

MAILING ADDRESS:

DIVISION OF MINERAL RESOURCES

OFFICE ADDRESS:

Box 3667  
Charlottesville, VA 22903

JAMES L. CALVER, COMMISSIONER

M McCormick Road  
Charlottesville, Virginia

WATER WELL COMPLETION REPORT

OWNER: Dept. of Conservation & Development Mailing Address: 7th. Floor, 911 East Broad

TENANT: Div. of Water Resources, Well#GW- Mailing Address: Richmond, Virginia

DRILLER: SYDNOR HYDRODYNAMICS, INC. Mailing Address: P.O. Box 27186, Richmond, Va.

WELL LOCATION: County NANSEMOND Approx. 23261 feet miles (direction) of

Northeast quadrant of the intersection of and Route 666 and 667 (direction) of

(GIVE DIRECTION AND DISTANCE IN FEET OR MILES FROM TWO REFERENCE POINTS - ROADS, TOWNS, RIVERS, ETC. - ON COUNTY HIGHWAY OR OTHER MAP.)

DATE STARTED: April 12, 1971 DATE COMPLETED: June 1, 1971

TYPE OF DRILL RIG USED: Rotary TOTAL DEPTH 1149 1/2 feet

WATER LEVEL: Stands 111 1/2 feet below surface OR

has NATURAL flow of gallons per minute.

YIELD TEST: Method Airlift 420 HOLE SIZE: 12 1/4" inches from 0 to 1149 1/2 feet

Drawdown feet

Estimated Rate 150 gal. per min.

Duration 2 hrs., 30 min.

WATER ZONES: from to feet

See screen settings . . . . .

from to feet

from to feet

WATER: Color Taste

Odor Temp. °F

WELL TO SUPPLY: (check one) Home

Farm Town School

Industry Other Observation well

WATER ANALYSIS AVAILABLE: Yes X No

DRILL CUTTINGS SAVED: Yes 105 No

(DRILL CUTTINGS SHOULD BE COLLECTED AT 10 FOOT INTERVALS. THESE SAMPLES MAY BE SHIPPED TO THIS OFFICE EXPRESS COLLECT. SAMPLE BAGS ARE FURNISHED FREE OF CHARGE UPON REQUEST.)

REMARKS:

