

County: James City

VDMR Well # 6037

Well: "B"
Property Owner: Russell J. Austin, Jr.
Driller: Va Dept. of Highways (VDMR)
Location: (340,500m East; 4,128,500m North)

Altitude Top of Hole: 99.6'
Total Depth: 67'
Started Drilling: 20 March 79
Completed Drilling: " "
Sample Description by: Kelvin Ramsey

GEOLOGIC SUMMARY

Depth	Thickness	Formation	Age
0-60'	60'	Columbia Group	Pleistocene
60'-67'	7'	Yorktown Fm.	Pliocene

Interval

GEOLOGIC LOG

W-6037

- 5.0-5.5 Clay - yellowish red 5YR-4/8; abundant sand; subrounded; coarse-medium grained; moderately sorted; 3% heavies.
- 5.5-6.0 Same as above - massive.
- 6.0-6.5 Sand - yellowish red 5YR-4/8; medium grained; subangular; poorly sorted (coarse-fine); abundant clay; some heavies; on border b/n sand & clay slightly mottled w/ lighter clay.
- 6.5-7.0 Sand - yellowish brown 10YR-5/8; medium grained; subangular; poorly sorted (coarse-fine); abundant clay; some heavies; slightly mottled.
- 7.0-10.0 Missing.
- 10.0-10.5 Sand - yellowish brown 10YR-5/6; medium grained; subangular; moderately sorted (medium-fine); moderate clay; some heavies; mottled w/ reddish clay - white sand - in layer in clay enriched zone.
- 10.5-11.0 Same - another white sand layer.
- 11.0-11.5 Sand - brownish yellow 10YR-6/8; medium grained; subangular; moderately sorted (medium-fine); abundant clay; some heavies; mottled w/ reddish clay - some white sand - in layer.
- 11.5-12.0 Sand - light yellowish brown 10YR-6/4; medium grained; moderate-poorly sorted (medium-v. fine); moderate clay; some heavies - layered sand w/ moderate - some clay and sand w/ abundant red clay - former dominant.
- 12.0-15.0 Missing.
- 15.0-15.5 Sand; red 2.5YR-4/8 to yellow 10YR-7/8; medium-fine grained; moderately sorted (medium-fine); abundant clay; some heavies, distinctly mottled red & yellow - more red than yellow.
- 15.5-16.0 Sand - red 2.5YR to yellow 10YR-7/8; fine grained; subangular; moderately sorted (medium-fine); abundant clay; some heavies; distinctly mottled yellow to red, some white - more yellow than red.
- 16.0-16.5 Same - more white.
- 16.5-17.6 Same as above - mottling now in layer yellow & red some white more red than yellow.
- 17.0-20.0 Missing.
- 20.0-20.5 Sand - red 2.5YR to yellow 10YR-7/8; fine grained; subangular moderately sorted (fine-silt); moderate clay; some heavies; distinct mottled red & yellow - more red than yellow.
- 20.5-21.0 Same as above.

