

W#: 4260
C#: 192

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT

MAILING ADDRESS:

DIVISION OF MINERAL RESOURCES

OFFICE ADDRESS:

B-3667
Charlottesville, VA 22903

JAMES L. CALVER, COMMISSIONER

McCormick Road
Charlottesville, Virginia

WATER WELL COMPLETION REPORT

OWNER: National Park Service Mailing Address: 143 South Third St. Philadelphia, PA 19106

TENANT: George Washington Birthplace, well #4 Mailing Address: G. W. Birthplace, VA

DRILLER: Sydnor Hydrodynamics, Inc. Mailing Address: P. O. Box 27186/Richmond, VA/23261

WELL LOCATION: County Westmoreland Approx. 2 ~~miles~~ ^{miles} northeast (direction) of state route 3 and 2000 ~~feet~~ ^{feet} northeast (direction) of state route 204

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

DATE STARTED: 5/20/74 DATE COMPLETED: 7/29/74

TYPE OF DRILL RIG USED: Rotary TOTAL DEPTH 814 feet

WATER LEVEL: Stands 22½ feet below surface OR (completed at 452 feet)

has NATURAL flow of _____ gallons per minute.

YIELD TEST: Method submersible pump

Drawdown 25 feet

Rate 150 gal. per min.

Duration 24 hrs., _____ min.

WATER ZONES: from 394 to 409 feet

from 442 to 447 feet

from _____ to _____ feet

WATER: Color _____ Taste _____

Odor _____ Temp. _____ °F

HOLE SIZE: 15¼* inches from 0 to 460 feet

9-7/8 inches from 460 to 814 feet

_____ inches from _____ to _____ feet

SCREEN SIZE: 6 inches from 394 to 409 feet

6 inches from 442 to 447 feet

_____ inches from _____ to _____ feet

CASE SIZE: 6 inches from +2 to 394 feet

6 inches from 409 to 442 feet

6 inches from 447 to 452 feet

WELL TO SUPPLY: (check one) Home _____

Farm _____ Town _____ School _____

Industry _____ Other National Park Facility

GROUTING: Method Pressure

Material Cement Depth 350 feet

PUMP: Type _____

WATER ANALYSIS AVAILABLE: Yes No _____

Capacity _____ gal. per min

DRILL CUTTINGS SAVED: Yes No _____

Depth of intake _____ feet

(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: * under-reamed to 18" from 394-409' and 442-447'

LOG

FURNISHED BY: _____

DATE: _____

DEPTH (feet)		TYPE OF ROCK OR SOIL PENETRATED (gravel, clay, etc., hardness, color, etc.)	REMARKS (water, caving, shot, screen, sample, etc.)
FROM	TO		
0	1	Top soil	
1	5	Gray sands silty clay	
5	15	Brown tan silty clay	
15	20	Brown tan clay and gravel	
20	25	Tan clay	
25	35	Blue and tan silty clay	
35	55	Green clay	
55	60	Green tan silty clay	
60	70	Green, tan silty clay, sand, gravel, and shells	
70	75	Dark green silty sand	
75	80	Dark green silty sand, clay with streaks of shells	
80	105	Dark green, silty clay and sand	
105	115	Dark green and white clay, sand and gravel	
115	130	Green silty clay and shells	
130	140	Green silty clay, trace shells	
140	145	Green clay, trace of sand and shells	
145	150	Green clay, trace of sand	
150	155	Green clay, trace of sand and shells	
155	165	Green clay, with black sand	
165	170	Green clay with streaks of shells	
170	190	Green silty clay and sand	
190	195	Green silty clay, black sand and gravel	
195	200	Green silty clay	
200	205	Green clay, trace of sand	
205	210	Blue gray clay	
210	215	Blue clay, shells, gravel	
215	223	Pink gray clay	
223	224	Hard sandstone	
224	225	Pink gray clay, some gravel	
225	230	Pink, gray clay streaks of sandstone	
230	234	Pink, gray and green clay	
234	235	Sandstone	
235	240	Pink, gray and white clay with streaks of sandstone	
240	250	Green, gray clay and sandstone	
250	255	Pink clay with layers of green sandstone	
255	260	Green sandstone pink clay and shells	
260	265	Pink clay and green sandstone	
265	290	Pink, green and gray clay with streaks of sandstone	
290	295	White, pink and gray clay	
295	300	Light yellow, gray, green clay with streaks of sandstone	
300	310	Yellow, gray silty sand clay with some sandstone	
310	315	Yellow, green pink, clay and sandstone	
315	325	Yellow, green, pink clay	
325	330	Green gray sand clay	
330	335	Silty green, gray sand with some pink clay	
335	349	Green sand clay, streaks of pink clay	
349	355	Pink brown green gray clay with streaks of shell	
355	375	Brown, green clay and black sand	
375	378	Fine black sand with gray and brown clay	
378	380	Red, gray, brown green clay	
380	385	Red, gray, brown clay with streaks of silty sand	
385	390	Fine and coarse sand with some red clay	

