

TECHNICAL PUBLICATION SJ 80-7
RESULTS OF TEST DRILLING
AND MATERIALS INVESTIGATION
OF BORROW AREAS

By

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St. Johns River Water Management District
Palatka, Florida
July 1980

Project Number 2002319

MEMORANDUM

DATE: July 11, 1980

TO: Ralph T. Garver 

THROUGH: Douglas A. Munch 

FROM: Frederick W. Ross  F.W.R.

SUBJECT: Results of Test Drilling and Materials
Investigation of Borrow Areas
Project No. 2002319

BACKGROUND

During the past eight years, the St. Johns River Water Management District has been mining a shallow deposit of shell material less than 20 feet deep for use in road maintenance and levee construction. One of two borrow pits on District property within the Bull Creek Wildlife Management Area, Osceola County (Figure 1), currently supplies 100% of the District's needs. In addition, Osceola County occasionally requests access to the pit. Prior to completion of this investigation, there were no estimates of future reserves of this deposit or where to find additional shell material once the present supplies run low.

LOCATION

Six locations within the Bull Creek Wildlife Management Area, Osceola County, and owned by the District were examined as potential sources of shallow shell deposits (Figure 2). Exploration in Areas A and B represent efforts to quantify future reserves in areas known to have contained usable deposits of shell material. Exploration in Areas C through F was an attempt to find new reserves of recoverable shell in desirable locations with respect to existing roads and levees.

A total of 14 test holes were drilled during the period June 23 through July 2--three each in Areas A, B, and C; two each in Areas D and E; and one in Area F. Test holes ranged in depth from 25 to 55 feet and averaged about 30 feet in depth. Due to physical constraints on the depth that our equipment can mine, it was considered impractical to explore much beyond depths of 30 feet. The locations and descriptions of the test holes is attached.

CONCLUSIONS AND RECOMMENDATIONS

Test holes 1, 2, and 3 indicate that an abundant layer of shell from 10 to 15 feet thick and 14 to 22 feet in depth underlies a portion of Area A. The unmined shell extends from the west wall of the pit to about 150 feet west of the pit occupying an area of approximately 30,000 square feet. Reserves should provide an additional 40,000 cubic yards of material or a 10 to 20-year supply provided the District is the sole user and no new construction is undertaken.



FIGURE 2. -- Aerial Photo (1:80,000) of Bull Creek Wildlife Management Area and Locations of Testing Areas (A-F)

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The north edge of the abandoned pit in Area B contains an extensive layer of shell, sand, clay, and limestone at depths greater than 25 feet. Due to the excessive depth and unclean nature of the deposit, this area cannot be considered as a prime source of shell material. No shell was present in test hole 6 located .4 mile north of the pit near the gate to US 192.

Test holes 7 through 9 in Area C and 10 and 11 in Area D were non-productive. There does not appear to be significant amounts of shell present at shallow depths on the west side of levee L-73 between the structure and US 192.

The area west of levee L-73 and 1.25 miles south of the structure (Area E) proved to be the most promising of the new areas investigated for shell material production. Eight feet of shell was found at depths of about 24 feet in test holes 12 and 13 drilled in this area. In Area F, four miles south of the structure and west of levee L-73, minor amounts of shell were encountered.

As time permits, an expanded program of test drilling along the west side of levee L-73, south of the structure near Area E, should reasonably delineate the configuration of the shell deposit encountered here. The data will then be on hand should the mining of additional reserves of shell become necessary. The acquisition of the augering equipment should help to expeditiously complete this project.

FWR:jmf
Attachments

cc: Larry Maddox - with attachments

Library

LOCATIONS AND DESCRIPTIONS OF TEST HOLES

AREA A

Test Hole No. 1

150 feet west of N.W. corner of borrow pit

<u>Depth (feet)</u>	<u>Description</u>
0-14	Fine sand, clayey sand, and some partially cemented sand and limestone
14-25	Abundant light tan shell with a little fine sand
25-30	Light tan shell with some green clay--not as clean or as abundant as above
30---	Dark gray limestone with some shell

Test Hole No. 2

150 feet west of S.W. corner of borrow pit

0-4	Fine sand
4-10	Cream and white limestone and partially cemented sand
10-22	Fine sand
22-32	Light tan shell with some sand--not as clean or as abundant as in test hole No. 1
32---	Dark gray limestone

Test Hole No. 3

250 feet west of borrow pit

0-5	Soft, light gray-green clayey sand
5-15	Fine brown sand with some clay
15-29	Soft gray-green sandy clay
29-30	Light tan shell
30-35	Hard, dark gray limestone with some tan shell and sand

AREA B

Test Hole No. 4
Northeast side of abandoned pit

<u>Depth (feet)</u>	<u>Description</u>
0-3	Fine sand
3-5	Cream, sandy clay
5-20	Gray and brown clayey sand
20-25	Hard, dark gray limestone with some tan shell

Test Hole No. 5
Northwest side of abandoned pit

0-5	Fine sand with some cream limestone and partially cemented sand
5-10	Hard, cream limestone (hardpan)
10-15	Light green clayey sand
15-23	Brown clayey sand
23-25	Tan shell with some dark gray limestone
25-40	Tan shell and dark gray limestone with some soft green clay
40-45	Tan shell
45-55	Tan shell and fine sand

Test Hole No. 6
.4 mile north of abandoned pit about
100 feet south of gate on US 192

0-5	Fine sand
5-15	Brown sand with some clay and partially cemented sand
15-35	White clayey sand

AREA C

Test Holes Nos. 7-9

No shell was encountered in holes in this area. Cuttings consisted mostly of fine sand and clay.

AREA D

Test Holes Nos. 10 and 11

No shell encountered in the two holes in this area. Test Hole No. 10 located in the wetlands near the old bridge contained some clear coarse-medium sand at 25 feet.

AREA E

Test Hole No. 12
1.25 miles south of the structure and
200 feet west of L-73

<u>Depth (feet)</u>	<u>Description</u>
0-5	Fine sand
5-24	Fine sand and clayey sand
24-32	Light tan shell with some fine sand
32-35	Tan shell with soft green clay
35---	Green clay and gray limestone

Test Hole No. 13
200 feet north of test hole No. 12

0-15	Fine sand
15-25	Fine sand and clayey sand
25-35	Light tan shell with some sand
35---	Tan shell and soft, green clay

AREA F

Test Hole No. 14
4 miles south of the structure and
200 feet west of L-73

<u>Depth (feet)</u>	<u>Description</u>
0-5	Fine sand
5-15	Fine sand with some cream clay
15-25	Fine sand and clayey sand
25-35	Soft green clay, gray limestone with some tan shell