Interval

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- 21.0-21.5 Sand - reddish yellow 5YR-6/6; fine grained; subangular; moderately sorted (fine-silt); some clay; some heavies; mottled pink & yellow.
- 21.5-22.0 Sand - reddish yellow 5YR-6/6; fine grained; subangular; moderately sorted (fine-silt); some clay - top - to moderate - bottom; some heavies; mottled pink & yellow; bottom has red & gray clay laminations.
- 22.0-25.0 Missing.
- 25.0-25.5 Sand - red 7.5Y-4/6; fine grained; subangular; moderately sorted (fine- v. fine); some-moderate clay; some heavies; streaks of yellow sand & clay in red sand & clay.
- 25.5-26.0 Sand - red 7.5R-4/6; fine grained; subangular; moderately sorted (fine- v. fine); some-moderate clay; some heavies - streaks of yellow sand & clay, white sand & clay & yellow sand & clay.
- 26.0-26.5 Same - layer of pure red & gray clay near bottom 2cm thick other laminations of yellow sand & clay.
- 26.5-27.0 Same as above.
- 27.0-30.0 Missing.
- 30.0-30.5 Sand - strong brown 7.5YR-5/6; medium grained; subrounded; v. poorly sorted (coarse- v. fine); moderate clay some heavies; streaks of yellow & red clay.
- 30.5-31.0 Top 4" some - streaks yellow clay.
Bottom 2" - sand strong brown 7.5-5/8 coarse grained; subrounded v. poorly sorted (coarse- v. fine); moderate clay; some heavies streaks of gray clay; feldspar.
- 31.0-31.5 Same as bottom of above streaks gray & red clay.
- 31.5-32.0 Same as above - 1" red & gray clay layer in center.
- 32.0-35.0 Missing
- 35.0-35.5 Clay - strong brown 7.5YR-5/6; some sand; medium - coarse grained subrounded sand in pockets & layers; some heavies.
- 35.5-36.0 Same as above - less sand some silt.
- 36.0-36.5 Same as above.
- 36.5-37.0 Same as above.
- 37.0-40.0 Missing.
- 40.0-40.5 Sand - brownish yellow 10YR-6/8; coarse grained; subrounded; poorly sorted (coarse-fine); moderate clay; some heavies; few feldspar.

Interval

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- 40.5-41.0 Same as above.
- 41.0-41.5 Same as above - streaks of gray clay.
- 41.5-42.0 Same as above - color ranging to pink.
- 42.0-42.5 Sand - strong brown; 7.5YR-5/8; coarse grained; subrounded poorly sorted (coarse-fine); moderate clay; some heavies; streaks of gray clay; few feldspar?
- 42.5-43.0 Same as above - w/ reddish streaks.
- 43.0-43.5 Same as above.
- 43.5-44.0 Sand - red 10R-4/8; coarse grained; subrounded; v. poorly sorted; (coarse-fine); moderate clay; some heavies; streaks of gray clay.
- 44.0-44.5 Same as above - few feldspars.
- 44.5-45.0 Same as above color strong brown; little gray clay; pebble; feldspar.
- 45.0-45.5 Same as above - color still brown - larger pebbles.
- 45.5-46.0 Sand - strong brown 7.5YR-5/8; coarse-medium grained; subrounded; poorly sorted (coarse-fine); moderate-abundant clay some heavies; streaks of red; black lamination; few feldspar.
- 46.0-46.5 Sand - red 2.5YR-4/8; coarse grained; subrounded-rounded; moderately sorted - (coarse-fine); little clay; some heavies.
- 46.5-47.0 Same - slightly lithified (ferricrete); red streak.
- 47.0-47.5 Top 3" - same as above - distinct red streak
Bottom 3" - streaks of brown & red clay - moderate clay - rest same as above.
- 47.5-48.0 Sand - yellowish red 5YR-5/8; medium grained; subrounded-rounded; moderately sorted (medium-fine); moderate clay; some heavies streaks of red clay; crossbedding.
- 48.0-48.5 Sand - yellowish red; 5YR-5/8 medium coarse grained; subrounded-rounded; poorly sorted (coarse-fine); little clay; some heavies.
- 48.5-49.0 Top 3" - same as above.
Bottom 3" - sand dark red 2.5YR-3/6; medium-fine grained moderately sorted (medium-fine); little clay; few heavies; lamination of ferricrete; subrounded-rounded.
- 49.0-49.5 Same as above - 1% heavies.
- 49.6-50.0 Same as above - some clay; 1% heavies.

