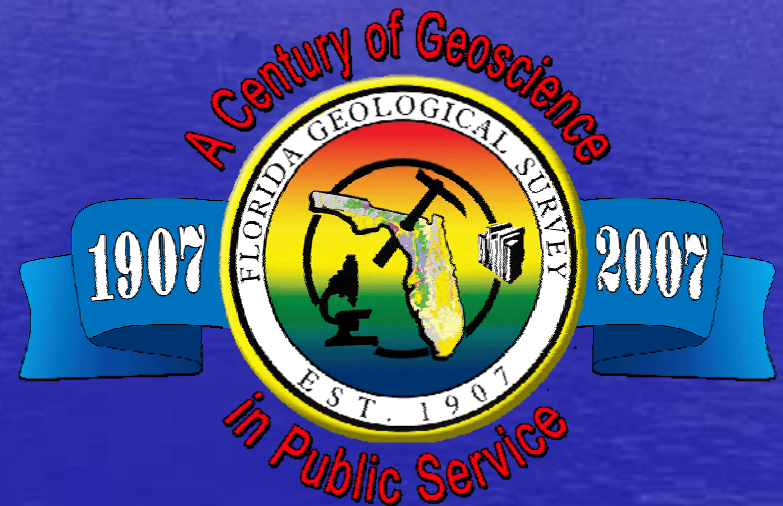


Coastal Research Program Florida Geological Survey Florida Department of Environmental Protection



Map of the Study Area



Field Instrumentation and Equipment Utilized



- A Marine Sonics Side Scan Sonar digital data acquisition system operating at 1200 kiloHertz.
- An Automatic bathymetric measurement system operating at 50 kiloHertz.
- Subaqueous surficial sediment samplers.
- Mala Ramac backpack based GPR system operating at 250 megaHertz
- A vibracoring system
- A hammer coring system

