1/31/69

from Natchez Trace Parkway
Att: Mr. Farrar

Address Box 948, Tupelo, Miss.

RESULTS:

Dear Mr. Farrar:

Our analytical results on the water sample from the Rocky Springs stream that you sent us January 31 are as follows:

Parts Per Million

pH	7.20
Total Solids (Filtered Sample)	86.80
Loss on Ignition	7.20
Bicarbonate Radical, HCO_3^-	43.90
Chloride Radical, Cl^-	10.00
Total Soap Hardness as CaCO_3	24.10
Total Acidity as CO_2	5.00
Iron, Fe (Filtered Sample)	0.05
Fluoride	0.135

The total dissolved solids are low in amount, and consist principally of organic matter, sodium bicarbonate, sodium chloride, and calcium bicarbonate. The water is very faintly alkaline and is soft, containing only one and a third grains per gallon hardness. A trace of dissolved iron is present, but the level is insufficient to cause any problem. No evidence of bacteriological contamination is present. The level of fluoride ion is well below any dangerous levels suggested as maximum by the U. S. Public Health Service.

This water appears to be an excellent one for cooking and drinking purposes.

Sincerely yours,

ENCLOSURE 2

James P. Minyard, Jr.
State Chemist



IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

SOUTHEAST REGION, P. O. BOX 10008
FEDERAL BUILDING, RICHMOND, VA. 23240

D18 SER(PC)

MAY 23 1968

379-5-24-68

OWP
5/27

Memorandum

To: Chief, Land and Water Rights, WSC
From: Regional Director, Southeast Region
Subject: Water resources study for Rocky Springs, Natchez Trace

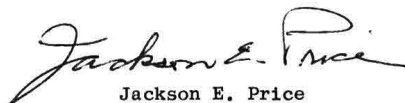
This will reaffirm our request which was recently made by telephone with personnel in your office and in Mr. Bainbridge's memorandum dated April 26.

A recent study by the Master Plan team at Natchez Trace has pointed out the need for a water resources study and soil permeability study of the drainage basin at Rocky Springs. This study is necessary to complete the Master Plan and Developed Area Plan for Rocky Springs in order that we may proceed with orderly construction development of the area. We would like to determine the yield of the watershed involved and the permeability of the soil to ascertain if these conditions are such that we may create a small lake for recreation purposes. We feel that this water oriented development is most desirable if water and soil conditions are appropriate. If not, we will have to develop the area along other lines.

In order to proceed with an orderly development, we must evaluate the resources we have. The Soil Conservation Service has been contacted and they would agree to accomplish such a study for the amount of \$5,000. Last year we considered using M&P funds to accomplish this study. Funds were not forthcoming. Again, this year, we considered using M&P funds for accomplishing this study and again funds were not available. After carefully reviewing the situation, we believe that this is a project for which water resource funds in your office should be made available since it is largely evaluating the surface water available in the drainage basin.

Therefore, it is requested that the \$5,000, if available, be allotted so the Soil Conservation Service can conduct this study. We would be unable, even if funds were available in the M&P account at this time, to allot funds for accomplishment say in July since these funds expire at the end of the fiscal year in which they are appropriated. As you know, construction funds which are obligated do not.

Your favorable consideration of this request will be very much appreciated, and certainly will save the Service money in the long run by eliminating any excessive planning costs incurred by not knowing quantitatively the resources we have available.


Jackson E. Price

cc:
Supt., Natchez Trace



UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
Natchez Trace Parkway
Tupelo, Mississippi 38801

JUL 21 1967

W. H. Robinson

IN REPLY REFER TO:

L54

July 19, 1967

Memorandum

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

From: Superintendent, Natchez Trace

Subject: Water Resources Program, Natchez Trace Parkway, 1968 F.Y.

As requested by Mr. Moore in his telephone call to Glenn Farrar on July 13, 1967, we are listing below our comments in regard to the above program.

Moore
Since only a limited supply of water was found originally at our Rocky Springs area, Section 3-S, and since considerable expansion is proposed, we recommend that we concentrate our study first at this area in Mississippi. Studies could begin later in the year for such areas as Tishomingo, Pharr Mounds, and Saltillo. We have already held one meeting with District Chief W. H. Robinson of the Jackson, Mississippi, U.S.G.S. office and others of his staff, and discussed the above plan. We do not believe that the \$3,000, mentioned by Mr. Moore to us as tentatively set up for contract drilling in Mississippi, would be sufficient for the Rocky Springs exploratory drilling. Therefore, we recommend that \$6,000 be set up for contract drilling in Mississippi with the omission of the \$3,000 for contract drilling for Tennessee this fiscal year.

Carroll
The other amounts mentioned by Mr. Moore, namely \$2,000 for U.S.G.S. contract work in Mississippi and \$1,500 for U.S.G.S. contract work in Tennessee, should remain the same. This will allow the studies to begin in Tennessee and continue during next fiscal year with contract drilling to follow thereafter.

Moore
Based on past experience the \$2,000 proposed for Park Participation is somewhat low if we are to continue with the water rights dockets, submission of information on springs, and participation in the U.S.G.S. studies.

Please let us know if you need additional information in this regard.

Joseph C. Rumburg, Jr.
Joseph C. Rumburg, Jr.

In duplicate

cc:
Regional Director, Southeast

Natchez Trace Parkway
Tupelo, Mississippi 38801

L54

March 6, 1969

Memorandum

To: Chief, Office of Land and Water Rights, WSC
From: Acting Superintendent, Natchez Trace
Subject: Water wells at Rocky Springs, Natchez Trace Parkway

We have your memorandum of February 5, 1969. We are in agreement with your office in that we should first consider going to a shallow well field. The peak future water demand at Rocky Springs Park has been estimated at 40,000 gpd. Three additional shallow wells producing 10 gpm each, plus the existing shallow well producing 14 gpm, would meet this estimated peak day water demand.

Mr. Moore of your office and Mr. Matthews of this office talked with the U.S.G.S. in Jackson, Mississippi, on February 27, 1969, concerning the shallow well field. It was decided that the three additional shallow wells should be located in the general area of the existing shallow well.

We would like to drill these wells in 1970 F.Y. A portion of the funds now programed during 1970 F.Y. for well drilling at Tishomingo Park and Pharr Mounds could be used to do this well drilling at Rocky Springs. The well drilling at Pharr Mounds and Tishomingo could be reprogramed the following year.

(SGD.) KEITH E. MILLER

Keith E. Miller

In duplicate

cc:
Regional Director, Southeast

772-10-15-68

Quc
10/15

L54 WSC-OLW

October 14, 1968

Mr. William H. Robinson
District Chief, Water Resources Division
U. S. Geological Survey
P. O. Box 2052
Jackson, Mississippi 39205

Dear Mr. Robinson:

We have received comments from our National Park Service offices concerning your recent report "Memorandum on the Ground-Water Resources of the Rocky Springs Park, Claiborne County, Mississippi." The primary concern to our planners and Design Office personnel is the color of 240. The Design Office is prepared to install fluoride removal units at all permanent residences and lower the pH, if necessary, but does not know how to plan for color removal. If it is due to only a simple compound, such as manganese bicarbonate, they will plan to use an oxidizing filter, but they must be certain before making their plans. There is great reluctance to use this water as a potable supply for the public with a color value of this extent.

Will it be possible for the Survey to make a complete chemical evaluation and recommendation for color removal? It is essential that all minerals in the water be accounted for as certain combinations are practically impossible to remove. One report indicated that the color may be due to lignites. Can this be proved and what system of color removal is available to us? Generally this requires exorbitant construction and subsequent maintenance costs.

The color, pH, and fluoride raises the question of drilling deeper to obtain a better quality water. The report indicates that the Sparta is the only fresh water aquifer below the Yazoo Clay and is about 1,800 - 2,000 feet deep in the Rocky Springs area. What are the possibilities of drilling into the Sparta and what would the quality be?

Figures 1 and 2 show #3 and AH-1 that we presume were test holes drilled for some unknown purpose. However, no description of #3 and AH-1 are given in the text. If a chemical analysis of water from these holes are

available, it might be helpful in determining whether to use the present well, drill another well to the same sand at a different location, or drill to the Sparta.

If extensive treatment of well water is necessary, the possibilities of a surface supply may be worth considering. We have tentative plans to create a recreational lake by construction of a dam on Little Sand Creek near the northern boundary. Could this creek be considered also as a potential potable water supply by means of a diversion at the southern boundary?

Your cooperation and assistance in this matter is appreciated.

Sincerely yours,

Richard L. Stanton

Richard L. Stanton
Chief, Office of Land
and Water Rights, WSC

cc:
Regional Director, Southeast
Superintendent, Natchez Trace
Chief, D&C, PSC
Chief, Branch of Water Resources

L54 ESC-LW

September 21, 1971

Memorandum

To: Chief, Division of Water Resources, WASO

From: Supervisory Hydraulic Engineer, Office of Land Acquisition
and Water Resources, ESC

Subject: 1970 F.Y. well drilling at Rocky Springs, Natchez Trace

In reply to your memorandum of September 1, we are enclosing copies of the information we have available for the test wells drilled at Rocky Springs. Please file this material in Water Right Docket No. 8.

All test wells drilled in 1969 F.Y. have not been placed in production.

(Sgd.) Richard W. Ketcham

Richard W. Ketcham

Enclosure

cc:
Director, Southeast Region
Superintendent, Natchez Trace Parkway w/c enc
ESC-EP&D Attn: Mr. Longworth

September 1, 1971

L54-CSW

Memorandum

To: Director, Eastern Service Center
Attention: Mr. Richard W. Ketcham

From: Chief, Division of Water Resources

Subject: 1970 F.Y. well drilling at Rocky Spring, Natchez Trace

All pertinent well data collected from the subject well drilling activities should be included in a water right docket assembly.

The information on hand indicates that six test holes were drilled of which two holes were dry, three holes yielded approximately 15 gpm, and the sixth hole yielded 100 gpm. Apparently, one or more of the producing wells will be or are being used as a supplemental source to the existing well drilled in 1964. If this is true, then the well data should be included as a part of Water Right Docket No. 8. Information should also be included therein on any modifications that may have been made to the existing Rocky Spring water system.

Your advice on this matter would be appreciated.



Manuel Morris

cc:
Director, Southeast Region (2)
ESC - Chief, EP&D
CSW(B) - Mr. Berte' - Rm. 708, 801 Bldg.
VABerte':sem 9/1/71

Mq/z
Berte'
Shills - Please file
in Natchez Trace
Water Right Docket

229-2/-15-20.

L54 ESC-LW

April 13, 1970

Memorandum

To: General Superintendent, National Capital Parks
Attention: Mrs. Elizabeth Read

From: Chief, Office of Land Acquisition and Water Resources, ESC

Subject: Contract No. 14-10-7:993-474, Drilling of Test Well, Rocky Springs,
Natchez Trace Parkway

Enclosed are the Unit Price Contract, Form 10-194, and the signed Release
of Claims, dated April 9, 1970, for the subject contract.

Richard L. Stanton
Richard L. Stanton

Enclosures

cc:
Director, Southeast w/c enc
Superintendent, Natchez Trace Parkway w/c enc
Chief, Division of Water Resources, WASO w/c enc
ESC-OPM w/c enc

RELEASE OF CLAIMS

For and in consideration of the receipt of final payment in the amount of \$8,177.00 from the United States of America (hereinafter call the Government) under and pursuant to Contract No. 14-10-7:993-474 for Drilling of Test Well, Rocky Springs, Natchez Trace Parkway, the undersigned hereby does remise, release, and discharge the Government, its officers, agents, and employees of and from any and all claims and demands whatsoever under or arising from the said contract, except specified claims in stated amounts listed as follows:

This release has been executed this 9 day of April 1970.