Interval

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- 50.0-50.5 Same as above - some-moderate clay; 1% heavies; some feldspar.
- 50.5-51.0 Same as above - some-moderate clay; 1% heavies.
- 51.0-51.5 Sand - strong brown 7.5YR-5/6 to red 2.5YR-4/6; medium-fine grained; moderately - well sorted (medium-fine); subrounded-rounded; moderate clay; 2% heavies; bottom redder than top.
- 51.5-52.0 Same as above - top red-back to strong brown at bottom - bottom goes to moderate-abundant brown clay.
- 52.0-52.5 Sand - yellowish red 5YR-4/8; medium grained; subrounded; moderately sorted (medium-fine); some clay; 3% heavies some glauconite.
- 52.5-53.0 Same as above.
- 53.0-53.3 Sand - reddish yellow 7.5YR-6/8; medium-coarse grained; subrounded; v. poorly sorted (coarse-silt); abundant clay; some heavies; clayey sand in laminations with pure brown clay.
- 53.3-53.6 Same as above - more clay layers than sand - brown & gray clay slight crossbedding? some glauconite.
- 53.6-54.0 Same as 53.3-53.6 some feldspar.
- 54.0-54.3 Sand - yellowish red 5YR-4/8; medium grained; subrounded v. poorly sorted (coarse-silt); moderate clay; some heavies; few feldspar some glauconite.
- 54.3-54.6 Same as above.
- 54.6-55.0 Top-2" - same as above.
Bottom-2" - clay - brown 7.5YR-5/4; some heavies; slight lighter color laminations; some glauconite.
- 55.0-55.3 Same as bottom of above - one lens of medium sand.
- 55.3-55.6 Same as above; slightly sand in spots; few feldspar.
- 55.6-57.0 Same as above - slightly sandy.
- 57-60 Missing.
- 60.0-60.3 Clay - dark brown 7.5YR-4/4; 5% glauconite?; some sand; rounded, -medium grained - heavies (dark spots) in layers.
- 60.3-60.6 Clay - dark brown 7.5YR-4/4; 5% glauconite?; some sand; sand layer 1" thick near bottom - coarse sand-rounded-moderately sorted; abundant clay; some heavies.
- 60.6-61.0 Same as above - sandy layer near top - rest clay.

Interval

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- 61.0-61.3 Same as above; 7% heavies.
- 61.3-61.6 Same as above - clay laminated brown & light brown.
- 61.6-62.0 Same as above - increasingly sandy.
- 62.0-65.0 Missing.
- 65.0-65.5 Top 3" Sand - brownish yellow 10YR-6/6; medium-fine grained-
moderately sorted (medium-fine); subrounded; 2% heavies.
Bottom 2" - abundant clay - red; clay lens?
- 65.5-66.0 Sand - yellowish brown 10YR-5/4; medium-fine grained; moderately
sorted (medium-fine); subrounded;-abundant clay; 3% heavies;
layers of heavies, brown clay & red clay.
- 66.0-66.3 Same as above - shell fragments-Chesapeake.
- 66.3-66.6 Same as above - 5% shell fragments Chesapeake.
- 66.6-67.0 Same as above - 5% shell fragments.

County: James City
VDMR Well # 6037

Well: "B":

Property Owner: Russell J. Austin, Jr.

Driller: Va Dept. of Highways (VDMR)

Location: (340, 500 m East; 4, 128, 500 m. North)

Altitude Top of Hole: 99.6'

Total Depth: 67'

Started Drilling: 20 March 79

Completed Drilling: " " "

Sample Description by: Kelvin Ramsey

GEOLOGIC SUMMARY

Depth	Thickness	Formation	Age
0-60'	60'	Columbia Group	Pleistocene
60'-67'	7'	Yorktown Fm.	Pliocene

C.R. Bergquist

"B"

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

INTERVAL SHEET

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Well Repository No: 60 37

Date rec'd: 20 March 1979 Date Processed: May 30 & 31 1979

Sample Interval: from: ^{5.0} to: 67.0'

PROPERTY: Russell J. Austin, Jr.

