Dredging Alternatives

While the Harper report contradicts its general conclusion that muck is the #1 exporter of nutrients in the supporting data and conclusions of the sediment core testing, there are many canals that do have elevated organic sediments (muck).

Example: Sediment organic content ranged from 0.1% to 20.9%, with an overall mean of 5.2%. Sediment organic content in excess of 20% to 30% are indicative of organic muck type sediments, with values less than that are either sand or mixtures of sand/muck, **suggesting a low amount of organic matter** in the sediments.

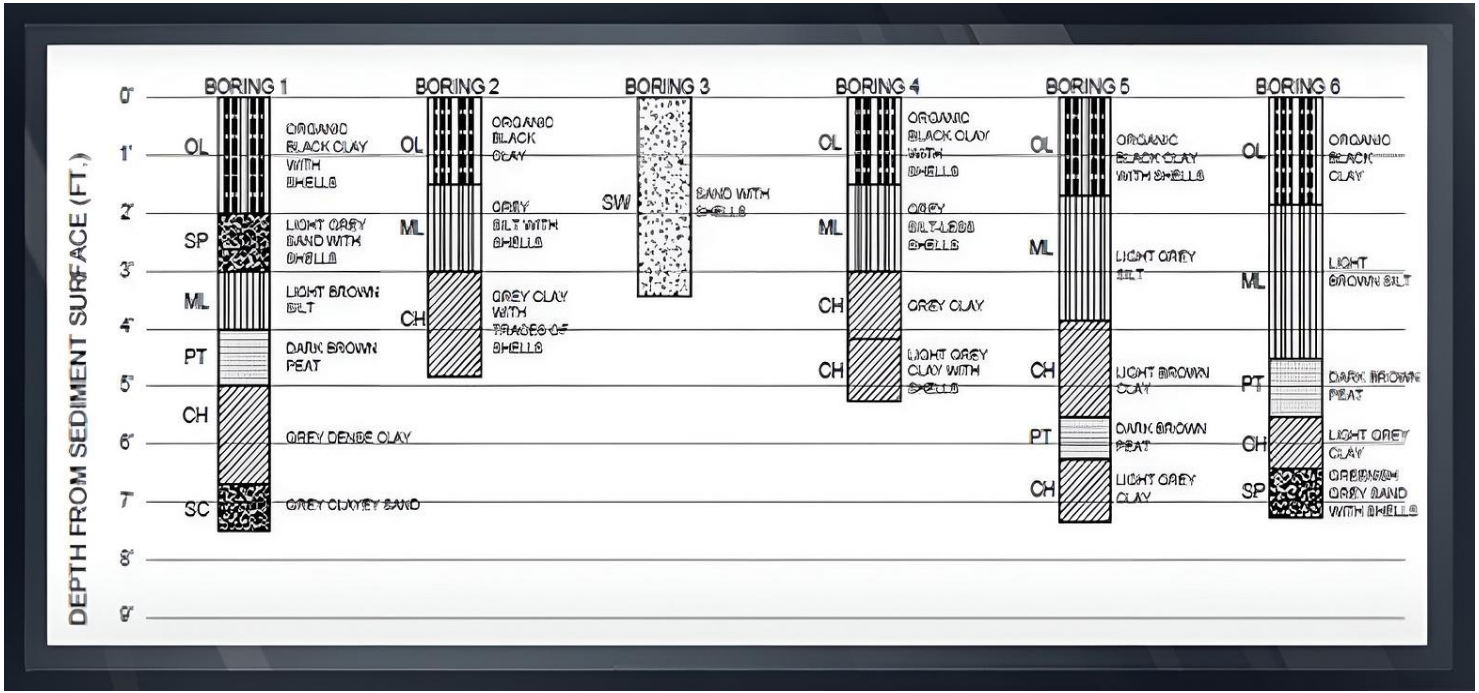
Florida’s Indian River Lagoon, North America’s most biologically diverse estuary is choking in muck. The lagoon stretches 165 miles along Florida’s East Coast.

It is well known that the muck must be removed to bring the lagoon back to a natural condition. What was not known, until an Arc/Aquares survey, was how to determine the exact location, thickness or the quantity of muck to be removed.

The objective of the survey was to locate the interface of muck with the natural uncontaminated bottom using advanced geophysical techniques and to develop a plan for **surgical excavation of muck.**

The Arc/Aquares survey generated 100% coverage of the test area waterway producing a 4D model of the subsurface isolating the **area of contaminated sediment to 1/3rd of the waterway.** The exact position and thickness of contaminated muck was obtained, including the interface with native bottom.

This survey reduces dredging costs by identifying areas for surgical excavation of only contaminated sediments, reducing unnecessary excavation of uncontaminated sediments to be placed in expensive and scarce disposal areas.


