UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
Region III, NATIONAL PARK
Service.

FILE NO. D5039

FIELD REPORT

ON

POSSIBLE SOURCES OF WATER SUPPLY

In the vicinity of

EL MORRO NATIONAL MONUMENT

September 17, 1940

By

Andrew E. Clark
Assistant Engineer.

IMPORTANT

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ARNO B. CAMMERER,
Director.

ING OFFICE 6—7410

FIELD REPORT

ON

POSSIBLE SOURCES OF WATER SUPPLY
In the vicinity of
EL MORRO NATIONAL MONUMENT

September 17, 1940
By
Andrew E. Clark, Assistant Engineer

PURPOSE OF INVESTIGATION

This report is the result of a memorandum dated May 20, 1940, from Chief of Engineering Taylor, transmitted through Regional Engineer Diehl, requesting that certain preliminary data pertaining to possible sources of water supply at El Morro National Monument be obtained as to distance, elevation of source of supply, necessary easements for a right-of-way to be acquired for the pipe line, the amount of rock excavation involved to construct the pipe line at least three feet below ground surface to prevent freezing, and the acquisition of a water right.

SURVEYS TO POSSIBLE SOURCES

Stadia surveys were made to four possible sources of water supply, with the assistance of Farrell McLean, Rodman, and Walter W. Widman, Assistant Engineering Aide. All surveys were initiated at control points near the Custodian's residence at El Morro National Monument. Elevations for profile were carried over all the lines by means of the Beaman stadia arc on the transit. Numerous checks were made along the lines by taking horizontal and vertical angles to airline signal lights which were conveniently located. Ties were made to fence corners thought to be property corners, to all old stone section corners, and to existing wells and water holes. Fluses were taken to all fences, and cultivated land noted.

SOUNDINGS ON SURVEY LINES

After completing the surveys to the four possible water supply sources, soundings were taken over all lines at all points where a possibility of rock occurred. Such soundings were taken to a depth of three feet, or to solid rock where this occurred at a depth of less than three feet. Fluses were noted to all soundings for use in plotting the rock which might be encountered in digging a trench three feet in depth for the pipe line.

OUTLINE OF FIVE POSSIBLE SOURCES OF WATER SUPPLY

No. 1 - Deepening of Well near Custodian's Residence

On January 5, 1939, a depth of 405 feet was reached in the well located approximately 175 feet north of the new Custodian's residence. Such depth reached the Navajo sandstone, and resulted in a well capable of producing approximately one gallon per hour, which should be considered as virtually a dry hole.

It has been proposed to deepen this well in an attempt to obtain an adequate supply of water for the Monument. This method is considered by Regional Geologist Ross A. Maxwell as the most satisfactory. This would require the deepening of the existing well to a depth of from 1550 to 1650 feet to the Shinarump conglomerate, according to former Assistant Chief Naturalist H. E. Rothrock.

Considering this well as a source of supply the following additional items should be considered for a complete water distribution system: (1) A deep-well pump with 7 H.P. air-cooled engine; (2) pressure pump with 1 H.P. air-cooled engine; (3) masonry pump-house and concrete sump; (4) a pipe line 1100 feet in length of 2" pipe, and (5) a reinforced concrete two-compartment reservoir, having a capacity of 10,000 gallons. Such reservoir would be located approximately 950 feet west of, and 70 feet higher in elevation than the Custodian's residence.

No. 2-A - Airport Well

This proposal would require the drilling of a well to a depth of approximately 175 feet at a point 150 feet east of the east boundary of the airport, and the laying of a pipe line 3.53 miles in length to Headquarters at the Monument. All of the trenching for this line would be through sandy soil. The supply of water which might be expected at this source would probably be equivalent to that now being obtained from the well at the airport, operated by the Civil Aeronautics Authority. Although the quality of water produced by this latter well is good, the supply is very poor. After 15 minutes of continuous pumping, the water obtained becomes very sandy. Several attempts have been made by the C.A.A. to improve this well at considerable cost with unsatisfactory results. Should a well be drilled at the proposed site east of the airport, it is doubtful that an adequate supply of water for the Monument could be obtained at a depth of less than 275 feet.

The same poor supply might be expected if a well were drilled to a depth of 175 feet in the vicinity of the well now operated by Frank O. Jones, located in the S.E.Corner of Sec. 12, T. 9N. R. 15 W., which has a depth of 162 feet. This latter well produced a poor supply of water for the owner.

No. 2-B - Indian Service Well

This well, owned and operated by the Indian Irrigation Service, was drilled during the period July 6 to August 14, 1936, to a depth of 369 feet. A Dempster windmill with a wheel 16 feet in diameter on a tower 35 feet in height, is now in use at this well., The capacity produced is 9 gallons per minute. A well drilled to this same depth in this locality could be expected to produce an adequate water supply for the Monument.

A pipe line from this location to the Monument Headquarters would have a length of 5.08 miles, or 26,847 feet. In the laying of a pipe line, all of the trenching would be through sandy soil, with the exception of 455 linear feet of solid malpais and 220 linear feet of 25% malpais near the well, as shown on the profile.

No. 3 - Shallow Well in Water Canyon Flats

This proposed site for a shallow well is located in the N. E. quarter of Sec. 17, T.10 N. R.14 W. On July 26, 1940, a test hole was dug at this site with a post hole digger to a depth of 6 feet. 1.5 feet of water percolated into the test hole in a period of 20 minutes. It will be noted on the plan that a dug well is located in the northwest corner of Sec. 16. This well produces a good supply of water for the owner, although its depth is only 6.5 feet.

It is the opinion of Dr. Maxwell, that a well having a depth of 10 to 20 feet would produce an adequate supply of water for the Monument. However, Dr. Maxwell suggests that a pumping test be made on such a well before beginning the construction of a pipe line. This test should consist of continuous pumping for a period of from three to six days.

A pipe line from this well to the Monument Headquarters would be 4.57 miles, or 24,137 feet in length. In trenching for the pipe line to a depth of 3 feet, the following soil classification would be encountered, in terms of linear feet: 3,045 feet of solid malpais, 685 feet of 75% malpais, 2,405 feet of 50% malpais, 200 feet of 25% malpais, the remainder, or 17,802 feet, being through sandy soil. By percentage, 26.4% of the trench would be through malpais as classified above and the remainder, or 73.6% through sandy soil.

No. 4 - Storage Reservoir in Water Canyon

This proposal would require the construction of a dam in Water Canyon as shown on the plan, and for which cross-sections are shown on the profile. Reference is also made to attached photos taken at the sites for the construction of a dam.

A dam at Site No. 1 would be a concrete gravity structure having a length of 40 feet and height of 20 feet. Such a dam would provide a storage reservoir having a capacity of approximately 650,000 gallons.

A dam at Site No. 2 would be a concrete gravity structure having a length of 54 feet and height of 18 feet. Such a dam would provide a storage reservoir having a capacity of approximately 550,000 gallons.

Any location in Water Canyon below Site No. 1, where an earth fill dam would be preferable, would not be satisfactory, since at approximately 100 feet below this site, the water percolates into the ground and at no point below is water in evidence in the bed of the stream.

A minimum flow of 15 gallons per minute can be expected at either of the above dam sites. This flow would be considerably increased in the Fall by melting snow and to a less extent by increased rainfall in the Spring of the year.

To pipe water from this location to Headquarters at the Monument, would require the construction of a pipe line 7.24 miles, or 38,244 feet in length. In trenching for the pipe line to a depth of 3 feet, the following soil conditions would be encountered in terms of linear feet: 4975 feet of solid malpais, 1545 feet of 75% malpais, 2430 feet of 50% malpais and 860 feet of 25% malpais; the remainder, or 28,434 feet being through sandy soil. By percentage, 25.65% of the trench would be through malpais as classified above and the remainder, or 74.35%, through sandy soil.

A 1½ inch pipe will deliver 7½ gallons per minute to a reservoir at the Monument located approximately 950 feet west of, and 70 feet higher in elevation than the Custodian's residence. This delivery is based on the available head of 310 feet and a friction loss of 8 feet per thousand feet of 1½ inch pipe. Although a head of 310 feet is available it is thought advisable to have gravity flow to a reservoir near the Monument Headquarters to avoid the use of larger pipe from the Water Canyon reservoir directly to Headquarters, which would be required to get the desired pressure and volume of water at all times.

RESERVOIR AND PIPE LINE AT MONUMENT

In all of the five possible sources of water supply in the vicinity of El Morro National Monument, a reinforced concrete reservoir having a capacity of 10,000 gallons (two compartments of 5,000 gallons each) must be considered. This storage reservoir would be located at a point

approximately 950 feet west of, and 70 feet higher in elevation than the new Custodian's residence at the Monument. A delivery of from 15 to 20 gallons per minute to this reservoir has been used as a basis for the "Estimate of Cost" in proposals No. 2A, 2B and 3. The estimates using the deep well at the Monument, or a storage reservoir in Water Canyon as a source of supply, are each based on a delivery of 7½ gallons per minute to the reservoir at the Monument.

