



WATER-RIGHT DOCKET

Assateague Island National Seashore

Docket No: 3

POPE BAY WELL

Supporting Hydro Data

00-00-0000: description of work performed: pope bay

The purpose of this report is to present the basic data obtained from wells drilled during the fourth quarter 1968 and the first quarter 1969 at the following two sites: (1) Pope Bay, Accomack County, Virginia, and (2) ~~Little Back Bay, Accomack County, Maryland.~~

DESCRIPTION OF WORK PERFORMED

Pope Bay

The test well, production well, and two observation wells at Pope Bay are 0.2 mile south of the Maryland-Virginia boundary (enclosure 2), within the Pope Island Life Saving Station compound (enclosure 3).

Contract work was performed by Delmarva Drilling Co., Inc., Denton, Maryland, under National Park Service Contract No. 14-10-7:933-305. Work on the test well was begun October 29, 1968, and final work on the production well was completed on or about December 9, 1968.

Two wells of minor significance were drilled in addition to the wells shown on enclosure 3. The first additional well, about 30 feet north of the test well, was a 4-inch-diameter well, drilled to a depth of 20 feet, and cased with slotted plastic pipe. This well was used to supply drilling fluid for the test well and the production well. Water from this well was sampled for chemical quality (enclosure 18) for comparison with water from deeper sands. This well was left intact for water-

level observations and possible emergency use. The second additional well, about 60 feet south of the shallow observation well, was intended to be a 6-inch-diameter observation well, drilled to a depth of 360 feet. This hole collapsed and was abandoned before it could be either logged or cased.

Test Well

An 8-inch-diameter test well was drilled to a depth of 500 feet by hydraulic rotary method and samples of the drill cuttings were collected at 10-foot intervals. An electric log was obtained to a depth of 499 feet (enclosure 4). During water sampling a gamma log was obtained to a depth of 482 feet (enclosure 5). Examination of the geophysical logs revealed at least five water sands.

Sands were selected for water-quality sampling on the basis of an examination of samples of the drill cuttings and the geophysical logs. Water from the sand between the depths of 452 feet and 500 feet contained 795 mg/l of chloride and 1.8 mg/l of iron (enclosure 15). Water from the sand between depths of 332 feet and 372 feet contained 670 mg/l of chloride and 4.7 mg/l of iron (enclosure 16). When the water-sampling pipe was withdrawn from a depth of 345 feet, the screen became clogged with caved drill cuttings, and it was not possible to sample the water either from the sand between depths of 186 feet and 234 feet or from the sand between depths of 150 feet and 180 feet. (Based upon water samples from these sands from wells

north of the Maryland-Virginia line, it was assumed that the chloride concentration in water from these two sands exceeds the concentration in water from the sand between the depths of 332 feet and 372 feet. This assumption was later verified by a water sample from the shallow observation well at Pope Bay.) The screen was freed of drill cuttings at a depth of 51 feet, and a water sample was obtained from the sand between depths of 36 feet and 56 feet. Water from this sand contained 495 mg/l of chloride, 37 mg/l of fluoride, and 5.9 mg/l of iron (enclosure 17). The sand between depths of 332 feet and 372 feet was selected for screening the production well.

The uncaved part of the test well was backfilled with fine drill cuttings and mud to land surface, and the surface casing was removed November 1, 1968.

Production Well

The production well was completed in a new 12-inch-diameter hole to a depth of 370 feet and electrically logged to a depth of 359 feet (enclosure 6). The hole was underreamed to 18-inch diameter between depths of 330 feet and 370 feet. Twenty feet of wire-wound screen was set between 340 feet and 360 feet below land surface with a #2 gravel pack (enclosure 7). Suitable sizes of gravel-pack material and screen slots were selected by U.O.P. Johnson Co. on the basis of mechanical analyses of the samples of the drill cuttings from the test well (enclosure 8).

The production well was developed for 10 to 12 hours with air lift, pumping between 15 and 90 gpm (gallons per minute). During development a water sample was collected for both field and laboratory determination of chloride concentration (enclosure 19).

During the first pumping test on December 2, 1968, the production well was pumped at about 50 gpm for 6 hours. Water-level measurements were made during both drawdown and recovery in the production well (enclosure 9), in the deep observation well (enclosure 10), and in the shallow observation well. The record from a continuous recorder on the shallow observation well indicated no apparent interconnection during the test between the shallow sand tapped by the shallow observation well and the deep sand screened in the production well. The extrapolated drawdown in the production well was about 105 feet for 8 hours of continuous pumping at 50 gpm. The resulting specific capacity for 8 hours would be about 0.5 gpm per foot of drawdown. Based upon an analysis of the deep observation-well data using the modified nonequilibrium formula and the Theis recovery formula (Ferris and others, 1962), the transmissibility of the sand was estimated to be between 2500 and 3000 gallons per day per foot. Using the modified nonequilibrium formula, the coefficient of storage was estimated to be 7×10^{-5} .

A water sample was collected from the production well during the first pumping test and analyzed by a commercial laboratory (enclosure 20).

During the second pumping test on December 5-6, 1968, the production well was pumped at a rate between 60 and 70 gpm for 22.3 hours. Water-level measurements were made during both drawdown and recovery in the production well (enclosure 11) and in the deep observation well (enclosure 12). The extrapolated drawdown in the production well was about 160 feet for 24 hours of continuous pumping at 70 gpm. The resulting specific capacity for 24 hours would be about 0.4 gpm per foot of drawdown. Based upon an analysis of the deep observation-well data using the modified nonequilibrium formula and the Theis recovery formula, the transmissibility of the sand was estimated to be between 2300 and 3000 gallons per day per foot. Using the modified nonequilibrium formula, the coefficient of storage was estimated to be 8×10^{-5} .

A water sample was collected from the production well during the second pumping test and analyzed by a U.S. Geological Survey laboratory (enclosure 21). The water had a mild salty taste.

The Pope Bay production well, when equipped with an adequate pump, should be capable of producing up to about 120 gpm. The water contains concentrations of iron, chloride, and dissolved solids that exceed the limits recommended by the U.S. Public Health Service for drinking water in those areas where better-quality water is available (U.S. Public Health Service, 1962).

Shallow Observation Well

A 6-inch-diameter observation well was drilled to a depth of 372 feet by hydraulic-rotary method and electrically logged to a depth of 372 feet (enclosure 13). Twenty feet of plastic screen was set between depths of 345 feet and 365 feet in the same sand screened in the production well. The hole was cased with 4-inch-diameter plastic pipe from land surface to a depth of 6 feet and with 2-inch-diameter plastic pipe from a depth of 6 feet to a depth of 345 feet.

During development fine sand and drilling mud, which had been poured into the casing in order to sink the casing while setting the screen, was blown from the well with an air line. After about a half hour of development, when the bottom of the air line was at a depth of about 180 feet, the casing imploded forcing mud, coarse sand, and gravel pack over the top of the 4-inch casing. After the casing rupture, the well was developed and yielded clear water at the rate of 15 gpm. On the basis of an electric log run inside the casing and sounding of the well following development, it was estimated that the well is open only to the sand between the depths of 162 feet and 186 feet.

A tidal fluctuation of about 0.4 foot was recorded in this well during the first pumping test on the production well. Presumably, the shallow observation well is responsive solely to water-level changes in the sand between 162 feet and 186 feet below land surface.

The shallow observation well was used to supply drilling fluid for the deep observation well. As determined by field analysis, water from the sand between depths of 162 feet and 186 feet contained 1090 mg/l of chloride.

The shallow observation well was capped and left intact for future water-level observations.

Deep Observation Well

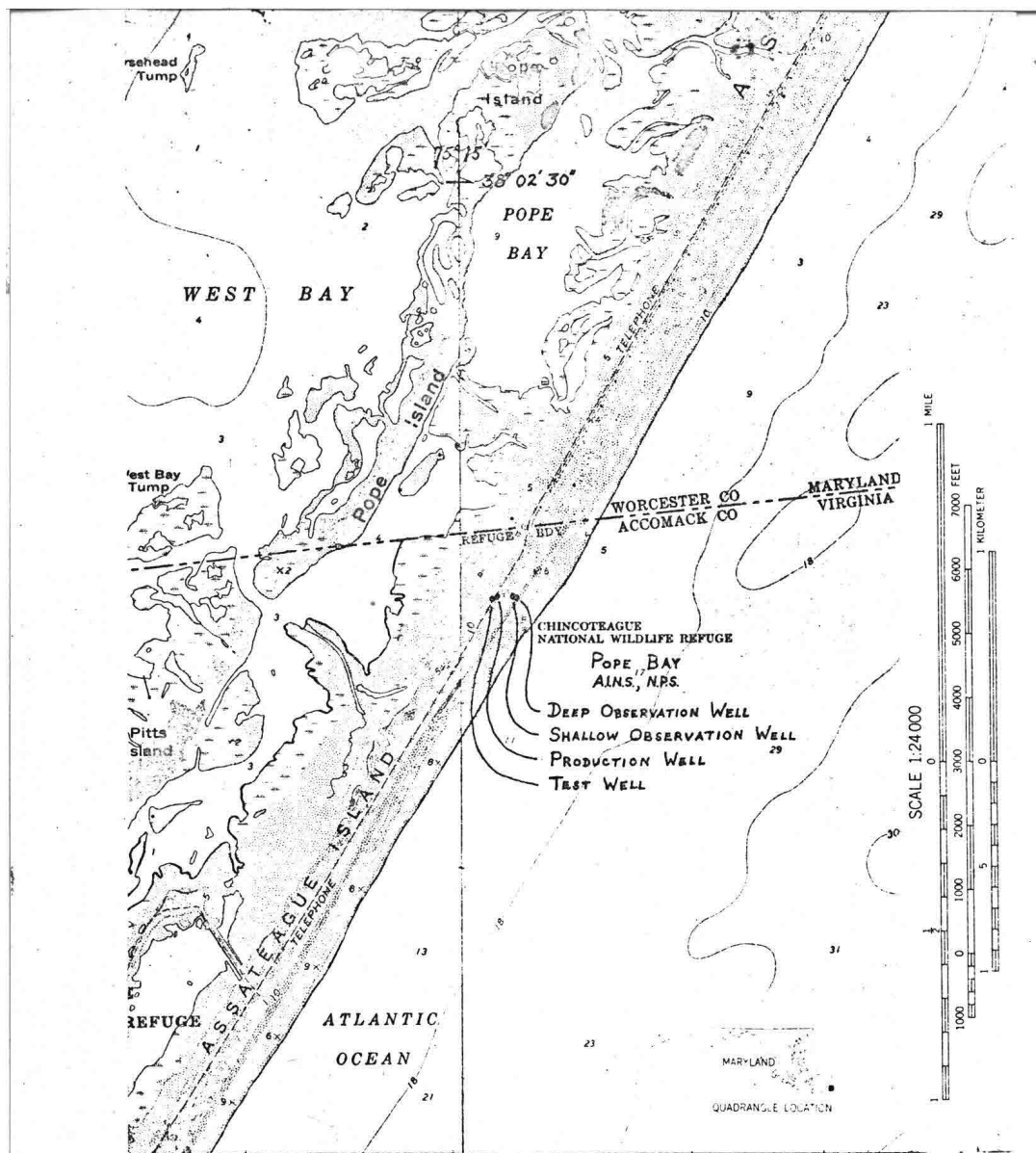
A 6-inch-diameter observation well was drilled to a depth of 380 feet by hydraulic-rotary method and electrically logged to a depth of 374 feet (enclosure 14). Twenty feet of plastic screen was set between depths of 346 feet and 366 feet in the same sand screened in the production well. The hole was cased with 4-inch-diameter steel pipe from about 3 feet above land surface to 7 feet below land surface and with 2-inch-diameter steel pipe from a depth of 7 feet to a depth of 346 feet.

After several days of intermittent development the screen was finally cleared of drilling mud and fine drill cuttings. In order to clear the screen, chemicals were injected into the well to the bottom of the screen, and then the well was blown with an air line forced to the bottom of the screen. The well was developed until it produced clear water.

During the first pumping test on the production well, 336 feet west of the deep observation well, the water level in the deep observation well was lowered about 6.7 feet (enclosure 10).

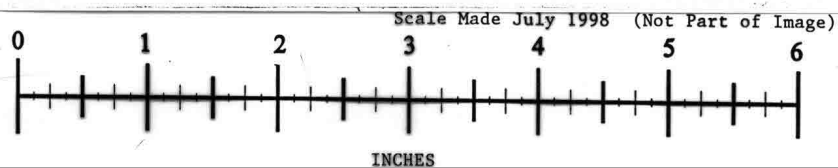
During the second pumping test on the production well, the water level in the deep observation well was lowered about 12.9 feet (enclosure 12).

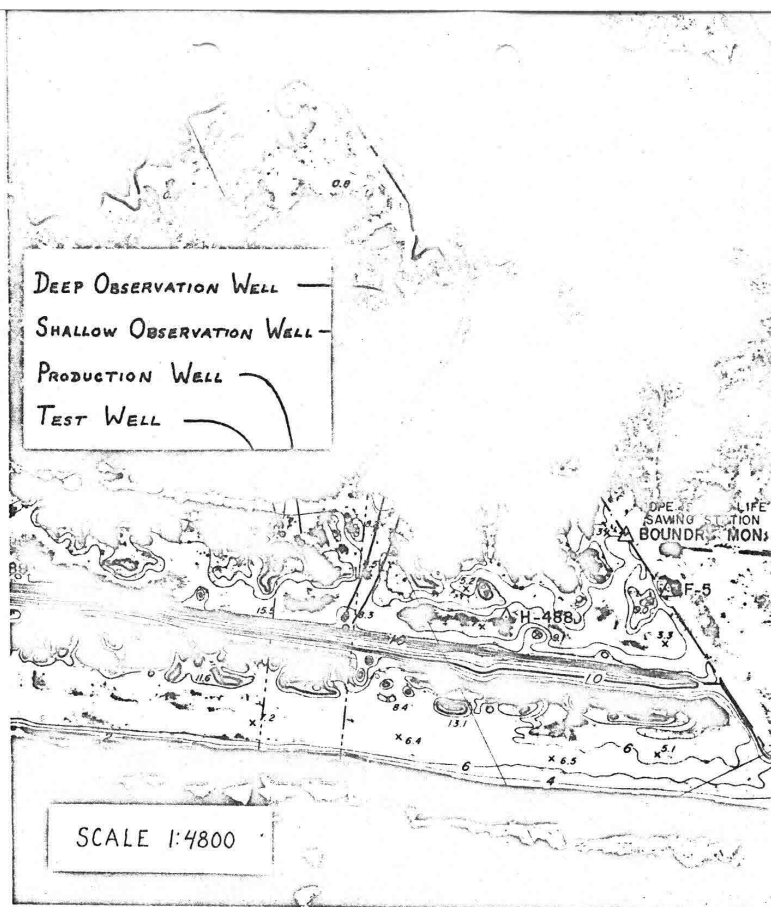
The deep observation well was capped and left intact for future water-level observations.



ENCLOSURE 2. -- Location of
Pope Bay test site.

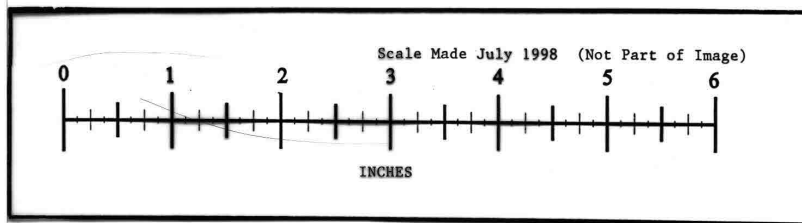
16

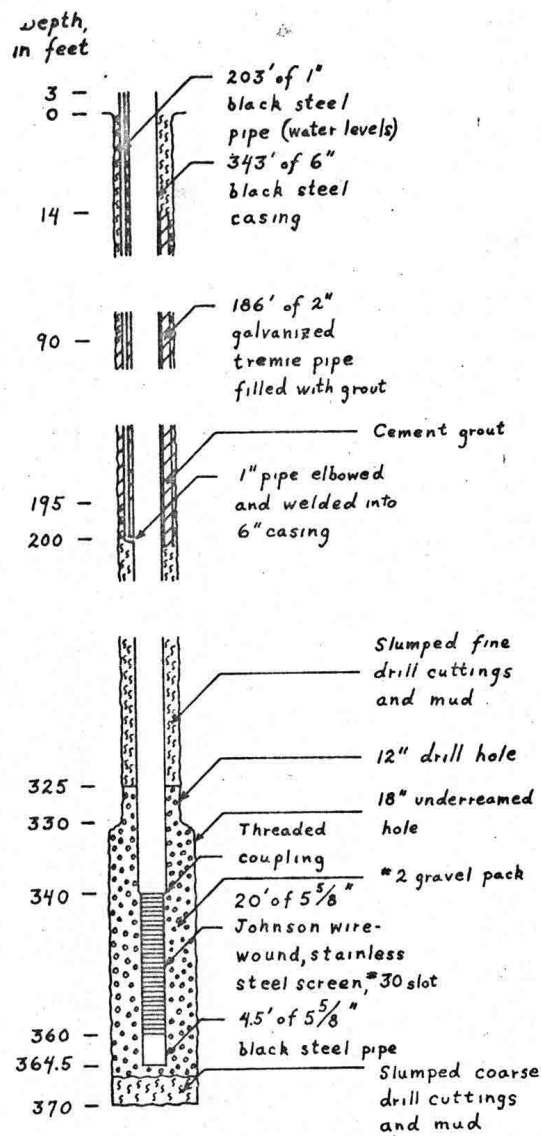




ENCLOSURE 3. -- Location of wells
at Pope Bay within Pope Island
Life Saving Station compound.

