Technical Report for:

ONR Grant N00014-94-1-0871

"Support of the Research Activities of a Marine Engineering Institute at the University of South Florida"

and

ONR Grant N00014-94-1-0963

"Sediment Characteristics of Selected Coastal Environments"

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St. Petersburg, FL 33701

September, 1996

# REPORT DOCUMENTATION PAGE

OMB No. 0704-0188



| 1. AGENCY USE ONLY (Leave blank) | 2. REPORT DATE | 3. REPORT TYPE AND DATES COVERED |
|---|---|---|
| | 2-18-97 | Final Report 6/94 - 6/96 |

**4. TITLE AND SUBTITLE OF REPORT** Support of the Research Activities of a Marine Engineering Institute at the University of South Florida

**5. FUNDING NUMBERS**
N00014-94-1-871

**6. AUTHOR(S)** Drs. Thomas Hopkins, Robert Byrne, Kendall Carder, Paula Coble, Kent Fanning, Pamela Hallock-Muller, Albert Hine

**7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)**

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St. Petersburg, FL 33701

**8. PERFORMING ORGANIZATION REPORT NUMBER:**
N00014-94-1-871

**9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)**
Office of Naval Research
Ballston Towers One
800 N Quincy St,
Arlington, VA 22217-5660

**10. SPONSORING/MONITORING AGENCY REPORT NUMBER:**
N00014-94-1-871

**11. SUPPLEMENTARY NOTES:**

**12a. DISTRIBUTION AVAILABILITY STATEMENT**
Unlimited

**12b. DISTRIBUTION CODE**

**13. ABSTRACT (Maximum 200 words)**

Ocean Measurements: Development of new instrumentation and fixed and moving submarine measurement platforms for such instrumentation, data retrieval, and data analysis.

**14. SUBJECT TERMS**

**15. NUMBER OF PAGES:** 33

**16. PRICE CODE**

| 17. SECURITY CLASSIFICATION OF REPORT | 18. SECURITY CLASSIFICATION OF THIS PAGE | 19. SECURITY CLASSIFICATION OF ABSTRACT | 20. LIMITATION OF ABSTRACT |
|---|---|---|---|
| Unclassified | Unclassified | Unclassified | Unclassified |

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## Project Overview

A collaborative effort between the University of South Florida (Department of Marine Science and Center for Ocean Technology), the Naval Research Laboratory at Stennis Space Center, and Florida Atlantic University (Department of Ocean Engineering) has acquired, processed and interpreted a substantial acoustic and physical database of the sediments from several nearshore areas around Florida (Fig. 1, Table 1, Appendix A). The main objective of the collaborative effort is the characterization of the acoustic, physical and geological properties of sediments using high resolution subbottom vertical-beam and side-scan sonar data in geologically distinct shallow marine environments. These data are being compared to the geoacoustic properties of the sediments (shear and compressional wave velocity, and shear modulus), physical properties (density, porosity, void ratio, grain size) and mineralogy as measured *in situ* and in the laboratory setting.

The data reveal relationships between geological, physical, and geoacoustic properties of sediments in shallow marine settings and increase our understanding of sedimentary acoustic controls and nearshore seabed variability. Sites were chosen to yield significant contrasts in energy regimes, wave climate, sediment mineralogy and texture, underlying bedrock control, and benthic biological communities. These areas include (1) the Boca Raton nearshore environment on the Florida east coast (Mallinson et al., 1995), (2) the Dry Tortugas and Marquesas inner continental shelf environments ("Keys" in Table 1) (Lavoie et al., 1995; Briggs et al., 1995; Furukawa et al., 1995; Richardson and Griffin, 1995; Stephens et al., 1995; Tooma and Richardson, 1995), (3) the Indian Rocks Beach (IRB) nearshore environment (Locker et al., 1995; Harrison et al., 1995), and (4) the Lower Tampa Bay (LTB) estuarine environment.

Data are being used for empirical modeling of the acoustic data with respect to the physical properties of the sediments (Lavoie et al., 1995; Briggs et al., 1995), and are being applied to the development of a predictive properties database for remote acoustic

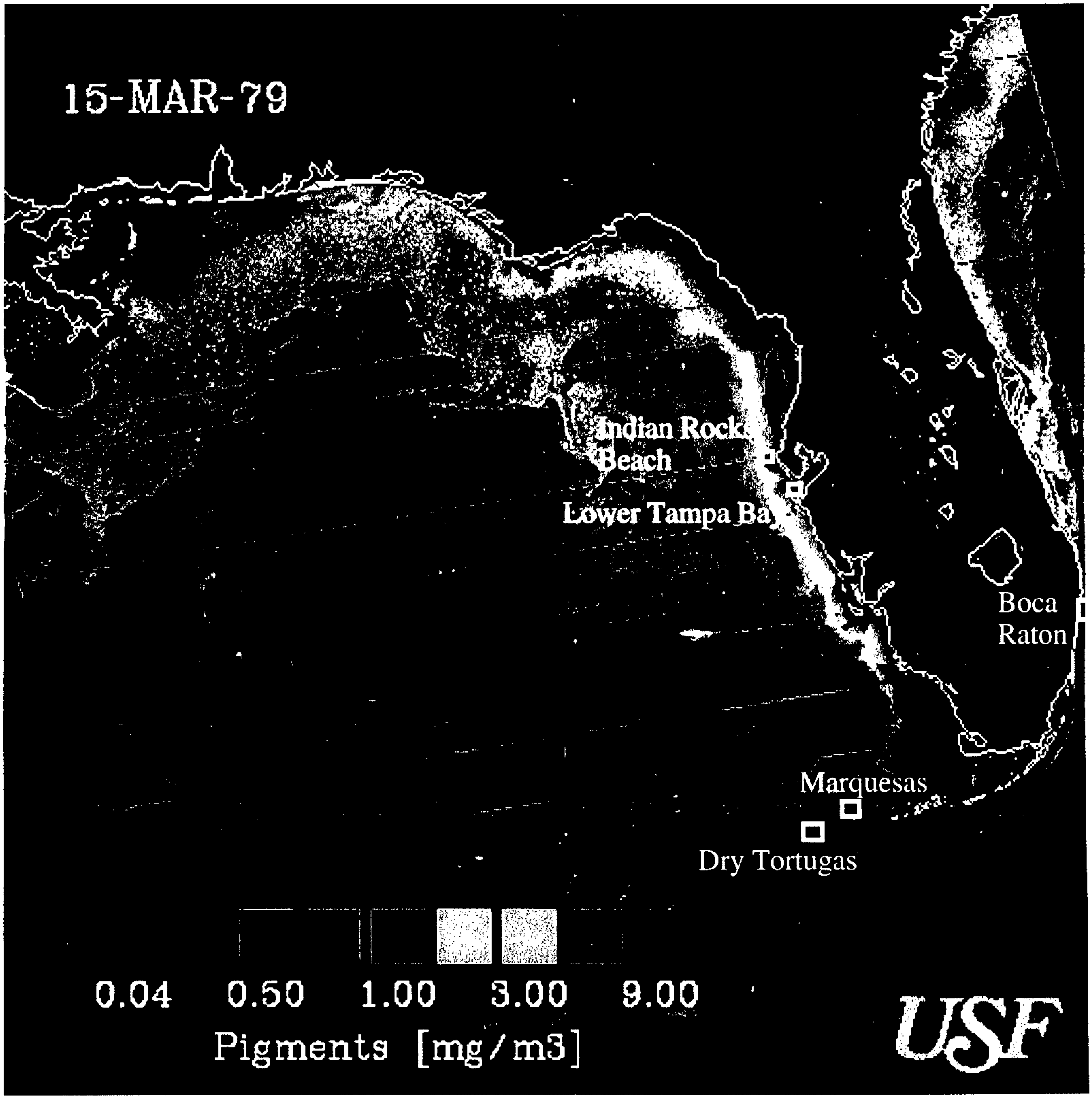



Figure 1. Coastal Zone Color Scanner imagery showing the Florida coastline, chlorophyll concentrations in Gulf of Mexico and Atlantic waters, and the location of sites investigated in the collaborative effort between the University of South Florida, Florida Atlantic University, and the Naval Research Laboratory.

sediment classification by impedance inversion (Fig. 2) (Panda et al., 1994). Development of the sediment classification algorithms based on these data, to be used in conjunction with chirp sonar, is being performed at FAU under the guidance of Dr. Steven Schock. An additional important aspect of these data is the identification and quantification of seafloor variability (bathymetry, sediment grain size, mineralogy, bedforms, acoustic properties) in these nearshore environments in order to define test bed sites for Autonomous Underwater Vehicle (AUV) deployment and calibration (Fig. 2).

Table 1. Data acquired from sites. IRB denotes Indian Rocks Beach. LTB denotes Lower Tampa Bay. Core types include diver cores (d), gravity cores (g), and vibracores (v).

| database | Boca Raton | Keys | IRB | LTB |
|---|---|---|---|---|
| seismic | | 120 km | 370km | |
| side scan | 15 km | 120 km | 370km | |
| chirp vert. beam | 50km | >100 km | 225km | 150km |
| ISSAMS/DIAS* | √ | √ | √ | √ |
| cores | 35(d) | 60(g) | 9(d), 3(v) | 8(d) |
| bottom roughness | √ | √ | √ | |

*In Situ Sediment Acoustic Measurement System / Duomorph In Situ Acoustic System

## Methods

An EG&G vertical beam chirp sonar with a swept range of 2-10 kHz was used to acquire shallow subbottom data. Chirp data were processed using X-star software. Reflection coefficients were recorded in decibel (dB) format. The decibel data are a measure of the amplitude of the acoustic return relative to the incident amplitude and are on a negative scale. Decibel data are related to the reflection coefficient (R) by a $20\mathrm{Log}_{10}$ scale ($\mathrm{dB} = R*20\mathrm{Log}_{10}$ or $R = 10^{\mathrm{dB}/20}$). Side scan sonar surveys were conducted at 100 kHz using an EG&G model 272 dual frequency (100/500 kHz) towfish, an EG&G 260 thermal plotter, and a 380 digital tape recorder. All data were acquired using differential GPS for navigation. Digital side-scan sonar data and vertical-beam chirp sonar data have been processed using a combination of software packages including GMT (Generic Mapping Tool), WHIPS (Woods Hole Image Processing Software) and Arc-Info to provide a three-

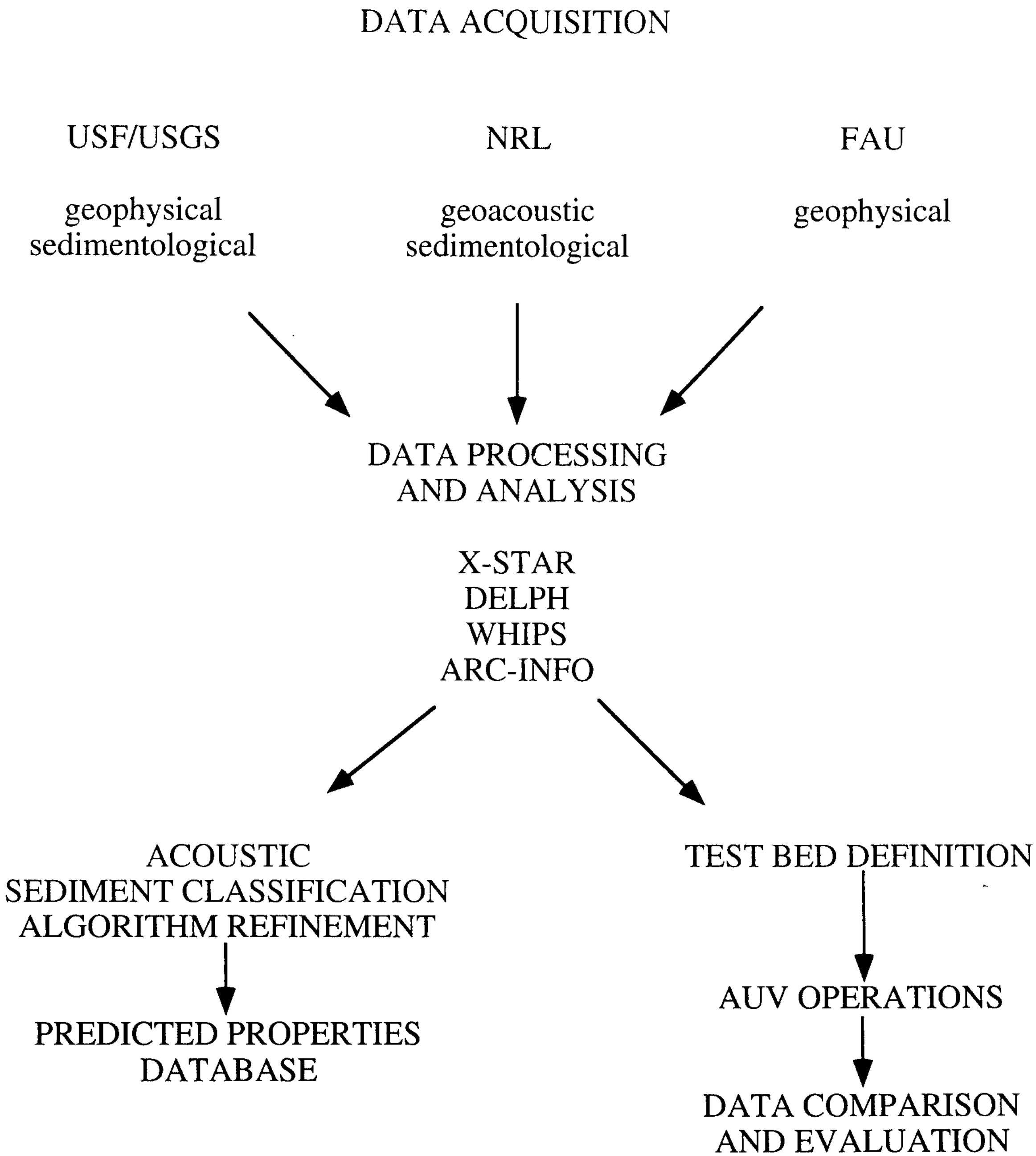



Figure 2. Flow diagram illustrating the components of the collaborative investigation between University of South Florida (USF), USGS (U.S. Geological Survey), NRL (Naval Research Laboratory) and FAU (Florida Atlantic University).

dimensional data base. Seismic data were acquired using a high-resolution, single channel, digital seismic system consisting of a Huntec electromagnetic transducer (boomer), ITI 10 channel streamer, and an Elics Delph2 processing unit.

Acoustic velocity and attenuation, bulk density and porosity were all determined on cores using a Geotek multisensor electric logger. Cores have been analyzed for acoustic velocity, grain size, bulk density, porosity, and mineralogy. *In situ* geoacoustic data consist of compressional and shear wave velocities and sediment rigidity measured with the ISSAMS (*In Situ* Sediment Acoustic Measurement System) and the DIAS (Duomorph *In Situ* Acquisition System) probes, respectively, both provided by Stennis Naval Research Laboratory.

Grain size analyses were performed by first bleaching the sediment with a 5.25% Na-hypochlorite solution to remove organics, then wet sieving with a 3% Na-metaphosphate solution at 63 microns to separate the sand and gravel fractions from the silt and clay fractions. The >63 micron fraction was dry sieved at 1 phi intervals. The <63 micron fraction was ultrasonicated for 15 seconds and analyzed using a Sedigraph 5100 and MasterTech automatic sampling device. Mean grain size was determined by the graphic mean method after Folk (1980).

Carbonate mineralogy of bulk sediments was determined by x-ray diffraction (XRD) analyses using a Scintag XDS-2000 x-ray diffractometer. Samples were step scanned at 0.001° intervals with a count time of 2 seconds from 25.5° to 31.5° 2-theta. Peak areas were determined for the aragonite 111 peak, and the 104 peak for low-Mg calcite (LMC), high-Mg calcite (HMC) and dolomite, using a Gaussian peak-fitting routine included with the XRD software. Areas were converted to weight percentages by using regression equations derived from analyses of in-house standards. Weight percent quartz was determined by HCl insoluble residue analyses of the bulk sediment.

# SECTION I. DRY TORTUGAS STUDY AREA

## Geologic Framework

The Dry Tortugas are situated on the South Florida margin, and occupy a transitional zone between the south and east facing rimmed margin (to the east) and the west facing ramp margin (to the north). The study area is a low-relief basin bordered to the north and west by the Holocene reefs of the Dry Tortugas, and to the south and east by a bathymetric high with some reef development (Figs. 3-5). The Holocene reefs which comprise the Dry Tortugas are approximately 14 meters thick, are composed of massive head corals such as *Montastrea sp.*, and are situated upon an antecedent high of the Key Largo Limestone, a Stage 5e (~125 ka) reef also composed of massive head corals (Shinn et al., 1977). The reefs surrounding the study area represent windward reef margins in regards to their orientation relative to the dominant wind and wave energies (Hine and Mullins, 1983). Tidal energy is also important in the study area with exchange occurring between the southwest Florida Shelf (Gulf of Mexico waters) to the north, and the Florida Straits to the south (Shinn et al., 1990). Strong tidal currents flow between the carbonate banks of the Dry Tortugas, especially through Southeast Channel at the northern end of our study area, and between the Dry Tortugas and Rebecca Shoal to the east (Fig. 3).

Maps of the geologic framework based on chirp sonar data include bathymetry (Fig. 5), a structure contour map of the surface of the Pleistocene Key Largo Limestone basement and sediment isopach (Fig. 6a,b). Water depth ranges from approximately 18 to 25 meters across the study area. The depositional basin deepens to the southwest and shoals rapidly in the northwest and northeast corners of the study area as the Holocene reef tracts are approached. The surface of the Key Largo Limestone, on average, has less relief than the present seafloor, but also deepens slightly to the southwest. Most of the surface is between 20 and 27 meters below present sea level. The shoal body forming the southern boundary to the study area shows relief of 4 to 6 meters above the back basin (Fig. 6a).

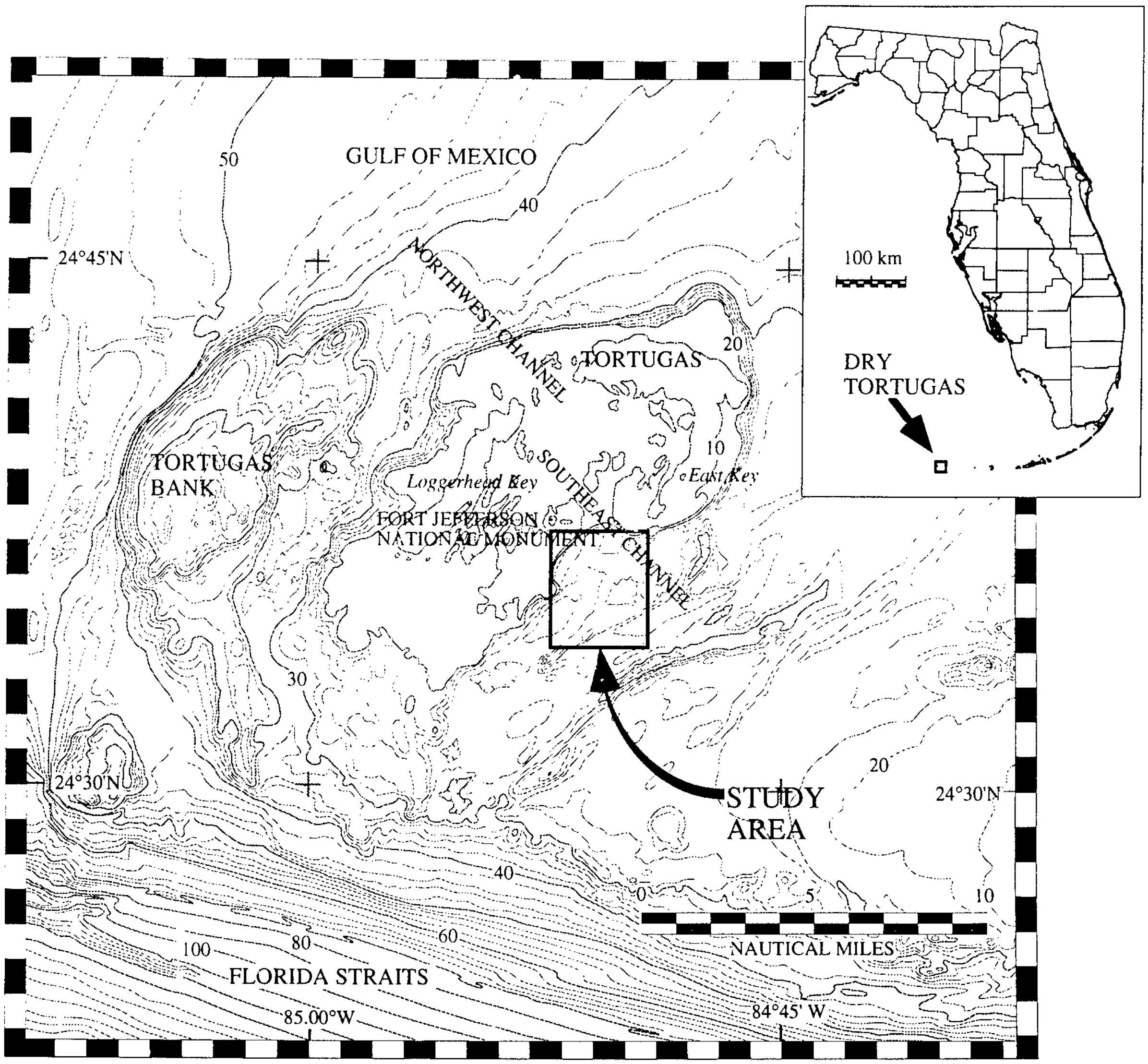



Figure 3. Bathymetric chart showing the location of the Dry Tortugas site. Contour interval is 2 meters.

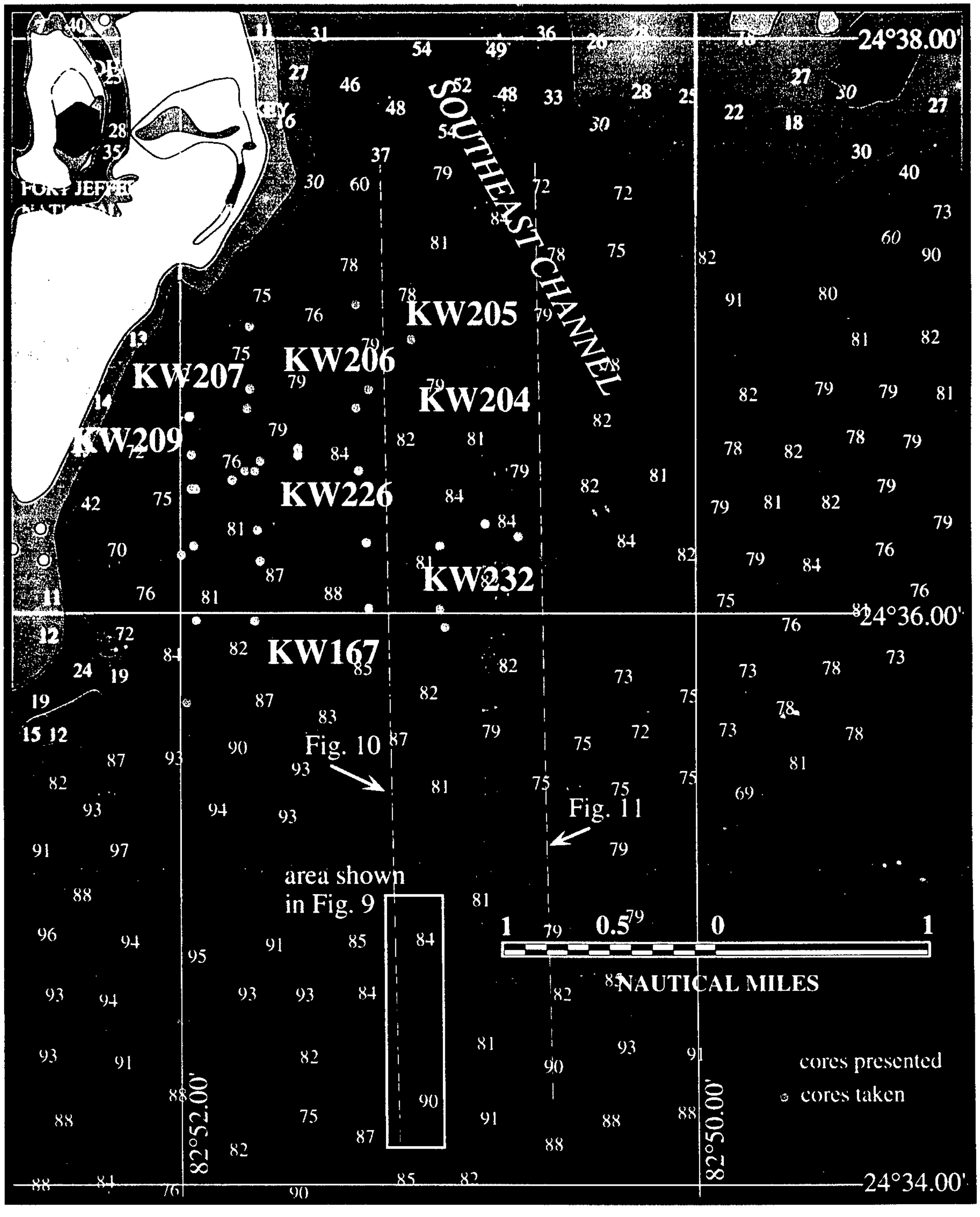



Figure 4. Color bathymetric chart showing locations of gravity cores acquired in the Dry Tortugas area, location of side-scan sonar data presented in Figure 9, and the locations of seismic transects presented in Figures 10 and 11. Soundings are in feet.

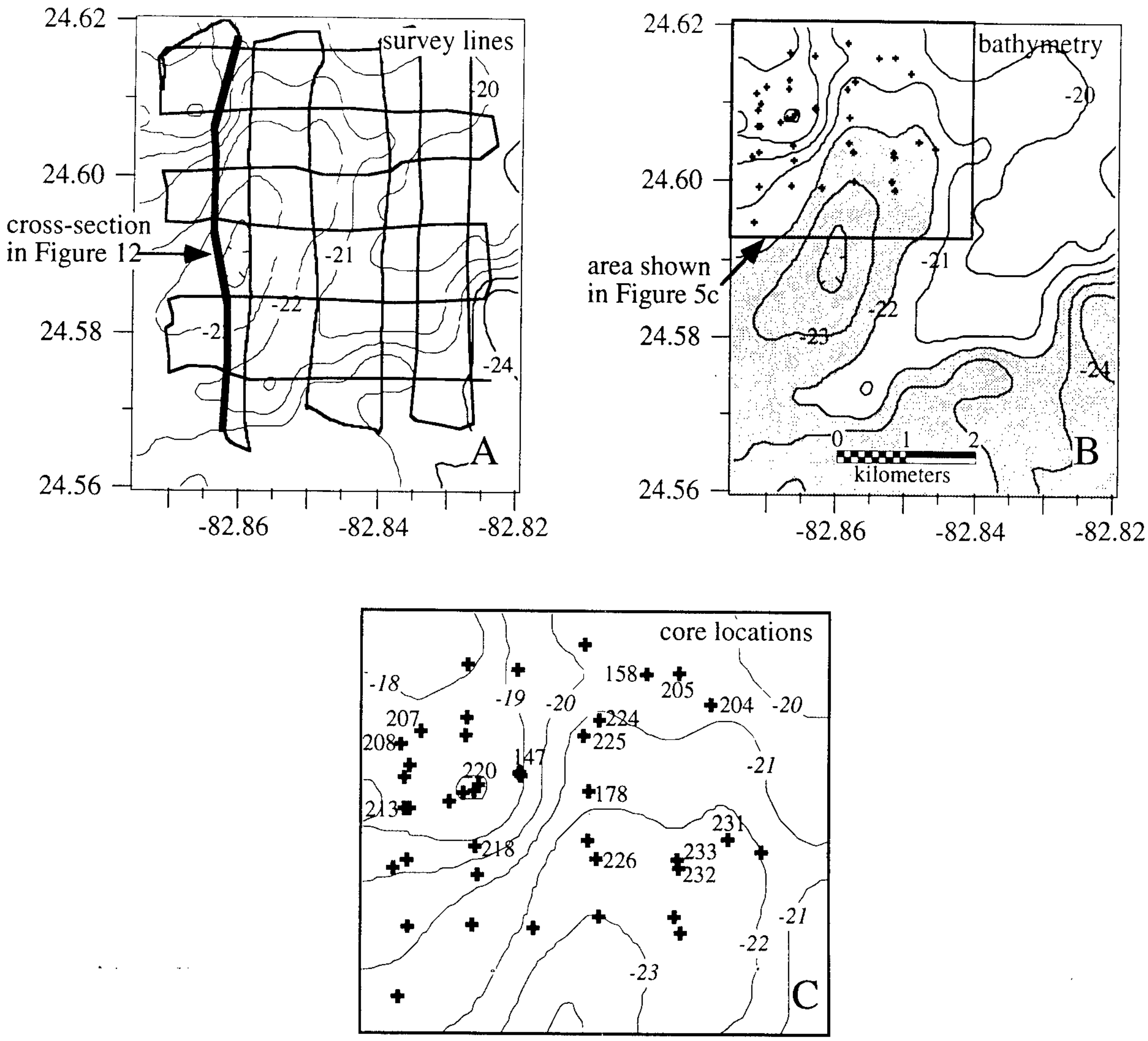



Figure 5. a) Bathymetric chart of the study area showing chirp sonar survey lines. b) Bathymetric chart produced from chirp sonar data using bathymetry along the survey lines shown in Figure 5a Bathymetric data are radially interpolated between data points using a weighted least squares algorithm. Gravity core locations are also shown. Contours are in meters. c) Enlargement of outlined area in Figure 5b showing gravity core locations. Cores presented in other figures in this report are labeled.

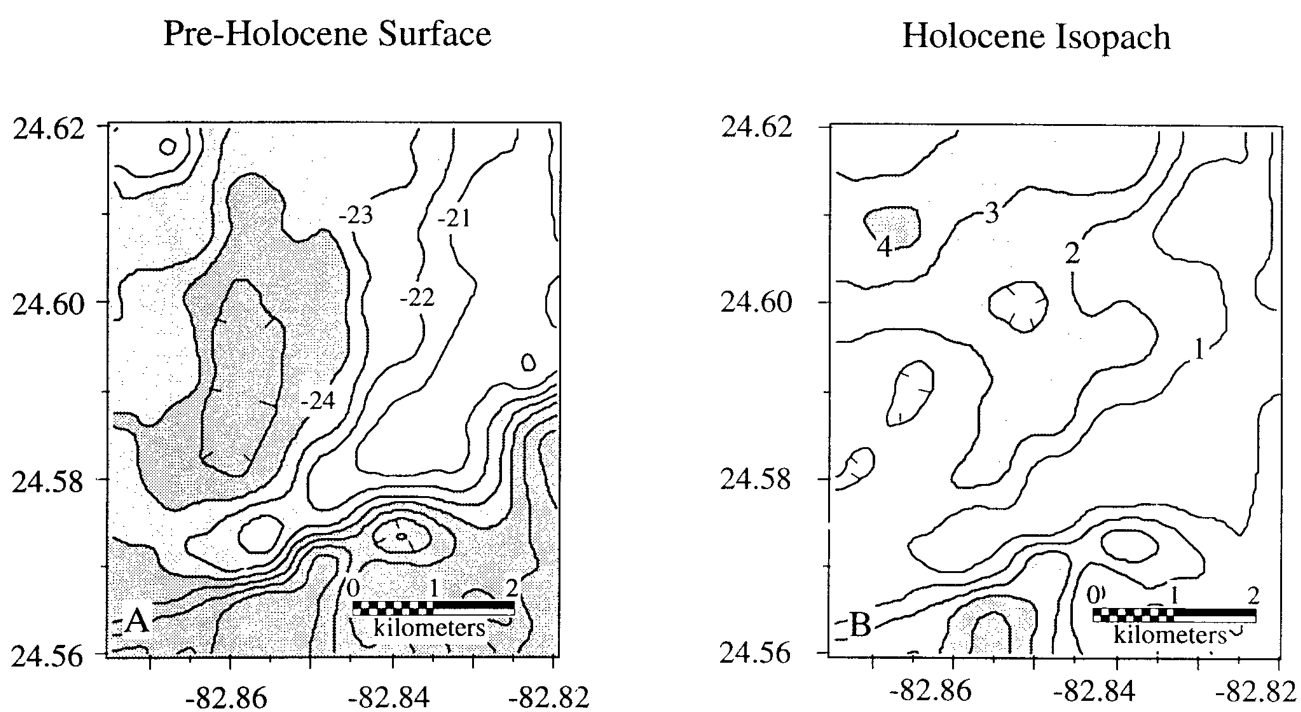


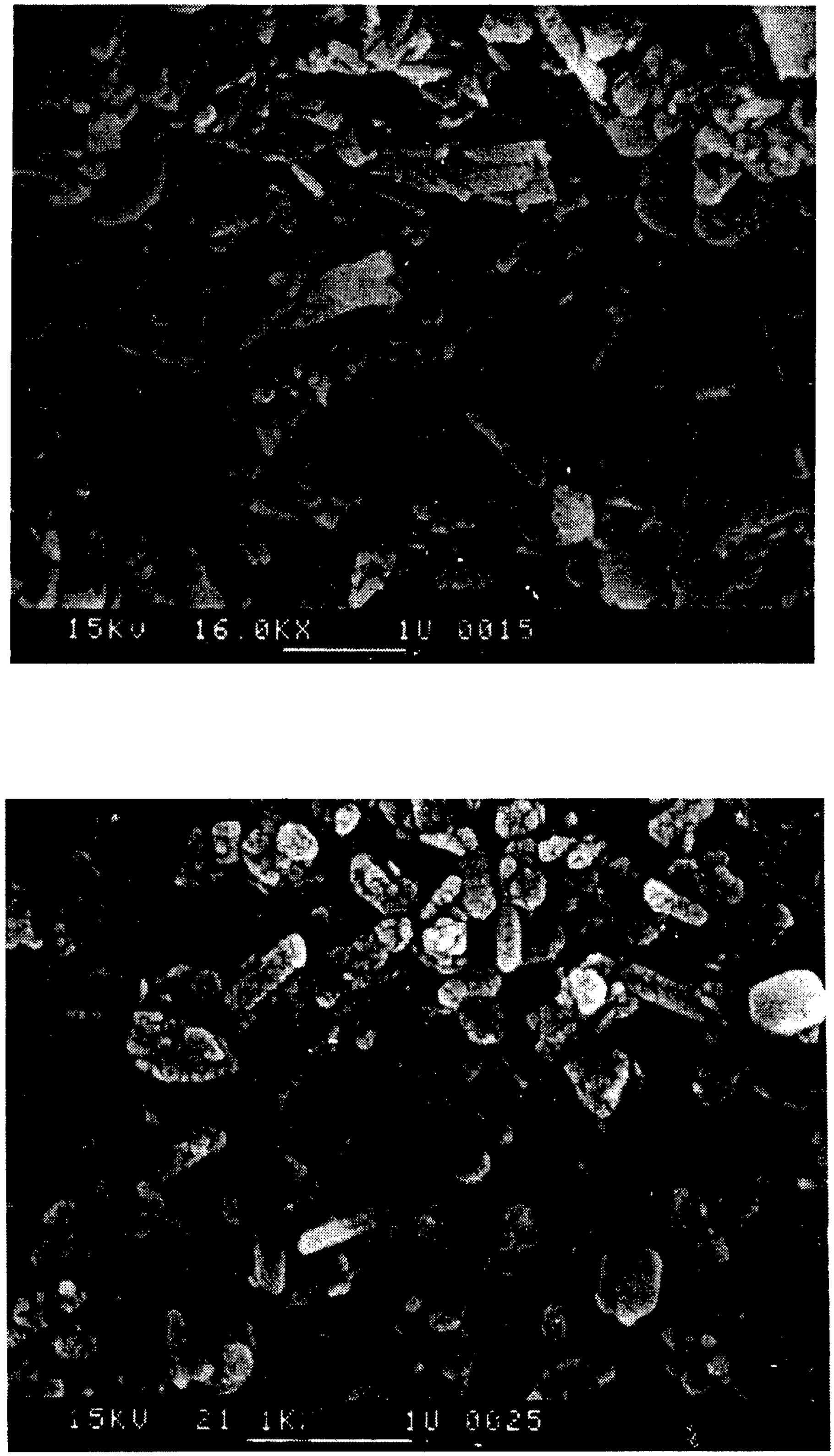

Figure 6. a) Shaded contour map of reflector ε interpreted as the unconformity separating Stage 5a sediments from Holocene sediments. Data were acquired by chirp sonar along survey lines shown in Figure 5a. Data are radially interpolated between survey lines using a weighted least squares algorithm. Contours are in meters below mean sea level. b) Isopach map of the Holocene sediment within the study area. Data were acquired by chirp sonar along survey lines shown in Figure 5a. Data are radially interpolated between survey lines using a weighted least squares algorithm. Contours are in meters.

Holocene sediments attain their maximum thickness (5 meters) near the northern and eastern boundaries of the study area, south of the mouth of Southeast Channel and adjacent to the modern reef tracts (Fig. 6b). Depositional packages thin southward and lapout onto the basement high at the southern boundary. South of the exposed limestone basement high, sediments fill a trough which may be a Stage 5a tidal channel. Seismic data reveal that the shoal body is stratified and reflectors are truncated by the channel feature.

## Mineralogic-Petrologic Framework

Sediments within the study area are carbonate sandy muds and muddy sands (Appendix A). The sediments are, on average, approximately 97% carbonate, with quartz, biogenic silica, and organic matter comprising the remainder. Mineralogically there is little variation downcore or across the depositional area. Sediments are dominated by aragonite (mean = 54%) and high-Mg calcite (HMC) (mean = 32%), with lesser amounts of low-Mg calcite (LMC) (mean = 14%) and dolomite (mean < 0.5%). Dolomite is present only within the silt fraction. Scanning electron microscope observations reveal the composition of the mud as primarily aragonite needles from green algal sources such as *Penicillus* and *Halimeda*, and from coral and mollusk shells (Fig. 7a). Aragonite chips from the bioerosion of coral by Clionid sponges are also apparent. HMC from the degradation of foram tests and perhaps from direct precipitation is abundant throughout (Fig. 7b). LMC is present in the form of coccoliths. Sands are primarily composed of benthic and planktonic forams, pelecypod, gastropod, echinoderm, coral, bryozoan, and *Halimeda* plate fragments, worm tubes, nondescript skeletal material, and carbonate lithoclasts.

Three lithologically distinct units were identified within the upper 240 cm of sediment recovered in cores. Deepest cores (208, 213, 220, 225) recovered a dark gray carbonate sandy mud with a mean grain size of approximately 10 microns at a subbottom depth of >160-200 cm. This muddy unit, hereafter referred to as Unit 1, is abruptly overlain by a much coarser unit (Unit 2). Unit 2 is marked by two to three very coarse




A.

B.

Figure 7. a) Scanning electron photomicrograph of sediment from core 226, 16 cm below the core top. Muds consist of a mixture of aragonite and high-Mg calcite and show little evidence of diagenesis. b) Scanning electron photomicrograph of sediment from core 226, 168 cm below core top. Muds are dominated by high-Mg calcite with some aragonite, and appear to be undergoing dissolution and micritization.

molluscan (pelecypod and gastropod) shell lags interbedded with finer sediment, and is generally 40 to 60 cm thick. Overlying Unit 2 is a unit of light gray carbonate sandy muds (Unit 3). Mean grain size in Unit 3 generally fines upward above a subbottom depth of approximately 120 cm (Fig. 8). Mean grain size at a subbottom depth of 100 cm averages 46 microns, whereas mean grain size at the sediment-water interface averages 17 microns. Surficial grain sizes are variable and patchy across the study area with finest sediments in the northwest near the Holocene reefs, and coarsest sediments generally in the center of the study area.

## Geophysical-Geoacoustic Framework

Side-scan sonar data are still being processed. Preliminary processing reveals the extent and character of the hardbottom area and reef at the southern edge of the study area (dark areas in Fig. 9), minimal acoustic contrast within the sediment fill (white) over most of the study area, and the edge of the Holocene reef tract of the Dry Tortugas at the northern edge of the study area. Based on the increase in backscatter toward the south, sediments appear to coarsen towards the hardbottom area.

Seismic data reveal six seismic sequences in the subsurface bounded by five high-amplitude reflectors (α, β, γ, δ, ε) (Figs. 10 and 11). The hardbottom surface of the bathymetric high in the south is continuous in the subsurface as reflector ε. The antecedent high is also shown to be stratified with reflectors apparently truncated by a cut and fill channel structure to the south. Only two regionally semi-continuous subbottom reflectors are evident in the chirp data as a result of the higher frequency and greater attenuation of the sonar signal. The deepest reflector (Fig. 12) occurs at an average depth of approximately -30 meters (msl datum), is variable in amplitude and corresponds to reflector δ in the seismic data. Amplitude variability appears to vary inversely with the amplitude of the overlying reflector, ε. Reflector ε exhibits a continuous high amplitude return, and occurs at an average depth of -25 meters. Reflector ε crops out on the seafloor along the NE-SW

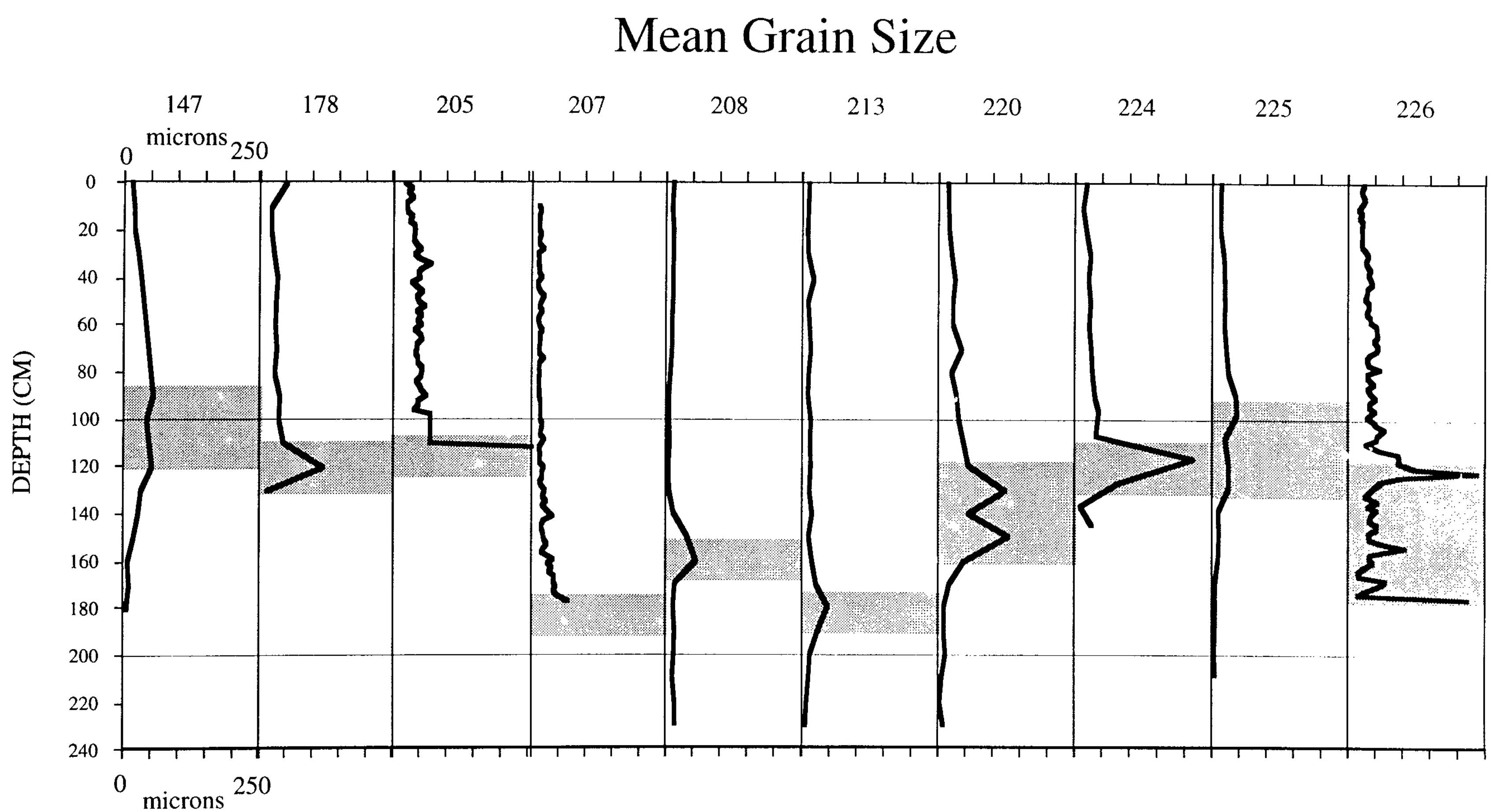



Figure 8. Plots of mean grain size versus depth of sediments from gravity cores shown in Figure 5c. Data were calculated using the graphic mean method of Folk (1980). Shaded areas correspond to the coarse shell beds of Unit 2. Note the fine-grain sediments of Unit 1, below Unit 2, indicating a low energy environment. Also note the general fining upward trrend of Unit 3, above Unit 2, indicating decreasing bottom energy and increasing mud supply during the late Holocene sea-level rise.

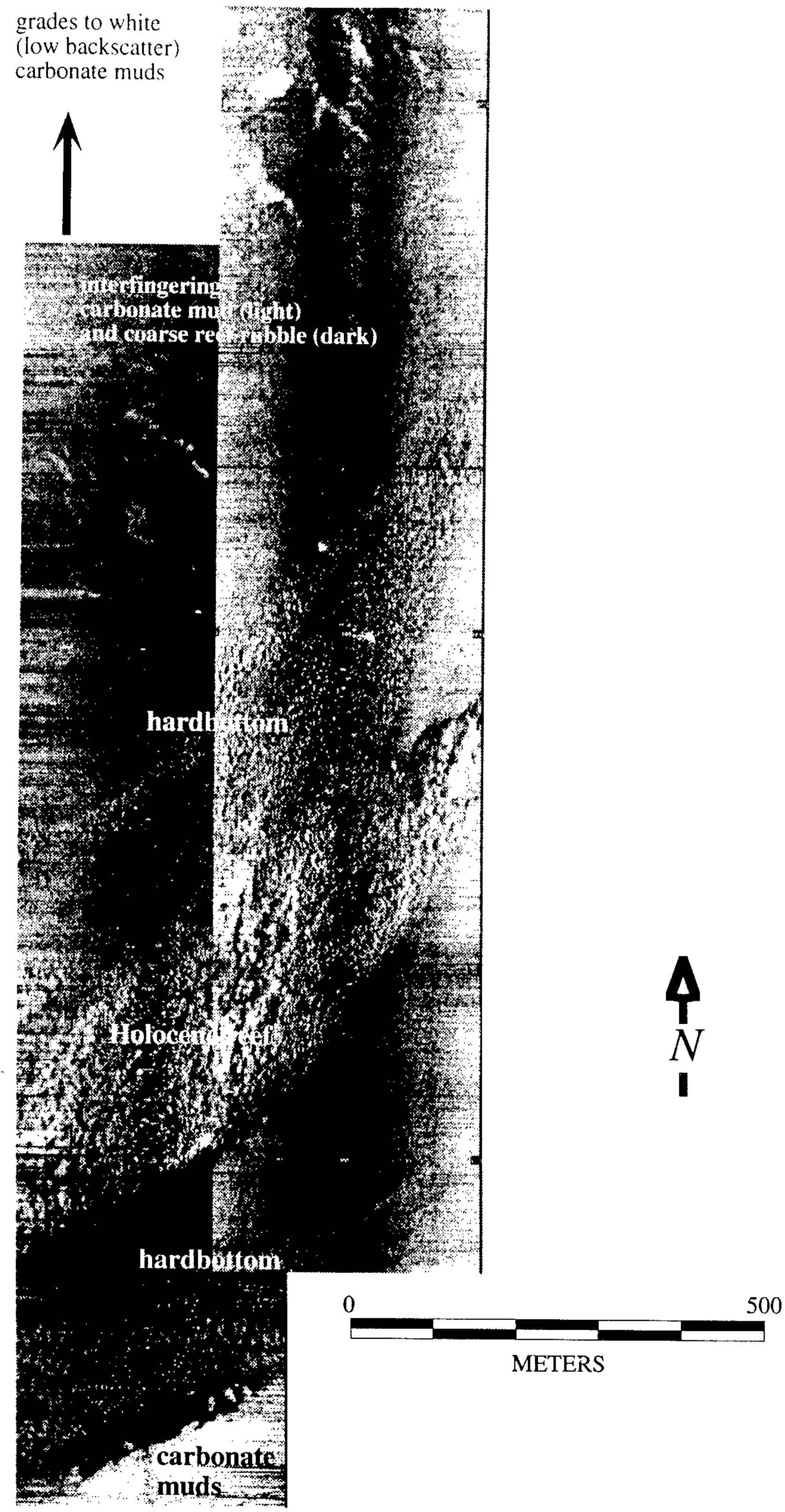



Figure 9. Side-scan sonar data from the Dry Tortugas area showing the high backscatter (dark) of the hardbottom with Holocene reef development in the southern study area.

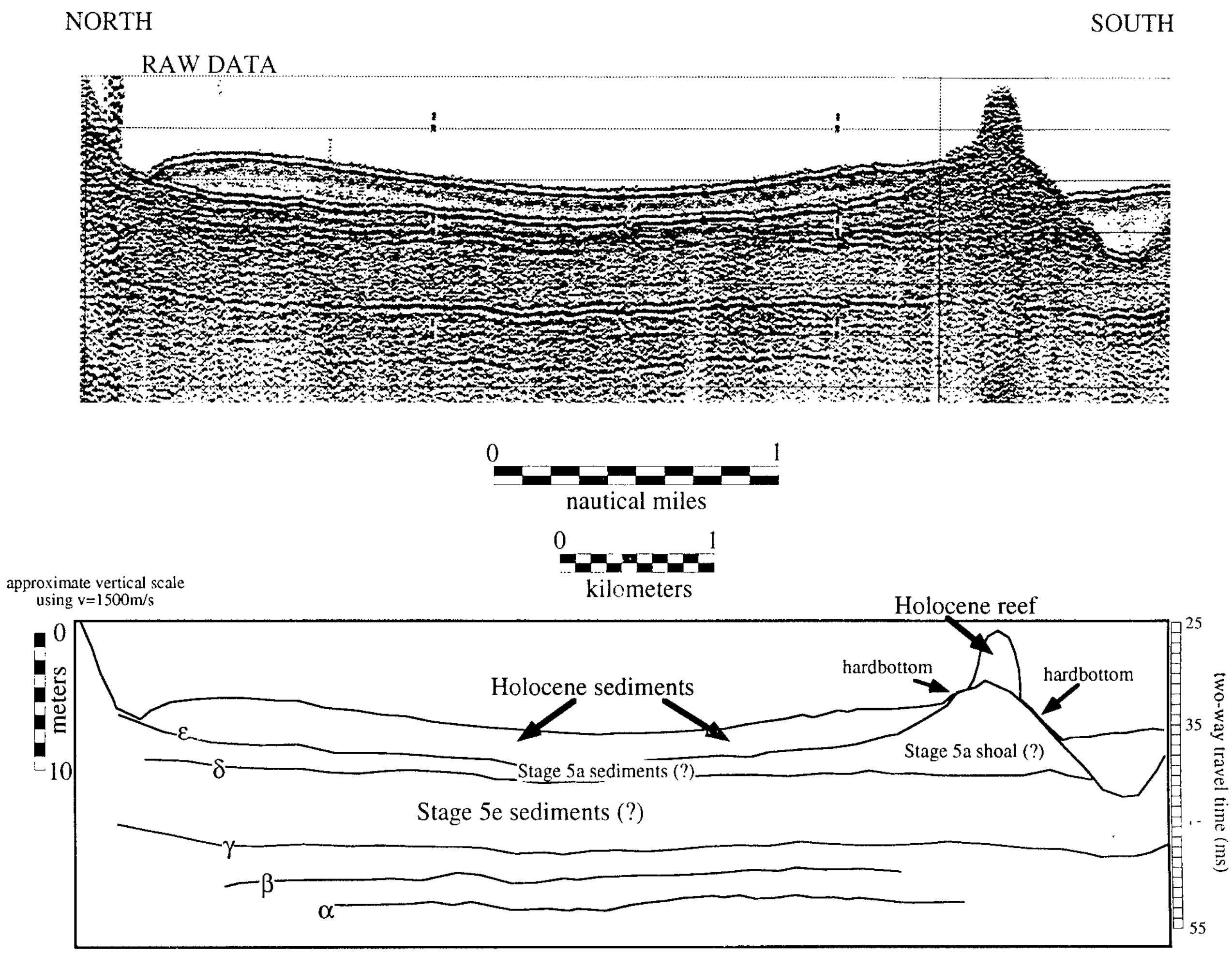



Figure 10. Seismic data and interpretation from the Dry Tortugas area showing reflectors α–ε, inferred sequence ages, and the shoal body with reef development in the south.

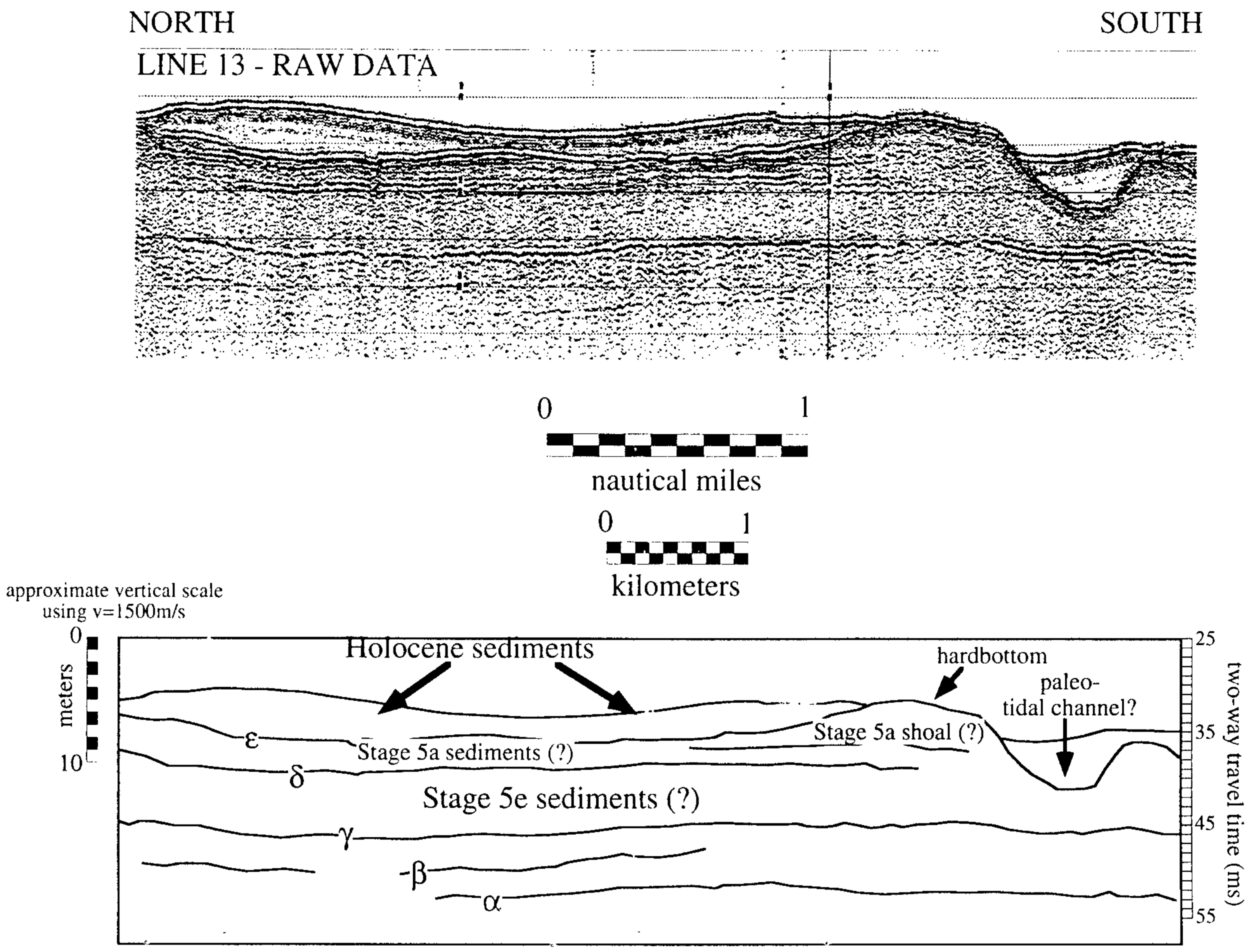



Figure 11. Seismic data and interpretation from the Dry Tortugas area showing reflectors α–ε, inferred sequence ages, and the stratified shoal body in the south.

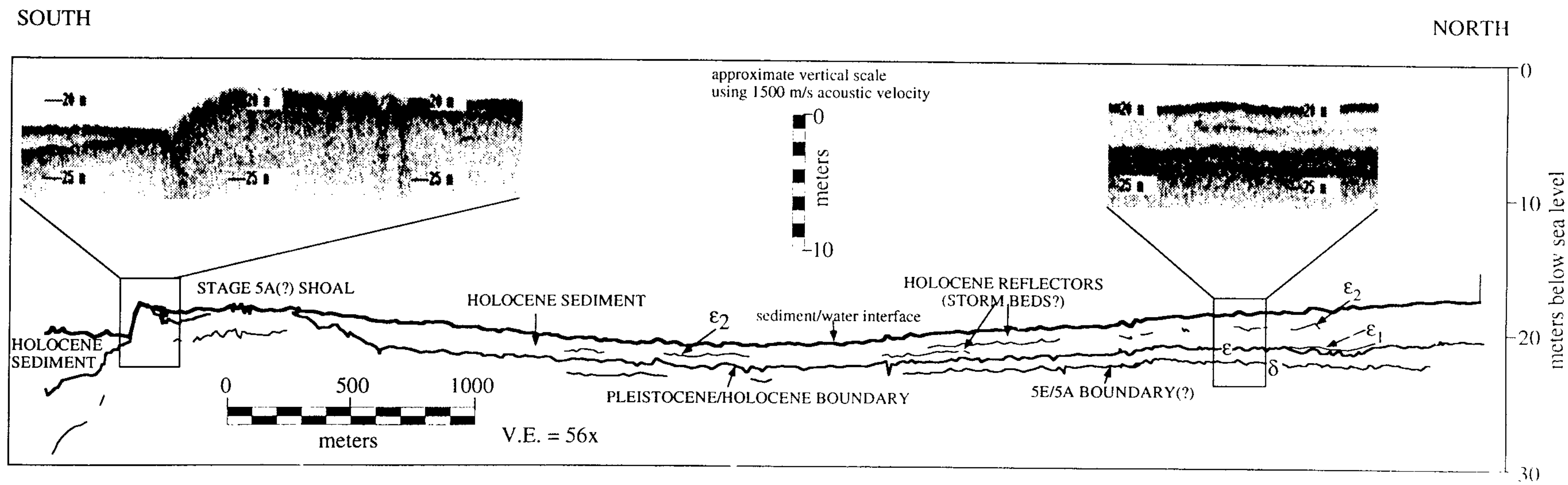



Figure 12. North to south cross-section of the study area based on interpreted chirp sonar data. See Figure 5a for location of cross-section. Chirp data sections corresponding to segments of the cross-section are shown. Reflectors are discussed in the text.

trending bathymetric high of the shoal. Where ε crops out, the reflection character changes to a highly diffracted, variable amplitude signal showing relief of tens of centimeters. The overlying unconsolidated carbonate sediments are largely acoustically transparent except for several very low amplitude, discontinuous, subparallel reflectors (Fig. 12). The lowermost of these reflectors, $\varepsilon_1$, occurs immediately superjacent to reflector ε in the northern portion of the study area where sediments are thickest. $\varepsilon_1$ occurs at a subbottom of approximately 2.5 meters. Another reflector, $\varepsilon_2$, occurs discontinuously throughout the study area at a subbottom depth of 1.5 meters.

The sediment water interface exhibits reflection coefficients ranging from -8 to -12 dB (r=0.40 to 0.25) (Fig. 13). Where hardbottom occurs, the reflection coefficient is variable as a result of bottom relief, but ranges from -2 dB (0.8) over a flat surface, to -24 dB (0.06) over a highly irregular surface.

Acoustic velocities of the sediment range from approximately 1480 to 1600 $ms^{-1}$, and tend to increase downcore (Fig. 14). Velocities below 100 cm are significantly more variable than velocities in the upper 100 cm. The high variability corresponds to coarse shell beds and heterogeneous sediments in the cores. Impedance values range from ~2.4 to 3.5 x $10^6$ $kgm^{-2}s^{-1}$ (Fig. 15).

## Discussion

No cores penetrated deep enough to recover any portion of sediment associated with reflectors α,β, γ, δ, ε or $\varepsilon_1$. However, certain inferences regarding their composition and origin can be derived from the acoustic signature of these reflectors. The variable but generally high amplitude of reflector δ indicates that this horizon is probably indurated on a local to regional scale. The discontinuous nature of this reflector can be partially attributed to acoustic attenuation of the high frequency chirp acoustic signal in the overlying sediments, and by the high impedance of reflector ε. Small scale relief of 1 meter is evident in reflector δ and is erosional in appearance. Reflector ε is interpreted as the transition

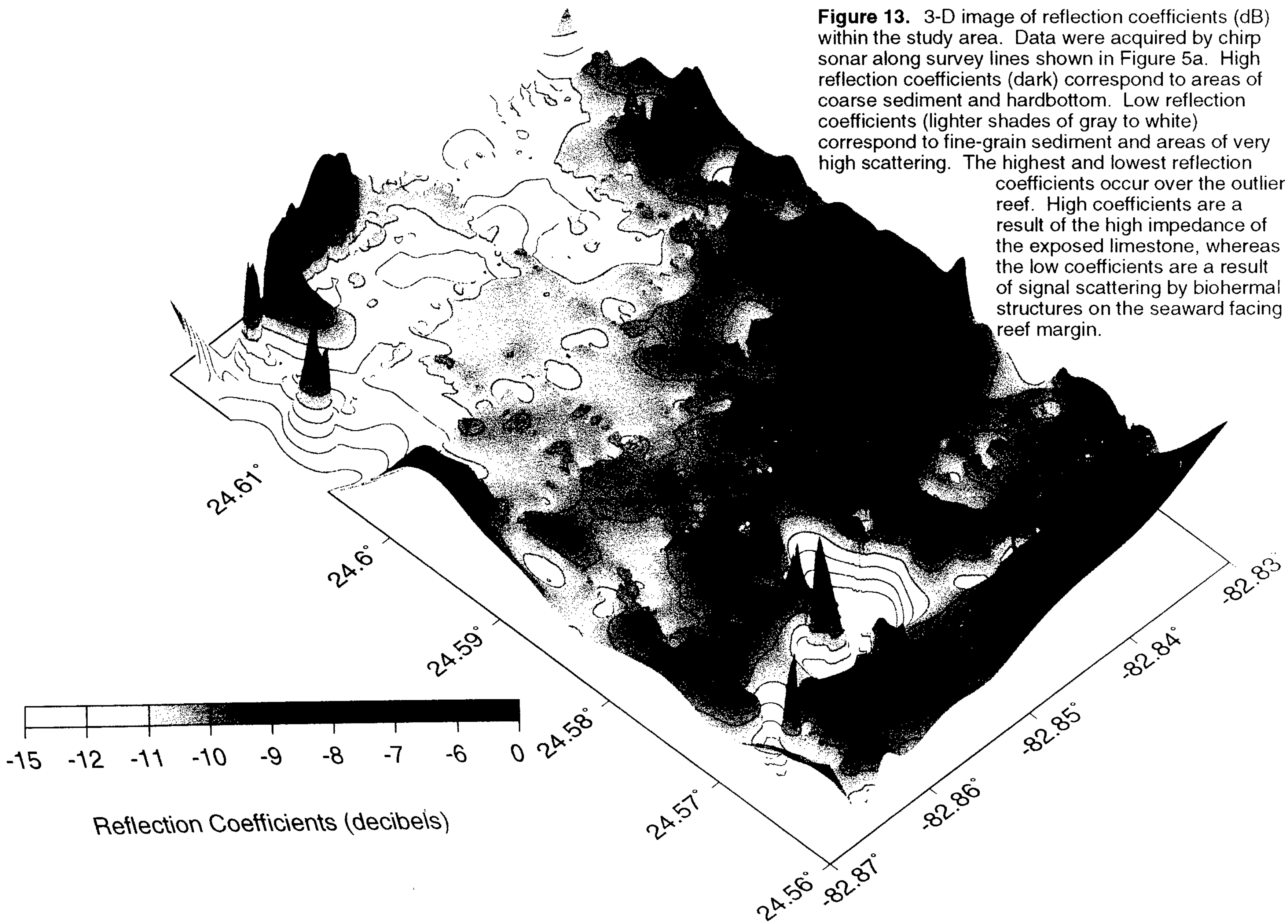



**Figure 13.** 3-D image of reflection coefficients (dB) within the study area. Data were acquired by chirp sonar along survey lines shown in Figure 5a. High reflection coefficients (dark) correspond to areas of coarse sediment and hardbottom. Low reflection coefficients (lighter shades of gray to white) correspond to fine-grain sediment and areas of very high scattering. The highest and lowest reflection coefficients occur over the outlier reef. High coefficients are a result of the high impedance of the exposed limestone, whereas the low coefficients are a result of signal scattering by biohermal structures on the seaward facing reef margin.

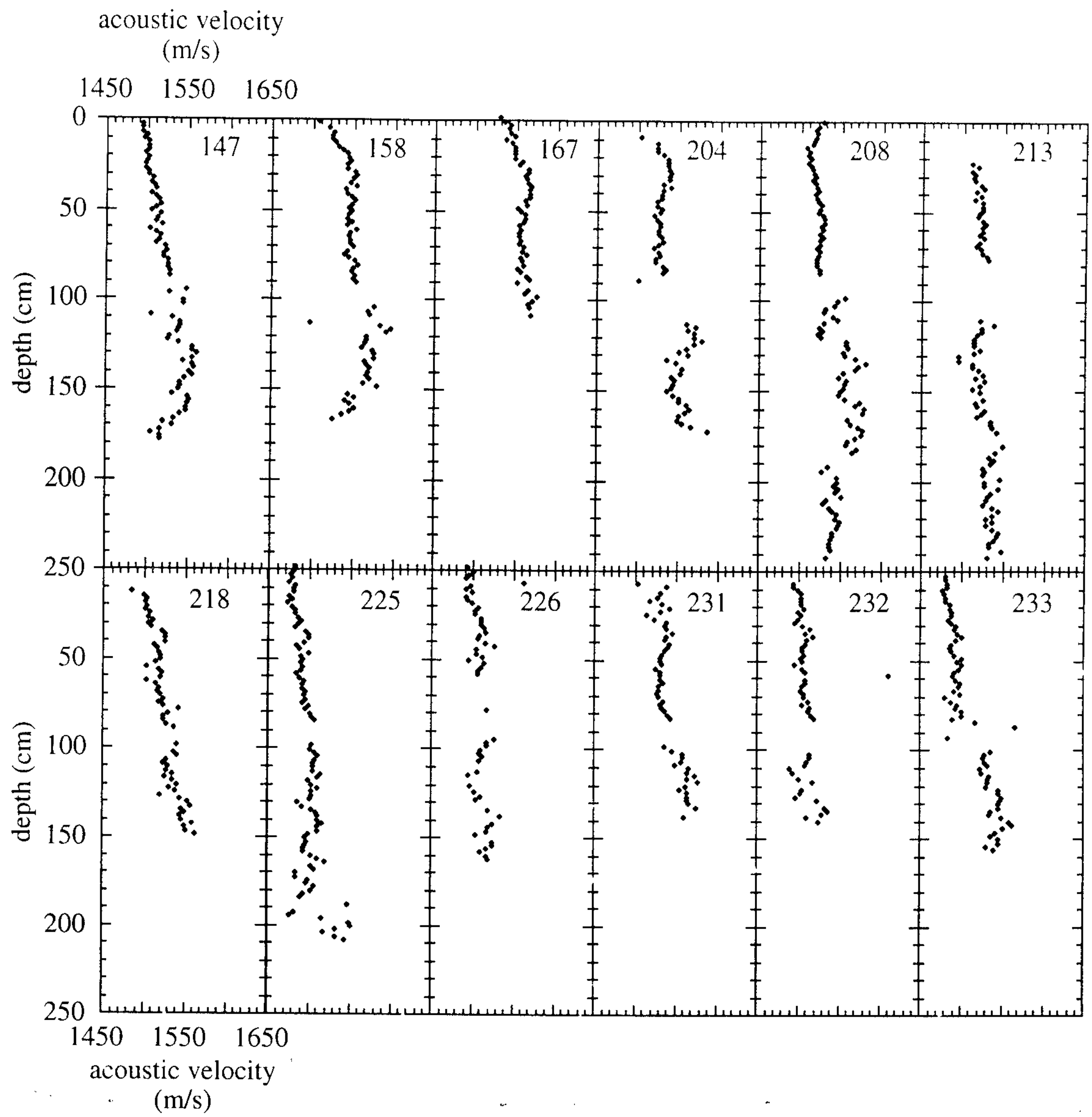



Figure 14. Plots showing downcore acoustic velocities measured by electric log on gravity cores shown in Figure 5c. Data gaps are a result of signal attenuation in very coarse sediments, or sediment disturbance where cores were sectioned.

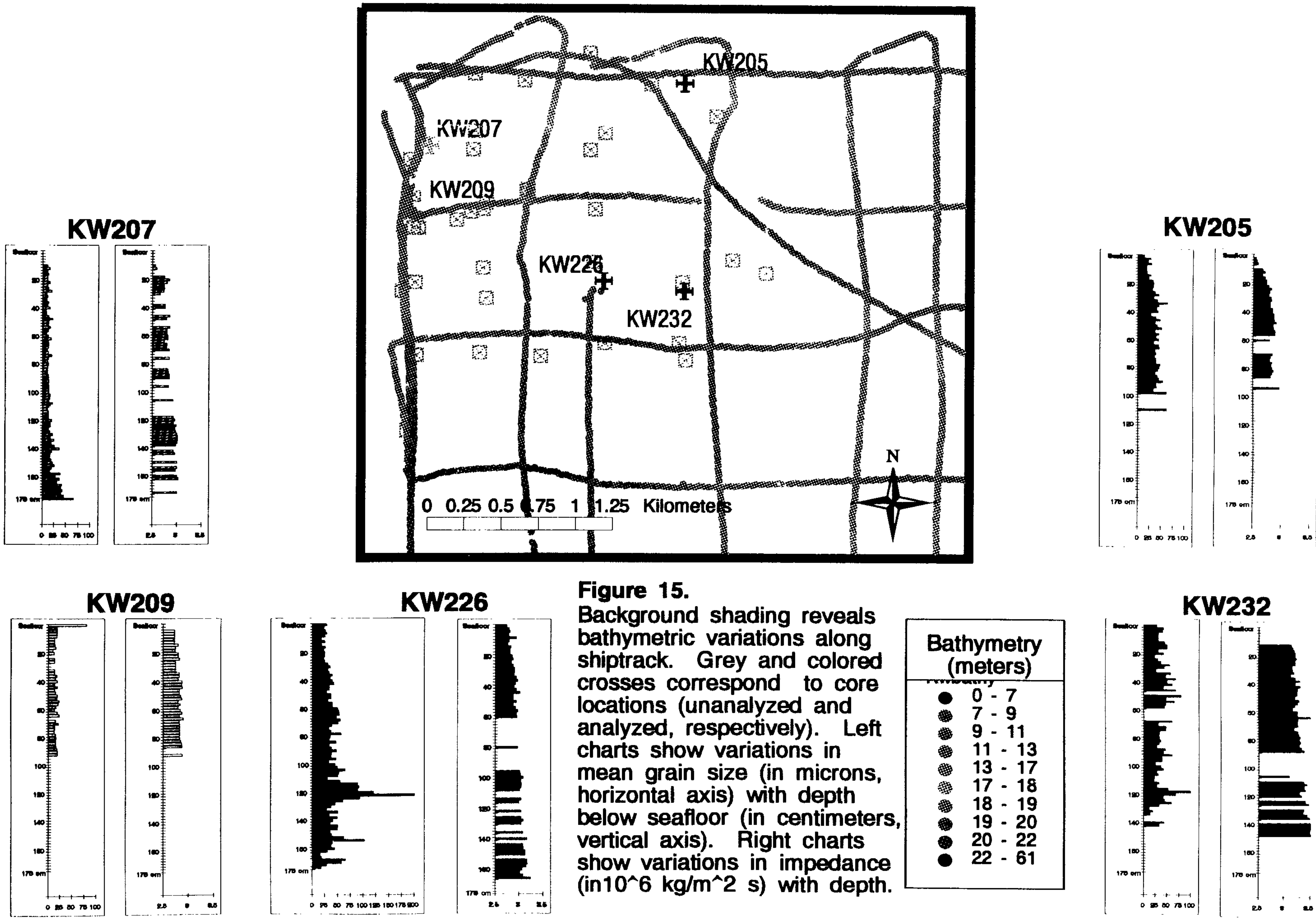



**Figure 15.**
Background shading reveals bathymetric variations along shiptrack. Grey and colored crosses correspond to core locations (unanalyzed and analyzed, respectively). Left charts show variations in mean grain size (in microns, horizontal axis) with depth below seafloor (in centimeters, vertical axis). Right charts show variations in impedance (in10^6 kg/m^2 s) with depth.

between unconsolidated carbonate sediments above and variably indurated carbonate sediments below based on the strong impedance contrast. Several small sinkholes were encountered extending below $\varepsilon$, and propagating upward through $\varepsilon_1$ but not into the overlying sediments. Based on these data, $\varepsilon$ is tentatively interpreted as a subaerial unconformity between Stage 5A carbonate sediments deposited in a shallow, tidal shoal setting, and Holocene sediments deposited in a forereef setting. This surface may be an extension of the paleosol surface present in the Marquesas and the Keys to the east (Shinn et al., 1990). Assuming that the shoal body identified in the southern portion of the study area is a Stage 5A tidal shoal, then reflector $\delta$ is likely the subaerial unconformity separating Stage 5A sediments from Stage 5E sediments.