Granulometric Analysis

Beach Sediment Samples

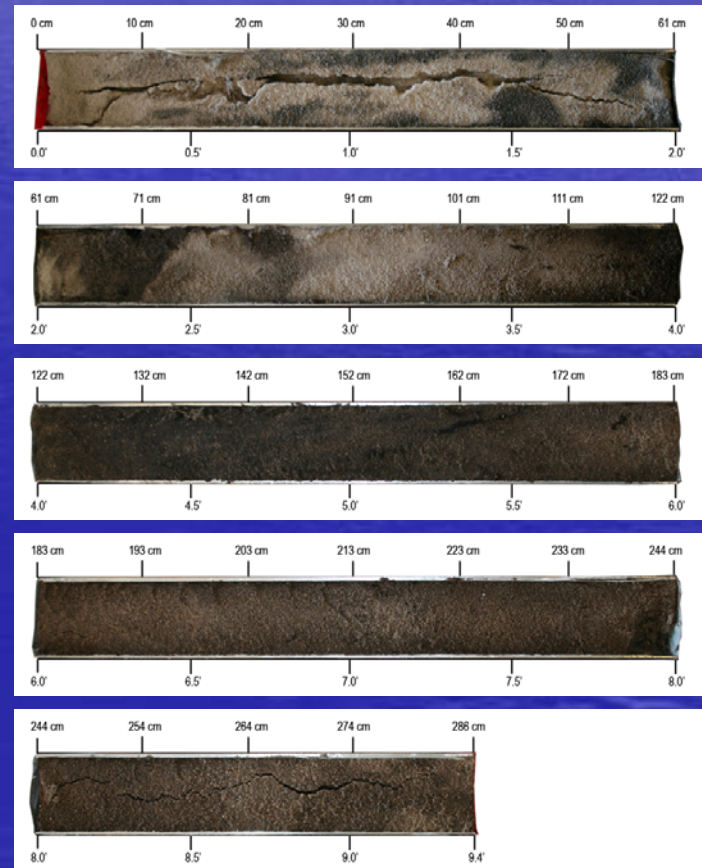


Hammer Cores



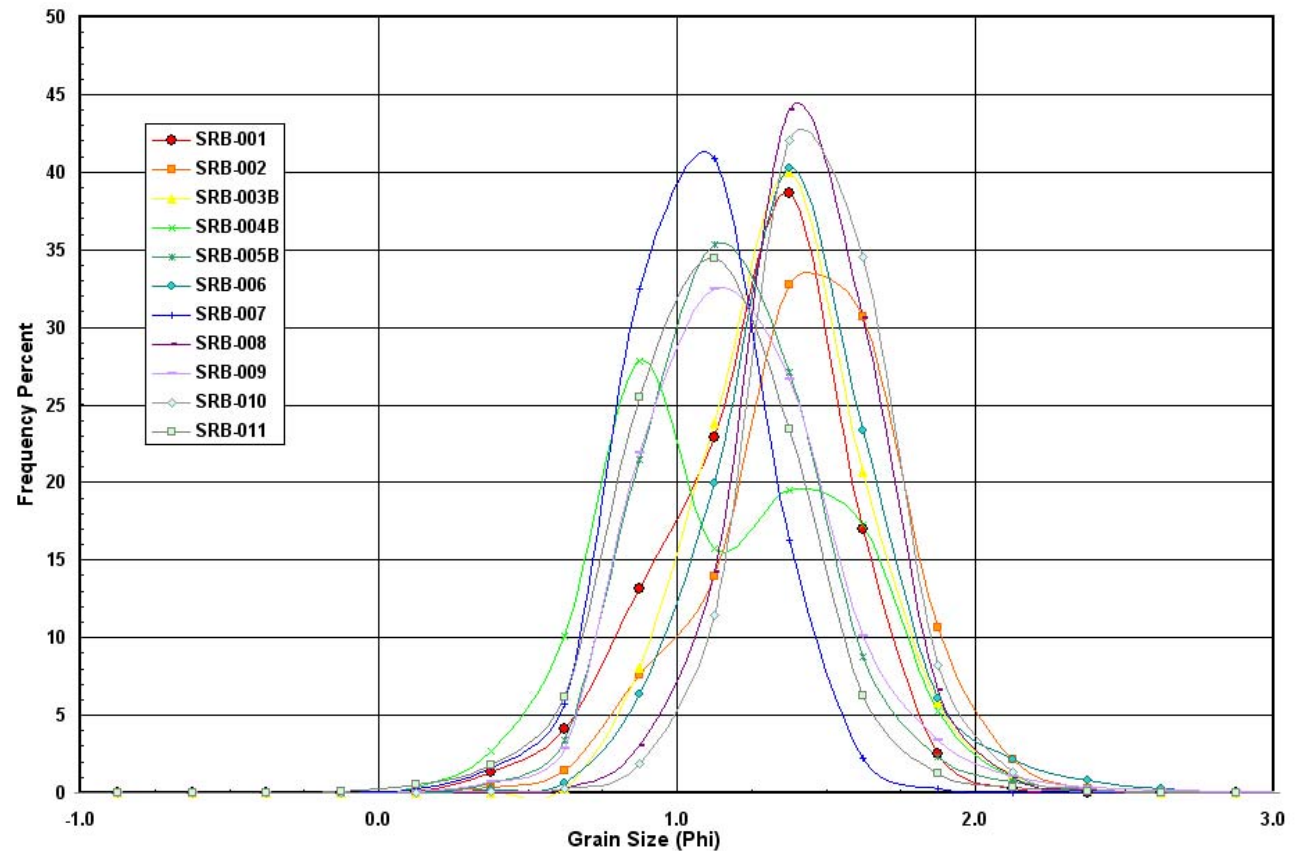
Vibracores

VSRB-04

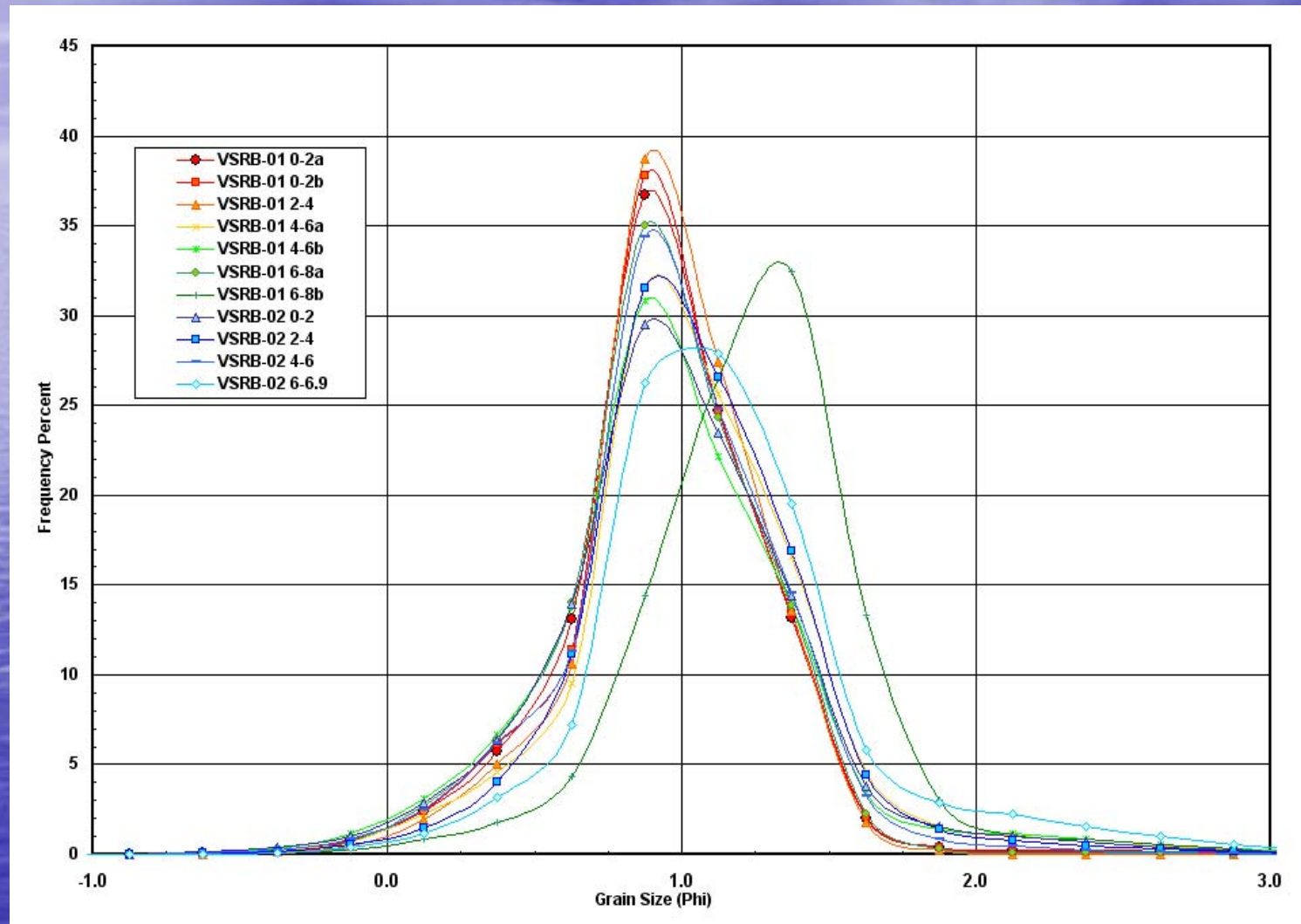


Island Beach Sample Sediments

- The south end of the island (SRB-001 through 003), in the area least affected by shoreline retreat, has finest grain sizes
- The north end of the island (SRB-004 through 007), where shoreline retreat is most pronounced, has coarser grain sizes
- Additionally, there appears to be a different dynamic going on regarding the narrow spit that connects the island to the mainland (SRB-008 through 011).