Dean L. Smith
(Contractor)

BY Dean L. Smith
Owner
(Title)

Form 10-194
(Rev. 9/60)UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

Check One:

Monthly
Estimate☐Final
Estimate☒NATCHEZ TRACE PARKWAY

(Park)

UNIT PRICE CONTRACT

ESTIMATE NO. 1	FOR (Period) January 15 - March 18, 1970	DATE 4/12/70
CONTRACT NO. 14-10-7:993-474	COMPLETION DATE March 18, 1970	EXTENDED DATE
CONTRACTOR Dean Griner Plumbing & Well Service		ORIGINAL CONTRACT \$ 7,435.00
PROJECT Test well drilling at Rocky Springs		CHANGE ORDERS* \$ 550.00
LOCATION Rocky Springs, Natchez Trace Parkway		TOTAL CONTRACT \$ 7,985.00

ITEM NO.	CONTRACT QUANTITY	DESCRIPTION	QUANTITY TO DATE	UNIT PRICE	AMOUNT TO DATE
1.	300 l.f.	Drill six-inch (6") test hole at three sites to obtain representative formation samples and allow for electric logging of hole.	572 l.f.	\$4.50	\$2,574.00
2.	3 ea	Furnish electric log of the test holes	0	0	0
3.	225 l.f.	Ream test hole from 6" diameter to minimum of 10.6" diameter.	151 l.f.	\$3.00	453.00
4.	75 l.f.	Under ream hole 6" diameter to minimum 14" diameter.	0	0	0
5.	240 l.f.	Furnish and install 6" ID casing and 2" minimum grout ring.	98 l.f.	6.00	588.00
6.	45 l.f.	Furnish and install 4" ID stainless steel well screen and 5 foot stub pipe section properly connected to pipe casing. (Pay quantity does not include the 5 ft. blank tail pipe sections.)	43 l.f.	25.00	1,075.00
7.	75 l.f.	Gravel pack each test well.	0	0	0
8.	15 l.f.	Furnish and install four-inch(4") ID lap pipe to top of well screen.	14 l.f.	4.00	56.00

Form 10-194
(Rev. 9/60)UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

Check One:

Monthly
Estimate☐Final
Estimate☒

(Park)

UNIT PRICE CONTRACT

ESTIMATE NO.		FOR (Period)		DATE 4/13/70	
CONTRACT NO. 14-10-7:993-474		COMPLETION DATE		EXTENDED DATE	
CONTRACTOR				ORIGINAL CONTRACT \$	
PROJECT				CHANGE ORDERS* \$	
LOCATION				TOTAL CONTRACT \$	

ITEM NO.	CONTRACT QUANTITY	DESCRIPTION	QUANTITY TO DATE	UNIT PRICE	AMOUNT TO DATE
9.	24 hr.	Develop well by pumping and surging.	29.5 hr	20.00	590.00
10.	16 hr.	Test well for yield and drawdown.	16 hr.	15.00	240.00
11.	12 hr.	Standby time for crew and equipment.	7.5 hr	20.00	150.00
12.	1 Job	Abandonment of well by direction of the Government.	3 Job	100.00	300.00
SUBTOTAL ORIGINAL CONTRACT					\$6,026.00

Form 10-194
(Rev. 7/60)UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

Check One:

Monthly
Estimate☐Final
Estimate☒

(Park)

UNIT PRICE CONTRACT

ESTIMATE NO.		FOR (Period)		DATE <u>4/13/70</u>	
CONTRACT NO. 14-10-7:993-474		COMPLETION DATE		EXTENDED DATE	
CONTRACTOR				ORIGINAL CONTRACT \$	
PROJECT				CHANGE ORDERS* \$	
LOCATION				TOTAL CONTRACT \$	

ITEM NO.	CONTRACT QUANTITY	DESCRIPTION	QUANTITY TO DATE	UNIT PRICE	AMOUNT TO DATE
CHANGE ORDER NO. 1.					
a.	475 l.f.	Drill six-inch (6") diameter test hole.	372 l.f.	\$3.00	\$1,116.00
b.	200 l.f.	Install four-inch (4") galvanized steel pipe.	200 l.f.	1.75	350.00
c.	5 l.f.	Install four-inch (4") stainless steel screen.	10 l.f.	25.00	250.00
d.	10 hr.	Develop well	29 hr	15.00	435.00
SUBTOTAL CHANGE ORDER NO. 1.					\$2,151.00
CHANGE ORDER NO. 2					
General adjustment of total contract amount to reflect an overrun of \$192.00 which is reflected in the above cost figures.					192.00
TOTAL CONTRACT					\$8,177.00

RECOMMENDED (Project Supervisor)		SUMMARY	
<i>Garland Moore</i> Garland Moore Hydraulic Engineer, ESC-LW		TOTAL TO DATE \$ <u>\$8,177.00</u>	
APPROVED (Contracting Officer)		LESS RETAINED AMOUNT.....	
<i>Ralph Ross</i> Ralph Ross Acting Chief, Division of Property Management and General Services		NET..... \$ <u>\$8,177.00</u>	
DATE <u>4/13/70</u>		LESS PREVIOUS PAYMENTS.....	
		LESS LIQUIDATED DAMAGES.....	
		DUE THIS ESTIMATE..... \$ <u>\$8,177.00</u>	
		% COMPLETED TO DATE: <u>100%</u>	

*Show Breakdown on Reverse

(See Reverse for Distribution)

138-3-10-70

M3/9/
Butem

L54 ESC-LW

March 5, 1970

Memorandum

To: Chief, Office of Land Acquisition and Water Resources, ESC

From: Hydraulic Engineer, ESC-LW

Subject: Trip Report - Natchez Trace Parkway, February 16 - 21, 1970

PURPOSE

1. To visit and note progress on Contract No. 14-10-7:993-474, Drilling of Test Wells, Rocky Springs, by Dean Griner Plumbing and Well Service, Columbia, Mississippi.
2. To collect basic data for Tennessee portion of Parkway - Nashville Terminus and Leipers Fork.

VISITED

National Park Service

Superintendent Robert C. Haraden
Assistant Superintendent Keith E. Miller
Chief of Park Maintenance Glenn C. Farrar
Civil Engineer Bobbie Matthews

U. S. Geological Survey (Mississippi)

Roy Newcombe, Geologist
Frederick H. Thomson, Geological Engineer
James A. Callahan, Physical Science Technician

Outside Service

Mr. Turner Dunn of Barge, Waggoner, and Sumner,
Engineers and Planners, Nashville, Tennessee
Mr. Henshaw of Henshaw, Honeycutt & Lewis, Inc.
Nashville, Tennessee
Mr. Tom L. Kinnie, Plant Manager, Harpeth Valley Utility
District

PURPOSE 1.

To date, the Contractor has drilled a total of five test holes in the southwest portion of the Rocky Springs Area. Preliminary indications are that two wells will produce a combined yield of 30 g.p.m. The three additional holes varying in depth from 106 feet to 148 feet were abandoned.

The contract called for the drilling of three test wells. Upon recommendations from the U. S. Geological Survey and as dictated by field conditions, only two producing wells will be drilled. It is estimated that this portion of the contract will cost \$5,885.00.

In consultation with the U. S. Geological Survey (Mississippi) I learned that a recent electric log taken of well AH-1 (Baptist Church) location shown in Figure 1 of memorandum on the Ground Water Resources of Rocky Springs Park - Claiborne County, Mississippi, by F. H. Thomson, U. S. Geological Survey, shows that two sand bearing aquifers are in existence.

The U. S. Geological Survey believes that the two sand aquifers may be found at 200 and 450 feet below ground surface in the area marked X on Figure 1.

Negotiations with the well driller, Mr. Griner, resulted in Change Order No. 1 calling for an observation well to be drilled to a depth of 475 feet. The observation well is to measure 4 inches in diameter and bottomed with 5 feet of stainless steel screen. The upper 10 feet is to be grouted. Total estimated price \$2,050.00.

The observation well is necessary in order to give us advance information on the availability of water on the northeast portion of the Rocky Springs Area for the proposed expansion of visitor oriented facilities in that area.

In discussing the final report of this project with the Survey, I asked them to include the following material in their basic data report:

1. Time, distance, drawdown computation of each well that is test pumped and the interference of one well in operation on the other two wells, and the total area of influence by pumping three wells simultaneously.

2. Based on all the information collected (13 wells when the 475 foot observation well is completed) prepare a geology map of the area relating the geology to its hydraulic characteristics.

U. S. Geological Survey agreed to the above.

PURPOSE 2.

Nashville Terminus:

U. S. Geological Survey Report - "Ground Water Prospects Along the Natchez Trace Parkway, Tennessee," by Gerald K. Moore and Charles R. Burchett, WRD, studied a site two miles to the north of the proposed development. In a conversation with Mr. Charles R. Burchett, it was learned that the geology as related to its hydraulic characteristics are similar to the area two miles south of the study area. Please note that the present proposed site was changed since the study was initiated.

Visited Mr. Turner Dunn of Barge, Waggoner, and Sumner Engineers and Planners at Nashville Terminus and learned that the Nashville Terminus Development Area is within the Harpeth Valley Water Utility District. A 6-inch main is located about 3,000 feet from the proposed park boundary.

An economic feasibility report will be prepared with recommendations on whether this area is to be served with a Government owned well source, or it would be more advantageous for the Government to tie in with the Utility Water District. According to the Water Resources proposal submitted by the Park, water will not be needed till 1981.

Leipers Fork:

The proposed development site is currently being served by HB and TS Utility District (Hillsboro, Burwood, and Thompson Station).

An engineering feasibility report is being prepared with recommendations on whether it will be more advantageous to the Government to drill its own water well source or to tie in with the existing utility district.

According to the Water Resources Proposal submitted by the Park, water will not be needed till 1977.

RECOMMENDATIONS:

1. That we conduct a survey along the entire Natchez Trace Parkway to determine:
 - a. If a water utility district is located in the area of a proposed development site.
 - b. Prepare a preliminary economical engineering report on whether it will be advantageous for the Government to drill its own water supply or to tie in with an existing water utility system.

