



WATER-RIGHT DOCKET

Natchez Trace Parkway

Docket No: 12

YOWANI PICNIC AREA WATER SYSTEM

Supporting Hydro Data

12-15-1967: water system data

WATER SYSTEM DATA

DATE
AREA Natchez Trace Parkway COMPLETED Dec. 15, 1967 COLLECTED BY B.S.M.

1. Name of System: Yowani Picnic Area Water System
2. Location: State Mississippi County Choctaw General Area French Camp
Reference to permanent landmark P.O.T. Mon. between Mon. #48 & Mon. #49
3. Source of Supply: Deep Well* Capacity 1200+**
(Well, Spring, Stream, Impoundment, etc.) GPM
4. Type of System: Pumped (Gravity)
(Pumped, Gravity, etc.)
5. Treatment: None
(Filtration, Chlorination, Aeration, etc.)
6. Distribution Mains: Size 4" Length 184'; Size Length
Size 2" Length 40'; Size Length
Size 1" Length 146'; Size Length
7. Pump Unit: Make Red Jacket; Type Submersible; Model No. 15001-CB
Serial No. CSN-P-350; Outlet 1 1/4" in.; Inlet in.
(Size) (Size)
8. Power Source: Electric Motor: Make Red Jacket; HP 1 1/2;
(Elec., Gas, Generator)
Serial No. CSN-M-350; Voltage 230; Amps 9.5;
RPM 3450; Type ; Phase One;
Cycles 60; Others ;
9. Control: Automatic Floatless (B/W Control Corp.); Manual ;
(Float, Electrode, Pressure, Time)
Other

*Drilled October 1958 by Robert E. Ratliff Company to a depth of 480 feet below the ground surface.

**Approximately 35,000 gallons water used annually.

10. Pump Design: Capacity - gpm USG
(Actual) (Design)
Head - ft ft
(Actual) (Design)
11. Pump Housing: Type Const. Brick; Asphalt Shingle; size 4'-9"X4'-9"
(Walls) (Roof)
12. Storage: Elevated tank; Type Const. Steel
(Rheumatic, Elevated, Underground, etc.) (Concrete, Wood, Steel)
Size -; Capacity 5,000 gal.; Inlet - ft. in.;
(Elev) (Size)
Outlet - ft. in.; Pressure Setting -
(Elev) (Size) (if pneumatic)
13. Distribution: Water Closets 2; Lavatory 2; Urinal 2;
Drinking Fountain 2; Hose Bibs -; Residences -;
Other -;
14. Metered or Nonmetered: Nonmetered; No. -; Size -;
No. -; Size -;
No. -; Size -;
15. Fire Protection: Fire Hydrants -; Yard Hydrants -
16. Water Analysis (If Available): Total Solids - 180.80 ppm; CO₃ - 16.00 ppm;
HCO₃ - 24.00 ppm; Cl - 97.60 ppm; Ammonia Nitrogen - 14.00 ppm; Albuminoid
Nitrogen - 0.00 ppm; Nitrite Nitrogen - 0.00 ppm; Nitrate Nitrogen - Trace;
CO₂ - Trace; Total Hardness as CaCO₃ - 0.00; PH - 9.2
17. Condition of System: Complete New Water System Installed in 1959
(Repairs needed, itemize)

COST ANALYSIS:	Water Supply Well	\$ 4,035.00
	Pump & Controls	735.00
	Distribution System	1,436.00
	5,000 Elevated Tank	3,880.00
	Day Labor, etc.	295.04
	Subtotal	10,381.04
	P&S	1,585.32
	TOTAL COST	\$11,967.26