The near transparency of the sediment unit overlying reflector $\varepsilon$ indicates the absence of any subaerial exposure surfaces which would show significant cementation and high amplitude acoustic reflections. These data indicate that the entire unit above reflector $\varepsilon$ is Holocene. The three units identified in cores are entirely within this Holocene sediment package. Unit 1 indicates a very low energy sheltered environment, such as a lagoon. Such an environment is expected during lower sea level as the shoal would block significant wave energy from the south and east and the antecedent high of the Key Largo Limestone would have blocked wave energy from the north and west. The superposition of reflector $\varepsilon_1$ on the subaerial unconformity ($\varepsilon$) indicates that $\varepsilon_1$ is a marine flooding surface, or perhaps preserved lagoonal muds which may grade upward into Unit 1 identified in the cores. The occurrence of this reflector only in the northwest corner of the study area on the rim of the bedrock high may indicate mud deposition associated with a mangrove fringe, a typical environment in the Keys today.

The abrupt upward transition to much coarser sediment in Unit 2 may reflect overtopping of the outer shoal during sea-level rise and introduction of higher wave energy into the depositional area. The imbricated coarse gastropod (Turritelid) and pelecypod shell beds and interbedded fining upward sediments associated with Unit 2 indicate high energy conditions and are interpreted as storm deposits, possibly associated with hurricanes. Shinn et al. (1990) identified similar shell beds in vibracores from the Quicksands (60 km to the east), and also interpreted them as storm beds. Reflector $\varepsilon_2$, within the unconsolidated Holocene sediment unit, occurs at depths corresponding to the coarse shell beds seen in the cores. This horizon represents much higher energies of deposition than sediments above or below and may be viewed as a flooding surface when the outlier reef was submerged by rising sea level.

The fining upward trend in Unit 3 reflects decreasing ambient bottom energies associated with normal wave activity during sea-level rise since the early Holocene, and a change in sediment source. Much of the fining upward trend likely results from the contribution of carbonate mud from new sources as extensive Holocene reef growth began on the antecedent highs, and backreef areas were flooded allowing mud producers, such as *Halimeda* and *Penicillus*, to become more prolific.

A diagenetic profile is apparent based on microscopic analyses. SEM observations of samples from the top 20 cm of cores show little evidence of dissolution, micritization, or cementation of carbonate muds (Fig. 7a). Samples from near the base of cores show significant evidence of micritization and cementation (Fig. 7b). Aragonite overgrowths were noted on larger carbonate fragments. The diagenetic profile is most apparent in observations of coccoliths. Coccolith preservation ranges from pristine near the sediment/water interface to highly degraded in the base of cores. Diagenesis of these grains is driven by their metastability and is accelerated by aerobic and anaerobic microbial decomposition of organic matter. Sulfate reduction in the presence of carbonate sediments can produce dolomite (Baker and Burns, 1985; Compton, 1988). However, it is not clear whether dolomite found in this investigation is the product of *in situ* diagenesis, or reworked from an external source. No dolomite rhombs were observed by SEM.

It is evident that much of the mud is not produced *in situ* but is derived from the surrounding carbonate banks. Muds are exported from the carbonate banks by wave and tidal current activity and deposited in the study area, with thickest deposits near the source areas. During dive operations, no significant carbonate mud producers were noted in the study area. The increase in mean grain size toward the south and east reflects a combination of increased bottom energy toward the Florida Straits, the direction of greatest fetch and wave energy, and proximity to source with most of the mud being derived from the reefs and backreef areas of the Dry Tortugas.

Reflection coefficient values appear to correspond to the mean grain size of the surface sediment as determined on core samples in the laboratory. The chirp data indicate a bottom sediment mean grain size primarily in the coarse silt size fraction. Chirp data suggest variations in the seafloor sediment grain size across the study area. The seafloor reflection coefficient in the area of core KW-205 is approximately -10 to -11 dB (0.31 to 0.28) indicating a coarse silt grain size. Grain size analyses of KW-205 indicate an average mean grain size of 15 microns (medium silt) in the top 10 cm. The seafloor reflection coefficient in the area of core KW-226, south of KW-205, is higher (-9 to -10 dB; 0.35 to 0.31) indicating coarser sediment. Surface mean grain size at KW-226 is 28.6 microns (coarse silt). Progressing south the seafloor reflection coefficient increases to -8 dB (0.40) indicating coarser sediment. Hardbottom areas are easily mapped based on a very high reflection coefficient of -2 to -4 dB. The very low reflection coefficients (-20 dB) on the seaward side of the outer reef are the product of high scattering resulting from biohermal structures at least 1 meter in relief.

Although impedance estimates have not yet been derived for subbottom reflectors in the chirp data, attempts were made to produce stickograms of impedance contrasts using the product of density and velocity as measured on cores. The primary difficulty with this modeling approach is acquiring useful velocity data for coarse sediment intervals within the cores. Where very coarse shell material is present, attenuation of the acoustic signal used to measure velocity is great. As a result, the first arrival of the acoustic wave may not be detected and an erroneous (lower) velocity is measured. Unfortunately it is these intervals, where the impedance contrasts should occur, which are of greatest importance to modeling. Nevertheless, where adequate data are available, forward modeling reveals some agreement between sediment physical properties, acoustic properties measured by the electric logger, and the chirp sonar data (Fig. 16).

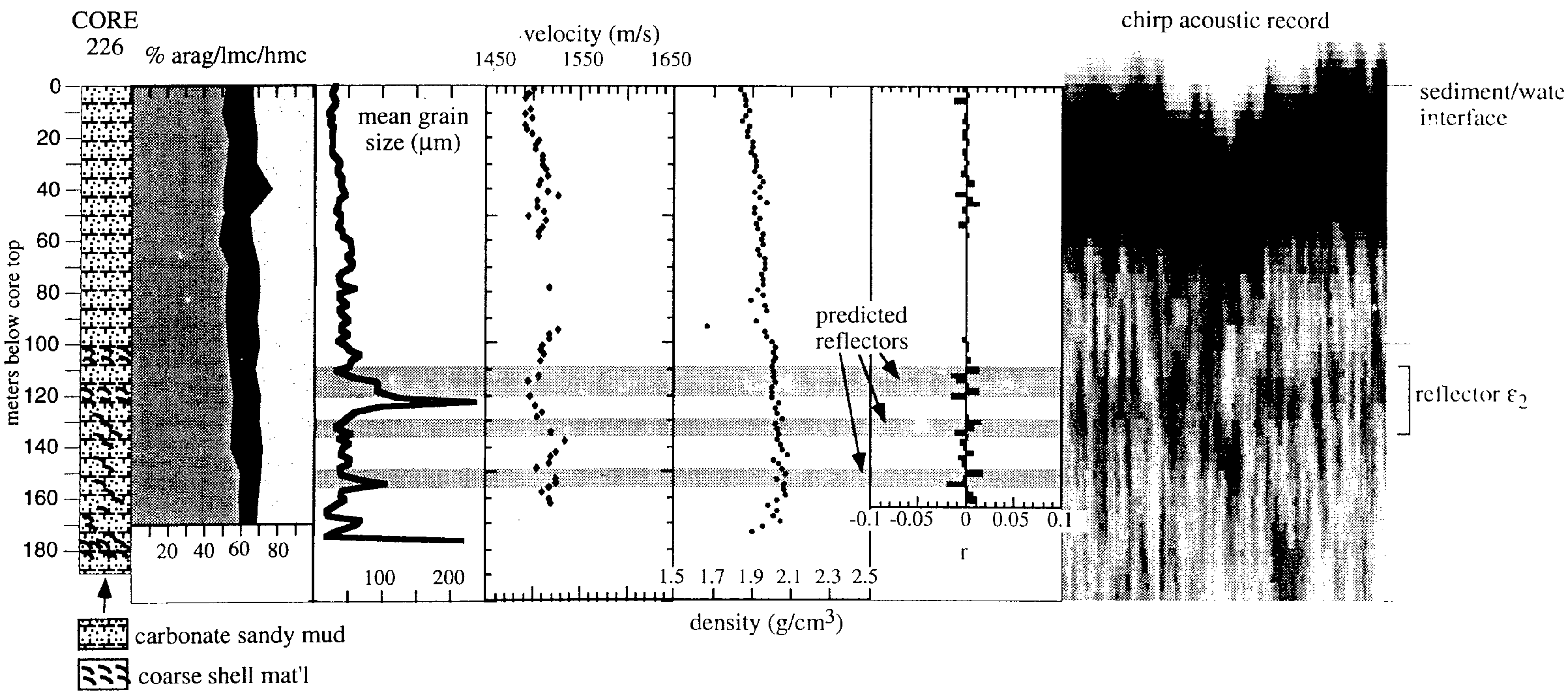



Figure 16. Diagram relating the physical and acoustic properties of sediment from gravity core 226 to the chirp sonar data in the same area. The shell beds of Unit 2 produce variability in the velocity and density structure which produce impedance contrasts. The stickogram of reflection coefficients $\{r = (\rho v_2 - \rho v_1) / (\rho v_2 + \rho v_1)\}$ was produced by averaging impedance $(\rho v)$ over 4 centimeter intervals. The depth of the shell beds and modeled impedance contrasts coincides well with the position of reflector $\varepsilon_2$ in the chirp data.

# SECTION II. BOCA RATON STUDY AREA

## Geologic Framework

The Boca Raton study area (Fig. 17) is a wave-dominated high energy coastline containing mixed carbonate-siliciclastic sands, and fronted by a degradational reef. The side-scan sonar mosaic (Fig. 18) reveals the extent and character of the erosional reef-tract, the sediment fill within the back-reef trough, and the outcropping limestone near the upper shoreface. Carbonate sediments are being shed from erosion of the reef-tract and create bedforms or sand patches migrating southward within the back-reef trough. These carbonate sand patches show greater acoustic backscatter (darker in Fig. 18) than the surrounding siliciclastic-rich sediments. Based on diver observations, the acoustic variability between sediment types is a function of texture and mineralogy as opposed to seafloor relief.

Interpreted vertical beam chirp sonar data are presented in Figures 19 and 20. Maps of the geologic framework based on the chirp data have been produced at USF and are presented in Figures 21, 22 and 23. These include bathymetry, sediment isopach (thickness), and a structure contour map of the surface of the limestone basement. Bathymetric data within the study area reveal a moderately steep upper shoreface environment between 0 and 18 meters below mean sea level (bmsl), a broad middle shoreface terrace between 18 and 22 meters, and a steeply dipping lower shoreface / inner continental shelf environment from 22 to >70 meters. Greatest sediment thickness (4 to 8 meters) occurs across the middle shoreface terrace, and at the seaward edge of the study area at waters depths of > 55 meters. The structure contour map of the limestone surface reveals a continuous broad terrace, a drowned Holocene reef at 24 to 30 meters below mean sea level (Lighty, 1985), with smaller local depressions and highs. The limestone crops out in the upper shoreface and along the relic reef tract offshore.

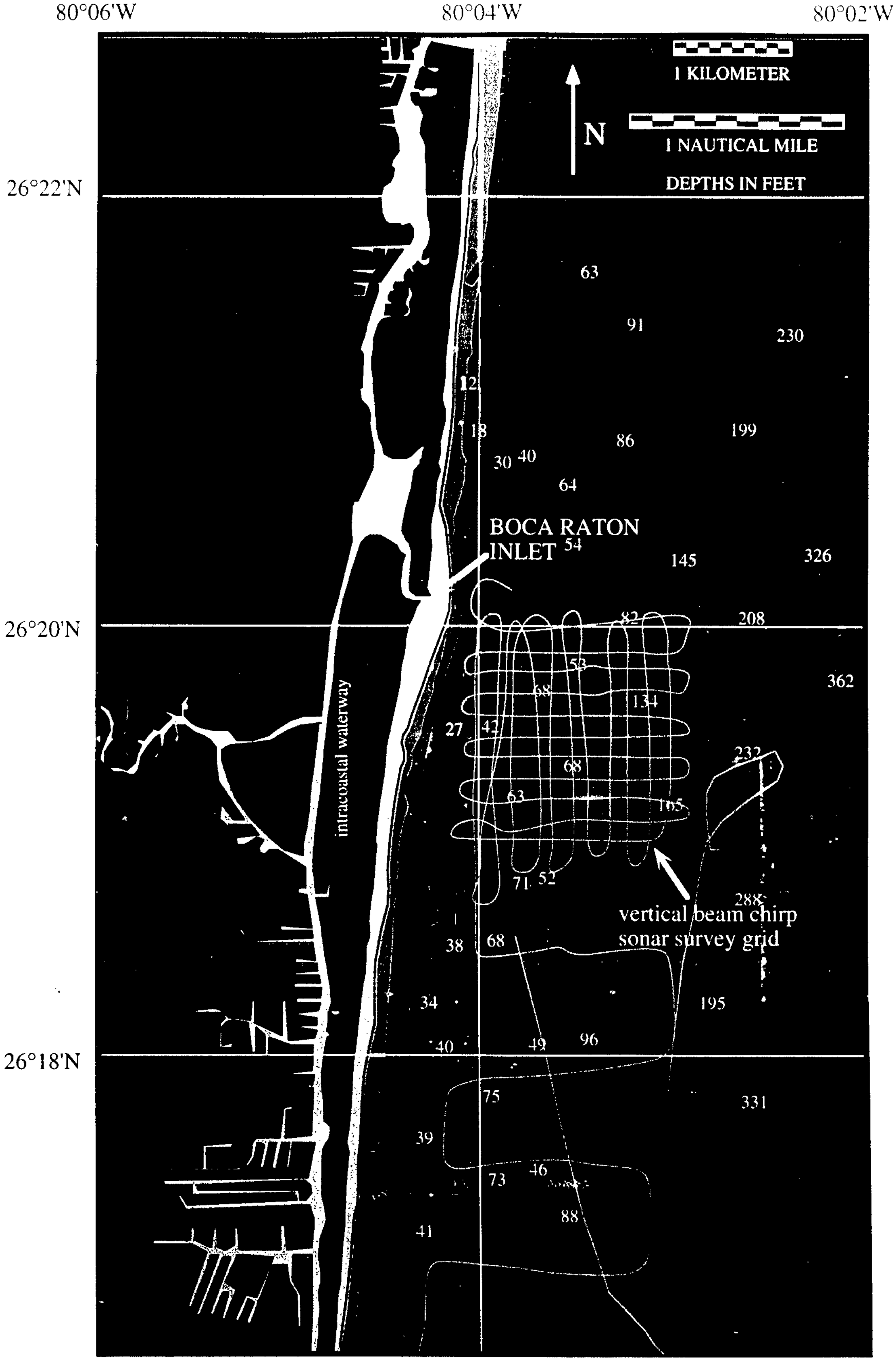



Figure 17. Chart of the Boca Raton study area showing cruise tracks where vertical beam chirp sonar data were collected. Soundings are in feet.

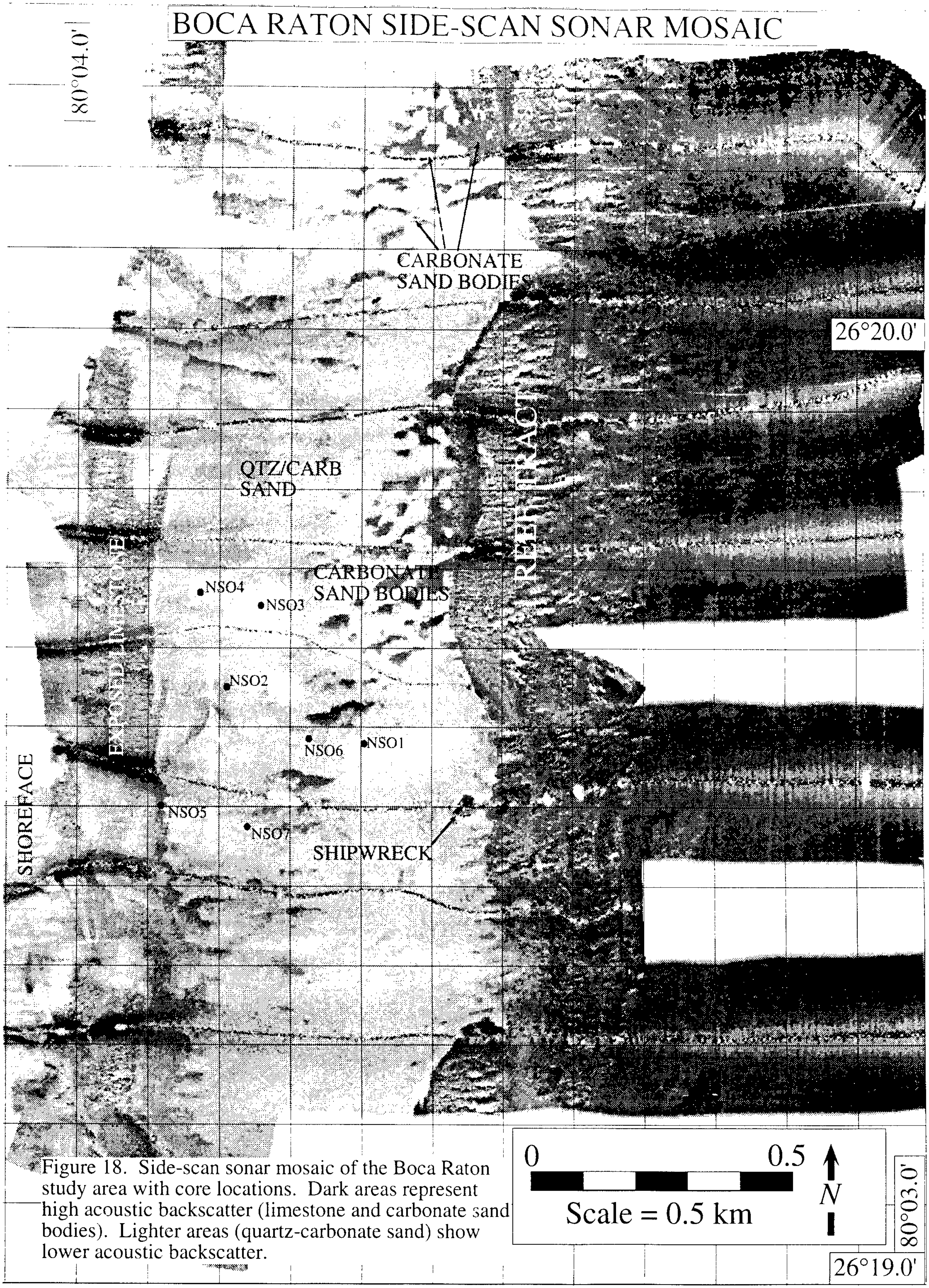



Figure 18. Side-scan sonar mosaic of the Boca Raton study area with core locations. Dark areas represent high acoustic backscatter (limestone and carbonate sand bodies). Lighter areas (quartz-carbonate sand) show lower acoustic backscatter.

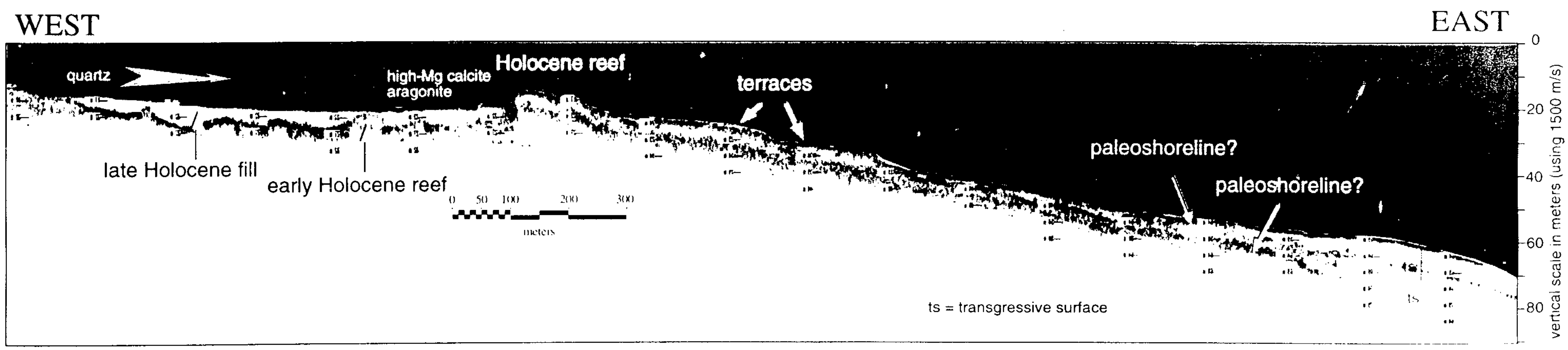



Figure 19. Chirp sonar data from the Boca Raton area with interpretations.

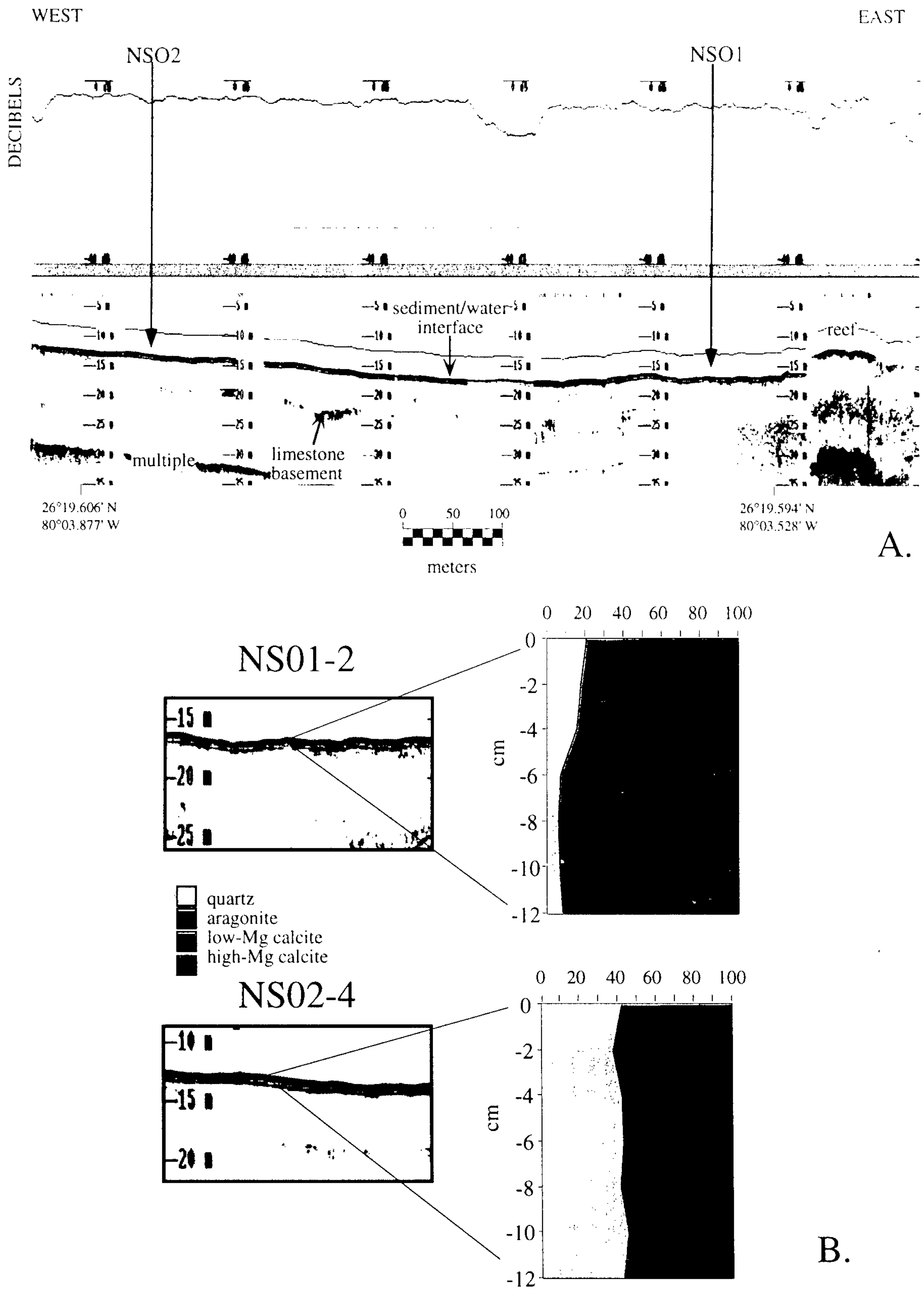



Figure 20. a) Vertical beam chirp sonar data from the Boca Raton study area showing the location of ground truth data provided by ISSAMS and DIAS probes and sediment cores. b) Chirp sonar data and mineralogy of sites NSO1-2 and NSO2-4 illustrating the acoustic facies change related to mineralogy.

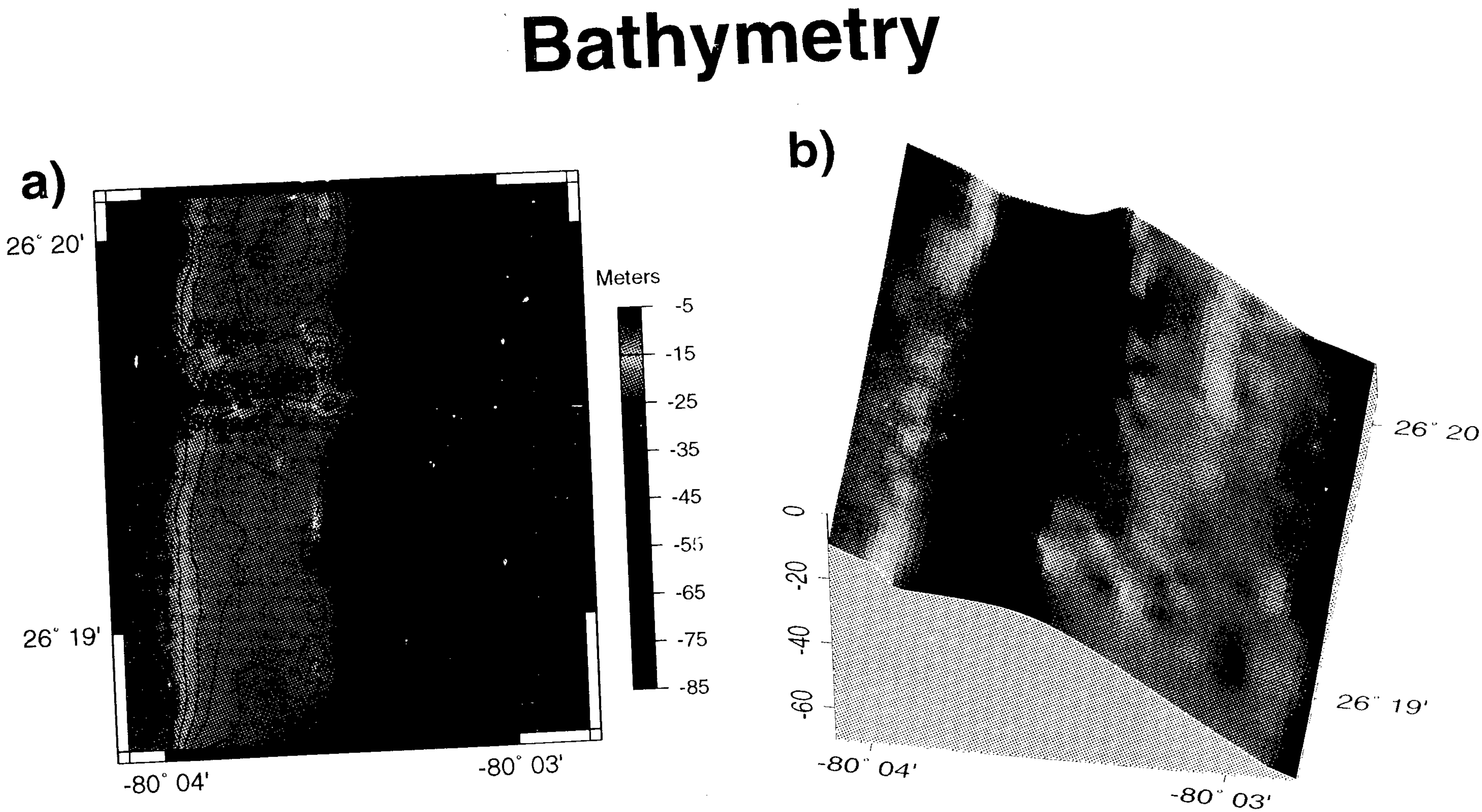



**Figure 21.** Bathymetry derived from CHIRP sonar data shown (a) in map view and (b) from a perspective of N170E, 45°.

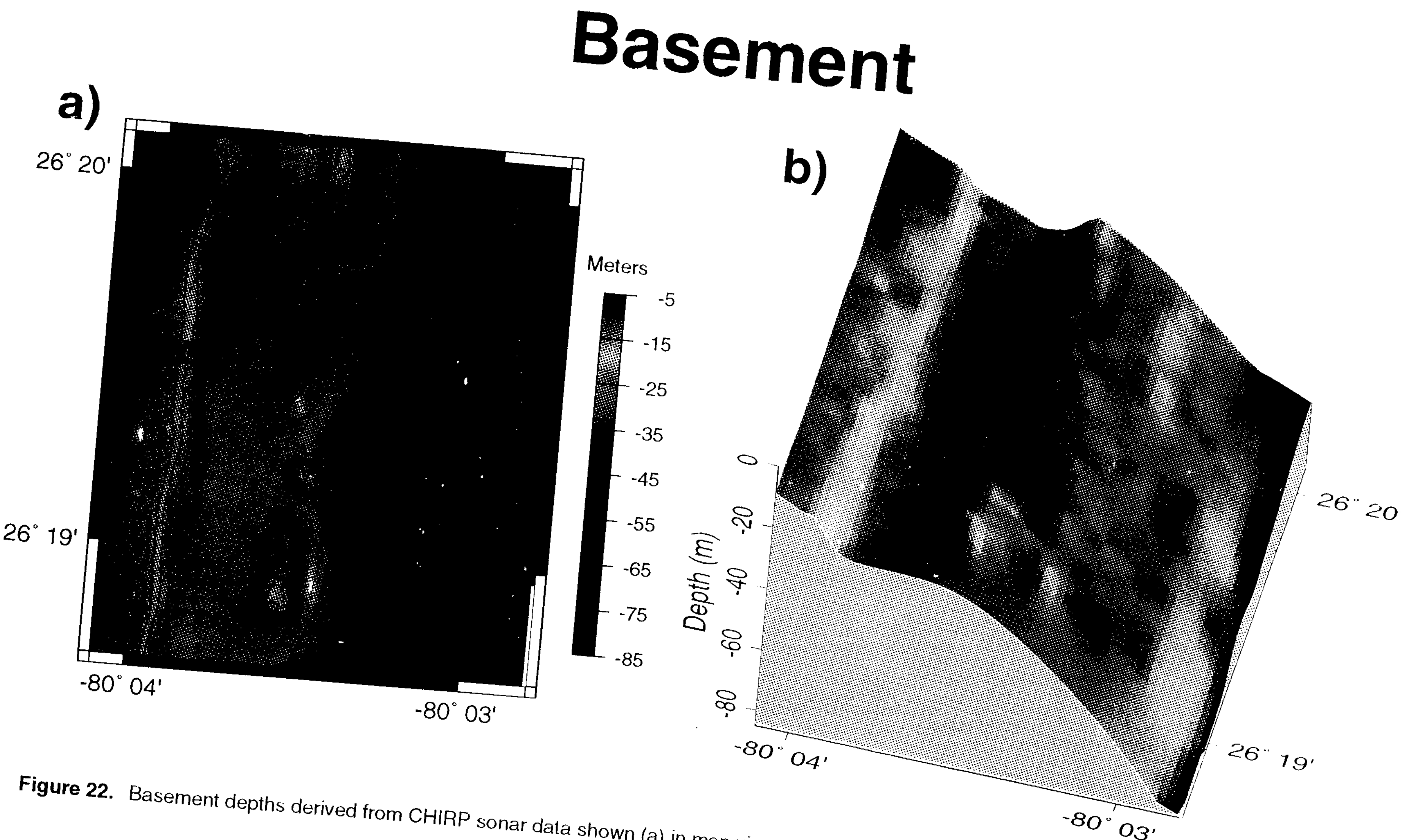



**Figure 22.** Basement depths derived from CHIRP sonar data shown (a) in map view and (b) from a perspective of N170E, 45°.

# Isopach map


**Figure 23.** Map view of isopach data derived from CHIRP sonar data.

## Mineralogic-Petrologic Framework

Sediments within the study area are mixed siliciclastic-carbonate sands (Fig. 24). Mean grain size averages approximately 2 phi (Table 2). The mud content is very low, ranging from 0.8 wt.% to 1.9 wt.%. Carbonates are generally dominated by aragonite with lesser amounts of low-Mg calcite and high-Mg calcite (Figs. 24 and 25; Appendix A). No dolomite was encountered in these cores. Sediments from sites NSO2, NSO3, NSO4, NSO5, and NSO7 are similar in that they have significant quartz (>35%), and little high-Mg calcite (<20%). Core sites NSO1 and NSO6 are closest to the reef tract and in the path of carbonate sands eroded from the reef (Fig. 24). NSO1 and NSO6 both have greater high-Mg calcite contents (>30 wt.%). Core NSO1-2 was taken in one of the carbonate patches seen on the side scan sonar mosaic less than 10m from NSO1-4. NSO1-2 is unique in that the quartz content decreases downcore from 20.6% to 6.2% and high-Mg calcite comprises 50-70% of the sediment.

## Geophysical-Geoacoustic Characteristics

Chirp data are shown in Figure 19 and 20. One major subsurface reflector is evident in the chirp data. Based on the high amplitude of this reflector and karst-like relief on this surface, this horizon is probably a subaerial unconformity and marine flooding surface developed during the last interglacial lowstand and subsequent Holocene sea-level rise. Sediments overlying this reflector show no internal stratification, however, there is an acoustic facies change in a shore-normal direction. Nearshore sediments are acoustically transparent and provide an initial high amplitude, narrow-band acoustic return. The sediments further offshore, toward the reef, exhibit an acoustic response with greater attenuation over the sediment column which tends to degrade the image of the deeper reflector.

Velocity, density, and impedance data from diver cores are presented in Figure 26 and Appendix A. NSO1-2, the core with the lowest insoluble residue, has the lowest

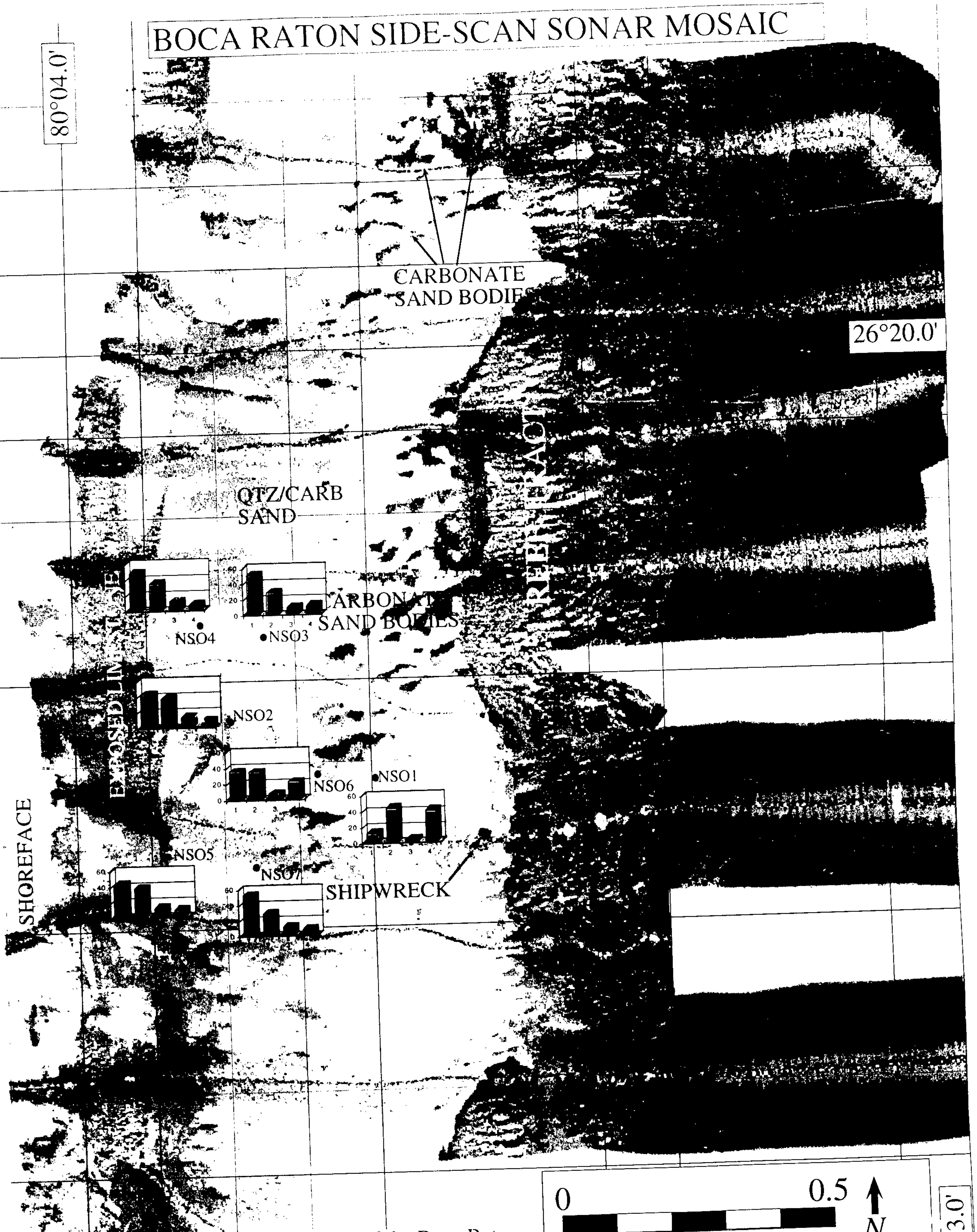



Figure 24. Side-scan sonar mosaic of the Boca Raton study area with histograms of the average mineralogy of sediments from diver cores. Bars are (from left to right) quartz, aragonite, calcite and high-Mg calcite.

# Mineralogy of Cores

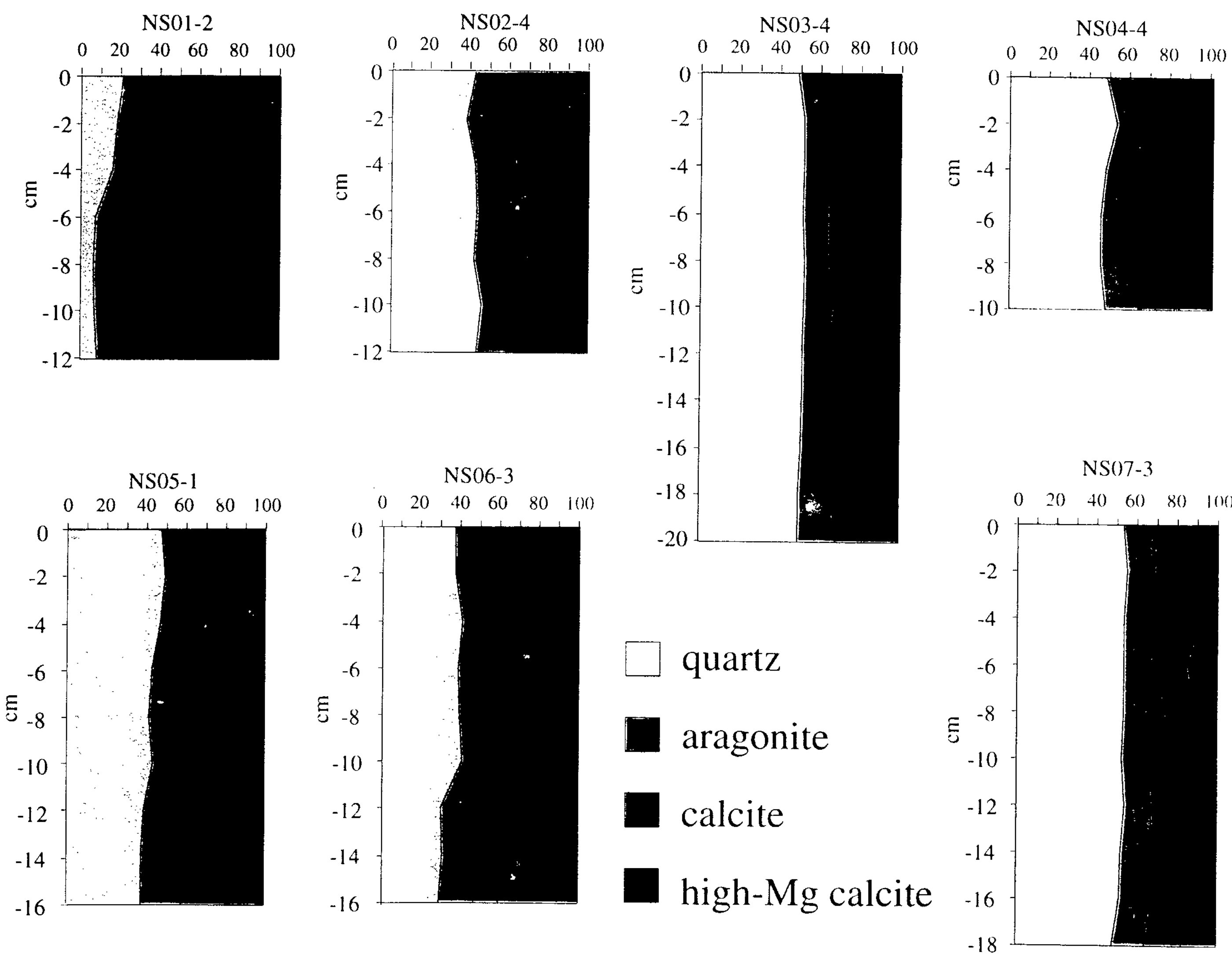



Figure 25. Mineralogy of sediments from diver cores taken in the Boca Raton study area. Carbonate mineralogy is determined by x-ray diffraction using standards. Quartz abundance is determined by acid-insoluble residue analyses.

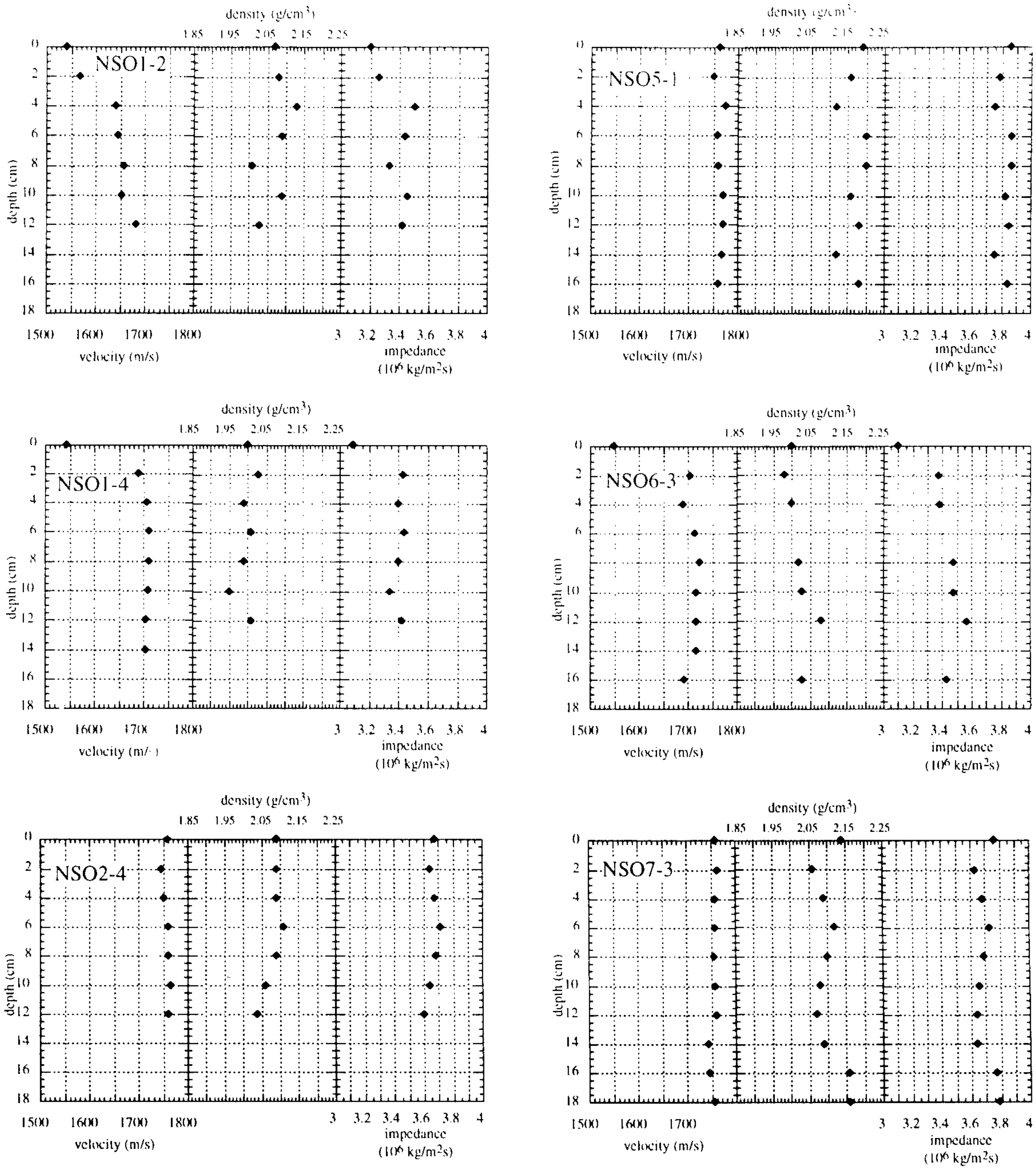



Figure 26. Graphs of p-wave velocity, wet bulk density and impedance versus depth in diver cores from the Boca Raton study area.

velocity (top 10 cm ave.= 1633 $ms^{-1}$). Cores NSO1-4 and NSO6-3, which have greater amounts of high-Mg calcite, have velocities averaging 1706 and 1709 $ms^{-1}$, respectively, in the top 10 centimeters. The remaining cores have velocities averaging approximately 1760 $ms^{-1}$ over the same depth interval. Wet density varies from approximately 2.0 to 2.2 $gcm^{-3}$.

## Discussion

The Boca Raton study area is a windward reef margin. This area has been investigated by Lighty (1985) who revealed that reef growth occurred during lower sea-level conditions of the early Holocene. The coral facies are similar to other Caribbean coral reefs and consist of forereef head corals (*Montastrea, Diploria*), reef framework branching corals (*Acropora palmata*), backreef branching corals (*Acropora cervicornis*), and backreef head corals. Lighty (1985) obtained radiocarbon dates of skeletal aragonite and submarine high-Mg calcite. The oldest date is 9,440 ± 85 years BP and the youngest is 7,145 ± 80 years BP. A mean aggradational rate of 6.6 m/1000 years was determined. The reef began as a fringing reef then developed into a barrier reef as sea level rise flooded the backreef area. Rapid sea-level rise and flooding of the backreef lagoonal area resulted in reef degradation by inimical waters at about 7000 years BP. Temperature and salinity fluctuations and higher turbidity in the nearshore waters stressed the reefs and terminated reef-framework aggradation.

The sediments sampled by divers in the backreef low (no longer a lagoon) are skeletal carbonates and quartz sand with minimal mud. The coarse nature of the sediments results from a combination of the high energy, wave-dominated environment, a lack of carbonate mud producers, and the lack of a terrigenous mud source. Carbonate skeletal material is dominated by pelecypod shells that display a wide range of preservation, from articulated and minimally abraded, to severely abraded, fragmented, and fossilized (gray). Much of the carbonate material is apparently produced within the local depositional area.

The quartz sand is transported in the littoral zone from the north via longshore currents. Some may also be reworked from Plio-Pleistocene beach and dune ridges on land.

The side-scan sonar mosaic reveals the presence of coarse patches of carbonate material being eroded from reefal highs. These patches are elongate and trend ENE-WSW. They appear to be sandwaves with a wavelength of approximately 75 to 100 meters, however, diver observation and chirp sonar data show negligible relief. The occurrence of the carbonate patches is obvious based on backscatter contrast with the carbonate sediments showing higher backscatter (darker hue) than the finer, quartz-rich sediments (lighter hue). The carbonate patches maintain their integrity as they migrate shoreward and downcurrent (southward), indicating that they are acting as coherent sandwaves.

Density and velocity measurements of core material show little variation in density (range = 1.95 to 2.2 $gcm^{-3}$) and high velocities (1540 to 1775 $ms^{-1}$), resulting in high impedance values (>3.2 x $10^6$ $kgm^{-2}s^{-1}$). Impedance increases toward the reef, perhaps in response to increased grain size of the carbonate dominated sediments.

# SECTION III. INDIAN ROCKS BEACH

## Geologic Framework

The Indian Rocks Beach study area is a shallow (<6 meters), low-gradient, wave-dominated, low to medium energy, mixed carbonate and siliciclastic nearshore environment. Approximately 370 km of side scan sonar tracklines comprising a mosaic of roughly 100 $km^2$ have been acquired within the study area (Fig. 27), and present a unique, high-resolution image of the seafloor (Fig. 28). Swath-beam bathymetry using an ELACS system was also acquired over a smaller area within the confines of the side scan mosaic (Figs. 29-32). Approximately 225 km of chirp sonar data were acquired within the Indian Rocks Beach area. Track lines are oriented north-south and east-west and are spaced at 100 meter intervals (Fig. 33). Total coverage is approximately 9 $km^2$. High resolution, single channel, digital seismic data (370 km) are also available from this study area (Fig. 34). Ground truth data consist of 24 vibracores and grab samples. Three sites were evaluated using the ISSAMS, and nine diver cores were taken.

Within the study area large sand ridges overly intermittently exposed limestone hardbottoms. Sand ridges are approximately 1 to 2 meters in relief and trend NNW-SSE, oblique to the coastline and subparallel to each other (Fig. 35). Ridges occur from the lower shoreface to at least 25 km offshore, and increase in wavelength and thickness (to as much as 4 meters) in an offshore direction. Harrison (1996) found a hierarchy of bedforms which are superimposed upon the sand ridges suggesting that the ridges, or at least the surface of the ridges, periodically equilibrate with the modern hydraulic regime. Some of the ridges appear symmetrical whereas others appear asymmetrical and suggest a southerly current flow. The ridges in the northwest portion of the study area are comprised of smaller sand waves. The ridges have a wavelength of >500 meters whereas sand waves have a wavelength of approximately 200 meters. The NW-SE trending sand waves coalesce in en echelon fashion to produce the larger NNW-SSE trending ridges.

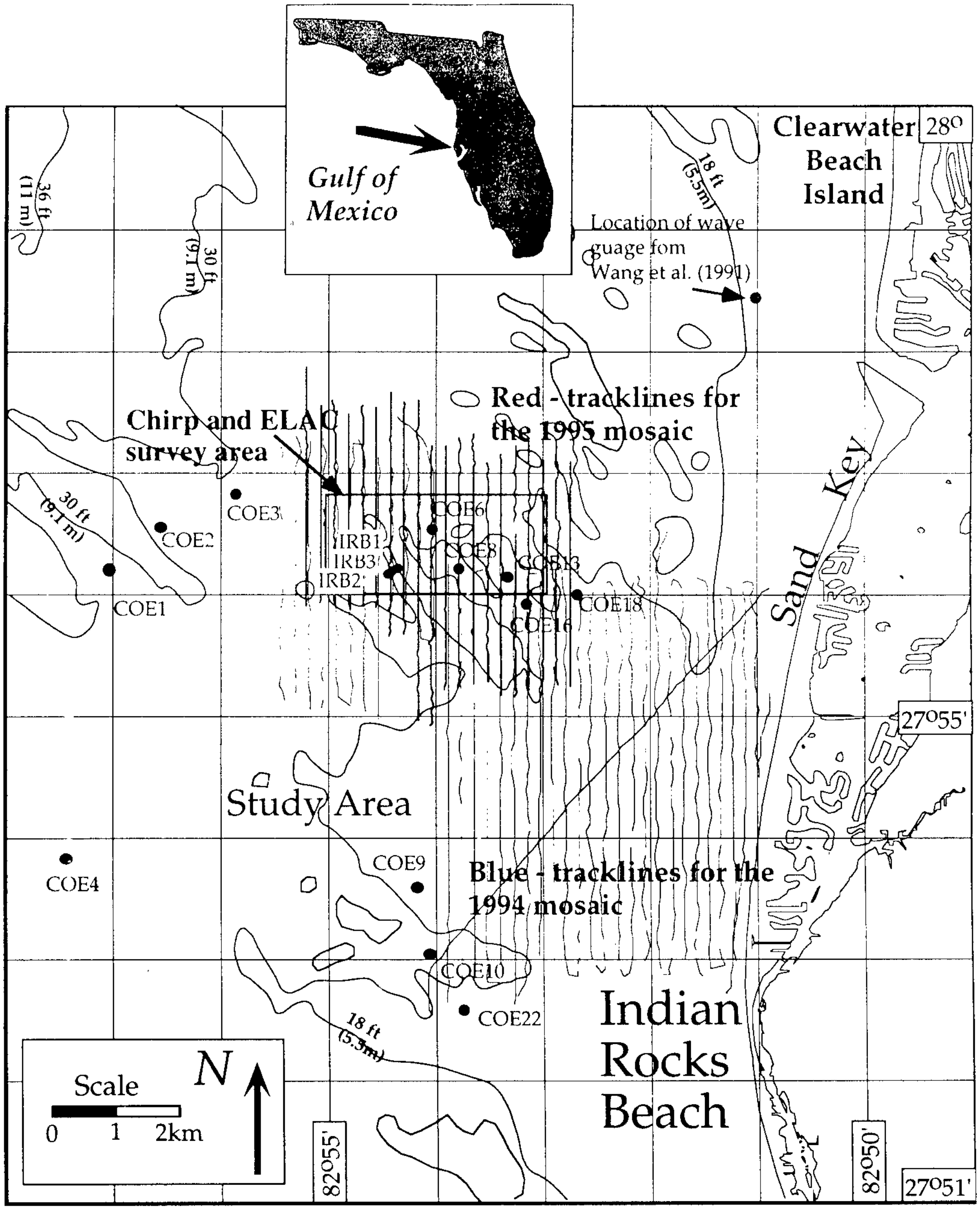



Figure 27. Tracklines for the 1994 (blue) and 1995 (red) side-scan sonar mosaics with locations of cores IRB 1-3 which transect a sand ridge. Other cores (COE) are from another investigation but are used to provide additional ground truth (modified from Harrison, 1996). The area surveyed by chirp vertical beam sonar and ELAC swath-beam sonar is outlined in green.

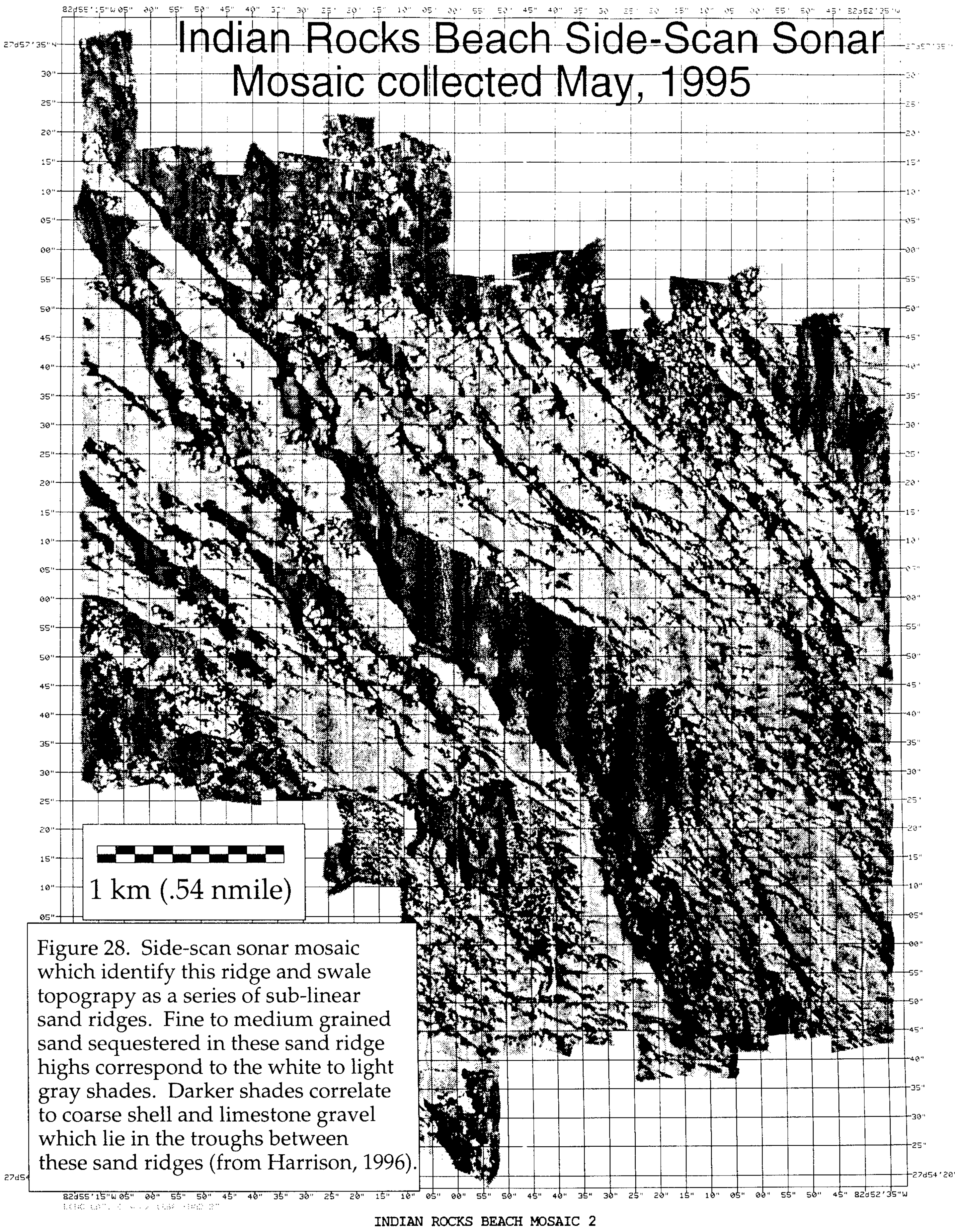



Figure 28. Side-scan sonar mosaic which identify this ridge and swale topograpy as a series of sub-linear sand ridges. Fine to medium grained sand sequestered in these sand ridge highs correspond to the white to light gray shades. Darker shades correlate to coarse shell and limestone gravel which lie in the troughs between these sand ridges (from Harrison, 1996).

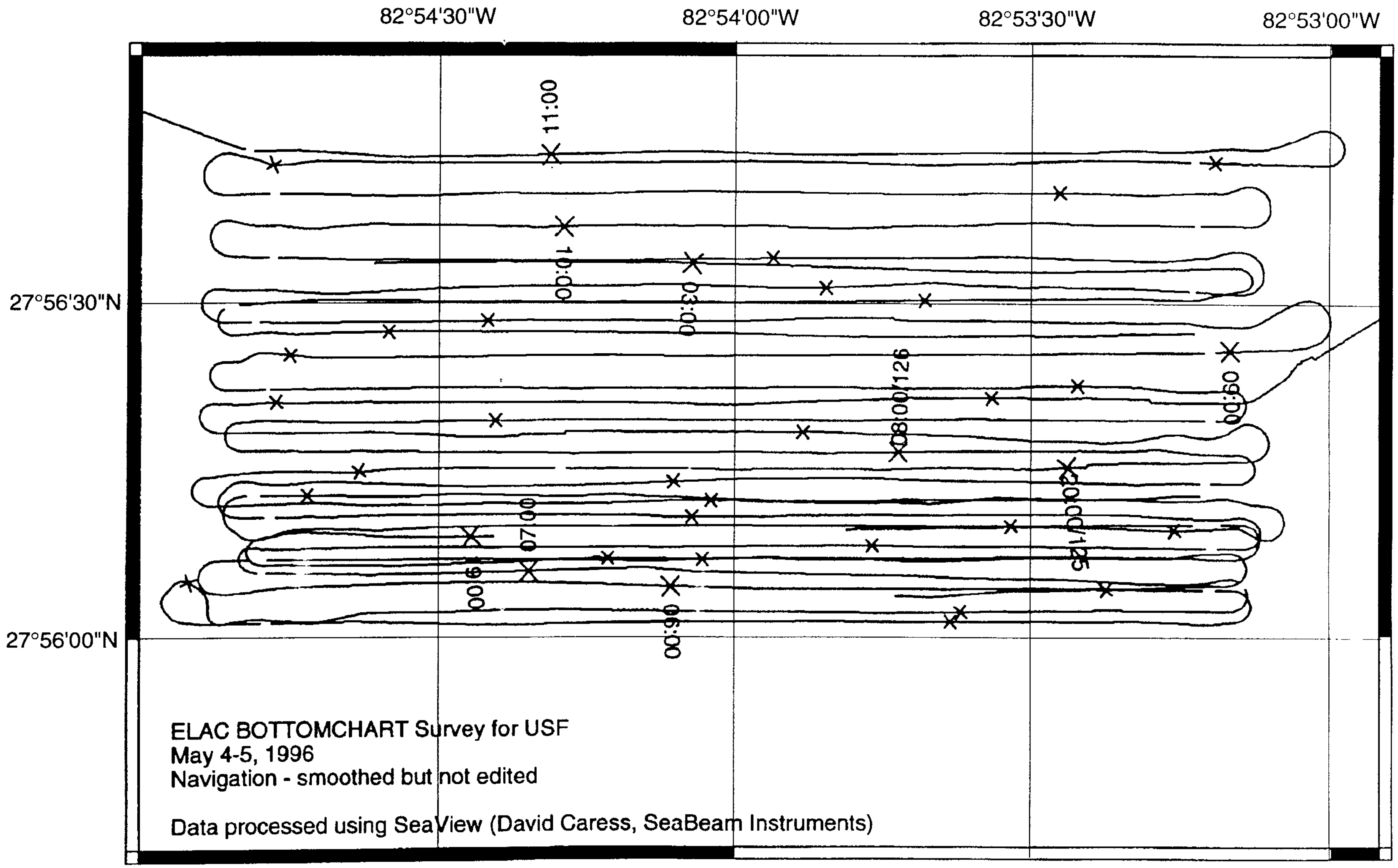



Figure 29. Cruisetracks from the ELAC swath-beam sonar survey. Data are presented in Figures 30-32.

ELAC BOTTOMCHART Survey for USF

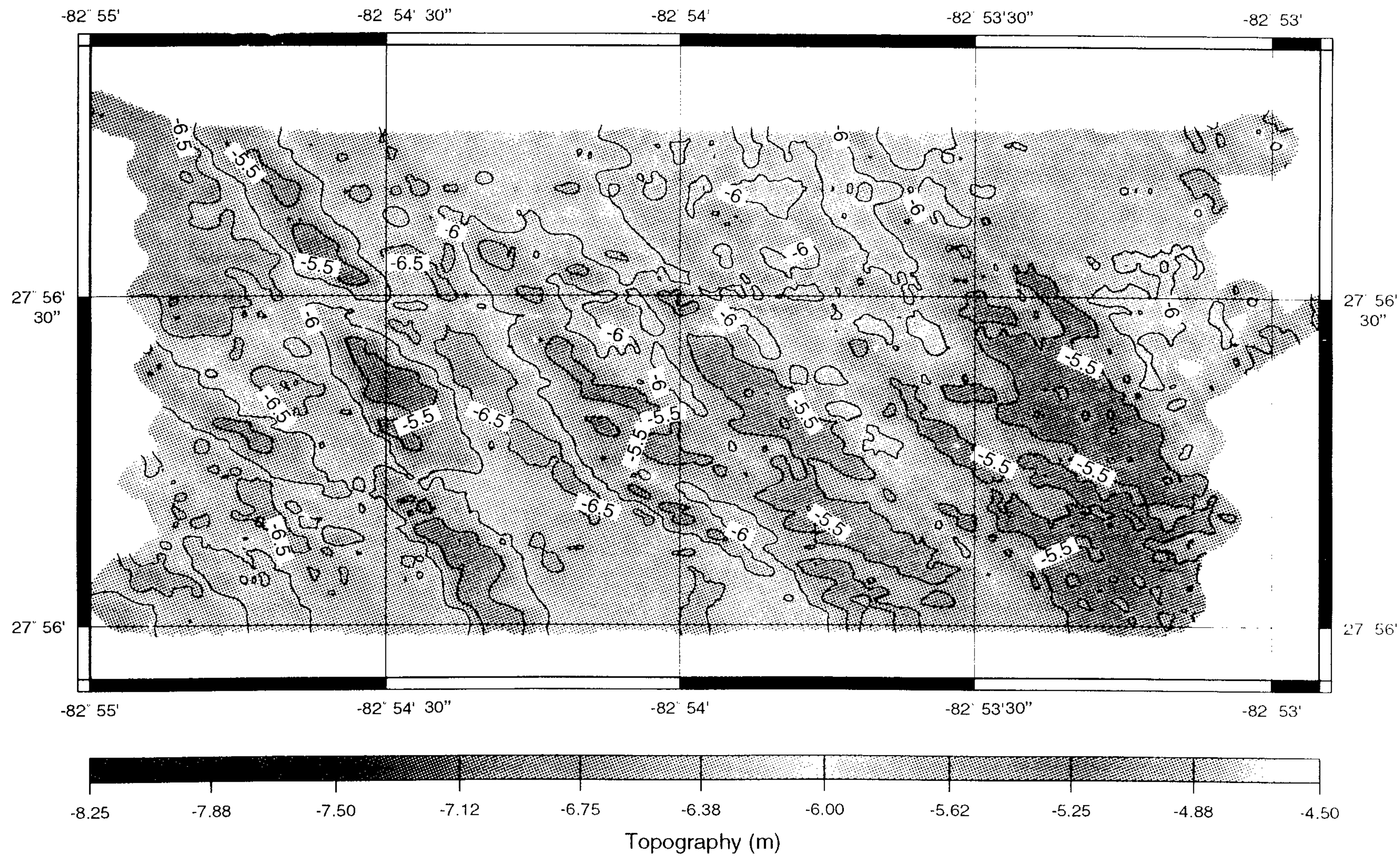



**Figure 30.** Map view of ELACS bathymetry data. Contoured at .5 m.
Raw bathymetry gridded to 5 m by 5 m bins, spline interpolated to fill in 100 m gaps.

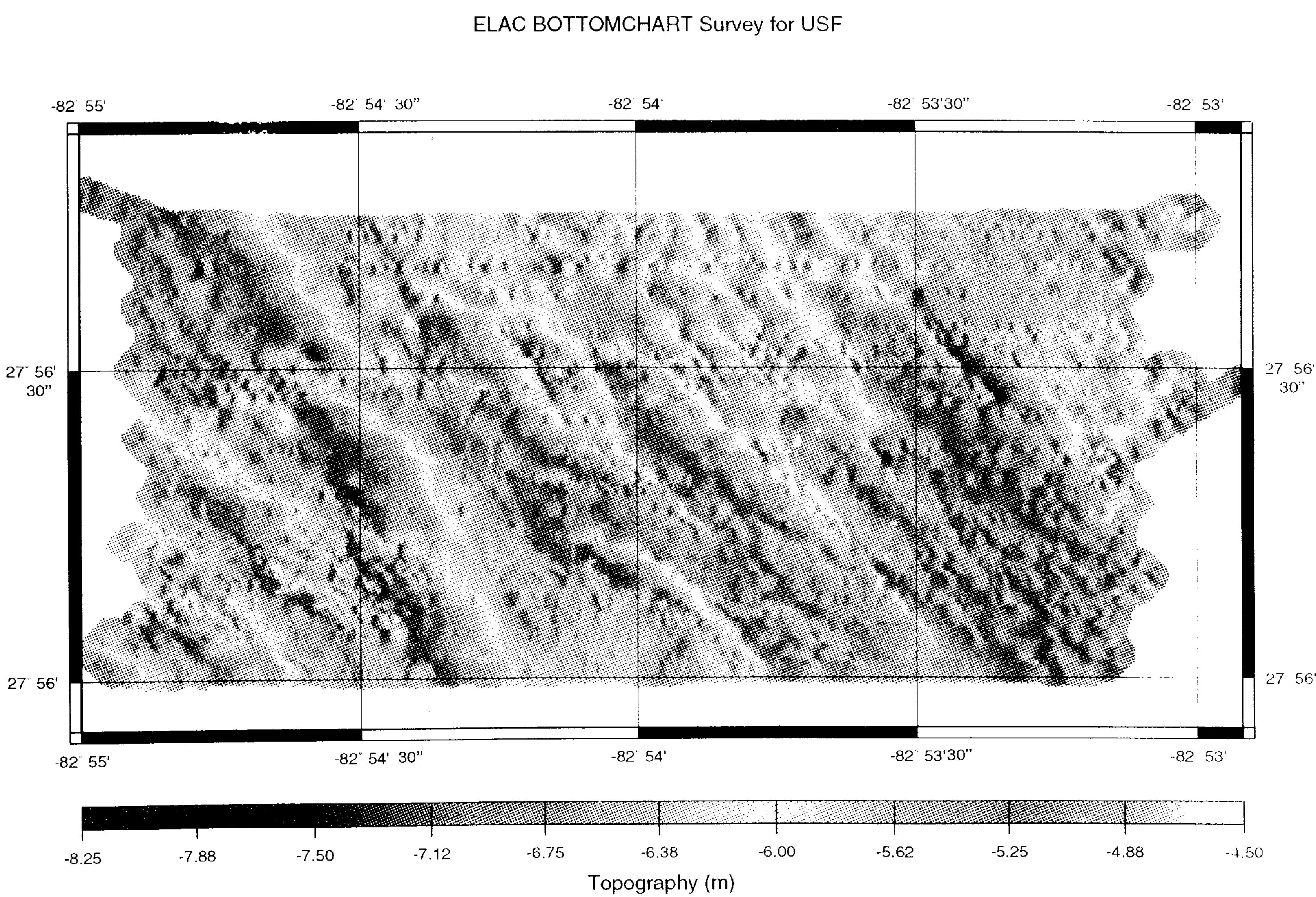



**Figure 31.** Shaded relief view of ELACS bathymetry data, illuminated from the east. Raw bathymetry gridded to 5 m by 5 m bins, spline interpolated to fill in 100 m gaps.

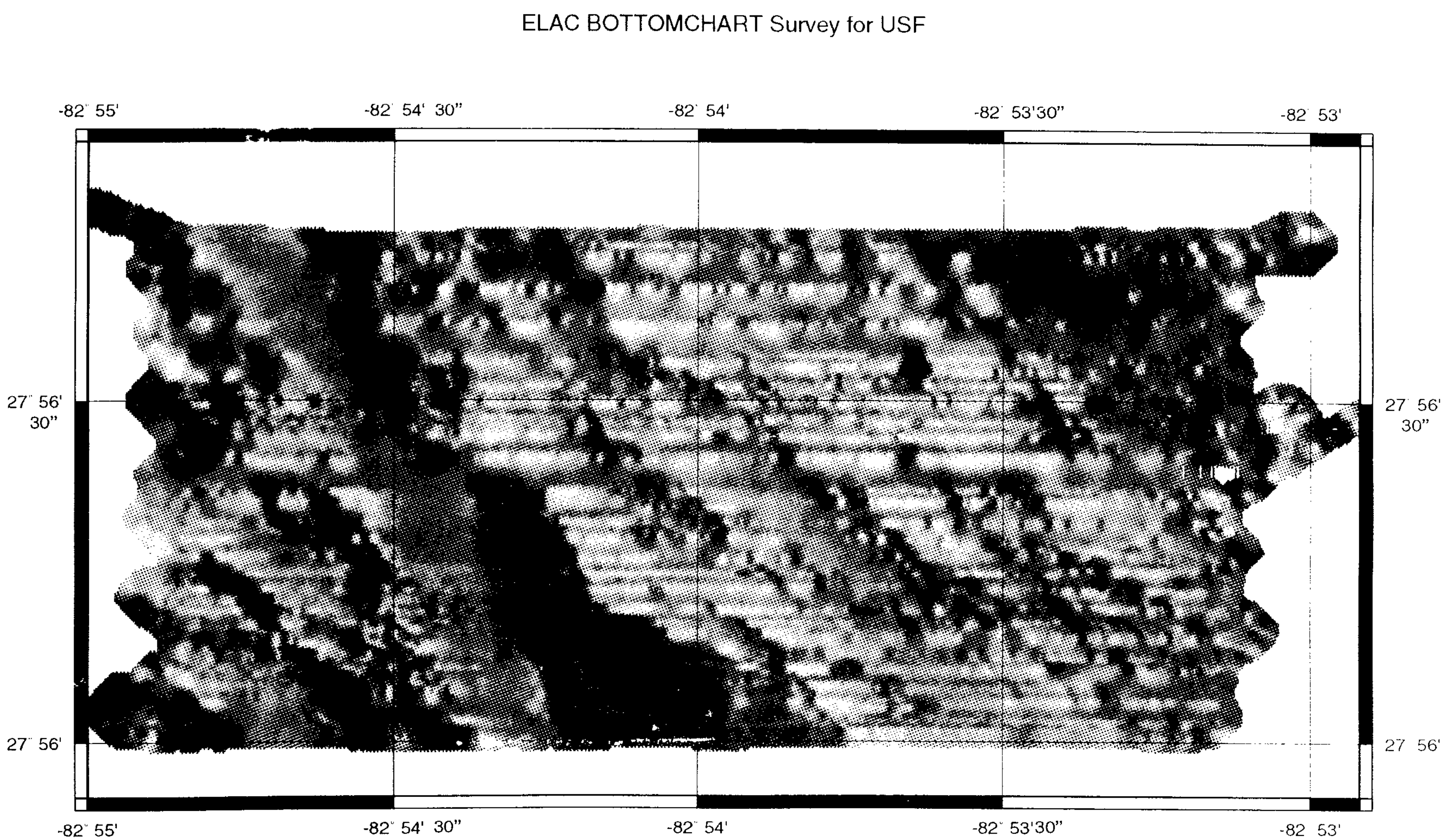



**Figure 32.** Map view of ELACS amplitude data. Large amplitudes shown as dark with histogram equalization.

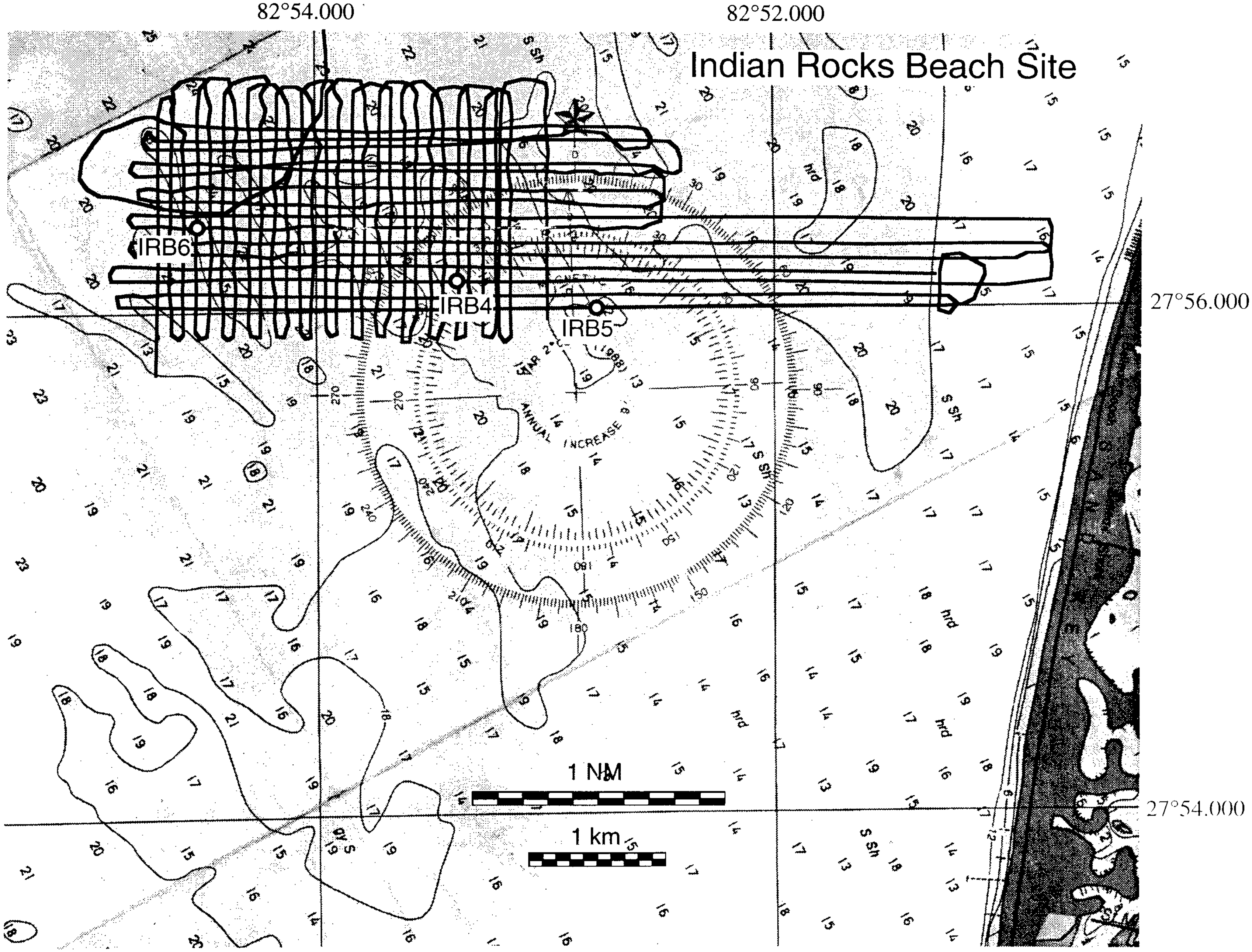



Figure 33. Chart showing tracklines for the chirp sonar survey grid, and ground truth locations (IRB4, IRB5, IRB6) in the Indian Rocks Beach test bed area.