/s/ Garland Moore
Garland Moore

Enclosure

cc:
Regional Director, Southeast w/c enc
Superintendent, Natchez Trace Parkway w/c enc
Chief, Office of Environmental Planning & Design, ESCw/c Enc. Attn: Mr. Longworth
/Chief, Division of Water Resources, WASO w/c enc

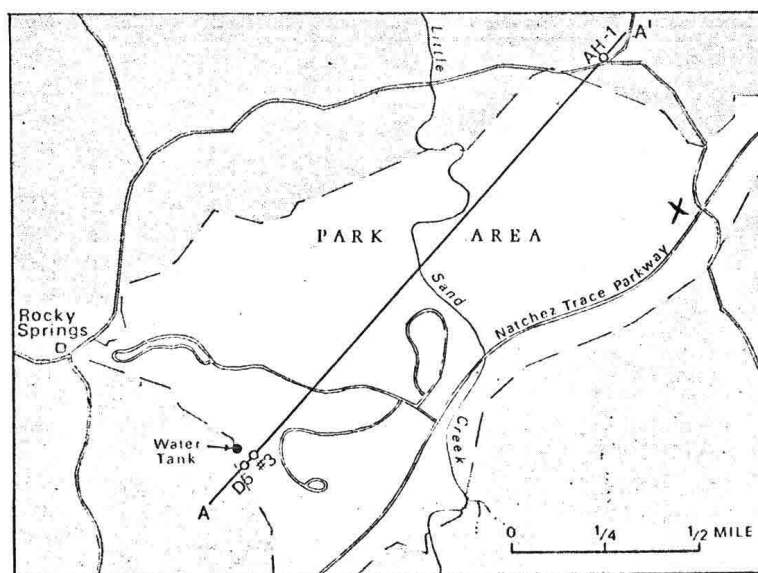
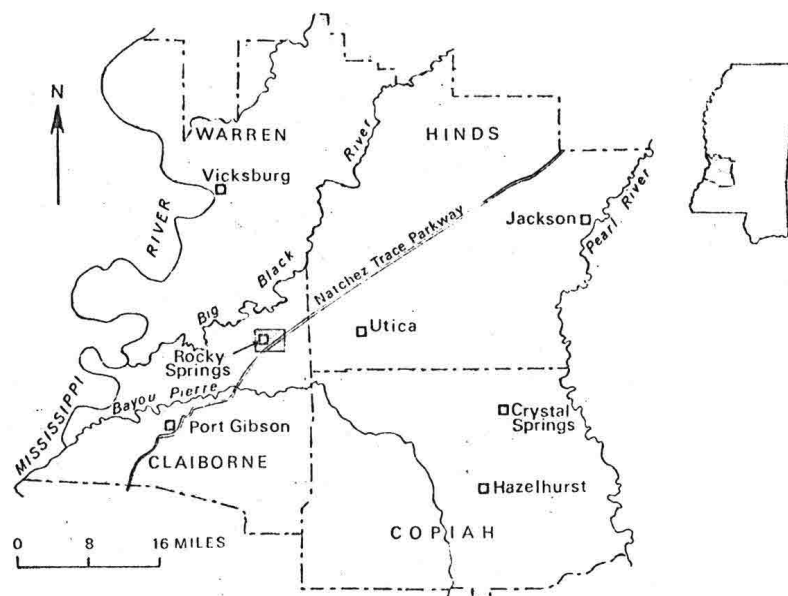


Figure 1.--Location of Rocky Springs Park.

Copied from - MEMORANDUM ON THE GROUND-WATER RESOURCES OF ROCKY SPRINGS PARK,
CLAIBORNE COUNTY, MISSISSIPPI by F.H. Thomson

897-11-4-69

L54 WSC-WR

October 31, 1969

Mr. Lamar E. Carroon
District Chief, Water Resources Division
U. S. Geological Survey
P. O. Box 2052
Jackson, Mississippi 39205

Dear Mr. Carroon:

We are pleased to advise that the water resources investigation at Natchez Trace Parkway will be continued during the 1970 fiscal year.

Funds in the amount of \$1,500 are available on a reimbursable basis to cover the cost of U. S. Geological Survey assistance in the development of a ground-water supply at Rocky Springs. We will drill, test, and if successful, finish three 100-foot wells at Rocky Springs this fiscal year. The Survey should provide (1) observation, supervision, and technical advice on the drilling; (2) a complete chemical quality analysis of the water; (3) preparation of a final report summarizing the project. This work should commence in December 1969.

The billing of all expenses for reimbursement to your appropriation should be handled directly with this office. The Standard Form 1081 should be made out to the National Park Service, National Capital Region, 1100 Ohio Drive, S.W., Washington, D. C. 20242, Attention: Mr. Richard W. Ketcham.

We request that any report prepared by the U. S. Geological Survey containing geologic and hydrologic data collected during the investigation be submitted in eight copies to the Park Service for review before it is released to the public.

We greatly appreciate the excellent cooperation and assistance received from members of your staff. Prompt acknowledgment of this letter is requested.

Sincerely yours,

cc:

Regional Director, Southeast	Richard W. Ketcham
Chief, Division of Water Resources,	Supervisory Hydraulic Engineer,
Chief, Office of Environmental	Water Resources, WSC
Planning & Design, WSC	
Superintendent, Natchez Trace	
Regional Director, NCR, Attn: Mr. Hough - Please obligate \$1,500 against WSC	
Acquisition of Water Rights Construction Appro. 14X1035 Work Order WSC-WR 70B	
(604-212782 Projects)	

CONSTRUCTION CONTRACT RECORD

1. Contract No. 14-10-7:993-474

2. Area Natchez Trace Parkway

3. Appropriation 14X1035

4. Bids Opened November 19, 1969

5. Award Recommended (date) November 19, 1969

6. Award (date) _____ Contract (date) \$7,435.00

7. Contractor Dean Griner Drilling Service, Inc.
 , Address Box 309, Columbia, Mississippi 39429

8. Notice to Proceed January 9, 1970

9. Date of Receipt of Notice to Proceed January 14, 1970

10. First Day of Contract January 15, 1970

11. Contract Time 45 Calendar Days

12. Completion Date February 16, 1970, Change Order #1 - March 18, 1970

13. Change Order:

No	Date	Amount	New Contract Amount	Date Approved	Date Accepted by Contractor
1	March 2, 1970	\$550.00	\$7,985.00	March 2, 1970	March 16, 1970

14. Final Inspection:

Made on March 13, 1970

Persons Attending Civil Engineer, Bobbie Matthews, Natchez Trace Parkway

15. Letter of Acceptance (date) April 3, 1970

16. Release of Claims (date) April 3, 1970

17. Preliminary Report:

Water Quality _____

Yield of Well _____

Specific Capacitance _____

18. Successful () Unsuccessful ()

19. Remarks _____

Award of contract delayed pending approval of Performance and

Payment Bonds.

Drilled a total of 6 test wells. 3 test wells were abandoned.
Preliminary estimates are that Test wells #9 and #11 will yield 35 g.p.m.
Test well No. 13, preliminary estimate yield 40 g.p.m.

Advance data on each test well:

Test hole #8 drilled to 106 feet - dry - abandoned.

Test hole #9 drilled to 106 feet - 40 feet of sand, 25 feet screen
installed - estimated yield 15 g.p.m.

Test hole #10 - drilled to 106 feet - dry - abandoned.

Test well #11 - drilled to 105 feet - 12 feet and 6 feet sand separated by
four feet of clay, screened both sand layers - estimated
yield 15 g.p.m.

Test well #12 - drilled to 148 feet - dry - abandoned.

Test well #13 - drilled to 372 feet, cased to 212 feet, estimated yield
50 g.p.m.

PROJECT STATUS UNDER WATER RESOURCES STUDIES AND WATER RIGHTS ACQUISITION PROGRAMS

<u>Eastern Service Center</u>	<u>1970</u>	<u>March 31, 1970</u>
(Service Center Office)	(Fiscal Year)	(Date)

Natchez Trace Parkway
(Area)

FUNDING STATUSM&PCONSTRUCTION

<u>Rocky Springs</u>	<u>Authorized</u>	<u>Obligated</u>	<u>Paid</u>	<u>Authorized</u>	<u>Obligated</u>	<u>Paid</u>
(Site or Activity)						
Park participation						
Geological Survey (Miss.)					\$1,500.00	
Private Contract #14-10-7:993-474)					7,435.00	

(Site or Activity)
Park participation
Geological Survey
Private

(Site or Activity)
Park participation
Geological Survey
Private

Estimate	Begin	January 1970
	Completed	June 1970

PROJECT PROGRESSREMARKS

Requested assistance	October 10, 1969
Confirmation	November 13, 1969

(Site or Activity)

PURPOSE: To locate ground water supply for proposed development at Rocky Springs area.

(Site or Activity)

(Site or Activity)

PROJECT STATUS UNDER WATER RESOURCES STUDIES AND WATER RIGHTS ACQUISITION PROGRAMS

<u>Washington</u> (Service Center Office)	<u>1968</u> (Fiscal Year) (Carry over)	<u>March 31, 1969</u> (Date)
<u>Natchez Trace Parkway</u> (Area)		
<u>FUNDING STATUS</u>	<u>M&P</u>	<u>CONSTRUCTION</u>
<u>Mississippi (Rocky Springs)</u> (Site or Activity)	<u>Authorized</u> <u>Obligated</u> <u>Paid</u>	<u>Authorized</u> <u>Obligated</u> <u>Paid</u>
Park participation		\$ 678.00 \$ 678.00 \$ 678.00 (b)
~~Geological Survey~~ Soil Conservation Service		(a) 5,000.00 5,000.00 5,000.00
Private Jackson, Mississippi		

(Site or Activity)
Park participation
Geological Survey
Private

(Site or Activity)
Park participation
Geological Survey
Private

PROJECT PROGRESSREMARKS

Mississippi (Rocky Springs)
(Site or Activity)

- (a) Rocky Springs Lake feasibility study.
Original request for service by memorandum from
Regional Director, Southeast Region, to Chief, OLW, WSC,
dated May 23, 1968.

Concurrence of request memo from Acting Chief, OLW-WSC,
to Regional Director, Southeast Region, dated May 28,
1968.

(Site or Activity)

- (b) Reflected in SF1081 (SERO) dated November 29, 1968.
Cleared for payment January 16, 1969

(Site or Activity)

OBJECT STATUS UNDER WATER RESOURCES STUDIES AND WATER RIGHTS ACQUISITION PROGRAMSWashington(Service Center Office)1968(Fiscal Year)(Carry over)December 31, 1968(Date)Natchez Trace Parkway(Area)FUNDING STATUSM&PCONSTRUCTION

<u>Mississippi (Rocky Springs)</u> <u>(Site or Activity)</u>	<u>Authorized</u>	<u>Obligated</u>	<u>Paid</u>	<u>Authorized</u>	<u>Obligated</u>	<u>Paid</u>
Park participation				\$ 678.00	\$ 678.00	\$ 678.00 (b)
~~Geological Survey~~ Soil Conservation Service				5,000.00	5,000.00	--
Private Jackson, Mississippi						

(Site or Activity)

Park participation

Geological Survey

Private

(Site or Activity)

Park participation

Geological Survey

Private

PROJECT PROGRESSREMARKSMississippi (Rocky Springs)
(Site or Activity)

(a) Rocky Springs Lake feasibility study.
Original request for service by memorandum from
Regional Director, Southeast Region, to Chief, OLW, WSC,
dated May 23, 1968.

Concurrence of request memo from Acting Chief, OLW-WSC,
to Regional Director, Southeast Region, dated May 28,
1968.

(Site or Activity)

(b) Reflected in SF1081 (SERO) dated November 29, 1968.

(Site or Activity)

PROJECT STATUS UNDER WATER RESOURCES STUDIES AND WATER RIGHTS ACQUISITION PROGRAMS

<u>Washington</u> (Service Center Office)	<u>1968</u> (Fiscal Year)	<u>September 30, 1968</u> (Date)
<u>Natchez Trace Parkway</u> (Area)		
<u>FUNDING STATUS</u>	<u>M&P</u>	<u>CONSTRUCTION</u>
<u>Mississippi</u> (Site or Activity)	<u>Authorized</u> <u>Obligated</u> <u>Paid</u>	<u>Authorized</u> <u>Obligated</u> <u>Paid</u>
Park participation		
Geological Survey	\$1,000.00 \$1,000.00 (e) \$1,000.00	\$3,000.00 \$3,000.00 (e) \$2,728.77
Private		2,000.00 2,000.00 (e) \$2,000.00
		8,299.50 8,299.50 8,299.50
		-- (c) 680.00
<u>Tennessee</u> (Site or Activity)	(b) \$1,000.00 \$1,000.00 (e) \$1,000	(b) \$1,500.00 \$1,500.00 (e) \$1,500.00
Park participation		
Geological Survey		
Private		
<u>Mississippi</u> (Site or Activity)		
Park participation		
~~Rocky Springs~~ Soil Conservation Service, Private Jackson, Mississippi	(d) \$5,000.00	\$5,000.00
<u>PROJECT PROGRESS</u>	<u>REMARKS FINAL SUBMISSION</u>	
<u>Rocky Springs</u> (Site or Activity)	(a) Contract #14-10-1:604-296 awarded to Dean Griner Plumbing and Well Service, Columbia, Mississippi. Yield 100 g.p.m. Fluoride is excessive.	
	(b) U.S.G.S. in Tennessee to make site investigation this fiscal year. Standard Form 1081 for \$2,500.00 has been received. This S.F. 1081 will be cleared for payment upon receipt of preliminary geo-hydrological report along Natchez Trace Parkway in Tennessee.	
	(c) Telecom this office requesting additional \$680.00 for pumping the well at Rocky Springs, Mississippi.	
	(d) Rocky Springs Lake feasibility study. Project funds carried over to 1969 F.Y.	
	(e) U. S. Geological Survey SF1081 payments to Mississippi and Tennessee completed in August 1968.	