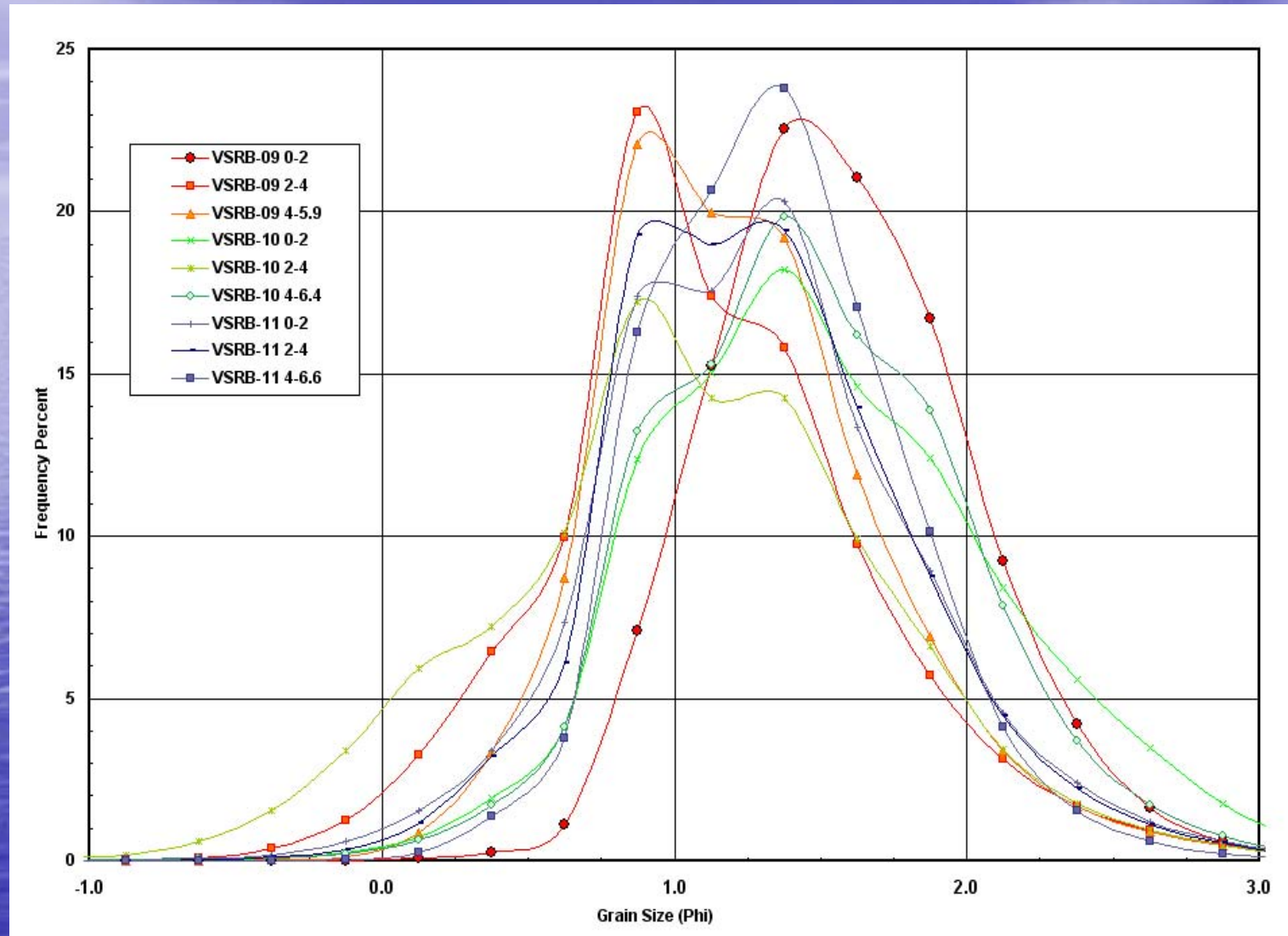


On-Island Proposed Borrow Site



The sediments from the proposed borrow site on the south end of the island were the coarsest of the two sites.

Off-Island Proposed Borrow Site



The off-island proposed borrow site sediment grain size distribution is strongly bimodal.

GSD Curve Comparison

- Graphical comparisons were done between the GSD curves of samples collected from vibracores taken from both potential borrow sites with:
 - Samples collected in the area to be remediated off the north end of the island (from hammer cores SRBC-01 and SRBC-03 and vibracore VSRB-08);
 - Samples collected from vibracore taken on the north end of the island (VSRB-04); and
 - Beach samples collected from the north end of the island peripheral to the area to be remediated (SRB-06 through SRB-09).