HOLE SIZE: 12 1/4" inches from 0 to 1149 1/2 feet

inches from to feet

inches from to feet

SCREEN SIZE: 4 inches from 401 to 406 feet

4 inches from 495 to 500 feet

4 inches from 628 to 633 feet

4 inches from 727 to 732 feet

4 inches from 989 to 999 feet

CASE SIZE: 4 inches from 0 to 401 feet

4 inches from 406 to 495 feet

4 inches from 500 to 628 feet

4 inches from 633 to 727 feet

4 inches from 732 to 989 feet

4 inches from 999 to 1148 feet

GROUTING: Method

Material Groute Mix Depth 30 feet

PUMP: Type

Capacity gal. per min

Depth of intake feet

LOG

FURNISHED BY: SYDNOR HYDRODYNAMICS, INC. DATE: 6/1/71

DEPTH (feet)		TYPE OF ROCK OR SOIL PENETRATED (gravel, clay, etc., hardness, color, etc.)	REMARKS (water, caving, shot, screen, sample, etc.)
FROM	TO		
0	3	Top Soil	
3	7	Sticky Clay	
7	10	Gray Sand	
10	13	Gray Clay	
13	20	Gray Sand	
20	60	Blue Clay, Gray Clay, Shells	
60	70	Gray Clay, shells and some black sand	
70	80	Lot of shells, sand, little Clay	
80	100	Tough gray clay and few shells	
100	110	Black Sand and Clay, few shells	
110	120	Gray Sand	
120	130	Brown, gray sand and shells	
130	160	Black sand, shells mixed	
160	165	Gray sand	
165	178	Black Sand, shells	
178	190	Red Clay	
190	205	Clay, Sand, few shells	
205	220	Red, Gray Clay mixed with shells	
220	265	Gray sand with little clay	
265	295	Gray clay mixed with some sand	
295	388	Gray clay	
388	390	Clay, small gravel and shells	
390	465	Clay, sand, shells mixed	
465	505	Gray Sand	
505	520	Gray Clay with streaks of sand	
520	545	Tough Clay, little sand mixed	
545	555	Clay	
555	575	Clay, streaks of sand and few shells mixed	
575	680	Coarse gray sand	
680	710	Tough clay	
710	740	Clay, shells and sand mixed	
740	775	Coarse gray sand and gravel mixed	
775	810	Clay and sand mixed	
810	820	Mostly sand, some clay and shells mixed	
820	850	Mostly sand, streaks of clay	
850	860	All colors of clay and little sand	
860	870	Red-Gray tough clay	
870	895	Clay, sand and shells mixed	
895	905	Tough Clay	
905	920	Clay, sand some shells	
920	955	Coarse sand and shell gravel	
955	975	Tough clay with some sand streaks	
975	1010	Coarse sand	
1010	1015	Green Clay	
1015	1045	Gray sand	
1045	1105	Different colors of clay and sand mixed	
1105	1120	Sand and clay mixed	
1120	1144'8"	Touch green and gray clay mixed	
1144'8"	1149'6"	Rock	

(Use additional forms if necessary)

VIRGINIA DIVISION OF MINERAL RESOURCES  
Box 3667, Charlottesville, VA 22903

INTERVAL SHEET

Page 1 of 2	C-182
Date rec'd: 6-29-71; ; processed 7-9-71	Well Repository No: 3221
PROPERTY: Va. Division of Water Resources (Cleopus obs. Well #2)	Sample Interval; from 0 to: 1149 1/2
COMPANY: Sydnor	Number of samples: 114
COUNTY: Nansemond (Cleopus)	Total Depth: 1149 1/2
	Oil or Gas: Water: \ Exploratory:

From-To	From-To	From-To	From-To
0 - 10	50 - 60	500 - 10	50 - 60
10 - 20	60 - 70	10 - 20	60 - 70
20 - 30	70 - 80	20 - 30	70 - 80
30 - 40	80 - 90	30 - 40	80 - 90
40 - 50	90 - 300	40 - 50	90 - 800
50 - 60	300 - 10	50 - 60	800 - 10
60 - 70	10 - 20	60 - 70	10 - 20
70 - 80	20 - 30	70 - 80	20 - 30
80 - 90	30 - 40	80 - 90	30 - 40
90 - 100	40 - 50	90 - 600	40 - 50
100 - 10	50 - 60	600 - 10	50 - 60
10 - 20	60 - 70	10 - 20	60 - 70
20 - 30	70 - 80	20 - 30	70 - 80
30 - 40	80 - 90	30 - 40	80 - 90
40 - 50	90 - 400	40 - 50	90 - 900
50 - 60	400 - 10	50 - 60	900 - 10
60 - 70	10 - 20	60 - 70	10 - 20
70 - 80	20 - 30	70 - 80	20 - 30
80 - 90	30 - 40	80 - 90	30 - 40
90 - 200	40 - 50	90 - 700	40 - 50
200 - 10	50 - 60	700 - 10	50 - 60
10 - 20	60 - 70	10 - 20	60 - 70
20 - 30	70 - 80	20 - 30	70 - 80
30 - 40	80 - 90	30 - 40	80 - 90
40 - 50	90 - 500	40 - 50	90 - 1000

All intervals have both washed and unwashed samples





Owner: Division of Water Resources  
Driller: (Va-GW-OWC-2) W# 3221  
County: Sydnor C# 182  
Nansemond (Suffolk) Total Depth: 1150'  
Quad:  
Elev:

Depth  
(feet)

WELL LOG

0-10 Sand - yellowish gray (5Y 8/1); no clay, no silt; few sand clasts; fine to coarse, subangular; moderately well sorted; quartz.

10-20 Sand - as above.

20-30 Clay - greenish gray (5GY 6/1); some clay in clasts, moderate silt; very sparse sand; fine to coarse, subangular; poor sorting; quartz; 10% shell fragments; lignite.

30-40 Clay - as above.

40-50 Clay - as above.