(Use additional forms if necessary)

LOG

C-192

FURNISHED BY: _____ DATE: _____

DEPTH (feet)		TYPE OF ROCK OR SOIL PENETRATED (gravel, clay, etc., hardness, color, etc.)	REMARKS (water, caving, shot, screen, sample, etc.)
FROM	TO		
390	415	Fine and coarse gray sand	
415	420	Gray, red clay with streaks of sand	
420	430	Gray, red clay some sand	
430	440	Gray, brown clay and shells	
440	445	Gray clay streaks of sandstone	
445	450	Gray clay, some sand	
450	470	Brown red tan gray clay	
470	490	Brown tan, gray clay	
490	500	Tan and gray clay	
500	505	Tan clay	
505	525	Tan and gray clay - some red	
525	535	Tan and gray clay	
535	570	Tan, red, brown, gray clay	
570	575	Gray brown, red clay	
575	580	Gray brown, red, clay with sand streaks	
580	590	Tan, brown, red clay	
590	595	Hard tan, brown red clay	
595	600	Tan red, gray clay	
600	615	Red, gray, brown, clay with sand streaks	
615	625	Silty brown, red, clay and sand	
630	630	Brown clay, streaks of sand	
630	645	Sand with some brown, red clay	
645	655	Red, brown, tan clay trace of sand	
655	672	Tan, red, gray clay with trace of sand shells	
672	690	Gray clay and sand	
690	705	Gray, red, tan clay - trace of sand	
705	710	Hard, gray, red, tan clay	
710	715	Gray, tan, brown, clay, streaks of sand	
715	720	Green, gray, clay and sand	
720	725	Red, green clay	
725	730	Sand, some clay	
730	735	Red, green gray clay and sand	
735	745	Sand with streaks of red, gray, green clay	
745	757	Coarse and medium sand	
757	760	Red, brown, tan and gray clay	
760	763	Sand	
763	785	Sand, clay mixed	
785	790	Red, green, gray and brown clay	
790	795	Red, gray, green, brown clay with streaks of sand	
795	814	Gray, green, red, brown clay	

(Use additional forms if necessary)

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

INTERVAL SHEET

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C#: 192
 Well Repository No: W#: 4260

Date rec'd: 9/30/74 Date Processed: 11/20/75 Sample Interval: from: 0 to: 814

PROPERTY: National Park Service
 (George Washington Birthplace)
 COMPANY: Sydnor

Number of samples: 160

Total Depth: 814'

COUNTY: Westmoreland

Oil or Gas: Water: Exploratory:

From-To	From-To	From-To	From-To
0- 5	125 - 130	250 - 255	375- 380
5- 10	130 - 135	255 - 260	380- 385
10- 15	135 - 140	260 - 265	385- 390
15- 20	140 - 145	265 - 270	390- 400
20- 25	145 - 150	270 - 275	400 - 410
25- 30	150 - 155	275 - 280	410- 420
30- 35	155 - 160	280 - 285	420 - 425
35- 40	160 - 165	285 - 290	-
40- 45	165 - 170	290 - 295	-
45- 50	170 - 175	295 - 300	-
50- 55	175 - 180	300 - 305	425- 430
55- 60	180 - 185	305 - 310	430- 435
60- 65	185 - 190	310 - 315	435- 440
65- 70	190 - 195	315 - 320	440- 445
70- 75	195 - 200	320 - 325	445- 450
75- 80	200 - 205	325 - 330	450- 455
80- 85	205 - 210	330 - 335	455- 460
85- 90	210 - 215	335 - 340	460- 465
90- 95	215 - 220	340 - 345	465- 470
95- 100	220 - 225	345 - 350	470- 475
100- 105	225 - 230	350 - 355	475- 480
105- 110	230 - 235	355 - 360	480- 485
110- 115	235 - 240	360 - 365	485- 490
115- 120	240 - 245	365 - 370	490- 495
120- 125	245 - 250	370 - 375	495- 500

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INTERVAL SHEET
 Continued

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Well Repository No.: C- 192
 W-4260

From-To	From-To	From-To	From-To	From-To
500 - 505	700 - 705	-	-	-
505 - 510	705 - 710	-	-	-
510 - 515	710 - 715	-	-	-
515 - 520	715 - 720	-	-	-
520 - 525	720 - 725	-	-	-
525 - 530	725 - 730	-	-	-
530 - 535	730 - 735	-	-	-
535 - 540	735 - 740	-	-	-
540 - 545	740 - 745	-	-	-
545 - 550	745 - 750	-	-	-
550 - 555	750 - 755	-	-	-
555 - 560	755 - 760	-	-	-
560 - 565	760 - 765	-	-	-
565 - 570	765 - 770	-	-	-
570 - 575	770 - 775	-	-	-
575 - 580	775 - 780	-	-	-
580 - 585	780 - 785	-	-	-
585 - 590	785 - 790	-	-	-
590 - 595	790 - 795	-	-	-
595 - 600	795 - 800	-	-	-
600 - 605	800 - 805	-	-	-
605 - 610	805 - 810	-	-	-
610 - 615	810 - 814	-	-	-
615 - 620	-	-	-	-
620 - 625	-	-	-	-
625 - 630	-	-	-	-
630 - 635	-	-	-	-
635 - 640	-	-	-	-
640 - 645	-	-	-	-
645 - 650	-	-	-	-
650 - 655	-	-	-	-
655 - 660	-	-	-	-
660 - 665	-	-	-	-
665 - 670	-	-	-	-
670 - 675	-	-	-	-
675 - 680	-	-	-	-
680 - 685	-	-	-	-
685 - 690	-	-	-	-
690 - 695	-	-	-	-
695 - 700	-	-	-	-

OWNER: National Park Service
(George Washington's Birthplace)
DRILLER: Sydnor
COUNTY: Westmoreland

W#: 4260
C#: 192
TOTAL DEPTH: 814'
QUAD.: Colonial Beach South

Depth
(feet)

GEOLOGIC LOG

- 0-5 Sand - light grayish orange, light gray; moderate clay; fine to medium grained; subangular to subrounded; moderately well sorted; quartz; feldspar; few flakes of muscovite.
- 5-10 As above except grayish orange, light gray.
- 10-15 Clay - light gray, grayish orange; abundant sand; fine to medium grained; subangular to subrounded; moderately well sorted; quartz; feldspar; few grains of glauconite; muscovite.
- 15-20 Clay - light grayish orange; abundant sand; fine to medium grained, some coarse grains, some granules, 5% pebbles; subangular to subrounded; moderately sorted; quartz; feldspar; some glauconite; few flakes of muscovite.
- 20-25 Sand - dusky yellow; abundant clay; fine grained, some medium grains; subangular to rounded; well sorted; quartz; 15% glauconite; feldspar; 2% muscovite.
- 25-30 As above except yellowish gray; 20% glauconite; some muscovite.
- 30-35 As above except light olive gray.
- 35-40 Sand - moderate olive brown; moderate clay; fine grained, some medium grains; subangular to subrounded; well sorted; quartz; some glauconite; few flakes of muscovite; bone fragments.
- 40-45 Clay - yellowish gray; diatoms abundant; quartz; some bone fragments; few flakes of muscovite.
- 45-50 Clay - yellowish gray; moderate sand; fine grained; subangular to subrounded; well sorted; quartz; some glauconite; bone fragments; few black phosphatic fragments; muscovite.
- 50-55 As above except some black phosphatic material.
- 55-60 Clay - yellowish gray; abundant sand; fine to medium grained, some granules; subangular to subrounded; moderately well sorted; quartz; 3% glauconite; some black phosphatic material; few bone fragments; muscovite.
- 60-65 Clay - light olive gray, grayish orange, white; slightly sandy; fine to medium grained; subangular to subrounded; well sorted; quartz; some black phosphatic material; few grains of glauconite; few bone fragments.
- 65-70 As above except abundant sand; fine to coarse grained; moderately sorted; few shell fragments.