PROJECT STATUS UNDER WATER RESOURCES STUDIES AND WATER RIGHTS ACQUISITION PROGRAMS

<u>Washington</u>	<u>1968</u>	<u>September 30, 1968</u>
<u>(Service Center Office)</u>	<u>(Fiscal Year)</u>	<u>(Date)</u>
	<u>(Carry over)</u>	
<u>Natchez Trace Parkway</u>		
<u>(Area)</u>		

<u>FUNDING STATUS</u>	<u>M&P</u>			<u>CONSTRUCTION</u>		
	<u>Authorized</u>	<u>Obligated</u>	<u>Paid</u>	<u>Authorized</u>	<u>Obligated</u>	<u>Paid</u>
Mississippi (Rocky Springs)						
(Site or Activity)						
Park participation				\$ 678.00	\$ 678.00	\$ 678.00
~~Geological Survey~~ Soil Conservation Service				5,000.00	5,000.00	--
Private Jackson, Mississippi						

(Site or Activity)
Park participation
Geological Survey
Private

(Site or Activity)
Park participation
Geological Survey
Private

PROJECT PROGRESSREMARKS

Mississippi (Rocky Springs)
(Site or Activity)

(a) Rocky Springs Lake feasibility study.
Original request for service by memorandum from
Regional Director, Southeast Region, to Chief, OLW, WSC,
dated May 23, 1968.

Concurrence of request memo from Acting Chief, OLW-WSC,
to Regional Director, Southeast Region, dated May 28,
1968.

(Site or Activity)

(Site or Activity)

72-3-4-20

LS4 ESC-LW

March 2, 1970

CHANGE ORDER NO. 1

Mr. Dean Griner
Dean Griner Plumbing & Well Service
Broad Street
Columbia, Mississippi

Dear Mr. Griner:

In accordance with the provisions of Article 1 of your Contract No. 14-10-7:983-474, dated November 24, 1969, you are directed to perform the following extra work.

1. Furnish all labor, equipment, and material for the following:
 - a. Drill six-inch (6") diameter test hole to a maximum depth - 475 l.f. @ \$3.00 l.f. - \$1,425.00
 - b. Install four-inch (4") galvanized steel pipe 200 l.f. @ \$1.75 l.f. - 350.00
 - c. Install four-inch (4") stainless steel screen five-foot (5') long @ \$25.00 l.f. - 125.00
 - d. Develop well estimated 10 hours @ \$15.00 per hour - 150.00

Total cost of extra work \$2,050.00

In addition to the above, you are directed to delete the following from your contract:

Item #2

Furnish electric log of the test holes - \$1,500.00

DIVISION OF WATER RESOURCES			
NO.	INFO.	NAME	INIT. DATE
		MORRIS, M.	
		CARBAN, J.	
		GREBIA, M.	
		SWANN, L.	
1		REED, B.	APR 7/70
2		BERTE, V.	
		CALCAMP, L.	

This provides for the sixth hole to be drilled. Five have been drilled to date. 3 of the 5 have been abandoned. 2 of the 5 apparently offer a combined yield of 30 gpm. See attached "Statement of Fact." V/c

This change order will increase your contract amount from \$7,435.00 to \$7,985.00.

An allowance of thirty (30) additional days will be made on account of the extra work involved and your completion date is changed accordingly from February 16, 1970, to March 18, 1970.

Very truly yours,

Signatures 2-70

Ralph R. Ross
Acting Regional Chief, Division of
Property Management and General
Services/Contracting Officer

Mr. Ralph R. Ross
Acting Regional Chief, Division of
Property Management and General Services
Eastern Service Center, NPS
4228 Wisconsin Avenue, N.W.
Washington, D. C. 20242

Date _____

Dear Mr. Ross:

Change order #1 for Contract No. 14-10-7:993-474 has been received and is acceptable.

Dean Griner Plumbing & Well Service

By _____

cc:
General Superintendent, NCP, Attn: Finance Office
Regional Director, Southeast
Superintendent, Natchez Trace Parkway
Chief, Division of Water Resources, WASO

March 2, 1970

FINDINGS OF FACT

Change Order No. 1, Contract No. 14-10-7:983-474

To date the Contractor, Dean Griner Plumbing and Well Service of Columbia, Mississippi, has drilled a total of five test holes in the Rocky Springs Area, Natchez Trace Parkway. Preliminary indications are that two of the five holes may provide water with an estimated yield of 30 g.p.m. Three test holes have been abandoned. This contract represents a continuing effort by this office to locate water in this area. A total of seven test wells have been previously drilled resulting in two production wells (18 and 5 g.p.m., respectively).

Proposed development plans for Rocky Springs call for a large visitor complex on the northeast side of Little Sand Creek for which water will be required. It is our intent to drill a test hole 475 feet deep in order to intercept two sand aquifers believed to be located at about the 200 and 450 foot depths in this area.

The Contractor has agreed to drill the additional test well at a price which is both fair and reasonable and is lower than if another contractor would be required to move in to do this project.

/s/ Garland Moore

Garland Moore
Hydraulic Engineer

12 test holes

984-62-5-68.

L54 WSC-WR

November 18, 1969

Memorandum

**To: Acting Chief, Office of Land Acquisition and Water Resources, WSC
Through: Chief, Water Resources Section, WSC**

From: Hydraulic Engineer, Water Resources Section, WSC

Subject: Report Natchez Trace Parkway - 1969

I visited the following persons:

National Park Service

**Mr. Glenn C. Farrar, Chief of Park Maintenance
Bobbie Matthews, Civil Engineer**

U. S. Geological Survey

**Lamar E. Carroon, District Chief, Water Resources
Division
Fred Thompson, Geologist**

Mississippi Board of Water Commissioners

**Mr. Pepper, Water Engineer (telephone)
Mr. Pitcher, Administrative Assistant**

PURPOSE OF TRIP

- 1. To become familiar with the Rocky Springs Area against the background on the Lake feasibility study performed by the Department of Agriculture-Soil Conservation Service at Jackson, Mississippi.**
- 2. To meet with members of the U. S. Geological Survey (Mississippi) regarding the comprehensive water resources study of Natchez Trace Parkway and with the Administrative Officer of the Mississippi Board of Water Commissioners, regarding Mississippi Water laws.**

PURPOSE 1. ROCKY SPRINGS AREA

Existing facilities

The area presently entertains two residences, maintenance area, contact station, a 50 site campground, and picnic area.

Existing Water System

The area is presently served by two wells capable of yielding 5 and 14 g.p.m. each.

The water level in the 25,000 gallon above ground water storage reservoir is electrically float controlled.

Water use is not metered.

The estimated maximum water demand per day is as follows:

Two residences - 8 persons @ 150 g.p.d.	= 1,200 g.p.d.
Campground 750 persons x 25 g.p.d.	= 18,850 g.p.d.
Picnic Area 945 persons x 5 g.p.d.	= <u>4,725</u> g.p.d.
Total estimated daily water demand	24,775 g.p.d.

The wells are capable of delivering 13,680 g.p.d. At 19 g.p.m. (12 hours daily operation schedule) with capacity of 25,000 gallons the system is capable of meeting all visitor water demands with limited water storage to meet a fire demand.

Proposed Facilities

As envisioned in the Master Plan which is being prepared, the following proposed facilities and estimated water demand is computed.

Group Campground (270 sites x 3.5 x 25)	= 23,625 g.p.d.
Picnic Area (50 sites x 3.5 x 5)	= 875 g.p.d.
Picnic Area Expansion Area (50 sites x 3.5 x 5)	= 875 g.p.d.
Bath House (500 x 10)	= 5,000 g.p.d.
Picnic Area (60 sites x 3.5 x 5)	= 1,050 g.p.d.
Lodge and Concessioner's Residence	= 5,000 g.p.d.
Cabins (10 x 3 x 25)	= 750 g.p.d.

Campground (150 sites x 3.5 x 25)	= 13,125 g.p.d.
General Recreation Area	
Seasonal Ranger Residence (4 x 150)	= 600 g.p.d.
Lake	
Total estimated daily water demand with visitor population of 1,885	50,900 g.p.d.

Proposed Water Sources

There are three potential sources where water could be diverted to meet the water requirements of the area:

1. Little Sand Creek flows through with an annual runoff equivalent to 12 inches a year is capable of delivering an estimated yearly flow of 3,510 acre feet of water of which 18.5% flows during the visitor season (June to September).

Master Planners envision the impounding the Little Sand Creek to form a lake with an estimated volume capacity of 1,860 acre feet at a lake elevation of 155.0 feet above MSL.

The use of water from this source will require the construction of an intake system with chlorination being the minimum water treatment required. As the creek flows through uninhabited forested area, the quality of water is not expected to deteriorate for a number of years because of the impact of urbanization or farming. See Enclosure 1 for Chemical Analysis.

RECOMMENDED.

Lake Water may have to be fertilized to encourage the growth of plankton in order to support a forage for a fish population such as blue gill. The introduction of excessive nitrates, phosphates, and potassium in the lake water compounded by increased turbidity and visitor contamination increasing the cost of water treatment. LAKE WATER IS NOT RECOMMENDED.

A plan view of the proposed lake in relation to the Parkway boundary, parkway, etc., is shown as Figure 1 and 1a.

2. Rocky Springs Creek will undoubtedly be used as an interpretative feature. See Enclosure 2 for chemical quality of the creek water. NOT RECOMMENDED.

3. Ground Water: A total of seven test holes have been drilled in the Rocky Springs Area by this Service.

Test Well #1	655 feet
Test Well #2	105 feet
Test Well #3	383 feet
Test Well #4	94 feet
Test Well #5	103 feet
Test Well #6	100 feet
Test Well #7	7 feet

See Figure 2 for location of all test wells drilled in this area.

Driller's logs are available on all test holes drilled, unfortunately an E-log was made for only Test Wells #1 and #7. Enclosed is a copy of a cutting analysis of Test Well No. 1 by the Mississippi Geological Economic and Topographical Survey and driller's logs for Test Wells #1 to #6, inclusive, with chemical analysis. See Enclosure 3.

The geology of the area is such that the area is underlain with Catahoula Sandstone (400 to 500 feet thick); Vicksburg Group consisting of Bucatunna Clay, Byram Clay, and limestone (74 to 155 feet thick); Forest Hill Sand; and Yazoo Clay. According to Newcombe the base of fresh water is about 2,000 feet below sealevel; however, it is probable that all fresh water aquifers found below 200 feet or so will be highly colored.

The two wells (#5 and #6) are bottomed in the Catahoula Sandstone and yield 5 and 14 g.p.m., respectively.

PURPOSE 2a. U. S. GEOLOGICAL SURVEY - COMPREHENSIVE WATER RESOURCES STUDY OF THE PARKWAY

In response to our memorandum to the Parkway, dated August 18, 1967, the Parkway staff submitted to us on October 1967 a list of areas with priorities that ground water investigation should be made. Inasmuch as the Parkway extends into three states (Tennessee, Alabama, and Mississippi) the Geological Survey has indicated that the Mississippi office should serve as coordinator of the project if and when the National Park Service decides to fund such a project.