17





ENCLOSURE 7.-- Construction diagram of Pope Bay production well.

FORM 9-1367 (9-1960)
U. S. DEPT. OF INTERIOR
GEOLOGICAL SURVEY

Towson

ANALYTICAL STATEMENT - GW

COUNTY Accomack

79763

LAS NO. DC-4754

Location Assateague Is. Nat. Seashore, Va.
screen 340-360'
Source (type of well) Pope Bay produc. well
Time: 2015

Date of collection Dec. 5, 1968

Ignition Loss _____ Color 7

Dissolved Solids: _____
Residue at 180°C 1,630
Calculated (Sum) 1,600

Tons per Acre Foot _____

Date dtd 11/8/68 Cased to 340 ft
Depth 360 Diam 6"
WSP Miocene, Manokin(?)

Water level 3 ft
Sampled after pumping 6 hrs
Yield 70 m GPM (max or est)
Pt of coll 2" orifice pipe discharge

Appearance clear
Temp 61.6 F
Collector E. F. Hollyday
Chemist Chemerys
Date completed Dec. 20, 1968
Checked by Rettig
Date transmitted _____

Hardness as CaCO_3 195
Non-carbonate Hardness 0
T. No. _____ SAR 7.9
Specific Conductance (micromhos at 25°C) 2,900
Alk as CaCO_3 361
 CO_2 Calc 8.8

Field Data:
Cond. 2,700
Red. 12/10/68

	meq/l	mg/l
SiO_2		18
Fe	Total	.73
Mn	Total	.00
Ca	1.50	30
Mg	2.39	29
Na	23.06	530
K	.61	24
	27.56	
Na+K		
HCO_3	7.21	440
CO_3	.00	0
SO_4	1.87	90
Cl	18.73	664
F	.02	.3
NO_3	.01	.6
	27.84	

ENCLOSURE 21.-- Chemical analysis of water
from Pope Bay production well; permanent
screen setting 340 to 360 feet below land
surface.

**ADDITIONAL INFORMATION, ELECTRIC AND INTERPRETATIVE LOGS AND
GAMMA LOGS OF POPE BAY ARE IN U. S. GEOLOGICAL SURVEY REPORT**

by ESTE F. HOLLYDAY, HYDROLOGIST, TOWSON, MARYLAND dated December 1969

Other Supporting Information

392 6-16-71

WR Copy

WAB

L54 ESC-LW

June 15, 1971

Memorandum

To: Superintendent, Assateague Island National Seashore

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

Subject: Water Right Dockets #3 and #6

Enclosed are subject dockets for the wells at Pope Bay and Little Fox Levels. We are also enclosing guidelines regarding the information to be included in Water Right Dockets. We would appreciate it if you would review the contents of these dockets and if you have material to add, it should be prepared in triplicate and distributed to the following offices: Chief, Division of Water Resources, WASO; to this office; and retain a copy in your docket file. Your assistance in this matter is appreciated.

(Sgd.) Richard W. Ketcham

Richard W. Ketcham

Enclosures *Fixed in Docket File*

cc:

Director, Northeast Region

WASO-MW w/c enc

ESC-EP&D Attn: Mr. Longworth

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

3

Assateague Island National Seashore

(Park)

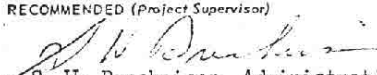
Check One:

Monthly
Estimate☐Final
Estimate☒

UNIT PRICE CONTRACT

ESTIMATE NO. 1	FOR (Period) October 18, 1968 - December 6, 1968	DATE January 15, 1969
CONTRACT NO. 14-10-7:993-305	COMPLETION DATE November 16, 1968	EXTENDED DATE December 6, 1968
CONTRACTOR Delmarva Drilling Co., Inc.		ORIGINAL CONTRACT \$ 8,978.00
PROJECT Drilling Test Water Well		CHANGE ORDERS* \$ 17.20
LOCATION Assateague Island National Seashore - Pope Bay		TOTAL CONTRACT \$ 8,995.20

ITEM NO.	CONTRACT QUANTITY	DESCRIPTION	QUANTITY TO DATE	UNIT PRICE	AMOUNT TO DATE
1.	500	Drilling hole to receive six-inch (6") inside diameter casing and two-inch (2") minimum grout ring.	370	9.20	\$3,404.00
2.	480	Furnishing and installing six-inch (6") casing and two-inch (2") minimum grout ring.	340	4.90	1,666.00
3.	20	Furnishing and installing six-inch (6") diameter stainless steel well screen.	20	40.00	800.00
4.	30	Reaming well hole to 18" in diameter in water aquifer for gravel envelope around well screen.	35	8.00	280.00
5.	30	Furnishing and installing gravel envelope.	35	5.00	175.00
6.	1	Furnishing an electric log of entire well hole.		300.00	
7.	4	Developing well, by pumping and surging	10	30.00	300.00
8.	8	Pump testing for yield of well	31	22.00	682.00

RECOMMENDED (Project Supervisor)		SUMMARY	
 S. W. Brecheisen, Administrative Assistant		TOTAL TO DATE	\$ 8,931.90
		LESS RETAINED AMOUNT.....	- - -
		NET.....	8,931.90
		LESS PREVIOUS PAYMENTS.....	- - -
		LESS LIQUIDATED DAMAGES.....	- - -
APPROVED (Contracting Officer)		DATE	
 B. C. Roberts, Superintendent		1/15/69	
		DUE THIS ESTIMATE.....	8,931.90
		% COMPLETED TO DATE:	100%

*Show Breakdown on Reverse

(See Reverse for Distribution)

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

UNIT PRICE CONTRACT CONTINUATION SHEET

Contract No. 14-10-7:993-305		Contractor Delmarva Drilling Company, Inc.			
ITEM NO.	CONTRACT QUANTITY	DESCRIPTION	QUANTITY TO DATE	UNIT PRICE	AMOUNT TO DATE
9.	8	Standby time for crew and equipment	23	17.50	402.50
10.	1	Plugging test well hole which has been abandoned by direction of the Government through no fault of the Contractor		100.00	
		Total Bid (Items 1 through 10) \$8,978.00			
		<u>CHANGE ORDER No. 1</u>			
		ADD			
		Item 1. 4' 6" pipe 26.40	100%	26.40	26.40
		" 2. 200' 1" pipe 56.00	100%	56.00	56.00
		Total Change Order No. 1 82.40			
		<u>CHANGE ORDER No. 2</u>			
		DELETE			
		Item 1. 131 l.f. pipe minus 1205.20			
		ADD			
		Item 1. 360 l.f. pipe 1080.00	100%	1080.00	1,080.00
		Item 2. Cost of furnishing and installing 8" blast steel pipe complete with threaded screw cap and anchored to ground 60.00	100%	60.00	60.00
		Total Change Order No. 2 minus 65.20			
		Total Contract after Change Orders Nos. 1 and 2 \$8,995.20			



IN REPLY REFER TO:

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

745-12-3-681

encl
12/3

November 25, 1968

CHANGE ORDER NO. 2

Delmarva Drilling Co., Inc.
P. O. Box 456
Denton, Maryland 21629

Gentlemen:

In accordance with Article 1 of the General Provisions of your Contract #14-10-7:993-305, dated September 12, 1968, the following reductions and additions of your contract are to be noted:

1. Reduce Item 1 of the Contract Bid Schedule from an estimated quantity of 500 l.f. to a revised estimated quantity of 369 l.f. This action will reduce your contract price by \$1,205.20.

2. Add the following extra work:

- a. Furnish all labor, equipment, and material for the installation of two rigid plastic pipes in a single hole drilled to an estimated overall depth of 360 feet.

The rigid plastic pipes are to extend from three feet above ground to a depth of 240 feet and 360 feet, respectively. The inner diameter of both pipes are to measure two (2) inches except for the upper ten (10) feet of the 360 feet rigid plastic pipe which is to measure four (4) inches.

The lower twenty (20) feet of both pipes are to be perforated with slot sizes not to exceed 0.020 inches. The perforated portion of each pipe is to be surrounded with a gravel pack.

Both wells are to be developed with no cross-flow between the two water zones.

- b. Furnish all labor, equipment, material to install a minimum five (5) feet long, eight (8) inch inner diameter black-steel pipe to house the projected portion of the two (2) rigid plastic pipes which are above ground. The black-steel pipe is to extend two (2) feet into the ground and anchored with concrete.

The casing shall be complete with a standard threaded cap.

Compensation for the add portion of this Change Order shall be as follows:

	<u>Estimated Quantities</u>	<u>Price</u>
1. Cost per linear foot of hole drilled complete with two plastic rigid pipes, perforated gravel pack and developed @ \$3.00 per l.f.	360 l.f.	\$1,080.00
2. Cost of furnishing and installing eight (8) inch blast steel pipe complete with threaded screw cap and anchored to ground.	Job	60.00
Total		\$1,140.00

This Change Order will decrease your contract price from \$9,060.40 to a revised contract price of \$8,995.20.

An allowance of fourteen (14) calendar days of time is made for completion of the extra work and an allowance of three (3) additional calendar days of time is made because of work stoppage brought about by inclement weather conditions. The Final Completion Date is now recorded as December 6, 1968.

Very truly yours,


Bertrum C. Roberts
Contracting Officer/Superintendent

Denton, Maryland
November 27, 1968

Superintendent
Assateague Island National Seashore
Route 2, Box 111
Berlin, Maryland 21811

Dear Sir:

Adjustment of the amount of compensation under Contract
No. 14-10-7:993-305 and in the time required for its performance by
reason of Change Order No. 2 is satisfactory and is hereby accepted.

Delmarva Drilling Co., Inc.

By

Leah D. Linn

FINDINGS OF FACT

Change Order No. 2, Contract No. 14-10-7:933-305

At the time the present project was advertised, the proposed additional work was not anticipated.

It has been determined that the drilling of an observation well would greatly increase our knowledge of the geo-hydrologic regime of this area.

The extra work contemplated is an integral part of the work and is essential to develop future adequate facilities for serving visitors.



Bertrum C. Roberts
Superintendent/Contracting Officer



By Garland Moore
Hydraulic Engineer



IN REPLY REFER TO:

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

932-11-26-68

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L54 WSC-OLW

November 21, 1968

Memorandum

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

From: Hydraulic Engineer, Office of Land and Water Rights, WSC

Subject: Trip Report to Assateague Island National Seashore
November 13 and 14, 1968

The undersigned visited the Seashore to:

1. Orient the Assistant District Chief, U. S. Geological Survey (Virginia) on the geo-hydrologic features of the Virginia portion of the Island.
2. Visit the NASA - Wallops Island Station with U. S. Geological Survey personnel to get their opinions of the cold water leaks being omitted from the island.
3. To followup on the progress of Contract #14-10-7:993-305 - Drilling of Test Wells at Pope Bay

The following persons were involved in the above:

NASA

Mr. J. D. Pennywell
Mr. Robert E. Carr

U.S.G.S.

Assistant District Chief Wait (Virginia)
Geologist Hollyday (Maryland)

NPS

Superintendent Roberts
Hydraulic Engineer Moore

Contractor

Mr. Les Lien - Delmarva Drilling Company

PURPOSE 1. U. S. G. S. (Virginia) Orientation

At long last and after many attempts the undersigned finally managed to get Bob Wait to visit the Virginia portion of the Seashore.

During his orientation visit Mr. Wait visited the Pope Bay well drilling site, and the test sites at Toms Cove #1 and #2.

We ran out of gas while at Toms Cove Assateague Coast Guard Station area and had to embarrassingly request Seashore assistance.

Geologist Hollyday presented Bob Wait with a publication of his report covering the test well drilling for 1967-1968 fiscal years on the Island. A lively technical discussion was held between the two on the merits of geo-physical methods of logging the wells. Mr. Wait's visit to the Virginia portion of the Seashore should not be misinterpreted that the U.S.G.S. (Va.) is about to replace the activities of the Maryland office in the geo-hydrologic studies of the Virginia portion of the Seashore. The U.S.G.S. (Maryland) office will continue the investigation into the foreseeable future.

PURPOSE 2. NASA visit

Both geologists were intensely interested in the infrared imagery and infrared photographs taken by NASA in the June 1968 flight but could not contribute any opinions at this time until certain basic data is collected (such as vertical temperature and salinity stratification at the leaks). Mr. Pennywell gave the undersigned blow-ups scanner pictures of the cold leaks at Leak #1, #2, and at tip of Fishing Point at Toms Cove. The pictures, on file in this office, will be made available for loan upon written request by any office.

PURPOSE 3. Contract #14-10-7:993-305

Work has been temporarily stopped because of inclement weather conditions. The contractor is planning to grout the well on November 15, 1968, and then proceed to drill a single observation well hole at a site located by Geologist Hollyday. The drilling of the observation well and attendant increase in time of contract will be reflected in Change Order 2.

In brief the observation well will include the following:

The Contractor is to furnish all labor, supplies, and material in constructing an observation well hole large enough to hold two rigid plastic pipes to an overall depth of 360 feet. The two rigid plastic pipes to comply with the following design considerations:

Pipe 1. to extend to a depth of 360 feet deep. The upper ten (10) feet is to measure 4 inches (I.D.). The remaining 350 feet to measure 2 inches (I.D.). The 2 inch (I.D.) plastic pipe is to be perforated with 0.020 inch slots. The perforated portion of the plastic pipe is to be surrounded with a gravel pack.

Pipe 2. to extend to a depth of 240 feet deep. The entire length of the pipe is to be measured two (2) inches (I.D.) with the lower portion (230-240) perforated with 0.020 inch slot and surrounded with a gravel pack.

The rigid plastic pipes are to extend from three to four feet above the ground surface and incased in an eight (8) inch black steel casing complete with a screwed cap. The bottom of the steel casing is to be located at a depth of 1.5 below ground and grouted in place.

The Contractor's quote for doing this work is as follows:

To construct and furnish all supplies, labor and develop the observation well @ \$3.00 per linear foot (\$3.00 x 360 l.f.) =	\$1,080.00
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To furnish all supplies and labor to install the 8 inch black steel pipe complete with grout and cap	60.00
	<u>\$1,140.00</u>

This extra work is to be financed by reducing the scope of the original contract by \$1,140. No additional funds in excess of the \$9,000 programmed for this project in the Work Order WSC-WR-69B is necessary.

cc: Chief, D&C, PSC
/ Chief, Branch of Water Resources
Superintendent, Assateague
Regional Director, Northeast

Garland Moore
Garland Moore



IN REPLY REFER TO:

L54 WSC-OLW

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

November 18, 1968

910-11-22-68
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4/22
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Memorandum

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

From: Hydraulic Engineer, Office of Land and Water Rights, WSC

Subject: Trip Report to Assateague Island and Wallops Island (NASA)
November 4, 1968

The undersigned visited subject to:

1. Attend a meeting at the NASA Station at Wallops Island regarding infrared photography and infrared imagery pictures of Assateague taken during the June 23, 1968, flight.
2. Followthrough on the progress of Contract #14-10-7:993-305 - Drilling of Test Well at Pope Bay.

The following persons were in attendance:

NASA

Mr. J. D. Pennywell
Philco - Ford Corporation
Optical Systems Section
NASA Wallops Island, Virginia

Mr. Robert E. Carr
Philco-Ford Corporation
Optical Systems Section
Nasa Wallops Island, Virginia

Park Service

Chief, Park Maintenance Tolsen (Assateague)
Resource Planner Smith, WSC, (Civil Engineer)
Resource Planner Russell, WSC, (Naturalist)
Hydraulic Engineer Moore, WSC

PURPOSE 1. NASA - INFRARED PHOTOGRAPHY AND INFRARED IMAGERY - ASSATEAGUE

Followthrough on a lead from Resource Planner Smith on the availability of purpose, the undersigned approached Chief, Branch of Water Resources, WASO, who in turn contacted Mr. Pennywell of NASA (Wallops Island). A meeting of our two offices was set for Monday, November 4, at Wallops Island.

During the meeting Mr. Pennywell displayed both infrared imagery and infrared photographs of the entire coastal portion of Assateague Island (wave length 8 - 14 microns, 800 - 1400 angstrom) taken the months of June and September 1968.

NASA's interest in Assateague Island is confined to a study of the littoral drift and the accumulation of sediment at Fishing Point which may fill chincoteague Inlet, thereby connecting Assateague Island with Wallops Island.

Much of the information on file at Wallops Island is classified as DEPARTMENTAL CONFIDENTIAL. It is fortunate that the negatives of the June 1968 flight was not classified as such.

Infrared Photography

Mr. Pennywell and Mr. Carr were particularly interested in bringing our attention to two cold water plumes appearing on these photographs which appear to originate from the Fish and Wildlife Refuge portion of Assateague Island. The apex of the cold water plumes have been observed on repeated area flights since June 1968 at points 1.8 and 5.2 miles south of the Virginia and Maryland State line.