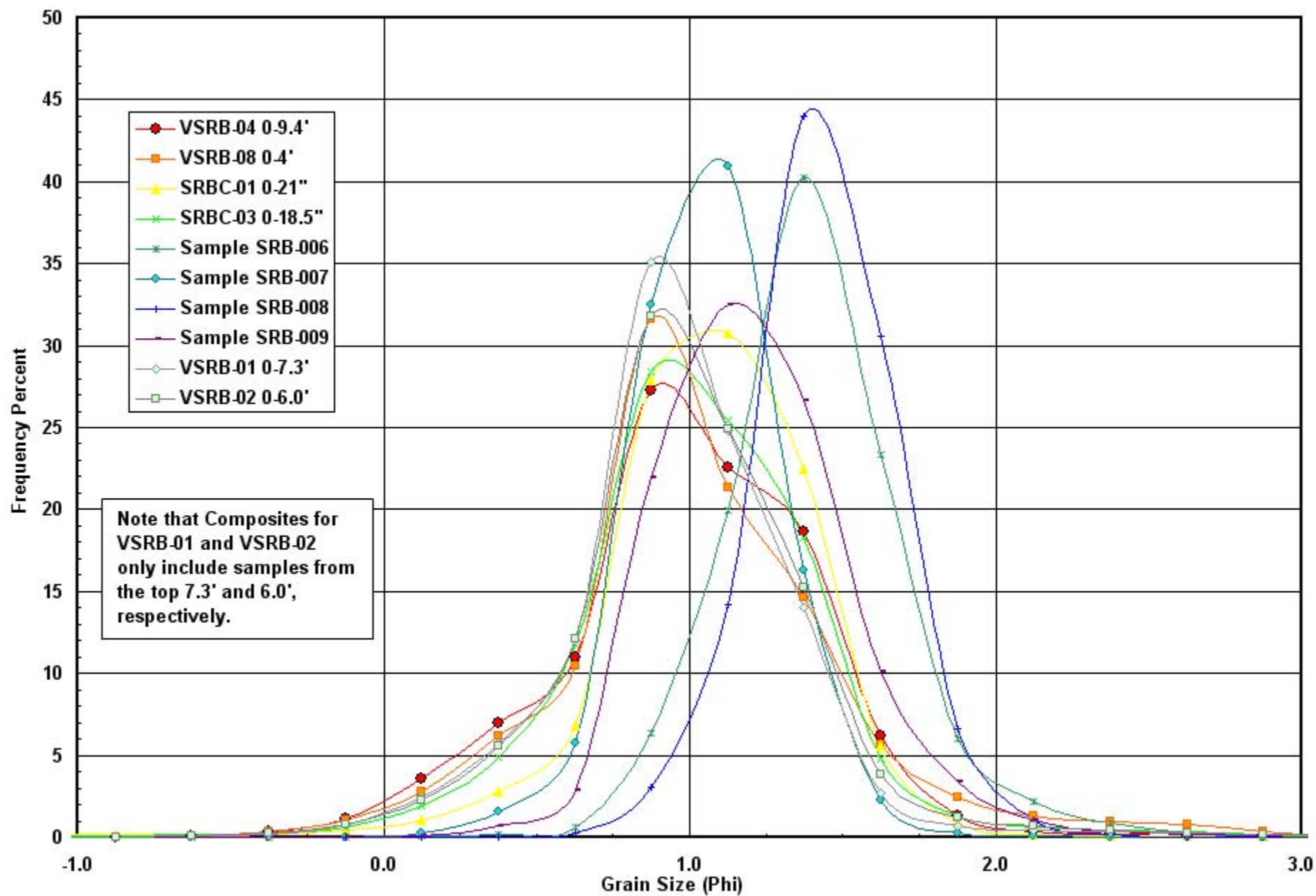


Figure 19 - GSD Curves of On-Island Proposed Borrow Site Vibracore Samples Compared with Samples from the Area to be Remediated