Other Supporting Information



COMPLETION REPORT
of
CONSTRUCTION PROJECT

NATCHEZ TRACE PARKWAY

TENNESSEE - ALABAMA - MISSISSIPPI

<u>Project or Job Title</u>	<u>Drawing Number</u>	<u>Account</u>	<u>Location</u>
Employee Residences (2)	PKY/NT 2969 (3 sheets)	513.22	(Little Mountain (Developed Area,
Work shop	PKY/NT 3117A (2 sheets)	513.22	--(Section 3-H, (Choctaw County,
Comfort Stations (2)	PKY/NT 3043B (1 sheet)	513.22	(Mississippi
Comfort Station	PKY/NT 3043B (1 sheet)	513.22	(Yowani Picnic Area, (Section 3-J,
Water System	PKW/NT 2991A (sheets 3 & 4)	513.22	--(Choctaw County,
Sower System	PKY/NT 2991A (sheets 3 & 4)	513.22	(Mississippi

General Drawings, as Follow:

Miscellaneous Building Construction, Dancy District (Cover Sheet); PKY/NT 2967 (1 sheet)
Residences (2); Workshop-Equipment Storage Building (Location); PKY/NT 2968 (1 sheet)
Water & Sewerage System; Kosciusko District (Cover Sheet); PKY/NT 2991A (1 sheet).



Form 10-174
(Rev. 8-56)UN. STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

COMPLETION REPORT OF CONSTRUCTION PROJECT

REGION One	AREA Natchez Trace Parkway	COUNTY Choctaw	STATE Mississippi
PROJECT OR JOB TITLE Employee Residences (2), Work Shop (1), Comfort Station and Utilities (3)		PCP NO B-125; B-136; B-25; B-116	
LOCATION IN AREA Sections 3J - 3H		MASTER PLAN NO.	BUILDING NO 198; 199; 193; 194; 230; 178
WORKING DRAWING NO. AND TITLE PKY-WT 2991A Water & Sewerage Systems Kosciusko District PKY-WT 2967 Miscellaneous Building Construction, Dancy District			
APPROPRIATION TITLE AND SYMBOL 14X1037-Construction, Liquidation of Contract Authorization, NPS			WORK ORDER NO. 513.22
CONTRACT NO. 14-10-127-880; 14-10-127-884(Por.) 14- 10-127-1005(Por.) 14-10-127-1006; 14-10-127-1007		DATE WORK STARTED July 11, 1958	DATE WORK COMPLETED November 23, 1959
NAME OF CONTRACTOR See attached sheet		ADDRESS See attached sheet	

COST ANALYSIS

CONSTRUCTION ITEMS	QTY.	UNIT COST IN PLACE	TOTAL COST IN PLACE
Comfort Station (2 at Little Mtn.)(1 at Yowani)	3	6,667.00	20,001.00 ^{22.936}
Work Shop & Equipment Storage Bldg. - Little Mtn.	1	13,385.80	13,385.80 ^{15.350}
Residences - Little Mountain 193 + 194	2	18,935.19	37,870.38 ^{43.425}
Water System - Yowani	1	10,381.94	10,381.94 ^{11.928}
Sewerage System - Yowani	1	3,336.00	3,336.00 ^{3.824}
Sub-Total PS&S			<u>84,975.12</u> 12,469.68
See individual Breakdowns on attached sheets.			
Fiscal Accounting Office Clearance			
SIGNED APR 7 1960			
V. L. La Follette, Administrative Officer			
TOTAL			97,444.80

SUMMARY OF EXPENDITURES

PERSONAL SERVICES \$147.23	EQUIPMENT \$21.80	MATERIALS AND SUPPLIES \$67.91
OTHER Travel \$9.00; Other Direct \$109.88; PS&S \$12,469.68		
CHANGE ORDERS		
ORIGINAL CONTRACT AMOUNT 84,312.00	FIRST 84,312.00	SECOND 85,009.30
FINAL CONTRACT AMOUNT 84,619.30	FOURTH	FIFTH
		SIXTH

THIS PROJECT OR JOB HAS BEEN COMPLETED IN ACCORDANCE WITH
APPROVED DRAWINGS, SPECIFICATIONS, AUTHORIZED CHANGES

SUBMITTED BY (Name and title) SIGNED John H. Saxon, Parkway Engineer	DATE APR 7 1960
APPROVED BY (Name and title) SIGNED Malcolm Gardner, Superintendent	DATE APR 7 1960