The cold water plumes appear to originate from these point sources on the Island and extend outward into the ocean in a southerly direction up to two miles from shore. See Figure 1 for general shape and location. Temperature readings of the surface of the ocean indicate that during the June flight a temperature differential of 2° C., was noted between temperature recorded to the north of cold water plumes and the center of the cold water plumes. In the September flight a 0.7° C., temperature differential was noted for the same areas.

This drop in temperature differential can be attributed to the seasonal decrease in ocean water temperatures from 22° C., to about 15° C. Temperature profiles have been taped along the entire length of Assateague Island

at a distance of 0.5 mile offshore and at elevations 50 and 140 feet above sea level. The sensitivity of the aerial thermometer is claimed to be 0.2° C., by its manufacturers.

In the opinion of both Messrs. Pennywell and Carr there are two possible causes for the persistent presence of the cold water plumes.

1. Cold water upwelling from the ocean.
2. Cold fresh water being discharged from the Island.

1. Upwelling (Discussion)

The undersigned contacted Mr. John Norcross, Oceanographer, with the Virginia Institute of Marine Science at Gloucester Point, Virginia. The Institute is under contract with NASA to study the circulation pattern of the ocean currents on the continental shelf from Cape Henlopen to Cape Hatteras. Mr. Norcross has noted upwellings and corresponding temperature differentials in many areas on the shelf. While the idea of cold water upwelling in this area cannot be entirely disregarded, it should be noted that the plan-view characteristics of the cold water plumes which was photographed does not readily lead itself to the characteristics of the plan-view of upwells.

2. Discharge from Land (Discussion)

In an attempt to qualify their opinion that cold fresh water is being discharged from the Island, NASA collected water samples for salinity analysis on September 12, 1968, at Ocean City Inlet, Chincoteague Inlet, and at the center of Leak #2, approximately 0.5 miles offshore. The samples were chemically analyzed and the salinity computed on November 5, 1968. The average readings of 5 samples collected from each area are as follows:

Ocean City Inlet	3,100 p.p.m.
Chincoteague Inlet	3,135 p.p.m.
Leak #2	31,354 p.p.m.

The higher salinity readings found at Leak #2 indicate that at this particular time in history the ocean water was approximately ten times more saline than the water in the lagoon. In view of the small volume of water present in the lagoon and the absence of any significant rainfall prior to the sampling dates, it is probable that an error has been made.

The Chesapeake Bay Institute has analyzed water samples of Chincoteague Bay and has found that in general the salinity varies from 26,000 p.p.m. to 31,500 p.p.m. No known tidal flushing studies have been made for this area.

Mr. Pennywell has raised the following questions which should be noted concerning the results of the salinity analysis:

- a. Were the laboratory techniques employed satisfactory in analyzing the inlet samples?
- b. Were the samples collected at plume much farther offshore than they had estimated? (It is difficult to estimate distances over water.)

Mr. Pennywell is presently planning an additional survey to be exercised at the end of November. His mission is to collect additional water for salinity analysis with tighter survey controls coupled with another flight if possible.

In a telephone conversation between Mr. Pennywell and the undersigned on November 7, 1968, a discussion of additional instrumentation was held - results is that NASA will request the loan of Nansen bottles complete with reverse thermometers, Foerst Samplers and Salinometer for their use in the next survey from the U. S. Navy, Hydrographic Office in Washington, D. C. The proper use of these instruments should significantly increase the reliability of data and samples to be collected and contributed in identifying the cold water plumes if the sampling locations can be pinpointed accurately in relation to the cold water plumes. Mr. Pennywell has indicated that the basic data and results of the next survey will be made available to this office.

Infrared Imagery

The group also had a chance to view infrared imagery pictures of the entire beach area of Assateague Island and some inland portions of the Island. The variation in red for the June flight was exceptionally good; however, because of extensive cloud cover during the September flight, much of the red brilliance was lost making interpretation almost impossible except for small localized areas.

The cold water plumes were not readily apparent in these pictures. The variations in red color does have application in noting the area distribution of various species of plant life on the Island.

CONCLUSIONS AND RECOMMENDATIONS

The use of infrared photography and infrared imagery has been well documented by many researchers in a multitude of publications. In general the following can be summarized.

1. Infrared photography has restricted usefulness in general water resources studies but is particularly useful in special problems such as shoreline mapping.
2. Infrared imagery is beginning to be used in water resources studies and will contribute significantly in identifying some of the following hydrologic variables.
 - a. Identification of submarine springs along coasts - such as at Virgin Islands, where water sources are difficult to locate.
 - b. Measurement of temperature differences along streams and beaches as indicators of effluent seepage of ground water.
3. Natural Science interests - such as identification of the distribution of plant life on the Island can be made when interpretation criteria for infrared imagery of various plants are made.

It is strongly recommended that this office take the following initiating steps to establish a cooperating attitude with NASA by -

1. Assisting NASA in surveys for the collection of basic oceanographic data in and around Assateague Island to establish IF COLD FRESH WATER is being discharged from the Island.
2. Encourage the Natural Science Group, Resource Planners, and Seashore personnel in establishing infrared imagery interpretation criteria for plant life on the Island in a cooperative effort.
3. To encourage the Fish and Wildlife personnel through the Superintendent of the Seashore to enter into a financial cooperative effort to drill exploratory test wells in the Refuge Area should this Service deem it feasible and desirable to identify the geo-hydrologic regime of the area for our mutual use.

PURPOSE 2. CONTRACT #14-10-7:993-305 - DRILLING OF TEST WELL AT POPE BAY

Delmarva Well Drilling Company had completed drilling the two inch test hole - Geologist Hollyday has instructed the Contractor to well screen

the second sand aquifer at a depth of 340 to 360 feet beneath the ground surface.

Geologist Hollyday has analyzed the water obtained from three zones with the following accompanying conductivity readings:

50' - 1750 - 400 p.p.m. Chlorides
360' - 2750 - 800 p.p.m. Chlorides
460' - 3000 - 800+ p.p.m. Chlorides

The 340 - 360 foot sand aquifer is confined between two clay layers. The uppermost sand bearing aquifer was not selected because of absence of a significant protective clay barrier to prevent salt water intrusion from above.

It is presently estimated that the contract will result in a savings of \$2,000. This office has requested Geologist Hollyday to obtain estimates for the following additional work on the existing contract which will result in a greater understanding of the geo-hydrologic regime of the area.

1. Cost of constructing a two (2) inch observation well with plastic casing, complete with perforation and gravel pack is to be located at the 340-360 feet depth.
2. Cost of constructing a telescoping plastic casing observation well. The upper 240 feet is to be constructed of 6" rigid plastic pipe with perforation 220-240 feet complete with gravel packs. An inner two inch diameter rigid plastic pipe is to be centrally located within the 6" upper rigid plastic pipe and is to be complete with perforations (340-360) and gravel pack.

A decision will be made upon receipt of Geologist Hollyday's request to Delmarva Well Drilling Company. The decision on which course of action to take is dependent upon the remaining funds available.

Our present plans are to extend the pump test from 8 hours as estimated on the contract bid documents to 24 hours if possible depending on the funds available.

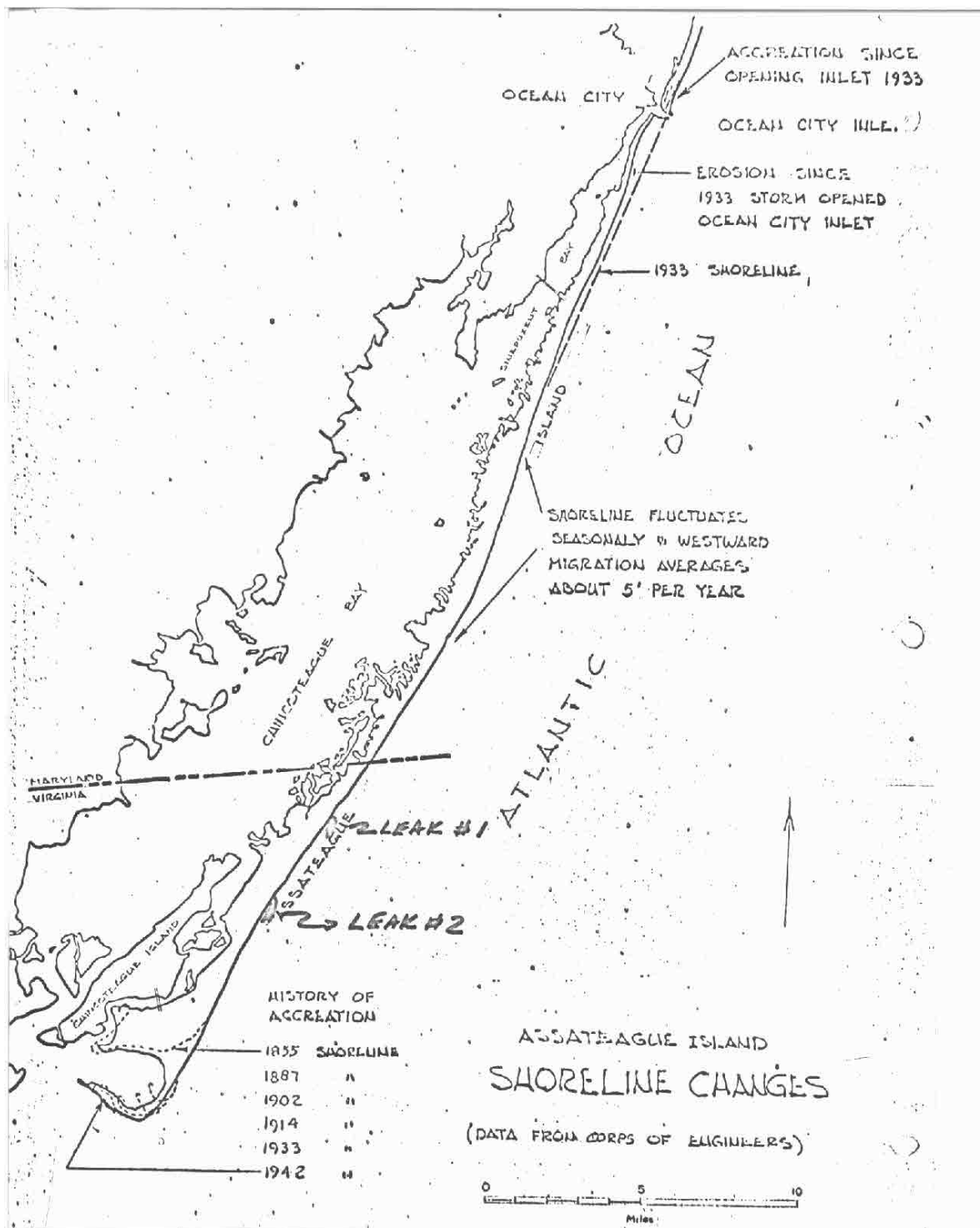
For the record it should be noted that Geologist Hollyday is doing an excellent job in providing the necessary technical supervision to the Contracting Officer.



Garland Moore

Enclosure

cc:
Regional Director, Northeast Region
Superintendent, Assateague
Chief, Office of Resource Planning, WSC (2) Messrs Smith & Russell
Chief, Branch of Water Resources, WASO
Chief, Natural Science, WASO



830-11-15-68
J. H. Coffey
9/11/15
[Signature]

L54 WSC-OLW

November 13, 1968

Memorandum

To: Regional Director, National Capital Region
Attention, Chief, Budget and Finance

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

Subject: Contract #14-10-7:933-305 - Assateague Island NS

Enclosed are the originals of the following for your files and contractual information:

Change Order No. 1 with acknowledgment
Findings of Fact
Letter from Contractor

RICHARD L. STANTON
Richard L. Stanton

Enclosure

cc:
Regional Director, Northeast
Superintendent, Assateague
Chief, DSC, PSC
Chief, Branch of Water Resources, WASO w/c enc



UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

Assateague Island National Seashore
R.R. 2, Box 111
Berlin, Maryland 21811

IN REPLY REFER TO:

D52

October 30, 1968

CHANGE ORDER NO. 1

Delmarva Drilling Co., Inc.
P.O. Box 456
Denton, Maryland 21629

Re: Contract No. 14-10-7:993-305

Gentlemen:

In accordance with the provisions of your contract dated September 12, 1968, you are hereby directed to furnish all necessary labor, material and equipment to complete the additional work:

1. Furnish and install one section of pipe, 6 inches in diameter and 4 feet in length at the lower end of the well screen. The pipe shall be directly connected to the lower end of the well screen and the bottom of the pipe shall be welded closed. Sufficient gravel shall be packed below the screen to prevent any sand intrusion into the screened area. \$26.40

2. Furnish and install 200 feet of 1" diameter pipe. Pipe shall be attached to the outside of the well casing by means of an elbow welded to the casing and will extend to ground level from a depth of 200 feet. \$56.00

All work covered by this Change Order shall be accomplished in accordance with the applicable provisions of the contract specifications and/or manufacturer's recommendation.

This Change Order will increase your contract price by \$82.40 from \$8,978.00 to \$9,060.40.

An allowance of three (3) calendar days of time is made for completion of the test well, Items 1 through 10 inclusive. Final completion date is now recorded as November 19, 1968.

Sincerely yours,

B. C. Roberts
Superintendent
(Contracting Officer)

P. O. Box 456
Denton, Maryland 21629
November 1, 1968

Superintendent
Assateague Island National Seashore
Berlin, Maryland 21811

Dear Sir:

Adjustment of the amount of compensation under Contract No.
14-10-7:993-305 and the time allowed by reason of this Change
Order is satisfactory and hereby accepted. Final completion
date for the test well is November 19, 1968.

Delmarva Drilling Co., Inc.

By: *Robert A. Lee*

Assateague Island National Seashore
R.R. 2, Box 111
Berlin, Maryland 21811

D52

October 30, 1968

FINDINGS OF FACT

Change Order #1, Contract No. 14-10-7:993-305

At the time the present project was advertised, the proposed additional work was not anticipated.

It has been determined that a section of pipe, 6" in diameter and 4 feet in length should be directly connected to the lower end of the well screen. The bottom end of the pipe shall be welded closed. This pipe is necessary to permit gravel packing below the screen to prevent sand intrusion into the screened area. (\$26.40)

Due to the limited knowledge of available water in this area, a method to provide an accurate measurement of water levels after a pump is installed is needed. A 1" diameter pipe should be attached to the outside of the well casing by means of an elbow welded to the casing and extend to ground level from a depth of 200 feet. (\$56.00)

The additional work contemplated is an integral part of the work and is essential to develop future adequate facilities for serving the public. The additional work will also provide much needed information concerning total water availability on the island.

The present contractor has offered to do this additional work at a price that is fair and reasonable. It would be impracticable for another contractor to move in the necessary men, materials and equipment and do the work at this price.

The proposed work is essential to the proper completion of this facility, to properly develop future facilities to serve the Park visitors, and is determined to be in the best interest of the U. S. Government.



B. C. Roberts
Superintendent
(Contracting Officer)



Garland Moore
Hydraulic Engineer, WSC

TELEPHONE 301/479-1678

Delmarva Drilling Co., Inc.

P. O. BOX 456

DENTON, MARYLAND 21629

SUBSIDIARY
A. C. SCHULTES & SONS, INC.

Water Well Contractors

October 29, 1968

Assateague Island National Seashore
Route 2, Box 111
Berlin, Maryland 21811

ATT: B. C. Roberts
Contracting Officer

RE: Contract No. 14-10-7:993-305
Change in Construction

Dear Mr. Roberts:

As per our agreement at the preconstruction conference on October 21, 1968 the additional construction and attendant costs are as follows.

Item I

A pipe, 6" diameter and 4 feet in length will be directly connected to the lower end of the well screen. The bottom of the pipe will be welded closed. This "cellar" will permit gravel packing below the screen to prevent any sand intrusion into the screened area.

The cost to furnish and install this pipe will be \$6.60 per foot for a total of \$26.40.

Item II

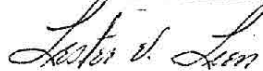
A 1" diameter pipe will be attached to the outside of the well casing by means of an elbow welded to the casing and will extend to ground level from a depth of 200 Ft. This will provide free access to measure water levels after a pump is installed.

The cost to furnish and install 200 Ft of 1" pipe will be \$.28 per foot for a total of \$56.00.

I shall be pleased to furnish any further information that you may require.

Yours truly,

DELMARVA DRILLING CO., INC.


Lester V. Lien

LVL:jw

862-11-7-68

Mr. Reed

Rm. 104

ENC
11/7
WY

L54 WSC-QLW

November 6, 1968

Memorandum

To: Regional Director, National Capital Region
Attention: Chief, Budget and Finance

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

Subject: Contract #14-10-7:933-305, Drilling of well - Pope Bay,
Assateague Island National Seashore

Enclosed are the following original documents related to subject:

Abstract of Bids w/Schedules A, B. and C
Payment and Performance Bonds w/Power of Attorney
Standard Form 19B - Representation and Certification
Standard Form 19 - Invitation of Bid and Award
Notice of Award
Notice to Proceed
Notice of Beginning Date

Richard L. Stanton

Richard L. Stanton

Enclosure

cc:
Regional Director, Northeast
Superintendent, Assateague
Chief, PSC - D&C
Chief, Branch of Water Resources, WASO w/c enc

Assateague Island National Seashore
Route 2, Box 111
Berlin, Maryland 21811

D52

October 25, 1968

NOTICE OF BEGINNING DATE

Delmarva Drilling Company, Inc.
P. O. Box 456
Denton, Maryland 21629

Gentlemen:

It is noted that you acknowledged receipt on October 17, 1968 of our letter dated October 15, 1968, notifying you to proceed with the work of your Contract No. 14-10-7:993-305, Drilling Test Water Well at Pope Island, Assateague Island.