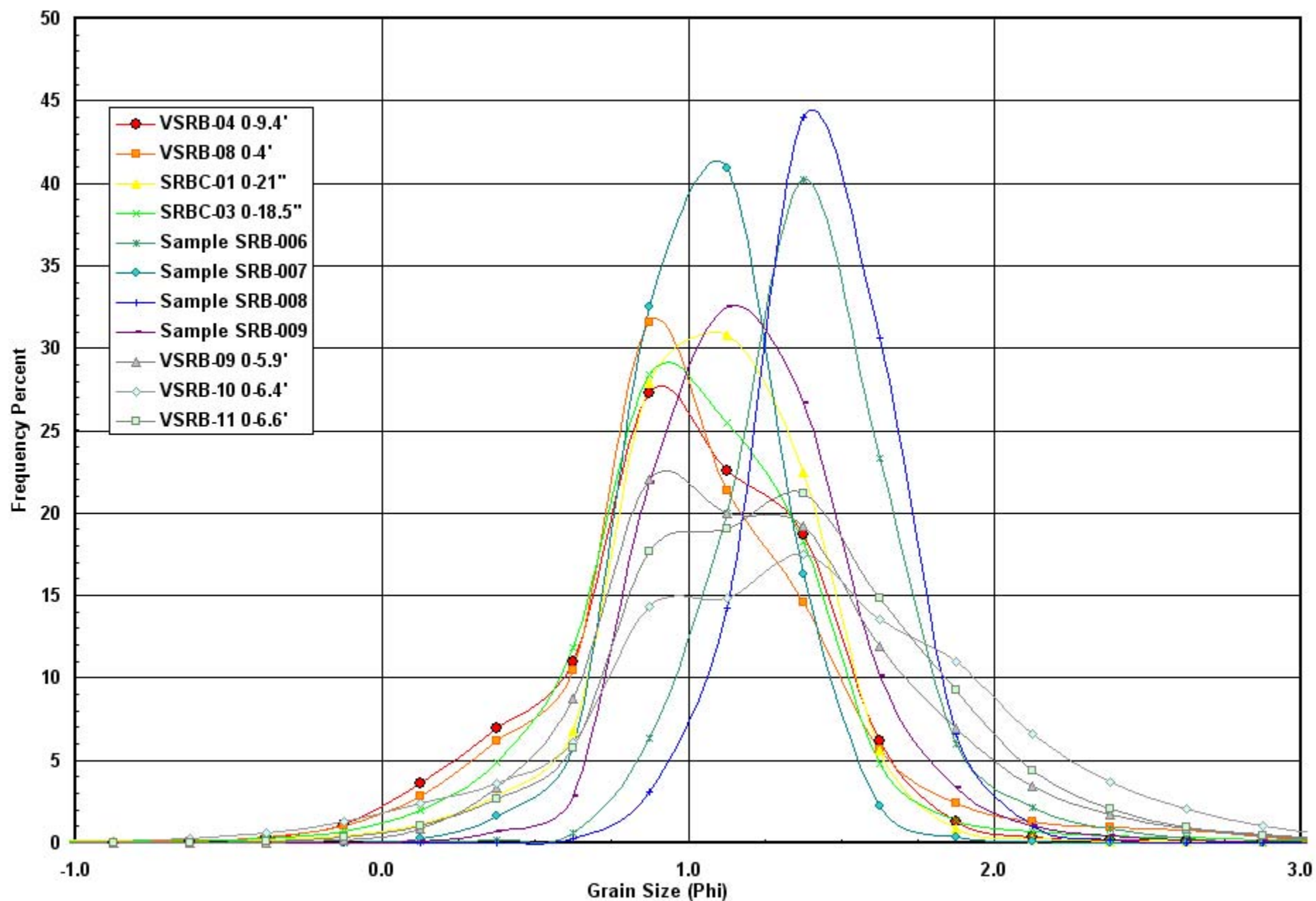


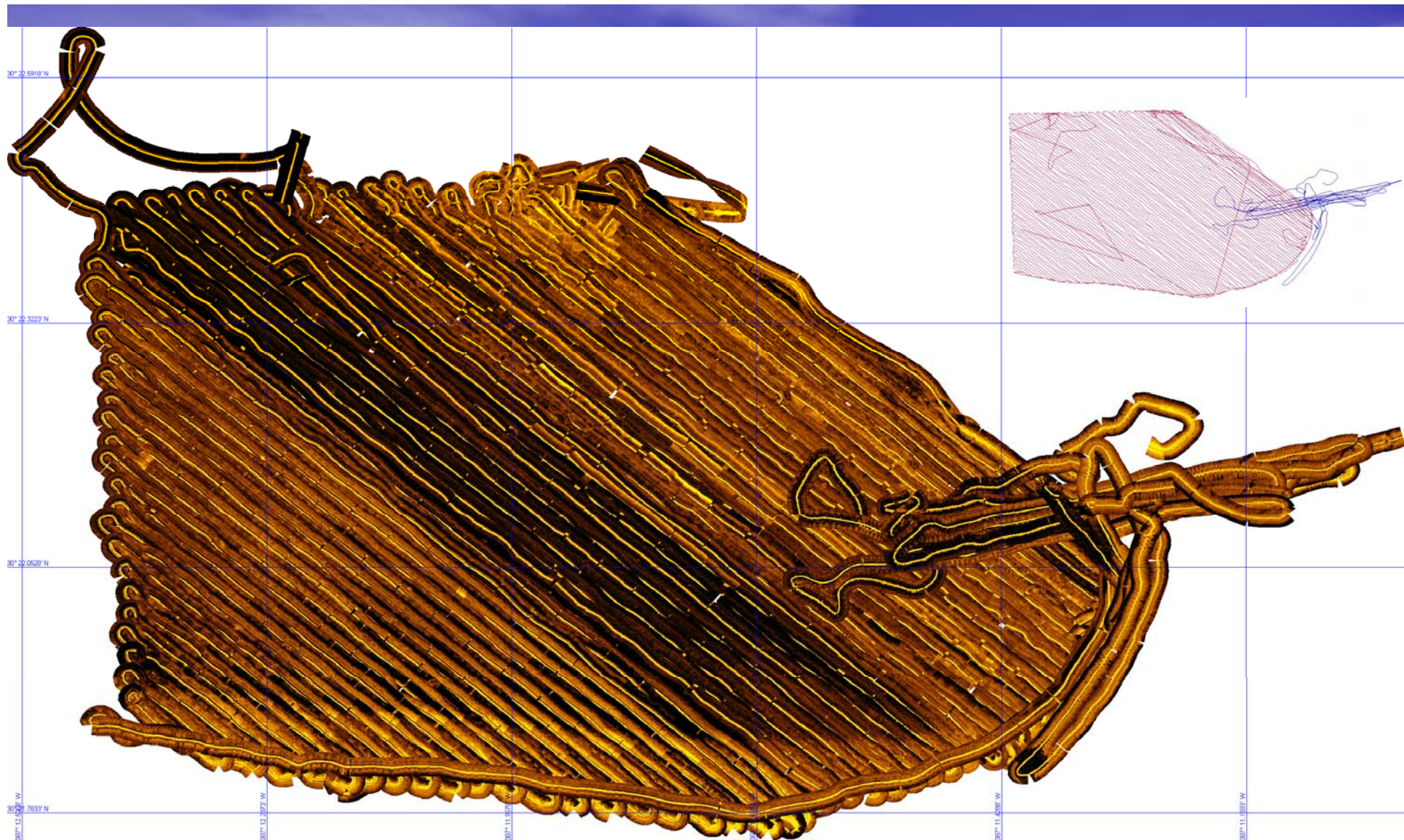
Figure 20 - GSD Curves of Off-Island Proposed Borrow Site Vibracore Samples Compared with Samples from the Area to be Remediated

A Side Scan Sonar Survey of Old Navy Cove and the Area off of Town Point

- The sound frequencies typically used in side-scan sonar surveys range from 100 to 1200 kHz. The higher frequencies yield better resolution but allow less side look range.
- The FGS conducted the survey using a 1200 kHz tow fish set at 20 meter side look (imaging a 40 meter/131.2 foot wide swath).
- The intended center line to center line distance was 15.2 meters /50 feet.
- This results in substantial overlap with each adjacent line and in significant redundancy in coverage.