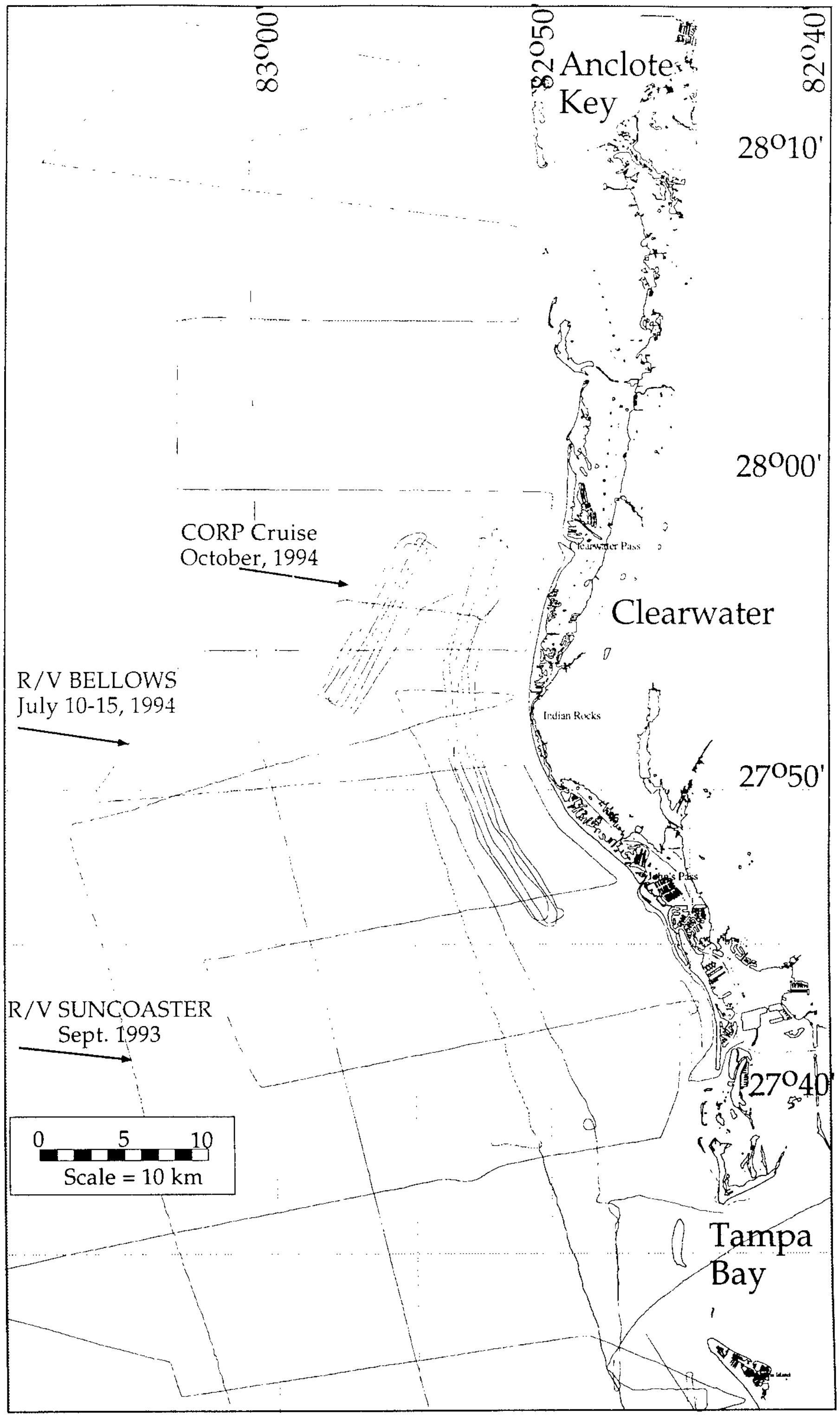



Figure 34. Tracklines where seismic data are available.

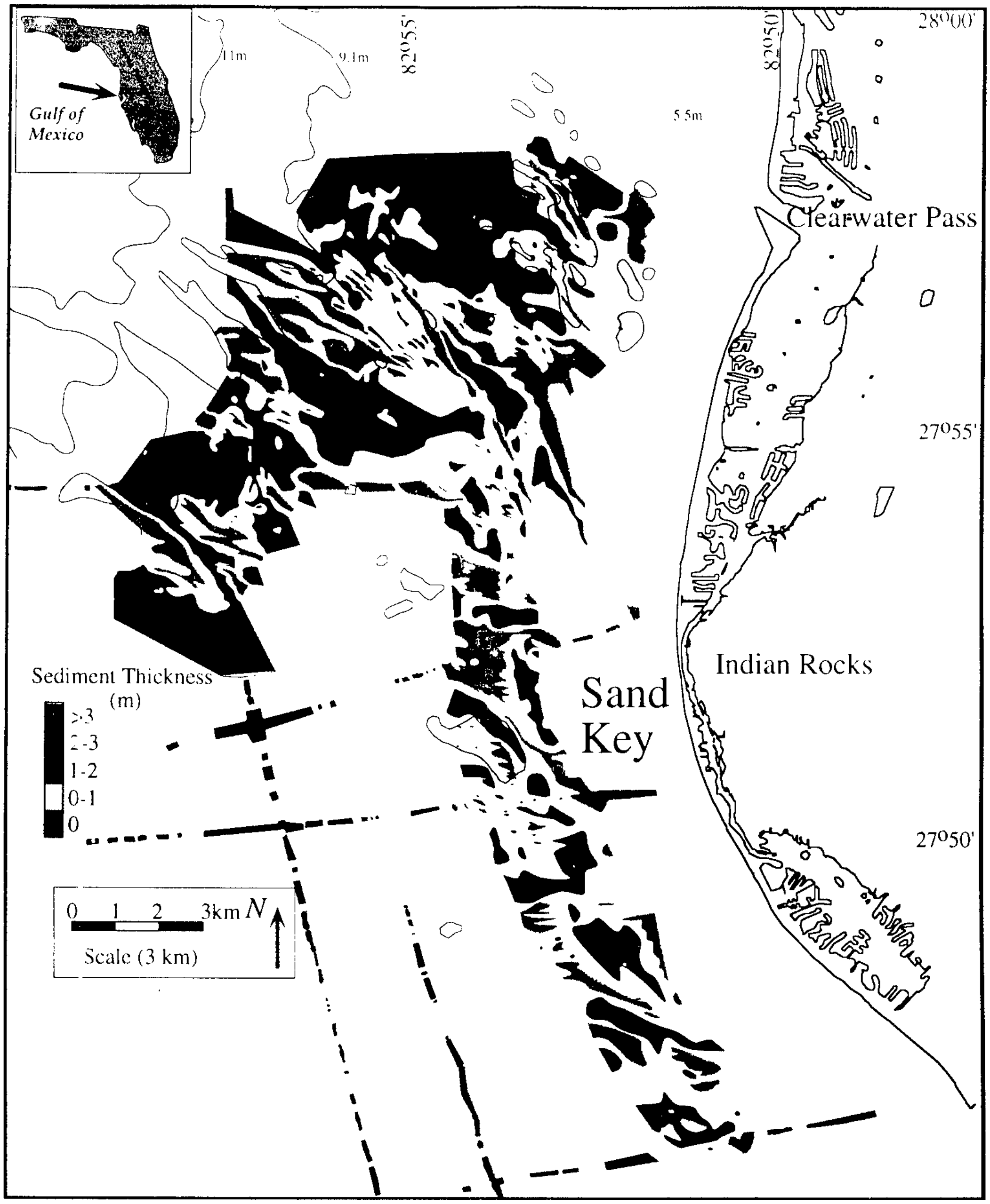



Figure 35. Sediment thickness isopach map displaying thickness of sand ridges offshore Sand Key. Note that sediment thickness and trend of these ridges match the offshore bathymetry which has been digitized from a 1983 NOAA bathymetric map (from Locker, 1995).

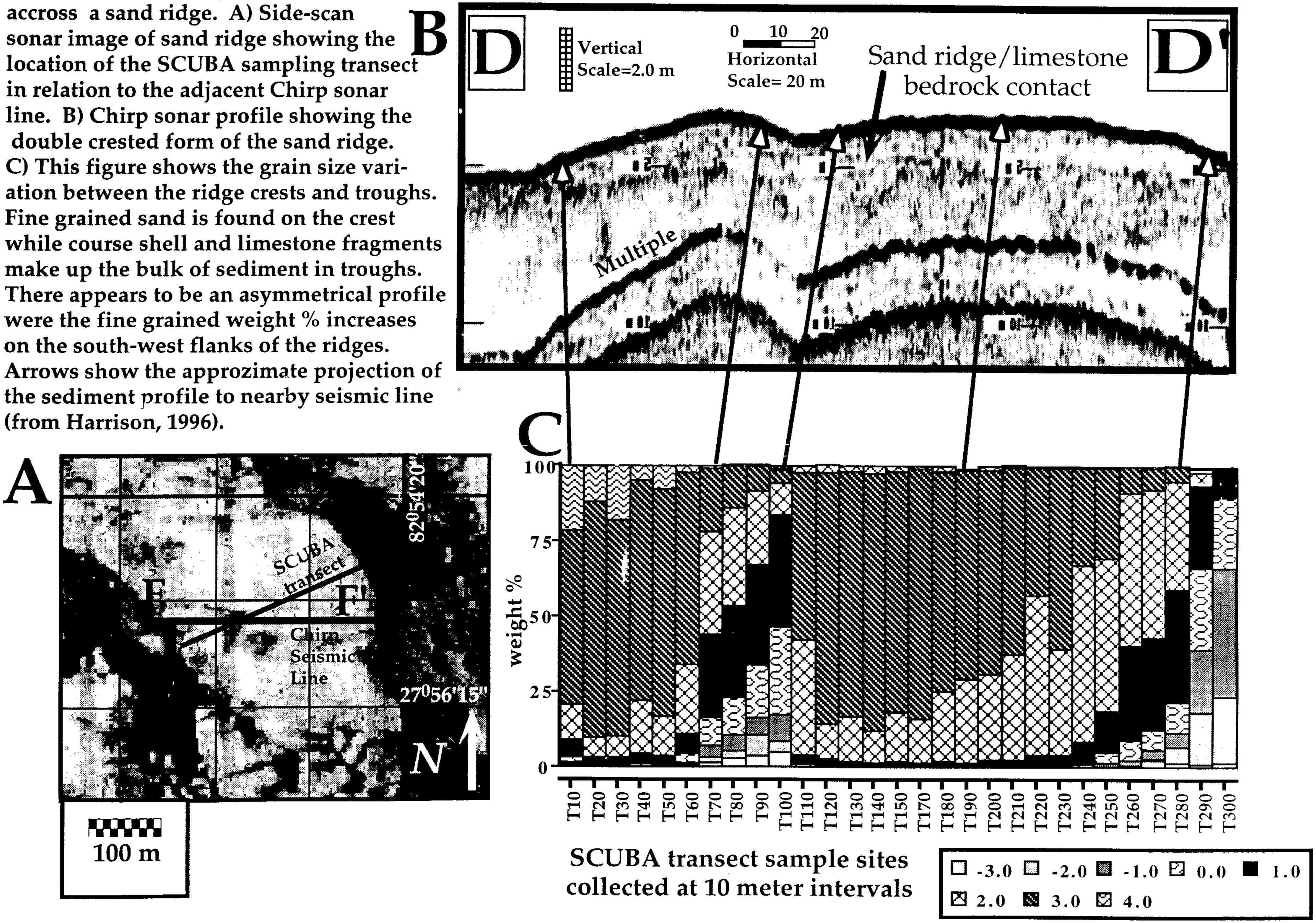
**Mineralogic-Petrologic Framework**

Sediments comprising the sand ridges are a mixture of well sorted, fine to very fine-grained quartz sand (predominantly in the 4 to 3 phi size range), carbonate skeletal grains, carbonate intraclasts, and, in lesser amounts, phosphorite grains. Mean grain sizes in diver cores from this study area are the coarsest of all the study areas. Mean phi at the top of core IRB6-2 is 1.1 to 1.7 phi, with grain size increasing to 0.26 phi at 8 cm (Appendix A). Gravel increases downward from 7.1% at the surface to 33.6% at 8 cm. The mud content is very low, less than 0.1 wt.%. The % insoluble residue (dominantly quartz) is slightly less than in the Boca Raton site, ranging from 22 to 40 wt.%.

Divers recovered surface sediment grab samples across two sand waves which comprise a sand ridge (Fig. 36). These samples show that grain size is coarsest along the northeast facing slopes and troughs of the sand ridges (Harrison, 1996). Sediment is finest on the crest of sand waves.

Vibracores which penetrated the sand ridges (Figs. 37, 38, 39) recovered several sedimentary facies (Harrison, 1996). The lowermost facies recovered is a blue-green clay grading upward into a non-fossiliferous carbonate facies consisting of white, chalky, brecciated limestone and stringers of quartz sand. Overlying the carbonate facies is a tan, fine-grained quartz sand and shell facies. An organic-rich silt facies underlies the quartz sand facies in core IRB-95-2. The tan sand and shell facies is abruptly overlain by a dark gray carbonate gravel, including limestone intraclasts, coral fragments, and large highly abraded shells. This gravel facies grades and fines upward into the sand ridge facies composed of fine to very fine quartz sand (3 to 4 phi) with better preserved, finer shells, and gray limestone intraclasts. Index properties (velocity, density, etc.) were not determined on the vibracores because of the inherent loss of original fine structure resulting from the vibration.

Figure 36; Sediment grain size variation accross a sand ridge. A) Side-scan sonar image of sand ridge showing the location of the SCUBA sampling transect in relation to the adjacent Chirp sonar line. B) Chirp sonar profile showing the double crested form of the sand ridge. C) This figure shows the grain size variation between the ridge crests and troughs. Fine grained sand is found on the crest while course shell and limestone fragments make up the bulk of sediment in troughs. There appears to be an asymmetrical profile were the fine grained weight % increases on the south-west flanks of the ridges. Arrows show the approzimate projection of the sediment profile to nearby seismic line (from Harrison, 1996).



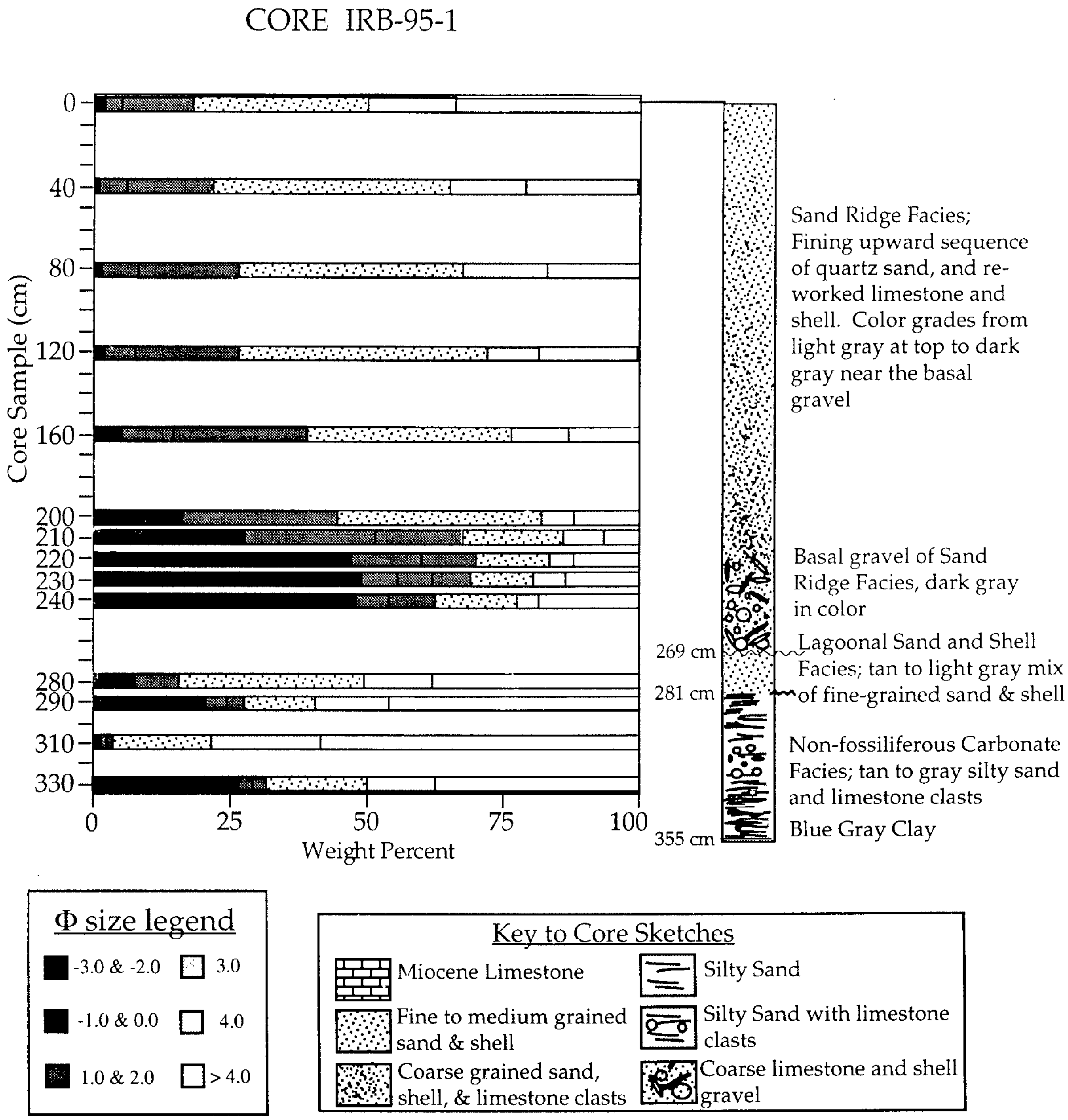



Figure 37. Description of core IRB-95-1 and grain size distribution. Location of ravinement surface is displayed (from Harrison, 1996).

CORE IRB-95-2

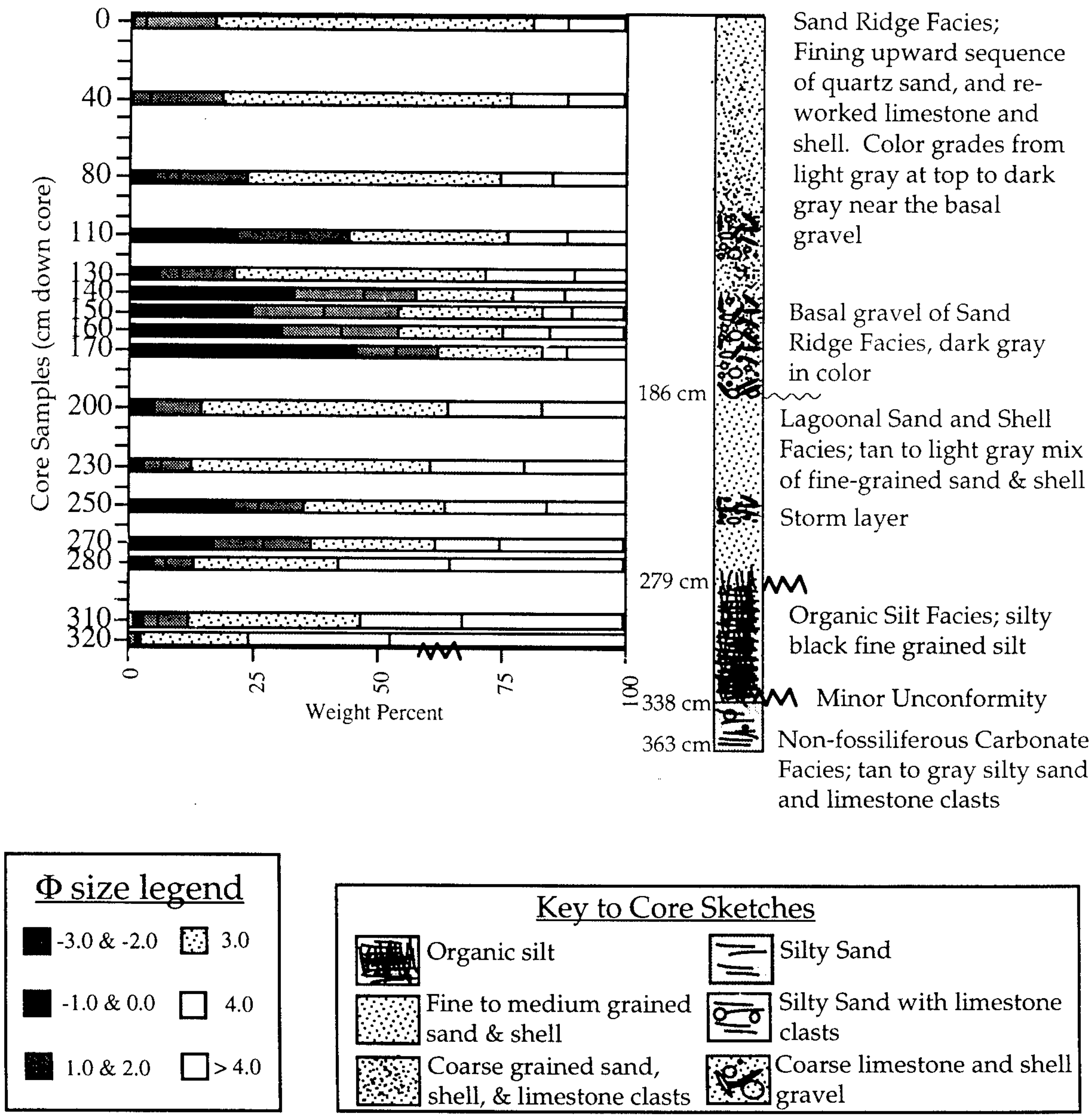



Figure 38. Description of core IRB-95-2 and grain size distribution. Location of ravinement surface is displayed (from Harrison, 1996).

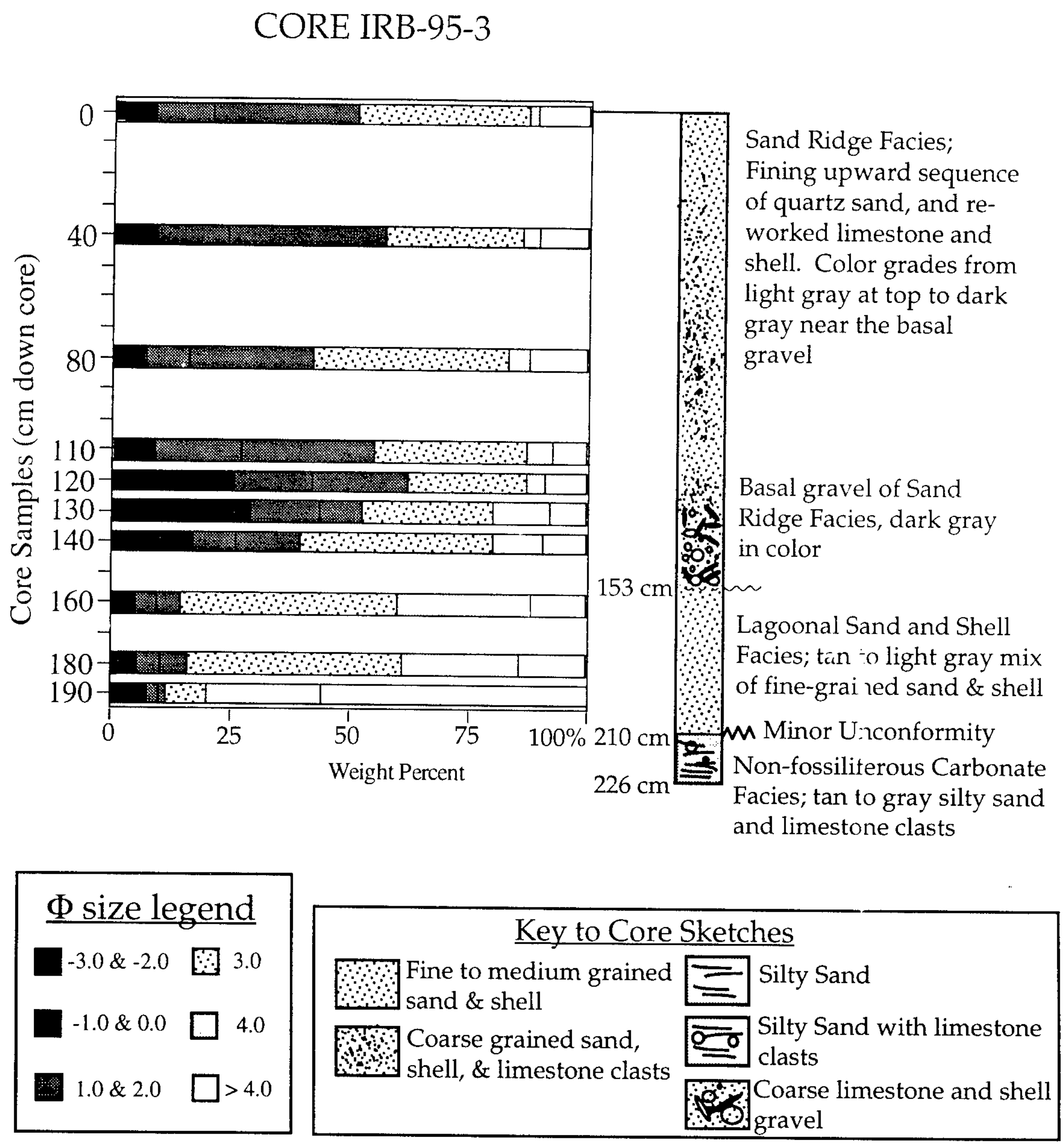



Figure 39. Description of core IRB-95-3 and grain size distribution. Location of ravinement surface is displayed.

**Geophysical-Geoacoustic Framework**

Chirp sonar data reveal minor reflectors within the sand ridges (Figs. 40-43), although the reflectors are near the limits of resolution. No internal structure is apparent in the seismic data. A horizontal reflector is apparent beneath the sand ridges, in some instances, and corresponds in depth to a continuation of the flat seafloor between ridges. Chirp sonar and seismic data reveal that the underlying limestone may be quite variable in relief.

Acoustic velocities range from 1542 $ms^{-1}$ (a surface measurement which may be erroneous) to 1773 $ms^{-1}$ (Fig. 44). Sediment wet bulk densities average 2.05 $gcm^{-3}$ with little variation. The resulting impedance values range from approximately 3.4 to 3.6 x $10^6$ $kgm^{-2}s^{-1}$. Overall, the conditions are quite similar to the Boca Raton site.

**Discussion**

Sedimentary facies identified in the vibracores reveal a depositional history beginning with a possible highly weathered calcrete and soilstone breccia developed upon older (possibly Miocene) clays. The contact between the carbonate facies and the organic-rich facies is a marine flooding surface indicating sea-level rise, indundation of the area, and development of shallow, probably back-barrier lagoonal conditions. The organic-rich silt facies has a radiocarbon age of 5400 years BP suggesting that it developed under approximately 3 meters of water (Harrison, 1996; Wright, 1995). The foraminiferal assemblage is dominated by *Broeckina/Parasorities orbitoloides*, which is a warm water, possibly hypersaline, epifaunal foram common to sea grass beds, lagoons and nearshore environments (Harrison, 1996; Hallock et al., 1993). The tan sand facies may be lagoonal or shallow marine as radiocarbon dating of foraminifera sets the age at 3420 years BP which suggests deposition at approximately 6 meters water depth (Wright, 1995).

Harrison (1996) interprets the gravel layer as resulting from sand ridge migration, as opposed to transgression and shoreface erosion, based on foram radiocarbon ages of <3400 years. The fining upward trend in the sand ridge facies may have formed by sand

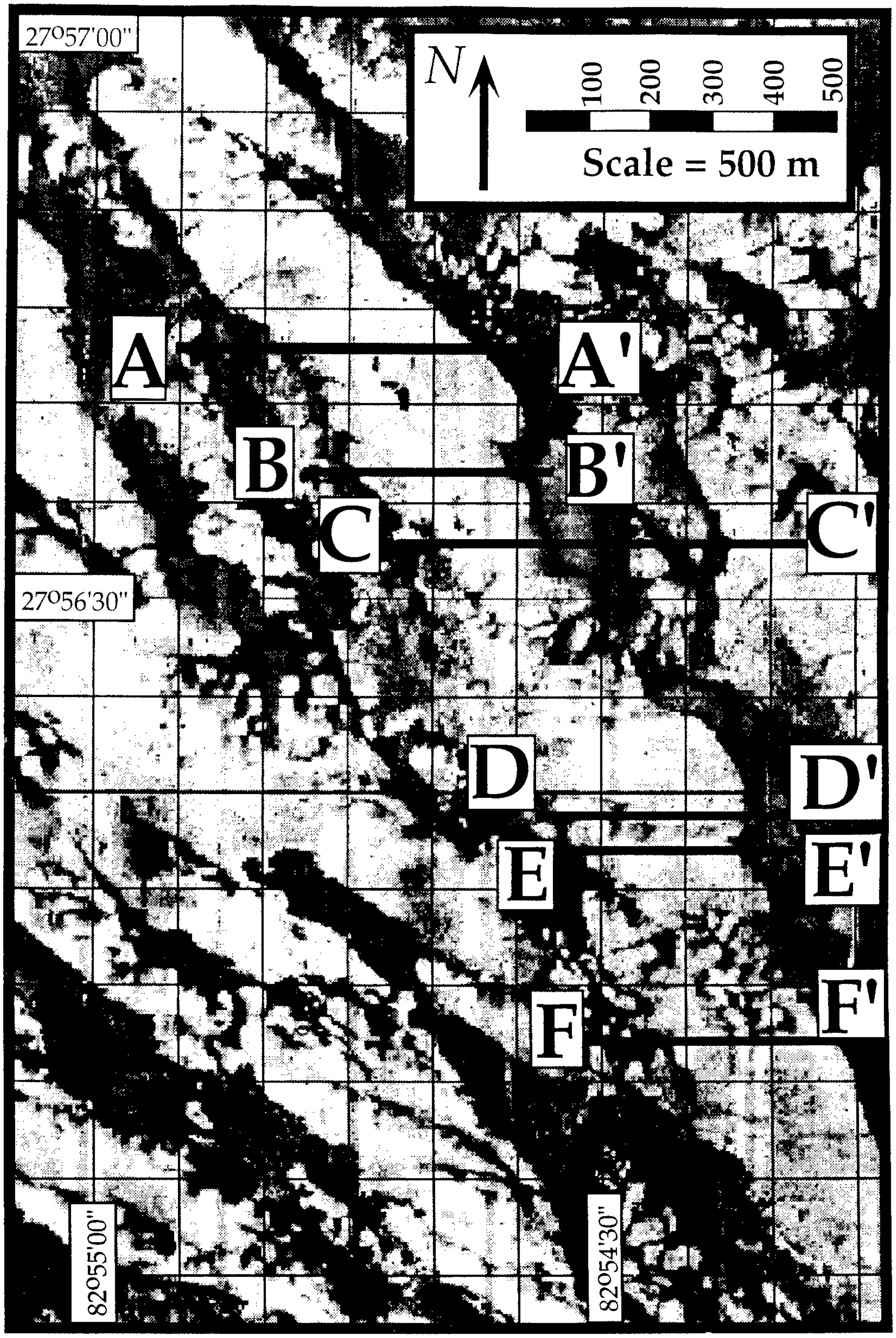



Figure 40. Side-scan mosaic displaying the locations of six chirp sub-bottom profile lines transecting a sub-linear sand ridge. Water depths in this region range from 6-9.5 m. Chirp data are presented in Figures 41-43 (from Harrison, 1996).

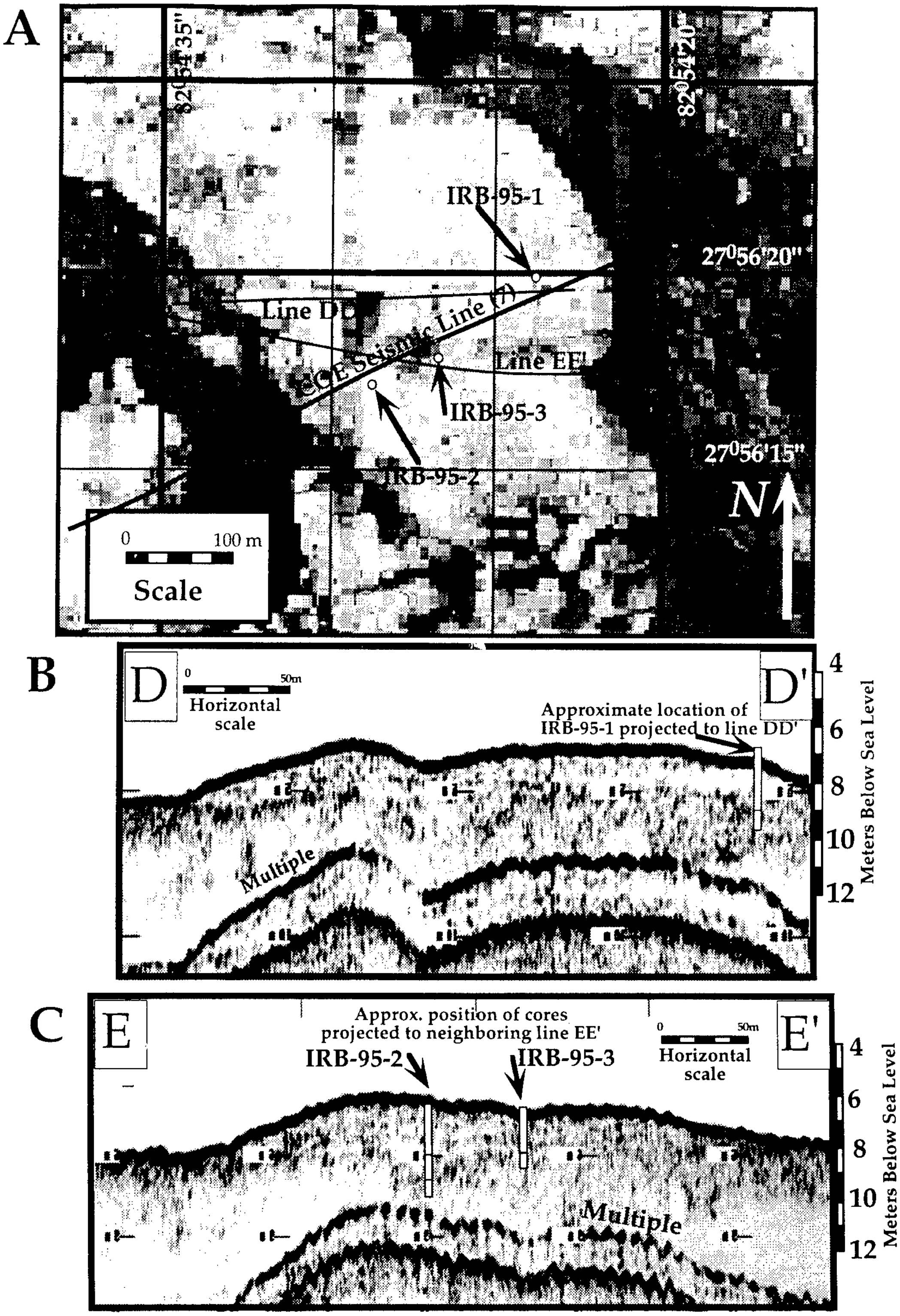
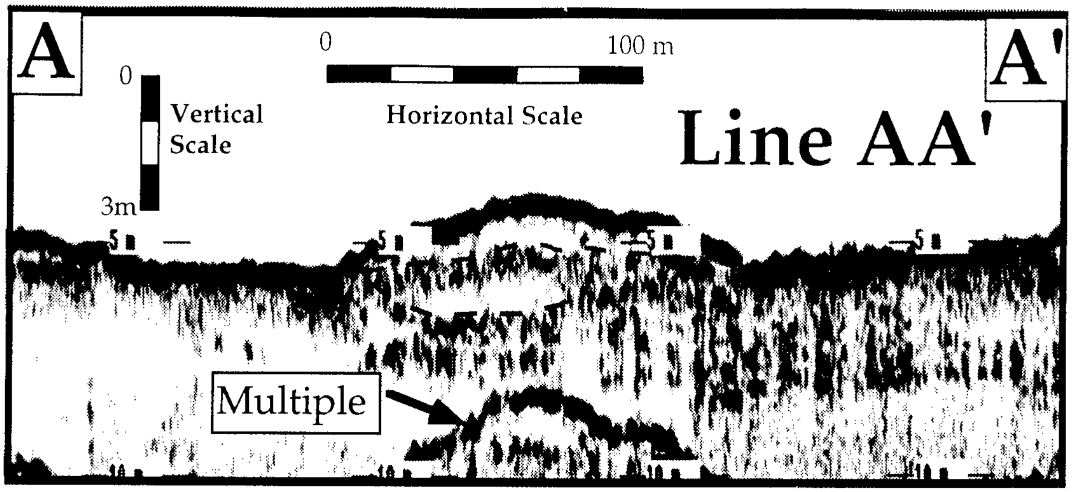



Figure 41. A) This is an enlargement from the May 1995 side-scan mosaic image which displays a sand ridge (white shades) and the surrounding trough containing reworked shell and limestone gravel (darker shades). The location of three cores in relation to three seismic/chirp lines; DD', EE' and Line COE, is also shown. B) Chirp sub-bottom profile Line DD' displaying the double crested sand ridge morphology and the location of IRB-95-1. C) Chirp sub-bottom profile Line EE' of the sand ridge displaying the location of IRB-95-2 as well as IRB-95-1 (from Harrison, 1996).



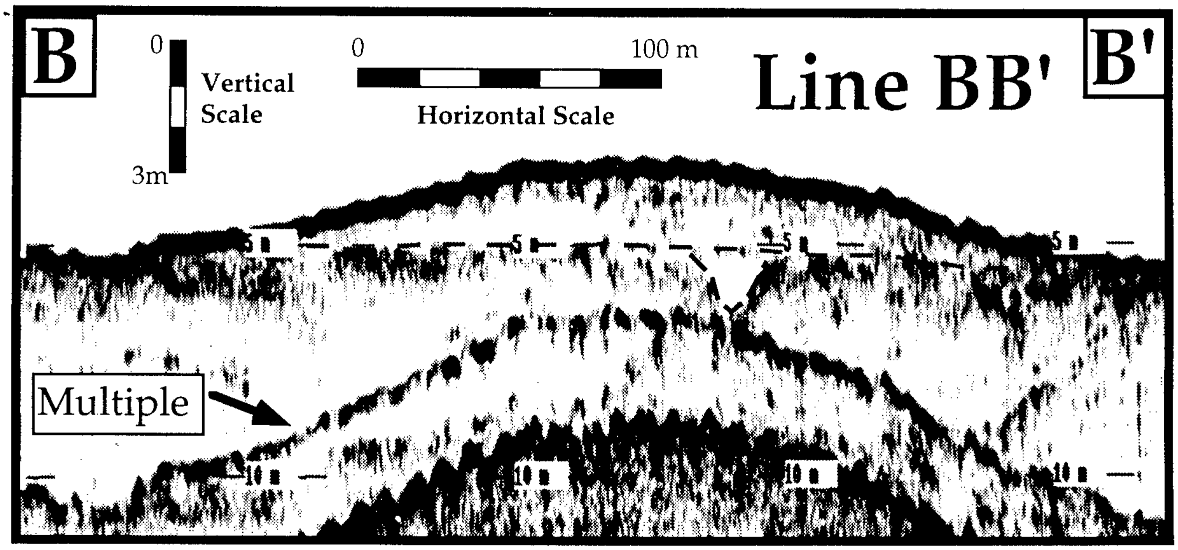




Figure 42. Chirp sub-bottom profile lines AA' and BB'. Line AA' depicts a sand ridge cross section with dark convex upward internal reflector outlined by the dashed grey line. There is a second prominent reflector below this outlined by the black line. There is no vibracore data in this region to identify the nature of these reflectors. Line BB' shows a more continuous reflector at the base of the ridge and is outlined by the dashed gray line. There also appears to be a channel feature below this ridge which is outlined by the black dashed line.

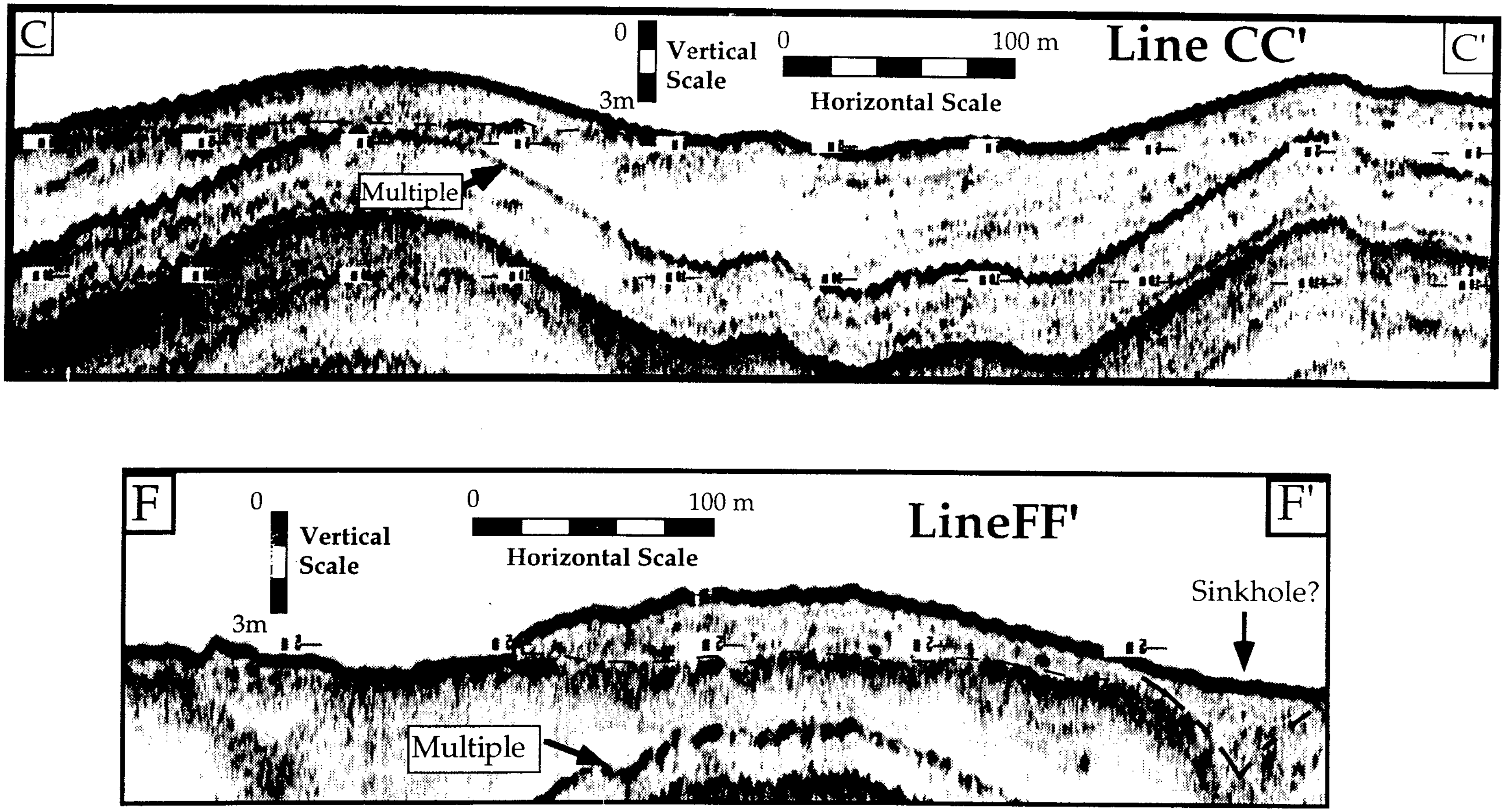
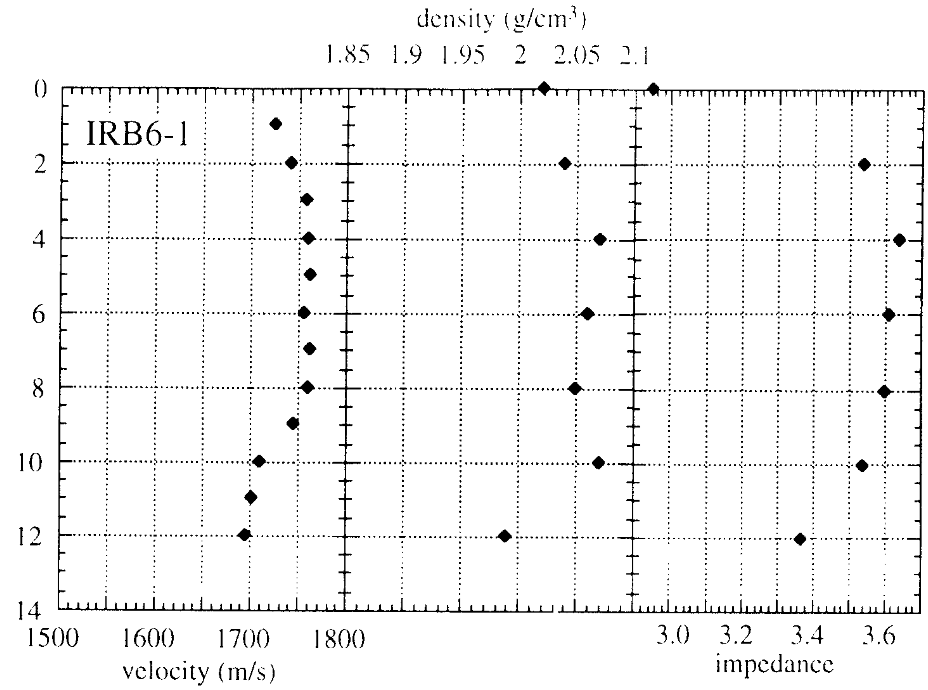



Figure 43. Chirp sub-bottom profiles CC' and FF'. Line CC' displays two sand ridges separated by a trough. The ridge in Line FF' appears to be bounded on its eastern edge by a potential collapse feature in the limestone bedrock. The base of the sand ridge facies in each line appears to be a fairly flat, continuous feature. Where this reflector is traceable, it has been outlined by a dashed line (from Harrison, 1996).



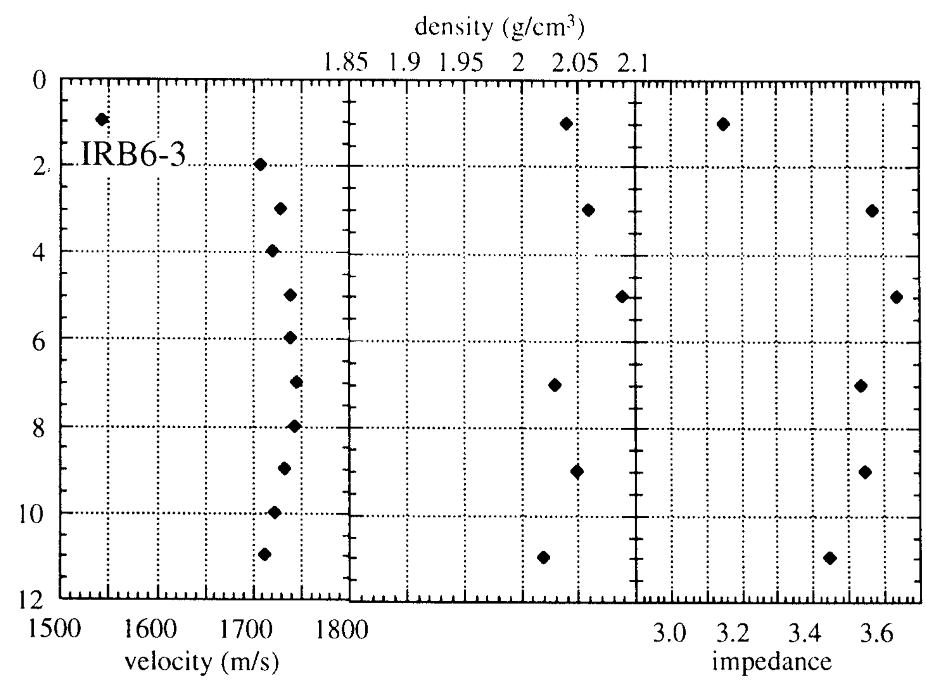




Figure 44. Graphs of p-wave velocity, wet bulk density and impedance from diver cores collected in the Indian Rocks Beach study area.

ridge migration or by accretion under decreasing energy levels with increasing water depth. The asymmetry of ridges and grain size variation across the ridges (Fig. 35) indicate a dominantly southerly current flow.

The 100 kHz side-scan sonar mosaic (Fig. 28) clearly reveals the sand ridge and wave morphologies for the first time. The ridges show low backscatter (light areas) as a result of their relatively finer sediment. The troughs and seafloor between ridges and waves show high backscatter (dark areas) resulting from the presence of coarse gravel lags and limestone outcrops (based on diver observation and seismic data). Harrison (1996) utilized two sets of side-scan sonar data collected six months apart to assess the possibility of sand ridge movement and variations in morphology. The data suggest that the northern flank of some ridges may have shifted southward by 1 to 5 meters in response to winter storm fronts, which create a southerly current flow. In one case, a portion of a ridge appears to have shifted southward by 15 to 20 meters. Southern flanks of ridges appear to migrate much less than northern flanks. Although there are still uncertainties in estimations of the accuracy of the measurements, it does appear that the bedform morphology adjusts to equilibrate with ambient bottom energy levels. This is an important detail to understand in regards to deploying instruments on the seafloor. Although large bedforms may appear stable over years or decades based on local charts, there still may be short-term, even seasonal, mobilization of surficial sediments which can bury or expose objects (mines, sensors, etc.). Consideration must be given to local current vector fields (including tidal currents, longshore currents, shelf currents, storm-induced currents, and the intensity, frequency and duration of storm events), and the seafloor sediment texture and bottom morphology to prevent the undesired burial or excavation of deployed instruments.

As stated above, the mineralogic and textural characteristics are very similar to the Boca Raton site. Index properties, determined on diver cores, indicate that densities in the IRB cores are significantly less than in Boca Raton cores. The lower densities in the IRB cores reflect greater porosity suggesting that the IRB sand ridge surface sediments are more mobile than the sediments in the Boca Raton area.

# SECTION IV. LOWER TAMPA BAY

## Geologic Framework

Investigations of the Lower Tampa Bay site and Egmont Key site were cut short as a result of Hurricane Alison and a subsequent red tide event. Cores and acoustic data from these areas have not been examined in the same detail as the other sites.

Lower Tampa Bay is a low energy, siliciclastic sand and mud dominated estuarine environment. Approximately 150 km of chirp vertical beam sonar data were acquired within the Lower Tampa Bay area (Fig. 45). Track lines are oriented north-south and east-west and are spaced at 200 meter intervals. Total coverage is approximately 16 $km^2$. Three sites were evaluated using the ISSAMS, and sixteen diver cores were taken.

Approximately 8 km of chirp sonar data were acquired over an area of approximately 1 $km^2$ within the Egmont Key study area (Fig. 46). Track lines are oriented north-south and east-west. Two sites were evaluated using the ISSAMS, and six diver cores were taken.

## Mineralogic-Petrologic Framework

Sediments within Lower Tampa Bay are poorly sorted, mixed carbonate and siliciclastic muddy sands (Appendices A and D). Mud content exceeds 10%. Mean grain size is 2.4 to 2.6 phi. Mineralogy has not yet been determined on these cores.

## Geophysical-Geoacoustic Framework

A sample of the chirp data from Lower Tampa Bay is shown in Figure 47. Acoustic penetration in this area was excellent as a result of the muddy nature of the sediments. Surficial sediment reflection coefficients based on chirp sonar data from the Lower Tampa Bay site range from approximately -8 to -10 dB (r = 0.4 to 0.32). Acoustic

# Lower Tampa Bay Site

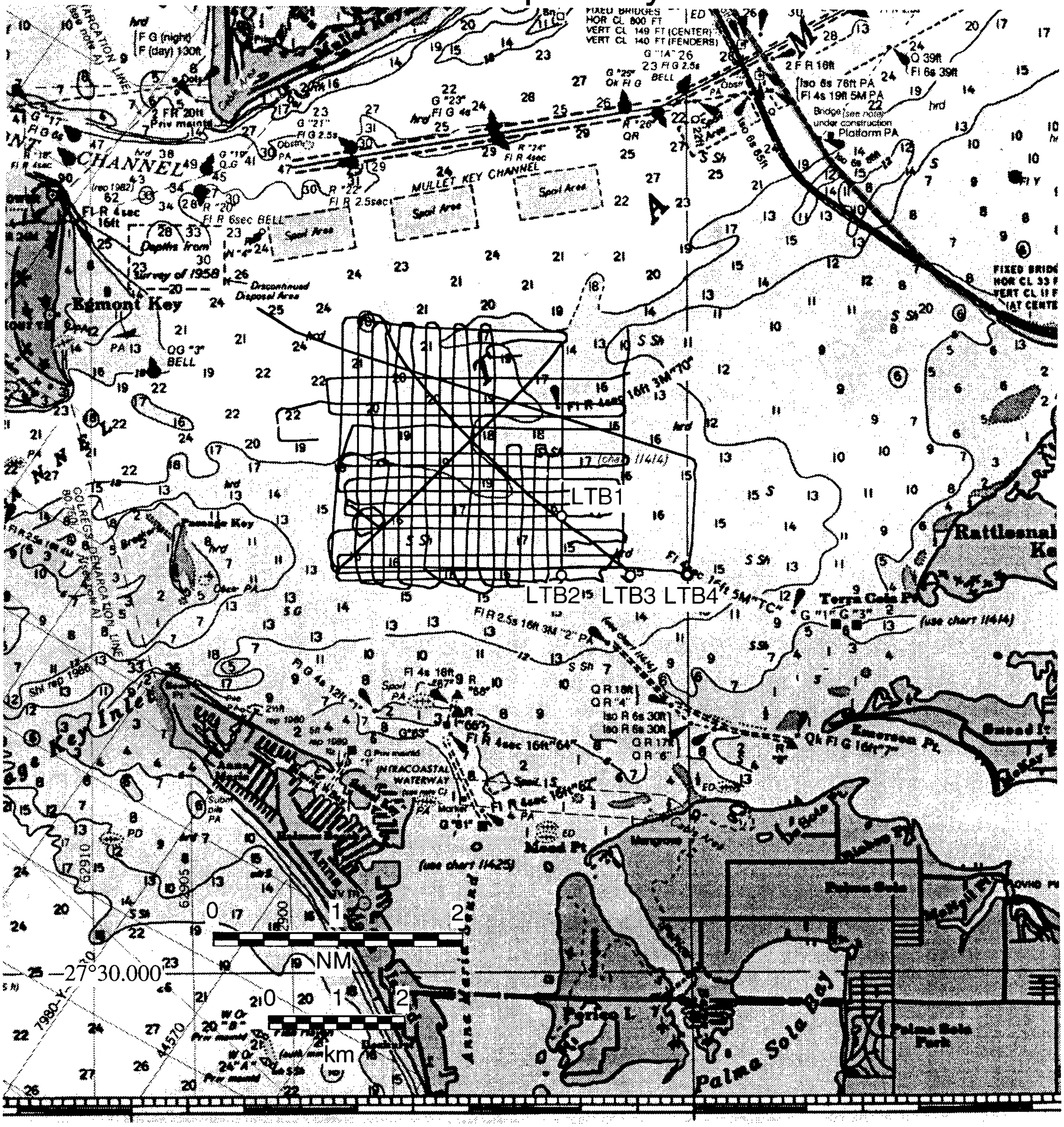



Figure 45. Chart showing tracklines for the chirp sonar survey grid, and ground truth locations (LTB1-4) in lower Tampa Bay.

# Egmont Key Site

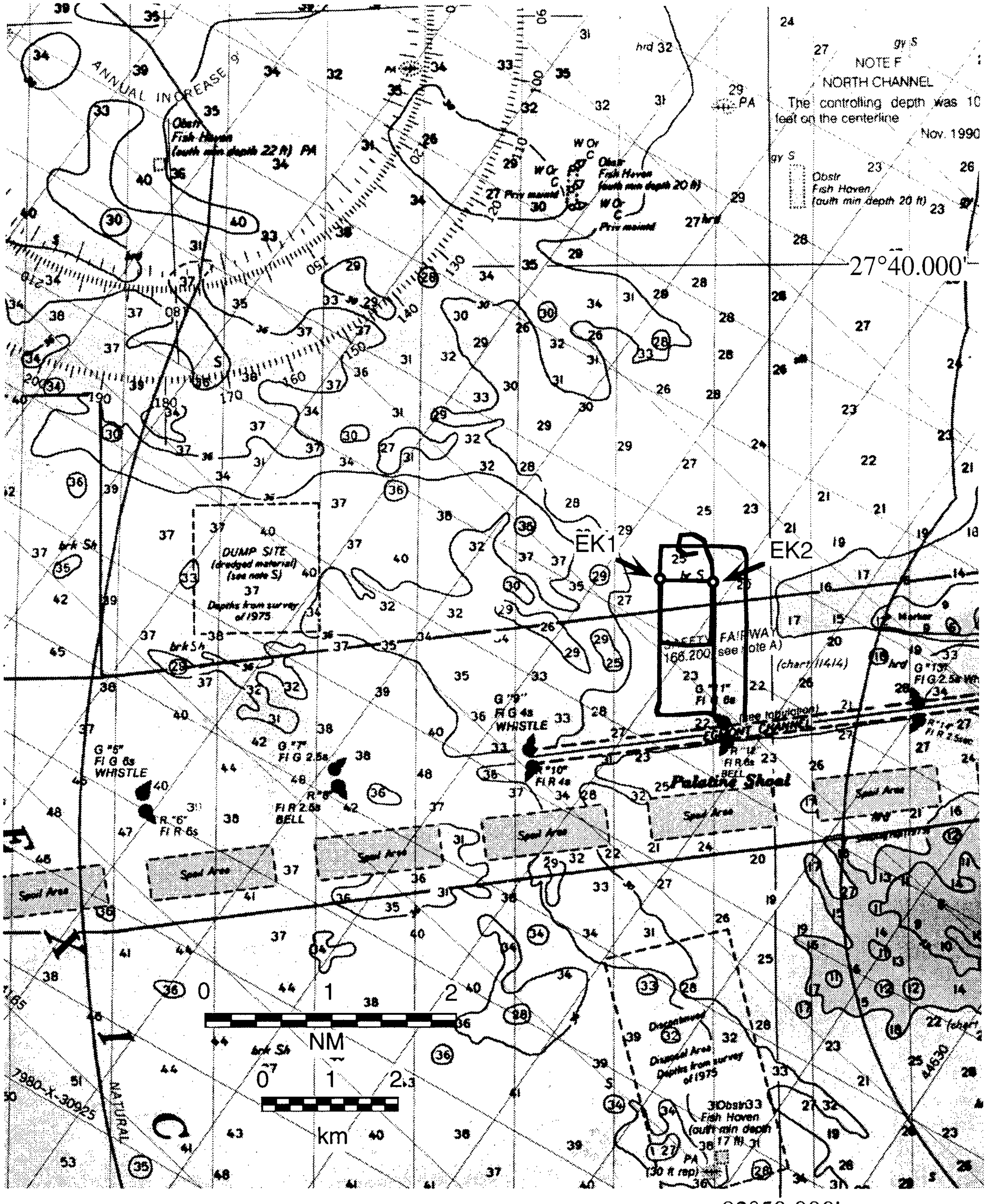



Figure 46. Chart showing tracklines for the chirp sonar survey grid, and ground truth locations (EK1, EK2) in the Egmont Key site.

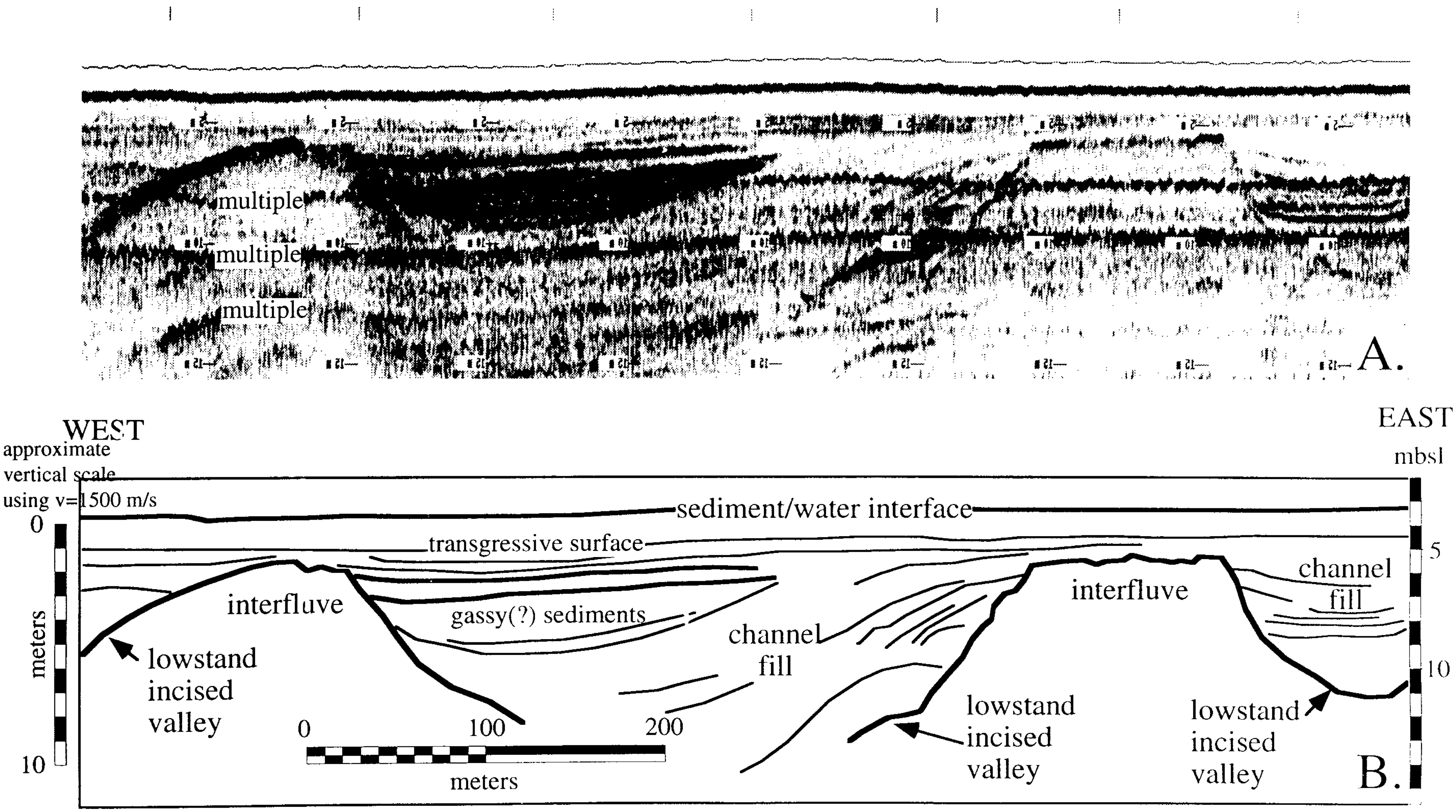
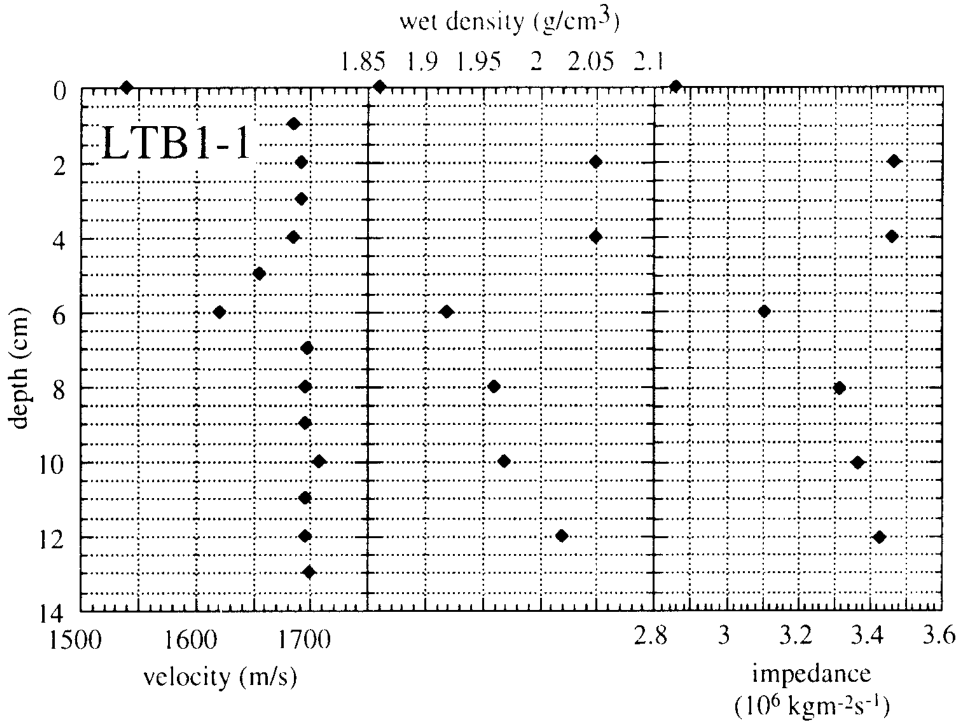



Figure 47. A) A portion of the chirp vertical beam sonar data from Lower Tampa Bay. B) Interpretation of the raw data showing incised fluvial valleys formed during the last glacial maximum, prograding channel fill, high amplitude gassy(?), probably organic-rich palustrine or lagoonal sediments, and the Holocene transgressive surface. Deep acoustic penetration at this site is facilitated by the muddy nature of the sediments.



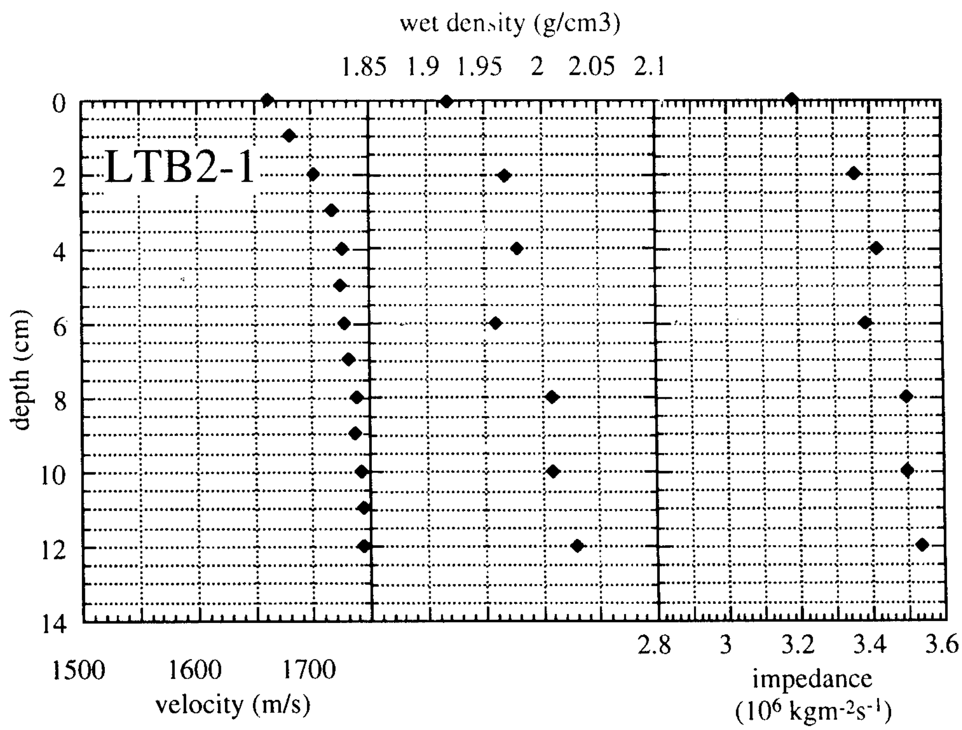




Figure 48. P-wave velocity, wet bulk density, and impedance data from lower Tampa Bay diver cores.

velocity averages 1686 $ms^{-1}$. Wet bulk density averages 2.0 $gcm^{-3}$. Resulting impedance averages $3.36 \times 10^6$ $kgm^{-2}s^{-1}$.

## Discussion

Chirp sonar data from the Lower Tampa Bay site show the subsurface geology to consist of an incised valley complex with three major channels separated by large interfluves (Fig. 47). The channels are up to 10 meters in depth and 400 meters across on sonar records (narrower in actual cross-section). Interfluves are approximately 100 meters in width. Clinoforms prograde from interfluves in a westerly direction indicating channel filling from the east. A series of very high amplitude reflectors occurs within the channel fill. These are probably gassy sediments associated with organic-rich palustrine deposits. A horizontal reflector approximately 1 meter below the seafloor is interpreted as the Holocene marine flooding surface marking initial inundation of the Tampa Bay area and establishment of the estuarine system.

Sediment velocities and densities are lower than in the Indian Rocks Beach and Boca Raton areas, but higher than the Dry Tortugas sediments (Appendices A and D). Impedance values are therefore intermediate.

# SECTION V. INTEGRATED DISCUSSION OF GEOLOGIC AND GEOACOUSTIC PARAMETERS

Acoustic and physical data are compared in Figure 49 a-i. Impedance is presented on the x-axis so that the regression equation can be used to determine a particular physical quantity (y-axis) based on impedance inversion. It is readily apparent that there are two impedance fields (Fig. 49 a-c) when either density or velocity are plotted versus impedance. The sediments of the Boca Raton, Indian Rocks Beach and Lower Tampa Bay sites have a higher impedance for a given density than do the sediments of the Dry Tortugas. Likewise the sediments of the Dry Tortugas have lower velocities overall, and lower velocities for a given impedance value than the other sites.

Hamilton et al. (1982) found a similar trend in deep sea sediments where shallower-water, sandy sediments yielded higher impedance values than deeper-water, muddier sediments. Hamilton et al. (1982) determined that the increased impedance in the sandier sediments was a function of higher velocities in these sediments, which is controlled by the degree of interparticle porosity. Their work revealed that as sand percentages declined in these deep water sediments, intraparticle porosity was replaced by interparticle porosity (with little change in total porosity), resulting in decreased velocity. A decrease in interparticle porosity results in more grains in contact, greater sediment rigidity, and greater velocity.