In my discussion with Mr. Carroon, he mentioned that the Survey has not discussed this project in detail but he envisioned that the final product of the comprehensive study of water resources along the Natchez Trace Parkway would probably take the form of a hydrologic atlas.

In reviewing the NEED for a comprehensive study on water resources of the entire Parkway, it can be concluded that such a study is a necessity but should be limited to each individual area. The final product should not be illustrated as a hydrologic atlas as the configuration of the Parkway (average width - 800 feet, length 450 miles) does not lend itself to the same treatment as we have attempted to do at Great Smoky Mountain National Park. The impracticality of the hydrologic atlas approach is further emphasized by the great number of test well drilling that will be required on private property in order to obtain a meaningful lateral interpretation of the geo-hydrologic regime along the length of the Parkway.

Data gaps between developed areas can be filled in in a general way by a study chart prepared by the U. S. Geological Survey and the Mississippi Board of Water Commissioners which shows that fresh water generally occupies the upper 1,500 to 2,500 feet of the surface and as such fresh water is, excepting some local areas, generally easy to get.

The only practical way for this Service to get a Hydrologic Atlas for the entire Parkway in a format similar to that of Great Smoky Mountains National Park is to enter into a joint venture with the U. S. Geological Survey and the State of Mississippi on a cost sharing basis.

This sudden shift in direction is not to be misinterpreted that this office should discontinue our test well drilling program in the area. This recommended action is taken as a refinement of our initial approach to a comprehensive water study of the area with practicality of objectives, funds available, and the mission of our organization as guide posts.

STATUS OF U. S. GEOLOGICAL SURVEY PRELIMINARY REPORTS ON AREAS

<u>Priority</u>	<u>Area</u>	<u>Remarks</u>
1	Rocky Springs	Test well drilling of wells - Invitation to bid to be opened on November 19, 1969.
2	Tishomingo State Park	Transfer of park by Mississippi State Legislature has not been done. U. S. Geological Survey preliminary report

<u>Priority</u>	<u>Area</u>	<u>Remarks</u>
		completed. It is to be noted that the State Park presently receives its water from a spring and a well. Chemical analyses of both sources indicate that the water meets U. S. Public Health Service Drinking Water Standards.
3	Pharr Mounds Historic Site	U. S. Geological Survey preliminary report received on July 12, 1969. A well producing 10 g.p.m. can be constructed at any point in the area. Excessive iron can be anticipated. Five g.p.m. will meet the needs of the proposed development of the area if sufficient storage is maintained. Test well drilling is not necessary.
4	Leipers Fork	U. S. Geological Survey preliminary report received on September 18, 1968, is contradictory in that they state that the chances of obtaining 5,000 g.p.d. is fair and later on state that there is a very good chance of obtaining 2 to 6 g.p.m. from the upper 150 feet of the Knoy. Interim test well drilling recommended pending clarification from U. S. Geological Survey. The nearest alternate source of water is over a mile away. A well capable of producing 5 g.p.m. with 50 K. storage will be required.
5	Nashville Terminus	U. S. Geological Survey preliminary report received. Harpeth Valley Utility District located within 1/2 mile of proposed development area - Economic study to be made on whether well or municipal water is to serve area.
6	Gordon House	U. S. Geological Survey preliminary report completed. No development planned for area at this time. As such test well drilling not recommended.

<u>Priority</u>	<u>Area</u>	<u>Remarks</u>
7	Emerald Mound	U. S. Geological Survey preliminary report completed. No test well drilling required. See Chief, Branch of Water Resources memorandum to Chief, Office of Land and Water Rights, WSC, dated April 11, 1969.
8	Bethel Mission Picnic Area	No report from U. S. Geological Survey. Estimated maximum demand 2,000 g.p.d. Recommendation withheld pending U. S. Geological Survey report.
9	Yockanookany Picnic Area	No report from U. S. Geological Survey. Estimated maximum demand 2,500 g.p.d. Recommendation withheld pending U. S. Geological Survey report.
10	Natchez Visitor Center	No U. S. Geological Survey preliminary report. Development area to be within the City of Natchez Water Supply System. Parkway staff recommends a municipal water source in this area.
11	Jackson Visitor Center	No U. S. Geological Survey preliminary report. Recommendation withheld pending U. S. Geological Survey report.
12	Cypress Picnic Area	U. S. Geological Survey preliminary report gives us an excellent chance of locating ground water with yields from 20 to 100 g.p.m. Estimated peak demand 2,000 g.p.d. Test well drilling not recommended. Recommend that U. S. Geological Survey or other Governmental agency determine flood stage levels in area.
13	Metal Ford Picnic Area	U. S. Geological Survey preliminary report gives us an 80% probability of locating yields of 5 g.p.m or more and 60% probability of yielding 10 g.p.m. or more. No test well recommended.

To date U. S. Geological Survey preliminary reports have been completed for all proposed development areas in Tennessee and Alabama. Within the State of Mississippi we have four reports (three preliminary and one final) of eight proposed development sites. A preliminary report on the Natchez Visitor Center may not be necessary as the development is located within the city municipal water district supply system.

PURPOSE 2b. MISSISSIPPI BOARD OF WATER COMMISSIONER

Civil Engineer Bobbie Matthews and I visited the Mississippi Board of Water Commissioner in Jackson, Mississippi, and learned that the water right laws of Mississippi are at present surface water oriented only. Ground water legislation is currently being prepared and will be forwarded to the State Legislature for action in the indefinite future.

Enclosed is a current copy of the Water Rights Law of Mississippi and a letter from Mr. Jack W. Pepper, Water Engineer, with an application for permit to appropriate the Public Waters of the State of Mississippi. (See Enclosure 4.)

In a telephone discussion with Mr. Pepper, I learned that his office records do not show any one as having appropriated surface water on Little Sand Creek as of September 1969.

This information is of particular value to us especially when construction of the earth fill dam for the proposed lake at Rocky Springs is about to begin. Interruption of normal flow could lead to litigation resulting in the least; embarrassment to the Park Service and the Government and possible straining the public relations between local and Parkway staff.

The Soil Conservation Service of the U. S. Department of Agriculture has in their report, dated December 26, 1968, considered the construction of a lake at Rocky Springs as feasible. They estimated storage capacity of the lake is 1,850 AF at a lake elevation of 155.0 feet above mean sea level.

By assuming that the meteorologic data at Port Gibson (20 miles to the southeast of Rocky Springs) is the same as would occur at Rocky Springs, and that the length of time for the construction of the earth fill dam is insignificant (which it is not) we can expect the normal flow of Little Sand Creek to be reduced to zero for an estimated three months and a diminished flow for one month.

Table 1 was computed based on the meteorologic data at Port Gibson for calendar year 1966. Evaporation was computed based on the Rowher formula. Average annual rainfall for the State of Mississippi is 53 inches. Annual rainfall at Port Gibson in 1966 was 51.18 inches. Enclosed is a copy of the U. S. Department of Agriculture, Soil Conservation Service, Engineering Memorandum - 27 (Rev.) Re: Earth Dams which is the basis for many of the recommendations the Soil Conservation Service used in their report on the feasibility of constructing a lake at Rocky Springs. (See Enclosure 5.) The following reports are on file in this office and available for loan:

1. Low Flow in Selected Subbasins of the Big Black River, by F. H. Thompson and C. P. Humphreys, Jr., State of Mississippi Board of Water Commission, Bulletin 67-1, June 1967.
2. The Beneficial Use of Water in Mississippi, Preliminary Report on the Historical, Physical and Legal Aspects of Water Problems in the State, prepared by the Mississippi Inter-Organizational Committee on Water Resources - December 1953.
3. Water for Industry, by Board of Water Commissioner - Mississippi 1964.
4. Water for a Changing Economy, by Board of Water Commissioners - Mississippi 1962.
5. Water Use and Development in Jackson County, Mississippi - 1964 to 1967, by D. E. Shattles, J. A. Callahan, and W. L. Broussard, U. S. Geological Survey - Mississippi State Bulletin #67-3.
6. Geology of Water Resources in Mississippi, by J. W. Lang, U. S. Geological Survey.
7. Facts about Mississippi's Water Resources, by Board of Water Commissioners, Mississippi, January 1958.
8. Water Well Contractors - Directory 1968 - 1969.
9. Water Resources Map 65-1, September 1965. Configuration of the Base of the Fresh Ground-Water Section in Mississippi, by Roy Newcone, Jr., U. S. Geological Survey - Board of Water Commissioners (Mississippi).
10. Water Resources Map 67-1, September 1967. Geology of Water Resources in Mississippi, U. S. Geological Survey - Board of Water Commissioners (Mississippi).

FOLLOWUP ACTION

1. Preliminary reports on the following areas are needed which are all in Mississippi:

Bethel Mission Picnic Area
Yockanookany Picnic Area
Jackson Visitor Center

2. Economic analysis for a well, city, or other system is needed for Nashville Terminus - will get the basic data and analyze.
3. A legal opinion on whether the Government must file an application for permit to appropriate surface water for the construction of the lake at Rocky Springs from the State of Mississippi.
4. Work-up well design for the following areas and forward them to Environmental Planning and Design Group for reference in future drilling of wells with construction funds.

Pharr Mounds^{2/}
Leipers Fork^{1/}
Gordon House^{2/}
Emerald Mound^{2/}
Cypress Picnic Area^{2/}
Metal Ford Picnic Area^{2/}

- ^{1/} Pending clarification by U. S. Geological Survey on apparent contradictions in report.

- ^{2/} No test well drilling recommended. Final production wells only with recommendations that U. S. Geological Survey assistance financed by Acquisition of Water Rights funds be made available. Estimate \$1,500 per well.

RECOMMEND

That the Parkway Staff install water meters in all developed areas.
Projecting water requirements into the future is unreliable without
some historical data.

Comments will be welcomed.

/s/ Garland Moore

Garland Moore

Enclosures

cc:
Regional Director, Southeast
Superintendent, Natchez Trace Parkway
Chief, Division of Water Resources, WASO
Chief, Office of Environmental Planning
and Design, ESC
ESC-OPM

TABLE 1
Storage Analysis - Rocky Spring Park
Natchez Trace Parkway

Year 1966	Stream Flow A.F.	Precipitation A.F.	Σ Inflow	Lake Evaporation A.F.	Σ Volume	Accumulated Volume	Overflow
January	509.1	19.8	528.9	6.3	522.6		
February	714.5	27.8	742.3	5.7	736.6	1259	-601
March	105.9	4.1	110.0	13.3	96.7	1356	-504
April	568.8	22.2	591.0	5.3	585.7	1942	82
May	175.3	6.8	182.1	9.3	172.8	2114	254
June	19.3	0.8	201.0	6.8	194.2	2309	449
July	153.4	4.0	157.4	10.9	146.5	2455	595
August	349.9	13.6	363.5	8.5	355.0	2810	950
September	138.0	5.4	143.4	8.3	135.1	2945	1085
October	254.2	9.9	264.1	7.0	257.1	3202	1342
November	234.3	9.1	243.4	9.8	233.6	3436	1576
December	288.9	11.3	300.2	8.5	291.7	3728	1868

*Overflow based on Lake storage to elevation 155.0 feet is 1860 acre feet.