Therefore, in accordance with the specifications, the date of October 18, 1968, has been recorded as the first calendar day of the contract period which, unless extensions are granted, will expire November 16, 1968.

Sincerely yours,



B. C. Roberts
Superintendent
(Contracting Officer)



IN REPLY REFER TO:

D52-ASIS

OCT 21 1968

ASSATEAGUE
ISLAND

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

Assateague Island National Seashore

Route 2, Box 111

Berlin, Maryland 21811

October 15, 1968

NOTICE TO PROCEED

Delmarva Drilling Company, Inc.

P. O. Box 456

Denton, Maryland 21629

Gentlemen:

Enclosed is a copy of approved Contract No. 14-10-7:933-305,
Drilling of well - Pope Bay, Assateague Island National Seashore,
for your information and file.

Under the provisions of the specifications, you are hereby notified to proceed with the work. In order that the date of beginning of the contract period may be made a matter of record, it is requested that you immediately acknowledge receipt of this letter on the form provided herewith. Please sign and return in duplicate, retaining 1 copy for your records.

Sincerely yours,

B. C. Roberts
Superintendent
(Contracting Officer)

Enclosure

Date

B. C. Roberts, Superintendent
(Contracting Officer)
Assateague Island National Seashore
Route 2, Box 111
Berlin, Maryland 21811

Dear Sir:

Notification to proceed with the work of Contract No.
14-10-7:993-305, Drilling of well - Pope Bay, Assateague Island
National Seashore, was received by us on October 12, 1968.

Delmarva Drilling Company, Inc.

By *Letter L. L...*

Title *TREASURER*

Assateague Island National Seashore
Route 2, Box 111
Berlin, Maryland 21811

D52-ASIS

September 12, 1968

NOTICE OF AWARD

Delmarva Drilling Co., Inc.
P. O. Box 456
Denton, Maryland 21629

Gentlemen:

We are pleased to notify you that your proposal, submitted in response to our Invitation for Bids, Drilling of Well - Pope Bay, Assateague Island National Seashore, has been accepted, and a contract has been awarded to you in the amount of Eight Thousand Nine Hundred Seventy-eight Dollars and No Cents (\$8,978.00).

There are enclosed six (6) copies of Standard Form 23, Construction Contract; and three (3) copies each of Standard Form 25, Performance Bond, and Standard Form 25A, Payment Bond, to be executed by you and all copies returned to this office. Performance Bond should be in an amount equal to 100% of the contract amount, and Payment Bond in an amount of 50%. Performance and Payment Bonds submitted with Government contracts should be accompanied by a "Power of Attorney" disclosing the authority of the agent or officer executing said bond or bonds on behalf of the Surety.

When the contract is approved, a copy will be furnished you, and you will be notified in writing to proceed with the work. Sometime before the actual Notice to Proceed is issued, you will be requested to furnish proof of Workman's Compensation and General Liability Insurance. A certificate of insurance will suffice. You may wish to submit this form when you return the enclosed contract forms.

Sincerely yours,

/s/ S. W. Brecheisen

S. W. Brecheisen
Acting Superintendent
(Acting Contracting Officer)

Enclosures 3

Copy to:
WDC-BLW
Regional Director, Northeast Region

SWBrecheisen:nf 9/12/68

STANDARD FORM 19 DECEMBER 1965 EDITION GENERAL SERVICES ADMINISTRATION FED. PROC. REG. 101 CFR 101-11.401		INVITATION, BID, AND AWARD (Construction, Alteration or Repair)		REFERENCE (Include in correspondence)	
☐ CHECK IF SMALL BUSINESS SET ASIDE OR OTHER NEGOTIATED PROCUREMENT (If checked, "Bid" includes "Proposal")					
INVITATION FOR BIDS			DATE ISSUED: AUG 13 1968		
ISSUING OFFICE * Superintendent Assateague Island National Seashore P.O. Box 345 Berlin, Maryland 21811			BID RECEIVING OFFICE * Superintendent Assateague Island National Seashore P.O. Box 345 Berlin, Maryland 21811		
Information regarding bidding material may be obtained from the issuing office.					
SEALED BIDS in duplicate covering work described in specifications, schedules, drawings and conditions entitled and dated as follows: Drilling of well - Pope Bay, Assateague Island National Seashore					
will be received at the Bid Receiving Office until 2:00 P. M. LOCAL PREVAILING TIME 3 SEP '68 and at that time publicly opened. (Hour and Time Zone) (Date)					
Sealed envelopes containing bids shall be addressed to the Bid Receiving Office and shall be marked to show: Bidder's Name and Address; * Reference; Time and Date of Opening;					
BID (This Section to be completed by Bidder)			DATE BID SUBMITTED: August 30, 1968		
The undersigned agrees, if this bid is accepted within _____ calendar days (30 days unless a different period is inserted) after date of opening, to complete all work specified in strict accordance with the above-identified documents and the General Provisions on the reverse hereof, within 45 calendar days after receipt of notice to proceed, for the following amount:					
including all applicable Federal, State, and local taxes. The undersigned further agrees, if any contract award resulting from this bid exceeds \$2,000, TO COMPLY with the provisions of Standard Form 19-A, Labor Standards Provisions Applicable to Contracts in Excess of \$2,000 and TO FURNISH a performance bond in an amount equal to 100 percent and a payment bond in an amount equal to 50 percent of the contract price with surety or sureties acceptable to the Government, on Government forms within _____ days after forms are furnished.					
The representations and certifications on the accompanying STANDARD FORM 19-B are made a part of this bid.					
NAME AND ADDRESS OF BIDDER (Street, city, State)* (Type or print.) Sydnor Hydrodynamics, Inc. 1305 Brook Road, P. O. Box 1476 Richmond, Virginia 23212			SIGNATURE OF PERSON AUTHORIZED TO SIGN THIS BID  SIGNER'S NAME AND TITLE (Type or print.) Guy E. Webb, Vice President		
AWARD (This Section for Government only)			DATE OF AWARD:		
THE ABOVE BID IS ACCEPTED IN THE AMOUNT OF \$ ☐ YOU ARE DIRECTED TO PROCEED WITH THE WORK UPON RECEIPT OF THIS AWARD. ☐ NOTICE TO PROCEED WILL BE ISSUED UPON RECEIPT OF ACCEPTABLE PAYMENT AND PERFORMANCE BONDS					
			THE UNITED STATES OF AMERICA BY _____ (Contracting Officer) _____ (Title)		

*Include "ZIP CODE" in all mailing addresses.

19-110

**BID SCHEDULE
DRILLING OF WELL - POPE BAY**

<u>Item</u>	<u>Description</u>	<u>Estimated Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Total</u>
1	Drilling hole to receive six-inch (6") inside diameter casing and two-inch (2") minimum grout ring.	500	L.F.	\$ <u>10.00</u>	\$ <u>5,000.00</u>
2	Furnishing and installing six-inch (6") casing and two-inch (2") minimum grout ring.	480	L.F.	\$ <u>5.50</u>	\$ <u>2,640.00</u>
3	Furnishing and installing six-inch (6") diameter stainless steel well screen.	20	L.F.	\$ <u>40.00</u>	\$ <u>800.00</u>
4	Reaming well hole to 18" in diameter in water aquifer for gravel envelope around well screen.	30	L.F.	\$ <u>30.00</u>	\$ <u>900.00</u>
5	Furnishing and installing gravel envelope.	30	L.F.	\$ <u>25.00</u>	\$ <u>750.00</u>
6	Furnishing an electric log of entire well hole.	1	L.S.	\$ <u>175.00</u>	\$ <u>175.00</u>
7	Developing well, by pumping and surging.	4	Hours	\$ <u>30.00</u>	\$ <u>120.00</u>
8	Pump testing for yield of well	8	Hours	\$ <u>30.00</u>	\$ <u>240.00</u>
9	Standby time for crew and equipment.	8	Hours	\$ <u>25.00</u>	\$ <u>200.00</u>
10	Plugging test well hole which has been abandoned by direction of the Government through no fault of the Contractor.		L.S.	\$ <u>150.00</u>	\$ <u>150.00</u>

Total Bid (Summary Items 1 thru 10) \$ 10,975.00

Basis of Award: Bidders are required to quote on all above items. Award will be made on "all or none" basis. Bids received will be evaluated as follows:

The unit prices quoted for each of the above items will be multiplied by the estimated quantity. The lowest total price for all items will be considered as the lowest bid received. Payment to the Contractor will be made on the basis of actual work completed. The Contracting Officer reserves the right to reject any and all bids.

STANDARD FORM 19-B
OCTOBER 1965 EDITION
GENERAL SERVICES ADMINISTRATION
FED. PROC. REG. (41 CFR) 1-16.401

**REPRESENTATIONS
AND CERTIFICATIONS**
(Construction Contract)
(For use with SF 19 and 21)

REFERENCE (Enter same No. (s) as on SF 19(21))

NAME AND ADDRESS OF BIDDER (No., Street, City, State, and ZIP Code)

Delmarva Drilling Co., Inc.
P. O. Box 456
Denton, Maryland 21629

DATE OF BID

Sept. 3, 1968

In negotiated procurements, "bid" and "bidder" shall be construed to mean "offer" and "offeror."

The bidder makes the following representations and certifications as a part of the bid identified above. (Check appropriate boxes.)

1. SMALL BUSINESS

He ☒ is, ☐ is not, a small business concern. (For this purpose, a small business concern is a business concern, including its affiliates, which (a) is independently owned and operated, (b) is not dominant in the field of operation in which it is bidding on Government contracts, and (c) had average annual receipts for the preceding 3 fiscal years not exceeding \$7,500,000. For additional information see governing regulations of the Small Business Administration.)

2. CONTINGENT FEE

(a) He ☐ has, ☒ has not, employed or retained any company or person (other than a full-time bona fide employee working solely for the bidder) to solicit or secure this contract, and (b) he ☐ has, ☒ has not, paid or agreed to pay any company or person (other than a full-time bona fide employee working solely for the bidder) any fee, commission, percentage or brokerage fee, contingent upon or resulting from the award of this contract; and agrees to furnish information relating to (a) and (b) above as requested by the Contracting Officer. (For interpretation of the representation, including the term "bona fide employee," see Code of Federal Regulations, Title 41, Subpart 1-1.5.)

3. TYPE OF ORGANIZATION

He operates as an ☐ individual, ☐ partnership, ☐ joint venture, ☒ corporation, incorporated in State of Maryland.

4. INDEPENDENT PRICE DETERMINATION

(a) By submission of this bid, each bidder certifies, and in the case of a joint bid each party thereto certifies as to his own organization, that in connection with this procurement:

(1) The prices in this bid have been arrived at independently, without consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor;

(2) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, in the case of a bid, or prior to award, in the case of a proposal, directly or indirectly to any other bidder or to any competitor; and

(3) No attempt has been made or will be made by the bidder to induce any other person or firm to submit or not to submit a bid for the purpose of restricting competition.

(b) Each person signing this bid certifies that:

(1) He is the person in the bidder's organization responsible within that organization for the decision as to the prices being bid herein and that he has not participated, and will not participate, in any action contrary to (a) (1) through (a) (3) above; or

(2) (i) He is not the person in the bidder's organization responsible within that organization for the decision as to the prices being bid herein but that he has been authorized in writing to act as agent for the persons responsible for such decision in certifying that such persons have not participated, and will not participate, in any action contrary to (a) (1) through (a) (3) above, and as their agent does hereby so certify; and (ii) he has not participated, and will not participate, in any action contrary to (a) (1) through (a) (3) above.

(c) This certification is not applicable to a foreign bidder submitting a bid for a contract which requires performance or delivery outside the United States, its possessions, and Puerto Rico.

(d) A bid will not be considered for award where (a) (1), (a) (3), or (b) above, has been deleted or modified. Where (a) (2) above, has been deleted or modified, the bid will not be considered for award unless the bidder furnishes with the bid a signed statement which sets forth in detail the circumstances of the disclosure and the head of the agency, or his designee, determines that such disclosure was not made for the purpose of restricting competition.

THE FOLLOWING NEED BE CHECKED ONLY IF BID EXCEEDS \$10,000 IN AMOUNT.

5. EQUAL OPPORTUNITY

He ☒ has, ☐ has not, participated in a previous contract or subcontract subject to the Equal Opportunity Clause herein, the clause originally contained in Section 301 of Executive Order No. 10925, or the clause contained in Section 201 of Executive Order No. 11114; he ☐ has, ☐ has not, filed all required compliance reports; and representations indicating submission of required compliance reports, signed by proposed sub-contractors, will be obtained prior to subcontract awards. (The above representation need not be submitted in connection with contracts or subcontracts which are exempt from the clause.)

6. PARENT COMPANY AND EMPLOYER IDENTIFICATION NUMBER

Each bidder shall furnish the following information by filling in the appropriate blocks:

(a) Is the bidder owned or controlled by a parent company as described below? ☒ Yes ☐ No. (For the purpose of this bid, a parent company is defined as one which either owns or controls the activities and basic business policies of the bidder. To own another company means the parent company must own at least a majority (more than 50 percent) of the voting rights in that company. To control another company, such ownership is not required; if another company is able to formulate, determine, or veto basic business policy decisions of the bidder, such other company is considered the parent company of the bidder. This control may be exercised through the use of dominant minority voting rights, use of proxy voting, contractual arrangements, or otherwise.)

(b) If the answer to (a) above, is "Yes," bidder shall insert in the space below the name and main office address of the parent company.

NAME OF PARENT COMPANY

A. C. Schultes & Sons, Inc.

MAIN OFFICE ADDRESS (No., Street, City, State, and ZIP Code)

664 S. Evergreen Ave.
Woodbury, New Jersey 08096

(c) Bidder shall insert in the applicable space below, if he has no parent company, his own Employer's Identification Number (E.I. No.) (Federal Social Security Number used on Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941), or, if he has a parent company, the E.I. No. of his parent company.

EMPLOYER
IDENTIFICATION NUMBER OF

21-0725843

BIDDER
52-0736190

NOTE.—Bids must set forth full, accurate, and complete information as required by this invitation for bids (including attachments). The penalty for making false statements in bids is prescribed in 18 U.S.C. 1001.

Form 10-335
Rev. 4/61UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

ABSTRACT OF BIDS DATA

Project: Drilling of well-Pope Bay, Assateague Island Nat. Seashore			Invitation No.
Date of Issue August 13, 1968	Opening Date September 3, 1968	No. Mailed 9	Bids Received 2

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

BIDDER	CITY	POSTMARKED		RECEIVED		DELIVERED BY
		Date	Time	Date	Time	

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

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

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

AWARDED TO:
Delmarva Drilling Company, Inc.
P. O. Box 456
Denton, Maryland 21629

IN THE AMOUNT OF:
Eight Thousand Nine Hundred Seventy
Eight Dollars and No Cents (\$8,978.00)
 Less _____

Please check one:

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

Exceptions, if any, to specifications:

Abstracted by: (Signature) <u>Arnold G. Tolson, Foreman III</u>	Bids Checked for Accuracy by: (Signature) <u>Samuel W. Brecheisen, Admin. Asst.</u>
Recommended for Acceptance by: (Signature & Title) <u>S. C. Roberts, Superintendent</u>	

CONTRACT NUMBER 11-10-7:993-305 dated September 12, 1968

warded by signature of the contracting officer on Standard Form 23 attached.

ATTACHMENT A

Ideal Well Drillers
William E. Fries
710 Parkway Circle
Salisbury, Maryland

A. C. Schultes & Sons, Inc.
664 S. Evergreen Avenue
Woodbury, New Jersey

East Coast Well & Pump Co.
Davidsonville
Maryland

Sydnor Hydrodynamics, Inc.
1305 Brook Road
P. O. Box 1476
Richmond, Virginia 23212

Norman M. Shannahan, Jr.
Box 217
St. Michaels, Maryland

R. L. Magette Company
P. O. Box 149
Smithfield, Virginia

Lynchburg Foundry Company
ATT: Pipe Sales Dept.
620 Court Street
Lynchburg, Virginia

E. S. Freshwater
McCallum Inspection Co.
441 E. Lincoln Avenue
Salisbury, Maryland

Boggs Concrete Works
Melfa
Virginia

J. T. Kearns
The Lauman Co., Inc.
100 Lauman Lane
Bethpage, L.I.
New York 11714

ATTACHMENT B

F. W. Dodge Corp.
Plan Room
6600 York Road
Baltimore, Maryland

Blue Reports, Inc.
1145 Nineteenth Street, NW
Washington, D. C.

F. W. Dodge Corp.
1309 Grandy
Norfolk, Virginia

Post Office
Berlin, Maryland

Post Office
Chincoteague, Virginia

Post Office
Salisbury, Maryland

Post Office
Norfolk, Virginia

ATTACHMENT C

Not advertised in newspaper.

ATTACHMENT D

S. W. Brecheisen

Arnold G. Tolson, Jr.