A similar, but weaker relationship is observed between grain size and impedance in sediments from this investigation. Porosity in Dry Tortugas sediments generally exceeds 50% whereas the Boca Raton sediments yield porosities of 35 to 40%. Sediments of the Boca Raton, Indian Rocks Beach, and Lower Tampa Bay sites have coarser sediments, lower interparticle porosity and higher velocities than sediments in the Dry Tortugas (Fig. 49d). There is a moderate positive correlation between % silt and impedance (R=0.74; Fig. 49e) but no correlation between mean grain size and velocity or impedance, and only a very weak positive correlation between mean grain size and density (Fig. 49f). The weak

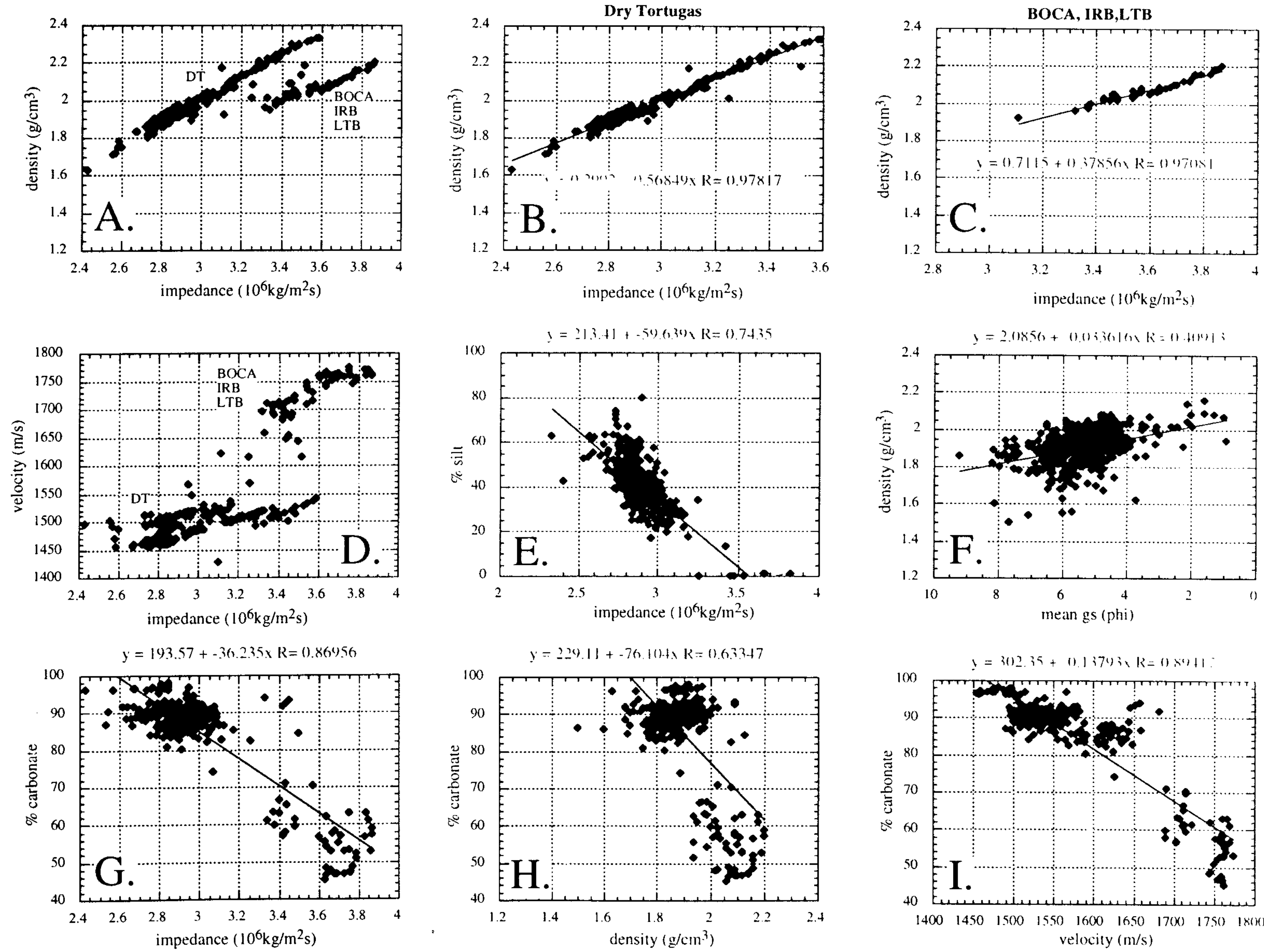



Figure 49. Plots of various sediment physical properties versus acoustic properties as measured on cores from the Dry Tortugas, Boca Raton, Indian Rocks Beach, and lower Tampa Bay sites.

correlation between density and grain size may be a function of complex variations in interparticle/intraparticle porosity ratios resulting from diagenesis. Changes in impedance within sites are apparently controlled by porosity changes, which are an inverse function of density, and are partially related to the amount of silt. As porosity decreases (decreasing silt), density and velocity increase resulting in increasing impedance. There is a greater density range in the Dry Tortugas sediments (Fig. 49a) probably as a result of greater sediment compaction, grain size variation, and diagenesis (dissolution and cementation). Since impedance is the product of density and velocity, the lower densities and velocities of the Dry Tortugas site yield lower impedance values than the other sites.

Another important control on impedance is carbonate versus siliciclastic abundance. Impedance values decrease with increasing carbonate (Fig. 49g). No correlation was found between the carbonate mineral phases present (aragonite, low-Mg calcite, high-Mg calcite, dolomite) and other properties. The correlation of carbonate versus density (R=0.6; Fig. 49h) is not as strong as carbonate versus velocity (R=0.87; Fig. 49i), implying that the impedance change is largely controlled by the inverse relationship between velocity and percent carbonate. The greater velocity and impedance in quartz-rich sediments is probably a function of lower grain densities (as opposed to bulk density). The densities of aragonite, low-Mg calcite, high-Mg calcite, and dolomite are 2.95, 2.71, ~2.75, and 2.85 $gcm^{-3}$, respectively. Quartz has a density of 2.65 $gcm^{-3}$. Comparing data from DT232 and the IRB cores illustrates the contribution of mineralogy (Appendix A). Although these cores have similar impedance values (approximately 3.3 to 3.6 x $10^6$ $kgm^{-2}s^{-1}$) and grain size, the velocities of the carbonate sediments (DT232) are much lower and the densities much higher than the IRB and LTB sediments. As a result, the quartz-rich sediments yield lower densities for a given impedance value (Fig. 49a).

An estimate of the surface sediment impedance can be derived by inversion based on the reflection coefficients recorded by the chirp vertical beam sonar. The impedance ($\rho v$) may be determined using the following equation:

$$r = (\rho_1 v_1 - \rho_2 v_2)/(\rho_1 v_1 + \rho_2 v_2)$$

where r is the reflection coefficent, $\rho_1 v_1$ is the impedance of the water column, and $\rho_2 v_2$ is the impedance of the surficial sediments. This equation reduces to:

$$\rho_2 v_2 = x / 1\text{-}r$$

where $x = r(\rho_1 v_1) + \rho_1 v_1$. Density and velocity measurements of the water column were made by CTD in the Dry Tortugas area. Average seawater density and velocity was 1.025 $gcm^{-3}$ and 1526 $ms^{-1}$, respectively, yielding a seawater impedance of $1.56 \times 10^6$ $kgm^{-2}s^{-1}$. The reflection coefficient recorded in the area of core 205 in the Dry Tortugas site is approximately 0.28 (Table 2). Inserting this r-value into the second equation above yields an impedance value of $2.78 \times 10^6$ $kgm^{-2}s^{-1}$. The impedance based on the electric logger ranges from 2.56 to $2.74 \times 10^6$ $kgm^{-2}s^{-1}$ over the top 20 centimeters, slightly less than that estimated by sonar. The reflection coefficient recorded in the area of core 226 is approximately 0.31. This r-value yields a sediment impedance of $2.97 \times 10^6$ $kgm^{-2}s^{-1}$, whereas the electric log data yield impedance values ranging from 2.76 to 2.95 $\times 10^6$ $kgm^{-2}s^{-1}$ over the top 20 centimeters. In Lower Tampa Bay, chirp-recorded impedance is approximately 3.04 to $3.65 \times 10^6$ $kgm^{-2}s^{-1}$ whereas ground truth impedance from core LTB1-1 averages $3.36 \times 10^6$ $kgm^{-2}s^{-1}$ over the top 10 cm. These estimates indicate that the remote acoustically estimated impedance is approximately 1% to 8% higher than the directly measured impedance in the top 20 centimeters of the sediment column. These data will allow calibration refinement. It is possible that the remotely estimated value is a better measure of impedance as the core material is likely to be slightly disturbed.

These data indicate that the mean grain size and percent carbonate versus siliciclastics may be evaluated using acoustic remote sensing and impedance inversion. However, some initial ground truthing for calibration purposes appears necessary. For instance, given an inverted impedance estimate of $3.4 \times 10^6$ $kgm^{-2}s^{-1}$, the corresponding density of material may be either 2.25 $gcm^{-3}$ in a pure carbonate environment or 2.0 $gcm^{-3}$ in a mixed carbonate-siliciclastic environment. Once the general mineralogic composition is established, the density (determined by impedance inversion) may be used to determine the mean grain size or percent carbonate (or insoluble residue).

Table 2. Comparison of impedance values for surficial sediments based on chirp data and ground truth data. Ground truth mean and range is determined over the top 20 cm of cores. Impedance values are in units of $10^6$ kgm$^{-2}$s$^{-1}$.

| Area | Core | Chirp | Ground truth mean | Range |
|---|---|---|---|---|
| DT | 147 | 2.61-2.79 | 2.66 | 2.54-2.70 |
| DT | 205 | 2.78 | 2.64 | 2.43-2.74 |
| DT | 207 | 2.78 | 2.69 | 2.57-2.85 |
| DT | 226 | 2.97 | 2.82 | 2.76-2.95 |
| DT | 232 | 3.01 | 3.18 | 3.14-3.21 |
| LTB | LTB1 | 3.01-3.28 | 3.28 | 2.86-3.47 |
| LTB | LTB2 | 3.28-3.63 | 3.41 | 3.19-3.54 |

# SECTION VI. CONCLUSIONS

- The study sites show marked differences in their respective geologic and corresponding geophysical/acoustic frameworks. These differences are well-defined by the various tools used in this investigation, and particularly by the remote acoustic instruments.

- Comparison of mineralogic, petrologic, and geoacoustic parameters of the sediments indicates that porosity and mineralogy both contribute significantly to the acoustic impedance of sediments and result in two separate impedance fields for carbonate sediments and mixed carbonate-siliciclastic sediments (Fig. 49a). Our data show a moderate positive correlation between % silt and impedance, but no correlation between mean grain size and impedance, perhaps because of complex variations in the ratio of interparticle to intraparticle porosity resulting from diagenesis of the carbonate sediments. More work needs to be performed to define the role of fabric in determining acoustic impedance. The percent carbonate versus siliciclastics contributes to the bulk density of the sediments and results in siliciclastic-rich sediments having a lower bulk density than carbonate sediments, for a given impedance value. These data will facilitate the refinement of sediment classification algorithms for use with the chirp sonar.

- Surficial sediment reflection coefficient values obtained by the chirp vertical beam sonar appear to record an impedance value similar, but not identical, to impedance measured on cores (Table 2). These data will enable calibration of the chirp sonar and indicate the potential of chirp vertical beam sonar for surface and subsurface sediment classification by impedance inversion.

- The study areas have been investigated and defined in terms of the physical and acoustic properties of the sediments and rocks, and the general geology and geomorphology. These sites are now suitable as AUV test beds. The data acquired by towed vehicles (chirp sonar, side-scan sonar, seismic) using differential GPS provide a geologic, geographic and geoacoustic baseline which we are prepared to use for Autonomous Underwater Vehicle testing and calibration, the primary focus of our current research. We are preparing a joint USF-FAU expedition to test the Ocean Voyager II AUV with a 60 kHz side scan sonar unit. Tests are being planned for AUV deployment in the Boca Raton and Indian Rocks Beach sites. Deployment in these areas will allow us to evaluate navigation modes, and the quality of AUV-acquired data as compared to data acquired by towed platforms. We anticipate performance of these experiments in the Fall of 1996 or Spring of 1997.

- Comparison of geologic and acoustic data is hindered sometimes by difficulties in obtaining accurate velocity measurements on very coarse sedimentary units. However, given sufficient data, forward modeling reveals some agreement between sediment physical properties, acoustic properties measured by the electric logger, and the chirp sonar data. These data illustrate the need for high resolution sampling and analyses of sediments to accurately model the acoustic signature and refine acoustic sediment classification algorithms. The data also reveal the potential for chirp sonar to resolve shallow subbottom sedimentary units with minimal impedance contrast on a decimeter scale.

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# APPENDIX A.

Condensed data from all sites.

Abbreviations:

DT = Dry Tortugas
BOCA = Boca Raton
IRB = Indian Rocks Beach
LTB = Lower Tampa Bay
%I.R. = % insoluble residue (dominantly quartz)
%carb = wt.% carbonate (acid-soluble component)
arag = aragonite
lmc = low-Mg calcite
hmc = high-Mg calcite
dolo = dolomite
impedance = $10^6$ $kgm^{-2}s^{-1}$

| SITE | CORE | DEPTH | % gravel | % sand | % silt | % clay | mean | mean | % I.R. | % carb | % arag | % lmc | % hmc | % dolo | velocity | density | %porosity | impedance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (cm) | | | | | (microns) | (phi) | | | | | | | m/s | g/cm3 | | 10^6 kg/m^2 s |
| DT | 205 | 0 | 0.2 | 25.3 | 56.0 | 18.6 | 15.3 | 6.0 | 3.7 | 96.3 | 50.4 | 13.1 | 32.8 | 0.0 | 1495.3 | 1.63 | 67.00 | 2.43 |
| DT | 205 | 2 | 0.2 | 33.4 | 53.0 | 13.4 | 28.2 | 5.2 | | | | | | | 1502.0 | 1.71 | 62.68 | 2.56 |
| DT | 205 | 4 | 0.5 | 23.8 | 61.2 | 14.5 | 22.4 | 5.5 | | | | | | | 1469.5 | 1.75 | 60.04 | 2.58 |
| DT | 205 | 6 | 0.7 | 30.8 | 55.4 | 13.2 | 30.1 | 5.1 | | | | | | | 1456.2 | 1.78 | 58.68 | 2.59 |
| DT | 205 | 8 | 1.3 | 28.7 | 53.3 | 16.7 | 19.5 | 5.7 | | | | | | | | 1.82 | 56.59 | |
| DT | 205 | 10 | 0.8 | 28.0 | 54.8 | 16.4 | 19.0 | 5.7 | 3.6 | 96.4 | 49.6 | 14.3 | 32.4 | 0.0 | 1460.6 | 1.83 | 55.73 | 2.68 |
| DT | 205 | 12 | 0.7 | 30.8 | 52.2 | 16.4 | 20.8 | 5.6 | | | | | | | 1460.6 | 1.86 | 54.01 | 2.72 |
| DT | 205 | 14 | 1.7 | 36.3 | 47.6 | 14.4 | 29.5 | 5.1 | | | | | | | 1457.2 | 1.83 | 55.91 | 2.67 |
| DT | 205 | 16 | 1.3 | 36.6 | 46.3 | 15.8 | 24.4 | 5.4 | | | | | | | 1461.2 | 1.86 | 54.30 | 2.72 |
| DT | 205 | 18 | 3.5 | 37.8 | 44.8 | 13.8 | 33.7 | 4.9 | | | | | | | 1458.5 | 1.88 | 53.17 | 2.74 |
| DT | 205 | 20 | 1.4 | 41.6 | 43.2 | 13.7 | 34.2 | 4.9 | 3.8 | 96.2 | 50.6 | 14.0 | 31.7 | 0.0 | 1457.2 | 1.88 | 53.09 | 2.74 |
| DT | 205 | 22 | 1.0 | 42.4 | 42.9 | 13.7 | 33.3 | 4.9 | | | | | | | 1469.1 | 1.89 | 52.37 | 2.78 |
| DT | 205 | 24 | 2.0 | 43.2 | 39.9 | 14.9 | 31.4 | 5.0 | | | | | | | 1498.8 | 1.89 | 52.50 | 2.83 |
| DT | 205 | 26 | 1.6 | 45.0 | 40.0 | 13.3 | 37.8 | 4.7 | | | | | | | 1472.9 | 1.90 | 52.24 | 2.79 |
| DT | 205 | 28 | 3.7 | 45.5 | 39.1 | 11.7 | 44.7 | 4.5 | | | | | | | 1470.2 | 1.89 | 52.63 | 2.78 |
| DT | 205 | 30 | 1.2 | 45.5 | 38.8 | 14.4 | 34.7 | 4.8 | 3.3 | 96.7 | 51.2 | 13.6 | 31.5 | 0.0 | 1476.9 | 1.91 | 51.59 | 2.82 |
| DT | 205 | 32 | 3.5 | 44.8 | 39.5 | 12.2 | 42.3 | 4.6 | | | | | | | 1479.5 | 1.91 | 51.27 | 2.83 |
| DT | 205 | 34 | 6.3 | 50.7 | 31.3 | 11.8 | 63.0 | 4.0 | | | | | | | 1476.9 | 1.90 | 52.10 | 2.80 |
| DT | 205 | 36 | 1.6 | 48.6 | 37.7 | 12.0 | 45.9 | 4.4 | | | | | | | 1471.5 | 1.90 | 51.92 | 2.80 |
| DT | 205 | 38 | 1.7 | 50.0 | 35.0 | 13.3 | 40.7 | 4.6 | | | | | | | 1479.5 | 1.92 | 50.91 | 2.84 |
| DT | 205 | 40 | 1.2 | 49.5 | 36.5 | 12.7 | 43.3 | 4.5 | 3.2 | 96.8 | 50.9 | 13.5 | 32.0 | 0.0 | 1474.2 | 1.93 | 50.45 | 2.84 |
| DT | 205 | 42 | 1.4 | 41.3 | 42.2 | 15.1 | 29.0 | 5.1 | | | | | | | 1490.4 | 1.93 | 50.53 | 2.87 |
| DT | 205 | 44 | 1.2 | 48.5 | 36.9 | 13.4 | 39.4 | 4.7 | | | | | | | 1487.6 | 1.93 | 50.35 | 2.87 |
| DT | 205 | 46 | 2.2 | 50.7 | 35.3 | 11.7 | 48.7 | 4.4 | | | | | | | 1490.4 | 1.93 | 50.16 | 2.88 |
| DT | 205 | 48 | 2.4 | 46.3 | 37.2 | 14.1 | 37.8 | 4.7 | | | | | | | 1494.4 | 1.94 | 49.90 | 2.90 |
| DT | 205 | 50 | 2.3 | 49.9 | 34.5 | 13.3 | 41.8 | 4.6 | 2.2 | 97.8 | 51.3 | 15.0 | 29.6 | 0.3 | 1494.4 | 1.91 | 51.72 | 2.85 |
| DT | 205 | 52 | 2.6 | 50.6 | 35.4 | 11.4 | 51.6 | 4.3 | | | | | | | 1494.4 | 1.92 | 50.89 | 2.87 |
| DT | 205 | 54 | 3.6 | 49.9 | 31.8 | 14.7 | 37.9 | 4.7 | | | | | | | 1495.8 | 1.94 | 50.11 | 2.89 |
| DT | 205 | 56 | 1.5 | 51.7 | 34.4 | 12.4 | 46.1 | 4.4 | | | | | | | 1494.4 | 1.93 | 50.30 | 2.89 |
| DT | 205 | 58 | 1.4 | 48.9 | 36.1 | 13.6 | 38.9 | 4.7 | | | | | | | | 1.93 | 50.63 | |
| DT | 205 | 60 | 3.6 | 48.3 | 35.1 | 13.1 | 45.2 | 4.5 | 2.5 | 97.5 | 54.3 | 12.6 | 29.4 | 0.0 | 1474.2 | 1.91 | 51.71 | 2.81 |
| DT | 205 | 62 | 2.5 | 44.5 | 38.4 | 14.6 | 34.1 | 4.9 | | | | | | | | 1.92 | 51.01 | |
| DT | 205 | 64 | 2.8 | 50.1 | 34.7 | 12.4 | 44.9 | 4.5 | | | | | | | | 1.88 | 53.13 | |
| DT | 205 | 66 | 2.3 | 50.3 | 35.6 | 11.8 | 46.6 | 4.4 | | | | | | | | 1.90 | 52.27 | |
| DT | 205 | 68 | 1.5 | 46.5 | 39.1 | 12.8 | 38.6 | 4.7 | | | | | | | | 1.93 | 50.65 | |
| DT | 205 | 70 | 1.6 | 47.0 | 37.9 | 13.6 | 38.7 | 4.7 | 2.0 | 98.0 | 51.5 | 13.9 | 30.5 | 0.4 | 1481.6 | 1.92 | 50.92 | 2.85 |
| DT | 205 | 72 | 4.4 | 44.3 | 36.7 | 14.6 | 36.0 | 4.8 | | | | | | | 1479.7 | 1.90 | 51.83 | 2.82 |
| DT | 205 | 74 | 3.2 | 47.0 | 36.1 | 13.6 | 40.0 | 4.6 | | | | | | | 1483.7 | 1.90 | 52.20 | 2.81 |
| DT | 205 | 76 | 3.4 | 47.0 | 36.0 | 13.7 | 40.0 | 4.6 | | | | | | | 1481.0 | 1.92 | 51.16 | 2.84 |
| DT | 205 | 78 | 7.5 | 45.3 | 33.5 | 13.6 | 48.5 | 4.4 | | | | | | | 1481.7 | 1.91 | 51.59 | 2.83 |
| DT | 205 | 80 | 3.1 | 51.1 | 32.8 | 13.0 | 47.2 | 4.4 | 2.7 | 97.3 | 54.4 | 12.8 | 29.1 | 0.0 | 1487.7 | 1.91 | 51.64 | 2.84 |
| DT | 205 | 82 | 3.9 | 49.3 | 31.8 | 14.9 | 44.5 | 4.5 | | | | | | | 1492.0 | 1.92 | 50.91 | 2.87 |

| SITE | CORE | DEPTH (cm) | % gravel | % sand | % silt | % clay | mean (microns) | mean (phi) | % I.R. | % carb | % arag | % lmc | % hmc | % dolo | velocity m/s | density g/cm3 | %porosity | impedance 10^6 kg/m^2 s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DT | 205 | 84 | 3.4 | 46.6 | 36.0 | 14.1 | 37.4 | 4.7 | | | | | | | 1496.0 | 1.90 | 52.00 | 2.84 |
| DT | 205 | 86 | 7.0 | 41.8 | 36.6 | 14.6 | 42.7 | 4.6 | | | | | | | 1485.4 | 1.90 | 52.24 | 2.82 |
| DT | 205 | 88 | 3.4 | 49.2 | 33.8 | 13.7 | 45.1 | 4.5 | | | | | | | | 1.91 | 51.58 | |
| DT | 205 | 90 | 4.4 | 50.9 | 32.7 | 12.1 | 54.7 | 4.2 | 3.2 | 96.8 | 52.0 | 13.5 | 30.4 | 0.3 | | 1.88 | 53.21 | |
| DT | 205 | 92 | 2.7 | 47.9 | 35.8 | 13.6 | 39.9 | 4.6 | | | | | | | | 1.91 | 51.35 | |
| DT | 205 | 94 | 2.7 | 48.4 | 35.3 | 13.5 | 40.3 | 4.6 | | | | | | | 1547.1 | 1.92 | 50.79 | 2.97 |
| DT | 205 | 96 | 3.0 | 48.3 | 33.0 | 15.7 | 33.0 | 4.9 | | | | | | | | 1.91 | 51.63 | |
| DT | 205 | 98 | 8.5 | 47.3 | 31.3 | 12.9 | 61.8 | 4.0 | | | | | | | | 1.96 | 48.73 | |
| DT | 205 | 100 | | | | | | | 2.5 | 97.5 | 51.6 | 13.8 | 30.9 | 0.0 | | 1.97 | 48.20 | |
| DT | 205 | 102 | | | | | | | | | | | | | | 2.00 | 46.69 | |
| DT | 205 | 104 | | | | | | | | | | | | | | 1.97 | 47.99 | |
| DT | 205 | 106 | | | | | | | | | | | | | | 2.00 | 46.71 | |
| DT | 205 | 108 | | | | | | | | | | | | | | 1.99 | 47.15 | |
| DT | 205 | 110 | 8.5 | 49.5 | 28.8 | 13.2 | 61.9 | 4.0 | 2.6 | 97.4 | 54.7 | 12.9 | 28.7 | 0.0 | | 1.27 | 86.64 | |
| | | | | | | | | | | | | | | | | | | |
| DT | 207 | 0 | | | | | | | 3.7 | 96.3 | 54.5 | 16.0 | 29.6 | 0.0 | | | 165.37 | |
| DT | 207 | 2 | | | | | | | | | | | | | 1567.4 | | 113.19 | 0.00 |
| DT | 207 | 4 | | | | | | | | | | | | | | | 134.15 | |
| DT | 207 | 6 | | | | | | | | | | | | | | 1.37 | 80.99 | |
| DT | 207 | 8 | | | | | | | | | | | | | | 1.47 | 75.68 | |
| DT | 207 | 10 | 0.0 | 17.6 | 62.6 | 22.1 | 11.7 | 6.4 | 3.7 | 96.3 | 53.4 | 16.6 | 30.0 | 0.0 | 1490.5 | 1.72 | 61.74 | 2.57 |
| DT | 207 | 12 | 0.0 | 21.4 | 62.2 | 19.0 | 16.0 | 6.0 | | | | | | | 1486.4 | 1.75 | 60.36 | 2.60 |
| DT | 207 | 14 | 0.1 | 21.3 | 58.3 | 21.1 | 12.1 | 6.4 | | | | | | | | 1.79 | 58.13 | |
| DT | 207 | 16 | 0.1 | 24.5 | 56.0 | 21.5 | 13.0 | 6.3 | | | | | | | | 1.82 | 56.29 | |
| DT | 207 | 18 | 0.0 | 19.4 | 58.3 | 23.7 | 11.3 | 6.5 | | | | | | | 1513.3 | 1.82 | 56.22 | 2.76 |
| DT | 207 | 20 | 1.1 | 18.7 | 59.5 | 23.8 | 11.9 | 6.4 | 3.7 | 96.3 | 54.5 | 15.9 | 29.6 | 0.0 | 1508.1 | 1.89 | 52.43 | 2.85 |
| DT | 207 | 22 | 0.2 | 29.6 | 52.6 | 19.9 | 16.2 | 5.9 | | | | | | | 1508.2 | 1.86 | 54.18 | 2.81 |
| DT | 207 | 24 | 6.9 | 22.0 | 47.7 | 24.6 | 11.6 | 6.4 | | | | | | | 1490.8 | 1.84 | 55.28 | 2.74 |
| DT | 207 | 26 | 0.6 | 24.1 | 54.6 | 23.1 | 12.8 | 6.3 | | | | | | | 1468.8 | 1.87 | 53.45 | 2.75 |
| DT | 207 | 28 | 5.0 | 29.5 | 49.6 | 18.6 | 20.6 | 5.6 | | | | | | | 1469.2 | 1.87 | 53.86 | 2.74 |
| DT | 207 | 30 | 1.5 | 23.7 | 51.3 | 24.6 | 10.4 | 6.6 | 3.4 | 96.6 | 53.0 | 15.2 | 30.9 | 0.9 | 1455.0 | 1.83 | 55.72 | 2.67 |
| DT | 207 | 32 | 1.0 | 25.0 | 50.6 | 23.9 | 11.3 | 6.5 | | | | | | | | 1.88 | 53.30 | |
| DT | 207 | 34 | 1.5 | 25.0 | 47.4 | 28.6 | 10.1 | 6.6 | | | | | | | | 1.88 | 53.24 | |
| DT | 207 | 36 | 0.7 | 25.7 | 53.8 | 22.9 | 13.7 | 6.2 | | | | | | | | 1.91 | 51.45 | |
| DT | 207 | 38 | 4.8 | 23.7 | 49.2 | 25.7 | 12.3 | 6.3 | | | | | | | 1468.2 | 1.88 | 52.87 | 2.77 |
| DT | 207 | 40 | 1.6 | 33.8 | 45.5 | 20.9 | 16.3 | 5.9 | 3.3 | 96.7 | 55.3 | 14.9 | 29.8 | 0.0 | 1468.2 | 1.88 | 52.90 | 2.77 |
| DT | 207 | 42 | 0.6 | 28.1 | 44.0 | 28.3 | 9.2 | 6.8 | | | | | | | | 1.88 | 52.93 | |
| DT | 207 | 44 | 1.7 | 28.1 | 45.2 | 28.8 | 10.4 | 6.6 | | | | | | | | 1.89 | 52.49 | |
| DT | 207 | 46 | 0.6 | 28.4 | 51.5 | 22.6 | 14.4 | 6.1 | | | | | | | 1511.6 | 1.90 | 52.29 | 2.86 |
| DT | 207 | 48 | 0.9 | 32.2 | 51.5 | 16.6 | 21.6 | 5.5 | | | | | | | 1462.5 | 1.91 | 51.46 | 2.79 |
| DT | 207 | 50 | 0.8 | 29.2 | 51.2 | 21.0 | 15.3 | 6.0 | 3.3 | 96.7 | 55.9 | 15.8 | 28.3 | 0.0 | | 1.90 | 51.95 | |

| SITE | CORE | DEPTH | % gravel | % sand | % silt | % clay | mean | mean | % I.R. | % carb | % arag | % lmc | % hmc | % dolo | velocity | density | %porosity | impedance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (cm) | | | | | (microns) | (phi) | | | | | | | m/s | g/cm3 | | 10^6 kg/m^2 s |
| DT | 207 | 52 | 0.4 | 29.3 | 49.5 | 22.0 | 13.5 | 6.2 | | | | | | | | 1.91 | 51.62 | |
| DT | 207 | 54 | 0.5 | 32.6 | 49.7 | 20.9 | 18.1 | 5.8 | | | | | | | 1462.8 | 1.96 | 48.82 | 2.86 |
| DT | 207 | 56 | 0.2 | 31.6 | 47.3 | 23.0 | 13.6 | 6.2 | | | | | | | 1461.6 | 1.92 | 50.72 | 2.81 |
| DT | 207 | 58 | 0.8 | 28.0 | 48.1 | 24.9 | 10.9 | 6.5 | | | | | | | 1463.7 | 1.92 | 51.10 | 2.81 |
| DT | 207 | 60 | 1.1 | 30.8 | 46.3 | 24.1 | 12.9 | 6.3 | 3.2 | 96.8 | 53.7 | 17.9 | 28.5 | 0.0 | 1459.7 | 1.93 | 50.32 | 2.82 |
| DT | 207 | 62 | 1.1 | 34.9 | 46.2 | 20.1 | 18.4 | 5.8 | | | | | | | 1506.2 | 1.88 | 53.03 | 2.83 |
| DT | 207 | 64 | 0.6 | 36.1 | 40.1 | 25.4 | 13.3 | 6.2 | | | | | | | 1461.7 | 1.88 | 53.02 | 2.75 |
| DT | 207 | 66 | 0.9 | 31.5 | 47.8 | 20.8 | 14.4 | 6.1 | | | | | | | 1459.1 | 1.93 | 50.59 | 2.81 |
| DT | 207 | 68 | 1.0 | 28.9 | 48.9 | 23.0 | 13.6 | 6.2 | | | | | | | 1464.3 | 1.91 | 51.58 | 2.79 |
| DT | 207 | 70 | 0.4 | 23.9 | 54.0 | 23.7 | 12.3 | 6.3 | 3.0 | 97.0 | 56.0 | 17.1 | 26.9 | 0.0 | 1459.1 | 1.95 | 49.27 | 2.85 |
| DT | 207 | 72 | 1.1 | 25.1 | 50.7 | 25.8 | 13.0 | 6.3 | | | | | | | | 1.94 | 49.60 | |
| DT | 207 | 74 | 0.2 | 19.0 | 67.7 | 16.1 | 20.1 | 5.6 | | | | | | | | 1.93 | 50.38 | |
| DT | 207 | 76 | 0.4 | 34.6 | 43.3 | 23.1 | 13.7 | 6.2 | | | | | | | 1475.7 | 1.93 | 50.39 | 2.85 |
| DT | 207 | 78 | 0.7 | 25.7 | 51.2 | 25.0 | 12.4 | 6.3 | | | | | | | | 1.96 | 48.63 | |
| DT | 207 | 80 | 0.4 | 27.1 | 49.7 | 25.7 | 12.6 | 6.3 | 3.1 | 96.9 | 55.6 | 16.8 | 26.9 | 0.8 | | 1.95 | 49.55 | |
| DT | 207 | 82 | 0.6 | 27.9 | 47.0 | 25.9 | 11.6 | 6.4 | | | | | | | | 1.95 | 49.52 | |
| DT | 207 | 84 | 0.4 | 26.8 | 48.5 | 26.6 | 11.8 | 6.4 | | | | | | | 1467.6 | 1.93 | 50.49 | 2.83 |
| DT | 207 | 86 | 0.5 | 25.7 | 49.7 | 26.1 | 11.8 | 6.4 | | | | | | | 1467.6 | 1.94 | 50.11 | 2.84 |
| DT | 207 | 88 | 0.6 | 26.9 | 50.0 | 25.0 | 12.6 | 6.3 | | | | | | | 1465.0 | 1.95 | 49.50 | 2.85 |
| DT | 207 | 90 | 1.4 | 27.5 | 48.3 | 24.5 | 12.5 | 6.3 | | | 57.0 | 15.5 | 27.6 | 0.0 | 1468.1 | 1.94 | 49.82 | 2.85 |
| DT | 207 | 92 | 1.3 | 32.4 | 44.6 | 23.5 | 14.0 | 6.2 | | | | | | | | 1.96 | 48.92 | |
| DT | 207 | 94 | 0.7 | 29.2 | 49.2 | 24.7 | 13.9 | 6.2 | | | | | | | | 1.94 | 49.59 | |
| DT | 207 | 96 | 1.5 | 29.6 | 47.9 | 23.8 | 14.1 | 6.1 | | | | | | | 1470.3 | 1.93 | 50.47 | 2.84 |
| DT | 207 | 98 | 1.9 | 27.2 | 50.3 | 23.1 | 14.4 | 6.1 | | | | | | | | 1.93 | 50.49 | |
| DT | 207 | 100 | 2.0 | 35.7 | 39.0 | 26.3 | 14.0 | 6.2 | | | 57.4 | 15.7 | 26.4 | 0.5 | | 1.92 | 51.01 | |
| DT | 207 | 102 | 1.2 | 33.1 | 48.1 | 18.7 | 17.6 | 5.8 | | | | | | | | 1.95 | 49.14 | |
| DT | 207 | 104 | 2.3 | 33.6 | 43.8 | 22.6 | 15.8 | 6.0 | | | | | | | | 1.88 | 53.06 | |
| DT | 207 | 106 | 1.7 | 32.6 | 44.7 | 23.7 | 14.5 | 6.1 | | | | | | | 1489.8 | 1.96 | 48.81 | 2.92 |
| DT | 207 | 108 | 1.8 | 37.9 | 42.7 | 20.0 | 21.5 | 5.5 | | | | | | | | 1.91 | 51.62 | |
| DT | 207 | 110 | 3.3 | 32.8 | 43.4 | 22.1 | 17.2 | 5.9 | | | 58.9 | 14.5 | 26.6 | 0.0 | | 1.94 | 49.75 | |
| DT | 207 | 112 | 1.7 | 25.3 | 48.4 | 26.4 | 11.7 | 6.4 | | | | | | | | 1.96 | 48.90 | |
| DT | 207 | 114 | 1.2 | 29.8 | 47.4 | 23.8 | 13.8 | 6.2 | | | | | | | | 1.97 | 48.46 | |
| DT | 207 | 116 | 1.5 | 28.8 | 47.3 | 23.5 | 13.3 | 6.2 | | | | | | | | 1.97 | 48.26 | |
| DT | 207 | 118 | 2.7 | 28.1 | 46.3 | 26.3 | 13.5 | 6.2 | | | | | | | 1474.2 | 2.00 | 46.76 | 2.94 |
| DT | 207 | 120 | 3.6 | 36.7 | 41.4 | 20.7 | 21.0 | 5.6 | | | 58.6 | 16.7 | 24.2 | 0.5 | 1478.6 | 2.00 | 46.37 | 2.96 |
| DT | 207 | 122 | 2.1 | 35.7 | 42.4 | 22.4 | 17.0 | 5.9 | | | | | | | 1473.4 | 2.00 | 46.64 | 2.94 |
| DT | 207 | 124 | 2.3 | 36.9 | 40.3 | 22.1 | 17.9 | 5.8 | | | | | | | 1483.0 | 2.01 | 45.75 | 2.99 |
| DT | 207 | 126 | 1.6 | 29.9 | 45.6 | 25.6 | 13.2 | 6.2 | | | | | | | 1484.0 | 2.00 | 46.74 | 2.96 |
| DT | 207 | 128 | 1.7 | 32.7 | 46.4 | 23.2 | 16.5 | 5.9 | | | | | | | 1483.0 | 2.01 | 46.17 | 2.98 |
| DT | 207 | 130 | 2.4 | 38.1 | 42.0 | 21.0 | 22.7 | 5.5 | | | 53.5 | 19.4 | 27.0 | 0.0 | 1487.4 | 2.01 | 45.80 | 3.00 |
| DT | 207 | 132 | 4.2 | 34.5 | 39.9 | 23.3 | 17.6 | 5.8 | | | | | | | 1486.1 | 2.03 | 44.78 | 3.02 |
| DT | 207 | 134 | 5.9 | 34.9 | 42.0 | 20.1 | 25.2 | 5.3 | | | | | | | 1487.6 | 2.03 | 44.91 | 3.02 |

| SITE | CORE | DEPTH (cm) | % gravel | % sand | % silt | % clay | mean (microns) | mean (phi) | % I.R. | % carb | % arag | % lmc | % hmc | % dolo | velocity m/s | density g/cm3 | %porosity | impedance 10^6 kg/m^2 s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DT | 207 | 136 | 3.0 | 38.3 | 38.4 | 22.4 | 18.4 | 5.8 | | | | | | | 1485.8 | 2.02 | 45.53 | 3.00 |
| DT | 207 | 138 | 5.9 | 37.5 | 39.0 | 20.1 | 26.2 | 5.3 | | | | | | | 1486.0 | 2.01 | 46.19 | 2.98 |
| DT | 207 | 140 | 8.6 | 41.3 | 32.0 | 19.5 | 36.4 | 4.8 | | | 58.9 | 15.7 | 25.4 | 0.0 | | 2.02 | 45.59 | |
| DT | 207 | 142 | 3.9 | 37.7 | 38.5 | 22.1 | 20.1 | 5.6 | | | | | | | 1479.2 | 1.98 | 47.69 | 2.93 |
| DT | 207 | 144 | 4.0 | 33.4 | 42.4 | 23.9 | 17.5 | 5.8 | | | | | | | 1484.6 | 1.99 | 46.98 | 2.96 |
| DT | 207 | 146 | 4.6 | 33.0 | 41.2 | 23.6 | 16.8 | 5.9 | | | | | | | | 2.05 | 44.07 | |
| DT | 207 | 148 | 3.5 | 34.8 | 41.8 | 22.9 | 19.1 | 5.7 | | | | | | | | 2.03 | 45.11 | |
| DT | 207 | 150 | 4.1 | 41.7 | 33.5 | 21.8 | 21.9 | 5.5 | | | 59.2 | 14.5 | 26.2 | 0.0 | 1484.8 | 2.03 | 45.18 | 3.01 |
| DT | 207 | 152 | 4.7 | 42.8 | 33.6 | 21.6 | 26.7 | 5.2 | | | | | | | | 2.05 | 43.92 | |
| DT | 207 | 154 | 3.8 | 41.7 | 33.2 | 22.7 | 20.3 | 5.6 | | | | | | | 1488.1 | 2.02 | 45.61 | 3.00 |
| DT | 207 | 156 | 7.0 | 30.6 | 39.3 | 25.7 | 16.7 | 5.9 | | | | | | | 1486.9 | 2.00 | 46.34 | 2.98 |
| DT | 207 | 158 | 10.6 | 37.0 | 33.9 | 20.5 | 37.7 | 4.7 | | | | | | | | 2.02 | 45.35 | |
| DT | 207 | 160 | 5.3 | 38.7 | 37.2 | 22.3 | 27.7 | 5.2 | | | 58.7 | 15.3 | 26.0 | 0.0 | 1489.6 | 2.02 | 45.34 | 3.01 |
| DT | 207 | 162 | 5.7 | 43.7 | 33.4 | 18.8 | 36.2 | 4.8 | | | | | | | 1485.5 | 2.04 | 44.55 | 3.03 |
| DT | 207 | 164 | 5.3 | 43.3 | 32.6 | 20.6 | 30.7 | 5.0 | | | | | | | | 2.03 | 44.82 | |
| DT | 207 | 166 | 7.5 | 44.4 | 30.5 | 19.3 | 40.5 | 4.6 | | | | | | | | 2.02 | 45.28 | |
| DT | 207 | 168 | 6.6 | 45.0 | 30.9 | 19.3 | 39.6 | 4.7 | | | | | | | | 2.01 | 45.82 | |
| DT | 207 | 170 | 9.7 | 38.7 | 33.8 | 19.8 | 43.0 | 4.5 | | | 59.7 | 14.0 | 25.9 | 0.4 | | 2.01 | 46.21 | |
| DT | 207 | 172 | 7.4 | 42.1 | 32.5 | 19.5 | 39.4 | 4.7 | | | | | | | 1489.6 | 2.02 | 45.50 | 3.01 |
| DT | 207 | 174 | 11.5 | 40.8 | 28.7 | 20.1 | 45.4 | 4.5 | | | | | | | | 2.08 | 42.17 | |
| DT | 207 | 176 | 11.2 | 43.3 | 30.2 | 16.7 | 65.5 | 3.9 | | | 61.6 | 13.4 | 25.0 | 0.0 | | 2.06 | 43.04 | |
| | | | | | | | | | | | | | | | | | | |
| DT | 209 | 0 | 16.0 | 14.8 | 59.1 | 10.2 | 78.9 | 3.7 | | | 50.4 | 16.0 | 32.9 | 0.8 | | 1.62 | 67.61 | |
| DT | 209 | 2 | 5.4 | 14.1 | 66.0 | 14.5 | 18.8 | 5.7 | | | | | | | | 1.76 | 59.44 | |
| DT | 209 | 4 | 0.1 | 14.1 | 74.0 | 11.8 | 20.8 | 5.6 | | | | | | | 1496.8 | 1.82 | 56.32 | 2.73 |
| DT | 209 | 6 | 0.1 | 13.3 | 73.9 | 12.6 | 19.7 | 5.7 | | | | | | | 1511.4 | 1.81 | 57.20 | 2.73 |
| DT | 209 | 8 | 0.3 | 12.5 | 74.1 | 13.1 | 18.4 | 5.8 | | | | | | | 1512.8 | 1.80 | 57.30 | 2.73 |
| DT | 209 | 10 | 0.1 | 11.9 | 72.6 | 15.5 | 14.8 | 6.1 | | | 52.5 | 14.1 | 33.0 | 0.4 | 1512.8 | 1.81 | 57.10 | 2.73 |
| DT | 209 | 12 | 0.4 | 15.6 | 67.8 | 16.2 | 14.6 | 6.1 | | | | | | | 1458.3 | 1.88 | 53.35 | 2.74 |
| DT | 209 | 14 | 0.7 | 15.8 | 66.8 | 16.7 | 14.3 | 6.1 | | | | | | | 1507.2 | 1.86 | 53.98 | 2.81 |
| DT | 209 | 16 | 1.1 | 16.8 | 66.8 | 15.3 | 16.7 | 5.9 | | | | | | | 1454.9 | 1.89 | 52.66 | 2.75 |
| DT | 209 | 18 | 0.3 | 15.2 | 62.9 | 21.5 | 10.4 | 6.6 | | | | | | | 1459.0 | 1.88 | 52.88 | 2.75 |
| DT | 209 | 20 | 1.1 | 18.4 | 62.5 | 18.0 | 13.9 | 6.2 | | | 51.6 | 14.7 | 32.6 | 1.1 | 1461.6 | 1.92 | 51.09 | 2.80 |
| DT | 209 | 22 | 0.0 | 0.0 | 61.9 | 18.4 | | | | | | | | | 1462.9 | 1.92 | 51.09 | 2.80 |
| DT | 209 | 24 | 0.5 | 22.0 | 59.7 | 17.7 | 15.4 | 6.0 | | | | | | | 1510.4 | 1.88 | 53.26 | 2.84 |
| DT | 209 | 26 | 0.7 | 21.5 | 59.8 | 18.0 | 14.8 | 6.1 | | | | | | | 1461.6 | 1.88 | 52.88 | 2.75 |
| DT | 209 | 28 | 0.0 | 0.0 | 61.4 | 17.5 | | | | | | | | | 1459.0 | 1.90 | 52.00 | 2.77 |
| DT | 209 | 30 | 0.0 | 0.0 | 60.3 | 18.2 | | | | | 50.8 | 14.1 | 34.8 | 0.2 | 1456.4 | 1.90 | 52.25 | 2.76 |
| DT | 209 | 32 | 0.6 | 20.9 | 60.3 | 18.2 | 14.7 | 6.1 | | | | | | | 1459.0 | 1.92 | 50.70 | 2.81 |
| DT | 209 | 34 | 1.1 | 20.7 | 60.6 | 17.6 | 15.4 | 6.0 | | | | | | | 1462.9 | 1.93 | 50.26 | 2.83 |
| DT | 209 | 36 | 0.5 | 23.1 | 60.5 | 15.9 | 18.4 | 5.8 | | | | | | | 1464.3 | 1.94 | 50.07 | 2.83 |

| SITE | CORE | DEPTH (cm) | % gravel | % sand | % silt | % clay | mean (microns) | mean (phi) | % I.R. | % carb | % arag | % lmc | % hmc | % dolo | velocity m/s | density g/cm3 | %porosity | impedance 10^6 kg/m^2 s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DT | 209 | 38 | 0.7 | 21.1 | 60.9 | 17.4 | 15.9 | 6.0 | | | | | | | 1465.6 | 1.92 | 50.97 | 2.81 |
| DT | 209 | 40 | 1.4 | 26.0 | 57.6 | 15.0 | 21.3 | 5.6 | | | 54.0 | 13.6 | 32.3 | 0.0 | 1470.9 | 1.96 | 48.60 | 2.89 |
| DT | 209 | 42 | 0.6 | 21.3 | 59.7 | 18.5 | 14.4 | 6.1 | | | | | | | 1466.9 | 1.96 | 48.51 | 2.88 |
| DT | 209 | 44 | 0.3 | 24.8 | 60.0 | 14.8 | 21.1 | 5.6 | | | | | | | 1468.2 | 1.97 | 48.38 | 2.89 |
| DT | 209 | 46 | 0.5 | 22.0 | 60.0 | 17.5 | 15.4 | 6.0 | | | | | | | 1466.9 | 1.94 | 50.01 | 2.84 |
| DT | 209 | 48 | 0.7 | 25.2 | 56.9 | 17.1 | 16.6 | 5.9 | | | | | | | 1465.6 | 1.93 | 50.37 | 2.83 |
| DT | 209 | 50 | 0.7 | 27.2 | 56.6 | 15.6 | 20.0 | 5.6 | | | 52.4 | 14.8 | 32.2 | 0.7 | 1465.6 | 1.95 | 49.16 | 2.86 |
| DT | 209 | 52 | 0.3 | 25.5 | 58.6 | 15.7 | 18.8 | 5.7 | | | | | | | 1465.6 | 1.97 | 48.36 | 2.88 |
| DT | 209 | 54 | 0.6 | 30.7 | 55.2 | 13.5 | 23.3 | 5.4 | | | | | | | 1461.6 | 1.93 | 50.62 | 2.81 |
| DT | 209 | 56 | 0.5 | 30.8 | 53.5 | 15.2 | 21.7 | 5.5 | | | | | | | 1465.6 | 1.95 | 49.53 | 2.85 |
| DT | 209 | 58 | 0.2 | 28.6 | 54.2 | 16.9 | 18.1 | 5.8 | | | | | | | 1457.4 | 1.93 | 50.33 | 2.81 |
| DT | 209 | 60 | 0.4 | 26.1 | 54.6 | 19.0 | 14.4 | 6.1 | | | 52.6 | 16.7 | 30.7 | 0.0 | 1462.8 | 1.95 | 49.23 | 2.85 |
| DT | 209 | 62 | 0.4 | 24.1 | 61.1 | 14.3 | 20.2 | 5.6 | | | | | | | 1464.1 | 1.97 | 48.27 | 2.88 |
| DT | 209 | 64 | 0.4 | 28.6 | 58.9 | 12.0 | 23.2 | 5.4 | | | | | | | 1462.8 | 1.93 | 50.13 | 2.83 |
| DT | 209 | 66 | 0.0 | 0.0 | 79.7 | 20.3 | | | | | | | | | 1510.2 | 1.92 | 51.08 | 2.90 |
| DT | 209 | 68 | 0.6 | 26.2 | 55.4 | 17.9 | 16.1 | 6.0 | | | | | | | 1461.6 | 1.93 | 50.38 | 2.82 |
| DT | 209 | 70 | 0.9 | 27.5 | 57.1 | 14.5 | 21.9 | 5.5 | | | 49.2 | 17.0 | 32.9 | 0.9 | 1460.3 | 1.94 | 49.92 | 2.83 |
| DT | 209 | 72 | 1.2 | 24.4 | 55.2 | 19.2 | 14.3 | 6.1 | | | | | | | 1461.6 | 1.94 | 50.08 | 2.83 |
| DT | 209 | 74 | 1.5 | 24.5 | 54.3 | 19.6 | 14.9 | 6.1 | | | | | | | 1460.3 | 1.94 | 49.76 | 2.83 |
| DT | 209 | 76 | 0.5 | 25.4 | 53.8 | 20.3 | 13.6 | 6.2 | | | | | | | 1461.8 | 1.94 | 49.99 | 2.83 |
| DT | 209 | 78 | 1.5 | 27.7 | 52.3 | 18.6 | 16.1 | 6.0 | | | | | | | 1460.7 | 1.94 | 49.66 | 2.84 |
| DT | 209 | 80 | 1.9 | 28.0 | 52.9 | 17.2 | 18.2 | 5.8 | | | 54.6 | 13.6 | 31.8 | 0.0 | 1460.7 | 1.94 | 50.08 | 2.83 |
| DT | 209 | 82 | 1.3 | 26.6 | 53.9 | 18.2 | 15.8 | 6.0 | | | | | | | 1463.5 | 1.95 | 49.05 | 2.86 |
| DT | 209 | 84 | 0.9 | 27.5 | 52.8 | 18.7 | 16.2 | 5.9 | | | | | | | 1465.6 | 1.96 | 48.80 | 2.87 |
| DT | 209 | 86 | 1.0 | 26.0 | 55.4 | 17.5 | 17.2 | 5.9 | | | | | | | 1468.1 | 1.95 | 49.17 | 2.87 |
| DT | 209 | 88 | 4.8 | 26.2 | 52.4 | 16.6 | 19.8 | 5.7 | | | | | | | | 1.91 | 51.22 | |
| DT | 209 | 90 | 2.5 | 27.4 | 54.6 | 15.5 | 20.8 | 5.6 | | | 53.0 | 15.4 | 31.5 | 0.0 | | 1.92 | 50.69 | |
| DT | 209 | 92 | 1.7 | 30.6 | 51.5 | 16.2 | 20.0 | 5.6 | | | | | | | 1492.9 | 1.94 | 50.01 | 2.89 |
| DT | 226 | 0 | 0.5 | 33.8 | 51.6 | 14.1 | 28.6 | 5.1 | 3.5 | 96.5 | 51.5 | 14.2 | 34.3 | 0.0 | 1497.1 | 1.84 | 55.24 | 2.76 |
| DT | 226 | 2 | 0.1 | 33.9 | 50.2 | 15.8 | 23.7 | 5.4 | 4.7 | 95.3 | 51.5 | 15.5 | 33.0 | 0.0 | 1504.7 | 1.86 | 54.32 | 2.80 |
| DT | 226 | 4 | 1.3 | 30.4 | 53.5 | 14.8 | 26.2 | 5.3 | 2.1 | 97.9 | 51.2 | 20.6 | 28.3 | 0.0 | 1498.4 | 1.87 | 53.52 | 2.81 |
| DT | 226 | 6 | 1.4 | 33.1 | 51.8 | 13.7 | 29.3 | 5.1 | 7.3 | 92.7 | 51.6 | 16.5 | 32.0 | 0.0 | 1495.2 | 1.87 | 53.86 | 2.79 |
| DT | 226 | 8 | 1.3 | 31.2 | 52.1 | 15.4 | 25.1 | 5.3 | 3.3 | 96.7 | 52.3 | 15.8 | 31.9 | 0.0 | 1565.9 | 1.89 | 52.84 | 2.95 |
| DT | 226 | 10 | 0.9 | 31.5 | 49.0 | 18.7 | 17.6 | 5.8 | 3.7 | 96.3 | 48.6 | 17.9 | 33.5 | 0.0 | 1499.9 | 1.87 | 53.67 | 2.80 |
| DT | 226 | 12 | 0.9 | 34.5 | 48.9 | 15.7 | 24.8 | 5.3 | 3.1 | 96.9 | 49.0 | 18.6 | 32.3 | 0.0 | 1495.3 | 1.85 | 54.80 | 2.77 |
| DT | 226 | 14 | 1.2 | 31.3 | 49.8 | 17.8 | 19.8 | 5.7 | 3.6 | 96.4 | 47.4 | 18.7 | 33.6 | 0.3 | 1501.6 | 1.89 | 52.74 | 2.83 |
| DT | 226 | 16 | 3.6 | 35.1 | 45.2 | 16.1 | 25.9 | 5.3 | | | 46.0 | 22.7 | 31.3 | 0.0 | 1493.8 | 1.88 | 53.16 | 2.81 |
| DT | 226 | 18 | 0.9 | 34.1 | 48.7 | 16.2 | 23.6 | 5.4 | | | 53.6 | 17.2 | 28.5 | 0.6 | 1496.4 | 1.88 | 52.98 | 2.82 |
| DT | 226 | 20 | 1.7 | 35.7 | 46.3 | 16.4 | 24.3 | 5.4 | | | 52.9 | 15.5 | 31.3 | 0.3 | 1501.7 | 1.91 | 51.69 | 2.86 |
| DT | 226 | 22 | 1.3 | 37.0 | 45.4 | 16.2 | 24.7 | 5.3 | | | 51.4 | 21.1 | 27.6 | 0.0 | 1509.2 | 1.91 | 51.71 | 2.88 |

| SITE | CORE | DEPTH | % gravel | % sand | % silt | % clay | mean | mean | % I.R. | % carb | % arag | % lmc | % hmc | % dolo | velocity | density | %porosity | impedance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (cm) | | | | | (microns) | (phi) | | | | | | | m/s | g/cm3 | | 10^6 kg/m^2 s |
| DT | 226 | 24 | 1.9 | 35.5 | 45.6 | 17.0 | 23.1 | 5.4 | | | 52.6 | 17.9 | 29.5 | 0.0 | 1505.3 | 1.89 | 52.43 | 2.85 |
| DT | 226 | 26 | 1.3 | 38.8 | 43.1 | 16.8 | 24.2 | 5.4 | | | 53.7 | 16.8 | 29.2 | 0.3 | 1506.6 | 1.91 | 51.26 | 2.88 |
| DT | 226 | 28 | 4.7 | 38.9 | 40.9 | 15.5 | 31.0 | 5.0 | | | 48.7 | 21.8 | 29.5 | 0.0 | 1514.1 | 1.92 | 50.93 | 2.91 |
| DT | 226 | 30 | 1.4 | 43.7 | 40.8 | 14.1 | 35.8 | 4.8 | | | 51.9 | 15.6 | 32.1 | 0.4 | 1513.3 | 1.93 | 50.55 | 2.92 |
| DT | 226 | 32 | 1.6 | 41.6 | 41.6 | 15.2 | 30.9 | 5.0 | | | 52.7 | 22.7 | 24.6 | 0.0 | 1512.6 | 1.91 | 51.28 | 2.89 |
| DT | 226 | 34 | 2.5 | 42.4 | 40.5 | 14.6 | 34.1 | 4.9 | | | 52.8 | 15.0 | 31.9 | 0.2 | 1517.1 | 1.94 | 49.83 | 2.94 |
| DT | 226 | 36 | 2.6 | 45.7 | 37.8 | 13.9 | 39.5 | 4.7 | | | 50.7 | 16.1 | 33.0 | 0.2 | 1519.6 | 1.95 | 49.02 | 2.97 |
| DT | 226 | 38 | 3.2 | 42.6 | 39.8 | 14.4 | 35.6 | 4.8 | | | 51.2 | 16.8 | 31.9 | 0.1 | 1511.5 | 1.94 | 49.78 | 2.93 |
| DT | 226 | 40 | 1.4 | 46.0 | 39.4 | 13.1 | 40.3 | 4.6 | | | 49.6 | 26.5 | 23.9 | 0.0 | 1509.7 | 1.92 | 51.12 | 2.89 |
| DT | 226 | 42 | 2.4 | 46.1 | 38.4 | 13.1 | 42.7 | 4.5 | | | 48.5 | 17.7 | 33.5 | 0.2 | 1518.4 | 1.94 | 49.63 | 2.95 |
| DT | 226 | 44 | 1.8 | 45.2 | 38.2 | 14.8 | 34.4 | 4.9 | | | 53.8 | 16.1 | 29.8 | 0.3 | 1530.8 | 1.98 | 47.71 | 3.03 |
| DT | 226 | 46 | 3.9 | 41.9 | 39.1 | 15.0 | 33.7 | 4.9 | | | 52.2 | 15.5 | 31.9 | 0.3 | 1506.7 | 1.91 | 51.23 | 2.88 |
| DT | 226 | 48 | 2.3 | 40.7 | 41.1 | 15.9 | 28.9 | 5.1 | | | 48.6 | 17.5 | 33.9 | 0.0 | 1507.3 | 1.91 | 51.48 | 2.88 |
| DT | 226 | 50 | 2.3 | 46.0 | 37.2 | 14.3 | 37.4 | 4.7 | | | 49.6 | 14.9 | 35.5 | 0.0 | 1514.9 | 1.94 | 49.88 | 2.94 |
| DT | 226 | 52 | 2.5 | 45.1 | 38.1 | 14.4 | 37.5 | 4.7 | | | 46.5 | 17.0 | 36.5 | 0.0 | 1498.0 | 1.92 | 50.87 | 2.88 |
| DT | 226 | 54 | 1.7 | 43.0 | 40.0 | 15.2 | 31.4 | 5.0 | | | 50.8 | 16.4 | 32.8 | 0.0 | 1516.2 | 1.93 | 50.41 | 2.93 |
| DT | 226 | 56 | 3.5 | 45.2 | 36.7 | 14.6 | 39.3 | 4.7 | | | 53.0 | 17.0 | 30.0 | 0.0 | 1512.4 | 1.96 | 48.63 | 2.97 |
| DT | 226 | 58 | 4.3 | 44.2 | 37.1 | 14.5 | 40.0 | 4.6 | | | 55.6 | 17.1 | 27.3 | 0.0 | 1508.8 | 1.95 | 49.29 | 2.94 |
| DT | 226 | 60 | 4.8 | 46.1 | 36.8 | 12.3 | 50.1 | 4.3 | | | 47.5 | 18.3 | 33.8 | 0.4 | 1509.2 | 1.96 | 48.75 | 2.96 |
| DT | 226 | 62 | 2.7 | 48.6 | 37.4 | 11.4 | 52.0 | 4.3 | | | 48.7 | 11.3 | 40.0 | 0.0 | | 1.93 | 50.16 | |
| DT | 226 | 64 | 3.3 | 50.2 | 34.5 | 12.1 | 53.6 | 4.2 | | | 53.4 | 16.3 | 30.3 | 0.0 | | 1.94 | 49.86 | |
| DT | 226 | 66 | 3.8 | 46.8 | 36.1 | 13.1 | 45.9 | 4.4 | | | 54.0 | 20.4 | 25.6 | 0.0 | | 1.96 | 48.49 | |
| DT | 226 | 68 | 3.4 | 49.2 | 35.3 | 12.1 | 54.5 | 4.2 | | | 50.5 | 21.1 | 28.4 | 0.0 | | 1.97 | 48.29 | |
| DT | 226 | 70 | 4.4 | 46.4 | 37.0 | 12.3 | 51.1 | 4.3 | | | 53.0 | 16.3 | 30.5 | 0.3 | | 1.97 | 48.31 | |
| DT | 226 | 72 | 3.3 | 45.1 | 36.4 | 15.4 | 38.4 | 4.7 | | | 52.2 | 18.8 | 29.0 | 0.0 | | 1.95 | 49.30 | |
| DT | 226 | 74 | 3.5 | 43.8 | 36.7 | 16.0 | 32.8 | 4.9 | | | 55.9 | 17.1 | 27.0 | 0.0 | | 1.96 | 48.60 | |
| DT | 226 | 76 | 2.4 | 47.3 | 34.7 | 15.6 | 36.5 | 4.8 | | | 50.5 | 16.8 | 32.5 | 0.2 | | 1.96 | 48.98 | |
| DT | 226 | 78 | 7.6 | 46.1 | 32.9 | 13.4 | 56.5 | 4.1 | | | 53.7 | 15.1 | 31.2 | 0.0 | | 1.93 | 50.51 | |
| DT | 226 | 80 | 4.5 | 44.3 | 35.0 | 16.3 | 35.0 | 4.8 | | | 51.2 | 18.6 | 29.7 | 0.4 | 1520.0 | 1.96 | 48.71 | 2.98 |
| DT | 226 | 82 | 3.9 | 45.2 | 34.3 | 16.7 | 34.4 | 4.9 | | | 53.5 | 17.3 | 29.0 | 0.2 | | 1.90 | 52.10 | |
| DT | 226 | 84 | 6.2 | 45.0 | 34.3 | 14.5 | 46.2 | 4.4 | | | 51.5 | 17.5 | 30.7 | 0.3 | | 1.97 | 48.27 | |
| DT | 226 | 86 | 3.8 | 44.5 | 35.7 | 15.9 | 34.9 | 4.8 | | | 52.7 | 17.3 | 29.8 | 0.2 | | 1.98 | 47.63 | |
| DT | 226 | 88 | 4.1 | 45.7 | 34.5 | 15.8 | 38.6 | 4.7 | | | 51.7 | 16.2 | 32.1 | 0.0 | | | 50.59 | |
| DT | 226 | 90 | 3.8 | 48.2 | 34.3 | 13.8 | 47.6 | 4.4 | | | 51.5 | 16.6 | 31.6 | 0.3 | | 1.92 | 50.71 | |
| DT | 226 | 92 | 2.1 | 48.4 | 34.2 | 15.4 | 38.2 | 4.7 | | | 54.6 | 17.6 | 27.8 | 0.0 | | 1.67 | 64.49 | |
| DT | 226 | 94 | 4.0 | 46.5 | 33.2 | 16.3 | 37.5 | 4.7 | | | 55.8 | 16.4 | 27.8 | 0.0 | | 1.97 | 48.06 | |
| DT | 226 | 96 | 4.1 | 46.9 | 34.9 | 14.1 | 46.6 | 4.4 | | | 49.9 | 17.6 | 32.5 | 0.0 | 1530.5 | 1.98 | 47.57 | 3.03 |
| DT | 226 | 98 | 4.4 | 42.9 | 35.8 | 17.0 | 33.1 | 4.9 | | | 49.2 | 16.3 | 34.5 | 0.0 | 1520.2 | 2.00 | 46.44 | 3.04 |
| DT | 226 | 100 | 6.3 | 45.2 | 33.6 | 14.9 | 45.0 | 4.5 | | | 52.6 | 17.3 | 29.8 | 0.3 | 1521.4 | 2.02 | 45.32 | 3.08 |
| DT | 226 | 102 | 7.0 | 45.3 | 32.7 | 15.0 | 48.8 | 4.4 | | | 52.9 | 16.5 | 30.6 | 0.0 | 1512.6 | 2.01 | 46.06 | 3.04 |
| DT | 226 | 104 | 10.8 | 45.2 | 28.7 | 15.3 | 64.9 | 3.9 | | | 51.1 | 17.8 | 31.2 | 0.0 | 1511.5 | 2.03 | 45.12 | 3.06 |
| DT | 226 | 106 | 8.7 | 43.2 | 32.6 | 15.5 | 51.7 | 4.3 | | | 52.3 | 17.4 | 30.4 | 0.0 | 1514.8 | 2.02 | 45.68 | 3.05 |

| SITE | CORE | DEPTH (cm) | % gravel | % sand | % silt | % clay | mean (microns) | mean (phi) | % I.R. | % carb | % arag | % lmc | % hmc | % dolo | velocity m/s | density g/cm3 | %porosity | impedance 10^6 kg/m^2 s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DT | 232 | 12 | 1.6 | 39.2 | 49.0 | 10.3 | 44.7 | 4.5 | | | | | | | 1497.0 | 2.10 | 41.24 | 3.14 |
| DT | 232 | 14 | 1.7 | 40.3 | 48.8 | 9.2 | 49.3 | 4.3 | | | | | | | 1497.0 | 2.11 | 40.48 | 3.16 |
| DT | 232 | 16 | 1.8 | 41.5 | 46.9 | 9.8 | 49.6 | 4.3 | | | | | | | 1501.5 | 2.12 | 39.84 | 3.19 |
| DT | 232 | 18 | 1.0 | 42.4 | 43.2 | 13.4 | 32.4 | 4.9 | | | | | | | 1506.1 | 2.13 | 39.49 | 3.21 |
| DT | 232 | 20 | 2.5 | 43.0 | 43.2 | 11.4 | 42.3 | 4.6 | | | 50.6 | 15.5 | 33.5 | 0.4 | 1505.9 | 2.13 | 39.36 | 3.21 |
| DT | 232 | 22 | 2.0 | 41.6 | 39.6 | 16.8 | 23.7 | 5.4 | | | | | | | 1505.9 | 2.14 | 38.75 | 3.23 |
| DT | 232 | 24 | 3.2 | 41.1 | 41.1 | 14.7 | 30.8 | 5.0 | | | | | | | 1504.8 | 2.13 | 39.35 | 3.21 |
| DT | 232 | 26 | 2.6 | 44.6 | 39.7 | 13.2 | 37.5 | 4.7 | | | | | | | 1509.4 | 2.13 | 39.64 | 3.21 |
| DT | 232 | 28 | 4.6 | 48.2 | 35.5 | 11.6 | 56.2 | 4.2 | | | | | | | 1501.9 | 2.10 | 41.11 | 3.15 |
| DT | 232 | 30 | 1.8 | 49.5 | 36.6 | 12.1 | 44.3 | 4.5 | | | 48.2 | 18.5 | 33.3 | 0.0 | 1505.0 | 2.10 | 40.86 | 3.17 |
| DT | 232 | 32 | 2.2 | 41.2 | 40.1 | 16.5 | 26.7 | 5.2 | | | | | | | 1501.5 | 2.12 | 39.78 | 3.19 |
| DT | 232 | 34 | 2.5 | 52.5 | 34.7 | 10.3 | 57.2 | 4.1 | | | | | | | 1498.3 | 2.09 | 41.50 | 3.13 |
| DT | 232 | 36 | 3.2 | 48.5 | 36.0 | 12.3 | 47.2 | 4.4 | | | | | | | 1506.8 | 2.13 | 39.19 | 3.22 |
| DT | 232 | 38 | 3.1 | 54.8 | 32.8 | 9.4 | 68.4 | 3.9 | | | | | | | 1517.3 | 2.17 | 37.15 | 3.30 |
| DT | 232 | 40 | 2.3 | 50.4 | 36.4 | 10.9 | 50.6 | 4.3 | | | 53.7 | 15.5 | 30.8 | 0.0 | 1510.7 | 2.13 | 39.17 | 3.22 |
| DT | 232 | 42 | 3.5 | 51.7 | 34.4 | 10.4 | 60.1 | 4.1 | | | | | | | 1520.0 | 2.18 | 36.58 | 3.32 |
| DT | 232 | 44 | 2.1 | 48.2 | 37.3 | 12.4 | 43.1 | 4.5 | | | | | | | 1513.8 | 2.16 | 37.74 | 3.27 |
| DT | 232 | 46 | 8.2 | 48.2 | 32.9 | 10.6 | 67.7 | 3.9 | | | | | | | 1510.7 | 2.15 | 38.10 | 3.25 |
| DT | 232 | 48 | 3.2 | 46.6 | 28.6 | 21.5 | | | | | | | | | 1507.8 | 2.15 | 38.14 | 3.25 |
| DT | 232 | 50 | 5.0 | 50.3 | 36.5 | | 80.1 | 3.6 | | | 52.7 | 15.0 | 32.3 | 0.0 | 1507.8 | 2.13 | 39.37 | 3.21 |
| DT | 232 | 52 | 5.2 | 46.8 | 34.6 | 13.4 | 47.9 | 4.4 | | | | | | | 1509.5 | 2.18 | 36.60 | 3.29 |
| DT | 232 | 54 | 4.0 | 51.2 | 34.1 | 10.6 | 64.8 | 3.9 | | | | | | | 1506.4 | 2.16 | 37.59 | 3.26 |
| DT | 232 | 56 | 4.6 | 47.2 | 35.7 | 12.5 | 47.5 | 4.4 | | | | | | | 1508.0 | 2.13 | 39.43 | 3.21 |
| DT | 232 | 58 | 3.4 | 46.7 | 37.3 | 12.6 | 45.9 | 4.4 | | | | | | | 1498.8 | 2.12 | 40.13 | 3.17 |
| DT | 232 | 60 | 2.9 | 47.3 | 33.7 | | | | | | 52.8 | 18.7 | 28.4 | 0.0 | 1507.8 | 2.17 | 37.42 | 3.27 |
| DT | 232 | 62 | 6.8 | 50.7 | 28.7 | | | | | | | | | | 1510.9 | 2.15 | 38.32 | 3.25 |
| DT | 232 | 64 | | | | | | | | | | | | | 1614.9 | 2.18 | 36.84 | 3.52 |
| DT | 232 | 66 | 3.2 | 58.5 | 21.2 | 17.1 | | | | | | | | | 1512.2 | 2.16 | 37.67 | 3.27 |
| DT | 232 | 68 | 2.8 | 57.8 | 26.9 | 12.5 | 60.9 | 4.0 | | | | | | | 1511.1 | 2.15 | 38.25 | 3.25 |
| DT | 232 | 70 | 3.1 | 48.8 | 29.9 | 18.2 | 31.2 | 5.0 | | | 51.9 | 15.6 | 32.5 | 0.0 | 1508.0 | 2.16 | 37.86 | 3.26 |
| DT | 232 | 72 | 6.0 | 51.5 | 27.9 | 14.6 | 48.4 | 4.4 | | | | | | | 1506.4 | 2.13 | 39.60 | 3.20 |
| DT | 232 | 74 | 4.3 | 56.7 | 23.9 | 15.1 | 47.0 | 4.4 | | | | | | | 1509.7 | 2.16 | 37.67 | 3.26 |
| DT | 232 | 76 | 4.9 | 47.6 | 30.2 | 17.3 | 35.2 | 4.8 | | | | | | | 1509.7 | 2.17 | 37.12 | 3.28 |
| DT | 232 | 78 | 3.0 | 55.7 | 22.4 | 19.0 | 33.6 | 4.9 | | | | | | | 1514.4 | 2.18 | 36.68 | 3.30 |
| DT | 232 | 80 | 4.8 | 48.3 | 28.9 | 18.0 | 34.8 | 4.8 | | | 53.1 | 14.4 | 32.5 | 0.0 | 1506.8 | 2.18 | 36.63 | 3.29 |
| DT | 232 | 82 | 3.5 | 57.3 | 21.8 | 17.4 | 38.6 | 4.7 | | | | | | | 1516.1 | 2.19 | 36.05 | 3.32 |
| DT | 232 | 84 | 3.9 | 50.9 | 27.2 | 18.0 | 33.8 | 4.9 | | | | | | | 1514.8 | 2.17 | 37.25 | 3.29 |
| DT | 232 | 86 | 4.5 | 50.8 | 23.4 | 21.2 | 28.8 | 5.1 | | | | | | | 1518.3 | 2.20 | 35.83 | 3.33 |
| DT | 232 | 88 | 5.3 | 52.6 | 27.1 | 14.9 | 47.3 | 4.4 | | | | | | | 1522.9 | 2.21 | 34.78 | 3.37 |
| DT | 232 | 90 | 3.0 | 53.6 | 27.8 | 15.6 | 41.8 | 4.6 | | | 52.4 | 20.2 | 27.4 | 0.0 | | 2.19 | 36.08 | |

| SITE | CORE | DEPTH (cm) | % gravel | % sand | % silt | % clay | mean (microns) | mean (phi) | % I.R. | % carb | % arag | % lmc | % hmc | % dolo | velocity m/s | density g/cm3 | %porosity | impedance 10^6 kg/m^2 s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DT | 232 | 92 | 7.1 | 54.5 | 24.2 | 14.3 | 60.4 | 4.0 | | | | | | | | 2.17 | 37.27 | |
| DT | 232 | 94 | 4.8 | 51.5 | 26.4 | 17.3 | 39.2 | 4.7 | | | | | | | | 2.16 | 37.72 | |
| DT | 232 | 96 | 4.7 | 50.8 | 28.1 | 16.3 | 40.6 | 4.6 | | | | | | | | 2.25 | 33.11 | |
| DT | 232 | 98 | 3.2 | 47.3 | 29.6 | 19.8 | 26.2 | 5.3 | | | | | | | | 2.21 | 35.11 | |
| DT | 232 | 100 | 11.1 | 50.7 | 15.0 | 23.1 | 37.7 | 4.7 | | | 54.5 | 15.9 | 29.7 | 0.0 | | | 161.22 | |
| DT | 232 | 102 | 7.7 | 49.0 | 26.5 | 16.7 | 42.5 | 4.6 | | | | | | | | 2.05 | 43.73 | |
| DT | 232 | 104 | 3.1 | 48.8 | 29.4 | 18.7 | 29.2 | 5.1 | | | | | | | | 2.00 | 46.80 | |
| DT | 232 | 106 | 4.0 | 51.3 | 25.2 | 19.6 | 31.6 | 5.0 | | | | | | | 1427.8 | 2.17 | 37.15 | 3.10 |
| DT | 232 | 108 | 3.0 | 49.9 | 22.4 | 24.7 | 24.3 | 5.4 | | | | | | | | 2.16 | 37.95 | |
| DT | 232 | 110 | 3.1 | 51.4 | 20.1 | 25.4 | 22.7 | 5.5 | | | 51.3 | 17.7 | 30.6 | 0.4 | 1517.6 | 2.23 | 33.93 | 3.39 |
| DT | 232 | 112 | 3.9 | 54.6 | 23.7 | 17.8 | 33.5 | 4.9 | | | | | | | 1516.0 | 2.26 | 32.31 | 3.43 |
| DT | 232 | 114 | 4.6 | 47.0 | 27.6 | 20.8 | 28.6 | 5.1 | | | | | | | 1512.7 | 2.23 | 33.86 | 3.38 |
| DT | 232 | 116 | 12.0 | 47.4 | 21.9 | 18.7 | 53.6 | 4.2 | | | | | | | 1511.3 | 2.25 | 32.96 | 3.40 |
| DT | 232 | 118 | 22.8 | 43.0 | 17.0 | 17.2 | 101.6 | 3.3 | | | | | | | 1491.8 | 2.21 | 35.30 | 3.29 |
| DT | 232 | 120 | 18.3 | 44.2 | 15.1 | 22.5 | 67.5 | 3.9 | | | 52.1 | 14.8 | 32.6 | 0.5 | 1496.5 | 2.22 | 34.24 | 3.33 |
| DT | 232 | 122 | 7.1 | 51.7 | 18.9 | 22.3 | 42.5 | 4.6 | | | | | | | | 2.24 | 33.34 | |
| DT | 232 | 124 | 11.3 | 45.0 | 21.8 | 21.9 | 44.8 | 4.5 | | | | | | | 1504.4 | 2.26 | 32.38 | 3.40 |
| DT | 232 | 126 | 17.9 | 41.4 | 16.7 | 24.1 | 59.8 | 4.1 | | | | | | | 1519.9 | 2.28 | 30.96 | 3.47 |
| DT | 232 | 128 | 7.5 | 44.6 | 25.3 | 22.6 | 33.1 | 4.9 | | | | | | | | 2.29 | 30.86 | |
| DT | 232 | 130 | 5.4 | 38.3 | 22.5 | 33.9 | 14.0 | 6.2 | | | 56.3 | 15.3 | 28.4 | 0.0 | 1506.8 | 2.24 | 33.46 | 3.37 |
| DT | 232 | 132 | 5.6 | 42.4 | 21.5 | 30.5 | 21.2 | 5.6 | | | | | | | 1505.4 | 2.23 | 33.73 | 3.36 |
| DT | 232 | 134 | 2.5 | 45.8 | 20.4 | 31.3 | 15.5 | 6.0 | | | | | | | 1500.8 | 2.30 | 30.07 | 3.45 |
| DT | 232 | 136 | | | | | | | | | | | | | 1525.7 | 2.29 | 30.84 | 3.49 |
| DT | 232 | 138 | | | | | | | | | | | | | | 2.30 | 30.08 | |
| DT | 232 | 140 | 13.7 | 40.2 | 17.8 | 28.3 | 44.5 | 4.5 | | | 55.4 | 16.3 | 28.3 | 0.0 | 1536.3 | 2.33 | 28.36 | 3.58 |
| DT | 232 | 142 | 5.9 | 53.5 | 15.1 | 25.5 | 33.3 | 4.9 | | | | | | | 1539.5 | 2.33 | 28.35 | 3.59 |
| DT | 232 | 144 | | | | | | | | | | | | | 1532.1 | 2.32 | 29.28 | 3.55 |
| DT | 232 | 146 | | | | | | | | | | | | | 1513.8 | 2.30 | 29.95 | 3.49 |
| DT | 232 | 148 | | | | | | | | | | | | | 1527.3 | 2.31 | 29.53 | 3.53 |
| DT | 232 | 150 | | | | | | | | | 56.8 | 11.9 | 31.3 | 0.0 | | 2.23 | 33.92 | |
| DT | 232 | 152 | | | | | | | | | 54.2 | 14.6 | 31.2 | 0.0 | | 2.19 | 36.31 | |
| DT | 232 | 154 | | | | | | | | | | | | | | 2.30 | 30.04 | |
| DT | 232 | 156 | | | | | | | | | | | | | | 2.28 | 30.96 | |
| BOCA | S INLET | 0 | 4.8 | 94.2 | 0.8 | 0.0 | 524.9 | 0.9 | 44.3 | 55.7 | 22.7 | 24.4 | 8.6 | 0.0 | | 1.94 | 46.27 | |
| BOCA | S INLET | 2 | | | | | | | 48.5 | 51.5 | 21.0 | 22.7 | 7.8 | 0.0 | | 1.94 | 44.80 | |
| BOCA | S INLET | 4 | | | | | | | 33.7 | 66.3 | 29.4 | 28.1 | 8.7 | 0.0 | | 1.96 | 44.84 | |
| BOCA | S INLET | 6 | | | | | | | 45.7 | 54.3 | 22.6 | 23.6 | 8.1 | 0.0 | | 1.99 | 44.40 | |

