INTERVAL SHEET

WWCR: 158

Page 1 of 1 VDMR Well No: 1909

Date rec'd: 6/23/67 Sample Interval: from 0' to: 330'

PROP: Ewell Hall Corp. Number of samples: 33

COMP: Mitchell's Well and Pump Company Total Depth: 330'

COUNTY: James City (Williamsburg) Oil or Gas: Water: X Exploratory:

From-To	From-To	From-To	From-To
0 - 10	300 - 310	-	-
10 - 20	310 - 320	-	-
20 - 30	320 - 330	-	-
30 - 40	-	-	-
40 - 50	-	-	-
50 - 60	-	-	-
60 - 70	-	-	-
70 - 80	-	-	-
80 - 90	-	-	-
90 - 100	-	-	-
100 - 110	-	-	-
110 - 120	-	-	-
120 - 130	-	-	-
130 - 140	-	-	-
140 - 150	-	-	-
150 - 160	-	-	-
160 - 170	-	-	-
170 - 180	-	-	-
180 - 190	-	-	-
190 - 200	-	-	-
200 - 210	-	-	-
210 - 220	-	-	-
220 - 230	-	-	-
230 - 240	-	-	-
240 - 250	-	-	-
250 - 260	-	-	-
260 - 270	-	-	-
270 - 280	-	-	-
280 - 290	-	-	-
290 - 300	-	-	-

All intervals have both washed and unwashed samples

OWNER: Ewell Hall Corporation
DRILLER: Mitchell's Well & Pump Company
COUNTY: James City (Williamsburg)

VDMR: 1909
WWCR: 158
TOTAL DEPTH: 330'

GEOLOGIC LOG

Depth in feet

COLUMBIA GROUP (0-40')

0-10 Sand - moderately abundant matrix of pale orange clay; fine- to medium-grained, fairly well-sorted, angular to sub-angular; moderately feldspathic, trace of magnetite

10-20 Clay - orange aspect, variegated, slightly to moderately sandy (sand content varies with color of clay); sand is fine- to medium-grained, moderately sorted; somewhat feldspathic

20-30 Sand - moderately clayey- orange clay); medium-grained, moderately sorted, angular to subangular; clear and iron-oxide stained quartz; slightly feldspathic

30-40 Sand - moderately clayey (bright-orange clay); medium- to coarse-grained, fairly well-sorted, subangular to sub-rounded; comprehensively iron-oxide stained; moderately feldspathic

YORKTOWN FORMATION (40-120')

40-50 Sand - binder of medium-greenish-gray clay, a few granules, 10-15% shell fragments (pelecypods, and a few echinoid spines); medium- to very coarse-grained, moderately sorted, subrounded to rounded; slightly glauconitic; irregular fragments and small nodules of black carbono-phosphatic material are common; a few corals, echinoid plates, and foraminifers

50-60 Sand and Shell - binder of light greenish-gray clay; 50% pelecypod shell debris; 50% medium-grained, well-sorted, subrounded sand; slightly glauconitic; echinoid spines common; a few foraminifers

60-70 " 70% shell fragments, 30% sand; very slightly glauconitic

70-80 " 50% shell fragments; 50% sand; very slightly glauconitic

80-90 Sand - dark-gray clay binder; medium-grained, well-sorted, subangular; clear quartz, with about 10% pelecypod shell fragments, and 2-3% fresh glauconite

90-100 Sand and Shell - light-gray clay binder; 50% coarse pelecypod shell fragments; 50% medium-grained, well-sorted, subangular to subrounded sand; clear quartz; trace of glauconite

100-110 Sand and Shell - light-gray clay binder; 30% pelecypod shell fragments; 70% fine- to medium-grained, fairly well-sorted, subangular quartz sand; trace of glauconite; a few echinoid spines and miliolid foraminifers

110-120 " "

120-130 Sand - greenish-gray, trace of clay; fine-grained, very well-sorted, angular; clear- to green-tinted quartz; slightly glauconitic and muscovite; trace of shell

130-140 " "

140-150 Sand - brown clay binder; fine grained, well sorted, angular; clear quartz; slightly glauconitic; trace of shell

150-160 Sand - moderately abundant matrix of medium-gray clay; fine- to very fine-grained, fairly well-sorted, angular; 10-15% glauconite, traces of phosphorite and muscovite; trace of shell

160-170 Sand - abundant greenish-gray clay; fine-grained, well sorted, angular; clear to greenish quartz; 2-5% glauconite; traces of phosphorite and muscovite

170-180 Clay - grayish-brown, sandy; sand is fine, fairly well-sorted, angular; traces of glauconite, phosphorite, and muscovite

180-190 Clay - medium-gray, moderately sandy; sand is fine- to medium-grained, moderately sorted, poorly rounded; slightly muscovitic; trace of glauconite; a few bone fragments

190-200 Clay - medium-gray, coherent, very slightly sandy, slightly micaceous; a few shell fragments; foraminifers common, but not abundant

200-210 " shell fragments common

CALVERT FORMATION (208-268') Top of formation defined on basis of other information.