Number of samples: 73

COMPANY:

Total Depth: 67.0'

COUNTY: James City

Oil or Gas: Water: Exploratory:

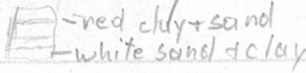
From-To	From-To	From-To	From-To
5.0 - 5.5	36.0 - 36.5	51.5 - 52.0	-
5.5 - 6.0	36.5 - 37.0	52.0 - 52.5	-
6.0 - 6.5	40.0 - 40.5	52.5 - 53.0	-
6.5 - 7.0	40.5 - 41.0	53.0 - 53.3	-
10.0 - 10.5	41.0 - 41.5	53.3 - 53.6	-
10.5 - 11.0	41.5 - 42.0	53.6 - 54.0	-
11.0 - 11.5	42.0 - 42.5	54.0 - 54.3	-
11.5 - 12.0	42.5 - 43.0	54.3 - 54.6	-
15.0 - 15.5	43.0 - 43.5	54.6 - 55.0	-
15.5 - 16.0	43.5 - 44.0	55.0 - 55.3	-
16.0 - 16.5	44.0 - 44.5	55.3 - 55.6	-
16.5 - 17.0	44.5 - 45.0	55.6 - 57.0	-
20.0 - 20.5	45.0 - 45.5	60.0 - 60.3	-
20.5 - 21.0	45.5 - 46.0	60.3 - 60.6	-
21.5 - 22.0	46.0 - 46.5	60.6 - 61.0	-
25.0 - 25.5	46.5 - 47.0	61.0 - 61.3	-
25.5 - 26.0	47.0 - 47.5	61.3 - 61.6	-
26.0 - 26.5	47.5 - 48.0	61.6 - 62.0	-
26.5 - 27.0	48.0 - 48.5	65.0 - 65.5	-
30.0 - 30.5	48.5 - 49.0	65.5 - 66.0	-
30.5 - 31.0	49.0 - 49.5	66.0 - 66.3	-
31.0 - 31.5	49.5 - 50.0	66.3 - 66.6	-
31.5 - 32.0	50.0 - 50.5	66.6 - 67.0	-
35.0 - 35.5	50.5 - 51.0	-	-
35.5 - 36.0	51.0 - 51.5	-	-

Hole
~~B~~

W-6037


~~Logged~~ ~~by Kelvin Ramsey~~ (1)

GEOLOGIC LOG

Interval	Description
5.0-5.5	Clay; yellowish red 5YR 4/8; abundant sand; subrounded; coarse-medium grained; moderately sorted; 3% heavies;
5.5-6.0	same as above - massive
6.0-6.5	Sand; yellowish red 5YR 4/8; medium grained; subangular; poorly sorted (coarse-fine); abundant clay; some heavies; on border b/n sand & clay slightly mottled w lighter clay
6.5-7.0	Sand; yellowish brown 10YR 5/8; medium grained; subangular; poorly sorted (coarse-fine); abundant clay; some heavies; slightly mottled
7.0'-10.0'	missing
10.0'-10.5'	Sand; yellowish brown 10YR 5/6; medium grained; subangular; moderately sorted (medium-fine); moderate clay; some heavies; mottled w/ reddish clay - white sand - in layer in clay enriched zone
10.5'-11.0'	same - another white sand layer
11.0'-11.5'	Sand; brownish yellow 10YR 6/8; medium grained; subangular; moderately sorted (medium-fine); abundant clay; some heavies; mottled w/ reddish clay - some white sand - in layer
11.5-12.0'	Sand; light yellowish brown 10YR 6/4; medium grained; moderate-poorly sorted (medium-v. fine); moderate clay; some heavies - layered sand w/ moderate-some clay and sand w/ abundant red clay - former dominant 
12.0-15.0'	missing
15.0-15.5'	Sand; red 2.5YR 4/8 to yellow 10YR 7/8; medium-fine grained; moderately sorted (medium-fine); abundant clay; some heavies; distinctly mottled red + yellow - more red than yellow

