

OWNER: Va. Dept. Cons. & Development (Dept. of Forestry) VDMR #218
DRILLER: R. L. Magette WWCR #51
COUNTY: Norfolk TOTAL DEPTH: 640'

GEOLOGIC LOG

Columbia Group (0-30')

- 0-10 Sand — buff; clean, fine grained, very well sorted, angular to subangular; clear to iron-stained quartz, a few grains of feldspar, and a varied and abundant suite of "heavy" minerals.
- 10-20 Sand — gray; clean, fine grained, well sorted, angular to subangular; clear quartz, and a varied suite of "heavy" minerals.
- 20-30 Sand — buff; clean, fine to medium grained, well sorted, angular to subangular; "heavy" minerals abundant, hornblende present.

Chesapeake Group (30-420')

- 30-40 As above — but with a few small fragments of pelecypod and gastropod shell, and a few foraminifers.
- 40-50 Sand — buff; slightly argillaceous; medium grained, well sorted, subangular; clear quartz with about 10% comminuted shell (pelecypods, gastropods echinoid spines) and a very few foraminifera (miliolids).
- 50-60 * Sand and Shell — gray, moderately silty (10% coarse silt and silt-size shell debris); medium-grained, fairly well sorted; sand (90%) composed of subequal amounts of subangular quartz and moderately abraded shells and shell fragments; traces of magnetite, glauconite, and hydrous iron oxides after glauconite; pelecypods, gastropods, scaphopods, bryozoa, corals, echinoid spines and plates; abundant ostracods and foraminifers.
- 60-70 Sand — yellow; slightly silty and argillaceous; fine to medium grained, well sorted subangular; small amount of magnetite; about 10% molluscan shell fragments.
- 70-80 Sand and Shell — yellow and gray slightly silty; fine to medium grained (skewed fine), well sorted sand composed of angular to subangular quartz (60-70%), and abraded molluscan shell fragments (30-40%); small amount magnetite, and traces of glauconite and brown epidote; a few echinoid spines and corals.

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- 80-90 Sand — buff, slightly argillaceous; medium grained, well sorted, subangular to subrounded; traces of glauconite and magnetite; about 10% molluscan shell fragments.
- 90-100 Sand and Shell — yellow and gray, very slightly silty; fine- to coarse-grained (skewed fine), moderately sorted, subangular to subrounded quartz sand (50-60%) and coarser (1-6 mm) abraded molluscan shell fragments (40-50%); trace of glauconite; a few echinoid spines and poorly preserved foraminifers (miliolids noted).
- 100-110 "
- 110-120 "
- 120-130 "
- 130-140 No sample.
- 140-150 Sand and Shell — buff and gray, very slightly silty and argillaceous; subequal amounts of medium-grained, fairly well-sorted, subangular to subrounded quartz sand and coarser (1-6 mm), slightly abraded pelecypod shell fragments; scattered gastropod shell fragments and echinoid spines; 2-5% fresh glauconite and a trace of garnet; a very few ostracods and poorly preserved foraminifers (miliolids).
- 150-170 No sample.
- 170-180 Sand and Shell — brown and gray, slightly silty and argillaceous; fine to medium grained, fairly well sorted, subangular to subrounded quartz sand (60-70%) and coarser (1-6 mm), slightly abraded pelecypod shell fragment (30-40%); a few bryozoa, gastropods, and echinoid spines; about 5% fresh medium-grained glauconite and a trace of phosphorite; a very few poorly preserved foraminifers and ostracods.
- 180-190 "
- 190-200 "
- 200-210 Sand — brown, moderately argillaceous; fine to medium grained, fairly well sorted, subangular; small amount of fresh glauconite; about 20% coarser (1-4 mm), abraded pelecypod shell fragments; a few gastropods, echinoid spines, and poorly preserved foraminifers.
- 210-220 "
- 220-230 "

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- 230-240 Sand -- brown, moderately argillaceous; fine to medium grained, fairly well sorted, subangular; small amount of fresh glauconite; about 20% coarser (1-4 mm), abraded pelecypod shell fragments; a few gastropods, echinoid spines, and poorly preserved foraminifers.
- 240-250 Sand and Shell -- brown and gray, moderately silty and argillaceous; fine-grained, moderately sorted, subangular quartz sand (60-70%) and coarser, abraded pelecypod shell fragments (30-40%); very slightly glauconitic; a very few foraminifers.
- 250-260 "
- 260-270 "
- 270-280 "
- 280-290 Sand -- brown, moderately silty and argillaceous; fine grained, moderately sorted, subangular; about 10% pelecypod shell fragments; very slightly glauconitic; a very few echinoid spines, foraminifers, and ostracods.
- 290-300 No sample.
- 300-310 Sand -- brown, moderately silty and argillaceous; fine grained, moderately sorted, subangular; about 10% pelecypod shell fragments; very slightly glauconitic; a very few echinoid spines, foraminifers, and ostracods.
- 310-320 "
- 320-330 Sand -- brownish-gray, argillaceous, moderately silty; very fine to medium grained, rather poorly sorted, angular to sub-rounded; 1-2% fresh glauconite; traces muscovite, garnet, kyanite; 2-5% shell fragments of pelecypods, gastropods, echinoid spines and plates; a few foraminifers.
- 330-340 "
- 340-350 "
- 350-360 "
- 360-370 "
- 370-380 No sample.