Running the side scan survey



Side scan sonar mosaic of Old Navy Cove and the area off of
Town Point

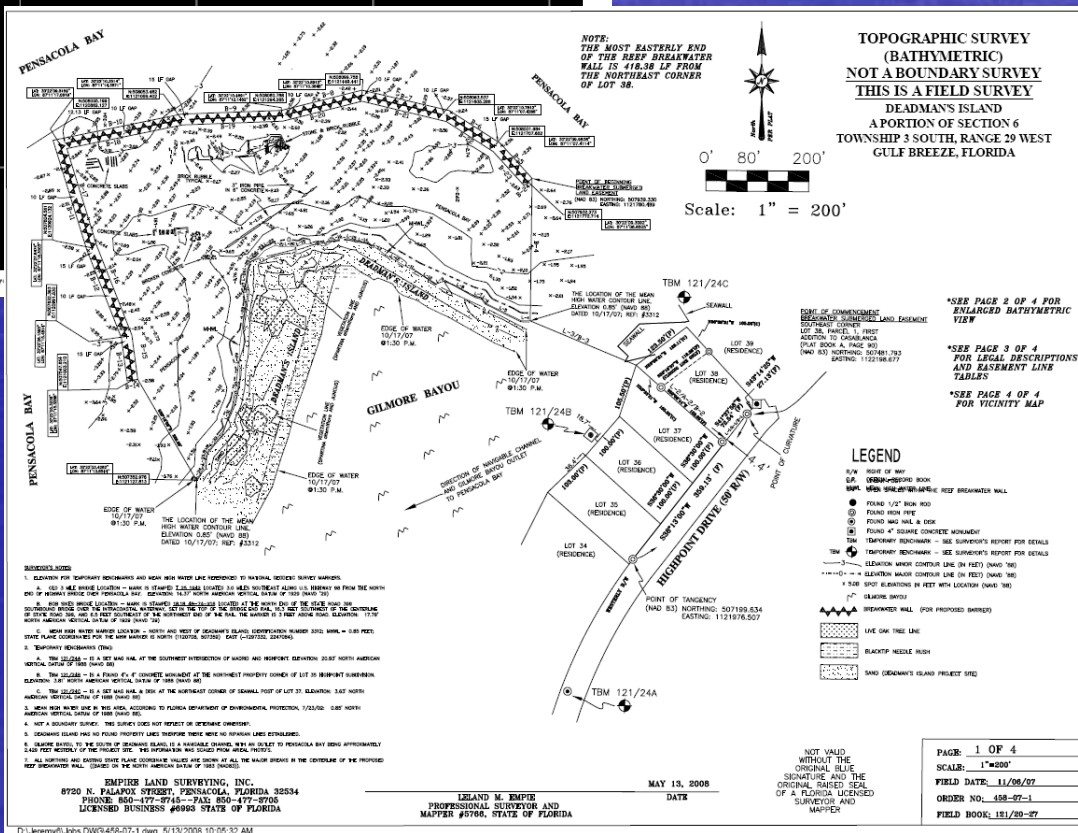
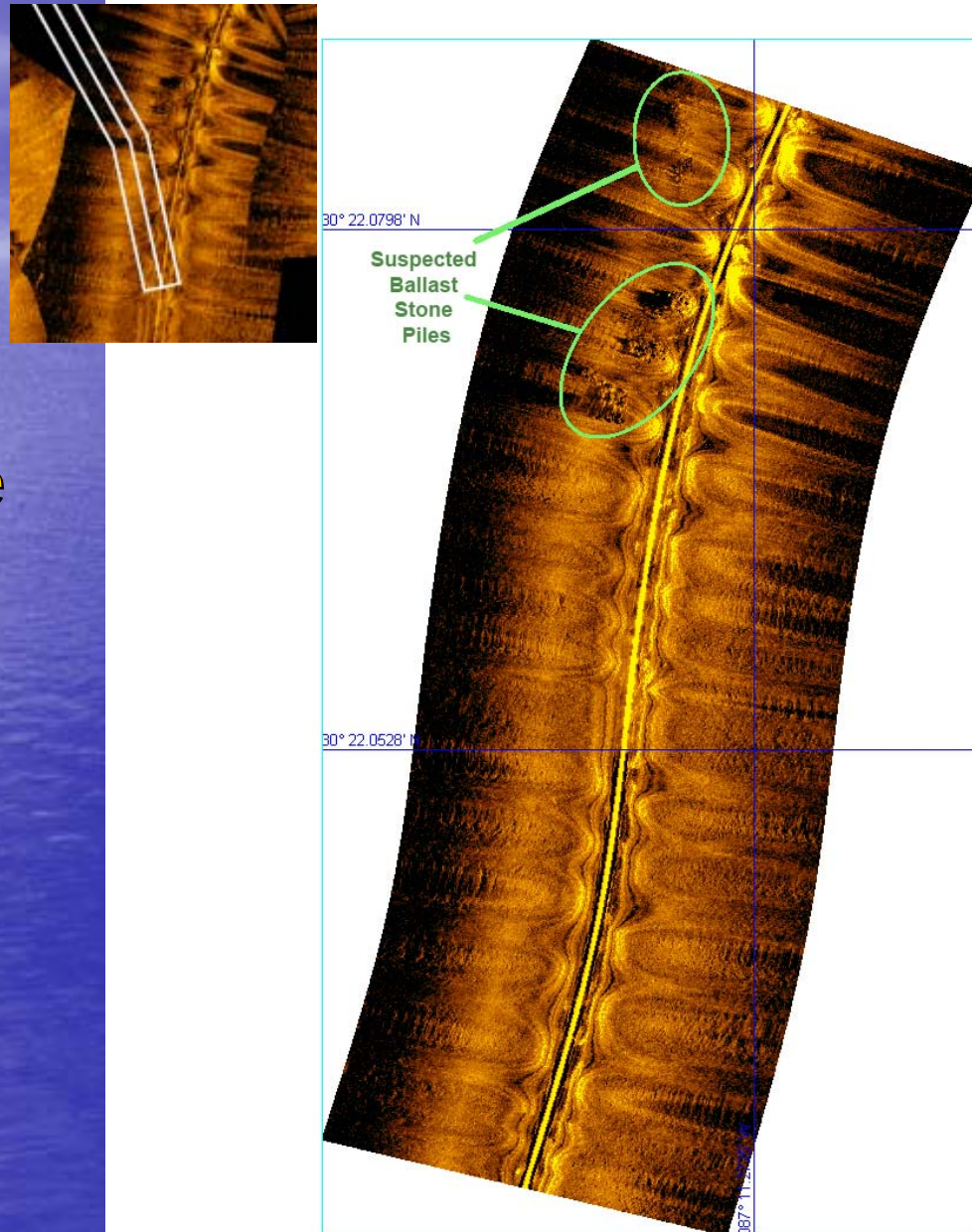


Figure 17 - Data Example from Side Scan Sonar Line: Targets Believed to be Ballast Stone Piles



Suspected
ballast stone
piles
potentially
intersected
by structure

FGS Coastal Program GPR Assets

- Mala Ramac backpack based GPR system
- Modern, all digital, fiber optic data transfer
- Sandmeier Reflexw analysis/interpretation software