(ATTACH NARRATIVE STATEMENT, PHOTOGRAPHS, AND "AS BUILT" DRAWINGS TO THIS FORM)

Contractors

O. L. Wilemon Lumber Company (14-10-127-380)
Tupelo, Mississippi

Robert E. Ratliff Company (14-10-127-384 Por.)
Grenada, Mississippi

Donald R. Sharp (14-10-127-1005 Por.)
Louisville, Mississippi

Industrial Steel & Machine Works (14-10-127-1006)
Gulfport, Mississippi

Herndon Well and Supply Company (14-10-127-1007)
Shannon, Mississippi

WORK ORDER 513.22 - WATER SYSTEM
YOWANI PICNIC AREA - SECTION 3-J, NATCHEZ TRACE PARKWAY

	<u>QUANTITY</u>	<u>UNIT COST</u>	<u>TOTAL COST</u>
Water Supply Well; (14-10-127-884 portion) Robert E. Ratliff Company, Grenada, Mississippi	See Attached Sheet		\$ 4,035.00
Furnish Installed Water Well Pump, Automatic Controls, & Appurtenances; (14-10-127-1007 portion) Herndon Well & Supply Company, Shannon, Miss.	1	Lump Sum	735.00
Water Distribution System; (14-10-127-1005 portion) Donald R. Sharp, Louisville, Mississippi	See attached Sheet		1,436.00
5,000 Gallon Elevated Water Tank (14-10-127-1006 portion) Industrial Steel & Machine Works, Gulfport, Mississippi	1	Lump Sum	3,880.00
Tank Footings & Pedestal (Gov't day labor)			245.94
Meter Loop (Electric)			50.00
TOTAL CONTRACT COST OF WATER SYSTEM			\$ 10,381.94
PS&S			1,585.32
TOTAL			\$ 11,967.26

CONTRACT NO. 14-10-127-884 (portion) WATER SUPPLY WELL
AT YOWANI PICNIC AREA, SECTION 3J, NATCHEZ TRACE PARKWAY

EXPLANATION OF CONTRACT OVERRUNS AND UNDERRUNS

<u>Bid Item</u>	<u>Description</u>	<u>Unit Price</u>	<u>Estimated</u>		<u>Amount</u>	<u>Final</u>	
			<u>Quan.</u>	<u>Unit</u>		<u>Quan.</u>	<u>Amount</u>
1.	Drilling well hole (0-400') to receive a 6" I.D. casing & 2" min. grout ring & furnishing 6" I.D. casing & installing & sealing it with a 2" min. grout ring.	\$ 8.00	400	per ft.	\$3,200.00	400	\$3,200.00
2.	Drilling well hole (below 400') as stated above.	8.00	80	per ft.	640.00	70	560.00
3.	Determining the approximate yield and securing water samples as directed.	20.00	24	per hr.	480.00	0	.00
4.	Furnishing and installing well screen with 5" approximate outside diameter.	20.00	10	per ft.	200.00	10	200.00
5.	Testing for yield and draw-down.	12.50	12	per hr.	150.00	6	75.00
Estimate					\$4,670.00	Final	\$4,035.00

Bid Items

2. Underrun 10 feet - Reached good water bearing sand sooner than estimated.
3. No water samples taken during construction - apparent that same sand strata was reached as was found at Little Mountain.
5. Decreased - Six hours of pumping did not cause any more drawdown than did one hour so testing was stopped.

