GENERAL GEOLOGIC SECTION

PCS Phosphate Co., Inc. — Aurora, NC

1. Farmer's clay - Sand, silt and organic debris in a clayey matrix. Tan, gray to black in color, usually with limonitic streaks. Sometimes occurs as a black organic rich peaty clay and mud.

2. Surface Sands - Fine grained sand to silt being organic and slightly clayey. Variegated tan to gray in color. Sometimes occurs as variable clean quartz sand with clay lenses. Some heavy minerals present. Occurs flat to cross-bedded with limonitic incrustations. Toward base of unit color darkens and sand size is greater sometimes containing pebbles and striated igneous rocks from "Ice Rafts".

3. Post-Croatan Sands - Blue gray silty to sandy mud and clay with abundant (*Mulinea*) pelecypod and gastropod shells. This unit contains mica and heavy minerals. Also, in the matrix are various types of organic matter. Many of the fossils found in this unit are in "life position".

4. Gumbo Clay - Blue gray to dark brown or black sandy to pure clay. Top of this unit contains much sand and silt with layers of peat, sand and organics such as roots and wood fragments. Center of unit is very impervious, greasy pure clay. Base of unit sometimes contains abundance of organic debris and sand streaks. Base may be black or brown in color and occasionally becomes a "coon" oyster bioherm.

5. Sugar Sands - Poorly sorted, white to gray, fine to very coarse, angular to sub-rounded quartz sand. Sand is sometimes translucent. Rarely contains organics. Heavy minerals and mica do occur. High angle cross-bedding is evident sedimentary structure. Base of unit becomes very coarse quartz sand and gravel. Sometimes containing gray clay lenses throughout unit. Occasionally this unit may overlie or be completely replaced by Croatan clay, which is a shelly dense clay.

6. Shell Bed - Blue green clayey silty shell hash to shelly sand. Abundant glauconite sand and silt throughout. Very fossiliferous unit containing wide variety of pelecypods, gastropods, and coelenterates. Sharp unconformable, undulatory contacts are found both above and below this unit. Channels in the upper surface are filled by sand from the overlying unit. Also, this unit may grade into a finer shell hash with coarse sand and pebbles as it may "scour" out underlying Yorktown clay sometimes quite deeply in old drainage patterns. Base of unit sometimes includes hard limonitic concretions of glauconitic sand cemented by $CaCo_3$, known as "Boulder Bed". Drainage from base of unit "weeps" at contact with underlying clay forming distictive iron oxide stained streaks on exposure of clean face.

7. Yorktown Clay - Light gray silty to sandy, semi-indurated cast and moldic *Turritella* clay. May be a marly sand at times.

8. Light green-gray silty stiff marly clay with minor shelly streaks and occasional cast and moldic *Turritella* streaks.

9. Green-gray semi-indurated marly clay with occasional bone fragments, lignite and mushy shell fragments.

10. Green-gray stiff silty marly clay with occasional quartz sand streaks. Also contains abundant echinoid spines. Base of unit sometimes contains large black phosphatic pebbles.

11. Light gray sandy stiff marly clay with abundant pecten shells, reworked phosphate pebbles, phosphatic bones, and teeth.

12. Dark green phosphatic sandy clay. Composed mostly of reworked materials including pebbles and fossils that have been phosphatized. Sometimes containing chalky, mushy, shell fragments and abundant quartz pebbles and sand streaks. At base of unit an abundance of large phosphatic pebbles.

13. Chartreuse Bed - Yellowish green sandy bryozoan hash. Contains only sparse fine grained phosphatic black sand.

14. Coquina Beds - Interbedded soft to indurated marly gray clay and white coquinoid limestone with rich black clayey phosphatic sand. This unit contains abundant variety of fossils and black vuggy - phosphatic pebbles known as microsphorite.

15. Phosphate Ore Matix - Black to olive green clayey fine grained phosphatic sand with minor fossil remains.

16. Light green semi-indurated phosphatic clay. Slightly calcareous with some dolo silt and quartz sand streaks. Also with minor pebbles and fossil remains.

17. Olive green to black clayey fine grained phosphatic sand with minor fossil remains.

18. Dolostone Unit - Indurated gray to light green dolostone. Forms as lenticular deposits in ore body. Phosphate pebbles and clam borings are present. Unit may contain very hard light green siliceous streaks.

19. Olive green very clayey phosphatic sand. Clay content increases with depth. Abundant coarse phosphatic pebbles and fossils found at base. Base of ore matrix.

20. Caprock - Hard light green fine grained dolomitic sandstone. Contains abundant quartz and phosphatic pebbles and cast and molds of pelecypods. Some calcite also present.

21. Lean Ore - Olive green fossiliferous slightly phosphatic clay. Very abundant phosphate pebbles and fossil remains. Also in matrix are large quartz pebbles. Sparse dolomitic and phosphatic sand present. At base of unit exists an erosional surface which is dense black phosphate replacing vuggy limestone.

22. White to tan cast and moldic coquinoid limestone. Artesian aquifer. Top of unit contains loose quartz sand in lattice grading to vuggy limestone, loosely cemented to hard, with beds of various coarse to fine textured coquina. Bottom of section becomes a glauconitic silty, shelly clay. Average thickness is ±250'.

PRESTRIPPING

STRIPPING

MINING

From Mine Blood #10
October 1983
Logged by:
Lt. "Tex" Gilmore, C.P.G.
Drawn by: SGR (1986)
Revised May 6, 1997