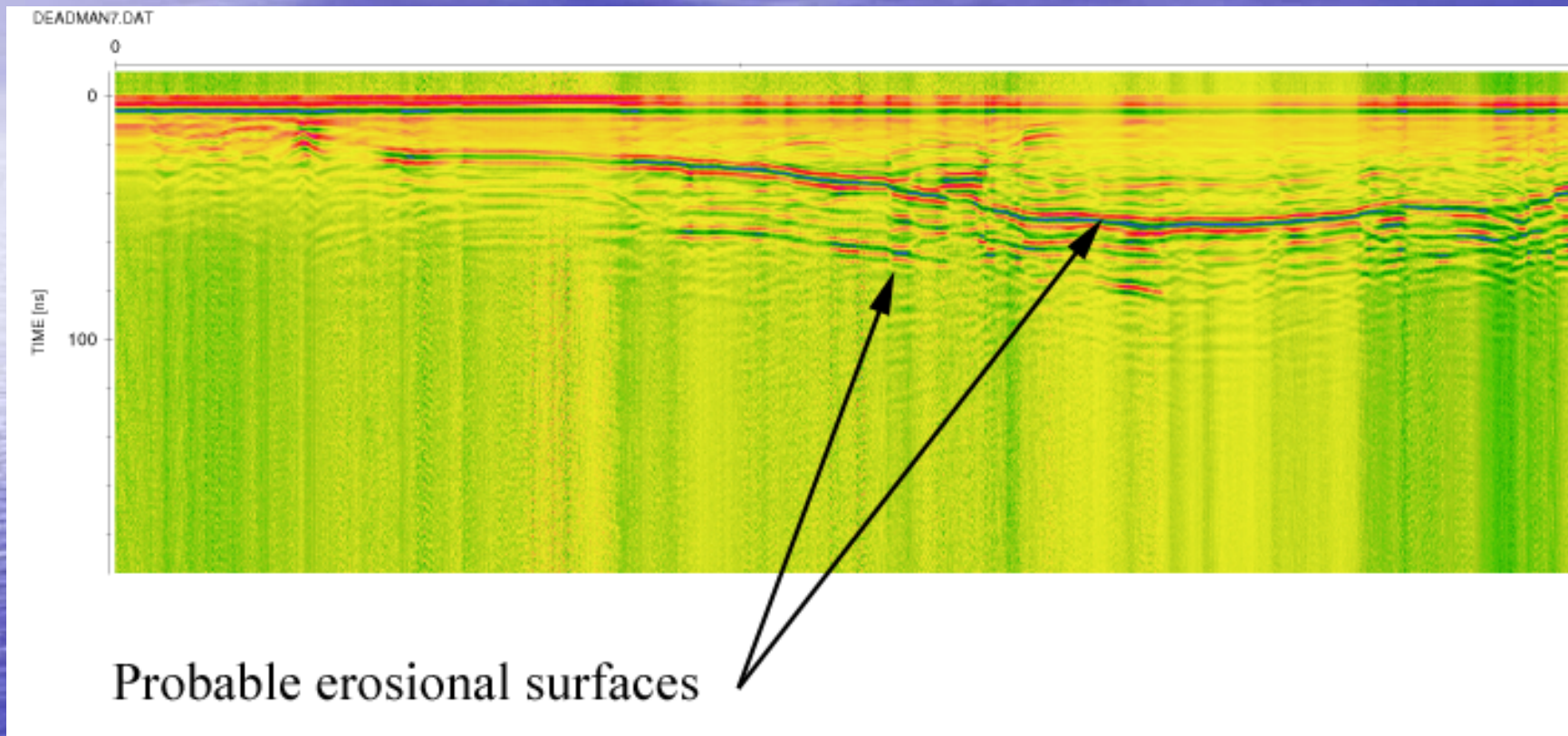
GPR Allows Rapid Analysis of Shallow Strata

GPR registers differences in ground electromagnetic properties much as seismic does acoustic properties