Change Orders

None

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CONTRACT NO. 14-10-127-1005 (portion) WATER DISTRIBUTION SYSTEM
AT YOWANI PICNIC AREA, SECTION 3J, NATCHEZ TRACE PARKWAY

EXPLANATION OF CONTRACT OVERRUNS AND UNDERRUNS

<u>Item</u> <u>No.</u>	<u>Description</u>	<u>Unit</u> <u>Price</u>	<u>Quan.</u>	<u>Estimated</u> <u>Unit</u>	<u>Amount</u>	<u>Final</u> <u>Quan.</u>	<u>Amount</u>
1.	4" Cement lined cast iron or asbestos cement water pipe.	\$ 3.50	170	per ft.	\$ 595.00	184	\$ 644.00
2.	2" Galvanized steel water pipe.	2.50	100	per ft.	250.00	40	100.00
3.	1" Galvanized Steel Water pipe.	2.00	135	per ft.	270.00	146	292.00
4.	Drinking fountains and appurtenances	200.00	2	each	400.00	2	400.00
					<u>Estimate</u>		<u>Final</u>
					\$ 1,515.00		\$ 1,436.00

No Change Orders

Items No. 1, 2, & 3 - variation of quantities due to estimating
from topographic maps.

Item No. 4 - No change.

NARRATIVE TO ACCOMPANY PROJECT COMPLETION REPORT

Employee Residences (2); Comfort Stations (2); and Work Shop at the Little Mountain Developed Area, Section 3-H, Choctaw County, Mississippi; and a Comfort Station; Water Distribution System; and Sewerage System at the Yowani Picnic Area, Section 3-J, Choctaw County, Mississippi, Natchez Trace Parkway

CONTRACTORS.

Buildings:

1. The G. I. Wilmon Lumber Company of Tupelo, Mississippi, Contract No. 14-10-127-880 for the Employee Residences (2), the Comfort Stations (2), and the Work Shop at the Little Mountain Area, and the Comfort Station at the Yowani Picnic Area.

Water and Sewerage:

1. Robert E. Ratliff Company, Well Driller, of Grenada, Mississippi, Contract No. 14-10-127-884 for the water supply well at the Yowani Picnic Area. (Contract also included same for Holly Hill area.)

2. Donald R. Sharp, Louisville, Mississippi, Contract No. 14-10-127-1005, Water Distribution and Sewerage Systems at the Yowani Picnic Area. (Contract also included same for Holly Hill area.)

3. The Herndon Well and Supply Company, Shannon, Mississippi, Contract No. 14-10-127-1007, furnish, installed a submergible-type water well pump for Yowani Picnic Area. (Contract included same for Holly Hill area.)

4. The Industrial Steel Machine Works, Gulfport, Mississippi, Contract No. 14-10-127-1006, design footings, furnish and erect a 5,000 gallon elevated steel tank at the Yowani Picnic Area. (Contract also included same for Holly Hill area.)

5. Government day labor forces constructed the reinforced concrete tank footings and connected the tank to the water distribution system at Yowani Picnic Area.

Electric current, 120-240 volt, single phase, was furnished to the Little Mountain Area and the Yowani Picnic Area by the 4-County Electric Power Company, with district office at Ackerman, Mississippi. Construction progress pictures, tabulations of overruns and underruns, change orders, etc., are attached following the section of the report to which they refer.

Work on other projects included in the above contracts will be reported under projects involved.

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WATER SYSTEM, YOWANI PICNIC AREA:

Well: Robert E. Ratliff Company started drilling the well as a portion of Contract No. 14-10-127-884 on October 15, 1958. The hydraulic rotary method of drilling was used. The contractor used a portable truck mounted rig operated by a gasoline engine. Difficulty was encountered at the 142' level where it was apparent that crevices had been cut, since all drilling water and material returns were lost below that point until a heavy concentration of drilling mud was used and then allowed to set for approximately two weeks before drilling was resumed. The pilot hole was then drilled to the 567' level and sand samples were secured and sent in for analysis. The analysis indicated a size .014" screen should be used in the strata selected. The hole was reamed to approximately 11-1/2" to the 469 foot level. A 6-inch iron casing with a four foot length at the top and approximately the top twenty feet galvanized with stabilizers spaced every second joint to insure casing being centered in the hole, was installed and grout was forced down through the casing and up the outside to within 3 feet of the surface. The grout was allowed to set for 72 hours after which time the grout plug in the bottom of the casing was drilled out and a 5-3/4" hole was drilled to the 480' level to allow 10 feet of well screen with 16 feet of 4" blank pipe to be placed with a 15 foot overlap on 6" casing. The blank pipe was sealed to the inside of the casing with a 6" x 4" standard lead packer seal. The screen installed was a Bar Lug, plain wrap, .014 gauge stainless steel screen with back pressure foot valve, manufactured by the Houston Well Screen Company, 21 N. Hamilton Street, Houston, Texas. The well was developed by pumping and surging. On December 5, 1958, a 6 hour acceptance and drawdown test was completed which produced 20 gpm with a total drawdown of 14 feet.