With a 2 inch line from the 10,000 gallon reservoir (mentioned above) to the residence, a delivery of 15 gallons per minute at a pressure of 26.6 lbs. per sq. inch would be available at the residence. Although this may be more pressure than is required at the residence, it is thought advisable to place the reservoir at the proposed location so that a sufficient head would be available for use at possible future developments such as the proposed campground and future buildings, which would be at a higher elevation than the residence.

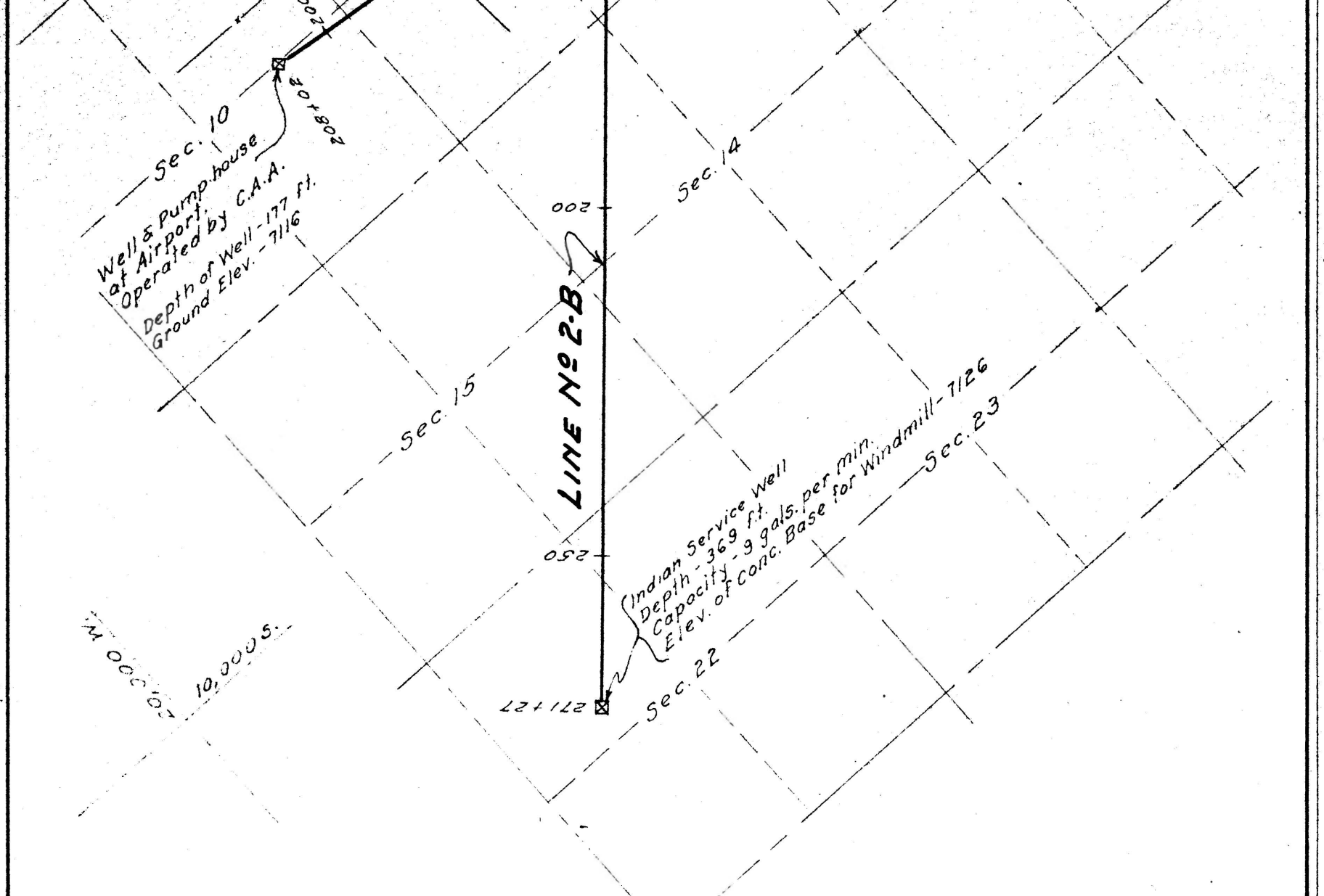
RIGHT-OF-WAY FOR PIPE LINE

On a pipe line from any one of the water supply sources outside of the Monument boundary, it is thought by the writer that little difficulty would be encountered in getting easements for a right-of-way, since the major portion of the land through which any of the pipe lines shown on the plan would be constructed, has a very low value.

The cost of crops which might be destroyed during the construction of the pipe line is of minor consideration in an estimate, since only a very small percentage of any one line passes through cultivated land.

NO. 1 - DEEPENING OF WELL NEAR RESIDENCE

Cost of reaming to depth of 400 ft.	@ 2.00	$800.00
Cost of drilling next 600 ft.	5.00	3000.00
Cost of drilling next 600 ft.	10.00	6000.00
500 ft. 10" Casing	2.28	1140.00
1100 ft. 8" Casing	1.60	1760.00
1600 ft. 6" Casing	1.05	1680.00
Deep-well Pump (Jack type) & 5 H.P. Engine		878.00
Pressure Pump and 1 H.P. Engine		142.00
1600 ft. 7/8" Galvanized Steel Sucker Rod	0.24	384.00
Deep-well Cylinder - Ball Valves - 36" Stroke		12.50
1600 ft. 2" Well Tubing	0.40	640.00
Masonry Pump-house and Sump		450.00
10,000 Gallon Reinforced Concrete Reservoir		930.00
1100 ft. 2" Galvanized Iron Pipe	0.25	275.00
1100 Linear Ft. Trench Excavation	0.25	275.00
1100 Linear Ft. Pipe Laying & Backfill	0.15	165.00
10% for Contingencies		1858.15
Estimated Cost		$20439.65
10% for Engineering and Supervision		2271.07
Total Estimated Cost		$22,710.72


Sec. 10
Sec. 14
Sec. 15
Sec. 22
Sec. 23
LINE No 2-B
200
250
Well & Pump house
at Airport.
Operated by C.A.A.
Depth of Well - 177 ft.
Ground Elev. - 7116
Indian Service Well
Depth - 369 ft.
Capacity - 9 gals. per min.
Elev. of Conc. Base for Windmill - 7126
10,000 W.
10,000 S.

NO. 2-B - INDIAN SERVICE WELL

Cost of drilling well to depth of 370 ft.	@ $5.00	$1850.00
370 ft. 6" Casing	1.05	388.50
175 ft. 8" Casing	1.60	280.00
Deep Well Pump and 5 H. P. Engine		250.00
High Pressure Pump and 5 H. P. Engine		226.00
370 ft. Octagon Wood Sucker Rod - 1-5/8"x7/8"	0.289	106.93
3¼" Deep-well Cylinder - Ball Valve - 10" Stroke		32.50
370 ft. 3½" Well Tubing	0.60	222.00
Masonry Pump-house and Concrete Sump		450.00
10,000 Gallon Reinforced Concrete Reservoir		930.00
27,800 ft. 2" Galvanized Iron Pipe	0.25	6950.00
27,100 Linear Ft. Trench Excavation	0.25	6775.00
700 " " " "	1.00	700.00
27,800 " " Pipe Laying & Backfill	0.15	4170.00
10% for Contingencies		2333.09
Estimated Cost		25,664.02
10% for Engineering & Supervision		2,851.56
Total Estimated Cost		$28,515.58

NO. 3 - SHALLOW WELL IN WATER CANYON

Cost of Shallow Well and Conc. Sump		. . .	$150.00
Masonry Pump House		. . .	350.00
High Pressure Pump and 5 H.P. Motor		. . .	235.00
25,750 ft. 2" Galvanized Iron Pipe	0.25	. . .	6437.50
19,415 ft. Trench Excavation	0.25	Lin.ft	4853.75
6,335 ft. " "	1.00	. . .	6335.00
25750 ft. Pipe Laying and Backfill	0.15	. . .	3862.50
10,000 Gallons Conc. Reservoir		. . .	930.00
10% for Contingencies		. . .	2315.37
Estimated Cost		. . .	$25469.12
10% for Engineering & Supervision		. . .	2829.90
Total Estimated Cost		. . .	$28,299.02

NO. 4 - RESERVOIR IN WATER CANYON

Cost of Concrete Dam in Water Canyon		. . .	$8770.00
38,750 ft. 1½" G. I. Pipe	0.19	. . .	7362.50
28,940 Linear Ft. Trennh Excavation	0.25	. . .	7235.00
9810 " " " "	1.00	. . .	9810.00
950 " " " "	0.25	. . .	237.50
39,700 ft. Pipe Laying and Backfill	0.15	. . .	5955.00
950 ft. 2" Pipe	0.25	. . .	237.50
10,000 Gallons Concrete Reservoir		. . .	930.00
10% for Contingencies		. . .	4053.75
Estimated Cost		. . .	44591.25
10% for Engineering and Supervision		. .	4954.58
Total Estimated Cost		. . .	$49,545.83