Deadman's Island GPR Test Transects

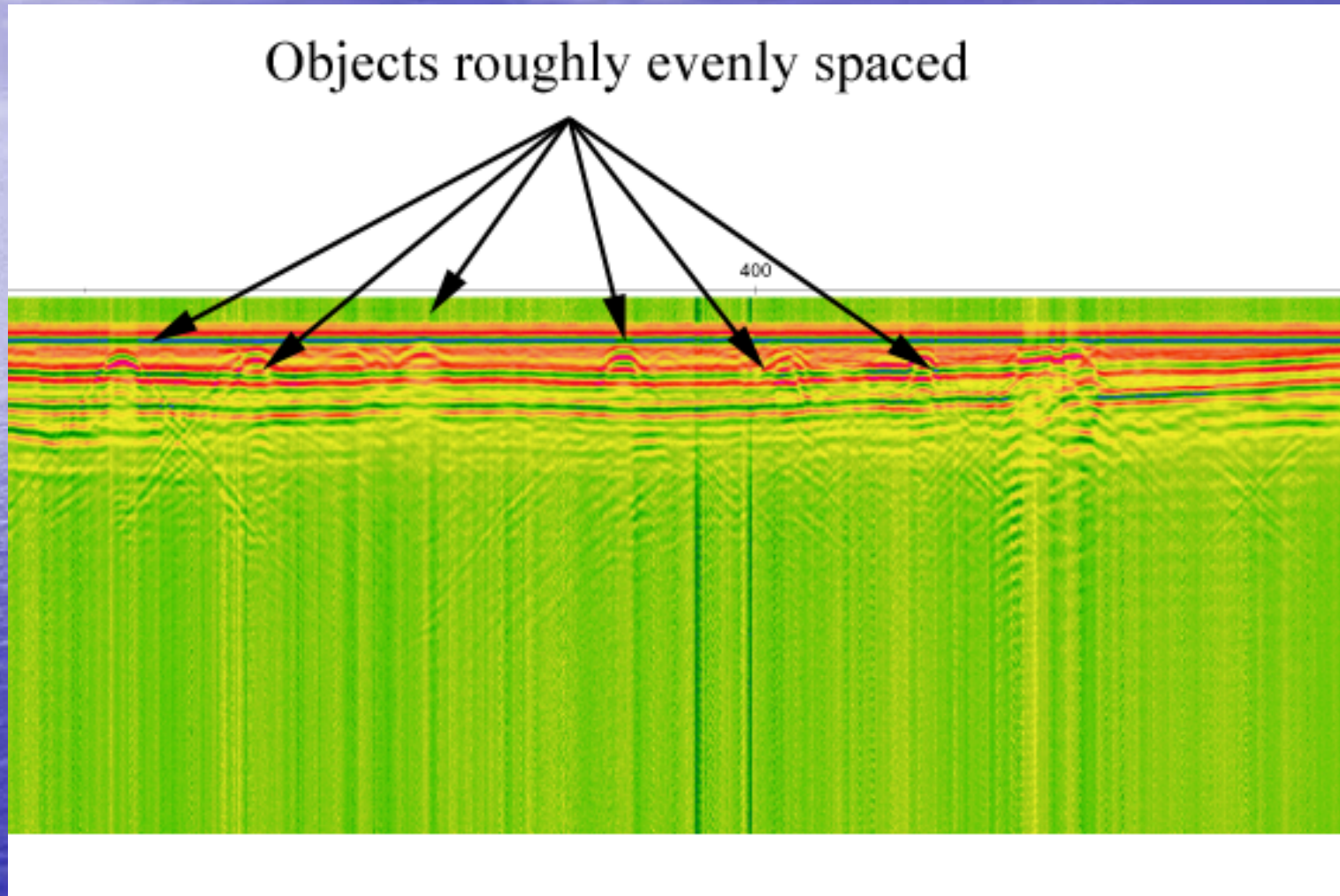


Deadman's Island GPR Test



Note that this display is not adjusted for surface elevation. Thus the down sag of the horizons noted above is likely the result of increased surface elevation from a dredge spoil mound on the south end of the island.

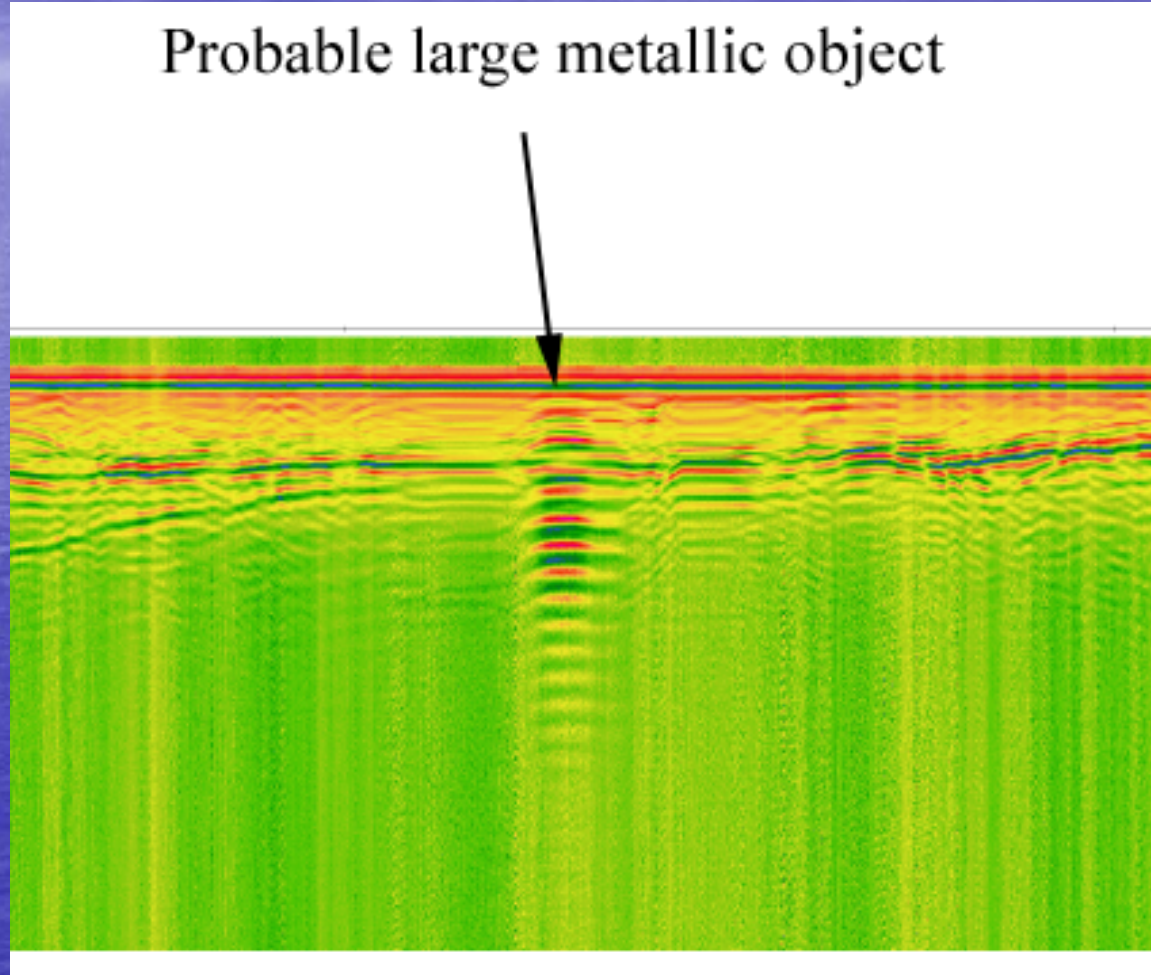
Deadman's Island GPR Test



- The regularly spaced objects noted above do not appear to be natural.

Deadman's Island GPR Test

Probable large metallic object





Reports produced in hard copy, CD, and DVD and posted on the web as requested.