| SITE | CORE | DEPTH (cm) | % gravel | % sand | % silt | % clay | mean (microns) | mean (phi) | % I.R. | % carb | % arag | % lmc | % hmc | % dolo | velocity m/s | density g/cm3 | %porosity | impedance 10^6 kg/m^2 s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BOCA | S INLET | 8 | | | | | | | 33.5 | 66.5 | 29.2 | 29.8 | 7.5 | 0.0 | | 1.97 | 44.74 | |
| BOCA | S INLET | 10 | | | | | | | 37.2 | 62.8 | 28.7 | 24.4 | 9.8 | 0.0 | | 1.94 | 44.36 | |
| BOCA | NSO1-2 | 0 | 6.0 | 93.7 | 0.0 | 0.0 | 386.9 | 1.4 | 20.6 | 79.4 | 19.6 | 8.4 | 51.4 | 0.0 | 1542.2 | 2.07 | 38.81 | 3.20 |
| BOCA | NSO1-2 | 2 | 3.7 | 96.3 | 0.0 | 0.0 | 397.8 | 1.3 | 17.7 | 82.3 | 18.7 | 7.5 | 56.1 | 0.0 | 1568.7 | 2.08 | 40.20 | 3.26 |
| BOCA | NSO1-2 | 4 | | | | | | | 15.7 | 84.3 | 19.6 | 6.6 | 58.2 | 0.0 | 1642.1 | 2.13 | 42.61 | 3.50 |
| BOCA | NSO1-2 | 6 | | | | | | | 7.4 | 92.6 | 19.5 | 5.7 | 67.5 | 0.0 | 1646.0 | 2.09 | 42.90 | 3.44 |
| BOCA | NSO1-2 | 8 | | | | | | | 6.2 | 93.8 | 19.1 | 5.6 | 69.1 | 0.0 | 1658.5 | 2.01 | 42.53 | 3.33 |
| BOCA | NSO1-2 | 10 | | | | | | | 6.7 | 93.3 | 18.6 | 7.8 | 66.9 | 0.0 | 1652.3 | 2.09 | 39.94 | 3.45 |
| BOCA | NSO1-2 | 12 | | | | | | | 8.3 | 91.7 | 21.3 | 8.7 | 61.7 | 0.0 | 1681.8 | 2.03 | 41.45 | 3.42 |
| BOCA | NSO1-4 | 0 | 0.4 | 97.4 | 1.9 | 0.0 | 178.0 | 2.5 | 45.3 | 54.7 | 14.9 | 10.0 | 29.8 | 0.0 | 1544.5 | 2.00 | 43.68 | 3.09 |
| BOCA | NSO1-4 | 2 | | | | | | | 42.0 | 58.0 | 15.0 | 11.3 | 31.8 | 0.0 | 1689.5 | 2.03 | 43.25 | 3.43 |
| BOCA | NSO1-4 | 4 | | | | | | | 37.0 | 63.0 | 16.9 | 11.0 | 35.0 | 0.0 | 1707.5 | 1.99 | 48.45 | 3.40 |
| BOCA | NSO1-4 | 6 | | | | | | | 34.9 | 65.1 | 16.7 | 9.0 | 39.4 | 0.0 | 1712.2 | 2.01 | 44.14 | 3.44 |
| BOCA | NSO1-4 | 8 | | | | | | | 33.5 | 66.5 | 19.9 | 10.2 | 36.4 | 0.0 | 1711.8 | 1.99 | 41.98 | 3.40 |
| BOCA | NSO1-4 | 10 | | | | | | | 39.0 | 61.0 | 15.0 | 8.9 | 37.1 | 0.0 | 1710.3 | 1.95 | 45.24 | 3.34 |
| BOCA | NSO1-4 | 12 | | | | | | | [illegible] | 56.9 | 16.2 | 11.0 | 29.7 | 0.0 | 1703.2 | 2.01 | 43.79 | 3.42 |
| BOCA | NSO1-4 | 14 | | | | | | | 43.5 | 56.5 | 14.0 | 10.0 | 32.5 | 0.0 | 1704.1 | | | |
| BOCA | NSO2-4 | 0 | 0.4 | 97.7 | 0.9 | 0.0 | 336.8 | 1.6 | 42.4 | 57.6 | 21.4 | 19.9 | 16.4 | 0.0 | 1756.7 | 2.09 | 38.66 | 3.67 |
| BOCA | NSO2-4 | 2 | | | | | | | 38.0 | 62.0 | 21.6 | 22.6 | 17.8 | 0.0 | 1745.2 | 2.09 | 36.95 | 3.64 |
| BOCA | NSO2-4 | 4 | | | | | | | 42.5 | 57.5 | 20.6 | 22.8 | 14.1 | 0.0 | 1751.2 | 2.09 | 37.16 | 3.67 |
| BOCA | NSO2-4 | 6 | | | | | | | 43.2 | 56.8 | 15.9 | 27.8 | 13.1 | 0.0 | 1760.3 | 2.11 | 36.67 | 3.71 |
| BOCA | NSO2-4 | 8 | | | | | | | 41.7 | 58.3 | 21.4 | 22.2 | 14.7 | 0.0 | 1761.3 | 2.09 | 37.89 | 3.68 |
| BOCA | NSO2-4 | 10 | | | | | | | 45.8 | 54.2 | 18.0 | 21.8 | 14.5 | 0.0 | 1765.3 | 2.06 | 38.91 | 3.64 |
| BOCA | NSO2-4 | 12 | | | | | | | 43.3 | 56.7 | 18.2 | 22.2 | 16.3 | 0.0 | 1759.8 | 2.04 | 40.63 | 3.60 |
| BOCA | NSO3-4 | 0 | 0.3 | 97.4 | 1.4 | 0.0 | 210.2 | 2.3 | 48.7 | 51.3 | 14.9 | 15.9 | 20.4 | 0.0 | | | | |
| BOCA | NSO3-4 | 2 | | | | | | | 51.9 | 48.1 | 15.9 | 15.8 | 16.4 | 0.0 | | 2.02 | 41.25 | |
| BOCA | NSO3-4 | 4 | | | | | | | 51.7 | 48.3 | 13.0 | 17.4 | 17.9 | 0.0 | | 2.03 | 39.64 | |
| BOCA | NSO3-4 | 6 | | | | | | | 51.1 | 48.9 | 12.9 | 17.7 | 18.3 | 0.0 | | 2.07 | 38.91 | |
| BOCA | NSO3-4 | 8 | | | | | | | 52.3 | 47.7 | 11.5 | 17.3 | 18.9 | 0.0 | | | | |
| BOCA | NSO3-4 | 10 | | | | | | | 52.0 | 48.0 | 14.3 | 17.0 | 16.7 | 0.0 | | | | |
| BOCA | NSO3-4 | 12 | | | | | | | 51.5 | 48.5 | 12.9 | 16.4 | 19.2 | 0.0 | | | | |
| BOCA | NSO3-4 | 14 | | | | | | | 51.2 | 48.8 | 13.5 | 15.0 | 20.3 | 0.0 | | | | |
| BOCA | NSO3-4 | 16 | | | | | | | 50.7 | 49.3 | 14.5 | 16.4 | 18.4 | 0.0 | | | | |
| BOCA | NSO3-4 | 18 | | | | | | | 50.0 | 50.0 | 14.3 | 14.6 | 21.0 | 0.0 | | | | |
| BOCA | NSO3-4 | 20 | | | | | | | 49.7 | 50.3 | 19.2 | 13.2 | 18.0 | 0.0 | | | | |

| SITE | CORE | DEPTH (cm) | % gravel | % sand | % silt | % clay | mean (microns) | mean (phi) | % I.R. | % carb | % arag | % lmc | % hmc | % dolo | velocity m/s | density g/cm3 | %porosity | impedance 10^6 kg/m^2 s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BOCA | NSO4-4 | 0 | | | | | | | 47.9 | 52.1 | 18.2 | 21.1 | 12.8 | 0.0 | 1545.9 | 2.12 | 37.16 | 3.28 |
| BOCA | NSO4-4 | 2 | | | | | | | 52.6 | 47.4 | 16.4 | 19.8 | 11.2 | 0.0 | 1759.2 | 2.14 | 38.49 | 3.76 |
| BOCA | NSO4-4 | 4 | | | | | | | 47.3 | 52.7 | 20.1 | 20.1 | 12.5 | 0.0 | 1757.7 | 2.12 | 39.64 | 3.73 |
| BOCA | NSO4-4 | 6 | | | | | | | 45.0 | 55.0 | 20.4 | 21.9 | 12.7 | 0.0 | 1764.2 | 2.10 | 38.80 | 3.70 |
| BOCA | NSO4-4 | 8 | | | | | | | 44.6 | 55.4 | 15.4 | 23.0 | 17.0 | 0.0 | 1764.2 | 2.06 | 39.68 | 3.63 |
| BOCA | NSO4-4 | 10 | 0.2 | 98.4 | 1.3 | 0.0 | 253.5 | 2.0 | 47.2 | 52.8 | 16.4 | 20.3 | 16.1 | 0.0 | 1760.7 | 2.08 | 39.33 | 3.66 |
| BOCA | NSO5-1 | 0 | | | | | | | 47.2 | 52.8 | 17.3 | 22.3 | 13.2 | 0.0 | 1762.8 | 2.19 | 36.47 | 3.86 |
| BOCA | NSO5-1 | 2 | | | | | | | 49.1 | 50.9 | 18.5 | 18.8 | 13.6 | 0.0 | 1750.2 | 2.16 | 35.89 | 3.79 |
| BOCA | NSO5-1 | 4 | | | | | | | 47.0 | 53.0 | 20.4 | 18.8 | 13.7 | 0.0 | 1774.0 | 2.12 | 38.41 | 3.75 |
| BOCA | NSO5-1 | 6 | | | | | | | 42.8 | 57.2 | 20.4 | 21.2 | 15.5 | 0.0 | 1758.7 | 2.20 | 36.03 | 3.87 |
| BOCA | NSO5-1 | 8 | | | | | | | 41.1 | 58.9 | 19.5 | 22.0 | 17.4 | 0.0 | 1761.2 | 2.20 | 34.86 | 3.87 |
| BOCA | NSO5-1 | 10 | 1.6 | 95.0 | 1.1 | 0.0 | 339.2 | 1.6 | 43.3 | 56.7 | 19.1 | 23.2 | 14.3 | 0.0 | 1770.4 | 2.16 | 35.91 | 3.83 |
| BOCA | NSO5-1 | 12 | | | | | | | 39.0 | 61.0 | 20.3 | 24.1 | 16.6 | 0.0 | 1769.9 | 2.18 | 36.03 | 3.85 |
| BOCA | NSO5-1 | 14 | | | | | | | 37.1 | 62.9 | 25.0 | 18.9 | 19.0 | 0.0 | 1767.3 | 2.12 | 36.52 | 3.75 |
| BOCA | NSO5-1 | 16 | | | | | | | 37.1 | 62.9 | 20.8 | 23.1 | 19.0 | 0.0 | 1760.7 | 2.18 | 35.00 | 3.84 |
| BOCA | NSO6-3 | 0 | 2.8 | 95.5 | 1.3 | 0.0 | 244.9 | 2.0 | 36.4 | 63.6 | 15.9 | 13.2 | 34.5 | 0.0 | 1548.8 | 2.00 | 45.42 | 3.10 |
| BOCA | NSO6-3 | 2 | | | | | | | 36.7 | 63.3 | 18.1 | 12.4 | 32.8 | 0.0 | 1704.3 | 1.98 | 47.55 | 3.37 |
| BOCA | NSO6-3 | 4 | | | | | | | 40.3 | 59.7 | 14.4 | 13.1 | 32.2 | 0.0 | 1689.8 | 2.00 | 43.68 | 3.38 |
| BOCA | NSO6-3 | 6 | | | | | | | 38.5 | 61.5 | 14.5 | 12.9 | 34.1 | 0.0 | 1713.4 | | | |
| BOCA | NSO6-3 | 8 | | | | | | | 38.6 | 61.4 | 15.5 | 12.1 | 33.8 | 0.0 | 1723.5 | 2.02 | 43.15 | 3.48 |
| BOCA | NSO6-3 | 10 | | | | | | | 40.5 | 59.5 | 15.7 | 12.4 | 31.5 | 0.0 | 1715.8 | 2.03 | 43.33 | 3.48 |
| BOCA | NSO6-3 | 12 | | | | | | | 29.7 | 70.3 | 14.7 | 16.0 | 39.6 | 0.0 | 1715.8 | 2.08 | 42.60 | 3.57 |
| BOCA | NSO6-3 | 14 | | | | | | | 30.3 | 69.7 | 18.6 | 11.3 | 39.8 | 0.0 | 1715.3 | | | |
| BOCA | NSO6-3 | 16 | | | | | | | 29.0 | 71.0 | 17.4 | 12.4 | 41.2 | 0.0 | 1691.7 | 2.03 | 45.02 | 3.43 |
| BOCA | NSO7-3 | 0 | 0.2 | 99.1 | 1.1 | 0.0 | 238.2 | 2.1 | 53.0 | 47.0 | 15.2 | 17.7 | 14.1 | 0.0 | 1759.0 | 2.14 | 39.65 | 3.76 |
| BOCA | NSO7-3 | 2 | | | | | | | 54.8 | 45.2 | 13.6 | 19.5 | 12.1 | 0.0 | 1762.5 | 2.06 | 40.90 | 3.63 |
| BOCA | NSO7-3 | 4 | | | | | | | 53.4 | 46.6 | 8.3 | 29.5 | 8.8 | 0.0 | 1759.0 | 2.09 | 40.84 | 3.68 |
| BOCA | NSO7-3 | 6 | | | | | | | 53.4 | 46.6 | 13.8 | 16.9 | 15.9 | 0.0 | 1758.5 | 2.12 | 41.39 | 3.73 |
| BOCA | NSO7-3 | 8 | | | | | | | 53.3 | 46.7 | 20.3 | 14.0 | 12.5 | 0.0 | 1755.5 | 2.10 | 39.82 | 3.69 |
| BOCA | NSO7-3 | 10 | | | | | | | 52.3 | 47.7 | 13.3 | 17.5 | 17.0 | 0.0 | 1759.0 | 2.08 | 40.60 | 3.66 |
| BOCA | NSO7-3 | 12 | | | | | | | 53.7 | 46.3 | 12.9 | 21.0 | 12.5 | 0.0 | 1760.5 | 2.07 | 41.31 | 3.64 |
| BOCA | NSO7-3 | 14 | | | | | | | 51.7 | 48.3 | 16.0 | 17.4 | 14.9 | 0.0 | 1744.0 | 2.09 | 43.02 | 3.64 |
| BOCA | NSO7-3 | 16 | | | | | | | 51.5 | 48.5 | 14.6 | 18.0 | 15.9 | 0.0 | 1745.5 | 2.16 | 39.23 | 3.77 |
| BOCA | NSO7-3 | 18 | | | | | | | 47.8 | 52.2 | 16.2 | 18.2 | 17.8 | 0.0 | 1754.5 | 2.16 | 38.84 | 3.79 |

| SITE | CORE | DEPTH (cm) | % gravel | % sand | % silt | % clay | mean (microns) | mean (phi) | % I.R. | % carb | % arag | % lmc | % hmc | % dolo | velocity m/s | density g/cm3 | %porosity | impedance 10^6 kg/m^2 s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IRB | IRB6-1 | 0 | 0.4 | 98.3 | 0.1 | 0.0 | 193.4 | 2.4 | | | | | | | 1455.4 | 2.02 | 40.38 | 2.95 |
| IRB | IRB6-1 | 1 | | | | | | | | | | | | | 1725.5 | | | |
| IRB | IRB6-1 | 2 | | | | | | | | | | | | | 1740.7 | 2.04 | 40.95 | 3.54 |
| IRB | IRB6-1 | 3 | | | | | | | | | | | | | 1757.1 | | | |
| IRB | IRB6-1 | 4 | | | | | | | | | | | | | 1760.1 | 2.07 | 39.33 | 3.64 |
| IRB | IRB6-1 | 5 | | | | | | | | | | | | | 1761.2 | | | |
| IRB | IRB6-1 | 6 | | | | | | | | | | | | | 1755.1 | 2.06 | 40.18 | 3.61 |
| IRB | IRB6-1 | 7 | | | | | | | | | | | | | 1762.2 | | | |
| IRB | IRB6-1 | 8 | | | | | | | | | | | | | 1759.1 | 2.05 | 40.34 | 3.60 |
| IRB | IRB6-1 | 9 | | | | | | | | | | | | | 1746.1 | | | |
| IRB | IRB6-1 | 10 | 11.7 | 86.6 | 0.0 | 0.0 | 503.5 | 1.0 | | | | | | | 1709.6 | 2.07 | 37.44 | 3.54 |
| IRB | IRB6-1 | 11 | | | | | | | | | | | | | 1702.5 | | | |
| IRB | IRB6-1 | 12 | | | | | | | | | | | | | 1694.5 | 1.99 | 42.50 | 3.37 |
| | | | | | | | | | | | | | | | | | | |
| IRB | IRB6-2 | 0 | 7.1 | 92.9 | 0.0 | 0.0 | 466.5 | 1.1 | 37.9 | 62.1 | | | | | 1542.2 | 2.05 | | 3.16 |
| IRB | IRB6-2 | 1 | | | | | | | | | | | | | 1773.8 | 2.05 | | 3.64 |
| IRB | IRB6-2 | 2 | 5.0 | 95.0 | 0.0 | 0.0 | 299.4 | 1.7 | 39.5 | 60.5 | | | | | 1725.2 | 2.05 | | 3.54 |
| IRB | IRB6-2 | 3 | | | | | | | | | | | | | 1710.7 | 2.05 | | 3.51 |
| IRB | IRB6-2 | 4 | 9.3 | 90.6 | 0.0 | 0.0 | 524.9 | 0.9 | 38.7 | 61.3 | | | | | 1726.1 | 2.05 | | 3.54 |
| IRB | IRB6-2 | 5 | | | | | | | | | | | | | 1746.9 | 2.05 | | 3.58 |
| IRB | IRB6-2 | 6 | 20.7 | 79.3 | 0.0 | 0.0 | 594.6 | 0.8 | 30.7 | 69.3 | | | | | 1699.7 | 2.05 | | 3.48 |
| IRB | IRB6-2 | 7 | | | | | | | | | | | | | 1681.5 | 2.05 | | 3.45 |
| IRB | IRB6-2 | 8 | 33.6 | 66.3 | 0.0 | 0.0 | 835.1 | 0.3 | 21.7 | 78.3 | | | | | 1686.1 | 2.05 | | 3.46 |
| IRB | IRB6-2 | 13 | | | | | | | | | | | | | 1659.5 | 2.05 | | 3.40 |
| IRB | IRB6-2 | 14 | | | | | | | | | | | | | 1692.6 | 2.05 | | 3.47 |
| IRB | IRB6-2 | 15 | | | | | | | | | | | | | 1721.3 | 2.05 | | 3.53 |
| IRB | IRB6-2 | 16 | | | | | | | | | | | | | 1691.2 | 2.05 | | 3.47 |
| IRB | IRB6-2 | 17 | | | | | | | | | | | | | 1681.5 | 2.05 | | 3.45 |
| IRB | IRB6-2 | 18 | | | | | | | | | | | | | 1676.8 | 2.05 | | 3.44 |
| | | | | | | | | | | | | | | | | | | |
| IRB | IRB6-3 | 0 | 6.6 | 92.8 | 0.0 | 0.0 | 389.6 | 1.4 | | | | | | | 1543.3 | 2.04 | 41.43 | 3.15 |
| IRB | IRB6-3 | 1 | | | | | | | | | | | | | 1709.9 | | | |
| IRB | IRB6-3 | 2 | | | | | | | | | | | | | 1730.2 | 2.06 | 40.61 | 3.57 |
| IRB | IRB6-3 | 3 | | | | | | | | | | | | | 1721.9 | | | |
| IRB | IRB6-3 | 4 | | | | | | | | | | | | | 1739.5 | 2.09 | 42.05 | 3.64 |
| IRB | IRB6-3 | 5 | | | | | | | | | | | | | 1739.5 | | | |
| IRB | IRB6-3 | 6 | | | | | | | | | | | | | 1746.9 | 2.03 | 41.89 | 3.54 |
| IRB | IRB6-3 | 7 | | | | | | | | | | | | | 1745.4 | | | |
| IRB | IRB6-3 | 8 | | | | | | | | | | | | | 1734.6 | 2.05 | 41.19 | 3.55 |
| IRB | IRB6-3 | 9 | | | | | | | | | | | | | 1724.3 | | | |
| IRB | IRB6-3 | 10 | | | | | | | | | | | | | 1714.2 | 2.02 | 40.12 | 3.45 |

| SITE | CORE | DEPTH | % gravel | % sand | % silt | % clay | mean | mean | % I.R. | % carb | % arag | % lmc | % hmc | % dolo | velocity | density | %porosity | impedance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (cm) | | | | | (microns) | (phi) | | | | | | | m/s | g/cm3 | | 10^6 kg/m^2 s |
| LTB | LTB1-1 | 0 | 2.8 | 89.2 | 10.8 | | 193.4 | 2.4 | | | | | | | 1539.1 | 1.86 | 45.77 | 2.86 |
| LTB | LTB1-1 | 1 | | | | | | | | | | | | | 1685.4 | | | |
| LTB | LTB1-1 | 2 | | | | | | | | | | | | | 1691.9 | 2.05 | 42.70 | 3.47 |
| LTB | LTB1-1 | 3 | | | | | | | | | | | | | 1692.4 | | | |
| LTB | LTB1-1 | 4 | | | | | | | | | | | | | 1685.4 | 2.05 | 42.79 | 3.46 |
| LTB | LTB1-1 | 5 | | | | | | | | | | | | | 1655.8 | | | |
| LTB | LTB1-1 | 6 | | | | | | | | | | | | | 1620.7 | 1.92 | 45.26 | 3.11 |
| LTB | LTB1-1 | 7 | | | | | | | | | | | | | 1697.1 | | | |
| LTB | LTB1-1 | 8 | | | | | | | | | | | | | 1695.7 | 1.96 | 44.06 | 3.32 |
| LTB | LTB1-1 | 9 | | | | | | | | | | | | | 1696.2 | | | |
| LTB | LTB1-1 | 10 | | | | | | | | | | | | | 1708.5 | 1.97 | 44.10 | 3.37 |
| LTB | LTB1-1 | 11 | | | | | | | | | | | | | 1696.2 | | | |
| LTB | LTB1-1 | 12 | 1.4 | 86.7 | 13.3 | | 160.4 | 2.6 | | | | | | | 1695.7 | 2.02 | 41.17 | 3.43 |
| LTB | LTB1-1 | 13 | | | | | | | | | | | | | 1699.5 | | | |
| | | | | | | | | | | | | | | | | | | |
| LTB | LTB2-1 | 0 | | | | | | | | | | | | | 1662.4 | 1.92 | | 3.19 |
| LTB | LTB2-1 | 1 | | | | | | | | | | | | | 1682.1 | | | |
| LTB | LTB2-1 | 2 | | | | | | | | | | | | | 1703.6 | 1.97 | | 3.36 |
| LTB | LTB2-1 | 3 | | | | | | | | | | | | | 1718.5 | | | |
| LTB | LTB2-1 | 4 | | | | | | | | | | | | | 1727.7 | 1.98 | | 3.42 |
| LTB | LTB2-1 | 5 | | | | | | | | | | | | | 1725.3 | | | |
| LTB | LTB2-1 | 6 | | | | | | | | | | | | | 1729.2 | 1.96 | | 3.39 |
| LTB | LTB2-1 | 7 | | | | | | | | | | | | | 1732.6 | | | |
| LTB | LTB2-1 | 8 | | | | | | | | | | | | | 1739.0 | 2.01 | | 3.50 |
| LTB | LTB2-1 | 9 | | | | | | | | | | | | | 1737.0 | | | |
| LTB | LTB2-1 | 10 | | | | | | | | | | | | | 1743.5 | 2.01 | | 3.50 |
| LTB | LTB2-1 | 11 | | | | | | | | | | | | | 1743.9 | | | |
| LTB | LTB2-1 | 12 | | | | | | | | | | | | | 1744.9 | 2.03 | | 3.54 |

APPENDIX B.

Raw data from the Dry Tortugas study area.

| CORE | Sample Interval (cm) | Wet Bulk Density (g/cc) | Grain Density (g/cc) | Water Content (%) | Void Ratio | Porosity (%) | % Grav. | % Sand | % Silt | % Clay | MGS (phi) | MGS (microns) | %Carb | Vp (m/s) | IMP (kg/cm^2s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 147 | 0 | 1.68 | 2.72 | 58.18 | 1.58 | 61.26 | 0.00 | 21.56 | 55.93 | 22.61 | 6.08 | 14.8 | 92.1 | | |
| 147 | 2 | 1.68 | 2.70 | 57.99 | 1.57 | 61.04 | | | | | | | 91.8 | | |
| 147 | 4 | 1.75 | 2.73 | 51.07 | 1.39 | 58.20 | | | | | | | 91.7 | 1497.13 | 2.62 |
| 147 | 6 | 1.70 | 2.73 | 55.05 | 1.50 | 60.08 | | | | | | | 90.4 | 1497.33 | 2.54 |
| 147 | 8 | 1.76 | 2.73 | 47.76 | 1.30 | 56.60 | | | | | | | 91.8 | 1497.33 | 2.64 |
| 147 | 10 | 1.76 | 2.75 | 47.92 | 1.32 | 56.86 | 0.08 | 26.39 | 53.63 | 19.90 | 5.80 | 17.9 | 88.4 | 1501.86 | 2.64 |
| 147 | 12 | 1.80 | 2.73 | 44.15 | 1.21 | 54.69 | | | | | | | 91.1 | 1499.04 | 2.70 |
| 147 | 14 | 1.78 | 2.74 | 45.41 | 1.24 | 55.41 | | | | | | | 88.8 | 1505.09 | 2.68 |
| 147 | 16 | 1.78 | 2.72 | 46.44 | 1.26 | 55.81 | | | | | | | 91.6 | 1505.09 | 2.67 |
| 147 | 18 | 1.79 | 2.74 | 46.16 | 1.26 | 55.83 | | | | | | | 88.7 | 1503.78 | 2.69 |
| 147 | 20 | 1.82 | 2.72 | 42.81 | 1.16 | 53.79 | 0.98 | 32.65 | 45.61 | 20.76 | 5.68 | 19.5 | 90.1 | 1500.75 | 2.73 |
| 147 | 22 | 1.80 | 2.71 | 43.99 | 1.19 | 54.41 | | | | | | | 90.7 | 1503.78 | 2.70 |
| 147 | 24 | 1.80 | 2.75 | 45.29 | 1.24 | 55.43 | | | | | | | 90.0 | 1502.26 | 2.70 |
| 147 | 26 | 1.80 | 2.79 | 44.53 | 1.24 | 55.38 | | | | | | | 90.0 | 1500.95 | 2.71 |
| 147 | 28 | 1.82 | 2.79 | 43.10 | 1.20 | 54.56 | | | | | | | 90.1 | 1499.64 | 2.73 |
| 147 | 30 | 1.82 | 2.76 | 41.58 | 1.15 | 53.41 | 2.16 | 40.55 | 38.72 | 18.57 | 5.24 | 26.5 | 90.8 | 1504.38 | 2.74 |
| 147 | 32 | 1.84 | 2.74 | 40.65 | 1.11 | 52.65 | | | | | | | 90.9 | 1504.38 | 2.77 |
| 147 | 34 | 1.85 | 2.76 | 40.57 | 1.12 | 52.83 | | | | | | | 91.2 | 1508.95 | 2.79 |
| 147 | 36 | 1.84 | 2.77 | 41.41 | 1.15 | 53.44 | | | | | | | 90.5 | 1507.22 | 2.77 |
| 147 | 38 | 1.86 | 2.72 | 38.63 | 1.05 | 51.24 | | | | | | | 90.1 | 1511.61 | 2.81 |
| 147 | 40 | 1.87 | 2.75 | 37.94 | 1.04 | 51.06 | 3.77 | 44.35 | 32.03 | 19.85 | 4.97 | 31.9 | 90.5 | 1513.14 | 2.82 |
| 147 | 42 | 1.87 | 2.75 | 37.97 | 1.04 | 51.07 | | | | | | | 90.2 | 1508.34 | 2.82 |
| 147 | 44 | 1.86 | 2.72 | 39.04 | 1.06 | 51.51 | | | | | | | 96.7 | 1514.27 | 2.81 |
| 147 | 46 | 1.86 | 2.80 | 39.03 | 1.09 | 52.25 | | | | | | | 91.6 | 1517.36 | 2.83 |
| 147 | 48 | 1.81 | 2.72 | 43.22 | 1.18 | 54.06 | | | | | | | 92.8 | 1518.70 | 2.75 |
| 147 | 50 | 1.84 | 2.75 | 40.83 | 1.12 | 52.89 | 3.71 | 47.84 | 31.37 | 17.07 | | | 92.0 | 1512.53 | 2.78 |
| 147 | 52 | 1.89 | 2.74 | 36.81 | 1.01 | 50.18 | | | | | | | 91.9 | 1507.94 | 2.85 |
| 147 | 54 | 1.89 | 2.80 | 37.08 | 1.04 | 50.93 | | | | | | | 91.4 | 1518.70 | 2.86 |
| 147 | 56 | 1.86 | 2.78 | 39.65 | 1.10 | 52.46 | | | | | | | 91.4 | 1515.61 | 2.82 |
| 147 | 58 | 1.87 | 2.78 | 37.98 | 1.06 | 51.41 | | | | | | | 91.5 | 1514.27 | 2.84 |
| 147 | 60 | 1.87 | 2.77 | 38.90 | 1.08 | 51.83 | 4.46 | 49.83 | 27.77 | 17.94 | | | 92.7 | 1520.45 | 2.84 |
| 147 | 62 | 1.88 | 2.76 | 38.14 | 1.05 | 51.30 | | | | | | | 90.1 | 1506.61 | 2.83 |
| 147 | 64 | 1.92 | 2.75 | 34.65 | 0.95 | 48.82 | | | | | | | 88.1 | 1512.94 | 2.90 |
| 147 | 66 | 1.89 | 2.75 | 36.48 | 1.00 | 50.09 | | | | | | | 89.9 | 1519.11 | 2.87 |
| 147 | 68 | 1.89 | 2.74 | 35.98 | 0.99 | 49.68 | | | | | | | 88.1 | 1517.56 | 2.87 |
| 147 | 70 | 1.91 | 2.77 | 34.81 | 0.97 | 49.12 | 4.13 | 50.15 | 29.60 | 16.12 | | | 91.9 | 1513.14 | 2.88 |
| 147 | 72 | 1.88 | 2.74 | 37.44 | 1.03 | 50.63 | | | | | | | 91.6 | 1523.97 | 2.87 |
| 147 | 74 | 1.88 | 2.74 | 37.25 | 1.02 | 50.53 | | | | | | | 90.0 | 1527.10 | 2.87 |
| 147 | 76 | 1.89 | 2.76 | 36.48 | 1.01 | 50.18 | | | | | | | 89.3 | 1522.42 | 2.88 |
| 147 | 78 | 1.92 | 2.74 | 34.25 | 0.94 | 48.39 | | | | | | | 89.7 | 1522.42 | 2.92 |
| 147 | 80 | 1.90 | 2.76 | 35.69 | 0.98 | 49.59 | 5.39 | 47.94 | 26.86 | 19.81 | | | 90.9 | 1528.66 | 2.90 |
| 147 | 82 | 1.93 | 2.74 | 33.31 | 0.91 | 47.72 | | | | | | | 92.3 | 1528.87 | 2.95 |
| 147 | 84 | 1.94 | 2.77 | 32.64 | 0.90 | 47.44 | | | | | | | 91.7 | 1528.87 | 2.97 |
| 147 | 86 | 1.96 | 2.76 | 30.30 | 0.83 | 45.50 | | | | | | | 91.8 | 1530.44 | 3.00 |
| 147 | 88 | 2.01 | 2.73 | 26.37 | 0.72 | 41.82 | 16.56 | 38.63 | 25.68 | 19.13 | | | 91.6 | 1529.07 | 3.07 |
| 147 | 90 | 1.96 | 2.77 | 31.18 | 0.86 | 46.30 | 9.71 | 46.58 | 25.17 | 18.54 | 4.21 | 54.0 | 93.7 | | |
| 147 | 92 | 1.97 | 2.73 | 30.81 | 0.84 | 45.66 | | | | | | | 92.1 | | |
| 147 | 94 | 1.97 | 2.73 | 29.85 | 0.81 | 44.87 | | | | | | | 94.1 | | |
| 147 | 96 | 1.98 | 2.77 | 29.28 | 0.81 | 44.78 | | | | | | | 90.4 | 1549.40 | 3.07 |
| 147 | 98 | 1.95 | 2.77 | 33.08 | 0.92 | 47.81 | | | | | | | 94.5 | 1529.26 | 2.98 |
| 147 | 100 | 1.95 | 2.79 | 33.05 | 0.92 | 47.96 | 6.43 | 48.96 | 23.74 | 20.87 | 4.59 | 41.5 | 91.7 | | |
| 147 | 102 | 1.92 | 2.72 | 34.48 | 0.94 | 48.42 | | | | | | | 93.0 | 1545.81 | 2.97 |
| 147 | 104 | 1.92 | 2.76 | 33.88 | 0.93 | 48.29 | | | | | | | 91.9 | 1545.96 | 2.97 |
| 147 | 106 | 1.91 | 2.76 | 35.65 | 0.98 | 49.62 | | | | | | | 93.0 | | |
| 147 | 108 | 1.94 | 2.75 | 33.28 | 0.92 | 47.80 | | | | | | | 93.5 | | |
| 147 | 110 | 1.95 | 2.78 | 32.58 | 0.91 | 47.55 | 10.81 | 42.34 | 24.59 | 22.25 | 4.43 | 46.4 | 94.1 | 1507.14 | 2.94 |
| 147 | 112 | 1.92 | 2.74 | 34.20 | 0.94 | 48.41 | | | | | | | 91.2 | 1533.85 | 2.94 |
| 147 | 114 | 1.94 | 2.75 | 32.91 | 0.91 | 47.52 | | | | | | | 92.1 | 1542.24 | 2.99 |
| 147 | 116 | 1.93 | 2.75 | 33.33 | 0.92 | 47.86 | | | | | | | 88.9 | 1542.45 | 2.97 |
| 147 | 118 | 1.96 | 2.75 | 31.84 | 0.88 | 46.70 | | | | | | | 92.2 | 1540.84 | 3.02 |
| 147 | 120 | 1.91 | 2.75 | 34.85 | 0.96 | 48.98 | 7.45 | 47.07 | 22.85 | 22.63 | 4.28 | 51.5 | 92.1 | 1539.45 | 2.94 |
| 147 | 122 | 1.93 | 2.76 | 33.26 | 0.92 | 47.82 | | | | | | | 92.6 | 1529.93 | 2.95 |
| 147 | 124 | 1.93 | 2.78 | 34.38 | 0.96 | 48.87 | | | | | | | 91.3 | 1528.56 | 2.95 |
| 147 | 126 | 1.96 | 2.78 | 33.25 | 0.92 | 48.00 | | | | | | | 90.5 | 1541.26 | 3.02 |
| 147 | 128 | 1.98 | 2.78 | 31.02 | 0.86 | 46.26 | | | | | | | 90.6 | 1557.44 | 3.08 |

| CORE | Sample Interval (cm) | Wet Bulk Density (g/cc) | Grain Density (g/cc) | Water Content (%) | Void Ratio | Porosity (%) | % Grav. | % Sand | % Silt | % Clay | MGS (phi) | MGS (microns) | %Carb | Vp (m/s) | IMP (kg/ cm^2s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 147 | 130 | 1.95 | 2.75 | 31.44 | 0.86 | 46.33 | 7.89 | 40.57 | 25.86 | 25.68 | 4.96 | 32.1 | 88.1 | 1557.65 | 3.04 |
| 147 | 132 | 1.97 | 2.73 | 29.84 | 0.81 | 44.90 | | | | | | | 88.7 | 1562.57 | 3.07 |
| 147 | 134 | 1.98 | 2.75 | 30.25 | 0.83 | 45.45 | | | | | | | 87.8 | 1557.65 | 3.08 |
| 147 | 136 | 1.98 | 2.79 | 30.79 | 0.86 | 46.23 | | | | | | | 88.6 | 1545.87 | 3.05 |
| 147 | 138 | 1.93 | 2.77 | 33.59 | 0.93 | 48.20 | | | | | | | 88.0 | 1557.97 | 3.00 |
| 147 | 140 | 1.94 | 2.75 | 32.72 | 0.90 | 47.35 | 6.33 | 42.14 | 23.57 | 27.96 | 5.22 | 26.8 | 89.1 | 1560.03 | 3.03 |
| 147 | 142 | 1.93 | 2.75 | 33.58 | 0.92 | 48.00 | | | | | | | 90.5 | 1553.91 | 3.00 |
| 147 | 144 | 1.93 | 2.75 | 33.23 | 0.91 | 47.76 | | | | | | | 90.9 | 1557.39 | 3.01 |
| 147 | 146 | 1.94 | 2.77 | 32.41 | 0.90 | 47.28 | | | | | | | 89.4 | 1547.84 | 3.01 |
| 147 | 148 | 1.93 | 2.75 | 33.12 | 0.91 | 47.67 | | | | | | | 90.2 | 1543.42 | 2.98 |
| 147 | 150 | 1.94 | 2.75 | 32.93 | 0.90 | 47.50 | 4.80 | 44.54 | 22.38 | 28.28 | 5.79 | 18.1 | 91.9 | 1542.03 | 2.99 |
| 147 | 152 | 1.97 | 2.76 | 30.82 | 0.85 | 45.97 | | | | | | | 89.0 | 1540.63 | 3.03 |
| 147 | 154 | 1.96 | 2.83 | 32.44 | 0.92 | 47.86 | | | | | | | 89.3 | 1534.47 | 3.00 |
| 147 | 156 | 1.96 | 2.77 | 31.98 | 0.89 | 46.99 | | | | | | | 86.1 | 1552.97 | 3.05 |
| 147 | 158 | 1.91 | 2.75 | 34.03 | 0.94 | 48.35 | | | | | | | 89.6 | 1553.18 | 2.97 |
| 147 | 160 | 1.93 | 2.76 | 32.94 | 0.91 | 47.64 | 3.06 | 38.47 | 24.73 | 33.74 | 7.04 | 7.6 | 90.4 | 1551.97 | 3.00 |
| 147 | 162 | 1.97 | 2.78 | 31.72 | 0.88 | 46.89 | | | | | | | 85.9 | 1550.56 | 3.05 |
| 147 | 164 | 1.98 | 2.76 | 30.66 | 0.85 | 45.87 | | | | | | | 86.4 | 1549.36 | 3.06 |
| 147 | 166 | 1.92 | 2.75 | 34.03 | 0.94 | 48.35 | | | | | | | 89.3 | 1543.55 | 2.96 |
| 147 | 168 | 1.85 | 2.75 | 39.98 | 1.10 | 52.41 | | | | | | | 90.2 | 1535.58 | 2.84 |
| 147 | 170 | 1.93 | 2.72 | 34.00 | 0.92 | 48.02 | 7.82 | 38.10 | 26.13 | 30.94 | 6.51 | 11.0 | 91.1 | 1523.19 | 2.94 |
| 147 | 172 | 1.82 | 2.71 | 41.00 | 1.11 | 52.62 | | | | | | | 86.4 | 1534.40 | 2.79 |
| 147 | 174 | 1.84 | 2.73 | 38.66 | 1.06 | 51.37 | | | | | | | 87.3 | 1518.73 | 2.80 |
| 147 | 176 | 1.91 | 2.75 | 34.66 | 0.95 | 48.85 | | | | | | | 87.4 | 1508.35 | 2.89 |
| 147 | 178 | 1.86 | 2.71 | 37.51 | 1.02 | 50.43 | | | | | | | 87.5 | 1518.20 | 2.83 |
| 147 | 180 | 1.90 | 2.74 | 34.30 | 0.94 | 48.45 | 1.16 | 26.04 | 35.10 | 37.70 | 7.59 | 5.2 | 84.2 | 1518.61 | 2.88 |
| | | | | | | | | | | | | | | | |
| 178 | 0 | 1.74 | 2.71 | 44.30 | 1.17 | 53.93 | 2.23 | 39.71 | 44.72 | 13.34 | 4.37 | 48.4 | 90.6 | | |
| 178 | 2 | 1.78 | 2.76 | 42.47 | 1.14 | 53.36 | | | | | | | | | |
| 178 | 4 | 1.72 | 2.71 | 47.27 | 1.25 | 55.56 | | | | | | | | | |
| 178 | 6 | 1.73 | 2.72 | 45.43 | 1.21 | 54.66 | | | | | | | | | |
| 178 | 8 | 1.73 | 2.75 | 46.86 | 1.26 | 55.68 | | | | | | | | | |
| 178 | 10 | 1.75 | 2.74 | 45.04 | 1.21 | 54.66 | 0.67 | 29.2 | 50.68 | 19.46 | 5.56 | 21.2 | 91.3 | | |
| 178 | 12 | 1.73 | 2.74 | 46.60 | 1.25 | 55.48 | | | | | | | | | |
| 178 | 14 | 1.75 | 2.71 | 43.72 | 1.16 | 53.66 | | | | | | | | | |
| 178 | 16 | 1.77 | 2.74 | 42.99 | 1.15 | 53.52 | | | | | | | | | |
| 178 | 18 | 1.73 | 2.74 | 46.75 | 1.25 | 55.56 | | | | | | | | | |
| 178 | 20 | 1.80 | 2.73 | 38.88 | 1.04 | 50.87 | 0.68 | 31.61 | 47.75 | 19.96 | 5.62 | 20.3 | 91.6 | | |
| 178 | 22 | 1.80 | 2.73 | 39.38 | 1.05 | 51.25 | | | | | | | | | |
| 178 | 24 | 1.77 | 2.72 | 41.50 | 1.10 | 52.40 | | | | | | | | | |
| 178 | 26 | 1.75 | 2.73 | 44.76 | 1.19 | 54.43 | | | | | | | | | |
| 178 | 28 | 1.81 | 2.73 | 38.26 | 1.02 | 50.52 | | | | | | | | | |
| 178 | 30 | 1.82 | 2.71 | 36.69 | 0.97 | 49.24 | 1.51 | 39.68 | 41.83 | 16.98 | 5.28 | 25.7 | 91.1 | | |
| 178 | 32 | 1.84 | 2.73 | 35.91 | 0.96 | 48.94 | | | | | | | | | |
| 178 | 34 | 1.85 | 2.72 | 34.67 | 0.92 | 47.97 | | | | | | | | | |
| 178 | 36 | 1.82 | 2.73 | 37.34 | 1.00 | 49.91 | | | | | | | | | |
| 178 | 38 | 1.81 | 2.73 | 38.20 | 1.02 | 50.48 | | | | | | | | | |
| 178 | 40 | 1.84 | 2.76 | 36.85 | 0.99 | 49.86 | 1.31 | 45.17 | 36.76 | 16.76 | 4.95 | 32.4 | 92.2 | | |
| 178 | 42 | 1.84 | 2.75 | 36.79 | 0.99 | 49.71 | | | | | | | | | |
| 178 | 44 | 1.83 | 2.73 | 36.92 | 0.98 | 49.61 | | | | | | | | | |
| 178 | 46 | 1.82 | 2.74 | 37.39 | 1.00 | 49.97 | | | | | | | | | |
| 178 | 48 | 1.82 | 2.73 | 37.81 | 1.01 | 50.19 | | | | | | | | | |
| 178 | 50 | 1.82 | 2.73 | 37.46 | 1.00 | 49.97 | 3.06 | 45.43 | 33.39 | 18.12 | 5.12 | 28.8 | 93.1 | 1575.00 | 2.87 |
| 178 | 52 | 1.84 | 2.74 | 36.40 | 0.97 | 49.35 | | | | | | | | | |
| 178 | 54 | 1.78 | 2.73 | 40.84 | 1.09 | 52.11 | | | | | | | | 1566.67 | 2.79 |
| 178 | 56 | 1.81 | 2.73 | 38.30 | 1.02 | 50.53 | | | | | | | | 1566.88 | 2.84 |
| 178 | 58 | 1.81 | 2.73 | 38.34 | 1.02 | 50.55 | | | | | | | | 1573.37 | 2.85 |
| 178 | 60 | 1.82 | 2.73 | 37.31 | 0.99 | 49.85 | 1.96 | 43.94 | 36.19 | 17.91 | 5.17 | 27.8 | 91.2 | 1568.49 | 2.86 |
| 178 | 62 | 1.79 | 2.74 | 40.52 | 1.09 | 52.04 | | | | | | | | 1563.65 | 2.80 |
| 178 | 64 | 1.85 | 2.74 | 35.30 | 0.94 | 48.57 | | | | | | | | 1572.95 | 2.91 |
| 178 | 66 | 1.80 | 2.75 | 40.19 | 1.08 | 51.89 | | | | | | | | 1561.01 | 2.80 |
| 178 | 68 | 1.83 | 2.72 | 36.72 | 0.98 | 49.41 | | | | | | | | 1563.61 | 2.86 |
| 178 | 70 | 1.81 | 2.75 | 38.78 | 1.04 | 51.04 | 2.38 | 44.29 | 35.24 | 18.08 | 5.04 | 30.4 | 91.4 | 1561.38 | 2.83 |
| 178 | 72 | 1.82 | 2.74 | 37.72 | 1.01 | 50.22 | | | | | | | | 1562.16 | 2.84 |
| 178 | 74 | 1.83 | 2.73 | 36.44 | 0.97 | 49.30 | | | | | | | | 1561.54 | 2.86 |

| CORE | Sample Interval (cm) | Wet Bulk Density (g/cc) | Grain Density (g/cc) | Water Content (%) | Void Ratio | Porosity (%) | % Grav. | % Sand | % Silt | % Clay | MGS (phi) | MGS (microns) | % Carb | Vp (m/s) | IMP (kg/cm^2s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 178 | 76 | 1.84 | 2.74 | 35.73 | 0.95 | 48.84 | | | | | | | | 1559.52 | 2.87 |
| 178 | 78 | 1.85 | 2.74 | 35.01 | 0.94 | 48.36 | | | | | | | | 1565.14 | 2.90 |
| 178 | 80 | 1.85 | 2.73 | 34.45 | 0.92 | 47.84 | 0 | 46.09 | 37.5 | 16.41 | 5.20 | 27.2 | 90.4 | 1565.72 | 2.90 |
| 178 | 82 | 1.84 | 2.73 | 35.83 | 0.95 | 48.83 | | | | | | | | | |
| 178 | 84 | 1.88 | 2.71 | 32.40 | 0.86 | 46.20 | | | | | | | | 1535.23 | 2.88 |
| 178 | 86 | 1.82 | 2.74 | 37.93 | 1.02 | 50.39 | | | | | | | | | |
| 178 | 88 | 1.83 | 2.74 | 36.69 | 0.98 | 49.51 | | | | | | | | 1574.52 | 2.88 |
| 178 | 90 | 1.85 | 2.73 | 34.71 | 0.92 | 48.05 | 4.04 | 47.3 | 30.44 | 18.23 | 4.76 | 36.9 | 90.7 | 1577.80 | 2.92 |
| 178 | 92 | 1.88 | 2.73 | 32.46 | 0.86 | 46.36 | | | | | | | | 1564.77 | 2.94 |
| 178 | 94 | 1.87 | 2.73 | 33.49 | 0.89 | 47.13 | | | | | | | | 1571.26 | 2.93 |
| 178 | 96 | 1.87 | 2.73 | 32.96 | 0.88 | 46.75 | | | | | | | | 1568.21 | 2.94 |
| 178 | 98 | 1.87 | 2.73 | 33.82 | 0.90 | 47.46 | | | | | | | | 1574.94 | 2.94 |
| 178 | 100 | 1.85 | 2.74 | 34.92 | 0.93 | 48.29 | 8.08 | 41.8 | 29.88 | 20.23 | 4.85 | 34.7 | 86.5 | 1584.00 | 2.94 |
| 178 | 102 | 1.91 | 2.75 | 30.71 | 0.83 | 45.22 | | | | | | | | 1569.87 | 3.00 |
| 178 | 104 | 1.87 | 2.74 | 33.36 | 0.89 | 47.17 | | | | | | | | | |
| 178 | 106 | 1.89 | 2.80 | 33.54 | 0.92 | 47.84 | | | | | | | | 1580.52 | 2.99 |
| 178 | 108 | 1.88 | 2.80 | 34.82 | 0.95 | 48.75 | | | | | | | | 1593.17 | 2.99 |
| 178 | 110 | 1.88 | 2.74 | 32.94 | 0.88 | 46.81 | 10.1 | 40.95 | 29.62 | 19.33 | 4.55 | 42.7 | 83.8 | 1584.25 | 2.97 |
| 178 | 112 | 1.88 | 2.78 | 33.98 | 0.92 | 48.01 | | | | | | | | 1582.81 | 2.98 |
| 178 | 114 | 1.89 | 2.77 | 32.72 | 0.89 | 46.97 | | | | | | | | 1579.52 | 2.99 |
| 178 | 116 | 1.92 | 2.77 | 30.99 | 0.84 | 45.62 | | | | | | | | | |
| 178 | 118 | 1.93 | 2.78 | 30.34 | 0.82 | 45.18 | | | | | | | | 1589.43 | 3.07 |
| 178 | 120 | 1.92 | 2.76 | 30.63 | 0.83 | 45.21 | 19.57 | 38.38 | 23.13 | 18.92 | 3.11 | 115.8 | 88.5 | 1589.43 | 3.05 |
| 178 | 122 | 1.89 | 2.80 | 33.63 | 0.92 | 47.94 | | | | | | | | 1576.45 | 2.99 |
| 178 | 124 | 1.91 | 2.78 | 32.13 | 0.87 | 46.59 | | | | | | | | 1587.98 | 3.03 |
| 178 | 126 | 1.91 | 2.77 | 31.62 | 0.85 | 46.07 | | | | | | | | 1601.36 | 3.05 |
| 178 | 128 | 1.97 | 2.76 | 27.55 | 0.74 | 42.65 | | | | | | | | | |
| 178 | 130 | 1.85 | 2.75 | 35.46 | 0.95 | 48.76 | 5.16 | 42.39 | 26.25 | 26.2 | 6.23 | 13.3 | 86.1 | | |
| | | | | | | | | | | | | | | | |
| 203 | 0 | 1.75 | 2.66 | 42.33 | 1.10 | 52.37 | 4.39 | 18.2 | 57.27 | 20.15 | 5.74 | 18.7 | 81.0 | 1625.55 | 2.84 |
| 203 | 2 | 1.78 | 2.72 | 40.39 | 1.07 | 51.75 | | | | | | | 88.1 | 1622.37 | 2.90 |
| 203 | 4 | 1.79 | 2.70 | 39.12 | 1.03 | 50.74 | | | | | | | 84.5 | 1631.94 | 2.92 |
| 203 | 6 | 1.82 | 2.71 | 36.73 | 0.97 | 49.27 | | | | | | | 86.4 | 1630.54 | 2.97 |
| 203 | 8 | 1.80 | 2.68 | 37.36 | 0.98 | 49.42 | | | | | | | 86.2 | 1645.08 | 2.97 |
| 203 | 10 | 1.86 | 2.75 | 34.74 | 0.93 | 48.26 | 25.3 | 12.3 | 46.36 | 16.04 | 3.39 | 95.4 | 84.4 | 1637.36 | 3.05 |
| 203 | 12 | 1.89 | 2.74 | 31.93 | 0.85 | 46.05 | | | | | | | 87.2 | 1637.13 | 3.10 |
| 203 | 14 | 1.96 | 2.72 | 27.02 | 0.72 | 41.83 | | | | | | | 85.3 | 1621.95 | 3.17 |
| 203 | 16 | 1.89 | 2.71 | 31.33 | 0.83 | 45.34 | | | | | | | 85.8 | 1622.53 | 3.07 |
| 203 | 18 | 1.85 | 2.71 | 34.44 | 0.91 | 47.67 | | | | | | | 88.3 | 1623.12 | 3.00 |
| 203 | 20 | 1.83 | 2.71 | 35.73 | 0.95 | 48.59 | 13.78 | 15.71 | 50.71 | 19.79 | 4.59 | 41.5 | 83.1 | 1635.89 | 3.00 |
| 203 | 22 | 1.92 | 2.70 | 28.60 | 0.75 | 42.99 | | | | | | | 86.5 | 1626.10 | 3.13 |
| 203 | 24 | 1.89 | 2.77 | 33.11 | 0.90 | 47.23 | | | | | | | 82.7 | 1649.69 | 3.11 |
| 203 | 26 | 1.88 | 2.70 | 31.60 | 0.83 | 45.41 | | | | | | | 88.8 | 1644.01 | 3.09 |
| 203 | 28 | 1.84 | 2.70 | 34.59 | 0.91 | 47.66 | | | | | | | 87.0 | 1628.52 | 3.00 |
| 203 | 30 | 1.82 | 2.71 | 37.10 | 0.98 | 49.56 | 9.99 | 20.66 | 53.47 | 15.88 | 4.85 | 34.7 | 87.6 | 1615.46 | 2.94 |
| 203 | 32 | 1.85 | 2.72 | 34.91 | 0.93 | 48.09 | | | | | | | 87.8 | 1622.57 | 3.00 |
| 203 | 34 | 1.84 | 2.71 | 35.09 | 0.93 | 48.12 | | | | | | | 86.5 | 1631.35 | 3.00 |
| 203 | 36 | 1.89 | 2.70 | 31.01 | 0.82 | 44.95 | | | | | | | 74.2 | 1626.36 | 3.07 |
| 203 | 38 | 1.87 | 2.70 | 32.72 | 0.86 | 46.34 | | | | | | | 86.2 | 1613.71 | 3.01 |
| 203 | 40 | 1.85 | 2.72 | 34.20 | 0.91 | 47.58 | 8.36 | 18.29 | 57.55 | 15.8 | 5.16 | 28.0 | 83.8 | 1604.15 | 2.98 |
| 203 | 42 | 1.80 | 2.75 | 39.38 | 1.06 | 51.35 | | | | | | | 82.9 | 1607.06 | 2.90 |
| 203 | 44 | 1.82 | 2.75 | 38.04 | 1.02 | 50.52 | | | | | | | 85.8 | 1613.32 | 2.94 |
| 203 | 46 | 1.81 | 2.75 | 38.61 | 1.04 | 50.87 | | | | | | | 87.1 | 1608.62 | 2.92 |
| 203 | 48 | 1.80 | 2.70 | 38.71 | 1.02 | 50.48 | | | | | | | 87.9 | 1611.55 | 2.89 |
| 203 | 50 | 1.84 | 2.72 | 35.11 | 0.93 | 48.24 | 5.13 | 17.35 | 48.68 | 28.83 | | | 87.6 | 1619.42 | 2.99 |
| 203 | 52 | 1.82 | 2.70 | 36.77 | 0.97 | 49.18 | | | | | | | 88.1 | 1616.46 | 2.94 |
| 203 | 54 | 1.82 | 2.70 | 37.12 | 0.98 | 49.50 | | | | | | | 84.8 | 1621.79 | 2.94 |
| 203 | 56 | 1.80 | 2.76 | 40.29 | 1.08 | 52.01 | | | | | | | 87.2 | 1611.74 | 2.90 |
| 203 | 58 | 1.77 | 2.69 | 41.24 | 1.08 | 51.98 | | | | | | | 87.3 | 1612.91 | 2.85 |
| 203 | 60 | 1.76 | 2.69 | 42.36 | 1.11 | 52.66 | 0.82 | 11.34 | 57.53 | 30.3 | 6.78 | 9.1 | 87.4 | 1611.73 | 2.83 |
| 203 | 62 | 1.77 | 2.69 | 40.74 | 1.07 | 51.73 | | | | | | | 83.4 | 1613.88 | 2.86 |
| 203 | 64 | 1.77 | 2.70 | 40.95 | 1.08 | 51.91 | | | | | | | 84.8 | 1604.73 | 2.84 |
| 203 | 66 | 1.76 | 2.69 | 41.36 | 1.09 | 52.04 | | | | | | | 87.0 | 1611.92 | 2.84 |
| 203 | 68 | 1.78 | 2.72 | 40.75 | 1.08 | 51.95 | | | | | | | 85.0 | 1611.33 | 2.87 |
| 203 | 70 | 1.76 | 2.70 | 42.10 | 1.11 | 52.62 | 0.88 | 10.75 | 55.37 | 33 | 7.06 | 7.5 | 84.9 | 1611.91 | 2.84 |

| CORE | Sample Interval (cm) | Wet Bulk Density (g/cc) | Grain Density (g/cc) | Water Content (%) | Void Ratio | Porosity (%) | % Grav. | % Sand | % Silt | % Clay | MGS (phi) | MGS (microns) | %Carb | Vp (m/s) | IMP (kg/cm^2s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 203 | 72 | 1.78 | 2.71 | 40.66 | 1.07 | 51.79 | | | | | | | 86.1 | 1615.62 | 2.87 |
| 203 | 74 | 1.81 | 2.72 | 38.05 | 1.01 | 50.25 | | | | | | | 87.8 | 1621.70 | 2.94 |
| 203 | 76 | 1.76 | 2.80 | 44.93 | 1.23 | 55.10 | | | | | | | 87.4 | 1617.56 | 2.85 |
| 203 | 78 | 1.78 | 2.71 | 41.16 | 1.09 | 52.18 | | | | | | | 87.5 | 1611.51 | 2.86 |
| 203 | 80 | 1.79 | 2.70 | 39.49 | 1.04 | 50.99 | 1.82 | 10.95 | 57.16 | 30.07 | 6.62 | 10.2 | 87.1 | 1609.95 | 2.88 |
| 203 | 82 | 1.85 | 2.73 | 35.13 | 0.94 | 48.37 | | | | | | | 87.5 | 1535.58 | 2.84 |
| 203 | 84 | 1.85 | 2.71 | 34.02 | 0.90 | 47.34 | | | | | | | 86.7 | 1618.04 | 3.00 |
| 203 | 86 | 1.89 | 2.74 | 32.09 | 0.86 | 46.17 | | | | | | | 85.5 | 1571.44 | 2.97 |
| 203 | 88 | 1.87 | 2.69 | 32.49 | 0.85 | 46.08 | | | | | | | 86.7 | 1659.17 | 3.10 |
| 203 | 90 | 1.77 | 2.70 | 40.97 | 1.08 | 51.92 | 5.7 | 17.99 | 50.83 | 25.48 | 5.99 | 15.7 | 84.1 | 1555.98 | 2.76 |
| 203 | 92 | 1.78 | 2.69 | 39.86 | 1.05 | 51.18 | | | | | | | 86.6 | 1496.28 | 2.67 |
| 203 | 94 | 1.82 | 2.70 | 36.73 | 0.97 | 49.24 | | | | | | | 83.4 | 1588.93 | 2.89 |
| 203 | 96 | 1.81 | 2.70 | 37.71 | 0.99 | 49.82 | | | | | | | 84.1 | 1589.12 | 2.87 |
| 203 | 98 | 1.79 | 2.72 | 40.15 | 1.06 | 51.57 | | | | | | | 83.3 | 1579.91 | 2.82 |
| 203 | 100 | 1.78 | 2.69 | 40.04 | 1.05 | 51.31 | 1.64 | 13.57 | 49.17 | 35.62 | 7.36 | 6.1 | 84.2 | 1564.98 | 2.79 |
| 203 | 102 | 1.76 | 2.73 | 42.74 | 1.14 | 53.26 | | | | | | | | 1569.68 | 2.77 |
| 203 | 104 | 1.77 | 2.73 | 42.13 | 1.12 | 52.92 | | | | | | | | 1569.68 | 2.78 |
| 203 | 106 | 1.78 | 2.73 | 41.08 | 1.10 | 52.27 | | | | | | | | 1569.68 | 2.80 |
| 203 | 108 | 1.79 | 2.74 | 40.90 | 1.09 | 52.24 | | | | | | | | 1572.89 | 2.81 |
| 203 | 110 | 1.79 | 2.71 | 40.05 | 1.06 | 51.47 | 2.77 | 14.84 | 43.67 | 38.72 | 7.52 | 5.4 | 86.0 | 1578.97 | 2.82 |
| 203 | 112 | 1.80 | 2.73 | 39.68 | 1.06 | 51.41 | | | | | | | | 1571.38 | 2.82 |
| 203 | 114 | 1.75 | 2.74 | 44.19 | 1.18 | 54.19 | | | | | | | | 1560.89 | 2.74 |
| 203 | 116 | 1.80 | 2.74 | 39.26 | 1.05 | 51.23 | | | | | | | | 1589.90 | 2.87 |
| 203 | 118 | 1.85 | 2.74 | 35.53 | 0.95 | 48.74 | | | | | | | | 1587.01 | 2.93 |
| 203 | 120 | 1.83 | 2.73 | 36.60 | 0.98 | 49.43 | 2.16 | 15.28 | 43.81 | 38.74 | 7.69 | 4.8 | 80.2 | 1590.10 | 2.91 |
| 203 | 122 | 1.85 | 2.75 | 35.62 | 0.96 | 48.86 | | | | | | | | 1581.07 | 2.92 |
| 203 | 124 | 1.79 | 2.75 | 40.83 | 1.09 | 52.27 | | | | | | | | 1583.38 | 2.83 |
| 203 | 126 | 1.83 | 2.75 | 37.09 | 0.99 | 49.87 | | | | | | | | 1591.66 | 2.91 |
| 203 | 128 | 1.87 | 2.75 | 33.69 | 0.91 | 47.51 | | | | | | | | 1602.76 | 3.00 |
| 203 | 130 | 1.87 | 2.74 | 33.53 | 0.90 | 47.25 | 1.9 | 22.98 | 38.06 | 37.06 | 7.35 | 6.1 | 85.2 | 1591.85 | 2.98 |
| 203 | 132 | 1.87 | 2.75 | 34.16 | 0.92 | 47.82 | | | | | | | | 1605.90 | 3.00 |
| 203 | 134 | 1.86 | 2.76 | 35.21 | 0.95 | 48.71 | | | | | | | | 1588.96 | 2.95 |
| 203 | 136 | 1.82 | 2.76 | 38.60 | 1.04 | 50.95 | | | | | | | | 1582.82 | 2.87 |
| 203 | 138 | 1.83 | 2.76 | 37.43 | 1.01 | 50.20 | | | | | | | | 1579.38 | 2.89 |
| 203 | 140 | 1.82 | 2.76 | 38.46 | 1.04 | 50.92 | 3 | 19.93 | 39.73 | 37.3 | 6.87 | 8.5 | 86.0 | 1586.45 | 2.89 |
| 203 | 142 | 1.83 | 2.76 | 37.35 | 1.01 | 50.19 | | | | | | | | 1586.06 | 2.91 |
| 203 | 144 | 1.87 | 2.75 | 34.04 | 0.91 | 47.76 | | | | | | | | 1592.04 | 2.98 |
| 203 | 146 | 1.88 | 2.77 | 33.46 | 0.91 | 47.54 | | | | | | | | 1593.59 | 3.00 |
| 203 | 148 | 1.85 | 2.76 | 35.99 | 0.97 | 49.27 | | | | | | | | 1598.26 | 2.96 |
| 203 | 150 | 1.83 | 2.74 | 36.63 | 0.98 | 49.53 | 7.9 | 23.83 | 34.62 | 33.6 | 6.15 | 14.1 | 85.2 | 1586.06 | 2.91 |
| 203 | 152 | 1.91 | 2.76 | 31.25 | 0.84 | 45.71 | | | | | | | | 1596.89 | 3.05 |
| 203 | 154 | 1.89 | 2.76 | 32.84 | 0.89 | 46.97 | | | | | | | | 1635.19 | 3.09 |
| 203 | 156 | 1.87 | 2.76 | 34.35 | 0.93 | 48.07 | | | | | | | | 1612.83 | 3.01 |
| 203 | 158 | 1.86 | 2.76 | 34.92 | 0.94 | 48.48 | | | | | | | | 1594.17 | 2.97 |
| 203 | 160 | 1.88 | 2.74 | 32.90 | 0.88 | 46.86 | 6.8 | 32.27 | 31.54 | 29.4 | 5.55 | 21.3 | 82.1 | 1616.21 | 3.04 |
| 203 | 162 | 1.87 | 2.76 | 34.22 | 0.92 | 47.99 | | | | | | | | 1611.44 | 3.01 |
| 203 | 164 | 1.88 | 2.77 | 33.94 | 0.92 | 47.84 | | | | | | | | 1608.66 | 3.02 |
| 203 | 166 | 1.87 | 2.78 | 35.16 | 0.96 | 48.87 | | | | | | | | 1522.21 | 2.84 |
| 203 | 168 | 1.97 | 2.78 | 27.80 | 0.75 | 42.98 | | | | | | | | 1523.12 | 3.00 |
| | | | | | | | | | | | | | | | |
| 208 | 0 | 1.79 | 2.73 | 40.81 | 1.09 | 52.15 | 0.39 | 10.88 | 69.97 | 18.74 | 6.35 | 12.3 | 87.8 | 1530.35 | 2.73 |
| 208 | 2 | 1.79 | 2.73 | 40.76 | 1.09 | 52.12 | | | | | | | | 1524.14 | 2.72 |
| 208 | 4 | 1.77 | 2.73 | 42.25 | 1.13 | 53.01 | | | | | | | | 1521.05 | 2.69 |
| 208 | 6 | 1.78 | 2.73 | 41.76 | 1.11 | 52.71 | | | | | | | | 1522.59 | 2.70 |
| 208 | 8 | 1.78 | 2.74 | 41.06 | 1.10 | 52.33 | | | | | | | | 1521.05 | 2.71 |
| 208 | 10 | 1.79 | 2.74 | 40.62 | 1.09 | 52.09 | 0.53 | 11.26 | 63.19 | 25.03 | 6.83 | 8.8 | 88.3 | 1517.97 | 2.72 |
| 208 | 12 | 1.75 | 2.73 | 43.72 | 1.17 | 53.82 | | | | | | | | 1517.77 | 2.66 |
| 208 | 14 | 1.77 | 2.73 | 41.78 | 1.11 | 52.69 | | | | | | | | 1509.93 | 2.68 |
| 208 | 16 | 1.78 | 2.73 | 41.51 | 1.11 | 52.56 | | | | | | | | 1512.37 | 2.69 |
| 208 | 18 | 1.78 | 2.73 | 41.20 | 1.10 | 52.33 | | | | | | | | 1511.76 | 2.69 |
| 208 | 20 | 1.76 | 2.74 | 43.85 | 1.17 | 53.96 | 0.30 | 16.18 | 59.15 | 24.37 | 6.39 | 11.9 | 88.4 | 1514.21 | 2.66 |
| 208 | 22 | 1.79 | 2.74 | 40.30 | 1.08 | 51.86 | | | | | | | | 1512.07 | 2.71 |
| 208 | 24 | 1.79 | 2.74 | 41.05 | 1.10 | 52.36 | | | | | | | | 1514.93 | 2.70 |
| 208 | 26 | 1.81 | 2.72 | 38.57 | 1.03 | 50.64 | | | | | | | | 1516.26 | 2.74 |
| 208 | 28 | 1.82 | 2.73 | 37.97 | 1.01 | 50.34 | | | | | | | | 1519.34 | 2.76 |