Hole
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- 15.5'-16.0' Sand; red 2.5 YR to yellow 10 YR 7/8; Fine grained; subangular; moderately sorted (medium-fine); abundant clay; some heavies; distinctly mottled yellow to red, some white - more yellow than red
- 16.0'-16.5' same - more white
- 16.5'-17.6' same as above - mottling now in layers  yellow + red, some white more red than yellow
- 17.0'-20.0' missing
- 20.0'-20.5' Sand; red 2.5 YR to yellow 10 YR 7/8; Fine grained; subangular moderately sorted (fine-silt); moderate clay; some heavies; distinct mottled red & yellow - more red than yellow
- 20.5'-21.0' same as above
- 21.0'-21.5' missing
- 21.0'-21.5' Sand; reddish yellow 5 YR 6/6; Fine grained; subangular; moderately sorted (fine-silt); some clay; some heavies; slightly mottled pink + yellow
- 21.5'-22.0' Sand; reddish yellow 5 YR 6/6; Fine grained; subangular; moderately sorted (fine-silt); some clay - top to moderate-bottom; some heavies; mottled pink + yellow; bottom has layers red + gray clay laminations
- 22.0'-25.0' missing
- 25.0'-25.5' Sand; red 7.5 R 4/6; Fine grained; subangular; moderately sorted (fine-v. fine); some-moderate clay; some heavies; streaks of yellow sand + clay in red sand + clay

Hole
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- 25.5-26.0 Sand; red 7.5 R 4/6; fine grained; subangular; moderately sorted (fine-v. fine); some-moderate clay; some heavies - streaks of yellow sand + clay, white sand + clay + yellow sand + clay
- 26.0-26.5 Same - layer of pure red + gray clay near bottom ~2 cm thick other laminations of yellow sand + clay
- 26.5-27.0 same as above
- 27.0-30.0 missing
- 30.0-30.5 Sand; strong brown 7.5 YR 5/6; medium grained; subrounded; v. poorly sorted (coarse-v. fine); moderate clay some heavies; streaks of yellow + red clay.
- 30.5-31.0 Top 4" same w/ streaks yellow clay
bottom 2" - Sand strong brown 7.5 YR 5/6 coarse grained; subrounded v. poorly sorted (coarse-v. fine); moderate clay; some heavies streaks of gray clay; feldspar
- 31.0-31.5 same as bottom of above streaks gray + red clay
- 31.5-32.0 same as above - 1" red + gray clay layer in center
- 32.0-35.0 missing
- 35.0-35.5 Clay; strong brown 7.5 YR 5/6; some sand; medium-coarse grained subrounded sand in packets + layers; some heavies
- 35.5-36.0 same as above - less sand some silt
- 36.0-36.5 same as above
- 36.5-37.0 same as above

Hole
B

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- 37.0'-40.0' missing
- 40.0'-40.5' Sand; brownish yellow 10 YR 6/8; coarse grained; subrounded; poorly sorted (coarse-fine); moderate clay; some heavies; ^{few} feldspar
- 40.5'-41.0' same as above
- 41.0'-41.5' same as above - streaks of gray clay
- 41.5'-42.0' same as above - color ranging to pink
- 42.0'-42.5' Sand; strong brown; 7.5 YR 5/8; coarse grained; subrounded; poorly sorted (coarse-fine); moderate clay; some heavies; streaks of gray clay; few feldspar?
- 42.5'-43.0' same as above - w/ reddish streaks
- 43.0'-43.5' same as above
- 43.5'-44.0' Sand; red 10 R 4/8; coarse grained; subrounded; ^vpoorly sorted; (coarse-fine); moderate clay; some heavies; streaks of gray clay
- 44.0'-44.5' Same as above - few feldspars
- 44.5'-45.0' same as above color strong brown; little gray clay; pebble; feldspar
- 45.0'-45.5' same as above - color still brown - larger pebbles
- 45.5'-46.0' Sand; strong brown 7.5 YR 5/8; coarse-medium grained; subrounded; poorly sorted (coarse-fine); moderate-abundant clay; some heavies; streaks of red; black lamination; few feldspar