50-60 Clay - as above, except: 7% shell fragments.

60-70 Clay - as above, except: 5% shell fragments.

70-80 Clay - as above, except: some clay in small clasts; 20% small shell fragments; moderate sand.

80-90 Clay - as above, except: some clay in large clasts; 10% shell fragments.

90-100 Clay - as above, except: moderate sand, fine to medium; 5% shell fragments.

100-110 Clay - as above, except: moderate sand, fine to very coarse; few granules.

110-120 Sand - greenish gray (5GY 6/1); very sparse clay; fine to coarse, mostly coarse, subangular; well sorted; quartz; lignite; bone fragments; rare shell fragments; echinoderm spines.

120-130 Sand - as above.

130-140 Sand - dark greenish gray (5GY 6/1); slight silt; coarse to very coarse; subangular; some in clasts; moderate sorting; quartz; 50% glauconite; 5% shell fragments.

140-150 Sand - as above, except: very slight clay in large sand clasts; 65%+ glauconite; poor sorting.

Owner: Division of Water Resources  
(Va-GW-OWC-2)

W# 3221

Depth  
(feet)

- 150-160 Sand - salt and pepper color; moderate white clay in clasts with glauconite; moderate sand; medium to very coarse; 50% glauconite; quartz; poor sorting; 3% shell fragments; bryozoa; pyrite; foram (Nodosaria).
- 160-170 Sand - salt and pepper; clay in very small clasts; 20% glauconite; blue quartz.
- 170-180 Sand - brownish gray (5YR 4/1); moderate clay; medium to coarse, subangular; some granules; poor sorting; quartz; 15% glauconite; 3% shell fragments; foram (Nodosaria).
- 180-190 Clay - moderate yellowish brown (10YR 5/4); large clasts of clay, slight silt; moderate sand; medium to coarse, subangular; poor sorting; quartz; 10% glauconite; some shell fragments.
- 190-200 Clay - as above, except: some granules; 5% glauconite; bone and tooth fragments.
- 200-210 Clay - dark yellowish brown (10YR 4/2); grey, brown, yellow, orange clay clasts; slight silt, moderate sand; coarse, subangular; some granules; poor sorting; quartz; 5% glauconite; some shell fragments; garnet chips; muscovite; mica.
- 210-220 Sand - light olive gray (5Y 6/1); abundant clay, some in clasts, slight silt; fine to coarse; some granules; poor sorting; quartz; very sparse glauconite; some muscovite.
- 220-230 No sample.
- 230-240 Sand - pale yellowish brown (10YR 6/2); slight clay in clasts; slight silt; medium to coarse, subangular; moderate sorting; quartz; mica; feldspar; rare grains glauconite.
- 240-250 Sand - as above.
- 250-260 Sand - as above, except: moderate clay; minor clay clasts; medium to very coarse.
- 260-270 Sand - light olive gray (5Y 5/1); abundant clay, moderate silt; medium to coarse, subangular; poor sorting; quartz; some mica; pelecypoda.
- 270-280 Clay - greenish gray (5GY 6/1); clay in large clasts; moderate silt; moderate sand; fine to coarse grained, subangular; poor sorting; quartz; 10% muscovite.

Owner: Division of Water Resources  
(Va-GW-OWC-2)

W# 3221

Depth  
(feet)

280-290	Clay - as above.
290-300	Clay - as above.
300-310	Clay - light olive gray (5Y 5/2); abundant sand - as above.
310-320	Clay - as above.
320-330	Clay - as above, except: 5% mica, 1% glauconite; weathered feldspar.
330-340	Clay - as above.
340-350	Clay - as above.
350-360	Clay - as above, except: some shell fragments; rare glauconite.
360-370	Clay - as above, except: no shell fragments.
370-380	Clay - as above, except: some shell fragments.
380-390	Clay - as above.
390-400	Sand - light olive gray (5Y 6/1); abundant clay and some in clasts; slight silt; medium to very coarse, subangular; some granules; poor sorting; quartz; some shell fragments.
400-410	Sand - as above, except: slight clay in clasts and pellets.
410-420	Sand - as above, except: few microcline feldspar grains.
420-430	Sand - as above, except: very slight clay; medium to granule sized sand.
430-440	Sand - as above, except: abundant clay, some in clasts; fine to very coarse; few mica; fine shell fragments; iron oxide and glauconite.
440-450	Sand - as above, except: moderate clay; fine shell fragments.
450-460	Sand - as above, except: sparse clay; medium to very coarse; moderate sorting; few granules.
460-470	Sand - as above.
470-480	Sand - as above.