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380-390 Sand — brownish-gray, very argillaceous; fine to very fine grained, fairly well sorted, subangular to subrounded; trace of glauconite; a few pelecypod and gastropod fragments, echinoid spines, and foraminifers.

390-400 "

400-410 Sand — brownish-gray, argillaceous; fine to medium grained, rather poorly sorted, subangular; trace of glauconite; 5% pelecypod shell fragments; a few bryozoa, echinoid spines, and foraminifera.

410-420 "

Pamunkey Group (420-620')

420-430 Sand — brownish-gray, very argillaceous; fine grained, fairly well sorted, angular to subangular; slightly glauconitic (5-10% fresh, relatively coarse-grained glauconite); traces of magnetite, muscovite, brown epidote, and yellow-brown phosphorite; small amount pelecypod shell fragments and a few gastropods (*Turritella*) and echinoid spines and plates; a few foraminifers and ostracods.

430-440 "

440-450 "

450-460 * Sand — gray ("salt-and-pepper"), clean; medium to coarse grained, fairly well sorted; subequal amounts black to bright green glauconite and subangular to subrounded quartz; about 5% chalky shell fragments, scattered fragments of glauconite-quartz-bearing limestone, and traces of pyrite, garnet, phosphorite; a few bryozoa, fish teeth, small gastropods, and foraminifers including Robulus, Nodosaria, Dentalina, Textularia.

460-470 more limestone fragments and fewer fossils.

470-480 Sand — gray ("salt-and-pepper"), slightly argillaceous; fine to very coarse grained, poorly sorted, variably rounded; subequal amounts of black to green glauconite, and quartz; minor shell and limestone fragments; a few poorly preserved foraminifers.

480-490 "

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- 490-500 Sand — brownish gray, very argillaceous; poorly sorted quartz and fresh glauconite; a few chalky pelecypod shell fragments and poorly preserved foraminifers.
- 500-510 "
- 510-520 "
- 520-530 " (Nodosaria, Dentalina)
- 530-540 "
- 540-550 "
- 550-560 * Sand — gray ("salt-and-pepper"), moderately argillaceous (buff clay); medium grained; moderately sorted; 65-75% subangular quartz and 25-35% fresh to slightly oxidized glauconite; scattered grains of pink garnet and fragments of brown phosphorite; a few echinoid spines and plates, pelecypod shell fragments, shark teeth, foraminifers, and ostracods.
- 560-570 "
- 570-580 more argillaceous, more poorly sorted.
- 580-590 Sand — brown, argillaceous (brown clay); poorly sorted; about 80% quartz, 20% glauconite; traces of muscovite, garnet, pyrite, phosphorite; scattered pelecypod shell fragments, echinoid spines, and foraminifers.
- 590-600 Sand — gray ("salt-and-pepper"), slightly silty and argillaceous; fine to coarse grained, rather poorly sorted; 65-75% subangular to subrounded quartz, and 25-35% glauconite; trace of garnet; small amount pelecypod shell fragments, and a few echinoid spines and foraminifera.
- 600-610 "
- 610-620 coarser, less glauconitic.
- Potomac Group (620-640')
- 620-630 Sand — grayish brown, slightly argillaceous and silty; very fine to very coarse grained, poorly sorted, subangular to subrounded; 5-10% glauconite; scattered grains of potassic-feldspar; traces of garnet and muscovite; scattered pelecypod shell fragments.

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630-640 Sand — gray, clean; medium to very coarse grained, moderately sorted, subangular to subrounded; about 5% fresh glauconite; slightly feldspathic (fresh potassic-feldspar); trace of garnet; a few shell fragments.

GEOLOGIC SUMMARY

	<u>ROCK UNIT</u>	<u>TIME ROCK UNIT</u>
0-30	Columbia Group	Pliocene-Pleistocene
30-420	Chesapeake Group	Miocene
420-620	Pamunkey Group	Eocene
620-640	Potomac Group	Lower Cretaceous

* Microfossil separations made.

Virginia Division of Mineral Resources
Robert H. Teifke, Geologist
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