Depth
(feet)

- 70-75 Sand - olive light gray; moderate clay; fine to coarse grained, some very coarse grains, few granules; subangular to subrounded; moderately sorted; quartz; 2% shell fragments; some black phosphatic material; muscovite; few grains of feldspar; lignite; few echinoid spines.
- 75-80 As above except no spines.
- 80-85 Sand - olive light gray; moderate clay; fine to medium grained, some coarse grains, some granules; subangular to subrounded; moderately sorted; quartz; some muscovite; some shell fragments; some black phosphatic material; ostracodes; large sandy limestone fragments; foram.
- 85-90 As above plus few gypsum crystals; no foram.
- 90-95 Sand - olive light gray; moderate clay; fine grained, some medium grains, some coarse grains, some granules; subangular to rounded; moderately well sorted; quartz; 7% glauconite; some muscovite; some shell fragments; few black phosphatic fragments.
- 95-100 As above except no granules; 35% glauconite.
- 100-105 As above plus some granules, few pebbles.
- 105-110 Sand - olive light gray; slightly clayey; fine to medium grained, some very coarse grains, some granules; subangular to rounded; moderately well sorted; quartz; 40% glauconite; few flakes of muscovite; few shell fragments; shark's tooth.
- 110-115 Sand - olive light gray; slightly clayey; fine to medium grained; subangular to rounded; moderately well sorted; quartz; 40% glauconite; some muscovite; few shell fragments; lignite.
- 115-120 As above plus few black phosphatic fragments; no lignite.
- 120-125 Sand - olive light gray; moderate clay; fine to coarse grained, few granules; subangular to rounded; moderately sorted; quartz; 35% glauconite; some shell fragments; muscovite; bone fragment.
- 125-130 As above except 25% glauconite; 2% shell fragments; no bone fragment.
- 130-135 As above except 15% glauconite.
- 135-140 Sand - olive light gray; moderate clay; fine to medium grained; subangular to rounded; moderately well sorted; quartz; 35% glauconite; some muscovite; some shell fragments; few echinoid spines; forams rare (inc. Buccella); ostracode.
- 140-145 As above except 50% glauconite; few shell fragments; no foram.

Depth
(feet)