CONCLUSION

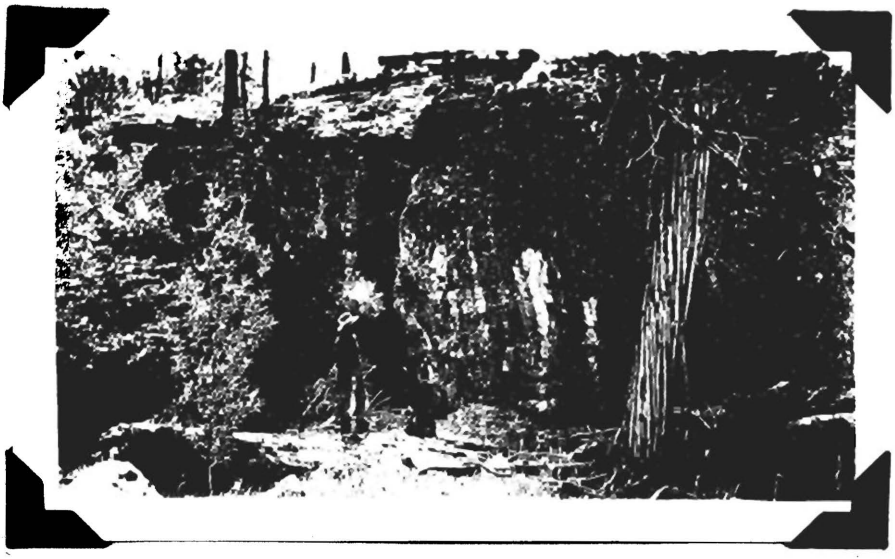
Should a well be drilled at any one of the proposed sites and a test made, proving that such a well would not produce as much as expected, an estimate and design of the particular system would necessarily have to be made to fit the conditions with regard to size of pressure-pump, size of deep well pump and size of pipe from source of supply to the proposed reservoir at the Monument.

Since similar problems regarding the obtaining of rights-of-way exist on all of the lines to sources of water outside of the Monument, property ownerships have not been definitely determined. It is thought advisable to obtain the data necessary for easements only on the particular line chosen for the water system.

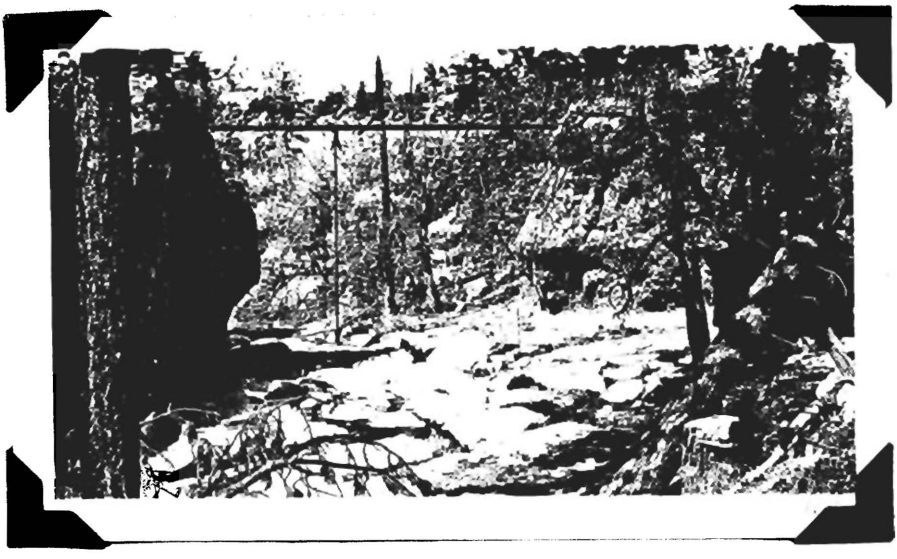
Respectfully submitted,

Andrew E. Clark

Assistant Engineer.



Limestone wall -- South or right side of canyon wall in Water Canyon at proposed Dam Site No.2



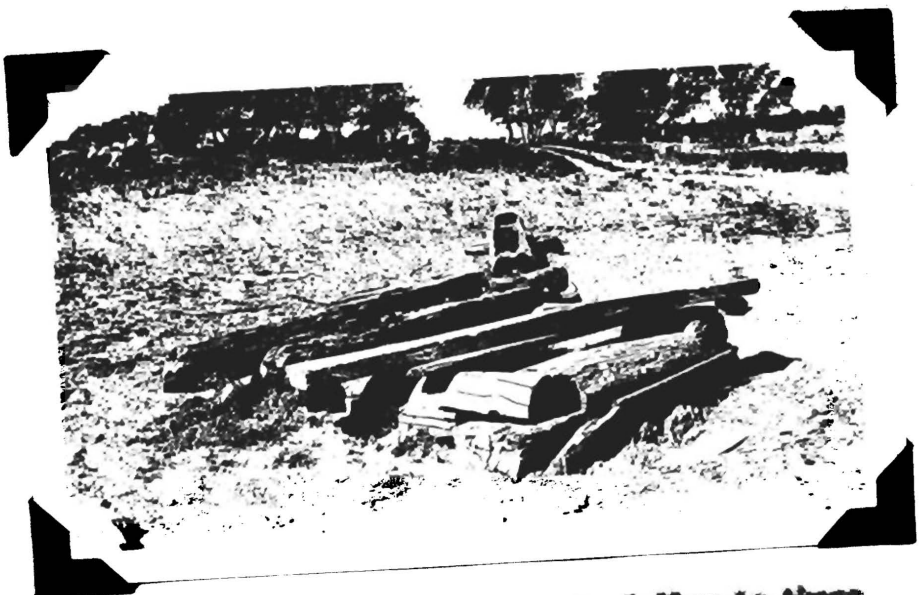
Looking downstream. Showing limestone walls on both sides of Water Canyon at Dam Site No. 2.



Looking downstream in Water Canyon at Pan Site No. 1.



The chief flow of water in Water Canyon on June 7, 1950. This is estimated at 10 gallons per minute. The total flow was estimated at 15 gallons per minute.



A well and watering trough similar to those seen in the "Dog-well" area northeast of El Morro National Monument. This well is located in the S.W. quarter of Sec. 15, T.10 N., R.11 W., as shown on plan.

LITHOLOGIC LOG

S. Geological Survey
ound Water Branch
njo Project

Well No.: 20T-5
Office No.: 134-

ation: 4 miles south of Ramah, McKinley County, New Mexico,
Sec. 19, T. 10N, R. 15W., Ramah # 2

l started:
l finished:
ples described by: Sally Schminke
tigraphic correlation by: J. W. Harshberger & C. A. Repenning

Date:

	Thickness (feet)	D (f
ETACEOUS:		
AKOTA GROUP:		
Moderate yellow brown; medium quartz sand; calcareous; fair sorting	50	
Medium gray; silty; claystone; slightly calcareous	40	
Light gray; medium quartz sand; poor sorting; calcareous	10	
Medium light gray; very fine quartz sand; poor sorting; calcareous plus claystone	70	
Olive gray; sandy siltstone; slightly calcareous plus carbonaceous material	20	
Light olive gray; medium quartz sand; poor sorting; slightly calcareous plus claystone	30	
Yellowish-gray; silty; very fine-quartz sand; fair sorting; calcareous	50	
Light olive gray; clayey siltstone; calcareous	10	
Yellowish-gray; fine-quartz sand; fair sorting; calcareous plus claystone	60	
MOUSER		
ASSIC:		
COW SPRINGS SANDSTONE:		
Grayish-orange pink; fine-quartz sand; fair sorting; calcareous plus fragments of white, very fine-sand	10	
Yellowish-gray; silty; very fine-quartz sand; fair sorting; calcareous	40	
Yellowish-gray; silty, very fine quartz sand; fair sorting; calcareous, plus dark gray claystone	40	
ENTRADA SANDSTONE: YOUR WELL STARTS ABOUT HERE		
Grayish-orange pink; silty; very fine-quartz sand; fair sorting; calcareous	70	
Very pale orange; silty; very fine-sand; fair sorting; calcareous	40	
Grayish-orange pink; silty very fine quartz sand	10	
Grayish-orange pink; very coarse quartz sand; poor sorting; calcareous	10	
Grayish-orange pink; very fine quartz sand; fair sorting; calcareous	20	

	Thickness (feet)	Depth (feet)
Grayish-orange pink; very coarse sand; poor sorting; calcareous plus fragments of gray very fine sandstone	10	590
Grayish-orange pink; medium quartz sand; good sorting; calcareous plus fragments of moderate brown very fine sandstone	40	630

ASSIC:

NGATE SANDSTONE:

Light brown; silty; very fine-quartz sand; fair sorting; calcareous	20	650
Moderate brown; silty; very fine-quartz sand; fair sorting; calcareous plus basalt	50	700
Light brown; silty; very fine-quartz sand; fair sorting; calcareous	40	740
Moderate brown; silty; very fine-quartz sandstone; fair sorting; calcareous	20	760
Light brown; silty; very fine-quartz sand; fair sorting; calcareous	70	830
Moderate brown; limy; very fine-quartz sand; fair sorting; calcareous	10	840
Light brown; very fine-quartz sand; fair sorting; calcareous	10	850
Light brown; sandy silt; calcareous	10	860
Moderate limy; very fine-quartz sandstone; fair sorting; calcareous	20	880
Light brown; silty very fine sand plus limy; very fine sand	20	900

DDLE FORMATION:

Moderate brown; limy very fine-quartz sandstone; fair sorting; calcareous	60	960
Moderate brown; limy sandy siltstone; calcareous plus limestone fragments	70	1,030
Moderate brown; silty; very fine-sand; poor sorting; calcareous	10	1,040
Light brown; siltstone plus fragments of claystone; calcareous	10	1,050
Moderate brown; limestone plus limy siltstone	10	1,060
Dark red brown siltstone plus caliche	10	1,070
Moderate red orange; claystone; calcareous	10	1,080
Grayish-red purple; limestone plus some claystone	5	1,085
Pale red limy claystone	7	1,092

DROLOGIC DATA:

Total depth . . . . . 1,092 feet
Water level . . . . . 330 feet below surface
Aquifer . . . . . Entrada Sandstone
Water bearing zone . . . . . 550-580 feet
Bailed at . . . . . 2$ g/p/m for 40 minutes with 153 feet drawdown

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
SOUTHWESTERN NATIONAL MONUMENTS
~~COOLIDGE, ARIZONA~~
Santa Fe, New Mexico

REPLY TO
RINTENDENT

December 10, 1942.

MEMORANDUM for the Custodian,
El Morro National Monument.

Reference is made to your memorandum of December 1 stating that 226 loads of rock and dirt had been hauled from the pool and you are of the opinion that the material should be wasted in some place other than the arroyo in which you originally started to waste the material. There is enclosed a sketch plan prepared by Associate Landscape Architect Kell which suggests additional area where the spoil material could be wasted. The following suggestions have been made by Mr. Kell.

"A sketch plan has been prepared which may aid Mr. Baxter in wasting additional material from the reservoir site at El Morro. At the time of our visit he was wasting material in the arroyo below the old ranger cabin and it is believed that if the material were spread evenly from this point to the base of the old dam, perhaps all of the material could be wasted in this arroyo. It is recommended that the fill material be distributed in even layers in the arroyo, keeping in mind that as the fill is placed the center should always be kept slightly lower than the sides in order to secure adequate drainage and not disturb the original drainage features. In order to get a finished job that will blend in with the surrounding landscape, it is suggested that Mr. Baxter instruct the men to work lengthwise up and down the arroyo. The sections on the sketch plan indicate the approximate placement of rock fill and the alternate colored areas indicate the general distribution of the material. It is suggested that the stone material be kept a minimum of four feet away from the edge of the trail except of course a small section of the trail which will be buried under the fill and will eventually be reconstructed. The rock fill material should also be kept approximately five feet away from the base of all existing trees. When the material is finally distributed an earth dressing should be placed over the entire area. The earth fill should not cover the base of existing trees more than six inches deep."

It is believed that if the suggestions made by Mr. Kell are followed, all of the material can be wasted in the location originally

selected. I have discussed the matter of placing the surplus material in the arroyo just north of the residence with Superintendent Richey and he agrees that perhaps some of the material could be placed in this location. However the soil at El Morro is of such a sandy nature that erosion starts on the least provocation and therefore it is doubtful if you could haul material to the arroyo without starting additional erosion unless perhaps it might be done when the ground is frozen. It is suggested that this last location be used only if all of the material cannot be wasted in the arroyo between the cliff and the old ranger cabin.

Ross A. Maxwell

Acting Superintendent.

Encl. 1899751.

KERSEY & CO.
CONTRACTORS

ALAMOGORDO, NEW MEXICO
Dec. 26, 1938

Daily Drilling Report for Well at the El Morro National Monument - Contract No. I-20p-920 - KERSEY & CO., Contractor

Dec. 8th	0 - 5'	Soil	
	5'- 20'	Sand Fill	
Dec. 9th	20' - 50'	Sand Fill	
Dec. 10th	50' - 91'	Sand Fill	
Dec. 11th	91' - 122'	Sand Fill	
Dec. 12th	122' - 125'	Sand Fill	
	125' - 155'	Gray Sandstone	
	155' - 160'	Red Sandy Clay	
Dec. 13th	160' - 210'	Red Sandy Clay	Seep of Water at 200' One Gallon per hour
Dec. 14th	210' - 224'	Red Sandy Clay	
Dec. 15th	224' - 243'	Red Sandy Clay	
Dec. 16th	243' - 258'	Red Clay & Gravel	
	258' - 265'	Red Clay, Sandy	
	Tools stuck with mud ring		
Dec. 17th	Tools removed from hole		
Dec. 18th	265' - 284'	Red Sandy Clay	
Dec. 19th	284' - 319'	Red Sandy Clay	
Dec. 20th	319' - 348'	Red Sandy Clay	
Dec. 21st	348' - 378'	Red Sandy Clay	
Dec. 22nd	378' - 405'	Red Sandy Clay	

Dec. 28, 1933

Daily Drilling Report for Well at the El Morro National Monument - Contract No. I-20p-920 - KELLEY & CO., Contractor

Dec. 8th	0 - 5' Soil 5' - 20' Sand Fill	
Dec. 9th	20' - 50' Sand Fill	
Dec. 10th	50' - 91' Sand Fill	
Dec. 11th	91' - 122' Sand Fill	
Dec. 12th	122' - 125' Sand Fill 125' - 155' Grey Sandstone 155' - 160' Red Sandy Clay	
Dec. 13th	160' - 210' Red Sandy Clay	Seep of Water at 200' One Gallon per hour
Dec. 14th	210' - 224' Red Sandy Clay	
Dec. 15th	224' - 243' Red Sandy Clay	
Dec. 16th	243' - 255' Red Clay & Gravel 255' - 265' Red Clay, Sandy Tools stuck with mud ring	
Dec. 17th	Tools removed from hole	
Dec. 18th	265' - 284' Red Sandy Clay	
Dec. 19th	284' - 319' Red Sandy Clay	
Dec. 20th	319' - 348' Red Sandy Clay	
Dec. 21st	348' - 378' Red Sandy Clay	
Dec. 22nd	378' - 405' Red Sandy Clay	

U. S. Standard Form No. 23
Approved by the Secretary of the Treasury
Revised September 9, 1935

Contract No [redacted]
I-20p-920

CONTRACT

(CONSTRUCTION)

DEPARTMENT OF THE INTERIOR
(Department)

Omer Harvey and Harold Harvey (Harvey & Co.)
(Contractor)

Contract for Drilling and casing a water well *Amount, $* 1,062.00

Place El Morro National Monument, New Mexico

Approved Nov. 15, 1934

10—2192

CONTRACT FOR CONSTRUCTION

This Contract, entered into this twenty-first day of October, 19[illegible], by THE UNITED STATES OF AMERICA, hereinafter called the Government, represented by the contracting officer executing this contract, and Omer Harvey and Harold Harvey

a corporation organized and existing under the laws of the State of
a partnership consisting of Omer Harvey and Harold Harvey, doing business as Harvey & [illegible]

an individual trading as
of the city of Alamogordo in the State of New Mexico
hereinafter called the contractor, witnesseth that the parties hereto do mutually agree as follows:

ARTICLE 1. *Statement of work.*—The contractor shall furnish the materials, and perform the work for

(1) Moving in and erecting, ready for drilling, a complete drill rig; also dismantling and removing same and cleaning up site; all completely at contractor's expense, job [illegible]
(2) Drilling well any depth down to 500 feet, price per foot $5.00 [illegible]
(3) Additional depth between 500 and 600 feet below surface, as required; estimated 80 feet, price per foot $4.00 [illegible]
(4) Furnishing and placing in well and sealing off above selected potable water bearing strata, 6-5/8" O.D. casing, weighing not less than 17 pounds per foot, with couplings; length as required; estimated 550 feet; at $1.85 per foot [illegible]
(5) Rental price of full drilling equipment while in operation, if required, per hour, [illegible]
(6) [illegible] Under-reaming, if required; per foot [illegible]

for the consideration of One thousand six hundred sixty-two and 50/100 Dollars ($1,662.50) - estimated total of Items 1, 2, 3, and 4, in accordance with specifications

in strict accordance with the specifications, schedules, and drawings, all of which are made a part hereof and designated as follows: "Specifications for Drilling a Water Well at El Morro National Monument" and "Bid Price Schedule for Drilling and Casing Water Well at El Morro National Monument, with Attached Specifications."