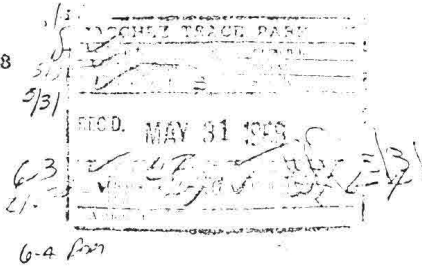
W. R. Copy

154 WSC-0127

May 28, 1968

X-518

Mr. W. L. Heard
State Conservationist
U. S. Department of Agriculture
Soil Conservation Service
P.O. Box 610
Jackson, Mississippi 39205



Dear Mr. Heard:

The National Park Service requests the assistance of your agency in determining the feasibility of a recreational lake at Rocky Springs within Natchez Trace Parkway. The lake, for visitor use, will be created if possible by construction of an impounding dam on Big Sand Creek approximately 100 yards inside the park boundary. The exact details of location and size should be confirmed by your office with the Superintendent of the park.

We request that the report detail the yield of the watershed involved showing 50 years flood flow, average flow, and minimum flow. This should be related to the time of year the conditions are expected to exist. It should also analyze permeability of the inundated area and note siltation and quality of water in the creek and proposed lake.

Funds in the amount of \$5,000 are available to cover the cost of the Soil Conservation Service's report. The billing of all expenses for reimbursement to your agency should be handled directly with this office. The Standard Form 1020 should be made out to the National Park Service, National Capital Region, 1100 Ohio Drive, Washington, D. C. 20242, Attention: Mr. Richard W. Ketcham.

We request that any report prepared by the Soil Conservation Service containing geologic or hydrologic data collected during the investigation be submitted to the Park Service in quadruplicate for review and approval before it is released to the general public.

Sincerely yours,

Signed

Robert J. Panton
Acting Chief, Office of
Land and Water Rights, WSC

RECEIVED DIRECTOR, DE
Superintendent, Natchez Trace
Chief, Resource Planning, WSC
Chief, DEC, PSC
Chief, Branch of Water Resources WSC

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
State Office
P.O. Box 610
Jackson, Mississippi 39205

June 5, 1968

Mr. Robert J. Panton
Acting Chief, Office of Land
and Water Rights
Washington Planning and Service Center
1730 North Lynn Street
Arlington, Virginia 22207

Dear Mr. Panton:

Thanks for your May 28 letter requesting our assistance in determining feasibility of a recreational lake proposed at Rocky Springs in Claiborne County, Mississippi.

We are glad to cooperate with the National Park Service in this undertaking, under the authority of Section 600 of the Economy Act. We will proceed with this work at the earliest possible time consistent with prior scheduling. It will not be possible, however, to complete it by July 1.

Upon completion of the work we will prepare billing, as suggested in your letter, to cover the actual costs incurred. In view of increases in cost since preparing the estimate last year, it is likely that the actual cost will exceed \$5,000.

If the above conditions are not acceptable to the National Park Service, please notify us by telegram immediately.

Sincerely yours,


W. L. Beard, State Conservationist

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
P. O. Box 610
Jackson, Mississippi 39205

October 5, 1965

0163
32

Mr. Robert G. Hall, Chief
Eastern Office of Design & Construction
National Park Service
143 South Third Street
Philadelphia, Pennsylvania

NATCHEZ TRACE PARKWAY
TUPELO, MISS.
RECEIVED

OCT 7 1965

History of
Supt. _____
Asst. Supt. _____
Asst. Dir. _____
Eng. _____
Interp. _____
Rep. _____

Dear Mr. Hall:

At the request of Mr. Edward J. Kurtz, Acting Superintendent, Natchez Trace Parkway, Tupelo, Mississippi, I am outlining below investigative procedures which the Soil Conservation Service would make in the case of the proposed lake development at Rocky Springs Park, Claiborne County, Mississippi, and an estimate of the costs involved:

A. Engineering Surveys Required

1. Run 160 and 165 feet contours around reservoir area and prepare reservoir area map. This map will show pertinent topographic features, utilities, roads, etc.
2. Detail survey of dam site and emergency spillway. Profile centerline of dam, emergency spillway, foundation drainage system and principal spillway with sufficient cross sections to prepare final design, layout and cost estimates. Surveys to be carried up abutments approximately 35 feet above valley floor.
3. Grid of borrow areas so that quantities of available fill material can be computed.

4. Estimated Cost of Surveys -

1 - GS-6	- 12 days @ \$24.00	-	\$288.00
1 - GS-5	- 12 days @ \$21.60	-	259.20
3 - GS-2	- 36 days @ \$16.00	-	576.00
GS-11 Supervision	- 3 days @ \$37.60	-	112.80
			<u>1236.00</u>
Transportation	2000 miles @ 6¢		120.00
Total			<u>\$1356.00</u>

B. : Geologic Investigations

1. Log; make field classification of strata; make standard penetration tests; take needed disturbed and undisturbed soil samples for laboratory testing along the centerline of the dam, principal spillway and foundation drainage system. At critical points under the structure, investigation will be made to a depth equal to twice the height of the proposed dam. Ground water levels will be recorded.
2. Log a few holes in reservoir area for permeability studies.
3. Prepare geologic and soils engineer reports based on findings during investigations.
4. Estimated Cost -

Site Investigations	-	\$2500.00
Laboratory Tests (if desired)-		800.00
		<u>\$3300.00</u>

Based on our past experience in similar areas, we feel that the proposed site will make a satisfactory recreation lake. Attached is a sample of the type surveys and geologic investigations we propose to make.

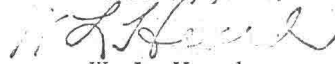
C. Cost of Hydrologic Analysis \$100.00

Total Estimated Cost

1. Field Surveys		\$1356.00
2. Geologic Investigations & Laboratory Tests		3300.00
3. Hydrologic Analysis		<u>100.00</u>
	Subtotal	\$4756.00
	3% Administrative Overhead	<u>142.68</u>
	Total	\$4898.68

If the above proposal is acceptable to you, a statement from you accepting our offer would enable us to proceed with the requested work. We would, however, have to reserve the privilege of working this into a reasonable schedule with other phases of our own activities.

Sincerely yours,



W. L. Heard
State Conservationist

Attachments

cc: Malcolm Gardner

J. B. Furr
H. R. Madison

348-5-13-68

EMR
5/13
um

LS4 WSC-OLW

May 10, 1968

Memorandum Report

To: Chief, Office of Land and Water Rights, WSC
Through: Supervisory Hydraulic Engineer, OLWR, WSC

From: Hydraulic Engineer, OLWR, WSC

Subject: Trip Report to Natchez Trace Parkway - March 23, 26, 1968

The undersigned visited the area to:

1. Check on the progress of the Rocky Springs Well Drilling Contract.
2. Discuss the long range planning on the acquisition of water rights of the Parkway.
3. Discuss with the park staff the quality of assistance the U. S. Geological Survey has given the park in States of Tennessee, Alabama, and Mississippi.

The undersigned met with the following persons:

Chief of Park Maintenance Glenn Farrar
(Congratulation Glenn)
Civil Engineer Bobby Mitchell

PERSON 1. CONTRACT NO. 14-10-1-604-226

The contractor Mr. Dean Griner of Columbia, Mississippi, was scheduled to move his equipment in on March 25 but because of inclement weather (unseasonal snow conditions) he would not move in until March 26. Engineer Mitchell was scheduled to work with the U. S. Geological Survey representative on the job for the remainder of the week at Rocky Springs.

Subsequent telephone discussions with Mr. Farrar to this date have indicated that the final cost of this test well will be about \$2,500 more than the programmed amount in the original Work Order WR-WSC-65B. We have revised the most recent work order to reflect a programmed amount of \$3,500. To date the well was drilled to a depth of 756 feet, with the final depth to be located at a depth of 814 feet 9 inches. The yield has been estimated between 50-60 g.p.m.

PURPOSE 2. LONG RANGE PROGRAM

Chief of Park Maintenance Glenn Farrar was in general agreement with the 1969 - 1973 fiscal year long range program as submitted to Chief, Branch of Water Resources by memorandum of February 23, 1968.

As a followup to our exchange of correspondence during the latter part of last calendar year in regards to a comprehensive study of the water resources of the parkway, Mr. Farrar was in agreement in tackling this study as a two-phase operation.

Phase I. To complete all test well drilling operations for the existing and proposed park developments as envisioned in the forthcoming revised master plan with the assistance of the U. S. Geological Survey.

Phase II. Upon reasonable conclusion of the test well drilling operations to enter into a cooperative agreement with the U. S. Geological Survey for a comprehensive study of the water resources potential of the entire parkway. Previous correspondence on this subject indicate that the Mississippi office will serve as spokesman for the Alabama and Tennessee offices.

PURPOSE 3. U. S. GEOLOGICAL SURVEY ASSISTANCE

The parkway staff were very satisfied with the technical assistance of the Survey's Tennessee office. Less satisfied with the Alabama office and had no comment at this time concerning the Mississippi office.

ALABAMA The parkway staff were genuinely concerned about the lack of complete data on the Survey's report on the geo-hydrologic investigations at Colbert Ferry Park, North. It was the undersigned's understanding that effort was made by the parkway staff to contact the Survey in order to expand the report to include the additional basic data on test holes but their request was not responded to.

At the verbal request of the staff this office has written a letter on May 6, 1968, to the U. S. Geological Survey at University, Alabama, requesting the necessary information. The request for information also include comments raised by Chief, Branch of Water Resources, by his memorandum of April 12, 1968.

MISSISSIPPI

The parkway staff would appreciate if the Survey would prepare a preliminary hydro-geologic report of the general area in which investigation is to take place as requested in our letter to the District Chief Kennedy on October 5, 1967. In general the parkway staff does not appear to have the confidence in the Mississippi office as they do for their counterpart in Tennessee.

At the suggestion of Mr. Farrar, which is concurred by the undersigned, the Mississippi office should not be reminded (tactfully but firmly) of their commitment to the Park Service until we have completed the well drilling job at Rocky Springs. 7

TENNESSEE

The amount of \$2,500 has been programmed for the assistance of the U. S. Geological Survey in preparing preliminary reports at Gordon House Historic Area, Leipers Fork Subdistrict, Nashville Terminus, Cypress Creek Picnic Area, and Metal Ford Historic Area. Mr. Farrar plans a trip to Nashville Field Office to check on the status of the preliminary reports.

RECOMMENDATIONS

PURPOSE 1. No action necessary.

PURPOSE 2. No action necessary at this time, however, the long range program from 1974 fiscal year should include a provision for the comprehensive study of the water resources of the parkway. This date may have to be delayed, however, if we are not able to maintain our present schedule because of reduction of operating funds or because the lands on which the investigation is to take place is still non-government owned.

PURPOSE 3.

a. This office should follow-through on getting the basic information requested by our letter of May 6, 1968 to District Chief, Broadhurst of the U. S. Geological Survey at Alabama.

b. That this office should in approaching the U. S. Geological Survey at Mississippi state clearly in a strong but tactful way the requirements of the job and the conditions of the agreement for 1969 fiscal year.

c. Follow-through in checking with Mr. Farrar on the status of the preliminary reports to be prepared by the U. S. Geological Survey of Tennessee.

In conclusion, the undersigned would like to state for the record that the parkway staff was most cordial and most efficient in keeping this office informed on all water resources matters and are ahead of all its problems which arise in that area.

/s/ Garland Moore

Garland Moore

cc:

Regional Director, Southeast

Superintendent, Natchez Trace

Chief, D&C, PSC

Chief, Branch of Water Resources, WASO



IN REPLY REFER TO:

D52

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

February 5, 1968

Casper
Encl
2/8
WFB

AIRMAIL

Memorandum

To: Assistant Director, D&C, WSC
Attention: Messrs. Reed and Moore

From: Superintendent, Natchez Trace

Subject: Abstract of Bids - Test Wells, Rocky Springs Park,
Natchez Trace Parkway, Claiborne County, Miss.