Water Right Application: The State of Mississippi does not require permits and licenses and hence, no application was made.

Pump: Herndon Well and Supply Company, Shannon, Mississippi, furnished under Purchase Order No. 27-358, during May 1959, a submersible water well pump with underground discharge, check valve, and automatic pump controls.

The submersible pump is a Red Jacket Model 130, Serial No. CSN-P-350, with a 1-1/2 h.p. direct connection electric pump motor, 13 stage, 230 volt, 9.5 amps, Model Number 150 CL, Serial No. CSN-M-350.

The pump delivered 11.7 gpm average to the tank in a 7 hour test conducted by Government personnel. The submersible pump unit was manufactured by Red Jacket Manufacturing Company, Davenport, Iowa. Two hundred ten feet of 1-1/4" galvanized steel drop pipe was installed underground, as indicated in the attached sketch. The automatic pump controls are a Warrick, heavy duty, floatless, as manufactured by Charles F. Warrick Company, 1964 N. Eleven Mile Road,

Berkley, Michigan, with shielded electrodes suspended in tank for water level control of pumping operations. All control and electric wires are in conduit underground except where the conduit, carrying the control wires, is fastened to the tank tower. A weatherproof box, set adjacent to the well site, contains all controls. The pumping operation may be set on automatic or switched to manual operation.

The pump and controls were installed and tested in May 1959; however, the completion of the installation of the shielded electrodes in the tank was delayed until the tank was erected in August 1959.

Water Distribution System: Donald Sharp, Contractor, of Louisville, Mississippi, started actual work on his Contract No. 14-10-127-1005 (of which the water distribution system is a part) on April 9, 1959. The water line trenches were excavated, 4 inch cement asbestos pipe, manufactured by Keasbey & Mattison Company, with neoprene gasket, was laid in the trench, backfilled enough to hold pipe securely while testing, with all joints left visible. The line was tested at 90 psi and then backfilled and tamped to the top of the pipe. The 3-wire cable for electrical service to the comfort station was laid on the left side of the trench running from the comfort station to the power pole. An additional one foot of dirt was backfilled and tamped over the line and the balance of the trench filled by a bulldozer.

The drinking fountains were constructed on the job substantially in accordance with the plans and specifications.

The quantities installed under this contract were:

18 1/2 lin. ft.	- 4" cement asbestos water pipe
40 lin. ft.	- 2" galvanized steel water pipe
14 1/2 lin. ft.	- 1" galvanized steel water pipe
2 each	- drinking fountains.

The work was completed on this phase of the water system on May 26, 1959.

Elevated Water Tank: Industrial Steel and Machine Works, P. O. Box 2217, Gulfport, Mississippi, under Contract No. 14-10-127-1006, designed the reinforced concrete footings for the elevated tank legs and pedestal and designed, furnished materials, and erected the 5,000 gallon, covered steel tank, elevated 30' above the top of the footings in accordance with the specifications and Industrial Steel Machine Works' unnumbered drawings. The tank and tower were painted outside with "Degraco" B-10, Gray Syn Gard Metal Finish. The interior of the tank was painted with (2) two coats of No. 827 Water Resistant Black Paint. Both the exterior and interior paints were manufactured by Detroit Graphite Division of the Valspar Corporation, 7701 W. 47th Street, Lyons, Illinois.

The reinforced concrete footings were constructed by Government day labor forces.