| CORE | Sample Interval (cm) | Wet Bulk Density (g/cc) | Grain Density (g/cc) | Water Content (%) | Void Ratio | Porosity (%) | % Grav. | % Sand | % Silt | % Clay | MGS (phi) | MGS (microns) | %Carb | Vp (m/s) | IMP (kg/cm^2s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 208 | 30 | 1.81 | 2.74 | 39.02 | 1.05 | 51.13 | 0.40 | 17.73 | 58.40 | 23.48 | 6.37 | 12.1 | 89.1 | 1520.88 | 2.75 |
| 208 | 32 | 1.81 | 2.74 | 38.65 | 1.03 | 50.85 | | | | | | | | 1517.80 | 2.75 |
| 208 | 34 | 1.82 | 2.74 | 38.08 | 1.02 | 50.50 | | | | | | | | 1520.88 | 2.77 |
| 208 | 36 | 1.85 | 2.73 | 35.21 | 0.94 | 48.40 | | | | | | | | 1522.63 | 2.81 |
| 208 | 38 | 1.81 | 2.75 | 38.63 | 1.04 | 50.93 | | | | | | | | 1524.18 | 2.77 |
| 208 | 40 | 1.82 | 2.75 | 38.44 | 1.03 | 50.77 | 0.82 | 18.10 | 57.08 | 24.00 | 6.51 | 11.0 | 88.8 | 1521.08 | 2.76 |
| 208 | 42 | 1.84 | 2.75 | 36.16 | 0.97 | 49.29 | | | | | | | | 1522.63 | 2.81 |
| 208 | 44 | 1.83 | 2.75 | 37.41 | 1.00 | 50.12 | | | | | | | | 1524.18 | 2.79 |
| 208 | 46 | 1.82 | 2.75 | 38.16 | 1.02 | 50.58 | | | | | | | | 1527.49 | 2.78 |
| 208 | 48 | 1.82 | 2.75 | 38.09 | 1.02 | 50.59 | | | | | | | | 1525.93 | 2.78 |
| 208 | 50 | 1.84 | 2.74 | 36.57 | 0.98 | 49.50 | 0.25 | 18.90 | 56.87 | 23.97 | 6.59 | 10.4 | 89.3 | 1525.20 | 2.80 |
| 208 | 52 | 1.84 | 2.75 | 36.67 | 0.98 | 49.62 | | | | | | | | 1530.28 | 2.81 |
| 208 | 54 | 1.84 | 2.75 | 36.43 | 0.98 | 49.45 | | | | | | | | 1532.46 | 2.82 |
| 208 | 56 | 1.83 | 2.75 | 37.35 | 1.00 | 50.07 | | | | | | | | 1531.51 | 2.80 |
| 208 | 58 | 1.83 | 2.75 | 37.68 | 1.01 | 50.33 | | | | | | | | 1528.59 | 2.79 |
| 208 | 60 | 1.84 | 2.76 | 36.54 | 0.98 | 49.59 | 1.70 | 14.68 | 59.04 | 24.58 | 6.64 | 10.0 | 90.5 | 1530.35 | 2.82 |
| 208 | 62 | 1.84 | 2.76 | 36.50 | 0.98 | 49.57 | | | | | | | | 1525.89 | 2.81 |
| 208 | 64 | 1.83 | 2.76 | 37.65 | 1.01 | 50.33 | | | | | | | | 1530.02 | 2.80 |
| 208 | 66 | 1.80 | 2.76 | 39.97 | 1.08 | 51.83 | | | | | | | | 1526.17 | 2.75 |
| 208 | 68 | 1.82 | 2.76 | 38.08 | 1.02 | 50.62 | | | | | | | | 1526.17 | 2.78 |
| 208 | 70 | 1.83 | 2.76 | 37.17 | 1.00 | 50.01 | 0.81 | 17.93 | 55.26 | 26.00 | 6.66 | 9.9 | 89.5 | 1523.28 | 2.79 |
| 208 | 72 | 1.82 | 2.75 | 38.01 | 1.02 | 50.54 | | | | | | | | 1526.38 | 2.78 |
| 208 | 74 | 1.82 | 2.76 | 38.56 | 1.04 | 50.93 | | | | | | | | 1523.49 | 2.77 |
| 208 | 76 | 1.83 | 2.75 | 37.10 | 1.00 | 49.92 | | | | | | | | 1523.28 | 2.79 |
| 208 | 78 | 1.85 | 2.76 | 36.17 | 0.97 | 49.35 | | | | | | | | 1522.67 | 2.81 |
| 208 | 80 | 1.83 | 2.76 | 37.22 | 1.00 | 50.04 | | | | | | | 91.5 | 1522.27 | 2.79 |
| 208 | 82 | 1.83 | 2.76 | 37.42 | 1.01 | 50.19 | | | | | | | | 1525.36 | 2.79 |
| 208 | 84 | 1.82 | 2.76 | 38.42 | 1.04 | 50.88 | | | | | | | | 1526.71 | 2.78 |
| 208 | 86 | 1.84 | 2.76 | 36.90 | 0.99 | 49.82 | | | | | | | | | |
| 208 | 88 | 1.94 | 2.77 | 29.63 | 0.80 | 44.48 | | | | | | | | | |
| 208 | 90 | 1.50 | 2.77 | 83.08 | | 69.20 | 0.46 | 20.65 | 44.42 | 34.47 | 7.68 | 4.9 | 86.3 | | |
| 208 | 92 | 1.58 | 2.76 | 67.96 | 1.83 | 64.72 | | | | | | | | | |
| 208 | 94 | 1.68 | 2.77 | 53.10 | 1.43 | 58.93 | | | | | | | | | |
| 208 | 96 | 1.73 | 2.77 | 47.20 | 1.28 | 56.08 | | | | | | | | | |
| 208 | 98 | 1.70 | 2.77 | 51.69 | 1.40 | 58.32 | | | | | | | | 1558.30 | 2.64 |
| 208 | 100 | 1.86 | 2.78 | 35.42 | 0.96 | 49.03 | 1.18 | 18.24 | 40.81 | 39.77 | 8.01 | 3.9 | 88.3 | 1548.70 | 2.88 |
| 208 | 102 | 1.83 | 2.77 | 37.94 | 1.03 | 50.64 | | | | | | | | 1545.52 | 2.83 |
| 208 | 104 | 1.82 | 2.76 | 38.16 | 1.03 | 50.74 | | | | | | | | 1534.31 | 2.80 |
| 208 | 106 | 1.85 | 2.76 | 35.49 | 0.96 | 48.86 | | | | | | | | 1532.14 | 2.84 |
| 208 | 108 | 1.86 | 2.75 | 34.92 | 0.94 | 48.43 | | | | | | | | 1543.67 | 2.87 |
| 208 | 110 | 1.85 | 2.77 | 36.11 | 0.98 | 49.41 | 0.85 | 28.53 | 39.46 | 31.17 | 7.48 | 5.6 | 88.3 | 1547.82 | 2.86 |
| 208 | 112 | 1.82 | 2.76 | 38.83 | 1.05 | 51.16 | | | | | | | | 1532.60 | 2.78 |
| 208 | 114 | 1.82 | 2.76 | 38.74 | 1.04 | 51.10 | | | | | | | | 1526.92 | 2.77 |
| 208 | 116 | 1.83 | 2.76 | 37.48 | 1.01 | 50.25 | | | | | | | | 1530.77 | 2.80 |
| 208 | 118 | 1.83 | 2.77 | 37.76 | 1.02 | 50.56 | | | | | | | | 1524.15 | 2.79 |
| 208 | 120 | 1.89 | 2.78 | 33.47 | 0.91 | 47.61 | 0.15 | 21.13 | 41.16 | 37.55 | 8.16 | 3.5 | 87.8 | 1528.39 | 2.88 |
| 208 | 122 | 1.91 | 2.78 | 31.61 | 0.86 | 46.15 | | | | | | | | 1559.73 | 2.98 |
| 208 | 124 | 1.95 | 2.76 | 28.23 | 0.76 | 43.25 | | | | | | | | 1559.73 | 3.05 |
| 208 | 126 | 1.90 | 2.78 | 32.30 | 0.88 | 46.72 | | | | | | | | 1561.15 | 2.97 |
| 208 | 128 | 1.93 | 2.77 | 30.09 | 0.81 | 44.87 | | | | | | | | 1555.88 | 3.00 |
| 208 | 130 | 1.94 | 2.75 | 28.82 | 0.77 | 43.63 | 1.88 | 27.66 | 36.71 | 33.75 | 7.77 | 4.6 | 87.7 | 1558.90 | 3.02 |
| 208 | 132 | 1.94 | 2.76 | 29.13 | 0.79 | 44.00 | | | | | | | | 1571.55 | 3.05 |
| 208 | 134 | 1.91 | 2.78 | 31.52 | 0.85 | 46.07 | | | | | | | | 1583.99 | 3.03 |
| 208 | 136 | 1.95 | 2.76 | 28.25 | 0.76 | 43.25 | | | | | | | | 1575.24 | 3.08 |
| 208 | 138 | 1.89 | 2.78 | 33.19 | 0.90 | 47.41 | | | | | | | | 1571.93 | 2.97 |
| 208 | 140 | 1.91 | 2.78 | 31.62 | 0.86 | 46.19 | 2.33 | 32.12 | 37.40 | 28.15 | 6.43 | 11.6 | 91.1 | 1555.41 | 2.97 |
| 208 | 142 | 1.89 | 2.76 | 32.75 | 0.88 | 46.93 | | | | | | | | 1549.96 | 2.93 |
| 208 | 144 | 1.91 | | | | | | | | | | | | 1559.64 | 2.98 |
| 208 | 146 | 1.88 | 2.77 | 33.55 | 0.91 | 47.55 | | | | | | | | 1557.60 | 2.93 |
| 208 | 148 | 1.90 | 2.75 | 31.73 | 0.85 | 46.04 | | | | | | | | 1555.78 | 2.96 |
| 208 | 150 | 1.91 | 2.78 | 31.80 | 0.86 | 46.33 | 14.86 | 28.89 | 32.96 | 23.29 | 4.77 | 36.7 | 88.0 | 1552.76 | 2.96 |
| 208 | 152 | 1.89 | 2.77 | 32.82 | 0.89 | 47.06 | | | | | | | | 1551.15 | 2.94 |
| 208 | 154 | 1.89 | 2.78 | 32.99 | 0.89 | 47.22 | | | | | | | | 1557.60 | 2.95 |
| 208 | 156 | 1.91 | 2.81 | 33.02 | 0.91 | 47.56 | | | | | | | | 1577.08 | 3.00 |
| 208 | 158 | 1.93 | 2.81 | 30.91 | 0.85 | 45.85 | | | | | | | | 1570.46 | 3.03 |

| CORE | Sample Interval (cm) | Wet Bulk Density (g/cc) | Grain Density (g/cc) | Water Content (%) | Void Ratio | Porosity (%) | % Grav. | % Sand | % Silt | % Clay | MGS (phi) | MGS (microns) | %Carb | Vp (m/s) | IMP (kg/cm^2s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 208 | 160 | 1.91 | 2.75 | 30.91 | 0.83 | 45.36 | 16.36 | 35.93 | 26.73 | 20.99 | 4.19 | 54.8 | 91.7 | 1582.08 | 3.02 |
| 208 | 162 | 1.92 | 2.80 | 31.68 | 0.87 | 46.46 | | | | | | | | 1580.41 | 3.04 |
| 208 | 164 | 1.89 | 2.78 | 33.15 | 0.90 | 47.38 | | | | | | | | | |
| 208 | 166 | 1.92 | 2.78 | 30.95 | 0.84 | 45.67 | | | | | | | | 1562.27 | 3.00 |
| 208 | 168 | 1.91 | 2.77 | 31.49 | 0.85 | 45.97 | | | | | | | | 1565.54 | 2.99 |
| 208 | 170 | 1.92 | 2.77 | 30.64 | 0.83 | 45.32 | 4.59 | 33.18 | 39.27 | 22.96 | 6.00 | 15.6 | 90.9 | 1575.42 | 3.03 |
| 208 | 172 | 1.93 | 2.77 | 29.81 | 0.81 | 44.66 | | | | | | | | 1580.62 | 3.06 |
| 208 | 174 | 1.92 | 2.77 | 30.46 | 0.82 | 45.15 | | | | | | | | 1579.17 | 3.04 |
| 208 | 176 | 1.90 | 2.75 | 32.03 | 0.86 | 46.25 | | | | | | | | 1571.72 | 2.98 |
| 208 | 178 | 1.91 | 2.75 | 31.26 | 0.84 | 45.67 | | | | | | | | 1561.10 | 2.98 |
| 208 | 180 | 1.91 | 2.77 | 31.27 | 0.85 | 45.82 | 5.23 | 25.72 | 43.85 | 25.19 | 6.34 | 12.3 | 92.7 | 1559.11 | 2.98 |
| 208 | 182 | 1.92 | 2.76 | 30.96 | 0.84 | 45.53 | | | | | | | | 1572.21 | 3.01 |
| 208 | 184 | 1.87 | 2.75 | 34.22 | 0.92 | 47.86 | | | | | | | | 1567.12 | 2.92 |
| 208 | 186 | 1.94 | 2.76 | 29.02 | 0.78 | 43.88 | | | | | | | | | |
| 208 | 188 | 1.86 | 2.78 | 35.36 | 0.96 | 48.99 | | | | | | | | | |
| 208 | 190 | 1.91 | 2.76 | 31.49 | 0.85 | 45.91 | 3.65 | 29.25 | 42.49 | 24.60 | 6.17 | 13.9 | 90.6 | | |
| 208 | 192 | 1.88 | 2.75 | 32.88 | 0.88 | 46.89 | | | | | | | | 1537.76 | 2.90 |
| 208 | 194 | 1.80 | 2.76 | 40.08 | 1.08 | 51.90 | | | | | | | | 1530.23 | 2.76 |
| 208 | 196 | 1.86 | 2.75 | 34.45 | 0.93 | 48.09 | | | | | | | | | |
| 208 | 198 | 1.91 | 2.76 | 31.17 | 0.84 | 45.64 | | | | | | | | 1547.86 | 2.96 |
| 208 | 200 | 1.84 | 2.76 | 37.02 | 1.00 | 49.94 | 4.23 | 25.76 | 45.67 | 24.33 | 6.20 | 13.6 | 90.9 | 1548.07 | 2.84 |
| 208 | 202 | 1.85 | 2.81 | 37.29 | 1.02 | 50.53 | | | | | | | | 1544.98 | 2.86 |
| 208 | 204 | 1.85 | 2.78 | 36.39 | 0.99 | 49.66 | | | | | | | | 1549.75 | 2.87 |
| 208 | 206 | 1.88 | 2.76 | 33.52 | 0.90 | 47.43 | | | | | | | | 1546.36 | 2.90 |
| 208 | 208 | 1.83 | 2.75 | 36.92 | 0.99 | 49.82 | | | | | | | | 1554.13 | 2.85 |
| 208 | 210 | 1.82 | 2.76 | 38.61 | 1.04 | 50.99 | 0.94 | 22.29 | 52.34 | 24.43 | 6.50 | 11.0 | 92.5 | 1535.34 | 2.79 |
| 208 | 212 | 1.84 | 2.77 | 36.70 | 0.99 | 49.84 | | | | | | | | 1532.22 | 2.83 |
| 208 | 214 | 1.85 | 2.80 | 37.37 | 1.02 | 50.58 | | | | | | | | 1540.04 | 2.84 |
| 208 | 216 | 1.88 | 2.77 | 33.70 | 0.91 | 47.67 | | | | | | | | 1543.20 | 2.90 |
| 208 | 218 | 1.87 | 2.75 | 34.02 | 0.91 | 47.76 | | | | | | | | 1549.54 | 2.90 |
| 208 | 220 | 1.87 | 2.75 | 34.07 | 0.92 | 47.78 | 1. 5 | 26.97 | 47.37 | 23.82 | 6.14 | 14.2 | 91.4 | 1546.36 | 2.89 |
| 208 | 222 | 1.89 | 2.77 | 32.96 | 0.89 | 47.10 | | | | | | | | 1552.73 | 2.93 |
| 208 | 224 | 1.90 | 2.77 | 32.34 | 0.87 | 46.61 | | | | | | | | 1551.34 | 2.94 |
| 208 | 226 | 1.85 | 2.74 | 35.75 | 0.96 | 48.93 | | | | | | | | 1548.16 | 2.86 |
| 208 | 228 | 1.86 | 2.79 | 36.11 | 0.98 | 49.55 | | | | | | | | 1543.40 | 2.86 |
| 208 | 230 | 1.84 | 2.75 | 36.42 | 0.98 | 49.44 | 0.30 | 30.21 | 46.75 | 22.75 | 6.04 | 15.2 | 91.0 | 1543.40 | 2.84 |
| 208 | 232 | 1.83 | 2.77 | 37.76 | 1.02 | 50.53 | | | | | | | | 1540.66 | 2.82 |
| 208 | 234 | 1.85 | 2.77 | 36.22 | 0.98 | 49.46 | | | | | | | | 1539.70 | 2.84 |
| 208 | 236 | 1.83 | 2.74 | 37.08 | 0.99 | 49.80 | | | | | | | | 1540.11 | 2.82 |
| 210 | 0 | 1.69 | 2.71 | 50.24 | 1.33 | 57.08 | 0.59 | 22.67 | 51.48 | 25.26 | 5.97 | 16.0 | 84.8 | | |
| 210 | 2 | 1.68 | 2.73 | 52.76 | 1.41 | 58.48 | | | | | | | | | |
| 210 | 4 | 1.71 | 2.73 | 49.27 | 1.32 | 56.81 | | | | | | | | | |
| 210 | 6 | 1.74 | 2.72 | 44.95 | 1.20 | 54.46 | | | | | | | | | |
| 210 | 8 | 1.72 | 2.76 | 47.98 | 1.29 | 56.37 | | | | | | | | | |
| 210 | 10 | 1.75 | 2.73 | 44.76 | 1.19 | 54.43 | 1.79 | 21 | 56.24 | 20.98 | 5.5 | 22.1 | 87.1 | | |
| 210 | 12 | 1.74 | 2.74 | 45.86 | 1.23 | 55.10 | | | | | | | | | |
| 210 | 14 | 1.67 | 2.73 | 53.27 | 1.42 | 58.70 | | | | | | | | | |
| 210 | 16 | 1.67 | 2.74 | 53.64 | 1.44 | 58.94 | | | | | | | | 1534.94 | 2.57 |
| 210 | 18 | 1.70 | 2.74 | 50.62 | 1.36 | 57.55 | | | | | | | | 1513.86 | 2.53 |
| 210 | 20 | 1.70 | 2.75 | 50.61 | 1.36 | 57.61 | 1.55 | 25.5 | 52.45 | 20.5 | 4.93 | 32.8 | 86.9 | 1490.07 | 2.53 |
| 210 | 22 | 1.68 | 2.75 | 52.59 | 1.41 | 58.53 | | | | | | | | 1534.68 | 2.58 |
| 210 | 24 | 1.75 | 2.74 | 44.95 | 1.20 | 54.64 | | | | | | | | 1549.19 | 2.71 |
| 210 | 26 | 1.78 | 2.75 | 41.73 | 1.12 | 52.83 | | | | | | | | 1542.14 | 2.75 |
| 210 | 28 | 1.78 | 2.75 | 42.13 | 1.13 | 53.08 | | | | | | | | 1542.95 | 2.74 |
| 210 | 30 | 1.80 | 2.74 | 39.67 | 1.06 | 51.53 | 1.25 | 26.02 | 50.23 | 22.49 | 5.36 | 24.3 | 89.1 | 1540.91 | 2.77 |
| 210 | 32 | 1.79 | 2.75 | 40.89 | 1.10 | 52.33 | | | | | | | | 1547.99 | 2.77 |
| 210 | 34 | 1.77 | 2.74 | 42.17 | 1.13 | 53.05 | | | | | | | | 1552.73 | 2.76 |
| 210 | 36 | 1.78 | 2.74 | 41.72 | 1.12 | 52.76 | | | | | | | | 1560.89 | 2.78 |
| 210 | 38 | 1.79 | 2.75 | 41.01 | 1.10 | 52.41 | | | | | | | | 1554.72 | 2.78 |
| 210 | 40 | 1.79 | 2.76 | 40.94 | 1.10 | 52.44 | 6.47 | 33.47 | 40.55 | 19.51 | 4.7 | 38.5 | 90.1 | 1553.60 | 2.78 |
| 210 | 42 | 1.80 | 2.76 | 40.57 | 1.09 | 52.22 | | | | | | | | 1558.57 | 2.80 |
| 210 | 44 | 1.82 | 2.76 | 38.56 | 1.04 | 50.99 | | | | | | | | 1560.37 | 2.84 |
| 210 | 46 | 1.79 | 2.75 | 40.96 | 1.10 | 52.42 | | | | | | | | 1560.57 | 2.79 |
| 210 | 48 | 1.81 | 2.75 | 39.09 | 1.05 | 51.25 | | | | | | | | 1563.77 | 2.83 |

| CORE | Sample Interval (cm) | Wet Bulk Density (g/cc) | Grain Density (g/cc) | Water Content (%) | Void Ratio | Porosity (%) | % Grav. | % Sand | % Silt | % Clay | MGS (phi) | MGS (microns) | % Carb | Vp (m/s) | IMP (kg/cm^2s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 210 | 50 | 1.81 | 2.75 | 39.36 | 1.06 | 51.41 | 3.19 | 32.44 | 44.17 | 20.2 | 5.26 | 26.1 | 91.1 | | |
| 210 | 52 | 1.84 | 2.76 | 36.17 | 0.97 | 49.33 | | | | | | | | 1562.17 | 2.82 |
| 210 | 54 | 1.82 | 2.77 | 38.97 | 1.05 | 51.29 | | | | | | | | 1565.58 | 2.89 |
| 210 | 56 | 1.80 | 2.77 | 40.46 | 1.09 | 52.26 | | | | | | | | 1562.58 | 2.84 |
| 210 | 58 | 1.80 | 2.76 | 40.77 | 1.10 | 52.39 | | | | | | | | 1559.39 | 2.81 |
| 210 | 60 | 1.79 | 2.79 | 41.72 | 1.14 | 53.19 | 4.37 | 32.8 | 41.96 | 20.87 | 4.9 | 33.5 | 91.0 | 1554.83 | 2.79 |
| 210 | 62 | 1.77 | 2.80 | 44.17 | 1.21 | 54.71 | | | | | | | | 1554.83 | 2.79 |
| 210 | 64 | 1.79 | 2.80 | 42.26 | 1.16 | 53.61 | | | | | | | | 1540.70 | 2.73 |
| 210 | 66 | 1.79 | 2.77 | 41.40 | 1.12 | 52.84 | | | | | | | | 1550.09 | 2.78 |
| 210 | 68 | 1.80 | 2.77 | 40.16 | 1.09 | 52.08 | | | | | | | | 1556.00 | 2.79 |
| 210 | 70 | 1.83 | 2.77 | 37.44 | 1.01 | 50.31 | 4.73 | 33.09 | 41.04 | 21.14 | 4.97 | 31.9 | 91.6 | 1557.39 | 2.81 |
| 210 | 72 | 1.83 | 2.76 | 37.08 | 1.00 | 49.94 | | | | | | | | 1555.59 | 2.85 |
| 210 | 74 | 1.83 | 2.76 | 37.66 | 1.01 | 50.35 | | | | | | | | 1558.16 | 2.86 |
| 210 | 76 | 1.85 | 2.75 | 35.73 | 0.96 | 48.98 | | | | | | | | 1560.53 | 2.85 |
| 210 | 78 | 1.83 | 2.77 | 37.72 | 1.02 | 50.48 | | | | | | | | 1556.72 | 2.88 |
| 210 | 80 | 1.86 | 2.77 | 35.41 | 0.96 | 48.88 | 3.46 | 36.75 | 38.52 | 21.26 | 5.38 | 24.0 | 90.5 | 1557.49 | 2.85 |
| 210 | 82 | 1.83 | 2.76 | 37.86 | 1.02 | 50.54 | | | | | | | | 1558.06 | 2.89 |
| 210 | 84 | 1.95 | 2.77 | 28.79 | 0.78 | 43.76 | | | | | | | | | |
| 210 | 86 | 1.99 | 2.77 | 25.76 | 0.70 | 41.05 | | | | | | | | | |
| 210 | 88 | 1.96 | 2.74 | 27.42 | 0.73 | 42.29 | | | | | | | | | |
| 210 | 90 | 1.91 | 2.82 | 32.44 | 0.89 | 47.15 | 7.1 | 34.74 | 35.98 | 22.17 | 5.36 | 24.3 | 92.1 | | |
| 210 | 92 | 1.92 | 2.77 | 30.80 | 0.83 | 45.41 | | | | | | | | | |
| 210 | 94 | 1.91 | 2.76 | 31.11 | 0.84 | 45.62 | | | | | | | | | |
| 210 | 96 | 1.91 | 2.76 | 31.28 | 0.84 | 45.78 | | | | | | | | | |
| 210 | 98 | 1.92 | 2.77 | 30.76 | 0.83 | 45.39 | | | | | | | | | |
| 210 | 100 | 1.90 | 2.77 | 31.92 | 0.86 | 46.36 | 5.3 | 36.78 | 36.52 | 21.41 | 5.19 | 27.4 | 92.0 | 1522.32 | 2.92 |
| 210 | 102 | 1.93 | 2.74 | 29.16 | 0.78 | 43.85 | | | | | | | | 1522.53 | 2.90 |
| 210 | 104 | 1.90 | 2.78 | 32.32 | 0.88 | 46.70 | | | | | | | | 1517.84 | 2.93 |
| 210 | 106 | 1.92 | 2.79 | 31.36 | 0.85 | 46.05 | | | | | | | | 1516.29 | 2.88 |
| 210 | 108 | 1.91 | 2.79 | 31.70 | 0.86 | 46.31 | | | | | | | | 1520.96 | 2.92 |
| 210 | 110 | 1.92 | 2.77 | 30.78 | 0.83 | 45.46 | 15.17 | 38.21 | 27.92 | 18.7 | 3.98 | 63.4 | 89.6 | 1518.05 | 2.90 |
| 210 | 112 | 1.93 | 2.75 | 29.89 | 0.80 | 44.56 | | | | | | | | 1513.39 | 2.91 |
| 210 | 114 | 1.91 | 2.76 | 30.95 | 0.83 | 45.49 | | | | | | | | 1516.70 | 2.92 |
| 210 | 116 | 1.89 | 2.80 | 34.07 | 0.93 | 48.22 | | | | | | | | 1518.46 | 2.91 |
| 210 | 118 | 1.94 | 2.80 | 30.31 | 0.83 | 45.28 | | | | | | | | 1509.17 | 2.85 |
| 210 | 120 | 1.93 | 2.78 | 30.32 | 0.82 | 45.19 | 12.5 | 34.26 | 29.43 | 23.81 | 4.95 | 32.4 | 90.5 | 1521.58 | 2.95 |
| 210 | 122 | 1.92 | 2.79 | 31.32 | 0.85 | 46.03 | | | | | | | | 1520.02 | 2.94 |
| 210 | 124 | 1.94 | 2.76 | 28.95 | 0.78 | 43.80 | | | | | | | | 1520.23 | 2.92 |
| 210 | 126 | 1.93 | 2.78 | 30.55 | 0.83 | 45.33 | | | | | | | | 1522.94 | 2.96 |
| 210 | 128 | 1.94 | 2.78 | 29.58 | 0.80 | 44.52 | | | | | | | | 1521.17 | 2.93 |
| 210 | 130 | 1.94 | 2.79 | 29.99 | 0.82 | 44.97 | 10.2 | 40.03 | 30.64 | 19.13 | 4.56 | 42.4 | 90.3 | 1513.18 | 2.94 |
| 210 | 132 | 1.92 | 2.77 | 30.76 | 0.83 | 45.39 | | | | | | | | 1516.61 | 2.94 |
| 210 | 134 | 1.94 | 2.80 | 30.41 | 0.83 | 45.42 | | | | | | | | 1508.87 | 2.90 |
| 210 | 136 | 1.94 | 2.78 | 29.37 | 0.80 | 44.33 | | | | | | | | 1512.16 | 2.93 |
| 210 | 138 | 1.91 | 2.83 | 33.24 | 0.92 | 47.89 | | | | | | | | 1516.40 | 2.95 |
| 210 | 140 | 1.89 | 2.77 | 32.98 | 0.89 | 47.15 | 13.77 | 42.92 | 25.1 | 18.12 | 4.03 | 61.2 | 91.6 | 1502.53 | 2.87 |
| 210 | 142 | 1.95 | 2.77 | 29.03 | 0.79 | 44.01 | | | | | | | | 1502.73 | 2.84 |
| 210 | 144 | 1.92 | 2.79 | 31.13 | 0.85 | 45.92 | | | | | | | | 1504.26 | 2.93 |
| 210 | 146 | 1.84 | 2.73 | 35.87 | 0.96 | 48.89 | | | | | | | | 1508.87 | 2.90 |
| 210 | 148 | 1.90 | 2.76 | 31.74 | 0.85 | 46.07 | | | | | | | | 1484.82 | 2.73 |
| 210 | 150 | 1.91 | 2.78 | 31.40 | 0.85 | 46.01 | 10.18 | 41.81 | 25.24 | 22.76 | 4.68 | 39.0 | 89.3 | 1480.36 | 2.81 |
| 210 | 152 | 1.95 | 2.76 | 28.08 | 0.76 | 43.05 | | | | | | | | 1513.71 | 2.90 |
| 210 | 154 | 1.95 | 2.78 | 28.78 | 0.78 | 43.82 | | | | | | | | 1520.46 | 2.97 |
| 210 | 156 | 1.96 | 2.77 | 28.10 | 0.76 | 43.21 | | | | | | | | 1526.25 | 2.98 |
| 210 | 158 | 2.00 | 2.80 | 26.29 | 0.72 | 41.78 | | | | | | | | 1529.62 | 3.00 |
| 210 | 160 | 1.97 | 2.77 | 27.40 | 0.74 | 42.57 | 7.77 | 43.13 | 26.71 | 22.38 | 5.29 | 25.6 | 91.0 | 1535.99 | 3.07 |
| 210 | 162 | 1.96 | 2.80 | 28.54 | 0.78 | 43.84 | | | | | | | | 1552.16 | 3.06 |
| 210 | 164 | 1.97 | 2.77 | 27.48 | 0.74 | 42.60 | | | | | | | | | |
| 210 | 166 | 1.97 | 2.79 | 28.10 | 0.76 | 43.32 | | | | | | | | 1558.72 | 3.07 |
| 210 | 168 | 1.97 | 2.76 | 27.28 | 0.74 | 42.37 | | | | | | | | 1541.65 | 3.03 |
| 210 | 170 | 2.00 | 2.77 | 25.71 | 0.70 | 41.02 | 12.82 | 42.92 | 23.91 | 20.36 | 4.28 | 51.5 | 89.8 | 1538.08 | 3.03 |
| 210 | 172 | 1.97 | 2.80 | 28.29 | 0.77 | 43.62 | | | | | | | | 1545.36 | 3.09 |
| 210 | 174 | 1.98 | 2.76 | 26.70 | 0.72 | 41.84 | | | | | | | | 1539.34 | 3.03 |
| 210 | 176 | 1.95 | 2.76 | 28.37 | 0.77 | 43.35 | | | | | | | | 1543.39 | 3.05 |
| 210 | 178 | 1.87 | 2.77 | 34.58 | 0.94 | 48.32 | | | | | | | | 1541.84 | 3.01 |

| CORE | Sample Interval (cm) | Wet Bulk Density (g/cc) | Grain Density (g/cc) | Water Content (%) | Void Ratio | Porosity (%) | % Grav. | % Sand | % Silt | % Clay | MGS (phi) | MGS (microns) | % Carb | Vp (m/s) | IMP (kg/ cm^2s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 210 | 180 | 1.86 | 2.77 | 34.95 | 0.95 | 48.60 | 7.14 | 44.61 | 24.77 | 23.48 | 5.23 | 26.6 | 89.9 | 1542.34 | 2.88 |
| 210 | 182 | 1.87 | 2.76 | 34.60 | 0.93 | 48.29 | | | | | | | | | |
| 210 | 184 | 1.91 | 2.77 | 31.66 | 0.86 | 46.12 | | | | | | | | 1584.82 | 3.02 |
| 210 | 186 | 1.94 | 2.77 | 29.37 | 0.79 | 44.28 | 1.41 | 41.22 | 22.62 | 34.75 | 5.88 | 17.0 | 90.1 | 1578.51 | 3.06 |
| 213 | 0 | 1.68 | 2.74 | 52.74 | 1.41 | 58.49 | 0.03 | 13.25 | 65.86 | 20.85 | 6.45 | 11.4 | 88.4 | | |
| 213 | 2 | 1.65 | 2.74 | 56.16 | 1.50 | 60.04 | | | | | | | | | |
| 213 | 4 | 1.66 | 2.74 | 55.64 | 1.49 | 59.85 | | | | | | | | | |
| 213 | 6 | 1.68 | 2.74 | 53.19 | 1.42 | 58.75 | | | | | | | | | |
| 213 | 8 | 1.73 | 2.74 | 46.65 | 1.25 | 55.51 | | | | | | | | | |
| 213 | 10 | 1.78 | 2.74 | 41.25 | 1.10 | 52.45 | 0.1 | 14.09 | 62.97 | 22.83 | 6.59 | 10.4 | 88.7 | | |
| 213 | 12 | 1.80 | 2.74 | 39.22 | 1.05 | 51.21 | | | | | | | | | |
| 213 | 14 | 1.80 | 2.74 | 39.39 | 1.05 | 51.27 | | | | | | | | | |
| 213 | 16 | 1.78 | 2.74 | 41.21 | 1.10 | 52.42 | | | | | | | | | |
| 213 | 18 | 1.80 | 2.73 | 38.99 | 1.04 | 51.00 | | | | | | | | | |
| 213 | 20 | 1.79 | 2.74 | 40.59 | 1.08 | 52.03 | 0.32 | 15.31 | 60.34 | 24.03 | 6.7 | 9.6 | 89.1 | | |
| 213 | 22 | 1.80 | 2.74 | 39.69 | 1.06 | 51.53 | | | | | | | | | |
| 213 | 24 | 1.80 | 2.74 | 39.62 | 1.06 | 51.51 | | | | | | | | 1512.57 | 2.72 |
| 213 | 26 | 1.80 | 2.74 | 39.88 | 1.07 | 51.58 | | | | | | | | 1520.64 | 2.74 |
| 213 | 28 | 1.81 | 2.74 | 39.05 | 1.04 | 51.08 | | | | | | | | 1513.18 | 2.72 |
| 213 | 30 | 1.82 | 2.74 | 37.79 | 1.01 | 50.24 | 0.09 | 20.7 | 56.87 | 22.34 | 6.53 | 10.8 | 89.1 | 1516.24 | 2.74 |
| 213 | 32 | 1.79 | 2.74 | 40.25 | 1.08 | 51.83 | | | | | | | | 1514.91 | 2.76 |
| 213 | 34 | 1.83 | 2.74 | 37.23 | 1.00 | 49.90 | | | | | | | | 1516.44 | 2.72 |
| 213 | 36 | 1.83 | 2.74 | 37.23 | 1.00 | 49.93 | | | | | | | | 1524.34 | 2.78 |
| 213 | 38 | 1.81 | 2.74 | 39.09 | 1.05 | 51.15 | | | | | | | | 1527.65 | 2.79 |
| 213 | 40 | 1.84 | 2.74 | 36.16 | 0.97 | 49.20 | 0.71 | 31.02 | 49.77 | 18.5 | 5.58 | 20.9 | 90.1 | 1518.78 | 2.74 |
| 213 | 42 | 1.84 | 2.74 | 36.51 | 0.98 | 49.44 | | | | | | | | 1524.95 | 2.81 |
| 213 | 44 | 1.82 | 2.74 | 37.81 | 1.01 | 50.30 | | | | | | | | 1517.65 | 2.79 |
| 213 | 46 | 1.83 | 2.74 | 36.80 | 0.99 | 49.65 | | | | | | | | 1525.56 | 2.78 |
| 213 | 48 | 1.84 | 2.75 | 36.78 | 0.99 | 49.69 | | | | | | | | 1525.77 | 2.80 |
| 213 | 50 | 1.83 | 2.75 | 37.30 | 1.00 | 50.05 | 0.32 | 25.32 | 50.86 | 23.5 | 6.52 | 10.9 | 89.5 | 1525.97 | 2.80 |
| 213 | 52 | 1.82 | 2.75 | 38.40 | 1.03 | 50.76 | | | | | | | | 1523.08 | 2.79 |
| 213 | 54 | 1.84 | 2.75 | 36.73 | 0.99 | 49.64 | | | | | | | | 1521.54 | 2.76 |
| 213 | 56 | 1.84 | 2.75 | 36.39 | 0.98 | 49.39 | | | | | | | | 1526.38 | 2.80 |
| 213 | 58 | 1.81 | 2.75 | 38.72 | 1.04 | 50.94 | | | | | | | | 1529.89 | 2.81 |
| 213 | 60 | 1.83 | 2.75 | 36.98 | 0.99 | 49.83 | 0.72 | 31.28 | 45.71 | 22.29 | 6.2 | 13.6 | 85.4 | 1526.78 | 2.77 |
| 213 | 62 | 1.83 | 2.74 | 37.27 | 1.00 | 49.97 | | | | | | | | 1525.64 | 2.80 |
| 213 | 64 | 1.84 | 2.74 | 35.88 | 0.96 | 48.99 | | | | | | | | 1522.55 | 2.78 |
| 213 | 66 | 1.83 | 2.75 | 37.16 | 1.00 | 49.90 | | | | | | | | 1528.74 | 2.82 |
| 213 | 68 | 1.82 | 2.75 | 38.47 | 1.03 | 50.81 | | | | | | | | 1522.76 | 2.79 |
| 213 | 70 | 1.82 | 2.75 | 37.70 | 1.01 | 50.31 | 0.56 | 28.03 | 46.7 | 24.71 | 5.96 | 16.1 | 89.3 | 1519.68 | 2.76 |
| 213 | 72 | 1.84 | 2.76 | 36.92 | 0.99 | 49.85 | | | | | | | | 1524.50 | 2.78 |
| 213 | 74 | 1.85 | 2.76 | 35.74 | 0.96 | 49.05 | | | | | | | | 1526.46 | 2.80 |
| 213 | 76 | 1.86 | 2.76 | 35.25 | 0.95 | 48.70 | | | | | | | | 1532.67 | 2.84 |
| 213 | 78 | 1.86 | 2.75 | 34.81 | 0.94 | 48.34 | | | | | | | | 1534.44 | 2.85 |
| 213 | 80 | 1.91 | 2.75 | 30.74 | 0.83 | 45.26 | 1.99 | 29.81 | 43.92 | 24.27 | 6.45 | 11.4 | 89.0 | | |
| 213 | 82 | 1.93 | 2.75 | 29.79 | 0.80 | 44.45 | | | | | | | | | |
| 213 | 84 | 1.86 | 2.75 | 35.04 | 0.94 | 48.49 | | | | | | | | | |
| 213 | 86 | 1.82 | 2.75 | 38.03 | 1.02 | 50.57 | | | | | | | | | |
| 213 | 88 | 1.88 | 2.75 | 33.11 | 0.89 | 47.10 | | | | | | | | | |
| 213 | 90 | 1.90 | 2.75 | 32.07 | 0.86 | 46.30 | 0.76 | 27.3 | 47.62 | 24.32 | 6.58 | 10.5 | 89.8 | | |
| 213 | 92 | 1.89 | 2.76 | 32.90 | 0.89 | 46.97 | | | | | | | | | |
| 213 | 94 | 1.90 | 2.76 | 31.58 | 0.85 | 45.95 | | | | | | | | | |
| 213 | 96 | 1.86 | 2.76 | 34.84 | 0.94 | 48.42 | | | | | | | | | |
| 213 | 98 | 1.91 | 2.76 | 31.13 | 0.84 | 45.61 | | | | | | | | | |
| 213 | 100 | 1.92 | 2.75 | 30.56 | 0.82 | 45.12 | 0.71 | 35.43 | 40.81 | 23.04 | 6.01 | 15.5 | 89.9 | | |
| 213 | 102 | 1.90 | 2.78 | 32.85 | 0.89 | 47.18 | | | | | | | | | |
| 213 | 104 | 1.87 | 2.76 | 34.00 | 0.92 | 47.85 | | | | | | | | | |
| 213 | 106 | 1.89 | 2.78 | 32.89 | 0.89 | 47.14 | | | | | | | | | |
| 213 | 108 | 1.87 | 2.76 | 34.06 | 0.92 | 47.83 | | | | | | | | | |
| 213 | 110 | 1.90 | 2.77 | 32.44 | 0.88 | 46.74 | 1.27 | 33.62 | 40.49 | 24.62 | 6.09 | 14.7 | 90.0 | 1524.36 | 2.89 |
| 213 | 112 | 1.93 | 2.75 | 29.64 | 0.80 | 44.30 | | | | | | | | 1540.40 | 2.97 |
| 213 | 114 | 1.90 | 2.77 | 32.10 | 0.87 | 46.45 | | | | | | | | 1527.09 | 2.90 |
| 213 | 116 | 1.89 | 2.75 | 32.11 | 0.86 | 46.31 | | | | | | | | 1525.52 | 2.89 |
| 213 | 118 | 1.89 | 2.78 | 33.53 | 0.91 | 47.65 | | | | | | | | 1521.03 | 2.87 |

| CORE | Sample Interval (cm) | Wet Bulk Density (g/cc) | Grain Density (g/cc) | Water Content (%) | Void Ratio | Porosity (%) | % Grav. | % Sand | % Silt | % Clay | MGS (phi) | MGS (microns) | % Carb | Vp (m/s) | IMP (kg/ cm^2s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 213 | 120 | 1.88 | 2.74 | 33.13 | 0.89 | 46.99 | 2.26 | 35.8 | 39.27 | 22.68 | 5.98 | 15.8 | 89.6 | 1516.37 | 2.85 |
| 213 | 122 | 1.89 | 2.74 | 31.92 | 0.85 | 46.09 | | | | | | | | 1517.72 | 2.87 |
| 213 | 124 | 1.88 | 2.80 | 34.43 | 0.94 | 48.53 | | | | | | | | 1516.16 | 2.86 |
| 213 | 126 | 1.89 | 2.77 | 33.20 | 0.90 | 47.34 | | | | | | | | 1523.95 | 2.88 |
| 213 | 128 | 1.91 | 2.75 | 31.11 | 0.83 | 45.50 | | | | | | | | 1517.72 | 2.89 |
| 213 | 130 | 1.81 | 2.76 | 39.60 | 1.07 | 51.63 | 2.64 | 27.42 | 46.65 | 23.29 | 6.27 | 13.0 | 90.4 | 1497.59 | 2.71 |
| 213 | 132 | 1.78 | 2.76 | 42.24 | 1.14 | 53.23 | | | | | | | | 1497.79 | 2.66 |
| 213 | 134 | 1.88 | 2.76 | 33.19 | 0.89 | 47.19 | | | | | | | | 1514.62 | 2.85 |
| 213 | 136 | 1.88 | 2.79 | 34.59 | 0.94 | 48.55 | | | | | | | | 1514.62 | 2.84 |
| 213 | 138 | 1.90 | 2.79 | 32.57 | 0.89 | 47.01 | | | | | | | | 1522.59 | 2.90 |
| 213 | 140 | 1.89 | 2.76 | 32.38 | 0.87 | 46.61 | 5.55 | 37.58 | 34 | 22.88 | 5.81 | 17.8 | 90.1 | 1527.30 | 2.89 |
| 213 | 142 | 1.91 | | | | | | | | | | | | 1519.48 | 2.89 |
| 213 | 144 | 1.90 | 2.76 | 31.90 | 0.86 | 46.23 | | | | | | | | 1530.24 | 2.91 |
| 213 | 146 | 1.90 | 2.74 | 31.75 | 0.85 | 45.96 | | | | | | | | 1523.95 | 2.89 |
| 213 | 148 | 1.91 | 2.76 | 31.38 | 0.85 | 45.86 | | | | | | | | 1514.62 | 2.89 |
| 213 | 150 | 1.92 | 2.76 | 30.69 | 0.83 | 45.27 | 2.5 | 35.49 | 37.64 | 24.36 | 6.4 | 11.8 | | 1523.95 | 2.92 |
| 213 | 152 | 1.91 | 2.78 | 31.62 | 0.86 | 46.16 | | | | | | | | | |
| 213 | 154 | 1.93 | 2.78 | 30.73 | 0.84 | 45.52 | | | | | | | | 1527.30 | 2.94 |
| 213 | 156 | 1.89 | 2.75 | 32.44 | 0.87 | 46.52 | | | | | | | | 1517.92 | 2.87 |
| 213 | 158 | 1.89 | 2.78 | 33.15 | 0.90 | 47.32 | | | | | | | | 1521.03 | 2.87 |
| 213 | 160 | 1.91 | 2.79 | 32.35 | 0.88 | 46.85 | 6.64 | 38.57 | 32 | 22.79 | 5.75 | 18.6 | | 1529.08 | 2.91 |
| 213 | 162 | 1.92 | 2.76 | 30.66 | 0.83 | 45.22 | | | | | | | | 1525.93 | 2.92 |
| 213 | 164 | 1.96 | 2.76 | 27.80 | 0.75 | 42.82 | | | | | | | | 1520.42 | 2.98 |
| 213 | 166 | 1.97 | 2.76 | 27.09 | 0.73 | 42.19 | | | | | | | | 1537.97 | 3.03 |
| 213 | 168 | 1.94 | 2.77 | 29.29 | 0.79 | 44.19 | | | | | | | | 1536.79 | 2.98 |
| 213 | 170 | 1.94 | 2.78 | 29.37 | 0.80 | 44.36 | 5.26 | 43.88 | 30.32 | 20.53 | 5.28 | 25.7 | | 1538.80 | 2.99 |
| 213 | 172 | 1.96 | 2.75 | 27.74 | 0.74 | 42.68 | | | | | | | | 1545.42 | 3.02 |
| 213 | 174 | 1.95 | 2.76 | 28.45 | 0.77 | 43.43 | | | | | | | | | |
| 213 | 176 | 2.04 | 2.77 | 23.08 | 0.62 | 38.42 | | | | | | | | | |
| 213 | 178 | 1.93 | 2.76 | 29.51 | 0.80 | 44.31 | | | | | | | | | |
| 213 | 180 | 1.96 | 2.78 | 28.61 | 0.78 | 43.72 | 9.62 | 47.4 | 24.7 | 18.28 | 4.41 | 47.0 | | 1552.59 | 3.04 |
| 213 | 182 | 1.91 | 2.77 | 31.36 | 0.85 | 45.94 | | | | | | | | | |
| 213 | 184 | 1.93 | 2.79 | 30.73 | 0.84 | 45.61 | | | | | | | | 1542.80 | 2.98 |
| 213 | 186 | 1.93 | 2.78 | 30.10 | 0.82 | 45.01 | | | | | | | | 1534.86 | 2.97 |
| 213 | 188 | 1.95 | 2.78 | 28.82 | 0.78 | 43.93 | | | | | | | | 1541.20 | 3.01 |
| 213 | 190 | 1.94 | 2.77 | 29.32 | 0.79 | 44.24 | 6.31 | 46.14 | 25.92 | 21.63 | 5.18 | 27.6 | | 1538.23 | 2.99 |
| 213 | 192 | 1.91 | 2.76 | 31.47 | 0.85 | 45.90 | | | | | | | | 1527.20 | 2.91 |
| 213 | 194 | 1.93 | 2.77 | 30.27 | 0.82 | 45.03 | | | | | | | | 1530.34 | 2.95 |
| 213 | 196 | 1.94 | 2.77 | 29.42 | 0.80 | 44.29 | | | | | | | | 1527.41 | 2.96 |
| 213 | 198 | 1.94 | 2.77 | 29.18 | 0.79 | 44.13 | | | | | | | | 1548.02 | 3.01 |
| 213 | 200 | 1.90 | 2.79 | 32.76 | 0.89 | 47.17 | 3.37 | 42 | 28.02 | 26.61 | 6.16 | 14.0 | | 1529.38 | 2.91 |
| 213 | 202 | 1.88 | 2.77 | 33.32 | 0.90 | 47.37 | | | | | | | | 1529.05 | 2.88 |
| 213 | 204 | 1.93 | 2.76 | 29.59 | 0.80 | 44.38 | | | | | | | | 1546.68 | 2.99 |
| 213 | 206 | 1.92 | 2.79 | 31.40 | 0.86 | 46.12 | | | | | | | | 1537.33 | 2.95 |
| 213 | 208 | 1.93 | 2.77 | 29.73 | 0.80 | 44.57 | | | | | | | | 1534.18 | 2.97 |
| 213 | 210 | 1.92 | 2.77 | 30.57 | 0.83 | 45.26 | 2.09 | 43.92 | 27.8 | 26.2 | 6.32 | 12.5 | | 1532.60 | 2.95 |
| 213 | 212 | 1.88 | 2.77 | 33.22 | 0.90 | 47.29 | | | | | | | | 1528.10 | 2.88 |
| 213 | 214 | 1.94 | 2.77 | 29.14 | 0.79 | 44.11 | | | | | | | | 1539.33 | 2.99 |
| 213 | 216 | 1.94 | 2.77 | 29.48 | 0.80 | 44.36 | | | | | | | | 1547.51 | 3.00 |
| 213 | 218 | 1.94 | 2.78 | 29.46 | 0.80 | 44.41 | | | | | | | | 1539.75 | 2.99 |
| 213 | 220 | 1.92 | 2.77 | 30.45 | 0.82 | 45.17 | 2.48 | 35.19 | 30.64 | 31.69 | 6.96 | 8.0 | | 1531.85 | 2.95 |
| 213 | 222 | 1.92 | 2.77 | 30.87 | 0.84 | 45.52 | | | | | | | | 1539.95 | 2.96 |
| 213 | 224 | 1.96 | 2.76 | 27.99 | 0.75 | 43.02 | | | | | | | | 1532.06 | 3.00 |
| 213 | 226 | 1.92 | 2.76 | 30.82 | 0.83 | 45.39 | | | | | | | | 1538.57 | 2.95 |
| 213 | 228 | 1.95 | 2.77 | 28.55 | 0.77 | 43.58 | | | | | | | | 1546.54 | 3.02 |
| 213 | 230 | 1.95 | 2.78 | 28.69 | 0.78 | 43.78 | 1.69 | 29.78 | 35.4 | 33.13 | 7.51 | 5.5 | | 1544.94 | 3.02 |
| 213 | 232 | 1.93 | 2.75 | 29.32 | 0.79 | 44.08 | | | | | | | | 1540.37 | 2.98 |
| 213 | 234 | 1.94 | 2.76 | 28.75 | 0.77 | 43.65 | | | | | | | | 1535.82 | 2.99 |
| 213 | 236 | 1.96 | 2.76 | 27.82 | 0.75 | 42.81 | | | | | | | | 1535.82 | 3.01 |
| | | | | | | | | | | | | | | | |
| 218 | 0 | 1.54 | 2.74 | 75.20 | | 66.76 | 0.05 | 23.6 | 55.14 | 21.21 | 7.07 | 7.4 | | | |
| 218 | 2 | 1.74 | 2.75 | 45.56 | 1.22 | 55.00 | | | | | | | | | |
| 218 | 4 | 1.78 | 2.74 | 41.49 | 1.11 | 52.62 | | | | | | | | | |
| 218 | 6 | 1.78 | 2.74 | 41.27 | 1.11 | 52.51 | | | | | | | | | |
| 218 | 8 | 1.75 | 2.75 | 44.48 | 1.19 | 54.40 | | | | | | | | | |

| CORE | Sample Interval (cm) | Wet Bulk Density (g/cc) | Grain Density (g/cc) | Water Content (%) | Void Ratio | Porosity (%) | % Grav. | % Sand | % Silt | % Clay | MGS (phi) | MGS (microns) | %Carb | Vp (m/s) | IMP (kg/cm^2s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 218 | 10 | 1.86 | 2.75 | 35.04 | 0.94 | 48.45 | 0.53 | 31 | 47.47 | 21 | 6.25 | 13.1 | | | |
| 218 | 12 | 1.82 | 2.74 | 37.53 | 1.00 | 50.12 | | | | | | | | | |
| 218 | 14 | 1.84 | 2.74 | 36.54 | 0.98 | 49.45 | | | | | | | | | |
| 218 | 16 | 1.85 | 2.74 | 35.30 | 0.94 | 48.57 | | | | | | | | 1487.56 | 2.73 |
| 218 | 18 | 1.85 | 2.73 | 34.81 | 0.93 | 48.16 | | | | | | | | 1501.21 | 2.78 |
| 218 | 20 | 1.84 | 2.74 | 36.15 | 0.97 | 49.17 | 1.35 | 37.05 | 41.07 | 20.54 | 5.51 | 21.9 | | 1505.82 | 2.79 |
| 218 | 22 | 1.87 | 2.75 | 33.54 | 0.90 | 47.35 | | | | | | | | 1504.28 | 2.77 |
| 218 | 24 | 1.86 | 2.75 | 34.37 | 0.92 | 47.97 | | | | | | | | 1505.82 | 2.82 |
| 218 | 26 | 1.88 | 2.74 | 32.94 | 0.88 | 46.88 | | | | | | | | 1504.28 | 2.80 |
| 218 | 28 | 1.87 | 2.75 | 33.90 | 0.91 | 47.63 | | | | | | | | 1508.50 | 2.84 |
| 218 | 30 | 1.89 | 2.75 | 32.23 | 0.87 | 46.41 | 1.68 | 41.82 | 37.92 | 18.57 | 5.17 | 27.8 | | 1506.75 | 2.82 |
| 218 | 32 | 1.88 | 2.75 | 33.61 | 0.90 | 47.49 | | | | | | | | 1513.15 | 2.86 |
| 218 | 34 | 1.89 | 2.75 | 32.56 | 0.87 | 46.61 | | | | | | | | 1506.95 | 2.83 |
| 218 | 36 | 1.89 | 2.74 | 31.96 | 0.86 | 46.13 | | | | | | | | 1511.80 | 2.85 |
| 218 | 38 | 1.92 | 2.75 | 30.18 | 0.81 | 44.78 | | | | | | | | 1524.33 | 2.89 |
| 218 | 40 | 1.91 | 2.75 | 30.63 | 0.82 | 45.14 | 3.34 | 46.2 | 34.29 | 16.17 | 4.77 | 36.7 | | 1528.12 | 2.94 |
| 218 | 42 | 1.91 | 2.76 | 31.02 | 0.84 | 45.51 | | | | | | | | 1528.95 | 2.93 |
| 218 | 44 | 1.86 | 2.76 | 34.79 | 0.94 | 48.36 | | | | | | | | 1527.99 | 2.92 |
| 218 | 46 | 1.89 | 2.76 | 32.52 | 0.88 | 46.67 | | | | | | | | 1515.83 | 2.82 |
| 218 | 48 | 1.89 | 2.76 | 32.49 | 0.88 | 46.70 | | | | | | | | 1519.37 | 2.87 |
| 218 | 50 | 1.90 | 2.76 | 32.15 | 0.87 | 46.42 | 2.62 | 40.91 | 34.71 | 21.76 | | | | 1521.35 | 2.88 |
| 218 | 52 | 1.89 | 2.76 | 32.98 | 0.89 | 47.07 | | | | | | | | 1521.56 | 2.89 |
| 218 | 54 | 1.89 | 2.76 | 32.81 | 0.88 | 46.95 | | | | | | | | 1521.56 | 2.87 |
| 218 | 56 | 1.88 | 2.77 | 33.29 | 0.90 | 47.34 | | | | | | | | 1517.27 | 2.87 |
| 218 | 58 | 1.89 | 2.76 | 32.99 | 0.89 | 47.06 | | | | | | | | 1506.43 | 2.84 |
| 218 | 60 | 1.89 | 2.76 | 32.43 | 0.87 | 46.66 | 1.62 | 41.73 | 36.6 | 20.05 | 5.22 | 26.8 | | 1520.40 | 2.87 |
| 218 | 62 | 1.88 | 2.76 | 33.82 | 0.91 | 47.73 | | | | | | | | 1523.54 | 2.89 |
| 218 | 64 | 1.87 | 2.77 | 34.62 | 0.93 | 48.32 | | | | | | | | 1521.76 | 2.86 |
| 218 | 66 | 1.91 | 2.76 | 31.02 | 0.84 | 45.57 | | | | | | | | 1504.89 | 2.81 |
| 218 | 68 | 1.90 | 2.77 | 31.84 | 0.86 | 46.25 | | | | | | | | 1517.27 | 2.90 |
| 218 | 70 | 1.88 | 2.77 | 33.28 | 0.90 | 47.35 | 0.82 | 38.46 | 39.09 | 21.63 | 5.65 | 19.9 | | 1520.20 | 2.89 |
| 218 | 72 | 1.92 | 2.77 | 31.06 | 0.84 | 45.66 | | | | | | | | 1518.22 | 2.86 |
| 218 | 74 | 1.91 | 2.79 | 32.04 | 0.87 | 46.58 | | | | | | | | 1522.71 | 2.92 |
| 218 | 76 | 1.90 | 2.77 | 32.12 | 0.87 | 46.52 | | | | | | | | 1525.45 | 2.91 |
| 218 | 78 | 1.92 | 2.76 | 30.62 | 0.83 | 45.25 | | | | | | | | 1520.52 | 2.89 |
| 218 | 80 | 2.00 | 2.76 | 25.59 | 0.69 | 40.84 | 3.04 | 49.33 | 29.44 | 18.19 | 4.74 | 37.4 | | 1526.20 | 2.93 |
| 218 | 82 | 1.95 | 2.77 | 28.70 | 0.78 | 43.73 | | | | | | | | 1544.57 | 3.08 |
| 218 | 84 | 1.94 | 2.77 | 29.77 | 0.81 | 44.64 | | | | | | | | 1531.72 | 2.99 |
| 218 | 86 | 1.95 | 2.77 | 28.59 | 0.77 | 43.61 | | | | | | | | 1526.95 | 2.96 |
| 218 | 88 | 1.94 | 2.80 | 30.45 | 0.83 | 45.42 | | | | | | | | 1525.79 | 2.98 |
| 218 | 90 | 1.97 | 2.78 | 28.02 | 0.76 | 43.22 | 9.63 | 46.01 | 25.31 | 19.05 | 4.51 | 43.9 | | 1529.99 | 2.96 |
| 218 | 92 | 1.90 | 2.75 | 31.97 | 0.86 | 46.20 | | | | | | | | 1540.21 | 3.03 |
| 218 | 94 | 1.92 | 2.75 | 30.16 | 0.81 | 44.79 | | | | | | | | | |
| 218 | 96 | 1.92 | 2.75 | 30.07 | 0.81 | 44.71 | | | | | | | | | |
| 218 | 98 | 1.88 | 2.77 | 33.77 | 0.91 | 47.71 | | | | | | | | | |
| 218 | 100 | 1.94 | 2.77 | 29.43 | 0.80 | 44.31 | 9.47 | 49.01 | 21.43 | 20.09 | 4.56 | 42.4 | | 1543.17 | 2.99 |
| 218 | 102 | 1.92 | 2.78 | 30.77 | 0.84 | 45.53 | | | | | | | | | |
| 218 | 104 | 1.95 | 2.81 | 29.96 | 0.82 | 45.11 | | | | | | | | 1539.62 | 3.00 |
| 218 | 106 | 1.96 | 2.77 | 27.87 | 0.75 | 42.99 | | | | | | | | 1543.02 | 3.03 |
| 218 | 108 | 1.92 | 2.78 | 30.57 | 0.83 | 45.32 | | | | | | | | 1529.77 | 2.94 |
| 218 | 110 | 1.91 | 2.77 | 31.28 | 0.85 | 45.84 | 6.26 | 47.57 | 25.79 | 20.36 | 4.78 | 36.4 | | 1526.71 | 2.92 |
| 218 | 112 | 1.90 | 2.77 | 32.07 | 0.87 | 46.42 | | | | | | | | 1532.04 | 2.91 |
| 218 | 114 | 1.90 | 2.76 | 32.24 | 0.87 | 46.50 | | | | | | | | 1529.31 | 2.90 |
| 218 | 116 | 1.91 | 2.80 | 32.63 | 0.89 | 47.17 | | | | | | | | 1537.61 | 2.93 |
| 218 | 118 | 1.89 | 2.78 | 33.60 | 0.91 | 47.74 | | | | | | | | 1528.15 | 2.88 |
| 218 | 120 | 1.94 | 2.77 | 29.27 | 0.79 | 44.19 | 9.43 | 45.31 | 25.24 | 20.02 | 4.61 | 40.9 | | 1537.82 | 2.99 |
| 218 | 122 | 1.94 | 2.79 | 29.73 | 0.81 | 44.74 | | | | | | | | 1542.38 | 3.00 |
| 218 | 124 | 1.95 | 2.79 | 29.66 | 0.81 | 44.73 | | | | | | | | 1533.41 | 2.98 |
| 218 | 126 | 1.95 | 2.80 | 29.53 | 0.81 | 44.70 | | | | | | | | 1541.49 | 3.01 |
| 218 | 128 | 1.94 | 2.79 | 30.18 | 0.82 | 45.13 | | | | | | | | 1522.88 | 2.95 |
| 218 | 130 | 1.95 | 2.77 | 28.49 | 0.77 | 43.53 | 3.54 | 42.84 | 29.33 | 24.3 | 5.45 | 22.9 | | 1547.42 | 3.02 |
| 218 | 132 | 1.96 | 2.78 | 28.32 | 0.77 | 43.42 | | | | | | | | 1556.73 | 3.05 |
| 218 | 134 | 1.98 | 2.78 | 27.01 | 0.73 | 42.30 | | | | | | | | 1559.58 | 3.09 |
| 218 | 136 | 1.96 | 2.79 | 28.59 | 0.78 | 43.79 | | | | | | | | 1547.99 | 3.03 |
| 218 | 138 | 1.98 | 2.78 | 26.90 | 0.73 | 42.22 | | | | | | | | 1552.85 | 3.08 |

| CORE | Sample Interval (cm) | Wet Bulk Density (g/cc) | Grain Density (g/cc) | Water Content (%) | Void Ratio | Porosity (%) | % Grav. | % Sand | % Silt | % Clay | MGS (phi) | MGS (microns) | % Carb | Vp (m/s) | IMP (kg/ cm^2s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 218 | 140 | 1.94 | 2.78 | 29.42 | 0.80 | 44.40 | 1.11 | 35.96 | 33.01 | 29.92 | 6.77 | 9.2 | | 1546.38 | 3.01 |
| 218 | 142 | 1.97 | 2.78 | 27.45 | 0.75 | 42.73 | | | | | | | | 1547.99 | 3.06 |
| 218 | 144 | 1.98 | 2.81 | 27.40 | 0.75 | 42.88 | | | | | | | | 1561.01 | 3.10 |
| 218 | 146 | 1.99 | 2.79 | 26.52 | 0.72 | 41.93 | | | | | | | | 1552.85 | 3.09 |
| 218 | 148 | 1.99 | 2.77 | 26.21 | 0.71 | 41.51 | | | | | | | | 1554.47 | 3.09 |
| 218 | 150 | 1.95 | 2.78 | 29.26 | 0.79 | 44.27 | 3.02 | 44.48 | 25.94 | 26.56 | 5.9 | 16.7 | | 1564.72 | 3.04 |
| 220 | 0 | 1.55 | 2.66 | 70.03 | 1.82 | 64.48 | 0.14 | 16.10 | 62.69 | 21.07 | 6.02 | 15.4 | | 1502.61 | 2.32 |
| 220 | 2 | 1.58 | 2.68 | 65.00 | 1.70 | 63.00 | | | | | | | | 1513.10 | 2.39 |
| 220 | 4 | 1.61 | 2.70 | 60.34 | 1.59 | 61.37 | | | | | | | | 1522.21 | 2.46 |
| 220 | 6 | 1.69 | 2.69 | 49.61 | 1.30 | 56.56 | | | | | | | | 1520.68 | 2.57 |
| 220 | 8 | 1.73 | 2.70 | 45.31 | 1.19 | 54.42 | | | | | | | | 1527.01 | 2.64 |
| 220 | 10 | 1.73 | 2.69 | 44.89 | 1.18 | 54.14 | 0.33 | 15.67 | 63.18 | 20.82 | 5.89 | 16.9 | | 1537.84 | 2.66 |
| 220 | 12 | 1.76 | 2.71 | 42.26 | 1.12 | 52.78 | | | | | | | | 1542.33 | 2.72 |
| 220 | 14 | 1.77 | 2.68 | 41.01 | 1.08 | 51.81 | | | | | | | | 1540.56 | 2.72 |
| 220 | 16 | 1.77 | 2.70 | 40.97 | 1.08 | 51.95 | | | | | | | | 1542.12 | 2.73 |
| 220 | 18 | 1.78 | 2.72 | 40.95 | 1.09 | 52.10 | | | | | | | | 1537.43 | 2.74 |
| 220 | 20 | 1.75 | 2.72 | 43.88 | 1.16 | 53.80 | 0.37 | 22.54 | 56.49 | 20.59 | 5.74 | 18.7 | | 1536.08 | 2.69 |
| 220 | 22 | 1.74 | 2.72 | 45.23 | 1.20 | 54.58 | | | | | | | | 1537.64 | 2.67 |
| 220 | 24 | 1.79 | 2.73 | 40.52 | 1.08 | 51.89 | | | | | | | | 1529.68 | 2.73 |
| 220 | 26 | 1.76 | 2.72 | 42.96 | 1.14 | 53.31 | | | | | | | | 1526.00 | 2.69 |
| 220 | 28 | 1.79 | 2.72 | 39.95 | 1.06 | 51.48 | | | | | | | | 1528.87 | 2.74 |
| 220 | 30 | 1.80 | 2.72 | 39.19 | 1.04 | 50.98 | 0.95 | 29.17 | 51.69 | 18.19 | 5.42 | 23.4 | | 1529.64 | 2.75 |
| 220 | 32 | 1.80 | 2.71 | 38.97 | 1.03 | 50.78 | | | | | | | | 1530.95 | 2.75 |
| 220 | 34 | 1.83 | 2.72 | 36.88 | 0.98 | 49.53 | | | | | | | | 1530.14 | 2.79 |
| 220 | 36 | 1.80 | 2.72 | 38.62 | 1.03 | 50.66 | | | | | | | | 1533.98 | 2.77 |
| 220 | 38 | 1.86 | 2.73 | 34.39 | 0.92 | 47.79 | | | | | | | | 1529.86 | 2.84 |
| 220 | 40 | 1.87 | 2.73 | 33.15 | 0.88 | 46.92 | 2.02 | 33.31 | 47.90 | 16.76 | 5.09 | 29.4 | | 1538.59 | 2.88 |
| 220 | 42 | 1.84 | 2.73 | 35.84 | 0.95 | 48.84 | | | | | | | | 1543.10 | 2.84 |
| 220 | 44 | 1.81 | 2.73 | 38.63 | 1.03 | 50.71 | | | | | | | | 1541.12 | 2.78 |
| 220 | 46 | 1.82 | 2.72 | 36.67 | 0.97 | 49.31 | | | | | | | | 1536.01 | 2.80 |
| 220 | 48 | 1.84 | 2.72 | 35.85 | 0.95 | 48.80 | | | | | | | | 1534.65 | 2.82 |
| 220 | 50 | 1.89 | 2.73 | 31.47 | 0.84 | 45.60 | 3.96 | 29.88 | 47.20 | 18.96 | 5.31 | 25.2 | | 1531.54 | 2.90 |
| 220 | 52 | 1.87 | 2.73 | 32.91 | 0.88 | 46.72 | | | | | | | | 1544.06 | 2.89 |
| 220 | 54 | 1.84 | 2.72 | 35.52 | 0.95 | 48.59 | | | | | | | | 1539.34 | |
| 220 | 56 | 1.83 | 2.73 | 36.27 | 0.97 | 49.15 | | | | | | | | | |
| 220 | 58 | 1.84 | 2.73 | 35.63 | 0.95 | 48.70 | | | | | | | | 1548.61 | 2.85 |
| 220 | 60 | 1.85 | 2.72 | 35.15 | 0.93 | 48.32 | 2.94 | 32.88 | 44.82 | 19.36 | 5.28 | 25.7 | | 1545.44 | 2.85 |
| 220 | 62 | 1.82 | 2.71 | 36.98 | 0.98 | 49.50 | | | | | | | | 1547.23 | 2.82 |
| 220 | 64 | 1.80 | 2.73 | 39.60 | 1.06 | 51.36 | | | | | | | | 1545.64 | 2.78 |
| 220 | 66 | 1.82 | 2.73 | 37.84 | 1.01 | 50.23 | | | | | | | | 1536.21 | 2.79 |
| 220 | 68 | 1.86 | 2.72 | 34.22 | 0.91 | 47.61 | | | | | | | | 1537.78 | 2.85 |
| 220 | 70 | 1.84 | 2.73 | 35.91 | 0.96 | 48.89 | 4.52 | 41.20 | 38.94 | 15.35 | 4.56 | 42.4 | | 1540.71 | 2.83 |
| 220 | 72 | 1.88 | 2.73 | 32.38 | 0.86 | 46.36 | | | | | | | | 1543.86 | 2.91 |
| 220 | 74 | 1.85 | 2.73 | 34.69 | 0.92 | 48.05 | | | | | | | | 1547.23 | 2.87 |
| 220 | 76 | 1.87 | 2.73 | 33.25 | 0.89 | 46.96 | | | | | | | | 1549.63 | 2.90 |
| 220 | 78 | 1.85 | 2.74 | 35.28 | 0.94 | 48.53 | | | | | | | | 1548.66 | 2.86 |
| 220 | 80 | 1.87 | 2.74 | 33.75 | 0.90 | 47.43 | 4.52 | 33.64 | 41.96 | 19.85 | 5.41 | 23.5 | | 1552.25 | 2.90 |
| 220 | 82 | 1.92 | 2.73 | 29.79 | 0.79 | 44.23 | | | | | | | | 1552.66 | 2.98 |
| 220 | 84 | 1.84 | 2.74 | 36.23 | 0.97 | 49.23 | | | | | | | | 1557.67 | 2.86 |
| 220 | 86 | 1.97 | 2.76 | 26.97 | 0.73 | 42.07 | | | | | | | | 1565.35 | |
| 220 | 88 | 1.96 | 2.73 | 31.34 | 0.84 | 45.53 | | | | | | | | | |
| 220 | 90 | 1.90 | 2.73 | 26.83 | 0.72 | 41.73 | 3.39 | 39.39 | 39.22 | 18.01 | 4.95 | 32.4 | | | |
| 220 | 92 | 1.96 | 2.73 | 28.18 | 0.75 | 42.92 | | | | | | | | | |
| 220 | 94 | 1.94 | 2.73 | 29.89 | 0.80 | 44.37 | | | | | | | | | |
| 220 | 96 | 1.92 | 2.74 | 28.49 | 0.76 | 43.28 | | | | | | | | | |
| 220 | 98 | 1.94 | 2.73 | 27.82 | 0.74 | 42.59 | | | | | | | | | |
| 220 | 100 | 1.95 | 2.73 | 29.54 | 0.79 | 44.07 | 5.83 | 39.07 | 37.15 | 17.95 | 4.76 | 36.9 | | | |
| 220 | 102 | 1.92 | 2.75 | 26.79 | 0.72 | 41.86 | | | | | | | | | |
| 220 | 104 | 1.97 | 2.74 | 30.12 | 0.81 | 44.66 | | | | | | | | | |
| 220 | 106 | 1.92 | 2.78 | 28.71 | 0.78 | 43.82 | | | | | | | | | |
| 220 | 108 | 1.95 | 2.77 | 28.78 | 0.78 | 43.79 | | | | | | | | | |
| 220 | 110 | 1.95 | 2.74 | 28.23 | 0.76 | 43.03 | | | | | | | | | |
| 220 | 112 | 1.94 | 2.76 | 26.88 | 0.72 | 41.96 | | | | | | | | | |
| 220 | 114 | 1.97 | 2.79 | 27.88 | 0.76 | 43.18 | | | | | | | | | |

| CORE | Sample Interval (cm) | Wet Bulk Density (g/cc) | Grain Density (g/cc) | Water Content (%) | Void Ratio | Porosity (%) | % Grav. | % Sand | % Silt | % Clay | MGS (phi) | MGS (microns) | % Carb | Vp (m/s) | IMP (kg/ cm^2s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 220 | 116 | 1.97 | 2.76 | 29.12 | 0.79 | 43.98 | | | | | | | | | |
| 220 | 118 | 1.94 | 2.81 | 27.99 | 0.77 | 43.43 | | | | | | | | | |
| 220 | 120 | 1.98 | 2.74 | 28.17 | 0.75 | 42.98 | 4.66 | 43.98 | 36.63 | 14.74 | 4.19 | 54.8 | | | |
| 220 | 122 | 1.95 | 2.77 | 24.96 | 0.68 | 40.33 | | | | | | | | | |
| 220 | 124 | 2.01 | 2.82 | 28.30 | 0.78 | 43.79 | | | | | | | | | |
| 220 | 126 | 1.98 | 2.77 | 27.05 | 0.73 | 42.27 | | | | | | | | | |
| 220 | 128 | 1.98 | 2.78 | 24.70 | 0.67 | 40.14 | | | | | | | | | |
| 220 | 130 | 2.02 | 2.76 | 25.76 | 0.69 | 40.98 | 13.51 | 54.44 | 19.38 | 12.66 | 3.05 | 120.7 | | | |
| 220 | 132 | 1.99 | 2.79 | 26.46 | 0.72 | 41.92 | | | | | | | | | |
| 220 | 134 | 1.99 | 2.78 | 25.19 | 0.68 | 40.61 | | | | | | | | | |
| 220 | 136 | 2.01 | 2.81 | 26.58 | 0.73 | 42.14 | | | | | | | | | |
| 220 | 138 | 2.00 | 2.78 | 26.25 | 0.71 | 41.63 | | | | | | | | | |
| 220 | 140 | 1.99 | 2.75 | 24.46 | 0.66 | 39.64 | 8.14 | 49.91 | 23.96 | 17.99 | 4.20 | 54.4 | | | |
| 220 | 142 | 2.01 | 2.81 | 26.90 | 0.74 | 42.43 | | | | | | | | | |
| 220 | 144 | 1.99 | 2.77 | 26.88 | 0.73 | 42.10 | | | | | | | | | |
| 220 | 146 | 1.98 | 2.79 | 25.02 | 0.68 | 40.50 | | | | | | | | | |
| 220 | 148 | 2.02 | 2.77 | 27.72 | 0.75 | 42.88 | | | | | | | | | |
| 220 | 150 | 1.97 | 2.74 | 26.47 | 0.71 | 41.46 | 16.96 | 42.85 | 24.46 | 15.73 | 2.98 | 126.7 | | | |
| 220 | 152 | 1.97 | 2.76 | 26.92 | 0.72 | 42.01 | | | | | | | | | |
| 220 | 154 | 1.97 | 2.76 | 27.53 | 0.74 | 42.60 | | | | | | | | | |
| 220 | 156 | 1.96 | 2.77 | 28.06 | 0.76 | 43.14 | | | | | | | | | |
| 220 | 158 | 1.96 | 2.77 | 26.88 | 0.73 | 42.11 | | | | | | | | | |
| 220 | 160 | 1.98 | 2.75 | 27.33 | 0.73 | 42.33 | 11.37 | 42.90 | 25.98 | 19.75 | 4.46 | 45.4 | | | |
| 220 | 162 | 1.96 | 2.75 | 25.77 | 0.69 | 40.94 | | | | | | | | | |
| 220 | 164 | 1.99 | 2.77 | 26.70 | 0.72 | 41.95 | | | | | | | | | |
| 220 | 166 | 1.98 | 2.75 | 27.30 | 0.73 | 42.33 | | | | | | | | | |
| 220 | 168 | 1.96 | 2.80 | 26.34 | 0.72 | 41.88 | | | | | | | | | |
| 220 | 170 | 2.00 | 2.75 | 26.72 | 0.72 | 41.78 | 3.99 | 43.13 | 27.98 | 24.89 | 5.72 | 19.0 | | | |
| 220 | 172 | 1.97 | 2.76 | 26.53 | 0.71 | 41.66 | | | | | | | | | |
| 220 | 174 | 1.98 | 2.79 | 25.60 | 0.70 | 41.12 | | | | | | | | | |
| 220 | 176 | 2.01 | 2.77 | 24.86 | 0.67 | 40.19 | | | | | | | | | |
| 220 | 178 | 2.01 | 2.82 | 28.17 | 0.78 | 43.72 | | | | | | | | | |
| 220 | 180 | 1.98 | 2.76 | 28.54 | 0.77 | 43.48 | 3.64 | 39.16 | 30.29 | 26.92 | 6.67 | 9.8 | | | |
| 220 | 182 | 1.95 | 2.77 | 30.47 | 0.82 | 45.16 | | | | | | | | 1519.61 | 3.01 |
| 220 | 184 | 2.05 | 2.77 | 33.71 | 0.91 | 47.68 | | | | | | | | 1518.65 | 2.96 |
| 220 | 186 | 2.09 | 2.77 | 35.04 | 0.95 | 48.67 | | | | | | | | 1523.83 | |
| 220 | 188 | 1.92 | 2.76 | 33.42 | 0.90 | 47.40 | | | | | | | | | |
| 220 | 190 | 1.88 | 2.76 | 30.26 | 0.82 | 44.92 | 2.71 | 32.19 | 28.03 | 37.07 | 6.74 | 9.4 | | 1529.22 | 2.94 |
| 220 | 192 | 1.86 | 2.79 | 30.08 | 0.82 | 45.08 | | | | | | | | | |
| 220 | 194 | 1.88 | 2.77 | 29.29 | 0.79 | 44.21 | | | | | | | | 1526.33 | 2.84 |
| 220 | 196 | 1.92 | 2.81 | 31.93 | 0.87 | 46.65 | | | | | | | | 1525.50 | |
| 220 | 198 | 1.94 | 2.77 | 31.91 | 0.86 | 46.34 | | | | | | | | | |
| 220 | 200 | 1.94 | 2.77 | 30.28 | 0.82 | 45.03 | 2.67 | 30.68 | 36.68 | 29.97 | 6.43 | 11.6 | | 1537.83 | |
| 220 | 202 | 1.92 | 2.77 | 31.76 | 0.86 | 46.21 | | | | | | | | | |
| 220 | 204 | 1.90 | 2.79 | 34.46 | 0.94 | 48.44 | | | | | | | | 1566.10 | 3.00 |
| 220 | 206 | 1.93 | 2.74 | 32.78 | 0.88 | 46.69 | | | | | | | | 1561.04 | 2.97 |
| 220 | 208 | 1.91 | 2.77 | 33.41 | 0.90 | 47.49 | | | | | | | | 1559.43 | 3.00 |
| 220 | 210 | 1.88 | 2.75 | 37.45 | 1.01 | 50.14 | 6.88 | 26.32 | 31.15 | 35.65 | 7.41 | 5.9 | | 1562.65 | 2.98 |
| 220 | 212 | 1.88 | 2.75 | 35.15 | 0.95 | 48.59 | | | | | | | | 1559.43 | 2.93 |
| 220 | 214 | 1.88 | 2.80 | 35.90 | 0.98 | 49.51 | | | | | | | | 1559.43 | 2.93 |
| 220 | 216 | 1.83 | 2.76 | 33.79 | 0.91 | 47.64 | | | | | | | | 1545.07 | 2.91 |
| 220 | 218 | 1.86 | 2.72 | 38.46 | 1.02 | 50.56 | | | | | | | | 1540.35 | 2.82 |
| 220 | 220 | 1.86 | 2.74 | 44.09 | 1.18 | 54.13 | 1.70 | 18.27 | 38.64 | 41.39 | 9.20 | 1.7 | | 1540.55 | 2.86 |
| 220 | 222 | 1.87 | 2.74 | 43.86 | 1.17 | 54.02 | | | | | | | | 1523.47 | 2.84 |
| 220 | 224 | 1.81 | 2.80 | 43.30 | 1.18 | 54.18 | | | | | | | | 1523.87 | 2.86 |
| 220 | 226 | 1.75 | 2.75 | 42.60 | 1.14 | 53.33 | | | | | | | | 1531.80 | 2.77 |
| 220 | 228 | 1.76 | 2.75 | 42.41 | 1.14 | 53.26 | | | | | | | | 1540.01 | 2.70 |
| 220 | 230 | 1.78 | 2.75 | 74.32 | 2.00 | 66.62 | 2.04 | 23.08 | 34.20 | 4.68 | 7.00 | 7.8 | | | |
| 220 | 232 | 1.77 | 2.76 | 44.52 | 1.20 | 54.54 | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| 222 | 0 | 1.71 | 2.70 | 47.16 | 1.24 | 55.39 | 0 | 12.31 | 66.48 | 21.21 | 6.34 | 12.3 | 90.6 | | |
| 222 | 2 | 1.71 | 2.70 | 48.09 | 1.27 | 55.88 | | | | | | | | | |
| 222 | 4 | 1.76 | 2.73 | 42.95 | 1.15 | 53.42 | | | | | | | | | |
| 222 | 6 | 1.74 | 2.69 | 44.37 | 1.17 | 53.83 | | | | | | | | | |
| 222 | 8 | 1.75 | 2.73 | 44.33 | 1.18 | 54.19 | | | | | | | | | |