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(Va-GW-OWC-2)

W# 3221

Depth  
(feet)

- 480-490 Sand - yellowish gray (5Y 8/1); cleanly washed sand; fine to very coarse; subangular; granules; moderate sorting; quartz; few glauconite; fine shell fragments and feldspar.
- 490-500 Sand - as above.
- 500-510 Sand - pale yellowish brown (10YR 6/2); slight clay, few clasts; no silt; fine to very coarse; subangular; some granules; poor sorting; quartz; 1% glauconite; garnet chips; feldspar; muscovite; shell fragments.
- 510-520 Sand - yellowish gray (5Y 8/1); cleanly washed; coarse to pebble; subangular to subrounded; moderate sorting; quartz; rare glauconite; garnet chips.
- 520-530 Sand - pale yellowish brown (10YR 6/2); moderate clay; some clasts; medium to coarse, subangular; some granules; poor sorting; quartz; feldspar; iron oxide; shell fragments; glauconite; garnet chips.
- 530-540 Sand - as above, except: clasts in various shades of gray, rose; few granules.
- 540-550 Sand - olive gray (5Y 4/1); abundant clay, some clasts; slight silt; medium to coarse; subangular; some very coarse to granules; poor sorting; quartz; iron oxide; garnet; glauconite; feldspar.
- 550-560 Sand - yellowish gray (5Y 8/1); rest as above, except: wood bits.
- 560-570 Sand - pale yellowish brown (10YR 6/2); as above, except: some small clasts; fine shell fragments.
- 570-580 Sand - olive gray (5Y 4/1); as above, except: moderate clay clasts.
- 580-590 Sand - yellowish gray (5Y 8/1); as above, except: moderate clay in small dark gray clasts; washed sand; medium to granule.
- 590-600 Sand - yellowish gray (5Y 8/1); very sparse clasts; silt; washed sand; medium to very coarse, subangular to subrounded; granules; moderate sorting; quartz; garnet; feldspar; glauconite.
- 600-610 Sand - as above, except: medium to coarse; some very coarse to granule; no clay.
- 610-620 Sand - as above.
- 620-630 Sand - as above, except: moderately well sorted.



Owner: Division of Water Resources  
(Va-GW-OWC-2)

W# 3221

Depth  
(feet)

630-640 Sand - as above, except: coarse to granule.

640-650 Sand - as above, except: few sand clasts; medium to granule.

650-660 Sand - as above, except: few pebbles.

660-670 Sand - as above, except: fine to very coarse; some granule to pebble size; some garnet grains.

670-680 Sand - as above, except: medium to very coarse.

680-690 Sand - sand-light olive gray (5Y 5/2); clay clasts - olive gray (5Y 4/1); moderate clay in clasts; medium and very coarse; subangular, some granules; poor sorting; quartz; fine shell fragments; garnet; feldspar; mica.

690-700 Sand - light olive gray (5Y 5/2); as above, except: medium-grained; few granules.

700-710 Sand - as above, except: abundant clay.

710-720 Sand - light olive gray (5Y 6/1); moderate clay; fine to very coarse.

720-730 Sand - as above, except: sparse clay; coarse-grained; moderately well sorted.

730-740 Sand - yellowish gray (5Y 8/1); no clay; silt; coarse to very coarse.

740-750 Sand - light olive gray (5Y 6/1); as above, except: medium to very coarse.

750-760 Sand - as above, except: granules to pebbles.

760-770 Sand - as above, except: 10% pebbles.

770-780 Sand - as above, except: 20% pebbles.

780-790 Sand - yellowish gray (5Y 7/2); sparse clay, sparse silt; some sand in clasts; medium to granular, subangular; moderate sorting; quartz; fine shell fragments; garnet; glauconite.