All work was completed on the elevated tank on August 14, 1959. Government forces connected the tank to the pump discharge and the main water distribution lines which had been completed to within 5' of the standpipe by the contractor for water distribution line.

Chlorination: When the entire water distribution system was completely installed, the 5,000 gallon tank was filled with water and all the lines were repeatedly flushed to be sure they were thoroughly cleaned out. Calcium Hypochlorite powder (HTH) was introduced into the well casing and the tank at the rate of 10 ounces per 1,000 gallons of water (50 ppm). Each outlet was then opened until a chlorine odor was noticed and then closed off. The solution was allowed to remain in the tank and lines for 24 hours; the entire system was then flushed and put into operation. A sample of the water was tested by the State Board of Health and the report showed absence of coliform organisms.

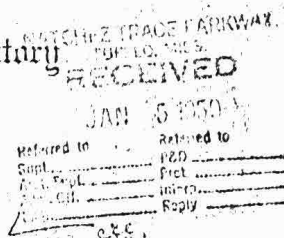
The complete water distribution system was put into operation on November 23, 1959.

FORM 1047-6-57-5H

Mississippi State Chemical Laboratory

State College, Mississippi

January 2, 1959

M. P. ETHEREDGE
STATE CHEMIST

Analysis No. 282,008

Analysis of WATER

Marked: Yowani Picnic Area.

Received on 12/17/58

from Natchez Trace Parkway

Address P. O. Box 428, Tupelo, Miss.

Gentlemen:

RESULTS:

The sample of water, which came to our laboratory just before the holidays, has now been analyzed and we should like to record our findings as follows:

PARTS PER MILLION

Total Solids	180.80
Carbonate Radicle, CO_3	16.00
bicarbonate Radicle, HCO_3	24.00
Chloride Radicle, Cl	97.60
Ammonia Nitrogen	14.00
Albuminoid Nitrogen	0.00
Nitrite Nitrogen	0.00
Nitrate Nitrogen	Trace
Free Carbon Dioxide, CO_2	Trace
Total Hardness as CaCO_3	0.00
pH	120.00
	9.2

The dissolved solids are not too high in amount; however, there seems to be a rather anomalous combination of circumstances. According to our titrations there is quite a bit of sodium carbonate present in addition to a majority of the solids being predominately calcium bicarbonate. Normally, one would expect the carbonate to precipitate out as calcium carbonate because the pH is well on the alkaline side. Evidently, though, the small amount of calcium chloride present, together with other traces of salts, seems to keep this additional calcium in solution rather than precipitating out as calcium carbonate. The loss on ignition, indicating organic matter being present, may, in part, help to cause this anomalous situation.

The freedom of all forms of nitrogenous matter, other than traces of nitrite and nitrate nitrogen, is indicative that there is no serious contamination of the water. Normally, when there is loss on ignition indicating dissolved organic material, we expect some color, small amount of musty odor, etc.; which probably are not harmful. Of course, the sand and silt present are somewhat objectionable unless filtered out..

Thanking you for this opportunity of serving you, we are

Sincerely yours,

M. P. Etheredge
State Chemist

RECORD OF SIX HOUR ACCEPTANCE TEST OF WATER WELL
Yowani Picnic Area, Natchez Trace Parkway
Test began at 8:30 a.m., December 5, 1958
Static Water Level Below Ground 168.5 Feet

<u>Time</u>	<u>Water Level Below Ground</u>	<u>Flow-Gallons Per Minute</u>
8:30 A.M.	168.5	16.67
TO		
8:35 A.M.	179.0	16.67
TO		
9:00 A.M.	181.5	16.67
TO		
9:30 A.M.	181.75	18.67
TO		
10:00 A.M.	182.0	18.67
TO		
10:30 A.M.	182.1	18.67
TO		
11:00 A.M.	182.25	18.67
TO		
11:30 A.M.	182.25	18.67
TO		
12:00 Noon	182.33	18.67
TO		
12:30 P.M.	182.33	20.0
TO		
1:00 P.M.	182.33	20.0
TO		
1:30 P.M.	182.25	20.0
TO		
2:00 P.M.	182.5	20.0
TO		
2:30 P.M.	182.5	20.0