| CORE | Sample Interval (cm) | Wet Bulk Density (g/cc) | Grain Density (g/cc) | Water Content (%) | Void Ratio | Porosity (%) | % Grav. | % Sand | % Silt | % Clay | MGS (phi) | MGS (microns) | % Carb | Vp (m/s) | IMP (kg/cm^2s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 222 | 10 | 1.77 | 2.73 | 42.10 | 1.12 | 52.90 | 0.17 | 14.69 | 63.23 | 21.92 | 6.29 | 12.8 | 91.8 | | |
| 222 | 12 | 1.76 | 2.71 | 42.98 | 1.14 | 53.23 | | | | | | | | | |
| 222 | 14 | 1.78 | 2.71 | 40.70 | 1.08 | 51.82 | | | | | | | | | |
| 222 | 16 | 1.82 | 2.70 | 36.21 | 0.96 | 48.86 | | | | | | | | | |
| 222 | 18 | 1.81 | 2.69 | 36.92 | 0.97 | 49.28 | | | | | | | | | |
| 222 | 20 | 1.83 | 2.72 | 35.97 | 0.96 | 48.85 | 0.69 | 16.02 | 60.17 | 23.12 | 6.43 | 11.6 | 93.1 | | |
| 222 | 22 | 1.81 | 2.71 | 37.39 | 0.99 | 49.70 | | | | | | | | | |
| 222 | 24 | 1.77 | 2.76 | 43.37 | 1.17 | 53.89 | | | | | | | | | |
| 222 | 26 | 1.76 | 2.74 | 43.31 | 1.16 | 53.67 | | | | | | | | | |
| 222 | 28 | 1.79 | 2.75 | 40.82 | 1.10 | 52.31 | | | | | | | | | |
| 222 | 30 | 1.83 | 2.72 | 36.57 | 0.97 | 49.23 | 1.86 | 20.68 | 56.62 | 20.84 | 5.99 | 15.7 | 92.2 | | |
| 222 | 32 | 1.86 | 2.79 | 36.11 | 0.98 | 49.57 | | | | | | | | | |
| 222 | 34 | 1.91 | 2.70 | 29.53 | 0.78 | 43.80 | | | | | | | | | |
| 222 | 36 | 1.87 | 2.69 | 32.10 | 0.84 | 45.77 | | | | | | | | | |
| 222 | 38 | 1.89 | 2.75 | 32.18 | 0.86 | 46.33 | | | | | | | | | |
| 222 | 40 | 1.91 | 2.77 | 31.33 | 0.85 | 45.87 | 0.85 | 23.68 | 54.04 | 21.44 | 6.05 | 15.1 | 92.1 | | |
| 222 | 42 | 1.87 | 2.80 | 35.12 | 0.96 | 49.01 | | | | | | | | | |
| 222 | 44 | 1.9 | 2.75 | 32.00 | 0.86 | 46.22 | | | | | | | | | |
| 222 | 46 | 1.89 | 2.74 | 32.00 | 0.86 | 46.13 | | | | | | | | | |
| 222 | 48 | 1.89 | 2.77 | 32.73 | 0.88 | 46.94 | | | | | | | | | |
| 222 | 50 | 1.9 | 2.70 | 30.39 | 0.80 | 44.45 | 1.09 | 18.43 | 55.69 | 24.79 | 6.62 | 10.2 | 92.7 | | |
| 222 | 52 | 1.91 | 2.73 | 30.46 | 0.81 | 44.85 | | | | | | | | | |
| 222 | 54 | 1.9 | 2.70 | 30.12 | 0.79 | 44.26 | | | | | | | | | |
| 222 | 56 | 1.9 | 2.81 | 33.12 | 0.91 | 47.57 | | | | | | | | | |
| 222 | 58 | 1.89 | 2.73 | 31.72 | 0.85 | 45.85 | | | | | | | | | |
| 222 | 60 | 1.89 | 2.79 | 33.20 | 0.90 | 47.48 | 1.07 | 21.7 | 39.43 | 37.8 | 5.92 | 16.5 | 92.5 | | |
| 222 | 62 | 1.89 | 2.77 | 32.48 | 0.88 | 46.74 | | | | | | | | | |
| 222 | 64 | 1.9 | 2.71 | 30.57 | 0.81 | 44.76 | | | | | | | | | |
| 222 | 66 | 1.9 | 2.71 | 30.70 | 0.81 | 44.84 | | | | | | | | | |
| 222 | 68 | 1.88 | 2.71 | 32.35 | 0.86 | 46.16 | | | | | | | | | |
| 222 | 70 | 1.9 | 2.74 | 31.03 | 0.83 | 45.33 | 1 | 22.63 | 52.81 | 23.56 | 6.54 | 10.7 | 93.5 | | |
| 222 | 72 | 1.89 | 2.71 | 31.17 | 0.82 | 45.18 | | | | | | | | | |
| 222 | 74 | 1.92 | 2.71 | 28.99 | 0.77 | 43.39 | | | | | | | | | |
| 222 | 76 | 1.9 | 2.73 | 30.81 | 0.82 | 45.09 | | | | | | | | | |
| 222 | 78 | 1.9 | 2.72 | 31.15 | 0.83 | 45.29 | | | | | | | | | |
| 222 | 80 | 1.9 | 2.73 | 31.53 | 0.84 | 45.70 | 1.17 | 22.16 | 51.82 | 24.85 | 6.96 | 8.0 | 93.5 | | |
| 222 | 82 | 1.91 | 2.72 | 29.66 | 0.79 | 44.02 | | | | | | | | | |
| 222 | 84 | 1.92 | 2.78 | 30.98 | 0.84 | 45.65 | | | | | | | | | |
| 222 | 86 | 1.89 | 2.70 | 30.84 | 0.81 | 44.89 | | | | | | | | | |
| 222 | 88 | 1.91 | 2.75 | 30.64 | 0.82 | 45.16 | | | | | | | | | |
| 222 | 90 | 2 | 2.73 | 24.71 | 0.66 | 39.73 | 5.13 | 28.16 | 45.08 | 21.63 | 5.9 | 16.7 | 91.1 | | |
| 222 | 92 | 1.89 | 2.76 | 32.90 | 0.89 | 47.03 | | | | | | | | | |
| 222 | 94 | 1.86 | 2.72 | 34.07 | 0.90 | 47.46 | | | | | | | | | |
| 222 | 96 | 1.89 | 2.75 | 32.78 | 0.88 | 46.83 | | | | | | | | | |
| 222 | 98 | 1.87 | 2.72 | 32.97 | 0.88 | 46.73 | | | | | | | | | |
| 222 | 100 | 1.89 | 2.73 | 31.85 | 0.85 | 45.89 | 1.34 | 28.37 | 46.81 | 23.48 | 6.07 | 14.9 | 92.7 | | |
| 222 | 102 | 1.89 | 2.74 | 31.80 | 0.85 | 45.99 | | | | | | | | | |
| 222 | 104 | 1.89 | 2.77 | 32.76 | 0.89 | 47.00 | | | | | | | | | |
| 222 | 106 | 1.89 | 2.74 | 32.02 | 0.86 | 46.09 | | | | | | | | | |
| 222 | 108 | 1.88 | 2.76 | 33.55 | 0.90 | 47.49 | | | | | | | | | |
| 222 | 110 | 1.9 | 2.73 | 31.25 | 0.83 | 45.42 | 2.03 | 24.14 | 47.48 | 26.35 | 6.71 | 9.6 | 92.2 | | |
| 222 | 112 | 1.87 | 2.79 | 35.08 | 0.95 | 48.82 | | | | | | | | | |
| 222 | 114 | 1.86 | 2.77 | 35.24 | 0.95 | 48.80 | | | | | | | | | |
| 222 | 116 | 1.9 | 2.75 | 31.69 | 0.85 | 46.00 | | | | | | | | | |
| 222 | 118 | 1.89 | 2.79 | 33.03 | 0.90 | 47.32 | | | | | | | | | |
| 222 | 120 | 1.88 | 2.73 | 32.82 | 0.87 | 46.63 | 5.59 | 31.55 | 40.82 | 22.04 | 5.92 | 16.5 | 96.3 | | |
| 222 | 122 | 1.88 | 2.74 | 32.67 | 0.87 | 46.61 | | | | | | | | | |
| 222 | 124 | 1.89 | 2.79 | 33.12 | 0.90 | 47.41 | | | | | | | | | |
| 222 | 126 | 1.91 | 2.75 | 31.27 | 0.84 | 45.67 | | | | | | | | 1503.25 | 2.87 |
| 222 | 128 | 1.89 | 2.75 | 32.50 | 0.87 | 46.63 | | | | | | | | 1506.34 | 2.85 |
| 222 | 130 | 1.94 | 2.73 | 28.46 | 0.76 | 43.14 | 3.49 | 31.06 | 33.9 | 31.56 | 5.9 | 16.7 | 93.4 | 1520.59 | 2.95 |
| 222 | 132 | 1.92 | 2.76 | 30.56 | 0.82 | 45.12 | | | | | | | | 1515.47 | 2.91 |
| 222 | 134 | 1.93 | 2.78 | 30.28 | 0.82 | 45.11 | | | | | | | | 1522.92 | 2.94 |
| 222 | 136 | 1.9 | 2.78 | 32.82 | 0.89 | 47.11 | | | | | | | | 1516.62 | 2.88 |
| 222 | 138 | 1.92 | 2.79 | 31.44 | 0.86 | 46.16 | | | | | | | | 1507.27 | 2.89 |

| CORE | Sample Interval (cm) | Wet Bulk Density (g/cc) | Grain Density (g/cc) | Water Content (%) | Void Ratio | Porosity (%) | % Grav. | % Sand | % Silt | % Clay | MGS (phi) | MGS (microns) | % Carb | Vp (m/s) | IMP (kg/ cm^2s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 222 | 140 | 1.91 | 2.79 | 31.82 | 0.87 | 46.46 | 7.02 | 33.36 | 38.16 | 21.46 | 5.62 | 20.3 | 89.8 | 1510.37 | 2.88 |
| 222 | 142 | 1.91 | 2.77 | 31.32 | 0.85 | 45.85 | | | | | | | | 1515.26 | 2.89 |
| 222 | 144 | 1.91 | 2.77 | 31.30 | 0.85 | 45.86 | | | | | | | | 1513.29 | 2.89 |
| 222 | 146 | 1.9 | 2.79 | 32.58 | 0.89 | 47.06 | | | | | | | | 1514.85 | 2.88 |
| 222 | 148 | 1.91 | 2.79 | 32.05 | 0.87 | 46.65 | | | | | | | | 1520.93 | 2.90 |
| 222 | 150 | 1.87 | 2.79 | 34.82 | 0.95 | 48.67 | 8.78 | 36.68 | 35.13 | 19.41 | 4.81 | 35.6 | 93.2 | 1512.05 | 2.83 |
| 222 | 152 | 1.89 | 2.77 | 32.71 | 0.88 | 46.91 | | | | | | | | 1508.32 | 2.85 |
| 222 | 154 | 1.91 | 2.79 | 32.12 | 0.87 | 46.66 | | | | | | | | 1503.26 | 2.87 |
| 222 | 156 | 1.95 | 2.76 | 28.56 | 0.77 | 43.50 | | | | | | | | 1501.72 | 2.93 |
| 222 | 158 | 1.96 | 2.78 | 28.53 | 0.77 | 43.65 | | | | | | | | 1526.78 | 2.99 |
| 222 | 160 | 1.95 | 2.78 | 29.17 | 0.79 | 44.17 | 12.96 | 30.95 | 32.73 | 23.37 | 5.6 | 20.6 | 93.3 | 1524.98 | 2.97 |
| 222 | 162 | 1.93 | 2.80 | 30.91 | 0.84 | 45.77 | | | | | | | | 1535.34 | 2.96 |
| 222 | 164 | 1.92 | 2.78 | 30.87 | 0.84 | 45.60 | | | | | | | | 1532.13 | 2.94 |
| 222 | 166 | 1.92 | 2.80 | 31.60 | 0.86 | 46.33 | | | | | | | | 1522.56 | 2.92 |
| 222 | 168 | 1.93 | 2.81 | 30.93 | 0.85 | 45.87 | | | | | | | | 1376.42 | 2.66 |
| 222 | 170 | 1.91 | 2.74 | 30.92 | 0.83 | 45.30 | 10.36 | 28.58 | 38.11 | 22.96 | 5.64 | 20.1 | 95.1 | 1538.57 | 2.94 |
| 222 | 172 | 1.96 | 2.78 | 28.40 | 0.77 | 43.57 | | | | | | | | 1522.56 | 2.98 |
| 222 | 174 | 1.9 | | | | | | | | | | | | 1526.15 | 2.90 |
| 222 | 176 | 1.93 | 2.75 | 29.74 | 0.80 | 44.44 | | | | | | | | 1531.57 | 2.96 |
| 222 | 178 | 1.94 | 2.78 | 29.95 | 0.81 | 44.84 | | | | | | | | 1512.46 | 2.93 |
| 222 | 180 | 1.97 | 2.74 | 26.62 | 0.71 | 41.60 | 2.59 | 35.56 | 34.17 | 27.69 | 6.31 | 12.6 | 90.1 | 1527.47 | 3.01 |
| 222 | 182 | 1.97 | 2.80 | 28.23 | 0.77 | 43.52 | | | | | | | | 1534.49 | 3.02 |
| 222 | 184 | 1.91 | 2.80 | 32.25 | 0.88 | 46.82 | | | | | | | | 1540.79 | 2.94 |
| 222 | 186 | 2.01 | | | | | | | | | | | | 1542.46 | 3.10 |
| 222 | 188 | 2.04 | 2.80 | 24.03 | 0.66 | 39.63 | | | | | | | | | |
| 222 | 190 | 1.91 | 2.79 | 32.03 | 0.87 | 46.58 | 1.85 | 38.19 | 31.93 | 28.02 | 6.27 | 13.0 | 90.5 | 1509.67 | 2.88 |
| 222 | 192 | 1.85 | | | | | | | | | | | | | |
| 222 | 194 | 1.92 | 2.76 | 30.72 | 0.83 | 45.28 | | | | | | | | | |
| 222 | 196 | 1.88 | 2.81 | 34.80 | 0.96 | 48.86 | | | | | | | | | |
| 222 | 198 | 1.84 | 2.76 | 36.17 | 0.97 | 49.33 | | | | | | | | 1551.64 | 2.86 |
| 222 | 200 | 1.87 | 2.78 | 34.98 | 0.95 | 48.69 | 1.93 | 27.69 | 37.21 | 33.17 | 7.52 | 5.4 | 90.9 | 1541.60 | 2.88 |
| 222 | 202 | 1.88 | 2.81 | 35.06 | 0.96 | 49.07 | | | | | | | | 1544.80 | 2.90 |
| 222 | 204 | 1.89 | 2.82 | 34.27 | 0.94 | 48.54 | | | | | | | | 1544.80 | 2.92 |
| 222 | 206 | 1.86 | 2.82 | 36.91 | 1.02 | 50.41 | | | | | | | | 1528.76 | 2.84 |
| 222 | 208 | 1.86 | 2.79 | 36.16 | 0.99 | 49.65 | | | | | | | | 1528.15 | 2.84 |
| 222 | 210 | 1.87 | 2.77 | 34.49 | 0.93 | 48.26 | 0.8 | 22.37 | 39.77 | 37.07 | 7.83 | 4.4 | 88.7 | 1521.29 | 2.84 |
| 222 | 212 | 1.88 | 2.78 | 33.51 | 0.91 | 47.59 | | | | | | | | 1520.68 | 2.86 |
| 222 | 214 | 1.92 | 2.83 | 32.46 | 0.90 | 47.29 | | | | | | | | 1525.36 | 2.93 |
| 222 | 216 | 1.92 | 2.75 | 30.05 | 0.81 | 44.66 | | | | | | | | 1533.00 | 2.94 |
| 222 | 218 | 1.87 | 2.76 | 33.99 | 0.92 | 47.83 | | | | | | | | 1538.72 | 2.88 |
| 222 | 220 | 1.85 | 2.77 | 36.08 | 0.97 | 49.35 | 2.2 | 24.86 | 36.6 | 36.34 | 7.61 | 5.1 | 86.6 | 1545.11 | 2.86 |
| 222 | 222 | 1.84 | 2.77 | 36.73 | 0.99 | 49.85 | | | | | | | | 1518.12 | 2.79 |
| 222 | 224 | 1.81 | 2.83 | 41.65 | 1.15 | 53.47 | | | | | | | | 1513.28 | 2.74 |
| 222 | 226 | 1.84 | 2.75 | 36.21 | 0.97 | 49.32 | | | | | | | | 1512.88 | 2.78 |
| 222 | 228 | 1.83 | 2.75 | 36.87 | 0.99 | 49.77 | | | | | | | | 1503.10 | 2.75 |
| 222 | 230 | 1.86 | 2.73 | 33.92 | 0.90 | 47.45 | 0.44 | 19.69 | 40.74 | 39.13 | 7.89 | 4.2 | 88.7 | 1499.67 | 2.79 |
| 222 | 232 | 1.81 | 2.77 | 39.43 | 1.07 | 51.65 | | | | | | | | 1503.81 | 2.72 |
| 222 | 234 | 1.79 | 2.79 | 42.41 | 1.16 | 53.63 | | | | | | | | 1509.72 | 2.70 |
| 222 | 236 | 1.82 | 2.76 | 38.79 | 1.05 | 51.13 | | | | | | | | 1496.05 | 2.72 |
| 222 | 238 | 1.81 | 2.74 | 38.43 | 1.03 | 50.66 | | | | | | | | 1488.55 | 2.69 |
| 222 | 240 | 1.6 | 2.74 | 63.30 | 1.69 | 62.88 | 0.12 | 16.53 | 42.74 | 40.61 | 8.13 | 3.6 | 85.9 | 1499.06 | 2.40 |
| 224 | 0 | 1.71 | 2.73 | 48.29 | 1.29 | 56.32 | 0.18 | 27.37 | 52.8 | 19.65 | 5.73 | 18.8 | 92.8 | | |
| 224 | 2 | 1.75 | 2.76 | 45.52 | 1.23 | 55.10 | | | | | | | | | |
| 224 | 4 | 1.71 | 2.80 | 50.19 | 1.37 | 57.81 | | | | | | | | | |
| 224 | 6 | 1.71 | 2.75 | 48.88 | 1.31 | 56.80 | | | | | | | | | |
| 224 | 8 | 1.74 | 2.75 | 45.83 | 1.23 | 55.20 | | | | | | | | | |
| 224 | 10 | 1.73 | 2.73 | 46.23 | 1.23 | 55.23 | 0.5 | 21.1 | 54.84 | 23.55 | 6.29 | 12.8 | 94.0 | | |
| 224 | 12 | 1.75 | 2.76 | 45.46 | 1.22 | 55.05 | | | | | | | | | |
| 224 | 14 | 1.74 | 2.72 | 45.28 | 1.20 | 54.62 | | | | | | | | | |
| 224 | 16 | 1.75 | 2.75 | 44.44 | 1.19 | 54.39 | | | | | | | | | |
| 224 | 18 | 1.78 | 2.75 | 42.19 | 1.13 | 53.09 | | | | | | | | | |
| 224 | 20 | 1.78 | 2.74 | 41.74 | 1.12 | 52.80 | 0.81 | 32.31 | 46.71 | 20.16 | 5.68 | 19.5 | 92.4 | | |
| 224 | 22 | 1.78 | 2.76 | 42.15 | 1.14 | 53.17 | | | | | | | | | |
| 224 | 24 | 1.80 | 2.76 | 40.19 | 1.08 | 51.97 | | | | | | | | | |

| CORE | Sample Interval (cm) | Wet Bulk Density (g/cc) | Grain Density (g/cc) | Water Content (%) | Void Ratio | Porosity (%) | % Grav. | % Sand | % Silt | % Clay | MGS (phi) | MGS (microns) | % Carb | Vp (m/s) | IMP (kg/cm^2s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 224 | 26 | 1.81 | 2.76 | 39.62 | 1.07 | 51.67 | | | | | | | | 1564.14 | 2.83 |
| 224 | 28 | 1.81 | 2.82 | 40.76 | 1.12 | 52.87 | | | | | | | | 1578.82 | 2.86 |
| 224 | 30 | 1.83 | 2.78 | 37.66 | 1.02 | 50.54 | 1.59 | 42 | 38.4 | 18.01 | 5.2 | 27.2 | 92.9 | 1579.90 | 2.90 |
| 224 | 32 | 1.85 | 2.78 | 36.37 | 0.99 | 49.68 | | | | | | | | 1582.57 | 2.93 |
| 224 | 34 | 1.82 | 2.75 | 37.82 | 1.01 | 50.37 | | | | | | | | 1576.82 | 2.87 |
| 224 | 36 | 1.82 | 2.80 | 39.26 | 1.07 | 51.77 | | | | | | | | 1580.31 | 2.88 |
| 224 | 38 | 1.82 | 2.75 | 38.30 | 1.03 | 50.70 | | | | | | | | 1578.88 | 2.87 |
| 224 | 40 | 1.83 | 2.76 | 37.27 | 1.00 | 50.12 | 1.18 | 38.78 | 40.79 | 19.25 | 5.44 | 23.0 | 92.5 | 1572.74 | 2.88 |
| 224 | 42 | 1.79 | 2.74 | 40.08 | 1.07 | 51.73 | | | | | | | | 1566.46 | 2.81 |
| 224 | 44 | 1.79 | 2.75 | 40.36 | 1.08 | 51.99 | | | | | | | | 1561.62 | 2.80 |
| 224 | 46 | 1.81 | 2.75 | 39.19 | 1.05 | 51.25 | | | | | | | | 1557.02 | 2.81 |
| 224 | 48 | 1.81 | 2.75 | 38.84 | 1.04 | 51.06 | | | | | | | | 1568.49 | 2.84 |
| 224 | 50 | 1.81 | 2.76 | 38.82 | 1.05 | 51.11 | 1.39 | 43.59 | 36.02 | 19 | 5.21 | 27.0 | 93.2 | 1560.43 | 2.83 |
| 224 | 52 | 1.82 | 2.72 | 36.94 | 0.98 | 49.55 | | | | | | | | 1563.64 | 2.85 |
| 224 | 54 | 1.82 | 2.75 | 37.83 | 1.01 | 50.37 | | | | | | | | 1560.43 | 2.84 |
| 224 | 56 | 1.83 | 2.74 | 36.90 | 0.99 | 49.64 | | | | | | | | 1566.66 | 2.87 |
| 224 | 58 | 1.81 | 2.74 | 38.76 | 1.04 | 50.88 | | | | | | | | 1563.23 | 2.83 |
| 224 | 60 | 1.83 | 2.73 | 36.75 | 0.98 | 49.52 | 2.83 | 43.81 | 33.39 | 19.97 | 5.34 | 24.7 | 92.5 | 1564.84 | 2.86 |
| 224 | 62 | 1.82 | 2.71 | 36.61 | 0.97 | 49.22 | | | | | | | | 1561.62 | 2.85 |
| 224 | 64 | 1.82 | 2.70 | 37.05 | 0.98 | 49.43 | | | | | | | | 1565.05 | 2.84 |
| 224 | 66 | 1.80 | 2.73 | 39.45 | 1.05 | 51.28 | | | | | | | | 1558.62 | 2.80 |
| 224 | 68 | 1.83 | 2.71 | 36.38 | 0.96 | 49.09 | | | | | | | | 1560.22 | 2.85 |
| 224 | 70 | 1.83 | 2.73 | 37.03 | 0.99 | 49.67 | 3.78 | 41.92 | 35.93 | 18.37 | 5.15 | 28.2 | 91.2 | 1566.66 | 2.86 |
| 224 | 72 | 1.83 | 2.80 | 38.42 | 1.05 | 51.25 | | | | | | | | 1571.32 | 2.88 |
| 224 | 74 | 1.83 | 2.75 | 37.31 | 1.00 | 50.03 | | | | | | | | 1564.63 | 2.86 |
| 224 | 76 | 1.82 | 2.71 | 36.64 | 0.97 | 49.26 | | | | | | | | 1562.82 | 2.85 |
| 224 | 78 | 1.82 | 2.77 | 38.28 | 1.03 | 50.83 | | | | | | | | 1566.04 | 2.86 |
| 224 | 80 | 1.82 | 2.76 | 38.36 | 1.04 | 50.87 | 4.27 | 45.39 | 31.75 | 18.59 | 5.04 | 30.4 | 88.6 | 1567.45 | 2.86 |
| 224 | 82 | 1.85 | 2.75 | 35.98 | 0.97 | 49.17 | | | | | | | | 1570.70 | 2.90 |
| 224 | 84 | 1.83 | 2.75 | 37.62 | 1.01 | 50.29 | | | | | | | | 1564.22 | 2.86 |
| 224 | 86 | 1.83 | 2.78 | 38.36 | 1.04 | 50.97 | | | | | | | | 1564.01 | 2.86 |
| 224 | 88 | 1.86 | 2.78 | 35.78 | 0.97 | 49.30 | | | | | | | | 1573.13 | 2.92 |
| 224 | 90 | 1.84 | 2.77 | 36.77 | 0.99 | 49.83 | 4.86 | 46.73 | 29.62 | 18.78 | 4.79 | 36.1 | 92.4 | | |
| 224 | 92 | 1.91 | 2.76 | 31.32 | 0.84 | 45.78 | | | | | | | | | |
| 224 | 94 | 2.00 | 2.78 | | | | | | | | | | | | |
| 224 | 96 | 1.90 | 2.76 | | | | 5.94 | 48.65 | 27.01 | 18.4 | 4.59 | 41.5 | 89.6 | | |
| 224 | 98 | 1.88 | 2.76 | 34.67 | 0.96 | 49.11 | | | | | | | | | |
| 224 | 100 | 1.90 | 2.79 | 34.75 | 0.97 | 49.16 | | | | | | | | | |
| 224 | 102 | 1.91 | 2.83 | 36.32 | 1.01 | 50.27 | | | | | | | | | |
| 224 | 104 | 1.91 | 2.77 | 34.06 | 0.95 | 48.67 | | | | | | | | 1551.90 | 2.96 |
| 224 | 106 | 1.90 | 2.77 | 31.46 | 0.85 | 46.01 | 4.95 | 46.29 | 31.89 | 16.87 | 4.74 | 37.4 | 91.5 | 1543.87 | 2.93 |
| 224 | 108 | 1.88 | 2.80 | 33.96 | 0.95 | 48.59 | | | | | | | | 1542.27 | 2.90 |
| 224 | 110 | 1.93 | 2.79 | 34.73 | 0.97 | 49.15 | | | | | | | | 1545.47 | 2.98 |
| 224 | 112 | 1.93 | 2.83 | 35.78 | 1.00 | 49.89 | | | | | | | | 1546.86 | 2.99 |
| 224 | 114 | 1.92 | 2.77 | 32.54 | 0.91 | 47.52 | | | | | | | | 1554.92 | 2.98 |
| 224 | 116 | 1.91 | 2.81 | 31.20 | 0.86 | 46.15 | 36.68 | 32.58 | 17.19 | 13.55 | 2.22 | 214.6 | | 1550.08 | 2.96 |
| 224 | 118 | 1.85 | 2.79 | 32.98 | 0.92 | 47.86 | | | | | | | | 1553.31 | 2.88 |
| 224 | 120 | 1.48 | 2.79 | 33.39 | 0.93 | 48.17 | | | | | | | | | |
| 224 | 122 | 1.79 | 2.77 | 38.17 | 1.06 | 51.51 | | | | | | | | | |
| 224 | 124 | 1.85 | 2.76 | | | | | | | | | | | | |
| 224 | 126 | 1.85 | 2.79 | 41.65 | 1.13 | 53.12 | 11.73 | 43.33 | 28.91 | 16.02 | 3.71 | 76.4 | 91.7 | | |
| 224 | 128 | 1.89 | 2.82 | 37.91 | 1.08 | 51.08 | | | | | | | | | |
| 224 | 130 | 1.91 | 2.78 | 36.26 | 1.06 | 49.63 | | | | | | | | | |
| 224 | 132 | 1.92 | 2.77 | 32.86 | 0.98 | 47.04 | | | | | | | | | |
| 224 | 134 | 1.95 | 2.78 | 31.61 | 0.93 | 46.16 | | | | | | | | | |
| 224 | 136 | 1.91 | 2.80 | 31.52 | 0.86 | 46.27 | 5.6 | 33.77 | 33.63 | 26.99 | 7.04 | 7.6 | 91.7 | | |
| 224 | 138 | 1.89 | 2.77 | 28.63 | 0.85 | 43.68 | | | | | | | | 1568.73 | 2.96 |
| 224 | 140 | 1.91 | 2.82 | 32.50 | 0.93 | 47.23 | | | | | | | | 1556.45 | 2.97 |
| 224 | 142 | 1.99 | 2.76 | 32.77 | 0.98 | 46.92 | | | | | | | | | |
| 224 | 144 | 1.82 | 2.78 | 31.89 | 0.94 | 46.42 | | | | | 5.08 | 29.6 | | 1549.60 | 2.82 |
| | | | | | | | | | | | | | | | |
| 225 | 0 | 1.81 | 2.71 | 37.70 | 1.00 | 49.94 | 0.04 | 31.01 | 47.77 | 21.18 | 5.95 | 16.2 | | 1484.48 | 2.69 |
| 225 | 2 | 1.78 | 2.72 | 40.55 | 1.08 | 51.84 | | | | | | | | 1483.18 | 2.64 |
| 225 | 4 | 1.82 | 2.73 | 37.70 | 1.00 | 50.12 | | | | | | | | 1480.18 | 2.69 |
| 225 | 6 | 1.82 | 2.71 | 37.16 | 0.98 | 49.61 | | | | | | | | 1480.79 | 2.69 |

| CORE | Sample Interval (cm) | Wet Bulk Density (g/cc) | Grain Density (g/cc) | Water Content (%) | Void Ratio | Porosity (%) | % Grav. | % Sand | % Silt | % Clay | MGS (phi) | MGS (microns) | %Carb | Vp (m/s) | IMP (kg/ cm^2s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 225 | 8 | 1.87 | 2.73 | 33.66 | 0.90 | 47.30 | | | | | | | | 1476.92 | 2.76 |
| 225 | 10 | 1.85 | 2.71 | 34.62 | 0.92 | 47.79 | 1.79 | 26.62 | 49.28 | 22.31 | 6.16 | 14.0 | | 1485.01 | 2.74 |
| 225 | 12 | 1.85 | 2.73 | 35.25 | 0.94 | 48.44 | | | | | | | | 1483.71 | 2.74 |
| 225 | 14 | 1.85 | 2.79 | 36.90 | 1.01 | 50.13 | | | | | | | | 1483.91 | 2.74 |
| 225 | 16 | 1.87 | 2.72 | 32.61 | 0.86 | 46.38 | | | | | | | | 1477.93 | 2.77 |
| 225 | 18 | 1.84 | 2.71 | 35.49 | 0.94 | 48.42 | | | | | | | | 1480.92 | 2.72 |
| 225 | 20 | 1.87 | 2.71 | 32.88 | 0.87 | 46.54 | 0.59 | 30.32 | 45.17 | 23.92 | 6.17 | 13.9 | | 1475.16 | 2.76 |
| 225 | 22 | 1.87 | 2.72 | 33.16 | 0.88 | 46.83 | | | | | | | | 1481.12 | 2.77 |
| 225 | 24 | 1.90 | 2.73 | 31.19 | 0.83 | 45.43 | | | | | | | | 1485.62 | 2.82 |
| 225 | 26 | 1.90 | 2.72 | 30.60 | 0.81 | 44.83 | | | | | | | | 1484.32 | 2.82 |
| 225 | 28 | 1.90 | 2.84 | 34.40 | 0.95 | 48.82 | | | | | | | | 1488.84 | 2.82 |
| 225 | 30 | 1.88 | 2.73 | 32.38 | 0.86 | 46.36 | 2.42 | 40.75 | 36.69 | 20.14 | 5.57 | 21.1 | | 1491.87 | 2.81 |
| 225 | 32 | 1.90 | 2.83 | 33.84 | 0.94 | 48.36 | | | | | | | | 1489.05 | 2.83 |
| 225 | 34 | 1.90 | 2.74 | 31.16 | 0.83 | 45.48 | | | | | | | | 1484.52 | 2.83 |
| 225 | 36 | 1.90 | 2.75 | 31.39 | 0.84 | 45.74 | | | | | | | | 1498.38 | 2.85 |
| 225 | 38 | 1.95 | 2.74 | 27.90 | 0.75 | 42.70 | | | | | | | | 1502.67 | 2.93 |
| 225 | 40 | 1.92 | 2.77 | 30.85 | 0.83 | 45.48 | 3.31 | 43.24 | 34.24 | 19.22 | 5.52 | 21.8 | | 1501.12 | 2.88 |
| 225 | 42 | 1.89 | 2.79 | 34.01 | 0.93 | 48.14 | | | | | | | | 1497.13 | 2.82 |
| 225 | 44 | 1.91 | 2.74 | 30.81 | 0.83 | 45.24 | | | | | | | | 1486.68 | 2.84 |
| 225 | 46 | 1.95 | 2.75 | 28.39 | 0.76 | 43.30 | | | | | | | | 1490.12 | 2.90 |
| 225 | 48 | 1.90 | 2.76 | 31.55 | 0.85 | 45.92 | | | | | | | | 1501.44 | 2.86 |
| 225 | 50 | 1.91 | 2.76 | 31.43 | 0.85 | 45.89 | 2.40 | 46.07 | 31.19 | 20.34 | 5.45 | 22.9 | | 1492.46 | 2.85 |
| 225 | 52 | 1.90 | 2.76 | 32.05 | 0.86 | 46.31 | | | | | | | | 1493.98 | 2.83 |
| 225 | 54 | 1.90 | 2.79 | 32.45 | 0.88 | 46.93 | | | | | | | | 1492.46 | 2.84 |
| 225 | 56 | 1.91 | 2.74 | 30.75 | 0.82 | 45.10 | | | | | | | | 1494.18 | 2.85 |
| 225 | 58 | 1.90 | 2.81 | 33.62 | 0.92 | 48.03 | | | | | | | | 1492.66 | 2.83 |
| 225 | 60 | 1.89 | 2.75 | 32.37 | 0.87 | 46.52 | 2.27 | 43.73 | 32.35 | 21.64 | 5.48 | 22.4 | | 1486.60 | 2.81 |
| 225 | 62 | 1.91 | 2.82 | 32.83 | 0.91 | 47.51 | | | | | | | | 1491.35 | 2.85 |
| 225 | 64 | 1.90 | 2.77 | 32.23 | 0.87 | 46.58 | | | | | | | | 1495.92 | 2.84 |
| 225 | 66 | 1.91 | 2.74 | 30.82 | 0.83 | 45.21 | | | | | | | | 1494.59 | 2.85 |
| 225 | 68 | 1.95 | 2.75 | 28.03 | 0.75 | 42.98 | | | | | | | | 1494.59 | 2.92 |
| 225 | 70 | 1.90 | 2.78 | 32.27 | 0.88 | 46.73 | 4.79 | 43.72 | 29.98 | 21.51 | 5.30 | 25.4 | | 1497.65 | 2.85 |
| 225 | 72 | 1.92 | 2.74 | 29.76 | 0.80 | 44.37 | | | | | | | | 1496.12 | 2.88 |
| 225 | 74 | 1.92 | 2.78 | 31.25 | 0.85 | 45.90 | | | | | | | | 1497.65 | 2.87 |
| 225 | 76 | 1.94 | 2.77 | 29.73 | 0.81 | 44.60 | | | | | | | | 1493.98 | 2.89 |
| 225 | 78 | 1.93 | 2.76 | 27.67 | 0.75 | 42.71 | | | | | | | | 1501.64 | 2.89 |
| 225 | 80 | 1.96 | 2.75 | 27.34 | 0.73 | 42.32 | 2.67 | 44.57 | 33.27 | 19.49 | 5.11 | 29.0 | | 1498.36 | 2.94 |
| 225 | 82 | 1.96 | 2.78 | 27.67 | 0.75 | 42.92 | | | | | | | | 1503.90 | 2.95 |
| 225 | 84 | 1.97 | 2.74 | 30.29 | 0.81 | 44.74 | | | | | | | | 1505.24 | 2.97 |
| 225 | 86 | 1.91 | 2.81 | 23.53 | 0.64 | 39.19 | | | | | | | | 1509.90 | 2.89 |
| 225 | 88 | 2.05 | 2.75 | 22.30 | 0.60 | 37.43 | | | | | | | | | |
| 225 | 90 | 2.04 | 2.77 | 31.05 | 0.84 | 45.65 | 6.31 | 47.66 | 28.78 | 17.25 | 4.55 | 42.7 | | | |
| 225 | 92 | 1.96 | 2.76 | 27.85 | 0.75 | 42.87 | | | | | | | | | |
| 225 | 94 | 1.92 | 2.79 | 26.41 | 0.72 | 41.84 | | | | | | | | | |
| 225 | 96 | 1.99 | 2.80 | 28.63 | 0.78 | 43.89 | | | | | | | | | |
| 225 | 98 | 1.99 | 2.75 | 27.12 | 0.73 | 42.10 | 6.93 | 47.14 | 28.19 | 17.75 | 4.50 | 44.2 | | | |
| 225 | 100 | 1.96 | 2.77 | 26.42 | 0.71 | 41.65 | | | | | | | | 1505.34 | 2.95 |
| 225 | 102 | 1.96 | 2.82 | 28.50 | 0.78 | 43.96 | | | | | | | | 1504.61 | 2.95 |
| 225 | 104 | 1.98 | 2.81 | 27.60 | 0.76 | 43.12 | | | | | | | | 1510.01 | 3.00 |
| 225 | 106 | 1.97 | 2.82 | 27.15 | 0.75 | 42.75 | | | | | | | | 1513.35 | 2.99 |
| 225 | 108 | 1.98 | 2.80 | 26.38 | 0.72 | 41.87 | 3.21 | 45.27 | 30.24 | 21.28 | 5.42 | 23.4 | | 1508.66 | 2.99 |
| 225 | 110 | 1.99 | 2.75 | 25.73 | 0.69 | 40.88 | | | | | | | | 1507.83 | 3.01 |
| 225 | 112 | 2.00 | 2.80 | 27.70 | 0.76 | 43.13 | | | | | | | | 1508.35 | 3.01 |
| 225 | 114 | 1.98 | 2.78 | 26.79 | 0.73 | 42.14 | | | | | | | | 1507.52 | 2.98 |
| 225 | 116 | 1.99 | 2.86 | 28.24 | 0.79 | 44.06 | | | | | | | | 1516.51 | 3.02 |
| 225 | 118 | 1.99 | 2.77 | 25.86 | 0.70 | 41.12 | 5.03 | 46.09 | 28.55 | 20.33 | 5.08 | 29.6 | | 1512.32 | 3.01 |
| 225 | 120 | 1.99 | 2.78 | 25.53 | 0.69 | 40.97 | | | | | | | | 1501.29 | 2.99 |
| 225 | 122 | 2.01 | 2.79 | 25.79 | 0.70 | 41.31 | | | | | | | | 1505.96 | 3.02 |
| 225 | 124 | 2.01 | 2.77 | 25.73 | 0.70 | 41.06 | | | | | | | | 1512.23 | 3.03 |
| 225 | 126 | 2.00 | 2.79 | 25.20 | 0.69 | 40.74 | | | | | | | | 1505.96 | 3.01 |
| 225 | 128 | 2.02 | 2.82 | 25.84 | 0.71 | 41.61 | 4.20 | 43.99 | 33.72 | 18.10 | 5.06 | 30.0 | | 1506.58 | 3.04 |
| 225 | 130 | 2.02 | 2.78 | 23.33 | 0.63 | 38.79 | | | | | | | | 1504.28 | 3.04 |
| 225 | 132 | 2.04 | 2.77 | 24.10 | 0.65 | 39.50 | | | | | | | | 1489.61 | 3.04 |
| 225 | 134 | 2.03 | 2.76 | 23.56 | 0.64 | 38.87 | | | | | | | | 1494.64 | 3.03 |
| 225 | 136 | 2.03 | 2.78 | 24.24 | 0.66 | 39.66 | | | | | | | | 1506.38 | 3.06 |

| CORE | Sample Interval (cm) | Wet Bulk Density (g/cc) | Grain Density (g/cc) | Water Content (%) | Void Ratio | Porosity (%) | % Grav. | % Sand | % Silt | % Clay | MGS (phi) | MGS (microns) | %Carb | Vp (m/s) | IMP (kg/ cm^2s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 225 | 138 | 2.02 | 2.79 | 24.78 | 0.68 | 40.32 | 4.14 | 34.16 | 30.68 | 31.03 | 6.49 | 11.1 | | | |
| 225 | 140 | 2.02 | 2.78 | 24.52 | 0.66 | 39.93 | | | | | | | | 1511.52 | 3.06 |
| 225 | 142 | 2.02 | 2.82 | 26.72 | 0.73 | 42.35 | | | | | | | | 1512.35 | 3.06 |
| 225 | 144 | 2.00 | 2.82 | 26.18 | 0.72 | 41.87 | | | | | | | | 1512.98 | 3.06 |
| 225 | 146 | 2.01 | 2.81 | 27.38 | 0.75 | 42.91 | | | | | | | | 1518.16 | 3.04 |
| 225 | 148 | 1.99 | 2.75 | 26.09 | 0.70 | 41.21 | 3.67 | 38.24 | 30.45 | 27.64 | 6.32 | 12.5 | | 1512.66 | 3.04 |
| 225 | 150 | 1.98 | 2.77 | 27.59 | 0.75 | 42.73 | | | | | | | | 1512.34 | 3.00 |
| 225 | 152 | 1.97 | 2.75 | 26.57 | 0.71 | 41.66 | | | | | | | | 1501.50 | 2.98 |
| 225 | 154 | 1.98 | 2.77 | 27.09 | 0.73 | 42.32 | | | | | | | | 1499.02 | 2.95 |
| 225 | 156 | 1.98 | 2.78 | 23.85 | 0.65 | 39.29 | | | | | | | | 1499.85 | 2.96 |
| 225 | 158 | 2.03 | 2.76 | 24.51 | 0.66 | 39.77 | 3.76 | 41.42 | 26.29 | 28.53 | 6.48 | 11.2 | | 1498.72 | 2.96 |
| 225 | 160 | 2.01 | 2.77 | 27.00 | 0.73 | 42.21 | | | | | | | | 1496.46 | 3.04 |
| 225 | 162 | 1.98 | 2.76 | 27.03 | 0.73 | 42.18 | | | | | | | | 1495.96 | 3.01 |
| 225 | 164 | 1.97 | 2.80 | 30.92 | 0.85 | 45.83 | | | | | | | | 1506.27 | 2.98 |
| 225 | 166 | 1.93 | 2.76 | 31.40 | 0.85 | 45.87 | | | | | | | | 1513.36 | 2.99 |
| 225 | 168 | 1.91 | 2.79 | 30.80 | 0.84 | 45.61 | 2.33 | 29.37 | 33.80 | 34.50 | 7.44 | 5.8 | | 1522.51 | 2.94 |
| 225 | 170 | 1.93 | 2.76 | 29.61 | 0.80 | 44.39 | | | | | | | | 1505.34 | 2.87 |
| 225 | 172 | 1.93 | 2.76 | 27.88 | 0.75 | 42.89 | | | | | | | | 1509.90 | 2.91 |
| 225 | 174 | 1.96 | 2.80 | 29.60 | 0.81 | 44.71 | | | | | | | | 1486.59 | 2.87 |
| 225 | 176 | 1.95 | 2.78 | 31.71 | 0.86 | 46.28 | | | | | | | | 1486.10 | 2.91 |
| 225 | 178 | 1.91 | 2.82 | 33.23 | 0.91 | 47.77 | 1.57 | 24.59 | 35.93 | 37.91 | 7.73 | 4.7 | | 1501.03 | 2.93 |
| 225 | 180 | 1.90 | 2.75 | 28.62 | 0.77 | 43.44 | | | | | | | | 1500.31 | 2.87 |
| 225 | 182 | 1.94 | 2.78 | 29.36 | 0.80 | 44.32 | | | | | | | | 1508.65 | 2.87 |
| 225 | 184 | 1.94 | 2.74 | 27.09 | 0.73 | 42.03 | | | | | | | | 1504.83 | 2.92 |
| 225 | 186 | 1.96 | 2.73 | | | | | | | | | | | 1495.95 | 2.91 |
| 225 | 188 | 1.80 | 2.78 | 39.78 | 1.07 | 51.63 | | 19.46 | 41.93 | 37.76 | 7.95 | 4.0 | | 1492.01 | 2.93 |
| 225 | 190 | 1.77 | 2.75 | 43.99 | 1.20 | 54.47 | | | | | | | | | |
| 225 | 192 | 1.80 | 2.79 | 38.81 | 1.03 | 50.80 | | | | | | | | 1549.73 | 2.74 |
| 225 | 194 | 1.87 | 2.72 | 33.44 | 0.89 | 47.22 | | | | | | | | | |
| 225 | 196 | 1.88 | 2.74 | 32.96 | 0.88 | 46.94 | | | | | | | | 1485.32 | 2.78 |
| 225 | 198 | 1.82 | 2.75 | 38.14 | 1.03 | 50.73 | 0.92 | 12.26 | 45.73 | 41.09 | 8.18 | 3.4 | | 1479.73 | 2.78 |
| 225 | 200 | 1.79 | 2.76 | 40.95 | 1.10 | 52.39 | | | | | | | | 1519.14 | 2.77 |
| 225 | 202 | 1.83 | 2.75 | 37.83 | 1.03 | 50.64 | | | | | | | | 1551.79 | 2.78 |
| 225 | 204 | 1.85 | 2.78 | 35.02 | 0.94 | 48.37 | | | | | | | | 1554.98 | 2.85 |
| 225 | 206 | 1.27 | 2.74 | | | | | | | | | | | 1536.07 | 2.85 |
| 225 | 208 | 1.07 | 2.74 | | | | 4.83 | 11.33 | 44.97 | 38.87 | 8.01 | 3.9 | | 1520.86 | 1.93 |
| 225 | 210 | 1.75 | 2.76 | | | | | | | | | | | 1535.33 | 1.64 |
| 225 | 212 | 1.74 | 2.81 | | | | | | | | | | | 1546.69 | 2.71 |
| | | | | | | | | | | | | | | | |
| 227 | 0 | 1.69 | 2.73 | 51.12 | 1.37 | 57.84 | 0.4 | 28.98 | 52.58 | 18.04 | 5.6 | 20.6 | | | |
| 227 | 2 | 1.74 | 2.75 | 45.94 | 1.23 | 55.18 | | | | | | | | | |
| 227 | 4 | 1.73 | 2.74 | 47.03 | 1.26 | 55.78 | | | | | | | | | |
| 227 | 6 | 1.74 | 2.75 | 46.12 | 1.24 | 55.34 | | | | | | | | | |
| 227 | 8 | 1.74 | 2.75 | 45.80 | 1.23 | 55.19 | | | | | | | | | |
| 227 | 10 | 1.73 | 2.75 | 47.09 | 1.26 | 55.78 | 0.4 | 25.55 | 53.25 | 20.8 | 6.07 | 14.9 | | | |
| 227 | 12 | 1.74 | 2.74 | 45.55 | 1.22 | 54.99 | | | | | | | | | |
| 227 | 14 | 1.69 | 2.75 | 51.48 | 1.39 | 58.08 | | | | | | | | | |
| 227 | 16 | 1.74 | 2.76 | 45.55 | 1.22 | 55.03 | | | | | | | | | |
| 227 | 18 | 1.77 | 2.75 | 42.89 | 1.15 | 53.52 | | | | | | | | | |
| 227 | 20 | 1.80 | 2.75 | 40.24 | 1.08 | 51.97 | 1.29 | 33.49 | 44.16 | 21.06 | 5.81 | 17.8 | | | |
| 227 | 22 | 1.77 | 2.75 | 43.04 | 1.16 | 53.63 | | | | | | | | | |
| 227 | 24 | 1.76 | 2.75 | 44.16 | 1.19 | 54.30 | | | | | | | | | |
| 227 | 26 | 1.74 | 2.76 | 45.41 | 1.22 | 54.94 | | | | | | | | | |
| 227 | 28 | 1.78 | 2.75 | 41.77 | 1.12 | 52.84 | | | | | | | | | |
| 227 | 30 | 1.78 | 2.75 | 41.91 | 1.12 | 52.87 | 1.57 | 41.42 | 39.69 | 17.31 | 5.09 | 29.4 | | | |
| 227 | 32 | 1.75 | 2.74 | 44.82 | 1.20 | 54.64 | | | | | | | | | |
| 227 | 34 | 1.82 | 2.75 | 38.24 | 1.02 | 50.60 | | | | | | | | 1528.29 | 2.78 |
| 227 | 36 | 1.80 | 2.74 | 39.59 | 1.06 | 51.50 | | | | | | | | 1577.67 | 2.84 |
| 227 | 38 | 1.78 | 2.75 | 41.26 | 1.11 | 52.50 | | | | | | | | 1579.94 | 2.82 |
| 227 | 40 | 1.84 | 2.74 | 36.22 | 0.97 | 49.28 | 1.93 | 40.54 | 38.67 | 18.86 | 5.41 | 23.5 | | 1572.25 | 2.89 |
| 227 | 42 | 1.77 | 2.75 | 43.05 | 1.16 | 53.63 | | | | | | | | 1585.75 | 2.80 |
| 227 | 44 | 1.80 | 2.75 | 40.09 | 1.08 | 51.84 | | | | | | | | 1571.32 | 2.83 |
| 227 | 46 | 1.83 | 2.75 | 37.71 | 1.01 | 50.36 | | | | | | | | 1560.29 | 2.85 |
| 227 | 48 | 1.81 | 2.75 | 39.12 | 1.05 | 51.31 | | | | | | | | 1576.39 | 2.86 |
| 227 | 50 | 1.80 | 2.76 | 39.90 | 1.07 | 51.79 | 0.68 | 37.15 | 42.05 | 20.11 | 5.87 | 17.1 | | 1573.14 | 2.84 |

| CORE | Sample Interval (cm) | Wet Bulk Density (g/cc) | Grain Density (g/cc) | Water Content (%) | Void Ratio | Porosity (%) | % Grav. | % Sand | % Silt | % Clay | MGS (phi) | MGS (microns) | % Carb | Vp (m/s) | IMP (kg/ cm^2s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 227 | 52 | 1.81 | 2.76 | 38.87 | 1.05 | 51.11 | | | | | | | | 1563.69 | 2.83 |
| 227 | 54 | 1.82 | 2.75 | 38.65 | 1.04 | 51.00 | | | | | | | | 1571.73 | 2.86 |
| 227 | 56 | 1.81 | 2.76 | 39.06 | 1.05 | 51.29 | | | | | | | | 1575.18 | 2.86 |
| 227 | 58 | 1.78 | 2.76 | 41.73 | 1.13 | 52.94 | | | | | | | | 1568.71 | 2.80 |
| 227 | 60 | 1.79 | 2.76 | 40.99 | 1.11 | 52.50 | 7.03 | 39.29 | 36.66 | 17.02 | 4.87 | 34.2 | | 1567.10 | 2.81 |
| 227 | 62 | 1.83 | 2.76 | 37.82 | 1.02 | 50.58 | | | | | | | | 1557.52 | 2.85 |
| 227 | 64 | 1.81 | 2.77 | 39.37 | 1.06 | 51.46 | | | | | | | | 1570.12 | 2.84 |
| 227 | 66 | 1.83 | 2.76 | 37.51 | 1.01 | 50.26 | | | | | | | | 1571.73 | 2.88 |
| 227 | 68 | 1.81 | 2.76 | 38.95 | 1.05 | 51.23 | | | | | | | | 1566.49 | 2.84 |
| 227 | 70 | 1.83 | 2.76 | 38.09 | 1.03 | 50.74 | 3.77 | 45.78 | 33.63 | 16.81 | 4.67 | 39.3 | | 1569.70 | 2.87 |
| 227 | 72 | 1.84 | 2.77 | 36.76 | 0.99 | 49.80 | | | | | | | | 1566.69 | 2.88 |
| 227 | 74 | 1.82 | 2.76 | 38.38 | 1.04 | 50.94 | | | | | | | | 1569.91 | 2.86 |
| 227 | 76 | 1.81 | 2.77 | 39.12 | 1.06 | 51.37 | | | | | | | | 1573.14 | 2.85 |
| 227 | 78 | 1.80 | 2.77 | 40.30 | 1.09 | 52.07 | | | | | | | | 1570.32 | 2.83 |
| 227 | 80 | 1.85 | 2.76 | 36.44 | 0.99 | 49.63 | 6.54 | 44.69 | 30.96 | 17.8 | 4.75 | 37.2 | | 1568.92 | 2.90 |
| 227 | 82 | 1.84 | 2.77 | 36.95 | 1.00 | 49.97 | | | | | | | | 1574.38 | 2.90 |
| 227 | 84 | 1.84 | 2.77 | 37.31 | 1.01 | 50.28 | | | | | | | | 1575.21 | 2.90 |
| 227 | 86 | 1.83 | 2.78 | 37.50 | 1.01 | 50.29 | | | | | | | | 1588.70 | 2.91 |
| 227 | 88 | 1.91 | 2.76 | | | | | | | | | | | | |
| 227 | 90 | 1.99 | 2.77 | | | | 3.82 | 42.57 | 33.43 | 20.18 | 5.25 | 26.3 | | 1564.93 | 3.11 |
| 227 | 92 | 1.68 | 2.77 | | | | | | | | | | | | |
| 227 | 94 | 1.74 | 2.77 | | | | | | | | | | | | |
| 227 | 96 | 1.86 | 2.77 | 34.97 | 0.95 | 48.61 | | | | | | | | | |
| 227 | 98 | 1.88 | 2.77 | 33.97 | 0.92 | 47.89 | 8.63 | 43.69 | 28.85 | 18.82 | 4.24 | 52.9 | | | |
| 227 | 100 | 1.92 | 2.82 | 32.09 | 0.88 | 46.93 | | | | | | | | | |
| 227 | 102 | 1.94 | 2.81 | 30.28 | 0.83 | 45.36 | | | | | | | | 1549.96 | 3.01 |
| 227 | 104 | 1.91 | 2.80 | 32.35 | 0.88 | 46.90 | | | | | | | | 1551.77 | 2.96 |
| 227 | 106 | 1.95 | 2.79 | 29.40 | 0.80 | 44.44 | | | | | | | | 1550.16 | 3.02 |
| 227 | 108 | 1.93 | 2.78 | 30.10 | 0.82 | 44.97 | 11.42 | 41.03 | 27.56 | 20 | 4.38 | 48.0 | | | |
| 227 | 110 | 1.95 | 2.81 | 29.81 | 0.82 | 44.98 | | | | | | | | 1551.98 | 3.02 |
| 227 | 112 | 1.94 | 2.77 | 29.49 | 0.80 | 44.35 | | | | | | | | 1542.60 | 2.99 |
| 227 | 114 | 1.92 | 2.83 | 32.40 | 0.90 | 47.25 | | | | | | | | 1557.23 | 2.99 |
| 227 | 116 | 1.96 | 2.86 | 30.35 | 0.85 | 45.87 | | | | | | | | 1569.27 | 3.08 |
| 227 | 118 | 1.97 | 2.77 | 27.13 | 0.73 | 42.33 | 15.94 | 34.1 | 25.32 | 24.64 | 4.62 | 40.7 | | 1553.02 | 3.07 |
| 227 | 120 | 2.03 | 2.77 | 23.81 | 0.64 | 39.14 | | | | | | | | 1561.10 | 3.16 |
| 227 | 122 | 1.93 | 2.77 | 29.72 | 0.80 | 44.52 | | | | | | | | 1581.06 | 3.06 |
| 227 | 124 | 1.95 | 2.80 | 29.71 | 0.81 | 44.82 | | | | | | | | 1543.84 | 3.01 |
| 227 | 126 | 1.96 | 2.82 | 29.62 | 0.82 | 44.91 | | | | | | | | 1531.44 | 2.99 |
| 227 | 128 | 1.89 | 2.77 | 33.00 | 0.89 | 47.17 | 11.62 | 29.92 | 30.22 | 28.25 | 5.76 | 18.5 | | 1536.14 | 2.90 |
| 227 | 130 | 1.92 | 2.75 | 30.08 | 0.81 | 44.68 | | | | | | | | 1557.07 | 2.99 |
| 227 | 132 | 1.94 | 2.84 | 30.85 | 0.85 | 46.07 | | | | | | | | 1541.08 | 3.00 |
| 227 | 134 | 1.94 | 2.83 | 31.14 | 0.86 | 46.24 | | | | | | | | 1539.70 | 2.98 |
| 227 | 136 | 1.95 | 2.77 | 28.94 | 0.78 | 43.95 | | | | | | | | 1555.87 | 3.03 |
| 227 | 138 | 1.94 | 2.80 | 30.08 | 0.82 | 45.13 | 7.65 | 47 | 30.11 | 15.25 | 4.43 | 46.4 | | 1559.52 | 3.03 |
| 227 | 140 | 1.94 | 2.82 | 30.89 | 0.85 | 45.98 | | | | | | | | 1548.89 | 3.00 |
| | | | | | | | | | | | | | | | |
| 167 | 0 | 1.56 | 2.70 | 67.13 | 1.81 | 64.44 | 0.46 | 29.92 | 48.87 | 20.74 | 5.70 | 19.2 | | 1532.72 | 2.40 |
| 167 | 2 | 1.70 | 2.72 | 53.31 | 1.45 | 59.17 | | | | | | | | 1536.93 | 2.61 |
| 167 | 4 | 1.73 | 2.71 | 56.59 | 1.53 | 60.52 | | | | | | | | 1544.68 | 2.67 |
| 167 | 6 | 1.73 | 2.71 | 52.62 | 1.43 | 58.81 | | | | | | | | 1543.33 | 2.66 |
| 167 | 8 | 1.76 | 2.71 | 49.11 | 1.33 | 57.11 | | | | | | | | 1544.88 | 2.72 |
| 167 | 10 | 1.75 | 2.72 | 46.92 | 1.28 | 56.06 | 3.17 | 40.17 | 39.41 | 17.25 | 4.81 | 35.6 | | 1551.14 | 2.72 |
| 167 | 12 | 1.86 | 2.71 | 46.30 | 1.26 | 55.69 | | | | | | | | 1540.22 | 2.87 |
| 167 | 14 | 1.83 | 2.72 | 43.08 | 1.17 | 53.93 | | | | | | | | 1546.44 | 2.82 |
| 167 | 16 | 1.80 | 2.72 | 49.83 | 1.35 | 57.50 | | | | | | | | 1551.14 | 2.79 |
| 167 | 18 | 1.82 | 2.72 | 41.71 | 1.13 | 53.16 | | | | | | | | 1551.34 | 2.82 |
| 167 | 20 | 1.85 | 2.72 | 42.26 | 1.15 | 53.49 | 2.28 | 41.03 | 39.50 | 17.19 | 4.89 | 33.7 | | 1551.34 | 2.86 |
| 167 | 22 | 1.85 | 2.72 | 41.03 | 1.12 | 52.77 | | | | | | | | 1551.34 | 2.88 |
| 167 | 24 | 1.84 | 2.72 | 40.44 | 1.10 | 52.42 | | | | | | | | 1560.21 | 2.87 |
| 167 | 26 | 1.85 | 2.72 | 39.71 | 1.08 | 51.93 | | | | | | | | 1555.46 | 2.88 |
| 167 | 28 | 1.92 | 2.72 | 38.12 | 1.04 | 50.93 | | | | | | | | 1566.39 | 3.01 |
| 167 | 30 | 1.88 | 2.72 | 40.61 | 1.10 | 52.46 | 4.52 | 47.61 | 32.80 | 15.07 | 4.44 | 46.1 | | 1568.00 | 2.95 |
| 167 | 32 | 1.89 | 2.72 | 38.15 | 1.04 | 50.91 | | | | | | | | 1562.99 | 2.96 |
| 167 | 34 | 1.91 | 2.72 | 39.20 | 1.07 | 51.58 | | | | | | | | 1565.98 | 2.98 |
| 167 | 36 | 1.87 | 2.73 | 38.59 | 1.05 | 51.26 | | | | | | | | 1567.38 | 2.94 |

| CORE | Sample Interval (cm) | Wet Bulk Density (g/cc) | Grain Density (g/cc) | Water Content (%) | Void Ratio | Porosity (%) | % Grav. | % Sand | % Silt | % Clay | MGS (phi) | MGS (microns) | % Carb | Vp (m/s) | IMP (kg/cm^2s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 167 | 38 | 1.86 | 2.73 | 38.71 | 1.06 | 51.34 | | | | | | | | 1570.60 | 2.93 |
| 167 | 40 | 1.85 | 2.74 | 41.08 | 1.12 | 52.93 | 3.89 | 48.04 | 32.17 | 15.90 | 4.40 | 47.4 | | 1568.78 | 2.90 |
| 167 | 42 | 1.88 | 2.74 | 39.87 | 1.09 | 52.20 | | | | | | | | 1568.57 | 2.96 |
| 167 | 44 | 1.89 | 2.73 | 39.13 | 1.07 | 51.65 | | | | | | | | 1568.37 | 2.96 |
| 167 | 46 | 1.88 | 2.73 | 39.88 | 1.09 | 52.11 | | | | | | | | 1563.36 | 2.93 |
| 167 | 48 | 1.88 | 2.73 | 39.50 | 1.08 | 51.90 | | | | | | | | 1566.15 | 2.95 |
| 167 | 50 | 1.88 | 2.73 | 39.03 | 1.06 | 51.57 | 7.85 | 44.56 | 30.79 | 16.80 | 4.43 | 46.4 | | 1554.59 | 2.93 |
| 167 | 52 | 1.87 | 2.73 | 39.59 | 1.08 | 51.94 | | | | | | | | 1557.56 | 2.92 |
| 167 | 54 | 1.89 | 2.73 | 37.76 | 1.03 | 50.76 | | | | | | | | 1563.73 | 2.96 |
| 167 | 56 | 1.89 | 2.73 | 35.44 | 0.97 | 49.17 | | | | | | | | 1563.73 | 2.95 |
| 167 | 58 | 1.91 | 2.72 | 36.62 | 1.00 | 49.94 | | | | | | | | 1561.92 | 2.99 |
| 167 | 60 | 1.88 | 2.72 | 37.60 | 1.02 | 50.58 | 4.70 | 48.93 | 29.36 | 17.01 | 4.45 | 45.8 | | 1555.36 | 2.92 |
| 167 | 62 | 1.95 | 2.72 | 37.19 | 1.01 | 50.28 | | | | | | | | 1558.12 | 3.04 |
| 167 | 64 | 1.90 | 2.74 | 38.04 | 1.04 | 51.04 | | | | | | | | 1556.33 | 2.96 |
| 167 | 66 | 1.91 | 2.72 | 36.51 | 0.99 | 49.87 | | | | | | | | 1556.33 | 2.98 |
| 167 | 68 | 1.91 | 2.73 | 34.65 | 0.95 | 48.63 | | | | | | | | 1557.92 | 2.97 |
| 167 | 70 | 1.91 | 2.73 | 37.06 | 1.01 | 50.31 | 13.61 | 43.25 | 26.84 | 16.29 | 3.87 | 68.4 | | 1556.13 | 2.97 |
| 167 | 72 | 1.91 | 2.73 | 35.98 | 0.98 | 49.55 | | | | | | | | 1562.49 | 2.99 |
| 167 | 74 | 1.90 | 2.73 | 38.04 | 1.04 | 50.98 | | | | | | | | 1559.30 | 2.96 |
| 167 | 76 | 1.93 | 2.74 | 36.87 | 1.01 | 50.23 | | | | | | | | 1565.49 | 3.02 |
| 167 | 78 | 1.95 | 2.72 | 34.89 | 0.95 | 48.73 | | | | | | | | 1557.51 | 3.04 |
| 167 | 80 | 1.95 | 2.74 | 31.65 | 0.87 | 46.40 | 15.93 | 43.15 | 23.80 | 17.12 | 3.48 | 89.6 | | 1559.10 | 3.04 |
| 167 | 82 | 1.97 | 2.74 | 32.88 | 0.90 | 47.39 | | | | | | | | 1562.08 | 3.07 |
| 167 | 84 | 1.95 | 2.73 | 30.10 | [illegible] | 45.07 | | | | | | | | 1554.14 | 3.03 |
| 167 | 86 | 1.99 | 2.73 | 28.73 | 0.78 | 43.95 | | | | | | | | 1558.69 | 3.10 |
| 167 | 88 | 1.95 | 2.74 | 32.47 | 0.89 | 47.08 | | | | | | | | 1564.88 | 3.05 |
| 167 | 90 | 1.94 | 2.74 | 31.21 | 0.86 | 46.12 | 13.68 | 43.22 | 24.12 | 18.98 | 3.81 | 71.3 | | 1569.50 | 3.04 |
| 167 | 92 | 1.94 | 2.74 | 31.90 | 0.87 | 46.66 | | | | | | | | 1553.32 | 3.02 |
| 167 | 94 | 1.96 | 2.73 | 35.86 | 0.98 | 49.46 | | | | | | | | 1674.10 | 3.28 |
| 167 | 96 | 1.96 | 2.74 | 33.67 | 0.92 | 47.94 | | | | | | | | 1567.27 | 3.07 |
| 167 | 98 | 1.95 | 2.74 | 33.03 | 0.90 | 47.49 | | | | | | | | 1564.05 | 3.05 |
| 167 | 100 | 2.02 | 2.76 | 30.59 | 0.84 | 45.79 | 38.01 | 27.89 | 17.47 | 16.63 | 1.96 | 257.0 | | 1578.62 | 3.19 |
| 167 | 102 | 1.98 | 2.74 | 31.89 | 0.87 | 46.64 | | | | | | | | 1573.73 | 3.12 |
| 167 | 104 | 2.02 | 2.75 | 29.01 | 0.80 | 44.36 | | | | | | | | 1567.27 | 3.16 |
| 167 | 106 | 2.06 | 2.74 | 24.96 | 0.68 | 40.65 | | | | | | | | 1568.88 | 3.23 |
| 167 | 108 | | | | | | | | | | | | | 1719.16 | |
| 167 | 110 | | | | | | | | | | | | | 1570.49 | |

# APPENDIX C.

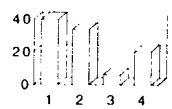
All raw data from the Boca Raton study area.

| | QTZ | ARAGONITE | CALCITE | HMC |
|---|---|---|---|---|
| HILLS INLET | | | | |
| 0-2 cm | 44.3 | 39.1 | 12.2 | 4.3 |
| 2-4 cm | 48.5 | 36.3 | 11.4 | 3.9 |
| 4-6 cm | 33.7 | 48.5 | 13.6 | 4.2 |
| 6-8 cm | 45.7 | 38.6 | 11.7 | 4.0 |
| 8-10 cm | 33.5 | 48.3 | 14.5 | 3.6 |
| 10-12 cm | 37.2 | 46.7 | 11.5 | 4.6 |
| NSO1-2 | | | | |
| 0-2 cm | 20.6 | 42.1 | 5.2 | 32.1 |
| 2-4 cm | 17.7 | 41.6 | 4.8 | 35.9 |
| 4-6 cm | 15.7 | 43.1 | 4.2 | 37.1 |
| 6-8 cm | 7.4 | 44.3 | 3.7 | 44.5 |
| 8-10 cm | 6.2 | 44.0 | 3.7 | 46.1 |
| 10-12 cm | 6.7 | 43.2 | 5.2 | 44.9 |
| 12-14 cm | 8.3 | 46.8 | 5.5 | 39.4 |
| NSO1-4 | | | | |
| 0-2 cm | 45.3 | 31.0 | 5.9 | 17.7 |
| 2-4 cm | 42.0 | 31.8 | 6.8 | 19.3 |
| 4-6 cm | 37.0 | 35.4 | 6.6 | 21.0 |
| 6-8 cm | 34.9 | 35.5 | 5.5 | 24.1 |
| 8-10 cm | 33.5 | 39.7 | 5.9 | 21.0 |
| 10-12 cm | 39.0 | 32.4 | 5.5 | 23.1 |
| 12-14 cm | 43.1 | 33.1 | 6.4 | 17.3 |
| 14-15 cm | 43.5 | 30.3 | 6.2 | 20.1 |
| NSO2-4 | | | | |
| 0-2 cm | 42.4 | 38.6 | 10.4 | 8.6 |
| 2-4 cm | 38.0 | 40.2 | 12.2 | 9.6 |
| 4-6 cm | 42.5 | 37.9 | 12.1 | 7.5 |
| 6-8 cm | 43.2 | 32.6 | 16.4 | 7.7 |
| 8-10 cm | 41.7 | 38.8 | 11.7 | 7.8 |
| 10-12 cm | 45.8 | 34.2 | 12.0 | 8.0 |
| 12-14 cm | 43.3 | 35.2 | 12.4 | 9.1 |
| NSO3-4 | | | | |
| 0-2 cm | 48.7 | 30.2 | 9.3 | 11.9 |
| 2-4 cm | 51.9 | 30.3 | 8.7 | 9.0 |
| 4-6 cm | 51.7 | 27.2 | 10.4 | 10.7 |
| 6-8 cm | 51.1 | 27.1 | 10.7 | 11.1 |
| 8-10 cm | 52.3 | 25.4 | 10.7 | 11.7 |
| 10-12 cm | 52.0 | 28.7 | 9.7 | 9.6 |
| 12-14 cm | 51.5 | 27.0 | 9.9 | 11.6 |
| 14-16 cm | 51.2 | 27.8 | 8.9 | 12.1 |
| 16-18 cm | 50.7 | 29.0 | 9.6 | 10.7 |
| 18-20 cm | 50.0 | 29.1 | 8.6 | 12.3 |
| 20-22 cm | 49.7 | 34.1 | 6.9 | 9.3 |
| NSO4-4 | | | | |
| 0-2 cm | 47.9 | 33.9 | 11.4 | 6.9 |
| 2-4 cm | 52.6 | 30.7 | 10.7 | 6.1 |
| 4-6 cm | 47.3 | 35.7 | 10.5 | 6.5 |
| 6-8 cm | 45.0 | 36.8 | 11.5 | 6.7 |
| 8-10 cm | 44.6 | 31.7 | 13.6 | 10.1 |
| 10-12 cm | 47.2 | 32.4 | 11.4 | 9.0 |
| NSO5-1 | | | | |
| 0-2 cm | 47.2 | 33.4 | 12.2 | 7.2 |
| 2-4 cm | 49.1 | 33.9 | 9.8 | 7.1 |
| 4-6 cm | 47.0 | 36.4 | 9.6 | 7.0 |
| 6-8 cm | 42.8 | 37.7 | 11.3 | 8.2 |
| 8-10 cm | 41.1 | 37.3 | 12.1 | 9.6 |
| 10-12 cm | 43.3 | 36.3 | 12.7 | 7.8 |
| 12-14 cm | 39.0 | 38.6 | 13.3 | 9.1 |
| 14-16 cm | 37.1 | 43.5 | 9.6 | 9.7 |
| 16-18 cm | 37.1 | 39.6 | 12.8 | 10.5 |

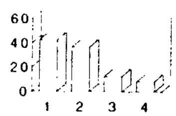
HILLS INLET HIST. Q/A/C/H


NSO1-2 Q/A/C/H

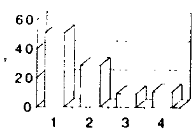

NS01-4 Q/A/C/H



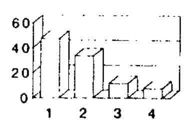

NS02-4 Q/A/C/H




NS03-4 Q/A/C/H




NS04-4 Q/A/C/H

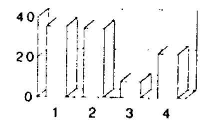



NS05-1 Q/A/C/H

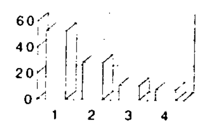

| ave. QTZ | ave. ARAGONIT | ave. CALCITE | ave. HMC | INITIAL WEIGHT | FINAL WT. | DENSITY wet g/cc | DENSITY dry g/cc | WATER CONT. % | VOID RATIO e | POROSITY n |
|---|---|---|---|---|---|---|---|---|---|---|
| | | .4977261 | 4.11343942 | 13.73 | 10.4 | 1.94 | 2.69 | 32.0192308 | 0.86131731 | 46.2746091 |
| | | | | 14.37 | 11.02 | 1.94 | 2.67 | 30.399274 | 0.81166062 | 44.8020236 |
| | | | | 13.17 | 10.14 | 1.96 | 2.72 | 29.8816568 | 0.81278107 | 44.8361405 |
| | | | | 10.92 | 8.42 | 1.99 | 2.69 | 29.6912114 | 0.79869359 | 44.4040938 |
| | | | | 13.14 | 10.1 | 1.97 | 2.69 | 30.0990099 | 0.80966337 | 44.7411039 |
| | | | | 13.44 | 10.35 | 1.94 | 2.67 | 29.8550725 | 0.79713043 | 44.3557362 |
| | | 62557515 | 39.9871025 | 10.8549 | 8.819 | 2.074 | 2.747 | 23.0853838 | 0.63415549 | 38.8063129 |
| | | | | 11.842 | 9.5311 | 2.08 | 2.77 | 24.2458898 | 0.67221729 | 40.1991593 |
| | | | | 8.54 | 6.75 | 2.13 | 2.8 | 26.5185185 | 0.74251852 | 42.6118007 |
| | | | | 9.02 | 7.09 | 2.09 | 2.76 | 27.2214386 | 0.75131171 | 42.899942 |
| | | | | 10.3878 | 8.18 | 2.009 | 2.742 | 26.99022 | 0.74007183 | 42.5311082 |
| | | | | 7.309 | 5.899 | 2.086 | 2.782 | 23.9023563 | 0.66496355 | 39.9386252 |
| | | | | 10.1034 | 8.0159 | 2.033 | 2.718 | 26.0419915 | 0.70782133 | 41.4458654 |
| | | | | 10.185 | 8.008 | 2.04 | 2.74 | 27.1853147 | 0.744787 | 42.686414 |
| | | | | 8.6601 | 6.9209 | 2.033 | 2.675 | 25.1296797 | 0.67221893 | 40.1992179 |
| | | 6.10443861 | 20.4661546 | 10.736 | 8.364 | 2.00 | 2.74 | 28.3596365 | 0.77563606 | 43.682153 |
| | | | | 9.151 | 7.2085 | 2.00 | 2.73 | 26.9473538 | 0.7343539 | 42.3403606 |
| | | | | 9.44 | 7.38 | 2.03 | 2.73 | 27.9132791 | 0.76203252 | 43.2473585 |
| | | | | 8.999 | 6.68 | 1.99 | 2.71 | 34.7155689 | 0.93975045 | 48.4469768 |
| | | | | 8.486 | 6.577 | 2.01 | 2.72 | 29.0253915 | 0.79007116 | 44.1362989 |
| | | | | 9.199 | 7.233 | 1.99 | 2.66 | 27.1809761 | 0.72355758 | 41.9804705 |
| | | | | 10.033 | 7.674 | 1.95 | 2.69 | 30.7401616 | 0.82609061 | 45.2382048 |
| | | | | 10.117 | 7.872 | 2.01 | 2.73 | 28.5258772 | 0.77913679 | 43.7929672 |
| | | 12.474952 | 8.32587323 | 12.8595 | 10.4664 | 2.091 | 2.757 | 22.8645953 | 0.63037689 | 38.6644889 |
| | | | | 12.123 | 9.9724 | 2.087 | 2.717 | 21.5655208 | 0.5859352 | 36.9457214 |
| | | | | 12.3396 | 10.1158 | 2.093 | 2.69 | 21.9834319 | 0.59135432 | 37.1604432 |
| | | | | 10.297 | 8.4452 | 2.108 | 2.641 | 21.9272486 | 0.57909864 | 36.6727336 |
| | | | | 9.8006 | 8.1572 | 2.151 | 2.795 | 20.1466189 | 0.563098 | 36.0244847 |
| | | | | 10.9914 | 9.003 | 2.09 | 2.762 | 22.0859713 | 0.61001453 | 37.8887592 |
| | | | | 11.2247 | 9.099 | 2.06 | 2.726 | 23.3619079 | 0.63684561 | 38.9068832 |
| | | | | 11.513 | 9.174 | 2.043 | 2.68 | 25.4959669 | 0.68439674 | 40.6315639 |
| | | 9.39110567 | 10.9052812 | 12.6193 | 10.0393 | 2.02 | 2.726 | 25.6990029 | 0.70055482 | 41.1956622 |
| | | | | 11.66 | 9.16 | 2.01 | 2.72 | 27.2925764 | 0.74235808 | 42.6065163 |
| | | | | 12.12 | 9.54 | 2.03 | 2.74 | 27.0440252 | 0.74100629 | 42.5619536 |
| | | | | 9.356 | 7.546 | 2.056 | 2.751 | 23.9862179 | 0.65986085 | 39.7539861 |
| | | | | 11.0971 | 8.8973 | 2.072 | 2.694 | 24.7243546 | 0.66607411 | 39.9786605 |
| | | | | 11.1045 | 8.7956 | 2.006 | 2.716 | 26.2506253 | 0.71296698 | 41.6217586 |
| | | | | 10.689 | 8.517 | 2.05 | 2.71 | 25.5019373 | 0.6911025 | 40.8669788 |
| | | 11.506138 | 7.53737859 | 13.3028 | 10.9626 | 2.124 | 2.77 | 21.3471257 | 0.59131538 | 37.1589057 |
| | | | | 9.92 | 8.07 | 2.14 | 2.73 | 22.9244114 | 0.62583643 | 38.4931977 |
| | | | | 10.84 | 8.75 | 2.12 | 2.75 | 23.8857143 | 0.65685714 | 39.6447663 |
| | | | | 13.53 | 10.98 | 2.1 | 2.73 | 23.2240437 | 0.63401639 | 38.8011036 |
| | | | | 13.08 | 10.54 | 2.06 | 2.73 | 24.0986717 | 0.65789374 | 39.6825033 |
| | | | | 13.6 | 10.99 | 2.08 | 2.73 | 23.7488626 | 0.64834395 | 39.33305 |
| | | | | 12.29 | 10 | 2.12 | 2.72 | 22.9 | 0.62288 | 38.3811496 |
| | | 11.4831129 | 8.47988476 | 10.498 | 8.684 | 2.1872 | 2.748 | 20.8889912 | 0.57402948 | 36.4687884 |
| | | | | 12.994 | 10.793 | 2.163 | 2.745 | 20.3928472 | 0.55978366 | 35.8885448 |
| | | | | 12.545 | 10.211 | 2.116 | 2.728 | 22.8577025 | 0.62355812 | 38.4068864 |
| | | | | 10.539 | 8.757 | 2.199 | 2.768 | 20.3494347 | 0.56327235 | 36.03162 |
| | | | | 11.553 | 9.673 | 2.195 | 2.753 | 19.4355422 | 0.53506048 | 34.8559868 |
| | | | | 12.5 | 10.378 | 2.162 | 2.74 | 20.4470996 | 0.56025053 | 35.9077289 |
| | | | | 11.558 | 9.611 | 2.177 | 2.78 | 20.2580377 | 0.5631734 | 36.0275725 |
| | | | | 13.105 | 10.832 | 2.123 | 2.742 | 20.9841211 | 0.5753846 | 36.5234369 |
| | | | | 11.62 | 9.649 | 2.179 | 2.754 | 20.4269873 | 0.56255923 | 36.0024259 |
| | | | | 9.92 | 8.32 | 2.22 | 2.77 | 19.2307692 | 0.53269231 | 34.7553325 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NSO6-3 | | | | | | | | | | | | | |
| 0-2 cm | 36.4 | 34.0 | 8.2 | 21.4 | 7.9863803 | 22.0363627 | 9.54 | 7.33 | 2 | 2.76 | 30.1500682 | 0.83214188 | 45.4190743 |
| 2-4 cm | 36.7 | 36.7 | 7.3 | 19.3 | | | 9.23 | 6.96 | 1.98 | 2.78 | 32.6149425 | 0.9066954 | 47.553238 |
| 4-6 cm | 40.3 | 31.4 | 8.2 | 20.2 | | | 11.39 | 8.87 | 2 | 2.73 | 28.410372 | 0.77560316 | 43.6811094 |
| 6-8 cm | 38.5 | 31.9 | 8.1 | 21.5 | | | 11.2784 | 9.0088 | 2.06 | 2.757 | 25.1931445 | 0.69457499 | 40.9881531 |
| 8-10 cm | 38.6 | 33.1 | 7.4 | 20.8 | | | 13 | 10.18 | 2.02 | 2.74 | 27.7013752 | 0.75901768 | 43.1500882 |
| 10-12 cm | 40.5 | 32.9 | 7.5 | 19.1 | | | 11.32 | 8.85 | 2.03 | 2.74 | 27.9096045 | 0.76472316 | 43.3338883 |
| 12-14 cm | 29.7 | 33.5 | 10.6 | 26.2 | | | 9.75 | 7.69 | 2.08 | 2.77 | 26.7880364 | 0.74202861 | 42.5956615 |
| 14-16 cm | 30.3 | 38.7 | 6.8 | 24.1 | | | 11.4011 | 9.0912 | 2.045 | 2.719 | 25.4080869 | 0.69084588 | 40.8580043 |
| 16-18 cm | 29.0 | 37.6 | 7.7 | 25.7 | | | 10.87 | 8.39 | 2.03 | 2.77 | 29.5589988 | 0.81878427 | 45.018218 |
| NSO7-3 | | | | | | | | | | | | | |
| 0-2 cm | 53.0 | 29.4 | 9.8 | 7.8 | 1.0666623 | 8.07722713 | 8.45 | 6.83 | 2.14 | 2.77 | 23.7188873 | 0.65701318 | 39.6504497 |
| 2-4 cm | 54.8 | 27.2 | 11.1 | 6.9 | | | 12 | 9.58 | 2.06 | 2.74 | 25.2609603 | 0.69215031 | 40.9035951 |
| 4-6 cm | 53.4 | 20.2 | 20.3 | 6.1 | | | 9.52 | 7.61 | 2.09 | 2.75 | 25.0985545 | 0.69021025 | 40.8357629 |
| 6-8 cm | 53.4 | 27.8 | 9.7 | 9.1 | | | 7.85 | 6.26 | 2.12 | 2.78 | 25.399361 | 0.70610224 | 41.3868654 |
| 8-10 cm | 53.3 | 33.8 | 6.8 | 6.1 | | | 10.66 | 8.58 | 2.1 | 2.73 | 24.2424242 | 0.66181818 | 39.8249453 |
| 10-12 cm | 52.3 | 27.4 | 10.3 | 10.0 | | | 8.79 | 7.03 | 2.08 | 2.73 | 25.0355619 | 0.68347084 | 40.5989117 |
| 12-14 cm | 53.7 | 26.6 | 12.4 | 7.4 | | | 8.76 | 6.99 | 2.07 | 2.78 | 25.3218884 | 0.7039485 | 41.3127802 |
| 14-16 cm | 51.7 | 30.5 | 9.6 | 8.2 | | | 8.1 | 6.38 | 2.09 | 2.8 | 26.9592476 | 0.75485893 | 43.0153626 |
| 16-18 cm | 51.5 | 29.2 | 10.3 | 9.1 | | | 7.44 | 6.05 | 2.16 | 2.81 | 22.9752066 | 0.64560331 | 39.2320132 |
| 18-19 cm | 47.8 | 31.8 | 10.3 | 10.1 | | | 8.36 | 6.81 | 2.16 | 2.79 | 22.7606461 | 0.63502203 | 38.8387444 |
| | | | | | | | 10.38 | 8.23 | 2.06 | 2.73 | 26.1239368 | 0.71318348 | 41.6291358 |

NS06-3 Q/A/C/H



NS07-3 Q/A/C/H



APPENDIX C.