DEPTH FROM SEDIMENT SURFACE (FT.)
0'
1'
2'
3'
4'
5'
6'
7'
8'
9'
BORING 1
OL
ORGANIC BLACK CLAY WITH SHELLS
SP
LIGHT GREY SAND WITH SHELLS
ML
LIGHT BROWN SILT
PT
DARK BROWN PEAT
CH
GREY DENSE CLAY
SC
GREY CLAYEY SAND
BORING 2
OL
ORGANIC BLACK CLAY
ML
GREY SILT WITH SHELLS
CH
GREY CLAY WITH TRACES OF SHELLS
BORING 3
SW
SAND WITH SHELLS
BORING 4
OL
ORGANIC BLACK CLAY WITH SHELLS
ML
GREY SILT-LESS SHELLS
CH
GREY CLAY
CH
LIGHT GREY CLAY WITH SHELLS
BORING 5
OL
ORGANIC BLACK CLAY WITH SHELLS
ML
LIGHT GREY SILT
CH
LIGHT BROWN CLAY
PT
DARK BROWN PEAT
CH
LIGHT GREY CLAY
BORING 6
OL
ORGANIC BLACK CLAY
ML
LIGHT BROWN SILT
PT
DARK BROWN PEAT
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LIGHT GREY CLAY
SP
GREENISH GREY SAND WITH SHELLS


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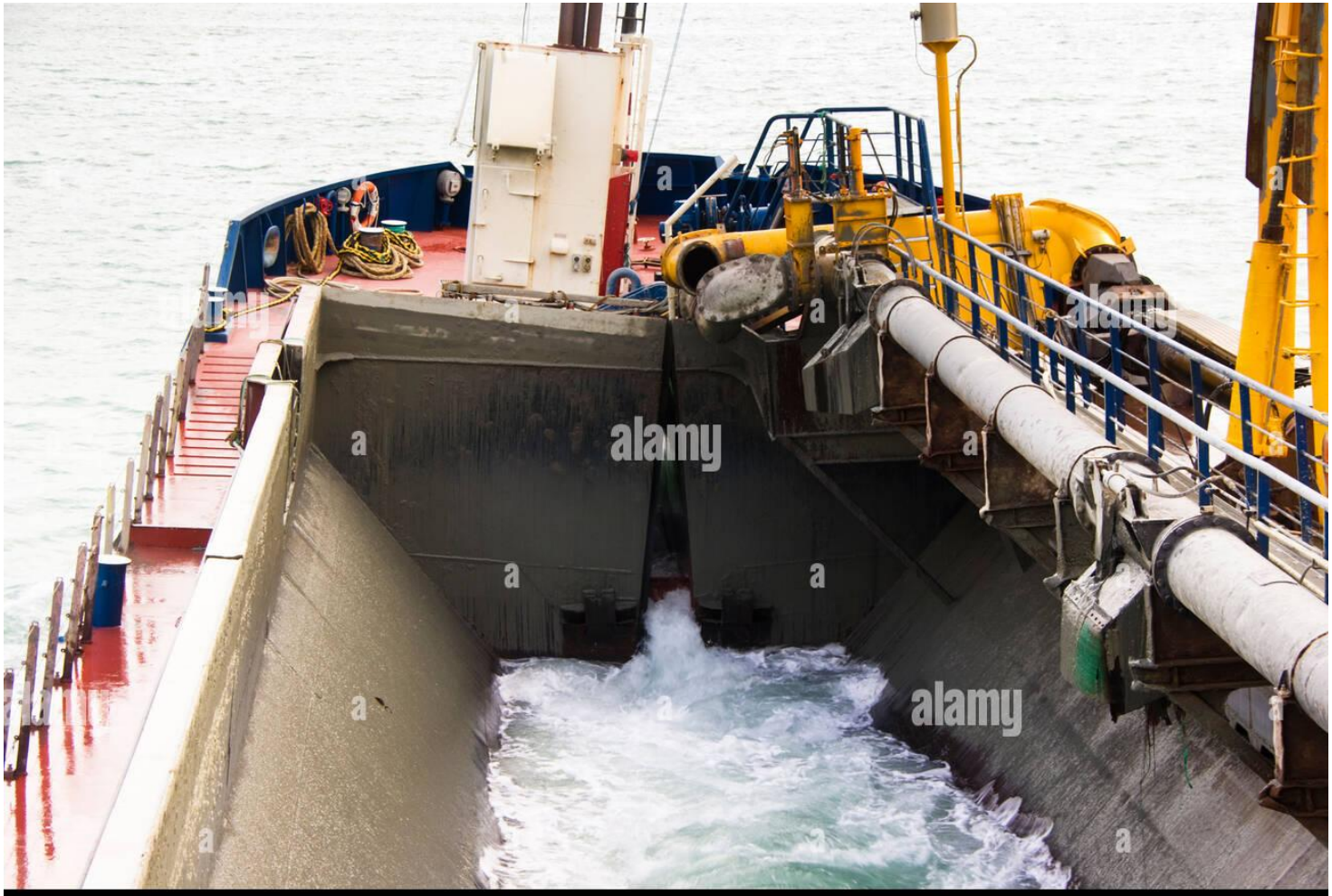

Hydraulic dredging shroud

Shroud developed at Indian River used with hydraulic dredging to increase the muck removal and leave the sand.

https://youtu.be/HmESfQZ6H3c

-There are some areas that are 20’+ and more around 17’ deep.

-These deep areas get no sunlight and are dead zones of muck accumulation.

-It may be possible to put spoils in these deep areas close to dredging sites and encapsulate with dense material.

-Similar cost savings without the islands and all the problems that come with it.

-Potential side benefit of raising the depth so sunlight can penetrate and create seagrass where it was dead before.