- 145-150 Sand - olive light gray; moderate clay; fine to medium grained; subangular to rounded; moderately well sorted; 60% glauconite; quartz; some muscovite; few shell fragments; forams scarce (inc. Guttulina and Nonion).
- 150-155 Sand - olive light gray; abundant clay; fine to medium grained; subangular to rounded; moderately well sorted; 65% glauconite; quartz; few flakes of muscovite; forams scarce (inc. Buccella); ostracode.
- 155-160 As above plus some coarse grains; 70% glauconite; no ostracode.
- 160-165 Sand - olive light gray; abundant clay; fine to coarse grained; subangular to rounded; moderately sorted; 60% glauconite; quartz; few flakes of muscovite; few shell fragments.
- 165-170 As above plus few sandy limestone fragments.
- 170-175 Sand and clay - light olive gray; moderate clay; abundant sand; fine to medium grained; subangular to rounded; moderately well sorted; quartz; 20% glauconite; some muscovite; few sandy limestone fragments.
- 175-180 Sand - olive light gray; moderate clay; fine to medium grained; subangular to rounded; moderately well sorted; quartz; 35% glauconite; some muscovite.
- 180-185 As above except 50% glauconite; few flakes of muscovite.
- 185-190 Sand - olive light gray; moderate clay; medium grained, some fine grains, some coarse grains; subangular to rounded; moderately well sorted; 60% glauconite; quartz; few flakes of muscovite; forams rare (inc. Buccella).
- 190-195 As above except 50% glauconite; forams scarce (inc. Robulus).
- 195-200 As above except 35% glauconite; some muscovite.
- 200-205 As above except abundant clay; few sandy limestone fragments; forams rare (inc. Buccella).
- 205-210 As above except forams scarce (inc. Buccella and Globulina).
- 210-215 Sand and clay - light olive gray; moderate clay; abundant sand; fine to medium grained, some coarse grains; subangular to rounded; moderately well sorted; glauconite 65% of sand sized fraction; quartz; few flakes of muscovite; few black phosphatic fragments; forams (inc. Robulus, Buccella, Nonion, Nodosaria, and Dentalina); few grains of pyrite.

Depth
(feet)

- 215-220 Clay - moderate orange pink, light gray; medium grained, some fine grains; subangular to rounded; well sorted; glauconite 60% of sand sized fraction; quartz; few flakes of muscovite.
- 220-225 As above plus few black phosphatic fragments; forams rare (inc. Nodosaria).
- 225-230 Sand - olive light gray; moderate clay (some clasts)-olive light gray, moderate orange pink, very light gray; medium grained, some fine grains, some coarse grains; subangular to rounded; moderately well sorted; quartz; 50% glauconite (brown, black, green); few black phosphatic fragments; few flakes of muscovite; forams rare (inc. Nodosaria).
- 230-235 As above plus some stained grains; no Nodosaria.
- 235-240 As above plus some sandy limestone fragments.
- 240-245 Sand - olive light gray; moderate clay; medium grained; subangular to rounded; well sorted; quartz; 40% glauconite; 7% sandy limestone fragments; few flakes of muscovite.
- 245-250 As above except 50% glauconite; 3% sandy limestone and shell fragments.
- 250-255 As above.
- 255-260 Sand - olive light gray; slightly clayey; medium to coarse grained; subrounded to rounded; moderately well sorted; quartz; 35% glauconite; 2% limestone and shell fragments.
- 260-265 As above except few shell fragments.
- 265-270 Sand - olive light gray; moderate clay-olive light gray, moderate orange pink, light gray; medium grained; subrounded to rounded; well sorted; quartz; 40% glauconite; 10% sandy limestone fragments; some shell fragments; forams (inc. Buccella, Robulus, Nodosaria, and Cibicides?); few flakes of muscovite.
- 270-275 As above except forams (inc. Nodosaria, Buccella, and Robulus).
- 275-280 Sand and limestone fragments - light olive gray; abundant clay; medium grained; subrounded to rounded; well sorted; 40% sandy limestone fragments; 30% glauconite; quartz; some shell fragments; forams (inc. Buccella and Robulus).
- 280-285 As above except 60% sandy limestone fragments.
- 285-290 Sand - olive light gray; moderate clay; medium grained, some coarse grains; subrounded to rounded; well sorted; 40% glauconite; quartz; 20% sandy limestone fragments; some shell fragments; forams (inc. Buccella).