The work shall be commenced within thirty (30) calendar days after date of receipt by the contractor of notice to proceed,

and shall be completed within sixty (60) calendar days from date such notice is received by the contractor

ARTICLE 2. *Specifications and drawings.*—The contractor shall keep on the work a copy of the drawings and specifications and shall at all times give the contracting officer access thereto. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of difference between drawings and specifications, the specifications shall govern. In any case of discrepancy in the figures, drawings, or specifications, the matter shall be immediately submitted to the contracting officer, without whose decision said discrepancy shall not be adjusted by the contractor, save only at his own risk and expense. The contracting officer shall furnish from time to time such detail drawings and other information as he may consider necessary, unless otherwise provided. Upon completion of the contract the work shall be delivered complete and undamaged.

ARTICLE 3. *Changes.*—The contracting officer may at any time, by a written order, and without notice to the sureties, make changes in the drawings and/or specifications of this contract and within the general scope thereof. If such changes cause an increase or decrease in the amount due under this contract, or in the time required for its performance, an equitable adjustment shall be made and the contract shall be modified in writing accordingly. No change involving an estimated increase or decrease of more than Five Hundred Dollars shall be ordered unless approved in writing by the head of the department or his duly authorized representative. Any claim for adjustment under this article must be asserted within 10 days from the date the change is ordered: *Provided, however,* That the contracting officer, if he determines that the facts justify such action, may receive and consider, and with the approval of the head of the department or his duly authorized representative, adjust any such claim asserted at any time prior to the date of final settlement of the contract. If the parties fail to agree upon the adjustment to be made the dispute shall be determined as provided in article 15 hereof. But nothing provided in this article shall excuse the contractor from proceeding with the prosecution of the work so changed.

ARTICLE 4. *Changed conditions.*—Should the contractor encounter, or the Government discover, during the progress of the work subsurface and/or latent conditions at the site materially differing from those shown on the drawings or indicated in the specifications, or unknown conditions of an unusual nature differing materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in the plans and specifications, the attention of the contracting officer shall be called immediately to such conditions before they are disturbed. The contracting officer shall thereupon promptly investigate the conditions, and if he finds that they do so materially differ the contract shall, with the written approval of the head of the department or his duly authorized representative, be modified to provide for any increase or decrease of cost and/or difference in time resulting from such conditions.

ARTICLE 5. *Extras.*—Except as otherwise herein provided, no charge for any extra work or material will be allowed unless the same has been ordered in writing by the contracting officer and the price stated in such order.

ARTICLE 6. *Inspection.*—(*a*) All material and workmanship (if not otherwise designated by the specifications) shall be subject to inspection, examination, and test by Government inspectors at any and all times during manufacture and/or construction and at any and all places where such manufacture and/or construction are carried on. The Government shall have the right to reject defective material and workmanship or require its correction. Rejected workmanship shall be satisfactorily corrected and rejected material shall be satisfactorily replaced with proper material without charge therefor, and the contractor shall promptly segregate and remove the same from the premises. If the contractor fails to proceed at once with the replacement of rejected material and/or the correction of defective workmanship the Government may, by contract or otherwise, replace such material and/or correct such workmanship and charge the cost thereof to the contractor, or may terminate the right of the contractor to proceed as provided in article 9 of this contract, the contractor and surety being liable for any damage to the same extent as provided in said article 9 for terminations thereunder.

10—2162

(*b*) The contractor shall furnish promptly without additional charge, all reasonable facilities, labor, and materials necessary for the safe and convenient inspection and test that may be required by the inspectors. All inspection and tests by the Government shall be performed in such manner as not to unnecessarily delay the work. Special, full size, and performance tests shall be as described in the specifications. The contractor shall be charged with any additional cost of inspection when material and workmanship is not ready at the time inspection is requested by the contractor.

(*c*) Should it be considered necessary or advisable by the Government at any time before final acceptance of the entire work to make an examination of work already completed, by removing or tearing out same, the contractor shall on request promptly furnish all necessary facilities, labor, and material. If such work is found to be defective in any material respect, due to fault of the contractor or his subcontractors, he shall defray all the expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, the actual cost of labor and material necessarily involved in the examination and replacement, plus 15 percent, shall be allowed the contractor and he shall, in addition, if completion of the work has been delayed thereby, be granted a suitable extension of time on account of the additional work involved.

(*d*) Inspection of material and finished articles to be incorporated in the work at the site shall be made at the place of production, manufacture, or shipment, whenever the quantity justifies it, unless otherwise stated in the specifications; and such inspection and acceptance, unless otherwise stated in the specifications, shall be final, except as regards latent defects, departures from specific requirements of the contract and the specifications and drawings made a part thereof, damage or loss in transit, fraud, or such gross mistakes as amount to fraud. Subject to the requirements contained in the preceding sentence, the inspection of material and workmanship for final acceptance as a whole or in part shall be made at the site.

ARTICLE 7. *Materials and workmanship.*—Unless otherwise specifically provided for in the specifications, all workmanship, equipment, materials, and articles incorporated in the work covered by this contract are to be of the best grade of their respective kinds for the purpose. Where equipment, materials, or articles are referred to in the specifications as "equal to" any particular standard, the contracting officer shall decide the question of equality. The contractor shall furnish to the contracting officer for his approval the name of the manufacturer of machinery, mechanical and other equipment which he contemplates incorporating in the work, together with their performance capacities and other pertinent information. When required by the specifications, or when called for by the contracting officer, the contractor shall furnish the contracting officer for approval full information concerning the materials or articles which he contemplates incorporating in the work. Samples of materials shall be submitted for approval when so directed. Machinery, equipment, materials, and articles installed or used without such approval shall be at the risk of subsequent rejection. The contracting officer may require the contractor to dismiss from the work such employee as the contracting officer deems incompetent, careless, insubordinate, or otherwise objectionable.

ARTICLE 8. *Superintendence by contractor.*—The contractor shall give his personal superintendence to the work or have a competent foreman or superintendent, satisfactory to the contracting officer, on the work at all times during progress, with authority to act for him.

ARTICLE 9. *Delays—Damages.*—If the contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified in article 1, or any extension thereof, or fails to complete said work within such time, the Government, may, by written notice to the contractor, terminate his right to proceed with the work or such part of the work as to which there has been delay. In such event the Government may take over the work and prosecute the same to completion, by contract or otherwise, and the contractor and his sureties shall be liable to the Government for any excess cost occasioned the Government thereby. If the contractor's right to proceed is so terminated, the Government may take possession of and utilize in completing the work such materials, appliances, and plant as may be on the site of the work and necessary therefor. If the Government does not terminate the right of the contractor to proceed, the contractor shall continue the work, in which event the actual damages for the delay will be impossible to determine and in lieu thereof the contractor shall pay to the Government as fixed, agreed, and liquidated damages for each calendar day of delay until the work is completed or accepted the amount as set forth in the

10—2192

specifications or accompanying papers and the contractor and his sureties shall be liable for the amount thereof: *Provided,* That the right of the contractor to proceed shall not be terminated or the contractor charged with liquidated damages because of any delays in the completion of the work due to unforseeable causes beyond the control and without the fault or negligence of the contractor, including, but not restricted to, acts of God, or of the public enemy, acts of the Government, acts of another contractor in the performance of a contract with the Government, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather or delays of subcontractors due to such causes, if the contractor shall within 10 days from the beginning of any such delay (unless the contracting officer, with the approval of the head of the department or his duly authorized representative, shall grant a further period of time prior to the date of final settlement of the contract) notify the contracting officer in writing of the causes of delay, who shall ascertain the facts and the extent of the delay and extend the time for completing the work when in his judgment the findings of fact justify such an extension, and his findings of fact thereon shall be final and conclusive on the parties hereto, subject only to appeal, within 30 days, by the contractor to the head of the department concerned, whose decision on such appeal as to the facts of delay and the extension of time for completing the work shall be final and conclusive on the parties hereto.

ARTICLE 10. *Permits and care of work.*—The contractor shall, without additional expense to the Government, obtain all required licenses and permits and be responsible for all damages to persons or property that occur as a result of his fault or negligence in connection with the prosecution of the work, and shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance.

ARTICLE 11. *Eight-hour law—Convict labor.*—(*a*) No laborer or mechanic doing any part of the work contemplated by this contract, in the employ of the contractor or any subcontractor contracting for any part of said work contemplated, shall be required or permitted to work more than eight hours in any one calendar day upon such work at the site thereof. For each violation of the requirements of this article a penalty of five dollars shall be imposed upon the contractor for each laborer or mechanic for every calendar day in which such employee is required or permitted to labor more than eight hours upon said work, and all penalties thus imposed shall be withheld for the use and benefit of the Government: *Provided,* That this stipulation shall be subject in all respects to the exceptions and provisions of U. S. Code, title 40, sections 321, 324, 325, and 326, relating to hours of labor.