790-800 Sand - as above, except: medium to coarse; 20% pebbles.

Owner: Division of Water Resources  
(Va-GW-OWC-2)

W# 3221

Depth  
(feet)

800-810 Sand - pale yellowish brown (10YR 6/2); abundant clay, clasts; slight silt; medium to coarse, subangular; some granules; moderate sorting; quartz; some glauconite.

810-820 Sand - yellowish gray (5Y 7/2); large clasts of gray clay, slight silt; sand - as above; some feldspar; garnet; iron.

820-830 Sand - grayish orange (10YR 7/4); sparse clay in small various colored clasts; sparse silt, "frosted sand;" medium to granule; subangular; moderately sorted; quartz.

830-840 Sand - as above, except: no clay.

840-850 Sand - as above, except: more granules; some feldspar.

850-860 Sand - as above, except: moderate clay, clasts; medium to coarse-grained; some granules.

860-870 Sand - as above, except: slight clay, small clasts; few granules; some shell fragments.

870-880 Sand - as above, except: moderate clay in very small clasts, gray, white, red, orange.

880-890 Sand - yellowish gray (5Y 7/2); slight clay as above; moderately well sorted.

890-900 Sand - as above, except: slight clay, gray clasts; slight silt; fine to granule, subangular; poorly sorted; quartz; mica; feldspar; wood bits; shell fragments.

900-910 Sand - as above.

910-920 Sand - grayish orange (10YR 7/4); very slight clay in orange, red and gray clasts, slight silt; medium to granule; subangular; poorly sorted; quartz; some glauconite.

920-930 Sand - as above, except: no clay; coarse to pebble.

930-940 Sand - as above, except: coarse to granule; some feldspar; moderate sorting.

940-950 Sand - as above.

950-960 Sand - as above, except: fine to granule; poorly sorted.

960-970 Sand - as above, except: clear, white, orange and yellow.

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(Va-GW-OWC-2)

W# 3221

<u>Depth (feet)</u>	
970-980	Sand - as above, except: medium to very coarse, some granules; moderate sorting.
980-990	Sand - as above, except: some pebbles.
990-1000	Sand - as above, except: coarse to pebble; few feldspar.
1000-1010	Sand - salt and pepper; as above.
1010-1020	Sand - yellowish gray (5Y 8/1); few very small clay clasts; no silt; medium to granule; subangular, poor sorting; quartz; iron oxide; feldspar.
1020-1030	Sand - as above, except: medium; 1% granules; moderately well sorted; some feldspars.
1030-1040	Sand - as above, except: medium to granule; poor sorting.
1040-1050	Sand - as above.
1050-1060	Sand - as above, except: moderate clay, dark gray clasts; fine to granule; angular to subrounded; some pebbles; poor sorting; quartz; feldspars.
1060-1070	Sand - as above, except: sparse clay; 7% rose to red quartz; iron.
1070-1080	Sand - as above, except: 50% 5mm pebbles; no clay.
1080-1090	Sand - as above, except: 30% pebbles.
1090-1100	Sand - as above, except: fine shell fragments; garnet.
1100-1110	Sand - as above, except: sparse clay clasts; various colors; 20% pebbles.
1110-1120	Sand - as above, except: fine to granules; few pebbles; rare chlorite.
1120-1130	Clay - light olive gray (5Y 5/2); abundant clay in clasts; slight silt; abundant sand; fine to very coarse; subangular to subrounded; some granules and pebbles; poor sorting; quartz; feldspar; iron oxide.

Owner: Division of Water Resources  
(Va-GW-OWC-2)

W# 3221

Depth  
(feet)

1130-1140 Sand - light olive gray (5Y 5/2); as above, except: fine to very coarse; some granules and pebbles; some shell fragments.

1140-1150 Sand - as above, except: fine to coarse; few clay clasts; chlorite mica; fine shell fragments; iron oxide; some very fine black glauconite.