Administrative Assistant

Foreman III-Maintenance

Assateague Island NS

" " "

STANDARD FORM 25 JUNE 1964 EDITION GENERAL SERVICES ADMINISTRATION FED. PROC. REG. (41 CFR) 101-11.601		PERFORMANCE BOND (See Instructions on reverse)		25 104	DATE BOND EXECUTED (Must be same or later than date of contract) September 18, 1968
PRINCIPAL (Legal name and business address) Delmarva Drilling Co., Inc. P. O. Box 456 Denton, Maryland 21629			TYPE OF ORGANIZATION ("X" one) ☐ INDIVIDUAL ☐ PARTNERSHIP ☐ JOINT VENTURE ☒ CORPORATION STATE OF INCORPORATION Maryland		
SURETY(IES) (Name(s) and business address(es)) Fidelity and Deposit Company of Maryland Baltimore, Md.			PENAL SUM OF BOND MILLION(S) THOUSAND(S) HUNDRED(S) CENT(S) 8 978 00 CONTRACT DATE CONTRACT NO. 09-12-68 14-10-7:993-305		
KNOW ALL MEN BY THESE PRESENTS, That we, the Principal and Surety(ies) hereto, are firmly bound to the United States of America (hereinafter called the Government) in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally: <i>Provided</i>, That, where the Sureties are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum. THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into the contract identified above; NOW, THEREFORE, if the Principal shall perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Government, with or without notice to the Surety(ies) and during the life of any guaranty required under the contract, and shall also perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the Surety(ies) being hereby waived, then the above obligation shall be void and of no effect. *(SEE ATTACHMENT) IN WITNESS WHEREOF, the Principal and Surety(ies) have executed this performance bond and have affixed their seals on the date set forth above.					
PRINCIPAL					
Signature(s)		1. <i>Lester V. Lien</i> (Seal)		2. (Seal)	
Name(s) & Title(s) (Typed)		1. Lester V. Lien, Treasurer		2. (Seal)	
INDIVIDUAL SURETY(IES)					
Signature(s)		1. (Seal)		2. (Seal)	
Name(s) (Typed)		1. (Seal)		2. (Seal)	
CORPORATE SURETY(IES)					
SURETY A	Name & Address	Fidelity and Deposit Company Baltimore, Md.		STATE OF INC.	LIABILITY LIMIT
	Signature(s)	1. <i>Loretta S. Sperry</i>		2. (Seal)	
	Name(s) & Title(s) (Typed)	1. Loretta S. Sperry Attorney in Fact		2. (Seal)	

Standard Form 25
(Revised June, 1967)

PERFORMANCE BOND
(Continuation Sheet)

Contract Date

--

Contract No.

--

The following replaces the "CANCELED" portion on the face of Standard Form 25 (June 1964 Edition):

NOW, THEREFORE, if the Principal shall

(a) Perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Government, with or without notice to the Surety(ies), and during the life of any guaranty required under the contract, and shall also perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the Surety(ies) being hereby waived; and

(b) If the said contract is subject to the Miller Act, as amended (40 U.S.C. 270a-270e), pay to the Government the full amount of the taxes imposed by the Government which are collected, deducted, or withheld from wages paid by the Principal in carrying out the construction contract with respect to which this bond is furnished; then the above obligation shall be void and of no effect.

Power of Attorney
FIDELITY AND DEPOSIT COMPANY OF MARYLAND

HOME OFFICE: BALTIMORE, MD.

KNOW ALL MEN BY THESE PRESENTS: That the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, a corporation of the State of Maryland, by WM. H.C. GRIFFITH, Vice-President, and JOHN C. GARDNER, Assistant Secretary, in pursuance of authority granted by Article VI, Section 2, of the By-Laws of said Company, which reads as follows:

"The President, or any one of the Executive Vice-Presidents, or any one of the additional Vice-Presidents specially authorized so to do by the Board of Directors or by the Executive Committee, shall have power, by and with the concurrence of the Secretary or any one of the Assistant Secretaries, to appoint Resident Vice-Presidents, Resident Assistant Secretaries and Attorneys-in-Fact as the business of the Company may require, or to authorize any person or persons to execute on behalf of the Company any bonds, undertakings, recognizances, stipulations, policies, contracts, agreements, deeds, and releases and assignments of judgments, decrees, mortgages and instruments in the nature of mortgages, and also all other instruments and documents which the business of the Company may require, and to affix the seal of the Company thereto."

does hereby nominate, constitute and appoint Howard N. German, Robert T. Swanson, and Loretta S. Spurry, all of Easton, Maryland, EACH.....

its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: any and all bonds and undertakings, each in a penalty not to exceed the sum of ONE HUNDRED THOUSAND DOLLARS (\$100,000).....

And the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Company, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the Company at its office in Baltimore, Md., in their own proper persons. This power of attorney revokes that issued on behalf of Howard N. German, et al, dated April 7, 1967.

The said Assistant Secretary does hereby certify that the foregoing is a true copy of Article VI, Section 2, of the By-Laws of said Company, and is now in force.

IN WITNESS WHEREOF, the said Vice-President and Assistant Secretary have hereunto subscribed their names and affixed the Corporate Seal of the said FIDELITY AND DEPOSIT COMPANY OF MARYLAND, this 2nd day of June, A.D. 19 67.

ATTEST:

FIDELITY AND DEPOSIT COMPANY OF MARYLAND

(SIGNED)

JOHN C. GARDNER

By

WM. H. C. GRIFFITH

(SEAL)

Assistant Secretary

Vice-President

STATE OF MARYLAND
CITY OF BALTIMORE } ss:

On this 2nd day of June, A.D. 19 67, before the subscriber, a Notary Public of the State of Maryland, in and for the City of Baltimore, duly commissioned and qualified, came the above-named Vice-President and Assistant Secretary of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and they each acknowledged the execution of the same, and being by me duly sworn, severally and each for himself depose and saith, that they are the said officers of the Company aforesaid, and that the seal affixed to the preceding instrument is the Corporate Seal of said Company, and that the said Corporate Seal and their signatures as such officers were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporation.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal, at the City of Baltimore, the day and year first above written.

(SIGNED)

EVELYN D. JONES

(SEAL)

Notary Public Commission Expires July 1, 1967

CERTIFICATE

I, the undersigned, Assistant Secretary of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the original Power of Attorney of which the foregoing is a full, true and correct copy, is in full force and effect on the date of this certificate; and I do further certify that the Vice-President who executed the said Power of Attorney was one of the additional Vice-Presidents specially authorized by the Board of Directors to appoint any Attorney-in-Fact as provided in Article VI, Section 2 of the By-Laws of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND.

This Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at a meeting duly called and held on the 19th day of October, 1966.

RESOLVED: "That the facsimile or mechanically reproduced signature of any Assistant Secretary of the Company, whether heretofore or hereafter, wherever appearing upon a certified copy of any power of attorney issued by the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed."

IN TESTIMONY WHEREOF, I have hereunto subscribed my name, and affixed the corporate seal of the said Company, this

18th day of September, 19 68

STANDARD FORM 25-A JUNE 1964 EDITION GENERAL SERVICES ADMINISTRATION FED. PROC. REG. (41 CFR) 1-12.801		PAYMENT BOND (See Instructions on reverse)		203	DATE BOND EXECUTED (Must be same or later than date of contract) September 18, 1968
PRINCIPAL (Legal name and business address) Delmarva Drilling Co., Inc. P. O. Box 456 Denton, Maryland 21629			TYPE OF ORGANIZATION ("X" one) ☐ INDIVIDUAL ☐ PARTNERSHIP ☐ JOINT VENTURE ☒ CORPORATION STATE OF INCORPORATION Maryland		
SURETY(IES) (Name(s) and business address(es)) Fidelity and Deposit Company of Maryland Baltimore, Md.			PENAL SUM OF BOND MILLION(S) THOUSAND(S) HUNDRED(S) CENT(S) 4 489 00 CONTRACT DATE CONTRACT NO. 09-12-68 14-10-7:993-305		
KNOW ALL MEN BY THESE PRESENTS, That we, the Principal and Surety(ies) hereto, are firmly bound to the United States of America (hereinafter called the Government) in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally: <i>Provided</i>, That, where the Sureties are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum. THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into the contract identified above; NOW, THEREFORE, if the Principal shall promptly make payment to all persons supplying labor and material in the prosecution of the work provided for in said contract, and any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the Surety(ies) being hereby waived, then the above obligation shall be void and of no effect. IN WITNESS WHEREOF, the Principal and Surety(ies) have executed this payment bond and have affixed their seals on the date set forth above.					
PRINCIPAL					
Signature(s)		1. <i>Lester V. Lien</i> (Seal)		2. (Seal)	
Name(s) & Title(s) (Typed)		1. Lester V. Lien, Treasurer		2. (Seal)	
INDIVIDUAL SURETY(IES)					
Signature(s)		1. (Seal)		2. (Seal)	
Name(s) (Typed)		1. (Seal)		2. (Seal)	
CORPORATE SURETY(IES)					
SURETY A	Name & Address	Fidelity and Deposit Company Baltimore, Md.		STATE OF INC.	LIABILITY LIMIT
	Signature(s)	1. <i>Loretta S. Sperry</i>		2. (Seal)	
	Name(s) & Title(s) (Typed)	1. Loretta S. Sperry Attorney in Fact		2. (Seal)	

Power of Attorney
FIDELITY AND DEPOSIT COMPANY OF MARYLAND

HOME OFFICE, BALTIMORE, MD.

KNOW ALL MEN BY THESE PRESENTS: That the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, a corporation of the State of Maryland, by WM. H. C. GRIFFITH, Vice-President, and JOHN C. GARDNER, Assistant Secretary, in pursuance of authority granted by Article VI, Section 2, of the By-Laws of said Company, which reads as follows:

"The President, or any one of the Executive Vice-Presidents, or any one of the additional Vice-Presidents specially authorized so to do by the Board of Directors or by the Executive Committee, shall have power, by and with the concurrence of the Secretary or any one of the Assistant Secretaries, to appoint Resident Vice-Presidents, Resident Assistant Secretaries and Attorneys-in-Fact as the business of the Company may require, or to authorize any person or persons to execute on behalf of the Company any bonds, undertakings, recognizances, stipulations, policies, contracts, agreements, deeds, and releases and assignments of judgments, decrees, mortgages and instruments in the nature of mortgages, and also all other instruments and documents which the business of the Company may require, and to affix the seal of the Company thereto."

does hereby nominate, constitute and appoint Howard N. German, Robert T. Swanson, and Loretta S. Spurry, all of Easton, Maryland, EACH.....

its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: any and all bonds and undertakings, each in a penalty not to exceed the sum of ONE HUNDRED THOUSAND DOLLARS (\$100,000).....

And the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Company, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the Company at its office in Baltimore, Md., in their own proper persons. This power of attorney revokes that issued on behalf of Howard N. German, et al, dated April 7, 1967.

The said Assistant Secretary does hereby certify that the foregoing is a true copy of Article VI, Section 2, of the By-Laws of said Company, and is now in force.

IN WITNESS WHEREOF, the said Vice-President and Assistant Secretary have hereunto subscribed their names and affixed the Corporate Seal of the said FIDELITY AND DEPOSIT COMPANY OF MARYLAND, this 2nd day of June, A.D. 19 67.

ATTEST: **FIDELITY AND DEPOSIT COMPANY OF MARYLAND**

(SIGNED)

JOHN C. GARDNER

By

WM. H. C. GRIFFITH

(SEAL)

Assistant Secretary

Vice-President

STATE OF MARYLAND }
 CITY OF BALTIMORE } ss:

On this 2nd day of June, A.D. 19 67, before the subscriber, a Notary Public of the State of Maryland, in and for the City of Baltimore, duly commissioned and qualified, came the above-named Vice-President and Assistant Secretary of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and they each acknowledged the execution of the same, and being by me duly sworn, severally and each for himself depose and saith, that they are the said officers of the Company aforesaid, and that the seal affixed to the preceding instrument is the Corporate Seal of said Company, and that the said Corporate Seal and their signatures as such officers were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporation.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal, at the City of Baltimore, the day and year first above written.

(SIGNED)

EVELYN D. JONES

(SEAL)

Notary Public Commission Expires July 1, 1967

CERTIFICATE

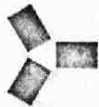
I, the undersigned, Assistant Secretary of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the original Power of Attorney of which the foregoing is a full, true and correct copy, is in full force and effect on the date of this certificate; and I do further certify that the Vice-President who executed the said Power of Attorney was one of the additional Vice-Presidents specially authorized by the Board of Directors to appoint any Attorney-in-Fact as provided in Article VI, Section 2 of the By-Laws of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND.

This Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at a meeting duly called and held on the 19th day of October, 1966.

RESOLVED: "That the facsimile or mechanically reproduced signature of any Assistant Secretary of the Company, whether heretofore or hereafter, wherever appearing upon a certified copy of any power of attorney issued by the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed."

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seal of the said Company, this

18th day of September, 19 68



CERTIFICATE OF INSURANCE

CONTINENTAL NATIONAL INSURANCE GROUP

NAME & ADDRESS OF PARTY TO WHOM THIS CERTIFICATE IS ISSUED

Department of Interior

NAME & ADDRESS OF INSURED

Delmarva Drilling Co., Inc.
Denton, Md.

INSURANCE IN FORCE

TYPE OF INSURANCE	LIMITS OF LIABILITY	POLICY NUMBER	EFFECTIVE DATE	EXPIRATION DATE	COMPANY
WORKMEN'S COMPENSATION	STATUTORY	WC7103430	6/1/68	6/1/69	Continental Casualty Company
EMPLOYERS' LIABILITY	EACH PERSON				
	EACH ACCIDENT				
	AGGREGATE				
MANUFACTURERS' AND CONTRACTORS' (Bodily Injury)	EACH PERSON				
	EACH ACCIDENT				
	AGGREGATE				
	AGGREGATE				
OWNERS' AND CONTRACTORS' PROTECTIVE (Bodily Injury)	EACH PERSON				
	EACH ACCIDENT				
	AGGREGATE				
	AGGREGATE				
OWNERS' AND CONTRACTORS' PROTECTIVE (Property Damage)	EACH PERSON				
	EACH ACCIDENT				
	AGGREGATE				
	AGGREGATE				
COMPREHENSIVE GENERAL LIABILITY EXCEPT AUTOMOBILE (Bodily Injury)	\$100,000. EACH PERSON	CCP5047621	6/1/68	6/1/69	"
	300,000. EACH ACCIDENT				
	100,000. AGGREGATE PRODUCTS				
	100,000. EACH ACCIDENT				
COMPREHENSIVE GENERAL LIABILITY EXCEPT AUTOMOBILE (Property Damage)	AGGREGATE OPERATIONS				
	AGGREGATE PROTECTIVE				
	AGGREGATE PRODUCTS				
	AGGREGATE CONTRACTUAL				
COMPREHENSIVE AUTOMOBILE LIABILITY (Bodily Injury)	250,000. EACH PERSON				
	500,000. EACH ACCIDENT				
COMPREHENSIVE AUTOMOBILE LIABILITY (Property Damage)	50,000. EACH ACCIDENT				
AUTOMOBILE (Medical Payments)	EACH PERSON				
FIDELITY					
BURGLARY					
PLATE GLASS					
INLAND MARINE					
BODILY INJURY LIABILITY	EACH PERSON				
	EACH ACCIDENT				
	AGGREGATE				
PROPERTY DAMAGE LIABILITY	EACH ACCIDENT				
	AGGREGATE				

The above policies identified by policy number, have been issued by the designated company and are in force on the date indicated below. The insurance is afforded only with respect to those coverages for which a specific limit of liability has been entered and is subject to all the terms of the policy having reference thereto. Nothing herein contained shall be considered as in anywise modifying any provision of said policies.

In the event of cancellation of said policies the Company will make all reasonable effort to send notice of such cancellation to the holder at the address shown herein, but the company assumes no responsibility for any mistake or for failure to give such notice.

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE HOLDER.

CONTINENTAL CASUALTY COMPANY NATIONAL FIRE INSURANCE COMPANY OF HARTFORD
TRANSPORTATION INSURANCE COMPANY TRANSCONTINENTAL INSURANCE COMPANY



MEMBERS OF THE CONTINENTAL NATIONAL INSURANCE GROUP

STANDARD FORM 23
JANUARY 1961 EDITION
GENERAL SERVICES ADMINISTRATION
FED. PROC. REG. (41 CFR) 1-16.401

CONSTRUCTION CONTRACT
(See instructions on reverse)

CONTRACT NO.
14-10-7:993-305
DATE OF CONTRACT
September 12, 1968

NAME AND ADDRESS OF CONTRACTOR

Delmarva Drilling Co., Inc.
P.O. Box 456
Denton, Maryland 21629

CHECK APPROPRIATE BOX

- ☐ Individual
☐ Partnership
☐ Joint Venture
☒ Corporation, incorporated in the
State of Maryland

DEPARTMENT OR AGENCY

Department of the Interior
National Park Service, Assateague Island National Seashore

CONTRACT FOR (Work to be performed)

Drilling of well - Pope Bay, Assateague Island National Seashore

PLACE

Pope Bay area, Assateague Island National Seashore, Accomack County,
Virginia

CONTRACT PRICE (Express in words and figures)

Eight Thousand Nine Hundred Seventy-eight Dollars and No Cents (\$8,978.00)

ADMINISTRATIVE DATA (Optional)

The United States of America (hereinafter called the Government), represented by the Contracting Officer executing this contract, and the individual, partnership, joint venture, or corporation named above (hereinafter called the Contractor), mutually agree to perform this contract in strict accordance with the General Provisions (Standard Form 23-A), Labor Standards Provisions Applicable to Contracts in Excess of \$2,000 (Standard Form 19-A), and the following designated specifications, schedules, drawings, and conditions:

WORK SHALL BE STARTED Within ten (10) calendar
days after the date of receipt of
Notice to Proceed.