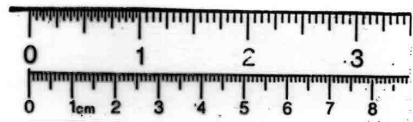
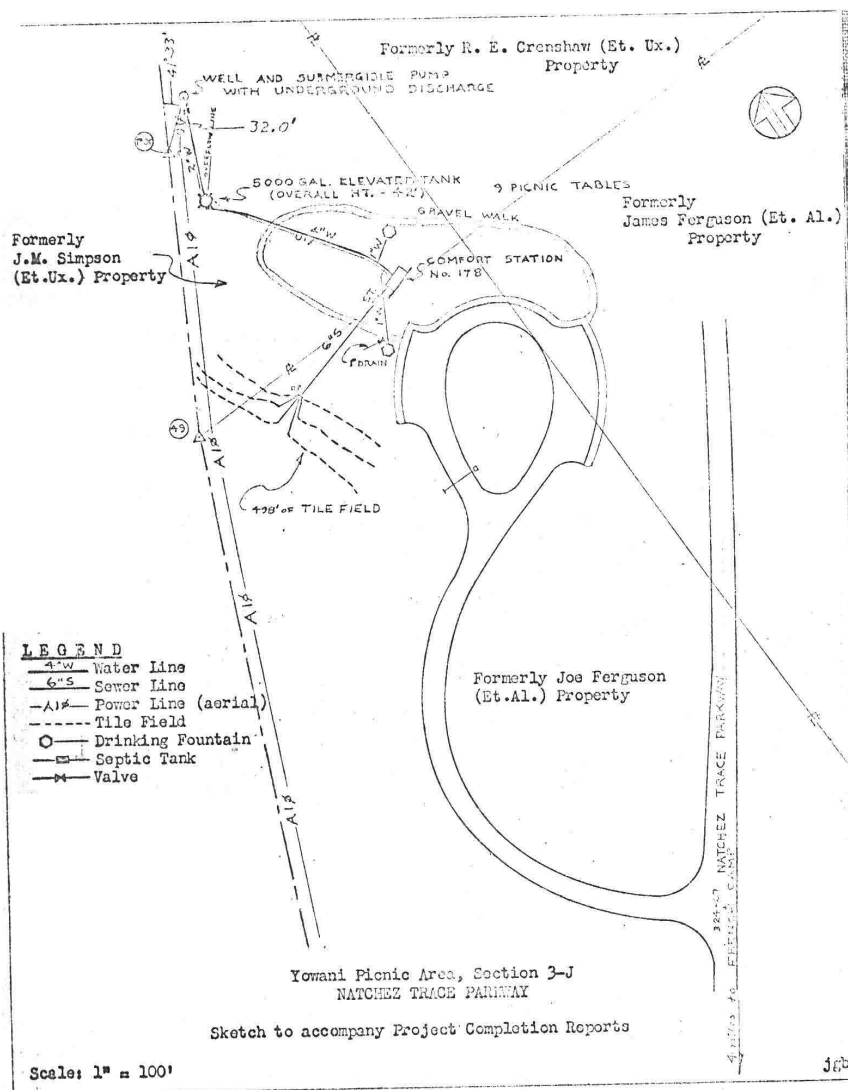
Recovery to 170.0 feet water level below ground took 15 minutes.

Above well drilled and tested by Robert E. Ratliff Company, Grenada, Mississippi.

Water level depth was measured with a Fisher M-Scope electrical instrument, and flow was determined with a 5-gallon bucket and watch. Pumping was done by air pressure.

I certify that the above test was observed and the data recorded by me on December 5, 1958.

John G. Bailey
John G. Bailey
Jr. Asst. San. Eng. (R)



Docket Information

Number of Documents in Docket 15

Documents Dated from 12/5/1958 to 12/15/1967

Docket Compiled: 5/27/2011