Depth
(feet)

- 290-295 Sand — olive light gray; slightly clayey; medium to coarse grained; subrounded to rounded; moderately well sorted; 40% glauconite; quartz; 25% sandy limestone fragments; forams (inc. Robulus, Buccella, and Guttulina).
- 295-300 Coquina and sand — light olive gray; slightly clayey; medium grained, some coarse grains; subrounded to rounded; well sorted; 50% sandy limestone and shell fragments; 30% glauconite; quartz; forams (inc. Robulus and Buccella).
- 300-305 As above except 40 % sandy limestone and shell fragments; 40% glauconite.
- 305-310 Sand — light olive gray; moderate clay; medium grained, some coarse grains; subrounded to rounded; well sorted; 40% glauconite; quartz; 25% sandy limestone and shell fragments; forams common (inc. Buccella, Robulus, Globulina, and Dentalina); few spines.
- 310-315 As above except forams common (inc. Buccella, Robulus, Nodosaria, and Marginulina).
- 315-320 As above plus some moderate orange pink clay; no Marginulina.
- 320-330 Clay and limestone fragments — light olive gray, moderate orange pink; abundant sand; medium to coarse grained; subrounded to rounded; moderately well sorted; 50% sandy limestone fragments; quartz; 25% glauconite; some shell fragments; forams (inc. Buccella and Robulus).
- 325-330 As above.
- 330-335 Sand and clay — olive light gray; moderate clay; abundant sand; medium grained; subrounded to rounded; well sorted; quartz; 40% glauconite; 15% sandy limestone fragments; few shell fragments; forams (inc. Buccella, Nodosaria, and Robulus); few spines.
- 335-340 As above except no Robulus.
- 340-345 As above except no Nodosaria.
- 345-350 Sand — olive light gray; moderate clay; medium grained, some coarse grains; subangular to rounded; well sorted; quartz; 25% glauconite; 7% sandy limestone and shell fragments; forams (inc. Buccella, Robulus, and Nodosaria).
- 350-355 Clay and sand — olive light gray, light gray, light brown; abundant clay; moderate sand; medium grained, some coarse grains; subangular to subrounded; moderately well sorted; quartz; 35% glauconite; 10% sandy limestone and shell fragments; forams scarce (inc. Buccella and Nodosaria).

Depth
(feet)

- 355-360 Clay — light olive gray, light brown; moderate sand; fine to medium grained; subangular to rounded; moderately well sorted; quartz; glauconite 30% of sand sized fraction; 10% sandy limestone and shell fragments; forams rare (inc. Nodosaria).
- 360-365 Clay and sand — light olive gray, moderate orange pink; abundant clay; moderate sand; fine to medium grained; subangular to rounded; moderately well sorted; quartz; glauconite 25% of sand sized fraction; few shell fragments; ostracode.
- 365-370 Sand — light olive gray; moderate clay (clasts)-light olive gray, moderate orange pink; medium grained; subrounded to rounded; well sorted; quartz; 35% glauconite; few shell fragments;
- 370-375 As above.
- 375-380 Sand — light olive gray; slightly clayey; medium grained, some coarse grains; subrounded; well sorted; quartz; feldspar; 3% glauconite; few flakes of muscovite.
- 380-385 As above.
- 385-390 Sand — yellowish gray; medium to coarse grained; subrounded; well sorted; quartz; feldspar; some glauconite; few flakes of muscovite.
- 390-400 As above except off white; 2% glauconite.
- 400-410 As above plus few grains of garnet.
- 410-420 As above except some glauconite.
- 420-425 Sand — light olive gray; slightly clayey; medium to very coarse grained, some granules; subrounded; moderately sorted; quartz; feldspar; some glauconite; few flakes of muscovite; few black phosphatic fragments; few grains of garnet.
- 425-430 As above except moderate clay; few flakes of biotite; no phosphatic material.
- 430-435 As above plus few limestone fragments.
- 435-440 As above.
- 440-445 Sand — light olive gray; slightly clayey; medium grained to granular; subrounded; poorly sorted; quartz; feldspar; some glauconite; few flakes of muscovite.
- 445-450 As above plus few grains of garnet.
- 450-455 As above plus few fragments of lignite; shark's teeth.