WORK SHALL BE COMPLETED Within thirty (30)
calendar days after the date of receipt
of Notice to Proceed.

Standard Form No. 1036
7 GAO 4500
1036-104

STATEMENT AND CERTIFICATE OF AWARD

No. 14-10-7:993-305
(Contract)
Date Sept. 12, 1968

Department of the Interior National Park Service
(Department or establishment) (Bureau or office)

Assateague Island
National Seashore
(Location)

METHOD OF OR ABSENCE OF ADVERTISING

METHOD OF ADVERTISING

1. By advertising in newspapers. Yes ☐ No ☒
2. (a) By advertising in circular letters sent to 10 dealers.
(b) And by notices posted in public places. Yes ☒ No ☐
(If notices were not posted in addition to advertising by circular letters sent to dealers, explanation of such omission must be made below.)

ABSENCE OF ADVERTISING

Without advertising in accordance with _____

(Cite law pursuant to which contract was negotiated and the applicable section and paragraph thereof. If contract was negotiated under a public exigency which would not admit of the delay incident to advertising, or because of it being impracticable to secure competition, state below or on the reverse hereof, the circumstances requiring negotiation.)

AWARD OF CONTRACT

- | | Yes | No |
|--|-------------------------------------|--------------------------|
| A. To lowest bidder as to price (Expenditures) | ☒ | ☐ |
| B. To highest bidder as to price (Receipts) | ☐ | ☐ |

CERTIFICATE

I CERTIFY that the foregoing statement is true and correct; that the written findings required by law to be submitted with the contract in case of negotiation, upon a determination by the agency head or other authorized official that such method of contracting is necessary, are attached thereto; that the total number of bids received is 2, and that where lower bids (expenditure contracts) or higher bids (receipt contracts) as to price were received, a statement of reasons for their rejection, together with an abstract of bids received, including all lower than that accepted in case of expenditure contracts and all higher in case of receipt contracts, is given below or on the reverse hereof or on a separate sheet attached hereto; that the articles or services covered by the agreement (expenditure) are necessary for the public service; and that the prices charged are just and reasonable.

Contract awarded to low bidder, Delmarva Drilling Company, Inc., Denton,
Maryland, in the amount of \$8,978.00

Superintendent
(Title)
Contracting Officer

B. C. Roberts
(Signature of contracting officer)

NOTE.—This statement and certificate will be used to support all agreements, both formal contracts and less formal agreements of whatever character, involving the expenditure or receipt of public funds. It must be executed and signed by the contracting officer (unless the award is made by or is subject to approval by an officer other than the contracting officer, when execution and signature may be made by such officer).

857-11-6-68-

EMP
11/6

L54 WSC-OLW

November 5, 1968

Memorandum

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

From: Hydraulic Engineer Office of Land and Water Rights, WSC

Subject: Trip Report to Assateague Island National Seashore
October 21 - 22, 1968

The undersigned visited the area to attend the pre-construction conference for Contract #14-10-7:993-305 (Pope Bay).

Persons in attendance

Superintendent Roberts
Administrative Officer Brecheisen
Chief Park Maintenance Tolson
Geologist Hollyday - (U. S. Geological Survey)
Engineer Moore
Contractor Mr. Les Lien, Treasurer, Delmarva Well Drilling Co.

The meeting opened at 3:00 p.m. with Administrative Officer Brecheisen officiating. The notes of the pre-construction conference will be forwarded by the Seashore personnel as soon as they have been written.

In regards to the technical aspects the following notes are submitted:

1. Wage Rates - The contractor claimed that the Wage Rate Determination Decision #AH-17,173 (a part of the contract) does not reflect the standard wage rates for the area.

The rates his company employs journeymen well drillers is a minimum of \$2.25 per hour and well driller helpers at \$1.95 per hour. The undersigned informed the Contractor to submit his objections in writing to the Superintendent.

The undersigned contacted Mr. Ralph Ross (Ext. 7-8954) who works with Mr. Fred Morrell our liaison officer with the Department of Labor, Wage Rate Determination Section, who after having contacted the Department of Labor on this matter was advised that we should allow the Contractor to pay his employees the going rate he had requested with one exception; that the well drillers' helper should not receive a wage lower than that of a laborer which is \$2.10 per hour plus 10¢ fringe benefits. A letter of information should then be forwarded to the Department of Labor informing them of the action taken.

The letter is presently being prepared by this office to comply with the Department's wishes.

2. Prosecution of Work - The contractor is interested in drilling a two inch pilot hole so that all geologic information can be collected and for the E-log report.

Upon receiving word for Geologist Hollyday as to the depth of casing and the zone to be screened, the Contractor will drill the production hole to specification - (Agreed).

3. Mud -The Contractor's choice of mud is QUICK-GEL. (Agreed)

On the evening of October 22, the Contractor was moving in supplies to the area. As of that date the Contractor had used up four days of the 30 days allowed in the contract.

/s/ Garland Moore

Garland Moore

cc:
Regional Director, Northeast
Superintendent, Assateague
Chief, D&C, PSC
Chief, Branch of Water Resources, WASO

858-11-6-68

EW
11/6

L54 WSC-OLW

November 5, 1968

Memorandum

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

From: Hydraulic Engineer Moore, Office of Land and Water Rights, WSC

Subject: Trip Report to Assateague Island National Seashore
October 29 - 30, 1968 (PROGRESS REPORT)

The undersigned traveled for the following purposes:

1. Attend the bid opening for Contract #14-10-7:993-320 Little Fox Levels (Md.).
2. To check on the progress of work at Pope Bay (Contract #14-10-7:993-305) by Delmarva Well Drilling Company.

PURPOSE 1, Contract #14-10-7:993-320 - Three bids were received, the lowest being Delmarva Well Drilling Company with a bid of \$8,338.00. The two other bids were from Ideal Well Drillers and Sydnor Hydrodynamics.

PURPOSE 2. Contract #14-10-7:993-305 - The Contractor drilled the pilot hole to a depth of 500 feet. The hole did not collapse as others have in previous contracts because of the use of MUD. The well was E-logged and appeared to indicate that the three most likely zones where water would be found is located at about depths 200 - 260, 300 - 360, and 400 - 480 feet. A gamma ray log would also be run with pipe in place in the hopes of offering additional information on the hydro-geologic regime of the area.

Geologist Hollyday was of the opinion that he would probably recommend the zone between 340 - 360 feet to be screened, but is unable to qualify his opinion until a water sample is collected from all three zones for analysis.

The contractor installed his 2" pipe in the well with screen in order to collect water for analysis on October 31, 1968.

Change Order No. 1 was approved by the Contracting Officer and accepted by the Contractor on this date to increase the contract price to \$9,060.40 and a time extension of six (6) days. The Change Order calls for the installation of a 4-foot stub pipe to be attached to the end of the well screen and for the installation of 200 feet of 1" pipe to be attached to the well casing for measurement of water levels in the well. This change is acceptable to the geologist.

MISCELLANEOUS INFORMATION

The undersigned learned from District Ranger John Hunter (Virginia Section) that from reports from local inhabitants of the area, a fresh water artesian flow is present in one of the guts near Pope Bay. The ponies are still or used to drink from this source. Superintendent Roberts has requested Pat Hollyday to check on this flow.

/s/ Garland Moore

Garland Moore

cc:

Regional Director, Northeast

Superintendent, Assateague

Chief, D&C, FSC

Chief, Branch of Water Resources, WASO

ASIS-3

SPECIFICATIONS
FOR
DRILLING OF WELL - POPE BAY



at
ASSATEAGUE ISLAND NATIONAL SEASHORE
VIRGINIA

August 1968

SECTION II

CONSTRUCTION SPECIFICATIONS

2.00 TIME FOR COMPLETION: The work shall be completed within thirty (30) calendar days from date of receipt of notice to proceed.

2.01 LIQUIDATED DAMAGES: Liquidated damages in lieu of actual damages in the amount of twenty dollars (\$20.00) per calendar day will be assessed for the entire delay in completing the work beyond the time agreed upon in Paragraph 2.00. If more than one well is drilled and developed, additional time will be allowed.

2.02 SCOPE OF WORK: The Contractor shall drill for a six-inch (6") inner diameter, well estimated depth 500 feet. The well is to be cased, screened and grouted. Test pumping for yield, drawdown, electric-logging and collection of water samples from each aquifer is to be included in the test. The electric logging shall be done before the well is cased, and if it is determined that no potable water is available through out the entire depth, the well will be abandoned at this time.

2.03 LOCATION: The well shall be drilled in the Pope Bay Area in the vicinity of the former U. S. Coast Guard Station. The exact location of the well to be drilled shall be staked by the Contracting Officer. See figure 1. for general location. PROSPECTIVE BIDDERS SHOULD EXAMINE ACCESS AND THE SITE. SINCE IT IS IN A RESTRICTED AREA, ADVANCE ARRANGEMENTS MUST BE MADE WITH THE SUPERINTENDENT, ASSATEAGUE ISLAND NATIONAL SEASHORE, ROUTE 2, BOX 111, BERLIN, MD. 21811 (AREA CODE 301 641-1441).

Access via the Maryland-Assateague Bridge. In general, the well site shall be located about 16 miles south from the Maryland Bridge from the mainland to the Maryland State Park. The road leading south is sandy and soft in many areas.

Access via the Virginia-Assateague Bridge.--Load limit on this bridge is 15 tons gross. Vehicles of that limit or less may use a route which is about 10 miles from the bridge to the drilling site. About 3 miles of this is graded. There are no identifiable roads or roadways for the remaining 6 miles, but a route would be marked by the contracting officer if this alternate is used. Prior examination should be as above.

2.04 LOCAL CONDITIONS AND GEOLOGY: The following information is provided for the benefit of the bidders, but the Government shall not be responsible if the Contractor encounters different conditions in drilling the test wells. The well will be designed to take water from sand aquifer believed to be located between 470 to 500 feet below land surface. In general, the area is underlain with sand, clay, and shells.

2.05 PROSECUTION: The Contractor shall start operations not later than the time limit for beginning as set forth in the Notice to Proceed.

The work shall be conducted in such a manner and with sufficient materials, equipment, and labor as are necessary to insure its completion within the time limit specified in this proposal. The Contractor shall be responsible

for construction of access roads required to reach the site and for their removal when the wells are completed at no cost to the Government.

The methods, procedures, and materials used shall, in general, be the choosing of the Contractor provided they produce the results as stated in these specifications.

2.06 WELL HOLE: The Contractor shall drill a hole having a minimum diameter that will accommodate a nominal six inches inside diameter coupled well casing and two inch grout ring specified below through all the formations above the aquifer or as directed by the Contracting Officer. If no acceptable aquifer is encountered at the required depth or the yield is less than one hundred (100) g.p.m., the Contracting Officer may require the Contractor to continue drilling the hole until an acceptable aquifer is encountered or the yield increased; however, in no case will the hole be drilled more than one hundred (100) feet beyond the estimated depth. The diameter of the hole in the aquifer shall be reamed to provide for a six inch (6") gravel envelope around the length of the well screen from five feet (5') below the bottom of the screen to five feet (5') above the screen. A standard pipe coupling shall be installed four feet (4') beneath the gravel surface. The use of double casing to prevent collapsing of the well base shall be at the discretion of the Contractor.

The drilling fluid shall consist of a mixture of fresh water and commercial drilling clay of a consistency to adequately mud-off the walls of the hole, and to assure recovery of reliable samples of drill cuttings. The Contractor shall not use natural muds of any kind in preparing his drilling fluid. Only standard manufactured drilling clay mixtures, such as aquagel baroid, fescogel, revert, etc., shall be used. Drilling operations must be so conducted as to assure cutting-returns as free as possible from contamination by material from sections of the hole above the section that is being drilled and circulation must be regulated to accomplish this objective. The Contractor is responsible for maintaining the drilling fluid at sufficient density and viscosity so that the hole remains open to within ten (10) feet of the bottom during electric logging operations.

2.07 SETTING AND SEALING CASING: The casing shall be provided from two feet (2') above the ground surface to the aquifer. The casing shall be standard weight black steel six inch (6") inside diameter pipe. The casing supplied shall comply with Federal Specifications WW-P-404C of August 2, 1961, and Amendment -1, April 9, 1962. Couplings shall be standard drive well couplings with long recessed threads. The casing shall be centered in the hole to assure a uniform thickness of grout around the casing. The casing shall be effectively sealed to within six inches (6") of the ground surface, set at the correct elevation, and anchored to prevent lateral and vertical movement of the casing. A standard threaded coupling shall be located four (4) feet below the original ground surface.

Effectively sealing the designated section of the casing for these specifications shall mean sealing by filling voids around the outside of the entire length of designated casing by the Halliburton or similar method of forcing grout into the annular space outside the casing. The minimum grout ring thickness required will be two inches between outside of pipe coupling and inside of well hole.

The Contractor's method of installing the casing, packing, and grout, shall be approved by the Contracting Officer before installation. Grout shall be obtained by mixing an approved type of Portland cement with potable water in the ratio of one (1) bag of fresh cement to five (5) gallons of water. Grout shall be prepared, mixed, and placed in one continuous operation. Grouted sections shall be allowed to set a minimum of seventy-two (72) hours before any pumping operations are resumed.

Kinks, bends, corkscrews and other defects in the well casing shall be cause for rejection where the deviations from the vertical is in excess of two-thirds (2/3) of the smallest inside diameter of that part of the well being tested per one hundred feet (100') of depth.

Plumbness and alignment shall be tested at the discretion of the Contracting Officer by lowering into the well throughout the length of the casing a section of pipe forty feet (40') long. The outer diameter of this plumb shall not be more than one-half inches (1/2") smaller than the inside diameter of the casing.

If the well does not meet the test described above, the plumbness and alignment of the well shall be corrected by the Contractor at no expense to the Government.

2.08 WELL SCREEN: Well screen shall be the continuous-slot design; fabricated or special-shaped; and cold-drawn, cold-rolled wire or bars. The outer winding of wire that forms the screen surface and the internal longitudinal bars shall be securely jointed at each intersection of the members, preferably by welding. Both members shall be constructed of the same material. The well screen will be type 304 stainless steel, conforming to the applicable requirements of AISI.

The screen and all accessories required for satisfactory installation and operation shall be essentially standard products of a manufacturer regularly engaged in the production of such equipment.

If the well-screen construction includes a perforated pipe core, the core shall be at least schedule 10 pipe and shall be of the same material as the screen surface to avoid electrolytic corrosion that can develop from two-metal screen construction.

The minimum length of the well screen shall be 20 feet exclusive of all blank sections. The diameter of the screen shall be at least 5-5/8 inches. The size of well screen openings and particle-size of the gravel pack shall be determined by the Contracting Officer based upon a particle-size analysis of the representative sample of the aquifer collected by the Contractor.

A well screen of the same type and construction shall be used to collect representative water samples as required in paragraph 2.17 of this section.

Joints connecting screen sections shall be butt-type coupling rings of the same materials as the screens; joints may be butt-welded. If the screen is installed by lowering it through the casing, the top of the screen unit shall be provided with a lead or rubber-type packer above the gravel pack. A wash-down fitting, bottom or other suitable closure shall be securely attached at the bottom of the screen.

A shop drawing showing the details of construction and dimensions of the well screen and its accessories shall be submitted for approval before installation by the Contractor.

2.09 GRAVEL PACKING: After the well screen and casing have been installed for the full depth of the well, a wall of gravel shall be packed around the screen from the bottom of the well to a point five feet (5') above the screen. Gravel for packing shall be washed clean and shall consist of well rounded particles. Refer to paragraph 2.08

2.10 DEVELOPING THE WELL: The Contractor shall furnish the necessary pump, compressor, plunger, bailer, or other needed equipment and shall develop the well by such approved methods as shall be necessary to give the maximum yield of water per foot of drawdown. The Contractor will extract from the water-bearing formation the maximum practical quantity of sand as may be drawn through the screen when the well is pumped under maximum conditions of drawdown. The Contractor shall develop and surge the well for a minimum period of four hours.

2.11 TESTING FOR YIELD AND DRAWDOWN: After the well has been completely constructed, and developed and the depth accurately measured, the Contractor shall make a final pumping test to determine the capacity of the well. The pumping test shall be for a period not less than eight (8) hours.

The Contractor shall furnish and install test pumping equipment capable of discharging into the measuring device at the surface of the ground 200 gallons per minute from the well and satisfactory throttling control devices for varying the discharge rate from fifty (50) to two hundred (200) gallons per minute. The pumping unit shall be complete with prime mover of ample power with controls and appurtenances capable of operating without interruption for a period of twenty-four (24) hours, if necessary. The Contractor may be required to test pump from the bottom of the well. Test pumping depth shall be determined by the Contracting Officer.

The Contractor shall also furnish adequate length of discharge pipe; install and maintain suitable equipment for measuring the flow of water; and install a device to measure the elevation of the water level in the well at any time during the pumping test.

The Contractor shall measure and record the level of the well water from a definite reference point; such as the top of the well casing before any pumping is started.