Logged by: J. K. Polzin

OWNER: Va. Division of Water Resources  
(Exp. Hole GW-OWC-2, ob. well )  
DRILLER: Sydnor Hydrodynamics, Inc.  
COUNTY: Nansemond (Cleopus)

W#3221  
C#182  
TD: 1149 1/2'

GEOLOGIC SUMMARY

<u>Depth</u> <u>(feet)</u>	<u>Rock Unit</u>	<u>Age</u>
0- 20	Columbia Group	Pleistocene
20- 90	Yorktown and St. Marys formations	Late Miocene
90- 130	Calvert Formation	Middle Miocene
130- 180	Mattaponi Formation	Paleocene
180- 400	"transitional beds"	Late Cretaceous(?)
400-1149 1/2	Patuxent Formation	Early Cretaceous

Virginia Division of Mineral Resources  
Robert H. Teifke, Geologist  
July 13, 1971

OWNER: Va. Division of Water Resources  
DRILLER: Sydnor  
COUNTY: Nansemond (Cleopus)

VDMR #3221  
WWCR  
TOTAL DEPTH: 1150'

GEOLOGIC SUMMARY

<u>Depth (feet)</u>	<u>Rock Unit</u>	<u>Age</u>
0- 20	Columbia Group	Pleistocene <i>post-Miocene</i>
20- 90	Yorktown and <del>St. Marys</del> Formations	Late Miocene
90-130	Calvert Formation	Middle Miocene
130-180	Mattaponi Formation	Paleocene
180-400	<del>T</del> Transitional Beds <del>??</del>	Late Cretaceous <del>??</del>
400-1150 T.D.	Patuxent Formation	Early Cretaceous

Virginia Division of Mineral Resources  
Robert H. Teifke, Geologist  
July 13, 1971

Holland SE Quad.

Elev. : 35'

GW-OWC-2  
State Obs. Well #42

E.L. in files under USGS logs of DWR wells.

OWNER: Virginia Division of Water Resources

VDMR # 3221

DRILLER: Sydnor

WWCR #

TOTAL DEPTH: 1150'

COUNTY: Nansemond (cleopus)

**COLUMBIA GROUP (0-20')**

0-20 fine, WS quartz sands.

**YORIKTOWN FORMATION (20-90')**

20-60 gray silty clay w/ abundant molluscan shell fragments.

60-70 gray, sl. clayey silt-sand w/ abundant shell; sl. glauconitic.

70-90 gray, sl. clayey silt-sand w/ abundant shell; v. sl. glauconitic.

**CALVERT FORMATION (90-130')**

90-110 speckled, clayey VWS silt-sand (w/ P<sub>2</sub>O<sub>5</sub>-glauconite) shell fragments moderately abundant.

110-130 clean, medium-to coarse-grained sands, Q and P<sub>2</sub>O<sub>5</sub>; moderately shelly.

**MATTAPONI FORMATION (130-180')**

130-180 clean, Q-glauconite sands w/ much calcitic glauconite-bearing sandstone and shell fragments; becomes coarser and less glauconitic downward; chalky calcitic sandstone particularly abundant from 150 to 180'.

**TRANSITIONAL BEDS (180-400')**

180-400 transitional (red) beds: Raritan-Patapsco equivalents?

**PATUXENT FORMATION (400-1150')**

400-530 poorly sorted feldspathic sands, v. sl. glauconitic; abundant matrix of gray and white clays.

530-540 clean, FWS, tan feldspathic sand and fine gravel; lenses (?) of gray silty clay.

540-590 dirty, gray, PS feldspathic sand w/ many fragments of calcitic sandstone, shell, and angular gravel.

590-600 light-gray arkosic sand, w/ trace of lag gravel (bone, calcitic sandstone, quartz).

400-600 may be Arundel equivalent.

600-680 lt. -gray arkosic sand-gravel w/ garnet (fining upwards)

680-700 gray, FWS feldspathic sand w/ traces of shell and glauconite; some lenses (?) of dark-gray clay.

700-800 NO SAMPLES

800-810 tan, FWS feldspathic sand.

810-1150 poorly sorted Q-feldspathic sands w/ fine-grained gravels; clean, tan to tan-and-red, somewhat lithic (mainly quartzite); traces of shell, glauconite, and various clays.