Depth
(feet)

- 455-460 As above except moderate clay; no garnet.
- 460-465 As above plus few flakes of biotite; no lignite.
- 465-470 Sand and clay — light olive gray, light brown; moderate clay; abundant sand; medium to very coarse grained, some granules; subangular to subrounded; moderately sorted; quartz; feldspar; some glauconite; few flakes of muscovite; garnet.
- 470-475 As above except 2% glauconite; no garnet.
- 475-480 As above except sand; abundant clay.
- 480-485 Sand and clay — light olive gray, light brown; medium to coarse grained, some granules; subangular to subrounded; moderately sorted; quartz; feldspar; some glauconite; few flakes of muscovite.
- 485-490 As above except 3% glauconite.
- 490-495 As above.
- 495-500 Clay — yellowish gray; moderate sand; medium grained to granular; subangular to subrounded; poorly sorted; quartz; feldspar; glauconite 5% of sand sized fraction; few flakes of muscovite.
- 500-505 As above except 2% glauconite.
- 505-510 Clay — yellowish gray; moderate sand; coarse grained to granular; subrounded; moderately sorted; quartz; feldspar; some glauconite; few flakes of muscovite.
- 510-515 Clay — yellowish gray; moderate sand; medium to very coarse grained, some fine grains; subangular to subrounded; moderately sorted; quartz; feldspar; some glauconite.
- 515-520 Clay and sand — yellowish gray; abundant clay; moderate sand; medium to very coarse grained; subangular to subrounded; moderately sorted; quartz; feldspar; glauconite 3% of sand sized fraction; few flakes of muscovite.
- 520-525 As above plus some fine grains.
- 525-530 Clay — yellowish gray; moderate sand; fine to coarse grained; subangular to subrounded; moderately sorted; quartz; feldspar; some glauconite; few flakes of muscovite.
- 530-535 Clay — light olive gray, light brown; slightly sandy; fine to coarse grained; subangular to subrounded; moderately sorted; quartz; feldspar; glauconite 3% of sand sized fraction; few flakes of muscovite.

- 535-540 As above except moderate sand; 2% glauconite.
- 540-545 As above.
- 545-550 As above except moderate sand; glauconite 7% of sand sized fraction.
- 550-555 As above except pale yellowish brown
- 555-560 As above except 5% glauconite.
- 560-565 As above.
- 565-570 As above.
- 570-575 As above.
- 575-580 Sand — pale yellowish brown; abundant clay; medium grained, some fine grains, some coarse grains; subangular to subrounded; moderately well sorted; quartz; feldspar; 3% glauconite; few flakes of muscovite.
- 580-585 Sand and clay — yellowish gray; moderate clay; abundant sand; medium to very coarse grained, 10% granules; subangular to subrounded; moderately sorted; quartz; feldspar; 5% glauconite; few flakes of muscovite.
- 585-590 As above.
- 590-595 Sand and clay — yellowish gray; moderate clay; abundant sand; medium grained, some fine grains, some coarse grains, few granules; subangular to subrounded; moderately well sorted; quartz; feldspar; glauconite 10% of sand sized fraction; few flakes of muscovite.
- 595-600 Clay — light brown, light olive gray; moderate sand; fine to medium grained; subangular to subrounded; moderately well sorted; glauconite 10% of sand sized fraction; few flakes of muscovite.
- 600-605 Sand — light olive gray; moderate clay; medium to coarse grained, few granules; subangular to subrounded; moderately well sorted; quartz; feldspar; 5% glauconite; few flakes of muscovite.
- 605-610 Sand — pale yellowish brown; some stained grains; slightly clayey; medium grained, some coarse grains; subangular to subrounded; well sorted; quartz; feldspar; 2% glauconite; few flakes of muscovite.
- 610-615 As above except medium to coarse grained; some glauconite.
- 615-620 Sand — light olive gray; moderate clay; medium to coarse grained; subangular to subrounded; moderately well sorted; quartz; feldspar; some glauconite; few flakes of muscovite.
- 620-625 As above except slightly clayey.
- 625-630 As above except well sorted.