Arrangements for measuring the discharge of the well shall be supplied by the Contractor, who may use any method he desires if approved by the Contracting Officer. Measuring the time required to fill a container of measurable capacity will be acceptable. However, if the well delivers more than 100 gpm, the use of an orifice will also be satisfactory. Disposal of water during pumping shall be made to the satisfaction of the Contracting Officer.

Complete records of the test, shall be submitted to the Contracting Officer upon conclusion of the test and if the information specified is not obtainable therefrom, the Contractor shall rerun the test until the required information has been secured, at no cost to the Government.

If the pump testing equipment is inadequate and fails to meet American Water Works Association specifications for testing of yield and drawdown, the Government representative shall issue a stop work order until such time as the Contractor installs adequate and proper equipment to produce the desired pumping rates and to measure water-level drawdown and recovery rates.

The Contractor shall cooperate fully with the Contracting Officer's representative in obtaining and recording data pertaining to rate of pumping and drawdown at suitable intervals throughout the test period.

2.12 DISINFECTION: After the well has been completely constructed and tested, it shall be thoroughly cleaned. The casing pipe shall be swabbed to remove oil, grease, or joint dope. The well shall then be disinfected with a chlorine solution.

The chlorine solution shall produce a strength of at least 50 ppm (parts per million) in the entire well and shall be flushed to all parts of the well and remain in the well for a period of 10 hours or more.

2.13 TEMPORARY CAPPING: Upon completion of the well, the Contractor shall weld a standard threaded steel cap on the casing to prevent the entrance of foreign matter.

2.14 ABANDONMENT OF WELL: Any hole that does not satisfy the requirements herein described, and which cannot be made acceptable, shall be declared an abandoned hole. Any hole in which the Contractor voluntarily stops work shall be considered as abandoned by him. If the hole is voluntarily abandoned by the Contractor, no payment will be made by the Government for any portion of the work completed. All abandoned test holes shall be filled by the Contractor at his own expense with puddled clay and/or neat cement from the bottom of the hole to the land surface to prevent infiltration of surface water or other waste into the test hole. All casing shall be removed from the abandoned hole and the salvageable material furnished by the Contractor shall remain his property.

2.15 STANDBY TIME: The Contractor is permitted to include standby time for his crew and drilling equipment while the Contracting Officer makes any special tests or performs other experimental work. Standby time is not to exceed eight (8) hours per day during a regular scheduled work day.

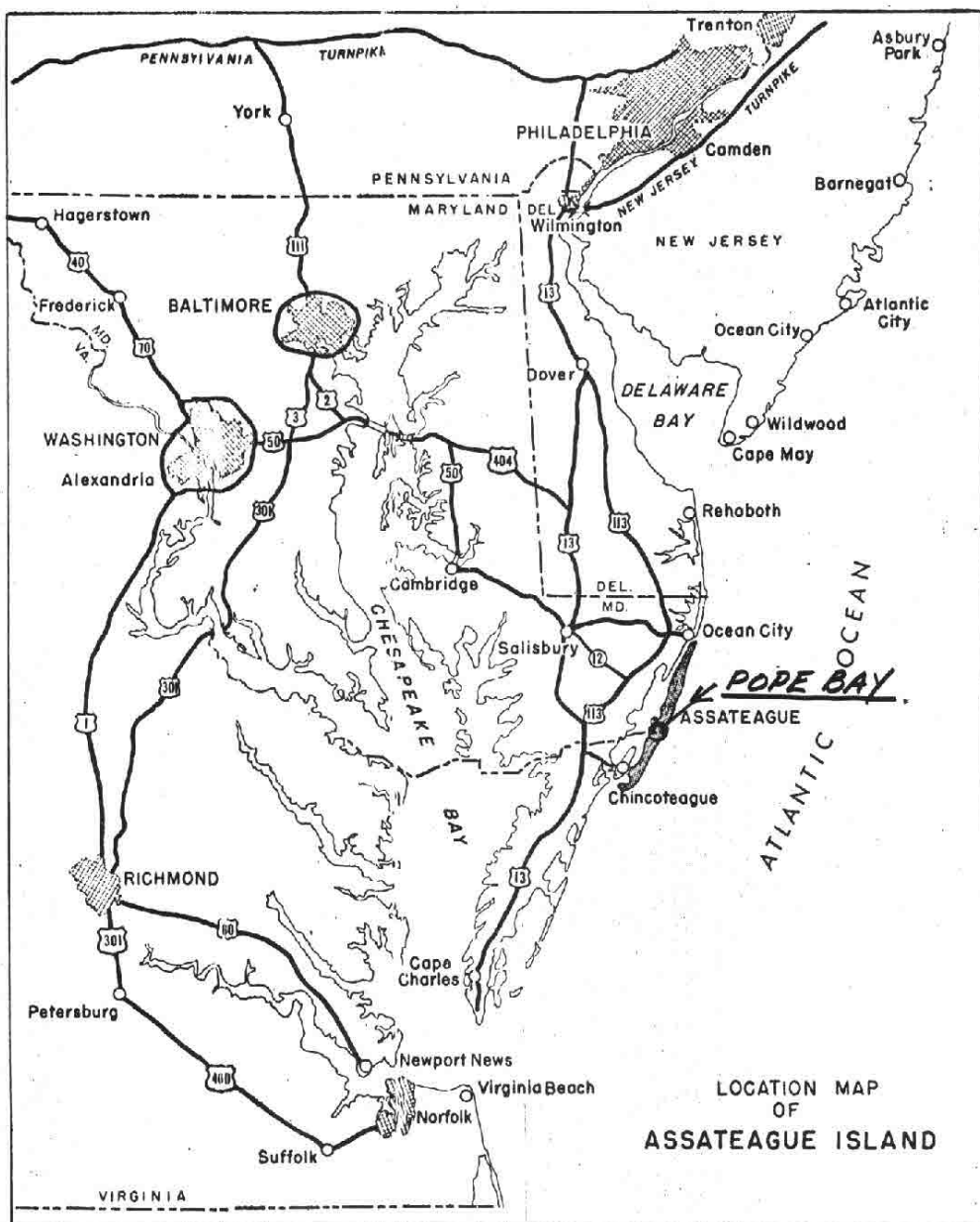
2.16 CLEANUP: Upon completion of the work, the Contractor shall remove his equipment at his expense, clean and restore the construction site to the acceptance of the Contracting Officer.

2.17 RECORDS AND SAMPLES: The driller shall be required to keep a log of his drilling operations. The driller's log shall describe all formations and water-bearing zones encountered and shall be kept accurate and current all time. Samples of geologic formations shall be taken by the Contractor at each change of formation and at five foot (5') intervals. Samples shall be placed in appropriate containers such as glass jars, or sample bags, furnished by the Contractor, and labeled as to the date, hour, and depth at which taken. The Contractor shall, upon request by the Contracting Officer, collect from one (1) to three (3) samples of water analysis. On completion of drilling the test hole and before casing the Contractor shall furnish the Contracting Officer with four (4) copies of an electric log of the hole.

A typewritten copy, in triplicate, of the driller's log shall be furnished to the Contracting Officer before final payment.

2.18 MEASUREMENT: Measurement for the various methods of construction as set forth in the Bid Schedule will be made when each item has been completed and constructed to the final dimensions as specified.

2.19 PAYMENT: The number of units determined as provided above shall be paid for at the contract price per unit of measurement. The payment shall be full compensation for all labor, equipment, materials, supervision, tools, transportation, site cleanup, and incidentals which were necessary to complete the work as prescribed in this specification.



495-6-1-2-68

W.R. Coffey
DWR
7/2

Philadelphia Planning and Service Center
Design and Construction
Philadelphia, Pa. 19106

June 24, 1968

LSH-PD

[Signature]
DLW

Memorandum

To: Chief, Office of Land and Water Rights, WSO
From: Chief, Design and Construction
Subject: 1969 F.Y. Acquisition of Water Rights Program, Pope Bay,
Assateague Island National Seashore

We have reviewed the draft of the specifications for drilling a well
at the above location and have no comments or suggestions to add.

(NCR) H. R. SMITH

H. Reese Smith

cc:
Assistant Director, D&C
— Chief, Branch of Water Resources, WSO
Regional Director, NCR (in duplicate)

ASIS

W.R. Carey
6/24

Philadelphia Planning and Service Center
Design and Construction
Philadelphia, Pa. 19106

154-FD

OCW

June 18, 1968

Memorandum

To: Chief, Office of Land and Water Rights, WSC
From: Chief, Design and Construction
Subject: Contract Documents, Well Drilling, St. Gaudens;
Draft of Bid Schedule and Specifications for Well Drilling,
Hope Bay, Assateague

Both sets of the subject documents, which were transmitted by your memorandum of June 5, have been reviewed by this office. We could find no reason for any change to be made as it appears all items are thoroughly covered.

We appreciate being given the opportunity to review the specifications for wells proposed to be constructed in our area.

(SGN) H. R. SMITH

H. Reese Smith

cc:

Assistant Director, D&C
Chief, Branch of Water Resources, WASO
Regional Director, Northeast (in duplicate)
Regional Director, NOR (in duplicate)

ASIS

154 WSC-OLW
ASIS

407.6-14-68
W.R. Copy.
6/14
Assateague Island National Seashore
Route 2, Box 111
Berlin, Maryland 21811

June 11, 1968

Memorandum

To: Chief, Office of Land and Water Rights, WSC
From: Superintendent, Assateague Island
Subject: 1969 F.Y. Acquisition of Water Rights Program, Pope Bay,
Assateague Island National Seashore

We have reviewed the specifications furnished with Mr. Stanton's memorandum of June 5. These matters occur to us:

1. Should it be made clear that there is no source of commercial power at the site at this time?
2. We have had considerable difficulty in the past in coordinating the efforts of our contractors when they are working within the wildlife refuge. We believe that this should be handled by agency-to-agency contact rather than our contractor or prospective bidder making direct contact. The latter situation leaves us in the position of not knowing what the agreement or arrangements are. "CONSTRUCTION SPECIFICATIONS 2.03 LOCATION" should be changed as follows:

Paragraph 1.--Add in caps: PROSPECTIVE BIDDERS SHOULD EXAMINE ACCESS AND THE SITE. SINCE IT IS IN A RESTRICTED AREA, ADVANCE ARRANGEMENTS MUST BE MADE WITH THE SUPERINTENDENT, ASSATEAGUE ISLAND NATIONAL SEASHORE, ROUTE 2, BOX 111, BERLIN, MD. 21811 (AREA CODE 301 641-1441).

Paragraph 2.--Add at the beginning: Access via the Maryland-Assateague Bridge. Then proceed with paragraph 2.

AS/s

Paragraph 3.--Eliminate the draft wording and substitute this:
Access via the Virginia-Assateague Bridge.--Load limit on this
bridge is 15 tons gross. Vehicles of that limit or less may use
a route which is about 10 miles from the bridge to the drilling
site. About 3 miles of this is graded. There are no identifiable
roads or roadways for the remaining 6 miles, but a route would
be marked by the contracting officer if this alternate is used.
Prior examination should be as above.

B. C. Roberts (Signed)

B. C. Roberts

cc:

Regional Director, NCR

PSC-DC

/ Chief, Branch of Water Resources, WASO

406-6-7-68
W. R. Copy.

ALL
6/7
WJ

134 NSC-OLW

June 5, 1968

Memorandum

To: Regional Director, National Capital Region
From: Chief, Office of Land and Water Rights, NSC
Subject: 1969 F.Y. Acquisition of Water Rights Program, Pope Bay, Assateague Island National Seashore

In preparing the 1969 fiscal year program for subject, we are forwarding a rough draft of subject to the Superintendent for review and comments. We would appreciate their results at the earliest possible date so that the subject can be prepared in final form for early advertising and awarding in 1969 fiscal year.

Please note that the specifications are essentially the same as those in previous contracts advertised in that area. We have taken the liberty to inform the prospective contractor on the road conditions of the area and have included suggestions raised by the U. S. Geological Survey to permit the contractor to double case the well base in order to prevent collapsing of the hole.

By copies of this memorandum we are forwarding copies of subject to Superintendent, Assateague; Chief, Branch of Water Resources, WASO; and Chief, Design and Construction, FSC, with enclosure for their comments. A separate letter and enclosure is being forwarded to District Chief, Water Resources Division, U. S. Geological Survey at Towson, Maryland.

Richard L. Stanton
Richard L. Stanton

Enclosure

cc:
Superintendent, Assateague w/c enc
Chief, D&C, FSC w/c enc
Chief, Branch of Water Resources, WASO w/c enc

L54 WSC-CLW

June 5, 1968

Mr. Walter F. White, Jr.
District Chief, Water Resources Division
U. S. Geological Survey
724 York Road
Towson, Maryland 21204

Attention: Mr. Este F. Hollyday, Geologist

Dear Mr. White:

Enclosed please find a draft copy of the construction specifications of the well to be drilled at Assateague Island next fiscal year. We would appreciate receiving your comments as it is our intention to have the enclosed reviewed and printed at the earliest possible date for advertising and awarding in 1969 fiscal year.

Drilling at this site is dependant upon the availability of funds next fiscal year.

Your cooperation and interest in the development of the water resources at Assateague Island is appreciated.

Sincerely yours,

Richard L. Stanton

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

Enclosure

cc:
Regional Director, NCR
Superintendent, Assateague
Chief, D&C, PSC
Chief, Branch of Water Resources, WASO

BID SCHEDULE
DRILLING OF WELL - POPE BAY

<u>Item</u>	<u>Description</u>	<u>Estimated Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Total</u>
1	Drilling hole to receive six-inch (6") inside diameter casing and two-inch (2") minimum grout ring.	500	L.F.	\$ _____	\$ _____
2	Furnishing and installing six-inch (6") casing and two-inch (2") minimum grout ring.	480	L.F.	\$ _____	\$ _____
3	Furnishing and installing six-inch (6") diameter stainless steel well screen.	20	L.F.	\$ _____	\$ _____
4	Reaming well hole to 18" in diameter in water aquifer for gravel envelope around well screen.	30	L.F.	\$ _____	\$ _____
5	Furnishing and installing gravel envelope.	30	L.F.	\$ _____	\$ _____
6	Furnishing an electric log of entire well hole.	1	L.S.	\$ _____	\$ _____
7	Developing well, by pumping and surging.	4	Hours	\$ _____	\$ _____
8	Pump testing for yield of well	8	Hours	\$ _____	\$ _____
9	Standby time for crew and equipment.	8	Hours	\$ _____	\$ _____
10	Plugging test well hole which has been abandoned by direction of the Government through no fault of the Contractor.		L.S.	\$ _____	\$ _____
Total Bid (Summary Items 1 thru 10)				\$ _____	

Basis of Award: Bidders are required to quote on all above items. Award will be made on "all or none" basis. Bids received will be evaluated as follows:

The unit prices quoted for each of the above items will be multiplied by the estimated quantity. The lowest total price for all items will be considered as the lowest bid received. Payment to the Contractor will be made on the basis of actual work completed. The Contracting Officer reserves the right to reject any and all bids.

SECTION I

SPECIAL PROVISIONS

1.00 DEFINITION OF TERMS:

Contracting Officer: Shall mean the officer accepting the contract on behalf of the Government or his duly appointed successor and shall include his authorized representative.

Contractor: Shall mean the second party of the contract. Subcontractor will not be recognized.

Work: Includes all materials, labor, tools, equipment, supplies, permits, licenses and insurance required in or incidental to the construction and completion of all or any part of the work described in the specifications or indicated on the drawings.

Whenever "as directed," "required," "as permitted," "approval," "acceptance," or words of similar import are used, it shall be understood that the direction, requirements, permission, approval or acceptance of the Contracting Officer is intended unless stated otherwise.

1.01 WORKING SCHEDULE: The Contractor and the Contracting Officer, shall agree on a schedule of work hours to be followed so that provisions may be made to have the Government representative on the site during working hours. If the schedule is to be changed, arrangements shall be made with the Contracting Officer twenty-four (24) hours in advance of such change. If, during testing, work must be continued into the hours of darkness, sufficient lighting shall be provided by the Contractor, at no cost to the Government.

1.02 SUPERVISION AND INSPECTION: Work done under this contract will receive daily supervision of a ground-water specialist of the U. S. Geological Survey, who will assist the Contracting Officer. In all questions relating to the interpretation of these specifications, the decision of the Contracting Officer shall be final.

The Contractor shall have his representative on the job site during all working hours.

The Contractor shall correct all defective workmanship at no cost to the Government.

1.03 RESPONSIBILITY FOR EMPLOYEES AND PLANT: The Contractor shall be responsible for the safety of his employees, plant, and materials, and for any injury or damage done to or by them from any cause. He shall save and

hold the United States free from all claims for damages from all persons and property arising from the execution of the work covered by these specifications.

1.04 INSURANCE:

a. Compensation: The Contractor shall furnish compensation for employees engaged in this work, and shall comply with the Workmen's Compensation Laws of the State and shall give proof of such insurance satisfactory to the Contracting Officer.

b. Liability: The Contractor shall, during the continuance of work of his contract and extra work in connection therewith, maintain liability insurance to protect himself from liability and damage for injury to any employee, the public and other persons, and liability and damage which may arise by virtue of any statute.