(*b*) The contractor shall not employ any person undergoing sentence of imprisonment at hard labor.

ARTICLE 12. *Covenant against contingent fees.*—The contractor warrants that he has not employed any person to solicit or secure this contract upon any agreement for a commission, percentage, brokerage, or contingent fee. Breach of this warranty shall give the Government the right to terminate the contract, or, in its discretion, to deduct from the contract price or consideration the amount of such commission, percentage, brokerage, or contingent fees. This warranty shall not apply to commissions payable by contractors upon contracts or sales secured or made through bona fide established commercial or selling agencies maintained by the contractor for the purpose of securing business.

ARTICLE 13. *Other contracts.*—The Government may award other contracts for additional work, and the contractor shall fully cooperate with such other contractors and carefully fit his own work to that provided under other contracts as may be directed by the contracting officer. The contractor shall not commit or permit any act which will interfere with the performance of work by any other contractor.

ARTICLE 14. *Officials not to benefit.*—No Member of or Delegate to Congress, or Resident Commissioner, shall be admitted to any share or part of this contract or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE 15. *Disputes.*—Except as otherwise specifically provided in this contract, all disputes concerning questions of fact arising under this contract shall be decided by the contracting officer subject to written appeal by the contractor within 30 days to the head of the department concerned or his duly authorized representative, whose decision shall be final and conclusive upon the parties thereto. In the meantime the contractor shall diligently proceed with the work as directed.

ARTICLE 16. *Payments to contractors.*—(*a*) Unless otherwise provided in the specifications, partial payments will be made as the work progresses at the end of each calendar month, or as soon thereafter as practicable, on estimates made and approved by the contracting officer. In preparing estimates the material delivered on the site and preparatory work done may be taken into consideration.

(*b*) In making such partial payments there shall be retained 10 percent on the estimated amount until final completion and acceptance of all work covered by the contract: *Provided, however*, That the contracting officer, at any time after 50 percent of the work has been completed, if he finds that satisfactory progress is being made, may make any of the remaining partial payments in full: *And provided further*, That on completion and acceptance of each separate building, vessel, public work, or other division of the contract, on which the price is stated separately in the contract, payment may be made in full, including retained percentages thereon, less authorized deductions.

(*c*) All material and work covered by partial payments made shall thereupon become the sole property of the Government, but this provision shall not be construed as relieving the contractor from the sole responsibility for the care and protection of materials and work upon which payments have been made or the restoration of any damaged work, or as a waiver of the right of the Government to require the fulfillment of all of the terms of the contract.

(*d*) Upon completion and acceptance of all work required hereunder, the amount due the contractor under this contract will be paid upon the presentation of a properly executed and duly certified voucher therefor, after the contractor shall have furnished the Government with a release, if required, of all claims against the Government arising under and by virtue of this contract, other than such claims, if any, as may be specifically excepted by the contractor from the operation of the release in stated amounts to be set forth therein.

ARTICLE 17. *Rate of wages* (in accordance with Public Act No. 403, 74th Cong., approved Aug. 30, 1935, this article shall apply if the contract is in excess of $2,000 in amount and is for the construction, alteration, and/or repair, including painting and decorating, of a public building or public work within the geographical limits of the States of the Union or the District of Columbia).—

(*a*) The contractor or his subcontractor shall pay all mechanics and laborers employed directly upon the site of the work, unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account, the full amounts accrued at time of payment, computed at wage rates not less than those stated in the specifications, regardless of any contractual relationship which may be alleged to exist between the contractor or subcontractor and such laborers and mechanics; and the scale of wages to be paid shall be posted by the contractor in a prominent and easily accessible place at the site of the work. The contracting officer shall have the right to withhold from the contractor so much of accrued payments as may be considered necessary by the contracting officer to pay to laborers and mechanics employed by the contractor or any subcontractor on the work the difference between the rates of wages required by the contract to be paid laborers and mechanics on the work and the rates of wages received by such laborers and mechanics and not refunded to the contractor, subcontractors, or their agents.

(*b*) In the event it is found by the contracting officer that any laborer or mechanic employed by the contractor or any subcontractor directly on the site of the work covered by the contract has been or is being paid a rate of wages less than the rate of wages required by the contract to be paid as aforesaid, the Government may, by written notice to the contractor, terminate his right to proceed with the work or such part of the work as to which there has been a failure to pay said required wages and prosecute the work to completion by contract or otherwise, and the contractor and his sureties shall be liable to the Government for any excess costs occasioned the Government thereby.

10—2192

ARTICLE 18. *Domestic preference.*—In the performance of the work covered by this contract the contractor, subcontractors, material men or suppliers, shall use only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States, and only such manufactured articles, materials, and supplies as have been manufactured in the United States substantially all from articles, materials, or supplies mined, produced, or manufactured, as the case may be, in the United States. The foregoing provision shall not apply to such articles, materials, or supplies of the class or kind to be used or such articles, materials, or supplies from which they are manufactured, as are not mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality, or to such articles, materials, or supplies as may be excepted by the head of the department under the proviso of title III, section 3, of the act of Congress approved March 3, 1933 (U. S. Code, title 41, sec. 10b).

ARTICLE 19. *Nonrebate.*—(*a*) The contractor shall furnish to the Government representative in charge at the site of the work covered by this contract, or if no Government representative is in charge at the site, shall mail to the Federal agency having control of the project, within 3 days after the payment of each and every weekly pay roll, an affidavit in the form prescribed by regulations issued jointly by the Secretary of the Treasury and the Secretary of the Interior under date of January 8, 1935, to be effective on and after January 15, 1935, or any modification thereof pursuant to the act of June 13, 1934 (48 Stat. 948), sworn to by the officer or employee of the contractor supervising such payment, to the effect that each and every person employed on the work has been paid in full the weekly wages shown on the pay roll covered by the affidavit; that no rebates or deductions from any wages due such employee or employees have been made either directly or indirectly; and that to the best of the knowledge and belief of the affiant no agreement or understanding exists with any person employed on the project pursuant to which any person, directly or indirectly, by force, intimidation, threat, or otherwise, induces or receives any deductions or rebates in any manner whatever from any sum paid or to be paid any person for labor performed in carrying out this contract. At the time upon which the first affidavit with respect to wages paid employees is filed the contractor shall also furnish an affidavit setting forth the name of the officer or employee who supervises the payment of employees and stating that such officer or employee is in a position to have full knowledge of the facts set forth in the affidavit respecting the payment of wages of employees. In the event that the contractor is a corporation the second affidavit herein described shall be executed by its president or a vice president; in case the contractor is a partnership such affidavit shall be executed by one of the partners. A similar affidavit shall be filed immediately in the event that a change is made in the officer or employee who supervises the payment of employees.

(*b*) The contractor shall cause appropriate provisions to be inserted in all subcontracts relating to this work to insure fulfillment of the requirements of this article.

ARTICLE 20. *Additional security.*—Should any surety upon the bond for the performance of this contract become unacceptable to the Government, or if any such surety shall fail to furnish reports as to his financial condition from time to time as requested by the Government, the contractor must promptly furnish such additional security as may be required from time to time to protect the interests of the Government and of persons supplying labor or materials in the prosecution of the work contemplated by the contract.

ARTICLE 21. *Definitions.*—(*a*) The term "head of the department" as used herein shall mean the head or any assistant head of the executive department or independent establishment involved, and the term "his duly authorized representative" shall mean any person authorized to act for him other than the contracting officer.

(*b*) The term "contracting officer" as used herein shall include his duly appointed successor or his authorized representative.

ARTICLE 22. *Alterations.*—The following changes were made in this contract before it was signed by the parties hereto:

Article 23. PATENTS. -- The contractor shall hold and save the Government, its officers, agents, servants, and employees, harmless from liabilities of any nature or kind for or on account of the use of any patented or unpatented invention, article or appliances furnished or used in the performance of this contract, excepting patented articles required by the Government in its specifications, the use of which the contractor does not control.

Article 24. APPROVAL. -- This contract shall be subject to the written approval of the Assistant Secretary, Department of the Interior, and shall not be binding until so approved.

IN WITNESS WHEREOF, the parties hereto have executed this contract as of the day and year first above written.

THE UNITED STATES OF AMERICA,

By FRANK PEIRCE,
Superintendent, Southwestern [illegible]
(Official title)

Two witnesses:

(Business address)

Contractor.

I, _____, certify that I am the _____ secretary of the corporation named as contractor herein; that _____ who signed this contract on behalf of the contractor, was then _____ of said corporation; that said contract was duly signed for and in behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

_____ [CORPORATE SEAL]

I hereby certify that, to the best of my knowledge and belief, based upon observation and inquiry, _____ who signed this contract for the _____ had authority to execute the same, and is the individual who signs similar contracts on behalf of this corporation with the public generally.

_____
Contracting Officer.

This contract is authorized by the acts of

Appn. 1451000 National Park Service, 1939.