- 630-635 As above.
- 635-640 Sand — light olive gray; moderate clay; medium to coarse grained, subangular to subrounded; moderately well sorted; quartz; feldspar; 2% glauconite.
- 640-645 As above except coarse grained; well sorted.
- 645-650 As above except abundant clay; few flakes of muscovite.
- 650-655 Sand — light olive gray; moderate clay; medium to coarse grained; subangular to subrounded; moderately well sorted; quartz; feldspar; some glauconite; few flakes of muscovite.
- 655-660 Sand — light olive gray; slightly clayey; medium grained, some coarse grains; subangular to subrounded; well sorted; quartz; feldspar; 2% glauconite; few flakes of muscovite.
- 660-665 As above.
- 665-670 As above.
- 670-675 As above.
- 675-680 As above except medium to coarse grained; moderately well sorted.
- 680-685 Sand — light olive gray; moderate clay; medium to coarse grained; subangular to subrounded; moderately well sorted; quartz; feldspar; some glauconite.
- 685-690 As above plus few grains of garnet.
- 690-695 Sand — light olive gray; moderate clay; coarse grained; subrounded; well sorted; quartz; feldspar; some glauconite; few flakes of muscovite.
- 695-700 As above.
- 700-705 As above except abundant clay.
- 705-710 Sand — light olive gray; slightly clayey; very coarse grained; subrounded; well sorted; quartz; feldspar; few grains of glauconite.
- 710-715 Clay — light olive gray; moderate sand; very coarse grained; subrounded; well sorted; quartz; feldspar; some glauconite; few flakes of muscovite.
- 715-720 As above.
- 720-725 Clay and sand — light olive gray; abundant clay; moderate sand; coarse to very coarse grained; subrounded; moderately well sorted; quartz; feldspar; some glauconite.
- 725-730 Sand — light olive gray; slightly clayey; coarse to very coarse grained; subrounded; moderately well sorted; quartz; feldspar; some glauconite; few grains of garnet.

Depth
(feet)

- 730-735 Sand — light olive gray; moderate clay; medium to coarse grained; subangular to subrounded; moderately well sorted; quartz; feldspar; some glauconite; few flakes of muscovite.
- 735-740 As above.
- 740-745 As above except coarse grained; well sorted.
- 745-750 As above except slightly clayey.
- 750-755 Sand — light olive gray; slightly clayey; very coarse grained to granular; subrounded; moderately well sorted; quartz; feldspar; some glauconite; few flakes of muscovite.
- 755-760 As above except coarse grained to granular.
- 760-765 As above except few grains of glauconite.
- 765-770 Sand and granules — light olive gray; abundant clay; very coarse grained, 50% granules; subrounded; moderately well sorted; quartz; feldspar; few grains of glauconite.
- 770-775 As above.
- 775-780 As above.
- 780-785 Clay and granules — light olive gray; abundant clay; 40% granules; subrounded; well sorted; quartz; feldspar.
- 785-790 Clay — light olive gray; moderate sand; medium to very coarse grained, few granules; subangular to subrounded; poorly sorted; quartz; feldspar; glauconite 10% of sand sized fraction; few flakes of muscovite.
- 790-795 Sand — light olive gray; moderate clay; medium to coarse grained; subangular to subrounded; moderately well sorted; quartz; feldspar; 2% glauconite.
- 795-800 As above except abundant clay.
- 800-805 Sand — light olive gray; moderate clay; coarse to very coarse grained, some medium grains; subangular to subrounded; moderately well sorted; quartz; feldspar; some glauconite; few flakes of muscovite.
- 805-810 As above except coarse grained to granular.
- 810-814 As above except abundant clay; some medium grains.

OWNER: National Park Service
(George Washington's Birthplace)

(11)

W#: 4260

GEOLOGIC SUMMARY

<u>Depth</u> <u>(feet)</u>	<u>Thickness</u> <u>(feet)</u>	<u>Rock Unit</u>	<u>Time Rock Unit</u>
0-40	40	Choptank Formation	Miocene
40-70	30	Calvert Formation	Miocene
70-215	145	Nanjemoy Formation	Eocene
215-225	10	Marlboro Clay	Eocene
225-375	150	Aquia Formation	Eocene-Cretaceous
375-814	439	Potomac Group	Cretaceous

VIRGINIA DIVISION OF MINERAL RESOURCES
David A. Hubbard, Jr. Geologist
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