1.05 ACCIDENT PREVENTION: The Contractor shall comply with all provisions of the "Manual of Accident Prevention in Construction of the Associated General Contractors of America, Inc.," and shall furnish and enforce such additional safeguards, safety devices and protective equipment as the Contracting Officer may determine necessary to protect the life and health of employees. The Contractor shall maintain an accurate record of, and shall report to the Contracting Officer all accidents connected with work on this contract. The Contractor shall comply with applicable State and local safety, health, and sanitation laws.

1.06 CARE OF PROPERTY: The Contractor shall conduct his operations as not to interfere with the ordinary use of roads and other utilities.

The Contractor shall not deface, injure, destroy trees and shrubs; remove, cut them without authority. Any vegetation or ground surface damaged shall be replaced or restored as nearly as possible to original conditions by the Contractor at his expense.

1.07 PARK RULES AND REGULATIONS: The Contractor and his subordinates shall during their presence in a National Park Service Area conduct themselves in accordance with Park rules and regulations. On written request from the Contracting Officer, the Contractor shall discharge from his employ any employee who does not obey said Park rules and regulations. The Contractor shall not rehire the discharged employee for any work on this contract.

1.08 RESPONSIBILITY FOR WORK: The Contractor shall be responsible for all damages to persons and property that occur as a result of his work.

The Contractor shall be responsible for all materials delivered and work performed until completion and final acceptance of this project.

1.09 PERMITS: The Contractor shall comply with all State and local regulations relative to this contract. All permits, licenses shall be purchased by the Contractor at no cost to the Government.

1.10 TRANSPORTATION: The Contractor shall furnish all transportation for his own equipment and crew to and from the job site.

SECTION II

CONSTRUCTION SPECIFICATIONS

2.00 TIME FOR COMPLETION: The work shall be completed within thirty (30) calendar days from date of receipt of notice to proceed.

2.01 LIQUIDATED DAMAGES: Liquidated damages in lieu of actual damages in the amount of forty dollars (\$40.00) per calendar day will be assessed for the entire delay in completing the work beyond the time agreed upon in Paragraph 2.00. If more than one well is drilled and developed, additional time will be allowed.

2.02 SCOPE OF WORK: The Contractor shall drill for a six-inch (6") inner diameter, well estimated depth 500 feet. The well is to be cased, screened and grouted. Test pumping for yield drawdown, electric-logging and collection of water samples from each aquifer is to be included in the test. The electric logging shall be done before the well is cased, and if it is determined that no potable water is available through out the entire depth, the well will be abandoned at this time.

2.03 LOCATION: The well shall be drilled in the Pope Bay Area in the vicinity of the former U. S. Coast Guard Station. The exact location of the well to be drilled shall be staked by the Contracting Officer. See figure 1. for general location.

In general, the well site shall be located about 16 miles south from the Maryland Bridge from the mainland to the Maryland State Park. The road leading south is sandy and soft in many areas.

An alternate route may be used which is about 10 miles from the drilling site. About three miles of which is graded and lies across the Chincoteague Wildlife Refuge. There are no identifiable roads or roadways for the remaining six miles. Permission to cross the Chincoteague Wildlife Refuge must first be secured from the officials of that office who are stationed on Assateague Island near the lighthouse.

2.04 LOCAL CONDITIONS AND GEOLOGY: The following information is provided for the benefit of the bidders, but the Government shall not be responsible if the Contractor encounters different condition in drilling the test wells. The well will be designed to take water from a sand and gravel aquifer believed to be located between 470 to 500 feet below land surface. In general, the area is underlain with sand, clay, shells, and gravel.

2.05 PROSECUTION: The Contractor shall start operations not later than the time limit for beginning as set forth in the Notice to Proceed.

The work shall be conducted in such a manner and with sufficient materials, equipment, and labor as are necessary to insure its completion within the time limit specified in this proposal. The Contractor shall be responsible for construction of access roads required to reach the site and for their removal when the wells are completed at no cost to the Government.

The methods, procedures, and materials used shall, in general, be the choosing of the Contractor provided they produce the results as stated in these specifications.

2.06 WELL HOLE: The Contractor shall drill a hole having a minimum diameter that will accommodate a nominal six inches inside diameter coupled well casing and two inch grout ring specified below through all the formations above the aquifer or as directed by the Contracting Officer. If no acceptable aquifer is encountered at the required depth or the yield is less than one hundred (100) g.p.m., the Contracting Officer may require the Contractor to continue drilling the hole until an acceptable aquifer is encountered or the yield increased, however, in no case will the hole be drilled more than one hundred (100) feet beyond the estimated depth. The diameter of the hole in the aquifer shall be reamed to provide for a six inch (6") gravel envelope around the length of the well screen from five feet (5') below the bottom of the screen to five-feet (5') above the screen. A standard pipe coupling shall be installed four feet (4') beneath the gravel surface. ~~The use of double casing to prevent collapsing of the well base shall be at the discretion of the Contractor. The Government shall not pay for the use of the double casing.~~ *10/20* ?

2.07 SETTING AND SEALING CASING: The casing shall be provided from two feet (2') above the ground surface to the aquifer. The casing shall be standard weight black steel six inch (6") inside diameter pipe. The casing supplied shall comply with Federal Specifications WW-P-404C of August 2, 1961, and Amendment - 1, April 9, 1962. Couplings shall be standard drive well couplings with long recessed threads. The casing shall be centered in the hole to assure a uniform thickness of grout around the casing. The casing shall be effectively sealed to within six inches (6") of the ground surface, set at the correct elevation, and anchored to prevent lateral and vertical movement of the casing. A standard threaded coupling shall be located four (4) feet below the original ground surface.

Effectively sealing the designated section of the casing for these specifications shall mean sealing by filling voids around the outside of the entire length of designated casing by the Halliburton or similar method of forcing grout into the annular space outside the casing. The minimum grout ring thickness required will be two inches between outside of pipe coupling and inside of well hole.

The Contractor's method of installing the casing, packing, and grout, shall be approved by the Contracting Officer before installation. Grout shall be obtained by mixing an approved type of Portland cement with potable water in the ratio of one (1) bag of fresh cement to five (5) gallons of water. Grout shall be prepared, mixed, and placed in one continuous operation. Grouted sections shall be allowed to set a minimum of seventy-two (72) hours before any drilling operations are resumed.

Kinks, bends, corkscrews and other defects in the well casing shall be cause for rejection where the deviations from the vertical is in excess of two-thirds ($2/3$) of the smallest inside diameter of that part of the well being tested per one hundred feet (100') of depth.

Plumbness and alignment shall be tested at the discretion of the Contracting Officer by lowering into the well throughout the length of the casing a section of pipe forty feet (40') long. The outer diameter of this plumb shall not be more than one-half inches ($1/2"$) smaller than the inside diameter of the casing.

If the well does not meet the test described above, the plumbness and alignment of the well shall be corrected by the Contractor at no expense to the Government.

2.08 WELL SCREEN: Well screen shall be the continuous-slot design; fabricated or special-shaped; and cold-drawn, cold-rolled wire or bars. The outer winding of wire that forms the screen surface and the internal longitudinal bars shall be securely jointed at each intersection of the members, preferably by welding. Both members shall be constructed of the same material. The well screen will be type 304 stainless steel, conforming to the applicable requirements of AISI.

The screen and all accessories required for satisfactory installation and operation shall be essentially standard products of a manufacturer regularly engaged in the production of such equipment.

If the well-screen construction includes a perforated pipe core, the core shall be at least schedule 10 pipe and shall be of the same material as the screen surface to avoid electrolytic corrosion that can develop from two-metal screen construction.

The minimum length of the well screen shall be 20 feet exclusive of all blank sections. The diameter of the screen shall be at least 5-5/8 inches. The size of well screen openings and particle-size of the gravel pack shall be determined by the Contracting Officer based upon a particle-size analysis of the representative sample of the aquifer collected by the Contractor.

A well screen of the same type and construction shall be used to collect representative water samples as required in paragraph 2.17 of this section.

Joints connecting screen sections shall be butt-type coupling rings of the same materials as the screens; joints may be butt-welded. If the screen is installed by lowering it through the casing, the top of the screen unit shall be provided with a lead or rubber-type packer above the gravel pack. A wash-down fitting, bottom or other suitable closure shall be securely attached at the bottom of the screen.

A shop drawing showing the details of construction and dimensions of the well screen and its accessories shall be submitted for approval before installation by the Contractor.

2.09 GRAVEL PACKING: After the well screen and casing have been installed for the full depth of the well, a wall of gravel shall be packed around the screen from the bottom of the well to a point five feet (5') above the screen. Gravel for packing shall be washed clean and shall consist of well rounded particles. Refer to paragraph 2.08

2.10 DEVELOPING THE WELL: The Contractor shall furnish the necessary pump, compressor, plunger, bailer, or other needed equipment and shall develop the well by such approved methods as shall be necessary to give the maximum yield of water per foot of drawdown. The Contractor will extract from the water-bearing formation the maximum practical quantity of sand as may be drawn through the screen when the well is pumped under maximum conditions of drawdown. The Contractor shall develop and surge the well for a minimum period of four hours.

2.11 TESTING FOR YIELD AND DRAWDOWN: After the well has been completely constructed, and developed and the depth accurately measured, the Contractor shall make a final pumping test to determine the capacity of the well. The pumping test shall be for a period not less than eight (8) hours.

The Contractor shall furnish and install test pumping equipment capable of discharging into the measuring device at the surface of the ground 200 gallons per minute from the well and satisfactory throttling control devices for varying the discharge rate from fifty (50) to two hundred (200) gallons per minute. The pumping unit shall be complete with prime mover of ample power with controls and appurtenances capable of operating without interruption for a period of twenty-four (24) hours, if necessary. The Contractor may be required to test pump from the bottom of the well. Test pumping depth shall be determined by the Contracting Officer.

The Contractor shall also furnish adequate length of discharge pipe; install and maintain suitable equipment for measuring the flow of water; and install a device to measure the elevation of the water level in the well at any time during the pumping test.

The Contractor shall measure and record the level of the well water from a definite reference point; such as the top of the well casing before any pumping is started.

Arrangements for measuring the discharge of the well shall be supplied by the Contractor, who may use any method he desires if approved by the Contracting Officer. Measuring the time required to fill a container of measurable capacity will be acceptable. However, if the well delivers more than 150 gpm, the use of an orifice will also be satisfactory. Disposal of water during pumping shall be made to the satisfaction of the Contracting Officer.

Complete records of the test, shall be submitted to the Contracting Officer upon conclusion of the test and if the information specified is not obtainable therefrom, the Contractor shall rerun the test until the required information has been secured, at no cost to the Government.

If the pump testing equipment is inadequate and fails to meet American Water Works Association specifications for testing of yield and drawdown, the Government representative shall issue a stop work order until such time as the Contractor installs adequate and proper equipment to produce the desired pumping rates and to measure water-level drawdown and recovery rates.

The Contractor shall cooperate fully with the Contracting Officer's representative in obtaining and recording data pertaining to rate of pumping and drawdown at suitable intervals throughout the test period.

2.12 DISINFECTION: After the well has been completely constructed and tested, it shall be thoroughly cleaned. The casing pipe shall be swabbed to remove oil, grease, or joint dope. The well shall then be disinfected with a chlorine solution.

The chlorine solution shall produce a strength of at least 50 ppm (parts per million) in the entire well and shall be flushed to all parts of the well and remain in the well for a period of 10 hours or more.

2.13 TEMPORARY CAPPING: Upon completion of the well, the Contractor shall weld a standard threaded steel cap on the casing to prevent the entrance of foreign matter.

2.14 ABANDONMENT OF WELL: Any hole that does not satisfy the requirements herein described, and which cannot be made acceptable, shall be declared an abandoned hole. Any hole in which the Contractor voluntarily stops work shall be considered as abandoned by him. If the hole is voluntarily abandoned by the Contractor, no payment will be made by the Government for any portion of the work completed. All abandoned test holes shall be filled by the Contractor at his own expense with puddled clay and/or neat cement from the bottom of the hole to the land surface to prevent infiltration of surface water or other waste into the test hole. All casing shall be removed from the abandoned hole and the salvageable material furnished by the Contractor shall remain his property.

2.15 STANDBY TIME: The Contractor is permitted to include standby time for his crew and drilling equipment while the Contracting Officer makes any special tests or performs other experimental work. Standby time is not to exceed eight (8) hours per day during a regular scheduled work day.

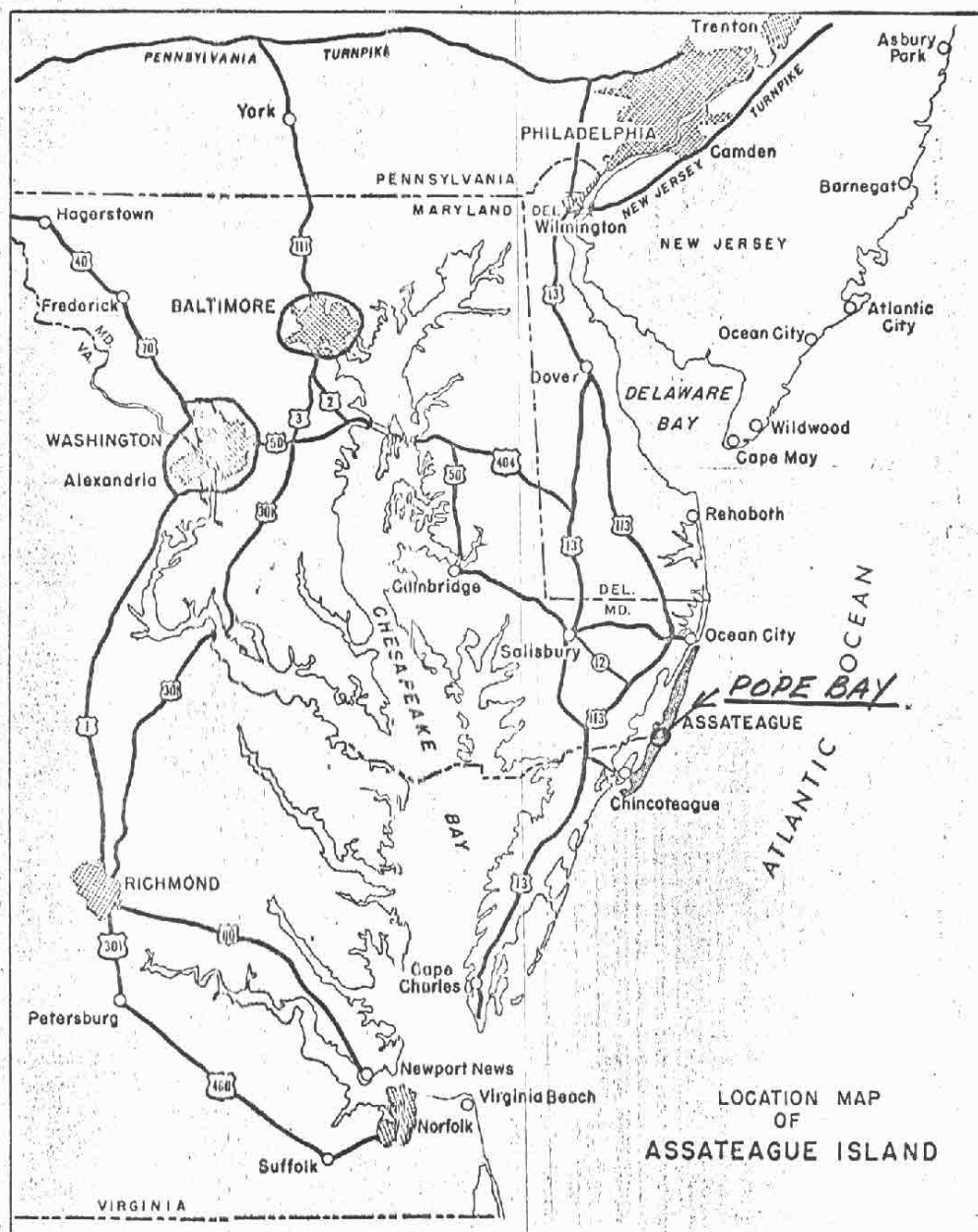
2.16 CLEANUP: Upon completion of the work, the Contractor shall remove his equipment at his expense, clean and restore the construction site to the acceptance of the Contracting Officer.

2.17 RECORDS AND SAMPLES: The driller shall be required to keep a log of his drilling operations. The driller's log shall describe all formations and water-bearing zones encountered and shall be kept accurate and current all time. Samples of geologic formations shall be taken by the Contractor at each change of formation and at five foot (5') intervals. Samples shall be placed in appropriate containers such as glass jars, or sample bags, furnished by the Contractor, and labeled as to the date, hour, and depth at which taken. The Contractor shall, upon request by the Contracting Officer, collect from one (1) to three (3) samples of water analysis. On completion of drilling the test hole and before casing the Contractor shall furnish the Contracting Officer with four (4) copies of an electric log of the hole.

A typewritten copy, in triplicate, of the driller's log shall be furnished to the Contracting Officer before final payment.

2.18 MEASUREMENT: Measurement for the various methods of construction as set forth in the Bid Schedule will be made when each item has been completed and constructed to the final dimensions as specified.

2.19 PAYMENT: The number of units determined as provided above shall be paid for at the contract price per unit of measurement. The Price payment shall be full compensation for all labor, equipment, materials, supervision, tools, transportation site cleanup, and incidentals which were necessary to complete the work as prescribed in this specification.



Docket Information

Number of Documents in Docket 86
Documents Dated from 6/2/1967 to 6/15/1971
Docket Compiled: 1/31/2011