Enclosed is a copy of Abstract of Bids for Invitation No. 604-4
opened at 2:00 P.M., CST, February 2, 1968.

We propose to make an award to the only bidder, Dean Griner
Plumbing & Well Service, Columbia, Mississippi, whose bid was
in the amount of \$9,481.50, on February 12, 1968.

You will notice that Item 4 has a unit price of \$1,200.00 and an
extension of \$4,800.00. It is our belief that only one water
sample or perhaps two at the most will be required. Assuming
two water samples, the total expected contract price would be
\$7,081.50. We assume that funds will be available for the
awarding of this contract.

Joseph C. Ferguson, Jr.
Joseph C. Ferguson, Jr.

Enclosure

cc: PSC, w/c Abstract of Bids
SERO, w/c Abstract of Bids

16-335
 (Rev. 4/61)

 UNITED STATES DEPARTMENT OF THE INTERIOR
 NATIONAL PARK SERVICE

ABSTRACT OF BIDS DATA

For: Post Wells, Rocky Springs Park, Natchez Trace Parkway, Clasborne County, Mississippi.			Invitation No. 604-4
Date of Issue January 5, 1968	Opening Date February 2, 1968	No. Mailed 6	Bids Received 1

The bids received in response to this invitation were opened at the exact time and place specified in the invitation. All bids were abstracted except the following which were returned unopened in accordance with the terms and conditions of the invitation:

BIDDER	CITY	POSTMARKED		RECEIVED		DELIVERED BY
		Date	Time	Date	Time	
	NOT APPLICABLE					

In addition to the bids abstracted on this form, invitations to bid were:

- ☐ Sent to those listed (See Attachment A)
☒ Posted in public places (See Attachment B)
☐ Advertised in the newspapers (See Attachment C)
 OR ☐ Without advertising in accordance with _____

(Include written findings required by law and determination as Attachment D.)

AWARDED TO:	IN THE AMOUNT OF:
_____	_____
_____	Less _____
_____	_____

Please check one:

- ☐ The lowest bidder as to price (Expenditures).
☐ The highest bidder as to price (Receipts)
☐ Other than low (high) bidder because (See Attachment E)

Exceptions, if any, to specifications:

Bids Abstracted by: (Signature) Lois D. Boyle, General Supply Assistant	Bids Checked for Accuracy by: (Signature) William C. Trotter, General Supply Officer
Recommended for Acceptance by: (Signature & Title) Glenn C. Farrey, Acting Chief of Maintenance	

CONTRACT NUMBER 14-10-1-604-296 dated _____
 is awarded by sign _____ of the contracting officer on Standard Form _____ attached.

ABSTRACT OF BIDS

Sheet No. 1 of 2

THE OPENED DATE		PLACE	BID NO.	BID NO.	BID NO.	BID NO.	BID NO.	VEHICULE ESTIMATE	
2:00 P.M., CDT 2/2/68		Pupelo, Mississippi	Bidder Name: Griner Plumbing & Columbia, Miss.	Bidder Name: Well Service,	Bidder Name:	Bidder Name:	Bidder Name:	☐ Labor Estimate ☐ Estimate of Profit ☐ Estimate With Profit	
2:00 P.M., CDT 2/2/68		Trace Parkway, Claiborne County, Miss.	2/ Bid Bond	2/	2/	2/	2/		
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL AMOUNT	UNIT PRICE	TOTAL AMOUNT	UNIT PRICE	TOTAL AMOUNT
1.	Moving drilling equipment and construction materials, as required, on and off the site for this job.	1	SUM	150.00	150.00				
2.	Drilling test hole which shall be of a suitable size to produce representative formation and water samples and allow the electric logging by commercial firm.	900	LF	2.50	2,250.00				
3.	Furnishing commercial electric log of the test hole.	1	EA	300.00	300.00				
4.	Collecting representative water samples.	4 Sample		1,200.00	4,800.00				
5.	Reaming test hole to receive the 6" I.D. casing with 2" minimum grout ring, four-inch (4") I.D. Well Screen, and four-inch (4") I.D. tail pipe.	100	LF	3.00	300.00				
6.	Furnishing and installing 6" I.D. casing and 2" minimum grout seal around casing from land surface to the bottom of the casing, including developing clear water from the well.	100	LF	6.00	600.00				
7.	Furnishing and installing 4" I.D. stainless steel screen and 5-foot tail pipe section and properly connecting to casing.	20	LF	22.00	440.00				
8.	Furnishing and installing four-inch (4") I.D. lag pipe and properly connecting to top of well screen.	10	LF	1.75	17.50				

1/ For Supply Invitation give discount-for Construction Invitation give deposit amount.

2/ For Supply Invitation give delivery class-for Construction Invitation give type of deposit.

30614

ABSTRACT OF BIDS

Sheet No. 2 of 2 sheets

TIME OPENED DATE		PLACE	BID NO. 1	BID NO.	BID NO.	BID NO.	BID NO.	GOVERNMENT ESTIMATE	
2:00 P.M., FEB 2/2/68		Tupelo, Miss.	Bidder Name: <u>Plumbing & Heat Service, Columbia, Mississippi</u>	Bidder Name:	Bidder Name:	Bidder Name:	Bidder Name:	☐ Fixed Labor Estimate	☐ Estimate w/o Profit
FOR: Test Wells, Rocky Springs Park, Hatchez Trace Parkway, Claiborne County, Miss.			<u>1/ 20'</u>	<u>1/</u>	<u>1/</u>	<u>1/</u>	<u>1/</u>	☐ Estimate With Profit	
INVITATION NO. <u>604-4</u>			<u>1/ 20' Bid Bond</u>	<u>1/</u>	<u>1/</u>	<u>1/</u>	<u>1/</u>		
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL AMOUNT	UNIT PRICE	TOTAL AMOUNT	UNIT PRICE	TOTAL AMOUNT
9.	Testing for yield and drawdown.	8	HR	22.00	176.00				
10.	Standby time for crew and equip.	8	HR	16.00	128.00				
11.	Plugging test well hole which has been abandoned by direction of the Government through no fault of the Contractor.	200	LF	0.10	320.00				
TOTAL BID					9,481.50				

1/ For Supply Invitation give amount for Construction Invitation give deposit amount.

2/ For Supply Invitation give delivery time for Construction Invitation give type of deposit.

52-13

ATTACHMENT "A"

1. Dean Griner Water Well Service, Hwy 61 N, Natchez, MS 39120
2. Waterwells, Inc., 5701 Hwy 49 N., Jackson, MS 39213
3. Hall Drilling Company, Siwell Road, Jackson, MS 39205
4. Forest Drilling Service, Box 231, Hwy 35 N., Forest, MS 39074
5. T. N. Parks Drilling Co., Houlka, Miss. 38850
6. Dean Griner Plumbing & Well Service, Broad Street, Columbia, Miss.

ATTACHMENT "B"

Post Offices at:

Jackson, MS
Tupelo, MS
Port Gibson, MS
Natchez, MS



812-12-527

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

IN REPLY REFER TO:
L54 WSC-OLW

December 1, 1967

Memorandum

To: Chief, Branch of Water Resources, WASO

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

Subject: Comprehensive study of water resources potential of
Natchez Trace Parkway

In our memorandum to your office on November 14 on subject, this office inadvertently omitted the listing of the present land status of all priority areas.

We have enclosed such a listing. The land status of all areas were dictated by telephone to Hydraulic Engineer Moore of this office by Civil Engineer (Parkway) Farrar of Natchez Trace.

Richard L. Stanton

Richard L. Stanton

Enclosure

cc:
Regional Director, Southeast w/encl.
Superintendent, Natchez Trace w/encl.
Chief, Resource Planning, WSC w/encl.
Chief, PSC-D&C w/encl.

TEST WELL DRILLING PRIORITIES
IN
NATCHEZ TRACE PARKWAY

<u>PRIORITY</u>	<u>AREA</u>	<u>LAND STATUS</u>
1.	Rocky Springs Park (Mississippi)	U.S.
2.	Tishomingo State Park (Mississippi)	State
3.	Pharr Mounds Historic Site (Mississippi)	U.S.
4.	Leipers Fork Subdistrict Headquarters (Tennessee)	Private
5.	Nashville Terminus (Tennessee)	Private
6.	Gordon House Historic Area (Tennessee)	Private
7.	Emerald Mound (Mississippi)	U.S.
8.	Bethel Mission Picnic Area (Mississippi)	U.S.
9.	Yockanookany Picnic Area (Mississippi)	U.S.
Unassigned	Cypress Creek Picnic Area (Tennessee)	U.S.
"	Metal Ford Historic Area (Tennessee)	Private
"	Natchez Visitor Center (Mississippi)	U.S.
"	Turpin Creek Picnic Area	U.S.
"	Jackson Visitor Center	Private

SEP 23 9 35 AM '64
Wlk

Natches Trace Parkway
Tupelo, Mississippi 38802

June 25, 1964

CHANGE ORDER NO. 1

Griner Plumbing and Well Service
P. O. Box 149
Columbia, Mississippi

W. R. Coff.
Land/Water
now S. D. G.
to Helen Sanders

87

Gentlemen:

In accordance with Article 1 of the General Provisions of your Contract No. 14-10-0127-1601, dated March 31, 1964, you are hereby directed to perform the following work:

1. Cleaning of test hole which was drilled earlier, pumping water and securing sample, investigation of reasons for colored water, see Findings of Fact, 13 hours at \$16.50.....\$ 214.50
2. Investigation of sand strata encountered at 75' to 95' to determine if well can be developed in this strata, 10½ hours at \$16.50.....\$ 173.25
3. Prepare drill hole for securing electric log, 10 hours at \$16.50.....\$ 165.00

The above three items are extra work not covered in bid items. Drilling of test hole, etc., are items which will be paid for on a unit basis, according to work actually performed.

In accordance with Article 2 of the General Provisions of your Contract No. 14-10-0127-1601, you are hereby granted an extension of 28 calendar days of time in which to complete the work specified. This extension of time is allowed because of the delays caused by the finding of colored water believed to be unacceptable for use by the public. These delays were no fault of the contractor and were requested by the Government to allow time for analyses, tests, and investigations. The first day of this extension will be June 26, 1964. Chemical analyses, tests, and investigations are being continued. The last and final day of the above contract will be July 23, 1964, unless otherwise extended.

Sincerely yours,

(SGD) W. E. EDWARDS, Jr.
William E. Edwards, Jr.
General Supply Specialist
(Contracting Officer)

In duplicate

CHANGE ORDER NO. 1, CONTRACT NO. 14-10-0127-1601

Columbia, Mississippi

1 July 64
(Date)

Superintendent
Matches Trace Parkway
P. O. Box 948
Tupelo, Mississippi 38802

Dear Sir:

Adjustment of the amount of compensation under Contract No. 14-10-0127-1601
and in the time required for its performance by reason of Change
Order No. 1 is satisfactory and is hereby accepted.

GRINER PLUMBING AND WELL SERVICE

By: /s/ Dean Griner

Title: Owner

Copy to: SERO
WASO
EODC

Natches Trace Parkway
Tupelo, Mississippi 38802

W14

FINDINGS OF FACT

Change Order No. 1, Contract No. 14-10-0127-1601, Water Supply Well

A notice to proceed was issued on the above contract on May 7, 1964, effective June 12, 1964.

The specifications were written to secure a well approximately 500' deep. This was based on rather meager available information of the area. As specified, the driller began drilling a test hole on May 18, 1964. Samples of geologic materials were taken and investigation of the sand at the depth where the well was expected to be developed, 400' to 500', revealed that there was lignite or other matter in the sand which probably would cause the well to produce colored water. It was decided that further investigation should be made before proceeding further.