DIRECTIONS FOR PREPARATION OF CONTRACT

1. This form shall be used for every formal contract for the construction or repair of public buildings or works, but its use will not be required in foreign countries.

2. There shall be no deviation from this standard contract form, except as provided for in these directions, and except as authorized by the Director of Procurement. Where interlineations, deletions, additions, or other alterations are permitted, specific notation of the same shall be entered in the blank space following the article entitled "Alterations" before signing. This article is not to be construed as general authority to deviate from the standard form. Deletion of the descriptive matter not applicable in the preamble need not be noted in the article entitled "Alterations."

3. The blank space of Article 1 is intended for the insertion of a statement of the work to be done, together with place of performance, or for the enumeration of papers which contain the necessary data.

4. If it is deemed necessary to include an article on patents the Invitation to Bidders shall so state and the following article be used:

> ARTICLE _____. *Patents.*—The contractor shall hold and save the Government, its officers, agents, servants and employees, harmless from liability of any nature or kind, including costs and expenses, for or on account of any patented or unpatented invention, article, or appliance manufactured or used in the performance of this contract, including their use by the Government.

Where any patent or patents are to be excepted from the operation of this article, such exceptions will be specifically stated, by reference to the patent number, date of issue and name of patentee, in a proviso to be added to the article.

5. Where only one payment is contemplated, upon completion of the contract, all except paragraph (*d*) of Article 16, "Payments to Contractor", must be stricken out.

6. If approval of the contract is required before it shall become binding, the following article must be added:

> ARTICLE _____. *Approval.*—This contract shall be subject to the written approval of _____ and shall not be binding until so approved.

Contracts subject to approval are not valid until approved by the authority designated to approve them, and the contractor's copy will not be delivered, nor any distribution made, until such approval. All changes and deletions must have been made before the contract is forwarded for approval.

7. The number of executed copies and of certified copies, designation of disbursing officer, statement of appropriation, amount of bond, designation of place of inspection, as well as other administrative details, shall be as directed by the department to which the contract pertains.

10—2192

8. All blank spaces must be filled in or ruled out. The contract must be dated, and the bond must bear the same or subsequent date.

9. An officer of a corporation, a member of a partnership, or an agent signing for the principal, shall place his signature and title after the word "By" under the name of the principal. A contract executed by an attorney or agent on behalf of the contractor shall be accompanied by two authenticated copies of his power of attorney, or other evidence of his authority to act on behalf of the contractor.

10. If the contractor is a corporation, one of the certificates following the signatures of the parties must be executed. If the contract is signed by the secretary of the corporation, then the first certificate must be executed by some other officer of the corporation under the corporate seal, or the second certificate executed by the contracting officer. In lieu of either of the foregoing certificates there may be attached to the contract copies of so much of the records of the corporation as will show the official character and authority of the officer signing, duly certified by the secretary or assistant secretary, under the corporate seal, to be true copies.

11. The full name and business address of the contractor must be inserted, and the contract signed with his usual signature. Typewrite or print name under all signatures to contract and bond.

12. The contracting officer must fill in the citation of the act authorizing the contract as indicated at the end of the last page of the contract.

13. The Invitation, Bid, Acceptance, and Instructions to Bidders are not to be incorporated in the contract.

14. The specifications should include a paragraph stating the amount of liquidated damages that will be paid by the contractor for each calendar day of delay, as indicated in Article 9 of the contract. If time is not of the essence of the contract the words "No liquidated damages" or an equivalent phrase should be inserted on the reverse side of Standard Form No. 20. So much of the language in Article 9 as relates to liquidated damages shall then be deleted.

15. Additional contract provisions and instructions, deemed necessary for the particular work, not inconsistent with the standard forms nor involving questions of policy, may be incorporated in the specifications or other accompanying papers.

10—2192 U.S. GOVERNMENT PRINTING OFFICE

Standard Form No. 21
Approved by the President
Nov. 19, 1926

STANDARD GOVERNMENT FORM OF BID

(CONSTRUCTION CONTRACT)

(*Place*) _____

(*Date*) _____

Frank Pinkley, Superintendent,
Southwestern Monuments,
Coolidge, Arizona.

In compliance with your invitation for bids dated October 6, 1938,
and subject to all the conditions thereof, the undersigned Omer Kersey & Harold Kersey

a corporation organized and existing under the laws of the State of
a partnership consisting of

or an individual trading as

of the city of Alamogordo, New Mexico, hereby proposes to furnish all labor and materials and perform all work required for drilling and casing a water well at El Morro National Monument, New Mexico,

, in strict accordance with the specifications, schedules, and drawings,

for the consideration of shown in Bid Price Schedule on "U. S. Standard Form No. 36" Standard Government Form of Continuation Schedule, attached.

10—1770

The undersigned agrees, upon receipt of written notice of the acceptance of this bid within days (60 days if no shorter period be specified) after the date of opening of the bids, to execute the standard form of Government contract, in accordance with the bid as accepted, and give bond, with good and sufficient surety, or sureties, for the faithful performance of the contract, within 10 days after the prescribed forms are presented for signature.

Performance will begin within 30 calendar days after date of receipt of notice to proceed and will be completed within 60 calendar days from that date.

KERSEY & CO.,

By _____

Partner.

(Business address)

Alamogordo, New Mexico.

NOTE.—Read Standard Government Instructions to Bidders before preparing this bid.

10—1770 GOVERNMENT PRINTING OFFICE: 0

ard Form No. 36
ved by the President
June 10, 1927

STANDARD GOVERNMENT FORM OF CONTINUATION SCHEDULE FOR STANDARD FORM 31 OR 33
(SUPPLIES)

M	ARTICLES OR SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT Dollars	AMOUNT Cents
	BID PRICE SCHEDULE FOR DRILLING AND CASING WATER WELL ** EL MORRO NATIONAL MONUMENT, WITH ATTACHED SPECIFICATIONS					
1.	Hauling in and erecting, ready for drilling, a complete drill rig; also dismantling and removing same and cleaning up site; all completely at Contractor's expense - - - - - -	One	Job	125.00	125.00	
2.	Drilling well any depth down to 300 feet- -	Price	per foot	3.00	900.00	
3.	Additional depth between 300 and 500 feet below surface, as required; estimated 50 ft.	Price	per foot	4.00	200.00	
4.	Furnishing and placing in well and sealing off above selected potable water bearing strata, 6-5/8" O.D. casing, weighing not less than 17 pounds per foot with couplings; length as required; estimated 350 feet- - -	Price	per foot	1.25	437.50	
5.	Rental price of full drilling equipment while in operation, if required, per hour - - - -	One	Hour	4.00		
6.	Under-reaming, if required- - - - - - - - -	As Required	Per foot	2.00		

Performance will begin within thirty (30) calendar days after date of receipt by the Contractor of notice to proceed, and will be completed within sixty (60) calendar days from date such notice is received by the Contractor.

The Government reserves the right to decrease Item 2 by thirty-three and one-third per cent (33-1/3%), or increase Item 3 by fifty per cent (50%).

PROPOSALS MUST BE SEALED AND MARKED FOR IDENTIFICATION AS FOLLOWS:

"Bids for drilling well, El Morro National Monument -- to be opened October 21, 1938, at the headquarters, Southwestern Monuments."

GSEY & CO.,

(Bidder)

By _____

10—1800

[OVER]

SPECIFICATIONS FOR DRILLING A WATER WELL

AT EL MORRO NATIONAL MONUMENT

GENERAL:

1. These specifications are to cover the work necessary to drill a water well at El Morro National Monument. The well shall be drilled and tightly cased to the depth at which potable water is encountered. Geologists estimate the required depth of well will be between 250 and 500 feet. However, the exact amount of drilled well for which payment will be made cannot be ascertained until after the drilling operation has been completed.

2. The Government reserves the right to reject any or all bids.

3. The well will be located in El Morro National Monument, a short distance southeast of the formation known as Inscription Rock. The location is about 58 miles southeast of Gallup, New Mexico, and about 45 miles west of Grants, New Mexico. Freight can be hauled from either point.

4. The Superintendent, Southwestern Monuments, Coolidge, Arizona, or his representative, will go over the ground with prospective bidders and acquaint them with local conditions and such park regulations as prevail, to which the successful bidder and all of his employees shall be subject during their stay within the boundaries of the monument. He will also indicate the location of the well to be drilled.

ACCOMMODATIONS FOR WORKMEN:

5. The Contractor shall make his own arrangements for the accommodation of himself and drilling crew, with no expense to the Government.

WATER:

6. There is a catchment pool of water on the monument, use of which for drilling is subject to regulation by the Custodian. The closest potable water is at the emergency airport, distant 3½ miles, subject to regulations of the authority in charge.

DERRICK:

7. The Contractor shall furnish and erect ready for drilling operations a portable drilling rig, using cable drilling tools capable of drilling to a depth of six hundred and fifty (650) feet, together with all necessary tanks, piping, drilling tools, pumping and bailing equipment; casing, strainers, et cetera, that will be required to construct the well in a workmanlike manner.