Hole
B

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- 46.0-46.5 Sand; red 2.5 YR 4/8; coarse grained; subrounded-rounded; moderately sorted - (coarse-fine); little clay; some heavies
- 46.5-47.0 same - slightly lithified (ferricrete); red streak
- 47.0-47.5 Top 3" - same as above - distinct red streak
bottom 3" - streaks of brown + red clay - moderate clay - rest same as above
- 47.5-48.0 Sand; yellowish red 5 YR 5/8; medium grained; subrounded-rounded; moderately sorted (medium-fine); moderate clay; some heavies streaks of red clay; cross bedding
- 48.0-48.5 Sand; yellowish red; 5 YR 5/8; medium-coarse grained; subrounded-rounded; poorly sorted (coarse-fine); little clay; some heavies
- 48.5-49.0 Top 3" - same as above
Bottom 3" - Sand; dark red 2.5 YR 3/6; medium-fine grained moderately sorted (medium-fine); little clay; few heavies; lamination of ferricrete; subrounded-rounded
- 49.0-49.5 same as above - 1% heavies
- 49.5-50.0 same as above - some clay; 1% heavies
- 50.0-50.5 same as above - some moderate clay; 1% heavies; some feldspar
- 50.5-51.0 same as above - some moderate clay; 1% heavies
- 51.0-51.5 Sand; strong brown 7.5 YR 5/6 to red 2.5 YR 4/6; medium-fine grained; moderately-well sorted (medium-fine); subrounded-rounded; moderate clay; 2% heavies; ^(musci) bottom redder than top
- 51.5-52.0 same as above - top red - back to strong brown at bottom - bottom goes to moderate-abundant brown clay

Hole B

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- 52.0'-52.5' Sand; yellowish red 5YR 4/8; medium grained; subrounded; moderately sorted (medium-fine); some clay; 3% heavies; ^{some} glauconite
- 52.5'-53.0' same as above
- 53.0'-53.3' Sand; reddish yellow 7.5 YR 6/8; medium-coarse grained; subrounded; v. poorly sorted (coarse-silt); abundant clay; some heavies; clayey sand in laminations with pure brown clay
- 53.3'-53.6' same as above - more clay layers than sand - brown + gray clay slight crossbedding? some glauconite
- 53.6'-54.0' same as 53.3'-53.6' some feldspar
- 54.0'-54.3' Sand; yellowish red 5YR 4/8; medium grained; subrounded v. poorly sorted (coarse-silt); moderate clay; some heavies; ^{few} feldspar; _{some glauconite}
- 54.3'-54.6' same as above
- 54.6'-55.0' top-2" - same as above
bottom-2" - Clay; brown 7.5 YR 5/4; some[?] heavies; slight lighter color laminations; some glauconite
- 55.0'-55.3' same as bottom of above - one lens of medium sand
- 55.3'-55.6' same as above; slightly sandy in spots; few feldspar
- 55.6'-57.0' same as above - slightly sandy
- 57'-60' missing
- 60.0'-60.3' * Clay; dark brown 7.5 YR 4/4. 5% ^{glauconite} heavies (manganese?); some sand; rounded, - medium grained - heavies (dark spots) in layers -

Hole
B

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- 60.3-60.6' Clay, dark brown 7.5YR 4/4; 5% heavies ^{glaucanite} (manganese?)
some sand; sand layer 1" thick near bottom - coarse
sand - rounded - moderately sorted; abundant clay;
some heavies
- 60.6'-61.0' same as above - sandy layer near top - rest clay
- 61.0'-61.3' same as above; 7% heavies
- 61.3'-61.6' same as above - clay laminated brown + light brown
- 61.6'-62.0' same as above - increasingly sandy
- 62.0'-65.0' missing
- 65.0'-65.5' ^{top 3"} Sand; brownish yellow 10 YR 6/6; medium-fine grained -
moderately sorted (medium-fine); subrounded; 2% heavies;
some clay
bottom 2" - abundant clay - red; clay lens?
- 65.5'-66.0' Sand; yellowish brown 10 YR 5/4; medium-fine grained;
moderately sorted (medium-fine); subrounded; abundant clay;
3% heavies; layers of heavies, brown clay + red clay
- 66.0'-66.3' same as above - shell fragments - Chesapecten
- 66.3'-66.6' same as above - 5% shell fragments Chesapecten
- 66.6'-67.0' same as above - 5% shell fragments