210-220 Clay - medium-gray, moderately sandy; sand is fine- to very fine-grained, well-sorted, angular; traces of muscovite, pyrite, phosphorite; a few shell fragments

220-230 Clay - greenish-brown, abundant coarse-grained silt to very fine-grained sand, well sorted, angular; clear to greenish quartz; a few foraminifers

230-240 Sand and Clay - about 40% brown clay; sand is medium grained, fairly well-sorted, subangular; 85% clear quartz, 15% fragments of black, brown and yellow phosphorite (shell and bone); a few shell fragments and foraminifers (mostly fragments of large forms)

240-250 Sand - about 20% grayish-brown clay; medium- to coarse-grained, fairly well-sorted (skewed coarse), subangular to subrounded; clear quartz, with 5-7% phosphatic shell and bone fragments; 10% non-phosphatic pelecypod shell fragments

250-260 Sand - binder of medium-brownish gray clay; medium- to coarse-grained, fairly well-sorted (skewed coarse),subangular to subrounded; clear quartz, with 2-3% phosphatic bone and shell fragments; 5-10% non-phosphatic pelecypod shell fragments, and a very few foraminifers

260-270 " "

NANJEMOY FORMATION (268-310') Top of formation defined on basis of other information.

270-280 Limestone - fossiliferous, arenaceous, sulfide-bearing; pelecypods, and a few ramose bryozoans; quartz and allochthonous brown glauconite (goethite after glauconite); abundant encrusting, void-filling, and replacing sulfide (much of glauconite has been replaced by sulfide); sulfide, in turn, exhibits alteration to limonitic material, and to a finely-crystalline white mineral, presumably a hydrous sulphate of calcium or iron

280-290 Limestone - arenaceous; carbonate is stained orange-red; hematite after allochthonous glauconite is common

290-300 Limestone - arenaceous, fossiliferous; pelecypods and a few bryozoans; much of quartz, shell material, and carbonate matrix is stained by hematite pigments; most of the allochthonous glauconite has been altered to hematite

300-310 Sand - deep-red; coarse-grained, fairly well-sorted; 30% iron-oxide stained, subrounded quartz, 70% hematite after allochthonous glauconite

MATTAPONI FORMATION (310-330')

310-320 Sand - black, with reddish cast, clean, a few shell fragments; 80% medium- to coarse-grained, variably altered, dominantly autochthonous glauconite; alteration to hematite is incipient to moderately advanced; 15% coarse- to very coarse-grained, subrounded to rounded quartz

320-330 " "

GEOLOGIC SUMMARY

	Rock Unit	Age
0-40'	Columbia Group	Pleistocene
40-208'	Yorktown Formation	Miocene
208-268'	Calvert Formation	Miocene
268-310'	Nanjemoy Formation	Eocene
310-330'	Mattaponi Formation	Paleocene - Late Cretaceous

Virginia Division of Mineral Resources
Robert H. Teifke, Geologist
October 23, 1967

Robert H. Teifke
March 3, 1972

90-100 Sand and Shell - light-gray clay binder; 50% coarse pelecypod shell fragments; 50% medium-grained, well-sorted, subangular to subrounded sand; clear quartz; trace of glauconite

100-110 Sand and Shell - light-gray clay binder; 30% pelecypod shell fragments; 70% fine- to medium-grained, fairly well-sorted, subangular quartz sand; trace of glauconite; a few echinoid spines and miliolid foraminifers

110-120 " "

120-130 Sand - greenish-gray, trace of clay; fine-grained, very well-sorted, angular; clear- to green-tinted quartz; slightly glauconitic and muscovite; trace of shell

130-140 " "

140-150 Sand - brown clay binder; fine grained, well sorted, angular; clear quartz; slightly glauconitic; trace of shell

150-160 Sand - moderately abundant matrix of medium-gray clay; fine- to very fine-grained, fairly well-sorted, angular; 10-15% glauconite, traces of phosphorite and muscovite; trace of shell

160-170 Sand - abundant greenish-gray clay; fine-grained, well sorted, angular; clear to greenish quartz; 2-5% glauconite; traces of phosphorite and muscovite

170-180 Clay - grayish-brown, sandy; sand is fine, fairly well-sorted, angular; traces of glauconite, phosphorite, and muscovite

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220-230 Clay - greenish-brown, abundant coarse-grained silt to very fine-grained sand, well sorted, angular; clear to greenish quartz; a few foraminifers