WELL CASING:

8. The Contractor shall furnish and run into the well a string of 6-5/8" O.D. well casing weighing not less than 17 pounds per foot, with couplings.

Casing shall be lapwelded and seamless, conforming to the American Petroleum Institute Pipe Specifications. He shall include a cap screwed or welded to the top of the casing to exclude foreign matter from the well.

WORK TO BE DONE:

9. It is contemplated that the work in connection with drilling the proposed well shall leave the Government in possession of a well drilled straight and plumb with a string of 6-5/8 inch O.D. casing so set on top of the water-bearing sands as to shut off all water entering the hole from above these sands. The depth of the hole multiplied by the price bid per foot for Items 2 and 3 shall be full compensation for drilling the hole.

10. The Contractor shall furnish, move on to the site, erect, dismantle, and remove from the monument the derrick and all drilling machinery, tools, and equipment necessary to provide successfully the Government with the above well. The lump sum listed under item one shall cover this portion of the work.

11. Under Item 1, he shall include the cost of digging and shoring up the sides of any cellar he may require, and of cleaning up the area and removing from it, as far as possible, any material useful or waste, which he has brought on to it during the time of his occupancy, except the well casing left in the well.

12. The Contractor shall run a string of 6-5/8 inch O.D. casing to the top of the water-bearing sand chosen for the potable supply, and shall seal off all water entering the hole from above. The length of string of 6-5/8 inch O.D. casing, multiplied by the price bid per foot for Item 4, shall be full compensation for this portion of the work.

13. The Contractor shall include in the price bid for Items 2, 3, and 4, the cost of furnishing, running (and removing if he desires) any casing larger than 6-5/8 inch O.D., which he may deem necessary to complete successfully the well above.

14. Under Item 4 he shall include the cost of sealing off any water that may enter the hole from above the lower end of the casing. He shall also include under Item 4 the cost of proving this seal to be effective by shutting off for at least 24 hours, by packers, the water entering the hole from below the casing. The seal shall be deemed effective if not more than one (1) gallon per hour enters the hole during this 24-hour test.

15. Under Items 2, 3, and 4 he shall include the cost of bailing out or "sand pumping" all drillings and sediment until the well is thoroughly cleaned. Under Items 2 and 3 he shall include the cost of disposing of well borings in a nearby gulley, to be pointed out by the Custodian of the monument.

16. Also he shall include the cost of measuring the total depth of well, the depth to static water level in the well, and the depth to the bottom of the 6-5/8 inch casing. This measurement shall be made with a steel line in the presence of a representative of the National Park Service designated by the Contracting Officer. All payments will be based upon these measurements.

17. Also he shall include in the price bid under Items 2, 3, and 4 the making of the following tests:

(a) A thorough pumping test for 24 hours, which will determine the rate of pumping in gallons per minute and the "draw down" of the water level.

(b) Fill three ½-gallon jugs, supplied by the National Park Service, for sampling purposes at the end of the pumping test when the water is as clear as possible.

(c) He shall furnish the Park Service with a daily report of his operations, and an accurate log of the well, recording the character and color of the formations, the water strata penetrated, and the depth below the surface where first and last encountered. Samples of the material encountered at 5-foot intervals shall be saved and placed in a wooden trough or box in proper sequences.

EXTRA WORK:

18. The price bid under Item 5 shall be full compensation for any extra work, such as deepening the hole below 500 feet, or any other work not included in the specifications. Extra work shall only be done on written order of the representative of the Contracting Officer.

UNDER-REAMING:

19. Should it become necessary to lower the casing as the well is drilled, necessitating under-reaming, the Contractor shall do so only after a written order is obtained from the representative of the Contracting Officer and full payment for this work shall be the bid price per foot of well drilled, plus the bid price per foot of under-reaming.

BID PRICES:

20. The lump sum bid under Item 1, the total depth of hole drilled, multiplied by the unit price bid under Item 2 and 3; plus the length of 6-5/8 inch O.D. casing set, multiplied by the unit price bid under Item 4; plus sums due, if any, for extra work and under-reaming, shall constitute full compensation for all work necessary to drill the well, including reaming, fishing for lost tools or other objects, and leave it ready for the installation of permanent pumping equipment. The above sum shall cover all superintendence, insurance, and other overhead.

COMPARISON OF BIDS:

21. The estimated length of hole and casing given on "U. S. Standard Form 21" are for purposes of comparing bids. The low bidder shall be the bidder whose price for drilling and casing the well to an estimated depth of 350 feet as contemplated by Items 1, 2, 3, and 4, given on the bid sheet, is the lowest.

TIME LIMITS:

22. Time is the essence of this contract, and it is required that the well shall be completed at the earliest date possible, and that the bid, to be considered, must specify a time of completion not greater than ninety (90) calendar days.

LIQUIDATED DAMAGES:

23. The time of completion for the entire work, as stated in the foregoing paragraph, will be made a part of the contract, which will provide for liquidated damages in lieu of actual damages in the amount of ten dollars ($10.00) per calendar day for the entire delay in completing the work beyond the time fixed and agreed upon in Paragraph 22 for its completion, or beyond such time as may be established because of justifiable extensions of time granted pursuant to other provisions of the contract.

DOMESTIC PRODUCTION:

24. Unless otherwise specified by the bidder, it is understood and agreed that only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States, and only such manufactured articles, materials, and supplies as have been manufactured in the United States substantially all from articles, materials, or supplies mined, produced, or manufactured, as the case may be, in the United States shall be delivered pursuant to a contract awarded as a result of this bid.

CONTRACTOR'S FAILURE TO PROSECUTE WORK:

25. If the Contractor shall neglect or discontinue the work of drilling said well for a space of fifteen (15) calendar days (except for delays due to unavoidable circumstances, hereinafter set forth, or for delays caused by the orders of the Superintendent), such neglect or discontinuance shall of itself constitute a forfeiture by the Contractor of his rights and claims without formal notice by the Superintendent, and the Government may thereupon take over said well, all equipment, machiner, ropes, supplies, and other articles used by the Contractor, and the Government may proceed to drill the well to completion.

26. If it should become necessary, as heretofore set forth, for the Government to take over the drilling operations, the Government will not be responsible for any loss, damage, or breakage of the Contractor's tools, et cetera, while conducting such operations; provide that if any additional cost accrues to the Government in prosecuting such work over and above the bid price per foot and other legitimate emoluments as set forth in the contract, such additional cost shall be retained from any money due the Contractor; and, further, provided that if the expense of such drilling and completion of the contract by the Government is less than the stipulated prices per foot, and other emoluments, the difference between such bid prices and the actual cost to the Government shall accrue to the Contractor, and he shall be paid therefor as compensation for the use of his equipment, overhead, and probable profits.

UNAVOIDABLE SHUT-DOWN -- ACTS OF GOD:

27. Should weather conditions or other act of God force the suspension of drilling, the fifteen (15) day forfeiture clause shall become inoperative upon written permission of the Superintendent to discontinue the drilling.

28. The Contractor will thereafter commence operations within ten (10) days after receiving written notice from the Superintendent that conditions are suitable for further drilling.

29. The Government assumes no responsibility for the loss or damage to Contractor's property during such shut-down or at any other time.

BIDDER'S RESPONSIBILITY:

30. The bidder shall furnish the Government with his bid, a statement covering in full similar work he has previously done, with names and addresses of parties for whom the work was done.

31. He shall also submit a list of the equipment he has on hand with which he proposes to do the work, or the equipment he intends to purchase therefor, with the names of the firms from which it is to be purchased.

BID SECURITY:

32. Bidder shall furnish with his bid, a bid bond or certified check for 5% of the amount of his bid, based on Item 1 plus 350 feet of well drilled and cased, computed in accordance with Items 2, 3, and 4.

PAYMENTS:

33. Partial payments will be made on monthly estimates for the amount of hole actually drilled and cased during the previous calendar month; provided, however, that ten (10) per cent of the monthly estimates shall be withheld by the Government until the contract has been fulfilled and accepted as a whole, at which time the final monthly estimate shall be prepared and shall include in addition the percentages previously retained.

CONTRACT:

34. The successful bidder will be required to execute Standard Government Form #23 of construction contract.

PATENTS:

35. The contract which the successful bidder will be required to enter into will have inserted therein the following article on patents:

> "The contractor shall hold and save the Government, its officers, agents, servants, and employees, harmless from liabilities of any nature or kind for or on account of the use of any patented or unpatented intention, article, or appliance furnished or used in the performance of this contract, excepting patented articles required by the Government in its specifications, the use of which the contractor does not control".

PERFORMANCE BOND:

36. The contractor will be required to furnish a Contractor's Performance Bond, approved by the Government, in the sum of fifty (50) per cent of the amount of the contract.

38. The contractor will be required also to furnish a purchase bond in the sum of fifty (50) per cent of the amount of the contract as noted on the bid sheet attached hereto.