The well contractor was asked to perform the additional work of drilling extra holes, securing water samples at various depths, stabilizing of drill holes for the purpose of running electric logs, and other investigative work on several different dates--namely, June 4, 5, 11, 22, 23, and 24. He cooperated in a commendable way, and the water and sand samples secured confirmed the fact that the water produced in the sand strata at 455' was extremely colored. This meant that some sort of treatment would be required before the water could be used for public consumption. A chemical analysis showed that the total solids, PH and iron content, were high.

Rather than develop the well in a sand that would produce water requiring extensive treatment, it was decided that every effort should be made to find water requiring less or no treatment.

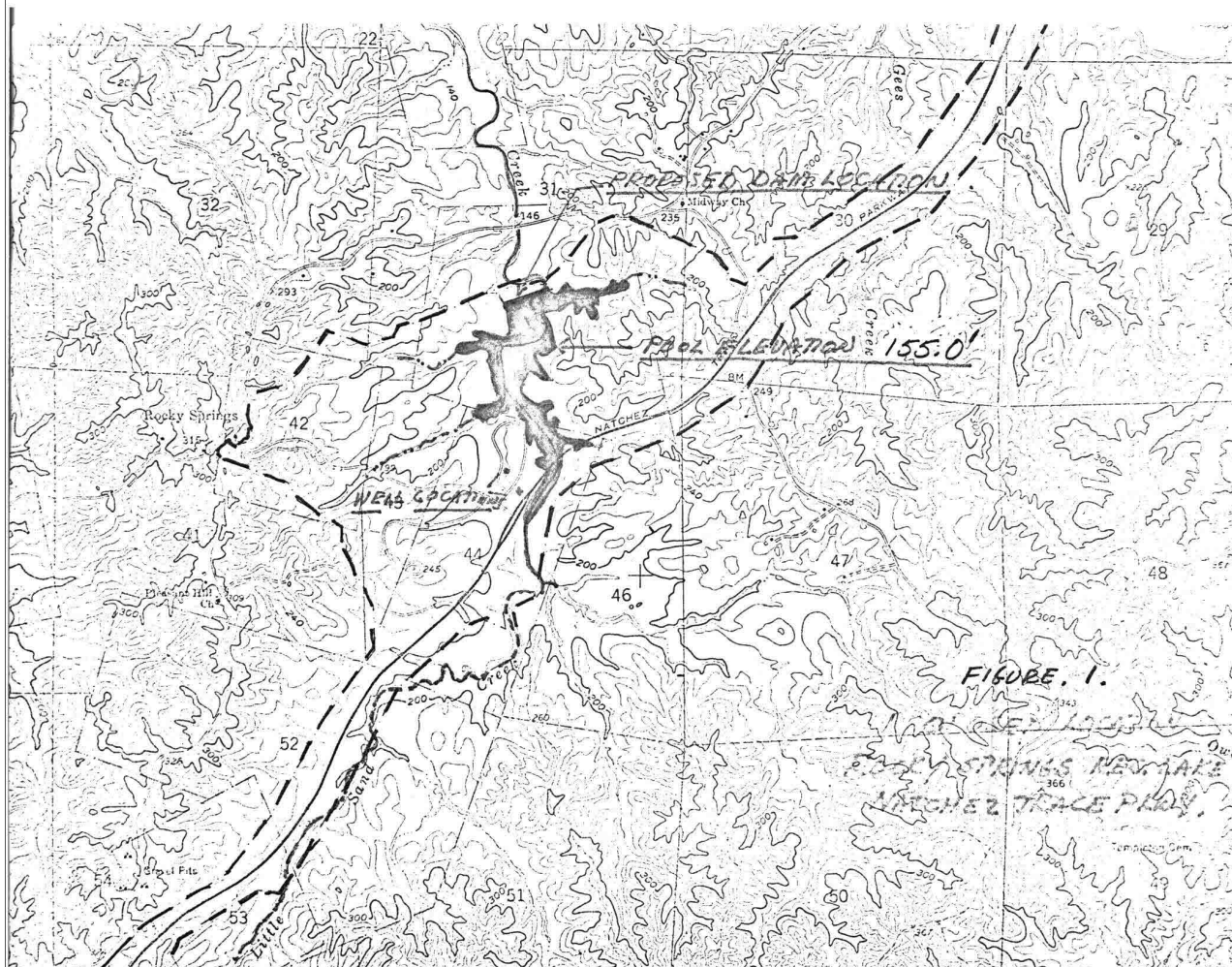
An alternate site was selected on June 22 for an additional test hole since the information gathered from well drillers, the U. S. Geological Survey, Mississippi Geological Survey, and others indicated that the Rocky Springs area was an unpredictable one. The site selected was about 1/4 miles from the original one. Drilling there showed the formations to be somewhat different from those at the original drilling site. It is believed that it will be possible to develop a well at the new site at a depth of about 100' that will produce water requiring no treatment.

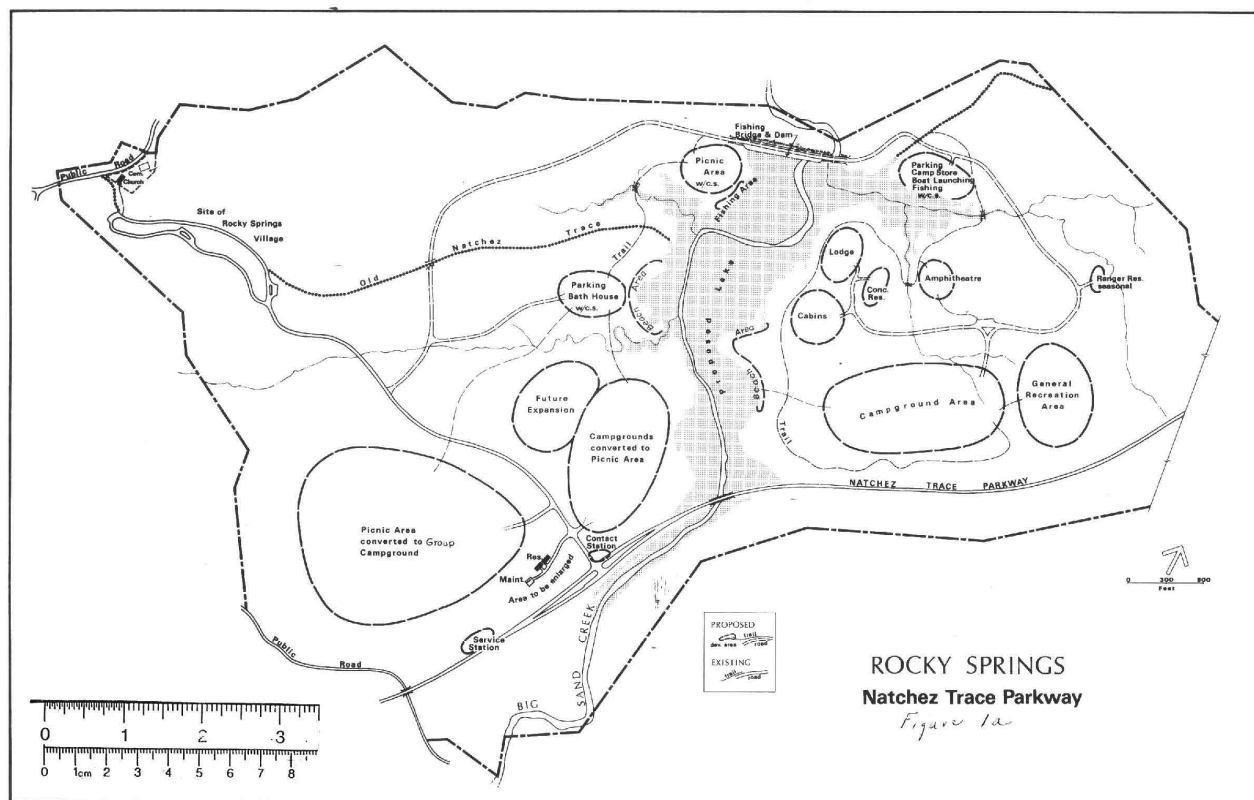
FINDINGS OF FACT, continued:

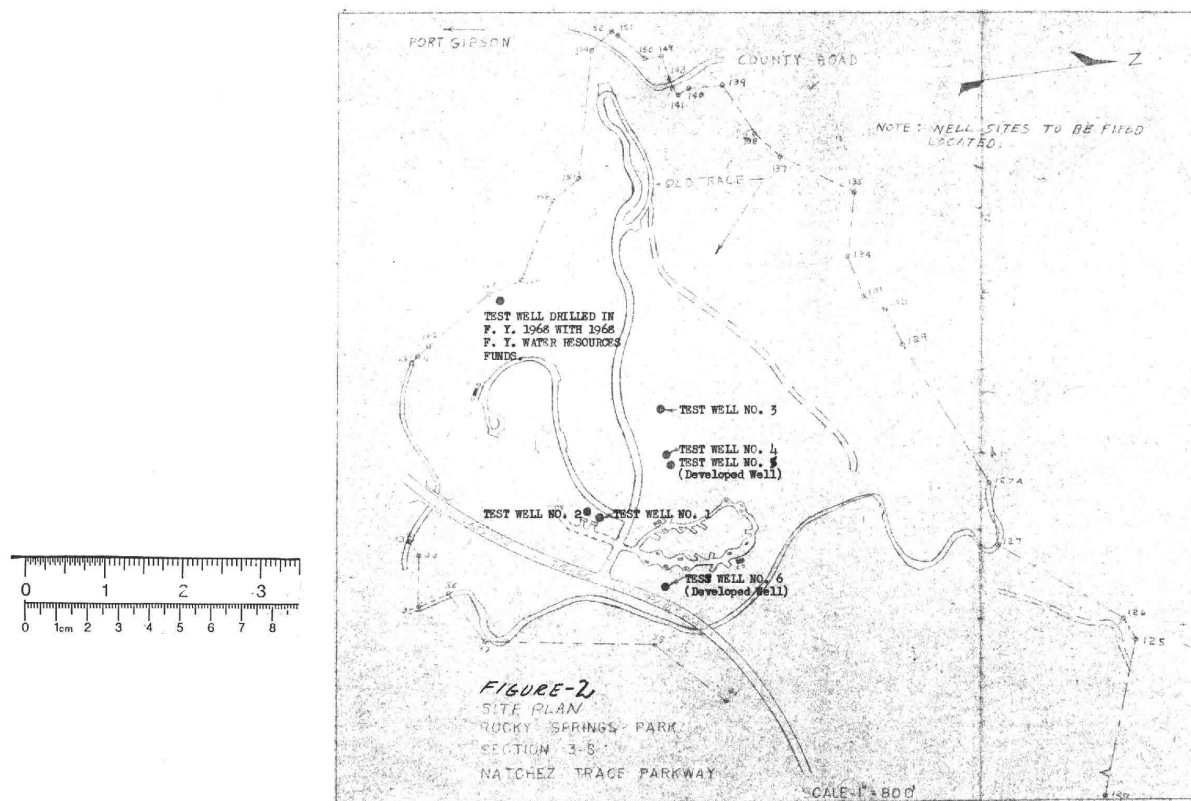
The additional work listed above is required to assure the best possible source of water supply for the developments proposed for the Rocky Springs area. To perform the work has required considerable delay to the contractor through no fault of his own. His contract time should be extended accordingly.

The extra work listed above is in the best interest of the United States.

Glenn C. Farrar
Assistant Park Engineer







Docket Information

Number of Documents in Docket 98

Documents Dated from 6/16/1964 to 9/21/1971

Docket Compiled: 5/27/2011