Raw data from the Boca Raton study area.

| BR NED | | | | | | | |
|---|---|---|---|---|---|---|---|
| POROSITY,VOID RATIO,DENSITY | | | | | | | |
| SAMPLE | INITIAL WEIGHT | FINAL WT. | DENSITY wet g/cc | DENSITY dry g/cc | WATER CONT. % | VOID RATIO e | POROSITY n |
| NS-01-1 (0-2)cm | 10.8549 | 8.819 | 2.074 | 2.747 | 23.0854 | 0.634155 | 38.806313 |
| NS-01-1 (2-4)cm | 11.842 | 9.531 | 2.08 | 2.77 | 24.2459 | 0.672217 | 40.199159 |
| NS-01-1 (4-6)cm | 8.54 | 6.75 | 2.13 | 2.8 | 26.5185 | 0.742519 | 42.611801 |
| NS-01-1 (6-8)cm | 9.02 | 7.09 | 2.09 | 2.76 | 27.2214 | 0.751312 | 42.899942 |
| NS-01-1 (8-10)cm | 10.3878 | 8.18 | 2.009 | 2.742 | 26.9902 | 0.740072 | 42.531108 |
| NS-01-1 (10-12)cm | 7.309 | 5.899 | 2.086 | 2.782 | 23.9024 | 0.664964 | 39.938625 |
| NS-01-1 (12-14)cm | 10.1034 | 8.016 | 2.033 | 2.718 | 26.042 | 0.707821 | 41.445865 |
| NS-01-1 (14-16)cm | 10.185 | 8.008 | 2.04 | 2.74 | 27.1853 | 0.744787 | 42.686414 |
| NS-01-1 (16-18)cm | 8.6601 | 6.921 | 2.033 | 2.675 | 25.1297 | 0.672219 | 40.199218 |
| NS-01-3 (0-2)cm | 10.736 | 8.364 | 2.00 | 2.74 | 28.3596 | 0.775636 | 43.682153 |
| NS-01-3 (4-6)cm | 9.44 | 7.38 | 2.03 | 2.73 | 27.9133 | 0.762033 | 43.247358 |
| NS-01-3 (6-8)cm | 8.999 | 6.68 | 1.99 | 2.71 | 34.7156 | 0.93975 | 48.446977 |
| NS-01-3 (8-10)cm | 8.486 | 6.577 | 2.01 | 2.72 | 29.0254 | 0.790071 | 44.136299 |
| NS-01-3 | 9.199 | 7.233 | 1.99 | 2.66 | 27.181 | 0.723558 | 41.980471 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| (10-12)cm | | | | | | | |
| NS-01-3 (12-14)cm | 10.033 | 7.674 | 1.95 | 2.69 | 30.7402 | 0.826091 | 45.238205 |
| NS-01-3 (14-16)cm | 10.117 | 7.872 | 2.01 | 2.73 | 28.5259 | 0.779137 | 43.792967 |
| NS-2-1 (4-6)cm | 13.3161 | 10.91 | 2.096 | 2.771 | 22.0753 | 0.611708 | 37.954007 |
| NS-02-1 (6-8)cm | 11.1983 | 9.278 | 2.14 | 2.764 | 20.7039 | 0.572255 | 36.397066 |
| NS-02-1 (8-10)cm | 10.09 | 8.3 | 2.17 | 2.77 | 21.5663 | 0.597386 | 37.397706 |
| NS-02-1 (12-14)cm | 12.75 | 10.29 | 2.08 | 2.73 | 23.9067 | 0.652653 | 39.491232 |
| NS-02-1 (14-16)cm | 14.2742 | 11.66 | 2.081 | 2.726 | 22.4013 | 0.610661 | 37.913675 |
| NS-02-1 (16-18)cm | 14.15 | 11.25 | 2.03 | 2.71 | 25.7778 | 0.698578 | 41.127218 |
| NS-02-2 (0-2)cm | 12.8595 | 10.47 | 2.091 | 2.757 | 22.8646 | 0.630377 | 38.664489 |
| NS-02-2 (2-4)cm | 12.123 | 9.972 | 2.087 | 2.717 | 21.5655 | 0.585935 | 36.945721 |
| NS-02-2 (4-6)cm | 12.3396 | 10.12 | 2.093 | 2.69 | 21.9834 | 0.591354 | 37.160443 |
| NS-02-2 (6-8)cm | 10.297 | 8.445 | 2.108 | 2.641 | 21.9272 | 0.579099 | 36.672734 |
| NS-02-2 (10-12)cm | 10.9914 | 9.003 | 2.09 | 2.762 | 22.086 | 0.610015 | 37.888759 |
| NS-02-2 (12-14)cm | 11.2247 | 9.099 | 2.06 | 2.726 | 23.3619 | 0.636846 | 38.906883 |
| NS-02-2 (14-16)cm | 11.513 | 9.174 | 2.043 | 2.68 | 25.496 | 0.684397 | 40.631564 |

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NS-03-1 (2-4)cm | 11.6292 | 9.231 | 2.024 | 2.702 | 25.9826 | 0.702049 | 41.247296 |
| NS-03-1 (4-6)cm | 13.8908 | 11.1 | 2.027 | 2.613 | 25.1345 | 0.656763 | 39.641344 |
| NS-03-1 (6-8)cm | 11.453 | 9.263 | 2.071 | 2.695 | 23.6371 | 0.63702 | 38.913395 |
| NS-03-2 (2-4)cm | 11.66 | 9.16 | 2.01 | 2.72 | 27.2926 | 0.742358 | 42.606516 |
| NS-03-2 (4-6)cm | 12.12 | 9.54 | 2.03 | 2.74 | 27.044 | 0.741006 | 42.561954 |
| NS-04-1 (0-2)cm | 13.3028 | 10.96 | 2.124 | 2.77 | 21.3471 | 0.591315 | 37.158906 |
| NS-04-1 (2-4)cm | 9.92 | 8.07 | 2.14 | 2.73 | 22.9244 | 0.625836 | 38.493198 |
| NS-04-1 (4-6)cm | 10.84 | 8.75 | 2.12 | 2.75 | 23.8857 | 0.656857 | 39.644766 |
| NS-04-1 (6-8)cm | 13.53 | 10.98 | 2.1 | 2.73 | 23.224 | 0.634016 | 38.801104 |
| NS-04-1 (8-10)cm | 13.08 | 10.54 | 2.06 | 2.73 | 24.0987 | 0.657894 | 39.682503 |
| NS-04-1 (10-12)cm | 13.6 | 10.99 | 2.08 | 2.73 | 23.7489 | 0.648344 | 39.33305 |
| NS-04-1 (12-14)cm | 12.29 | 10 | 2.12 | 2.72 | 22.9 | 0.62288 | 38.38115 |
| NS-04-2 (2-4)cm | 9.8972 | 8.111 | 2.096 | 2.759 | 22.025 | 0.607668 | 37.798122 |
| NS-04-2 (4-6)cm | 9.347 | 7.7 | 2.141 | 2.831 | 21.3896 | 0.60554 | 37.715654 |
| NS-04-2 (6-8)cm | 10.1316 | 8.374 | 2.138 | 2.813 | 20.9844 | 0.590292 | 37.118479 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NS-04-2 (8-10)cm | 10.1822 | 8.327 | 2.079 | 2.735 | 22.2735 | 0.609179 | 37.856513 |
| NS-04-2 (12-14)cm | 12.9672 | 10.57 | 2.075 | 2.755 | 22.6607 | 0.624303 | 38.435119 |
| NS-05-2 (2-4)cm | 10.3175 | 8.545 | 2.149 | 2.806 | 20.7445 | 0.582092 | 36.79254 |
| NS-05-2 (4-6)cm | 13.5732 | 11.07 | 2.092 | 2.736 | 22.5981 | 0.618283 | 38.206117 |
| NS-05-2 (6-8)cm | 11.1932 | 9.166 | 2.103 | 2.752 | 22.1218 | 0.608793 | 37.841608 |
| NS-05-2 (8-10)cm | 9.6686 | 7.947 | 2.119 | 2.776 | 21.662 | 0.601337 | 37.552177 |
| NS-05-2 (12-14)cm | 14.1214 | 11.66 | 2.116 | 2.746 | 21.142 | 0.580559 | 36.731241 |
| NS-05-2 (14-18)cm | 13.6734 | 11.15 | 2.095 | 2.744 | 22.5841 | 0.619708 | 38.260482 |
| NS-5-3 (0-2)cm | 10.498 | 8.684 | 2.1872 | 2.748 | 20.889 | 0.574029 | 36.468788 |
| NS-5-3 (2-4)cm | 12.994 | 10.79 | 2.163 | 2.745 | 20.3928 | 0.559784 | 35.888545 |
| NS-5-3 (4-6)cm | 12.545 | 10.21 | 2.116 | 2.728 | 22.8577 | 0.623558 | 38.406886 |
| NS-5-3 (6-8)cm | 10.539 | 8.757 | 2.199 | 2.768 | 20.3494 | 0.563272 | 36.03162 |
| NS-5-3 (8-10)cm | 11.553 | 9.673 | 2.195 | 2.753 | 19.4355 | 0.53506 | 34.855987 |
| NS-5-3 (10-12)cm | 12.5 | 10.38 | 2.162 | 2.74 | 20.4471 | 0.560251 | 35.907729 |
| NS-5-3 (12-14)cm | 11.558 | 9.611 | 2.177 | 2.78 | 20.258 | 0.563173 | 36.027573 |
| NS-5-3 | 13.105 | 10.83 | 2.123 | 2.742 | 20.9841 | 0.575385 | 36.523437 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| (14-16)cm | | | | | | | |
| NS-5-3 (16-18)cm | 11.62 | 9.649 | 2.179 | 2.754 | 20.427 | 0.562559 | 36.002426 |
| NS-5-3 (18-20)cm | 9.92 | 8.32 | 2.22 | 2.77 | 19.2308 | 0.532692 | 34.755332 |
| NS-06-1 (2-4)cm | 10.51 | 8.27 | 2.05 | 2.79 | 27.0859 | 0.755695 | 43.042508 |
| NS-06-1 (4-6)cm | 8.37 | 6.35 | 2.02 | 2.78 | 31.811 | 0.884346 | 46.931203 |
| NS-06-1 (6-8)cm | 7.67 | 5.71 | 2 | 2.83 | 34.3257 | 0.971419 | 49.275105 |
| NS-06-1 (8-10)cm | 8.19 | 6.12 | 1.96 | 2.8 | 33.8235 | 0.947059 | 48.640483 |
| NS-06-1 (12-14)cm | 9.55 | 6.77 | 1.89 | 2.8 | 41.0635 | 1.149778 | 53.483578 |
| NS-06-1 (14-16)cm | 10.46 | 7.5 | 1.88 | 2.79 | 39.4667 | 1.10112 | 52.406336 |
| NS-06-2 (0-2)cm | 9.54 | 7.33 | 2 | 2.76 | 30.1501 | 0.832142 | 45.419074 |
| NS-06-2 (2-4)cm | 9.23 | 6.96 | 1.98 | 2.78 | 32.6149 | 0.906695 | 47.553238 |
| NS-06-2 (4-6)cm | 11.39 | 8.87 | 2 | 2.73 | 28.4104 | 0.775603 | 43.681109 |
| NS-06-2 (8-10)cm | 13 | 10.18 | 2.02 | 2.74 | 27.7014 | 0.759018 | 43.150088 |
| NS-06-2 (10-12)cm | 11.32 | 8.85 | 2.03 | 2.74 | 27.9096 | 0.764723 | 43.333888 |
| NS-06-2 (12-14)cm | 9.75 | 7.69 | 2.08 | 2.77 | 26.788 | 0.742029 | 42.595661 |
| NS-06-2 (16-18)cm | 10.87 | 8.39 | 2.03 | 2.77 | 29.559 | 0.818784 | 45.018218 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NS-07-1 (2-4)cm | 8.8393 | 7.134 | 2.07 | 2.729 | 23.9091 | 0.652478 | 39.484823 |
| NS-07-1 (4-6)cm | 13.9454 | 11.29 | 2.071 | 2.724 | 23.4959 | 0.640027 | 39.025407 |
| NS-07-1 (6-8)cm | 11.7106 | 9.374 | 2.062 | 2.717 | 24.9277 | 0.677286 | 40.379886 |
| NS-07-1 (8-10)cm | 10.4712 | 8.405 | 2.071 | 2.767 | 24.5815 | 0.68017 | 40.482221 |
| NS-07-1 (12-14)cm | 12.1879 | 9.667 | 2.019 | 2.716 | 26.0813 | 0.708368 | 41.464596 |
| NS-07-1 (14-16)cm | 11.9891 | 9.659 | 2.08 | 2.761 | 24.13 | 0.66623 | 39.984291 |
| NS-07-1 (16-18)cm | 9.37 | 7.3 | 2.13 | 2.77 | 28.3562 | 0.785466 | 43.992205 |
| NS-07-1 (18-20)cm | 9.9052 | 7.996 | 2.066 | 2.833 | 23.8831 | 0.676609 | 40.35581 |
| NS-07-2 (0-2)cm | 8.45 | 6.83 | 2.14 | 2.77 | 23.7189 | 0.657013 | 39.65045 |
| NS-07-2 (2-4)cm | 12 | 9.58 | 2.06 | 2.74 | 25.261 | 0.69215 | 40.903595 |
| NS-07-2 (4-6)cm | 9.52 | 7.61 | 2.09 | 2.75 | 25.0986 | 0.69021 | 40.835763 |
| NS-07-2 (6-8)cm | 7.85 | 6.26 | 2.12 | 2.78 | 25.3994 | 0.706102 | 41.386865 |
| NS-07-2 (8-10)cm | 10.66 | 8.58 | 2.1 | 2.73 | 24.2424 | 0.661818 | 39.824945 |
| NS-07-2 (10-12)cm | 8.79 | 7.03 | 2.08 | 2.73 | 25.0356 | 0.683471 | 40.598912 |
| NS-07-2 (12-14)cm | 8.76 | 6.99 | 2.07 | 2.78 | 25.3219 | 0.703948 | 41.31278 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NS-07-2 (14-16)cm | 8.1 | 6.38 | 2.09 | 2.8 | 26.9592 | 0.754859 | 43.015363 |
| NS-07-2 (16-18)cm | 7.44 | 6.05 | 2.16 | 2.81 | 22.9752 | 0.645603 | 39.232013 |
| NS-07-2 (18-20)cm | 8.36 | 6.81 | 2.16 | 2.79 | 22.7606 | 0.635022 | 38.838744 |
| NS-07-2 (20-22)cm | 10.38 | 8.23 | 2.06 | 2.73 | 26.1239 | 0.713183 | 41.629136 |
| angie 1 (14-16)cm | 13.35 | 11.16 | 2.21 | 2.78 | 19.6237 | 0.545538 | 35.297596 |
| angie 1 (16-18)cm | 13.91 | 11.77 | 2.25 | 2.79 | 18.1818 | 0.507273 | 33.655006 |
| angige 1 (18-20)cm | 13.86 | 11.41 | 2.16 | 2.74 | 21.4724 | 0.588344 | 37.041329 |
| angie 1 (20-22)cm | 13.14 | 10.71 | 2.13 | 2.76 | 22.6891 | 0.626218 | 38.507648 |
| angie 7 (0-2)cm | 13.73 | 10.4 | 1.94 | 2.69 | 32.0192 | 0.861317 | 46.274609 |
| angie 7 (2-4)cm | 14.37 | 11.02 | 1.94 | 2.67 | 30.3993 | 0.811661 | 44.802024 |
| angie 7 (4-6)cm | 13.17 | 10.14 | 1.96 | 2.72 | 29.8817 | 0.812781 | 44.83614 |
| angie 7 (6-8)cm | 10.92 | 8.42 | 1.99 | 2.69 | 29.6912 | 0.798694 | 44.404094 |
| angie 7 (8-10)cm | 13.14 | 10.1 | 1.97 | 2.69 | 30.099 | 0.809663 | 44.741104 |
| angie 7 (10-12)cm | 13.44 | 10.35 | 1.94 | 2.67 | 29.8551 | 0.79713 | 44.355736 |
| angie 7 (12-14)cm | 12.99 | 9.93 | 1.94 | 2.68 | 30.8157 | 0.825861 | 45.231319 |
| angie 7 | 12.05 | 9.25 | 1.96 | 2.73 | 30.2703 | 0.826378 | 45.246833 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| (14-16)cm | | | | | | | |
| | | | | | | | |
| angie 7 | 12.59 | 9.87 | 1.99 | 2.7 | 27.5583 | 0.744073 | 42.662949 |
| (16-18)cm | | | | | | | |
| | | | | | | | |
| angie 7 | 11.96 | 9.53 | 2.05 | 2.71 | 25.4984 | 0.691007 | 40.863651 |
| (18-20)cm | | | | | | | |
| | | | | | | | |
| angie 7 | 13.05 | 10.28 | 2 | 2.69 | 26.9455 | 0.724835 | 42.023427 |
| (20-22)cm | | | | | | | |

Cruise: Suncoaster Station: NS01-1 date: 9 Nov 94
lat: 26-19.57 N long: 80-03.62 W depth: 22 m

calc for: 27.0 deg C 36.0 o/oo 22.0 m 400 kHz
ref core: 25.5 deg C 79.88 delta-t 393.8 H 0.001 V/D
smp core: 36.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1536.0 | 0.998 | 21.9 | 0.055 |
| 0.0 | 1542.2 | 1.002 | 146.6 | 0.367 |
| 1.0 | 1544.9 | 1.004 | 448.5 | 1.121 |
| 2.0 | 1568.7 | 1.019 | 613.2 | 1.533 |
| 3.0 | 1549.6 | 1.007 | 589.9 | 1.475 |
| 4.0 | 1642.1 | 1.067 | 589.9 | 1.475 |
| 5.0 | 1637.2 | 1.063 | 558.2 | 1.396 |
| 6.0 | 1646.0 | 1.069 | 491.2 | 1.228 |
| 7.0 | 1659.9 | 1.078 | 484.2 | 1.211 |
| 8.0 | 1658.5 | 1.077 | 506.3 | 1.266 |
| 9.0 | 1655.9 | 1.076 | 552.5 | 1.381 |
| 10.0 | 1652.3 | 1.073 | 597.2 | 1.493 |
| 11.0 | 1672.2 | 1.086 | 482.6 | 1.207 |
| 12.0 | 1681.8 | 1.092 | 413.6 | 1.034 |
| 13.0 | 1683.7 | 1.094 | 415.7 | 1.039 |
| 14.0 | 1689.7 | 1.098 | 409.7 | 1.024 |
| 15.0 | 1683.7 | 1.094 | 343.4 | 0.858 |
| 16.0 | 1696.8 | 1.102 | 343.4 | 0.858 |
| 17.0 | 1706.2 | 1.108 | 325.6 | 0.814 |

Cruise: Suncoaster    Station: NS01-2    date: 9 Nov 94
lat: 26 19.57 N    long: 80 03.62 W    depth: 22 m

calc for: 27.0 deg C   36.0 o/oo   22.0 m   400 kHz
ref core: 25.5 deg C   79.88 delta-t   393.8 H   1.000 V/D
smp core: 36.0 o/oo   6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1536.8 | 0.998 | 981.4 | 2.453 |
| 0.0 | 1540.6 | 1.001 | 1043.1 | 2.608 |
| 1.0 | 1553.6 | 1.009 | 1381.4 | 3.453 |
| 2.0 | 1577.6 | 1.025 | 1506.6 | 3.767 |
| 3.0 | 1576.0 | 1.024 | 1477.2 | 3.693 |
| 4.0 | 1536.4 | 0.998 | 1584.2 | 3.961 |
| 11.0 | 1628.1 | 1.058 | 1611.2 | 4.028 |
| 13.0 | 1677.2 | 1.089 | 1523.2 | 3.808 |

Cruise: Suncoaster    Station: NS01-3    date: 9 Nov 94
lat: 26 19.57 N    long: 80 03.62 W    depth: 22 m

calc for: 27.0 deg C    36.0 o/oo    22.0 m    400 kHz
ref core: 25.0 deg C    79.88 delta-t    387.5 H    0.001 V/D
smp core: 36.0 o/oo    6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1538.3 | 0.999 | -2.3 | -0.006 |
| 0.0 | 1544.5 | 1.003 | 81.4 | 0.204 |
| 1.0 | 1675.2 | 1.088 | 225.2 | 0.563 |
| 2.0 | 1689.5 | 1.097 | 204.5 | 0.511 |
| 3.0 | 1703.2 | 1.106 | 255.6 | 0.639 |
| 4.0 | 1707.5 | 1.109 | 300.7 | 0.752 |
| 5.0 | 1714.2 | 1.113 | 319.0 | 0.797 |
| 6.0 | 1712.2 | 1.112 | 271.7 | 0.679 |
| 7.0 | 1711.3 | 1.112 | 241.1 | 0.603 |
| 8.0 | 1711.8 | 1.112 | 222.4 | 0.556 |
| 9.0 | 1710.3 | 1.111 | 209.4 | 0.523 |
| 10.0 | 1710.3 | 1.111 | 209.4 | 0.523 |
| 11.0 | 1703.7 | 1.107 | 204.5 | 0.511 |
| 12.0 | 1703.2 | 1.106 | 199.7 | 0.499 |
| 13.0 | 1703.7 | 1.107 | 204.5 | 0.511 |
| 14.0 | 1704.1 | 1.107 | 199.7 | 0.499 |
| 15.0 | 1702.2 | 1.106 | 197.4 | 0.493 |
| 16.0 | 1697.5 | 1.103 | 202.1 | 0.505 |
| 17.0 | 1691.4 | 1.099 | 252.8 | 0.632 |

Cruise: Suncoaster Station: NS01-4 date: 9 Nov 94
lat: 26 19.57 N long: 80 03.62 W depth: 22 m

calc for: 27.0 deg C 36.0 o/oo 22.0 m 400 kHz
ref core: 25.0 deg C 79.89 delta-t 393.8 H 0.001 V/D
smp core: 36.0 o/oo 6.0 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1538.5 | 0.999 | 0.0 | 0.000 |
| 0.0 | 1543.2 | 1.002 | 73.1 | 0.183 |
| 1.0 | 1671.1 | 1.085 | 317.6 | 0.794 |
| 2.0 | 1693.2 | 1.100 | 237.3 | 0.593 |
| 3.0 | 1698.0 | 1.103 | 209.8 | 0.525 |
| 4.0 | 1701.4 | 1.105 | 220.0 | 0.550 |
| 5.0 | 1699.9 | 1.104 | 245.8 | 0.614 |
| 6.0 | 1701.3 | 1.105 | 239.7 | 0.599 |
| 7.0 | 1696.5 | 1.102 | 228.1 | 0.570 |
| 8.0 | 1694.6 | 1.101 | 228.1 | 0.570 |
| 9.0 | 1686.1 | 1.095 | 242.7 | 0.607 |
| 10.0 | 1692.2 | 1.099 | 263.1 | 0.658 |
| 11.0 | 1705.7 | 1.108 | 240.9 | 0.602 |
| 12.0 | 1707.1 | 1.109 | 214.8 | 0.537 |
| 13.0 | 1711.5 | 1.112 | 217.4 | 0.543 |
| 14.0 | 1450.9 | 0.942 | 1862.0 | 4.655 |
| 15.0 | 1703.2 | 1.106 | 411.7 | 1.029 |
| 16.0 | 1694.6 | 1.101 | 672.6 | 1.682 |
| 17.0 | 1694.6 | 1.101 | 588.5 | 1.471 |
| 18.0 | 1691.8 | 1.099 | 598.8 | 1.497 |

Cruise: Suncoaster    Station: NS02-1    date: 10 Nov 94
lat: 26-19.63 N    long: 80-03.82 W    depth: 17.5 m

calc for: 27.0 deg C    36.0 o/oo    17.5 m    400 kHz
ref core: 24.5 deg C    79.93 delta-t    381.2 H    0.001 V/D
smp core: 36.0 o/oo    6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1536.7 | 0.998 | -4.6 | -0.011 |
| 0.0 | 1646.2 | 1.069 | 125.6 | 0.314 |
| 1.0 | 1752.2 | 1.138 | 145.2 | 0.363 |
| 2.0 | 1756.2 | 1.141 | 145.2 | 0.363 |
| 3.0 | 1763.3 | 1.145 | 186.2 | 0.465 |
| 4.0 | 1771.5 | 1.151 | 125.6 | 0.314 |
| 5.0 | 1764.8 | 1.146 | 120.1 | 0.300 |
| 6.0 | 1768.4 | 1.149 | 134.3 | 0.336 |
| 7.0 | 1774.5 | 1.153 | 126.6 | 0.316 |
| 8.0 | 1775.6 | 1.153 | 129.9 | 0.325 |
| 9.0 | 1777.1 | 1.154 | 135.8 | 0.340 |
| 10.0 | 1777.6 | 1.155 | 138.9 | 0.347 |
| 11.0 | 1771.5 | 1.151 | 137.3 | 0.343 |
| 12.0 | 1772.0 | 1.151 | 146.8 | 0.367 |
| 13.0 | 1772.5 | 1.151 | 143.6 | 0.359 |
| 14.0 | 1770.4 | 1.150 | 145.2 | 0.363 |
| 15.0 | 1765.8 | 1.147 | 143.6 | 0.359 |
| 16.0 | 1749.7 | 1.137 | 129.9 | 0.325 |
| 17.0 | 1741.2 | 1.131 | 127.0 | 0.318 |
| 18.0 | 1738.3 | 1.129 | 121.4 | 0.304 |
| 19.0 | 1739.2 | 1.130 | 160.6 | 0.401 |
| 20.0 | 1735.8 | 1.128 | 184.0 | 0.460 |
| 21.0 | 1747.2 | 1.135 | 204.6 | 0.511 |

Cruise: Suncoaster Station: NS02-2 date: 10 Nov 94
lat: 26 19.63 N long: 80 03.82 W depth: 17.5 m

calc for: 27.0 deg C 36.0 o/oo 17.5 m 400 kHz
ref core: 24.5 deg C 79.91 delta-t 387.5 H 0.001 V/D
smp core: 36.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1535.9 | 0.998 | 1.2 | 0.003 |
| 0.0 | 1756.7 | 1.141 | 289.8 | 0.724 |
| 1.0 | 1735.3 | 1.127 | 141.2 | 0.353 |
| 2.0 | 1745.2 | 1.134 | 139.7 | 0.349 |
| 3.0 | 1758.2 | 1.142 | 147.5 | 0.369 |
| 4.0 | 1751.2 | 1.138 | 202.1 | 0.505 |
| 5.0 | 1762.3 | 1.145 | 199.7 | 0.499 |
| 6.0 | 1760.3 | 1.143 | 166.5 | 0.416 |
| 7.0 | 1761.8 | 1.144 | 176.1 | 0.440 |
| 8.0 | 1761.3 | 1.144 | 184.2 | 0.461 |
| 9.0 | 1765.8 | 1.147 | 182.2 | 0.455 |
| 10.0 | 1765.3 | 1.147 | 152.5 | 0.381 |
| 11.0 | 1763.3 | 1.145 | 138.1 | 0.345 |
| 12.0 | 1759.8 | 1.143 | 164.7 | 0.412 |
| 13.0 | 1757.7 | 1.142 | 168.4 | 0.421 |
| 14.0 | 1763.3 | 1.145 | 182.2 | 0.455 |
| 15.0 | 1752.7 | 1.139 | 209.4 | 0.523 |
| 16.0 | 1757.7 | 1.142 | 180.1 | 0.450 |
| 17.0 | 1762.3 | 1.145 | 174.1 | 0.435 |
| 18.0 | 1753.7 | 1.139 | 159.3 | 0.398 |
| 19.0 | 1756.2 | 1.141 | 157.6 | 0.394 |

Cruise: Suncoaster Station: NS02-3 date: 10 Nov 94
lat: 26 19.63 N long: 80 03.82 W depth: 17.5 m

calc for: 27.0 deg C 36.0 o/oo 17.5 m 400 kHz
ref core: 25.0 deg C 79.91 delta-t 368.8 H 0.001 V/D
smp core: 36.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1535.3 | 0.997 | -11.6 | -0.029 |
| 0.0 | 1760.2 | 1.143 | 192.7 | 0.482 |
| 1.0 | 1745.2 | 1.134 | 125.1 | 0.313 |
| 2.0 | 1755.7 | 1.140 | 116.7 | 0.292 |
| 3.0 | 1754.2 | 1.139 | 93.9 | 0.235 |
| 4.0 | 1752.2 | 1.138 | 96.6 | 0.241 |
| 5.0 | 1755.7 | 1.140 | 122.3 | 0.306 |
| 6.0 | 1750.7 | 1.137 | 140.5 | 0.351 |
| 7.0 | 1748.2 | 1.136 | 167.1 | 0.418 |
| 8.0 | 1738.7 | 1.129 | 188.1 | 0.470 |
| 9.0 | 1730.8 | 1.124 | 229.8 | 0.574 |
| 10.0 | 1720.1 | 1.117 | 402.2 | 1.005 |
| 11.0 | 1730.4 | 1.124 | 493.0 | 1.233 |
| 12.0 | 1719.7 | 1.117 | 417.2 | 1.043 |
| 13.0 | 1698.2 | 1.103 | 444.6 | 1.111 |
| 14.0 | 1695.8 | 1.102 | 496.9 | 1.242 |

Cruise: Suncoaster  Station: NS03-1  date: 10 Nov 94
lat: 26-19.72 N  long: 80-03.03 W  depth: 20 m

calc for: 27.6 deg C  36.0 o/oo  20.0 m  400 kHz
ref core: 24.5 deg C  79.91 delta-t  393.8 H  0.001 V/D
smp core: 36.0 o/oo  6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1537.2 | 0.998 | 0.0 | 0.000 |
| 0.0 | 1643.2 | 1.066 | 186.5 | 0.466 |
| 1.0 | 1746.7 | 1.134 | 308.9 | 0.772 |
| 2.0 | 1739.8 | 1.129 | 148.2 | 0.371 |
| 3.0 | 1736.3 | 1.127 | 143.5 | 0.359 |
| 4.0 | 1732.4 | 1.124 | 141.9 | 0.355 |
| 5.0 | 1735.8 | 1.127 | 141.9 | 0.355 |
| 6.0 | 1737.3 | 1.128 | 140.4 | 0.351 |
| 7.0 | 1736.3 | 1.127 | 143.5 | 0.359 |
| 8.0 | 1743.8 | 1.132 | 141.9 | 0.355 |
| 9.0 | 1746.2 | 1.133 | 145.0 | 0.363 |
| 10.0 | 1746.2 | 1.133 | 153.1 | 0.383 |
| 11.0 | 1740.3 | 1.129 | 170.7 | 0.427 |
| 12.0 | 1732.9 | 1.125 | 184.4 | 0.461 |
| 13.0 | 1726.1 | 1.120 | 219.3 | 0.548 |
| 14.0 | 1717.8 | 1.115 | 233.2 | 0.583 |

Cruise: Suncoaster    Station: NS03-2    date: 10 Nov 94
lat: 26 19.72 N    long: 80 03.03 W    depth: 20 m

calc for: 27.6 deg C    36.0 o/oo    20.0 m    400 kHz
ref core: 24.5 deg C    79.91 delta-t    400.0 H    0.001 V/D
smp core: 36.0 o/oo    6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1538.0 | 0.998 | 2.2 | 0.006 |
| 0.0 | 1758.3 | 1.141 | 398.4 | 0.996 |
| 1.0 | 1723.6 | 1.119 | 172.9 | 0.432 |
| 2.0 | 1727.0 | 1.121 | 184.6 | 0.462 |
| 3.0 | 1727.5 | 1.121 | 197.4 | 0.493 |
| 4.0 | 1716.9 | 1.114 | 193.0 | 0.483 |
| 5.0 | 1729.5 | 1.122 | 199.6 | 0.499 |
| 6.0 | 1735.4 | 1.126 | 186.7 | 0.467 |
| 7.0 | 1737.3 | 1.128 | 171.1 | 0.428 |
| 8.0 | 1737.8 | 1.128 | 163.9 | 0.410 |
| 9.0 | 1734.9 | 1.126 | 162.1 | 0.405 |
| 10.0 | 1726.6 | 1.121 | 158.7 | 0.397 |
| 11.0 | 1724.6 | 1.119 | 171.1 | 0.428 |
| 12.0 | 1735.4 | 1.126 | 171.1 | 0.428 |
| 13.0 | 1743.3 | 1.131 | 150.4 | 0.376 |
| 14.0 | 1741.3 | 1.130 | 162.1 | 0.405 |

Cruise: Suncoaster Station: NS03-3 date: 10 Nov 94
lat: 26 19.72 N long: 80 03.03 W depth: 20 m

calc for: 27.6 deg C 36.0 o/oo 20.0 m 400 kHz
ref core: 24.5 deg C 79.93 delta-t 400.0 H 0.001 V/D
smp core: 36.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1540.7 | 1.000 | 0.0 | 0.000 |
| 0.0 | 1549.7 | 1.006 | 110.3 | 0.276 |
| 1.0 | 1720.7 | 1.117 | 252.0 | 0.630 |
| 2.0 | 1726.1 | 1.120 | 162.1 | 0.405 |
| 3.0 | 1732.9 | 1.125 | 162.1 | 0.405 |
| 4.0 | 1733.4 | 1.125 | 172.9 | 0.432 |
| 5.0 | 1724.1 | 1.119 | 178.7 | 0.447 |
| 6.0 | 1726.6 | 1.121 | 195.2 | 0.488 |
| 7.0 | 1730.5 | 1.123 | 197.4 | 0.493 |
| 8.0 | 1727.0 | 1.121 | 195.2 | 0.488 |
| 9.0 | 1727.0 | 1.121 | 201.9 | 0.505 |
| 10.0 | 1727.0 | 1.121 | 213.9 | 0.535 |
| 11.0 | 1722.7 | 1.118 | 241.4 | 0.603 |
| 12.0 | 1714.5 | 1.113 | 268.6 | 0.672 |
| 13.0 | 1704.5 | 1.106 | 282.5 | 0.706 |
| 14.0 | 1700.7 | 1.104 | 253.4 | 0.633 |
| 15.0 | 1697.4 | 1.102 | 227.0 | 0.567 |
| 16.0 | 1698.8 | 1.103 | 229.7 | 0.574 |
| 17.0 | 1700.7 | 1.104 | 257.4 | 0.643 |
| 18.0 | 1701.1 | 1.104 | 271.6 | 0.679 |
| 19.0 | 1704.0 | 1.106 | 240.7 | 0.602 |
| 20.0 | 1700.2 | 1.103 | 273.1 | 0.683 |
| 21.0 | 1692.2 | 1.098 | 290.8 | 0.727 |

Cruise: Suncoaster Station: NS03-4 date: 10 Nov 94
lat: 26 19.72 N long: 80 03.03 W depth: 17 m

calc for: 27.6 deg C 36.0 o/oo 17.0 m 400 kHz
ref core: 24.0 deg C 79.95 delta-t 393.8 H 0.001 V/D
smp core: 36.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1539.5 | 0.999 | 0.0 | 0.000 |
| 0.0 | 1550.4 | 1.006 | 153.1 | 0.383 |
| 1.0 | 1550.4 | 1.006 | 153.1 | 0.383 |
| 1.0 | 1708.5 | 1.109 | 214.2 | 0.535 |
| 2.0 | 1727.2 | 1.121 | 151.4 | 0.379 |
| 3.0 | 1726.7 | 1.121 | 156.4 | 0.391 |
| 4.0 | 1731.1 | 1.124 | 178.4 | 0.446 |
| 5.0 | 1735.1 | 1.126 | 206.7 | 0.517 |
| 6.0 | 1724.3 | 1.119 | 190.8 | 0.477 |
| 7.0 | 1732.6 | 1.125 | 182.4 | 0.456 |
| 8.0 | 1735.1 | 1.126 | 186.5 | 0.466 |
| 9.0 | 1737.5 | 1.128 | 188.6 | 0.472 |
| 10.0 | 1735.1 | 1.126 | 197.4 | 0.493 |
| 11.0 | 1736.0 | 1.127 | 222.0 | 0.555 |
| 12.0 | 1740.0 | 1.129 | 222.0 | 0.555 |
| 13.0 | 1729.7 | 1.123 | 216.7 | 0.542 |
| 14.0 | 1730.2 | 1.123 | 224.7 | 0.562 |
| 15.0 | 1733.6 | 1.125 | 230.3 | 0.576 |
| 16.0 | 1734.1 | 1.125 | 227.5 | 0.569 |
| 17.0 | 1734.1 | 1.125 | 211.7 | 0.529 |
| 18.0 | 1733.6 | 1.125 | 204.3 | 0.511 |
| 19.0 | 1733.6 | 1.125 | 239.1 | 0.598 |
| 20.0 | 1726.7 | 1.121 | 258.6 | 0.646 |
| 21.0 | 1727.2 | 1.121 | 352.5 | 0.881 |

Cruise: Suncoaster Station: NS04-1 date: 10 Nov 94
lat: 26-19.73 N long: 80-03.86 W depth: 17 m

calc for: 27.0 deg C 36.0 o/oo 17.0 m 400 kHz
ref core: 23.5 deg C 79.97 delta-t 400.0 H 0.001 V/D
smp core: 36.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1538.5 | 0.999 | 2.2 | 0.006 |
| 0.0 | 1545.9 | 1.004 | 107.9 | 0.270 |
| 1.0 | 1703.0 | 1.106 | 284.1 | 0.710 |
| 2.0 | 1759.2 | 1.143 | 113.9 | 0.285 |
| 3.0 | 1757.2 | 1.141 | 110.3 | 0.276 |
| 4.0 | 1757.7 | 1.142 | 122.9 | 0.307 |
| 5.0 | 1762.7 | 1.145 | 135.3 | 0.338 |
| 6.0 | 1764.2 | 1.146 | 158.7 | 0.397 |
| 7.0 | 1760.2 | 1.143 | 136.7 | 0.342 |
| 8.0 | 1764.2 | 1.146 | 148.8 | 0.372 |
| 9.0 | 1763.7 | 1.146 | 135.3 | 0.338 |
| 10.0 | 1760.7 | 1.144 | 153.7 | 0.384 |
| 11.0 | 1758.7 | 1.142 | 163.9 | 0.410 |
| 12.0 | 1757.2 | 1.141 | 180.6 | 0.452 |
| 13.0 | 1763.7 | 1.146 | 190.9 | 0.477 |
| 14.0 | 1752.1 | 1.138 | 232.5 | 0.581 |

Cruise: Suncoaster    Station: NS04-2    date: 10 Nov 94
lat: 26 19.73 N    long: 80 03.86 W    depth: 17 m

calc for: 27.0 deg C    36.0 o/oo    17.0 m    400 kHz
ref core: 24.0 deg C    79.96 delta-t    387.5 H    0.001 V/D
smp core: 36.0 o/oo    6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1538.2 | 0.999 | 0.0 | 0.000 |
| 0.0 | 1542.4 | 1.002 | 36.4 | 0.091 |
| 1.0 | 1753.4 | 1.139 | 127.9 | 0.320 |
| 2.0 | 1754.9 | 1.140 | 114.5 | 0.286 |
| 3.0 | 1755.4 | 1.140 | 113.2 | 0.283 |
| 4.0 | 1760.0 | 1.143 | 135.1 | 0.338 |
| 5.0 | 1765.0 | 1.147 | 138.1 | 0.345 |
| 6.0 | 1763.0 | 1.145 | 144.3 | 0.361 |
| 7.0 | 1767.1 | 1.148 | 161.1 | 0.403 |
| 8.0 | 1764.5 | 1.146 | 170.3 | 0.426 |
| 9.0 | 1760.5 | 1.144 | 170.3 | 0.426 |
| 10.0 | 1759.0 | 1.143 | 168.4 | 0.421 |
| 11.0 | 1763.0 | 1.145 | 182.2 | 0.455 |
| 12.0 | 1757.9 | 1.142 | 162.9 | 0.407 |
| 13.0 | 1750.9 | 1.137 | 164.7 | 0.412 |
| 14.0 | 1765.0 | 1.147 | 182.2 | 0.455 |
| 15.0 | 1764.0 | 1.146 | 162.9 | 0.407 |
| 16.0 | 1765.0 | 1.147 | 159.3 | 0.398 |
| 17.0 | 1757.4 | 1.142 | 186.3 | 0.466 |

Cruise: Suncoaster Station: NS04-3 date: 10 Nov 94
lat: 26 19.73 N long: 80 03.86 W depth: 17 m

calc for: 27.0 deg C 36.0 o/oo 17.0 m 400 kHz
ref core: 24.0 deg C 79.95 delta-t 400.0 H 0.001 V/D
smp core: 36.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1538.9 | 1.000 | 2.2 | 0.006 |
| 0.0 | 1763.5 | 1.146 | 201.9 | 0.505 |
| 1.0 | 1747.9 | 1.135 | 132.4 | 0.331 |
| 2.0 | 1752.9 | 1.139 | 139.7 | 0.349 |
| 3.0 | 1763.5 | 1.146 | 145.7 | 0.364 |
| 4.0 | 1766.1 | 1.147 | 132.4 | 0.331 |
| 5.0 | 1763.0 | 1.145 | 128.3 | 0.321 |
| 6.0 | 1764.0 | 1.146 | 135.3 | 0.338 |
| 7.0 | 1761.0 | 1.144 | 167.4 | 0.419 |
| 8.0 | 1774.8 | 1.153 | 152.1 | 0.380 |
| 9.0 | 1773.7 | 1.152 | 145.7 | 0.364 |
| 10.0 | 1771.2 | 1.151 | 160.4 | 0.401 |
| 11.0 | 1751.9 | 1.138 | 184.6 | 0.462 |
| 12.0 | 1750.4 | 1.137 | 229.7 | 0.574 |

Cruise: Suncoaster  Station: NS04-4  date: 10 Noc 94
lat: 26 19.73 N  long: 80 03.86 W  depth: 17 m

calc for: 27.0 deg C  36.0 o/oo  17.0 m  400 kHz
ref core: 24.0 deg C  79.95 delta-t  381.2 H  0.001 V/D
smp core: 36.0 o/oo  6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1539.7 | 1.000 | -4.6 | -0.011 |
| 0.0 | 1650.9 | 1.072 | 124.2 | 0.310 |
| 1.0 | 1752.4 | 1.138 | 110.9 | 0.277 |
| 2.0 | 1762.5 | 1.145 | 110.9 | 0.277 |
| 3.0 | 1768.1 | 1.149 | 131.4 | 0.328 |
| 4.0 | 1769.6 | 1.150 | 140.4 | 0.351 |
| 5.0 | 1769.1 | 1.149 | 135.8 | 0.340 |
| 6.0 | 1767.6 | 1.148 | 140.4 | 0.351 |
| 7.0 | 1762.0 | 1.145 | 143.6 | 0.359 |
| 8.0 | 1762.0 | 1.145 | 162.4 | 0.406 |
| 9.0 | 1761.0 | 1.144 | 197.4 | 0.494 |
| 10.0 | 1747.9 | 1.135 | 207.1 | 0.518 |
| 11.0 | 1754.4 | 1.140 | 202.1 | 0.505 |
| 12.0 | 1742.5 | 1.132 | 237.6 | 0.594 |

Cruise: Suncoaster  Station: NS05-1  date: 11 Nov 94
lat: 26 19.5 N  long: 80 03.9 W  depth: 15 m

calc for: 27.0 deg C  36.0 o/oo  15.0 m  400 kHz
ref core: 23.0 deg C  79.87 delta-t  412.5 H  0.001 V/D
smp core: 36.0 o/oo  6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1537.1 | 0.998 | 2.2 | 0.005 |
| 0.0 | 1644.6 | 1.068 | 173.6 | 0.434 |
| 1.0 | 1743.2 | 1.132 | 191.1 | 0.478 |
| 2.0 | 1752.2 | 1.138 | 156.4 | 0.391 |
| 3.0 | 1765.3 | 1.147 | 131.3 | 0.328 |
| 4.0 | 1770.9 | 1.150 | 115.9 | 0.290 |
| 5.0 | 1772.4 | 1.151 | 114.7 | 0.287 |
| 6.0 | 1765.8 | 1.147 | 158.1 | 0.395 |
| 7.0 | 1759.7 | 1.143 | 170.0 | 0.425 |
| 8.0 | 1754.7 | 1.140 | 187.0 | 0.467 |
| 9.0 | 1754.2 | 1.140 | 195.3 | 0.488 |
| 10.0 | 1752.2 | 1.138 | 193.1 | 0.483 |
| 11.0 | 1744.7 | 1.133 | 195.3 | 0.488 |
| 12.0 | 1742.2 | 1.132 | 215.8 | 0.539 |
| 13.0 | 1745.2 | 1.134 | 288.5 | 0.721 |
| 14.0 | 1754.7 | 1.140 | 353.8 | 0.885 |
| 15.0 | 1751.2 | 1.138 | 256.4 | 0.641 |
| 16.0 | 1751.7 | 1.138 | 213.4 | 0.533 |
| 17.0 | 1744.7 | 1.133 | 251.3 | 0.628 |
| 18.0 | 1755.7 | 1.140 | 226.0 | 0.565 |

Cruise: Suncoaster    Station: NS05-2    date: 11 Nov 94
lat: 26 19.5 N    long: 80 03.91 W    depth: 15 m

calc for: 27.0 deg C    36.0 o/oo    15.0 m    400 kHz
ref core: 23.0 deg C    79.87 delta-t    400.0 H    0.001 V/D
smp core: 36.0 o/oo    6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1535.9 | 0.998 | 0.0 | 0.000 |
| 0.0 | 1763.3 | 1.145 | 184.6 | 0.462 |
| 1.0 | 1748.2 | 1.136 | 128.3 | 0.321 |
| 2.0 | 1758.7 | 1.142 | 119.3 | 0.298 |
| 3.0 | 1765.3 | 1.147 | 132.4 | 0.331 |
| 4.0 | 1767.3 | 1.148 | 132.4 | 0.331 |
| 5.0 | 1765.3 | 1.147 | 141.2 | 0.353 |
| 6.0 | 1764.8 | 1.146 | 147.3 | 0.368 |
| 7.0 | 1760.2 | 1.143 | 145.7 | 0.364 |
| 8.0 | 1766.8 | 1.148 | 153.7 | 0.384 |
| 9.0 | 1764.8 | 1.146 | 158.7 | 0.397 |
| 10.0 | 1759.7 | 1.143 | 169.2 | 0.423 |
| 11.0 | 1761.7 | 1.144 | 193.0 | 0.483 |
| 12.0 | 1767.8 | 1.148 | 195.2 | 0.488 |
| 13.0 | 1763.8 | 1.146 | 197.4 | 0.493 |
| 14.0 | 1760.7 | 1.144 | 219.0 | 0.547 |
| 15.0 | 1749.7 | 1.137 | 239.5 | 0.599 |
| 16.0 | 1747.2 | 1.135 | 309.1 | 0.773 |
| 17.0 | 1751.7 | 1.138 | 282.5 | 0.706 |

Cruise: Suncoaster Station: NS05-3 date: 11 Nov 94
lat: 26 19.5 N long: 80 03.91 W depth: 15 m

calc for: 27.0 deg C 36.0 o/oo 15.0 m 400 kHz
ref core: 23.0 deg C 79.90 delta-t 406.2 H 0.001 V/D
smp core: 36.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1536.7 | 0.998 | 4.5 | 0.011 |
| 0.0 | 1762.8 | 1.145 | 216.1 | 0.540 |
| 1.0 | 1733.4 | 1.126 | 162.6 | 0.406 |
| 2.0 | 1750.2 | 1.137 | 211.2 | 0.528 |
| 3.0 | 1764.3 | 1.146 | 180.9 | 0.452 |
| 4.0 | 1774.0 | 1.152 | 166.1 | 0.415 |
| 5.0 | 1766.8 | 1.148 | 180.9 | 0.452 |
| 6.0 | 1758.7 | 1.142 | 253.0 | 0.632 |
| 7.0 | 1762.8 | 1.145 | 235.9 | 0.590 |
| 8.0 | 1761.2 | 1.144 | 223.8 | 0.559 |
| 9.0 | 1762.8 | 1.145 | 211.2 | 0.528 |
| 10.0 | 1770.4 | 1.150 | 231.9 | 0.580 |
| 11.0 | 1778.6 | 1.155 | 211.2 | 0.528 |
| 12.0 | 1769.9 | 1.150 | 213.6 | 0.534 |
| 13.0 | 1768.9 | 1.149 | 191.0 | 0.477 |
| 14.0 | 1767.3 | 1.148 | 186.8 | 0.467 |
| 15.0 | 1766.8 | 1.148 | 193.1 | 0.483 |
| 16.0 | 1760.7 | 1.144 | 218.6 | 0.547 |
| 17.0 | 1751.2 | 1.138 | 229.2 | 0.573 |
| 18.0 | 1748.7 | 1.136 | 213.6 | 0.534 |
| 19.0 | 1744.2 | 1.133 | 216.1 | 0.540 |
| 20.0 | 1733.4 | 1.126 | 263.7 | 0.659 |

Cruise: Suncoaster Station: NS05-4 date: 11 Nov 94
lat: 28 19.5 N long: 80 03.91 W depth: 15 m

calc for: 27.0 deg C 36.0 o/oo 15.0 m 400 kHz
ref core: 22.8 deg C 79.90 delta-t 406.2 H 0.001 V/D
smp core: 36.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1535.9 | 0.998 | 0.0 | 0.000 |
| 0.0 | 1761.6 | 1.144 | 188.9 | 0.472 |
| 1.0 | 1745.6 | 1.134 | 144.9 | 0.362 |
| 2.0 | 1753.1 | 1.139 | 136.1 | 0.340 |
| 3.0 | 1761.6 | 1.144 | 123.8 | 0.309 |
| 4.0 | 1767.7 | 1.148 | 137.5 | 0.344 |
| 5.0 | 1771.8 | 1.151 | 149.5 | 0.374 |
| 6.0 | 1771.8 | 1.151 | 146.4 | 0.366 |
| 7.0 | 1774.4 | 1.153 | 154.3 | 0.386 |
| 8.0 | 1761.6 | 1.144 | 237.6 | 0.594 |
| 9.0 | 1746.6 | 1.135 | 229.2 | 0.573 |
| 10.0 | 1738.2 | 1.129 | 234.7 | 0.587 |
| 11.0 | 1744.6 | 1.133 | 221.2 | 0.553 |
| 12.0 | 1756.1 | 1.141 | 213.6 | 0.534 |
| 13.0 | 1759.1 | 1.143 | 216.1 | 0.540 |
| 14.0 | 1762.1 | 1.145 | 213.6 | 0.534 |
| 15.0 | 1772.8 | 1.152 | 218.6 | 0.547 |
| 16.0 | 1759.1 | 1.143 | 270.9 | 0.677 |
| 17.0 | 1770.3 | 1.150 | 208.8 | 0.522 |
| 18.0 | 1769.2 | 1.149 | 182.8 | 0.457 |
| 19.0 | 1776.4 | 1.154 | 182.8 | 0.457 |
| 20.0 | 1783.6 | 1.159 | 195.2 | 0.488 |

Cruise: Suncoaster Station: NS06-1 date: 11 Nov 94
lat: 26 18.58 N long: 80 02.99 W depth: 20 m

calc for: 27.0 deg C 36.0 o/oo 20.0 m 400 kHz
ref core: 23.0 deg C 79.94 delta-t 393.8 H 0.001 V/D
s[illegible] core: 36.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1539.1 | 1.000 | -4.5 | -0.011 |
| 0.0 | 1669.3 | 1.084 | 394.3 | 0.986 |
| 1.0 | 1710.3 | 1.111 | 269.4 | 0.673 |
| 2.0 | 1727.6 | 1.122 | 428.8 | 1.072 |
| 3.0 | 1721.8 | 1.118 | 219.3 | 0.548 |
| 4.0 | 1709.8 | 1.111 | 230.3 | 0.576 |
| 5.0 | 1692.3 | 1.099 | 242.2 | 0.605 |
| 6.0 | 1682.6 | 1.093 | 266.4 | 0.666 |
| 7.0 | 1679.8 | 1.091 | 288.6 | 0.721 |
| 8.0 | 1670.2 | 1.085 | 319.1 | 0.798 |
| 9.0 | 1677.5 | 1.090 | 347.2 | 0.868 |
| 10.0 | 1668.0 | 1.083 | 363.7 | 0.909 |
| 11.0 | 1626.8 | 1.057 | 583.1 | 1.458 |
| 12.0 | 1623.0 | 1.054 | 579.6 | 1.449 |
| 13.0 | 1641.2 | 1.066 | 532.1 | 1.330 |
| 14.0 | 1660.3 | 1.078 | 440.8 | 1.102 |
| 15.0 | 1647.4 | 1.070 | 573.2 | 1.433 |
| 16.0 | 1662.1 | 1.080 | 756.5 | 1.891 |
| 17.0 | 1662.5 | 1.080 | 739.3 | 1.848 |
| 18.0 | 1677.5 | 1.090 | 616.4 | 1.541 |

Cruise: Suncoaster Station: NS06-2 date: 11 Nov 94
lat: 26 18.58 N long: 80 02.99 W depth: 20 m

calc for: 27.0 deg C 36.0 o/oo 20.0 m 400 kHz
ref core: 22.5 deg C 79.92 delta-t 400.0 H 0.001 V/D
smp core: 36.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1537.1 | 0.998 | -2.2 | -0.006 |
| 0.0 | 1548.8 | 1.006 | 162.1 | 0.405 |
| 1.0 | 1692.6 | 1.099 | 213.9 | 0.535 |
| 2.0 | 1704.3 | 1.107 | 224.3 | 0.561 |
| 3.0 | 1690.3 | 1.098 | 296.1 | 0.740 |
| 4.0 | 1689.8 | 1.098 | 305.3 | 0.763 |
| 5.0 | 1704.3 | 1.107 | 268.6 | 0.672 |
| 6.0 | 1713.4 | 1.113 | 262.9 | 0.657 |
| 7.0 | 1723.0 | 1.119 | 268.6 | 0.672 |
| 8.0 | 1723.5 | 1.120 | 221.6 | 0.554 |
| 9.0 | 1721.1 | 1.118 | 219.0 | 0.547 |
| 10.0 | 1715.8 | 1.114 | 199.6 | 0.499 |
| 11.0 | 1712.9 | 1.113 | 201.9 | 0.505 |
| 12.0 | 1715.8 | 1.114 | 227.0 | 0.567 |
| 13.0 | 1720.1 | 1.117 | 227.0 | 0.567 |
| 14.0 | 1715.3 | 1.114 | 247.6 | 0.619 |
| 15.0 | 1694.9 | 1.101 | 371.8 | 0.930 |
| 16.0 | 1691.7 | 1.099 | 448.1 | 1.120 |
| 17.0 | 1670.1 | 1.085 | 504.6 | 1.262 |
| 18.0 | 1663.3 | 1.080 | 557.6 | 1.394 |
| 19.0 | 1669.6 | 1.085 | 557.6 | 1.394 |

Cruise: Suncoaster Station: NS06-3 date: 11 Nov 94
lat: 26 18.58 N long: 80 02.99 W depth: 20 m

calc for: 27.0 deg C 36.0 o/oo 20.0 m 400 kHz
ref core: 22.5 deg C 79.95 delta-t 406.2 H 0.001 V/D
smp core: 36.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1537.5 | 0.999 | 0.0 | 0.000 |
| 0.0 | 1657.9 | 1.077 | 243.0 | 0.607 |
| 1.0 | 1708.1 | 1.110 | 234.7 | 0.587 |
| 2.0 | 1714.8 | 1.114 | 208.8 | 0.522 |
| 3.0 | 1716.7 | 1.115 | 201.8 | 0.505 |
| 4.0 | 1717.7 | 1.116 | 234.7 | 0.587 |
| 5.0 | 1716.3 | 1.115 | 246.6 | 0.617 |
| 6.0 | 1714.3 | 1.114 | 234.7 | 0.587 |
| 7.0 | 1713.9 | 1.113 | 259.6 | 0.649 |
| 8.0 | 1717.7 | 1.116 | 259.6 | 0.649 |
| 9.0 | 1715.3 | 1.114 | 243.6 | 0.609 |
| 10.0 | 1715.3 | 1.114 | 572.3 | 1.431 |
| 11.0 | 1721.1 | 1.118 | 243.6 | 0.609 |
| 12.0 | 1719.6 | 1.117 | 243.6 | 0.609 |
| 13.0 | 1720.1 | 1.117 | 266.5 | 0.666 |
| 14.0 | 1716.7 | 1.115 | 273 8 | 0.685 |
| 15.0 | 1713.4 | 1.113 | 273.8 | 0.685 |
| 16.0 | 1715.8 | 1.114 | 293.0 | 0.733 |
| 17.0 | 1715.3 | 1.114 | 293.0 | 0.733 |
| 18.0 | 1710.5 | 1.111 | 309.4 | 0.774 |

Cruise: Suncoaster  Station: NS06-4  date: 11 Nov 94
lat: 26 19.48 N  long: 80 03.80 W  depth: 19 m

calc for: 27.0 deg C  36.0 o/oo  19.0 m  400 kHz
ref core: 22.5 deg C  79.97 delta-t  412.5 H  0.001 V/D
smp core: 36.0 o/oo  6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1536.7 | 0.998 | 0.0 | 0.000 |
| 0.0 | 1756.5 | 1.141 | 509.0 | 1.273 |
| 1.0 | 1713.4 | 1.113 | 185.0 | 0.463 |
| 2.0 | 1706.2 | 1.108 | 199.6 | 0.499 |
| 3.0 | 1703.4 | 1.106 | 213.4 | 0.533 |
| 4.0 | 1694.9 | 1.101 | 231.3 | 0.578 |
| 5.0 | 1686.5 | 1.096 | 228.6 | 0.572 |
| 6.0 | 1682.8 | 1.093 | 242.7 | 0.607 |
| 7.0 | 1659.7 | 1.078 | 315.5 | 0.789 |
| 8.0 | 1648.5 | 1.071 | 343.8 | 0.860 |
| 9.0 | 1666.4 | 1.082 | 370.3 | 0.926 |
| 10.0 | 1681.9 | 1.093 | 319.5 | 0.799 |

Cruise: Suncoaster Station: NS07-1 date: 11 Nov 94
lat: 26 19.48 N long: 80 03.80 W depth: 19 m

calc for: 27.0 deg C 36.0 o/oo 19.0 m 400 kHz
ref core: 22.5 deg C 79.94 delta-t 412.5 H 0.001 V/D
smp core: 36.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1537.5 | 0.999 | 2.2 | 0.005 |
| 0.0 | 1755.0 | 1.140 | 247.6 | 0.619 |
| 1.0 | 1740.1 | 1.130 | 119.5 | 0.299 |
| 2.0 | 1745.5 | 1.134 | 141.1 | 0.353 |
| 3.0 | 1755.0 | 1.140 | 147.0 | 0.368 |
| 4.0 | 1755.5 | 1.140 | 158.1 | 0.395 |
| 5.0 | 1754.0 | 1.139 | 193.2 | 0.483 |
| 6.0 | 1749.0 | 1.136 | 234.1 | 0.585 |
| 7.0 | 1748.5 | 1.136 | 231.4 | 0.579 |
| 8.0 | 1757.0 | 1.141 | 218.2 | 0.546 |
| 9.0 | 1757.5 | 1.142 | 193.2 | 0.483 |
| 10.0 | 1759.5 | 1.143 | 193.2 | 0.483 |
| 11.0 | 1759.0 | 1.143 | 210.9 | 0.527 |
| 12.0 | 1755.5 | 1.140 | 206.3 | 0.516 |
| 13.0 | 1754.5 | 1.140 | 201.8 | 0.504 |
| 14.0 | 1756.0 | 1.141 | 195.2 | 0.488 |
| 15.0 | 1757.5 | 1.142 | 195.2 | 0.488 |
| 16.0 | 1760.5 | 1.144 | 187.0 | 0.468 |
| 17.0 | 1762.5 | 1.145 | 189.0 | 0.472 |
| 18.0 | 1761.0 | 1.144 | 187.0 | 0.468 |
| 19.0 | 1759.5 | 1.143 | 191.1 | 0.478 |
| 20.0 | 1766.6 | 1.148 | 195.2 | 0.488 |
| 21.0 | 1759.5 | 1.143 | 225.9 | 0.565 |
| 22.0 | 1759.5 | 1.143 | 239.7 | 0.599 |
| 23.0 | 1762.5 | 1.145 | 231.4 | 0.579 |
| 24.0 | 1762.5 | 1.145 | 231.4 | 0.579 |

Cruise: Suncoaster Station: NS07-2 date: 11 Nov 94
lat: 26 19.48 N long: 80 03.80 W depth: 19 m

calc for: 27.0 deg C 36.0 o/oo 19.0 m 400 kHz
ref core: 22.5 deg C 79.95 delta-t 412.5 H 0.001 V/D
smp core: 36.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1538.7 | 0.999 | 2.2 | 0.005 |
| 0.0 | 1759.0 | 1.143 | 147.0 | 0.368 |
| 1.0 | 1757.0 | 1.141 | 122.1 | 0.305 |
| 2.0 | 1762.5 | 1.145 | 141.1 | 0.353 |
| 3.0 | 1759.0 | 1.143 | 131.3 | 0.328 |
| 4.0 | 1759.0 | 1.143 | 153.2 | 0.383 |
| 5.0 | 1759.0 | 1.143 | 153.2 | 0.383 |
| 6.0 | 1758.5 | 1.142 | 154.8 | 0.387 |
| 7.0 | 1757.5 | 1.142 | 158.1 | 0.395 |
| 8.0 | 1755.5 | 1.140 | 163.1 | 0.408 |
| 9.0 | 1756.0 | 1.141 | 179.2 | 0.448 |
| 10.0 | 1759.0 | 1.143 | 177.3 | 0.443 |
| 11.0 | 1757.5 | 1.142 | 183.0 | 0.458 |
| 12.0 | 1760.5 | 1.144 | 215.8 | 0.539 |
| 14.0 | 1750.5 | 1.137 | 189.0 | 0.473 |
| 15.0 | 1744.0 | 1.133 | 177.3 | 0.443 |
| 16.0 | 1746.0 | 1.134 | 177.3 | 0.443 |
| 17.0 | 1745.5 | 1.134 | 187.0 | 0.467 |
| 18.0 | 1748.0 | 1.135 | 191.1 | 0.478 |
| 19.0 | 1754.5 | 1.140 | 189.0 | 0.473 |
| 20.0 | 1750.5 | 1.137 | 191.1 | 0.478 |
| 21.0 | 1740.6 | 1.131 | 183.0 | 0.458 |
| 22.0 | 1740.1 | 1.130 | 185.0 | 0.463 |
| 23.0 | 1738.6 | 1.129 | 263.1 | 0.658 |

Cruise: Suncoaster Station: NS07-3 date: 11 Nov 94
lat: 26 19.48 N long: 80 03.80 W depth: 19 m

calc for: 27.0 deg C 36.0 o/oo 19.0 m 400 kHz
ref core: 22.5 deg C 79.95 delta-t 406.2 H 0.001 V/D
smp core: 36.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1538.3 | 0.999 | 4.5 | 0.011 |
| 0.0 | 1541.8 | 1.001 | 90.2 | 0.225 |
| 1.0 | 1745.0 | 1.133 | 169.6 | 0.424 |
| 2.0 | 1749.0 | 1.136 | 140.4 | 0.351 |
| 3.0 | 1749.0 | 1.136 | 140.4 | 0.351 |
| 4.0 | 1753.0 | 1.139 | 171.4 | 0.429 |
| 5.0 | 1750.0 | 1.137 | 180.9 | 0.452 |
| 6.0 | 1750.0 | 1.137 | 167.8 | 0.420 |
| 7.0 | 1750.5 | 1.137 | 147.9 | 0.370 |
| 8.0 | 1753.5 | 1.139 | 167.8 | 0.420 |
| 9.0 | 1755.5 | 1.140 | 173.3 | 0.433 |
| 10.0 | 1749.5 | 1.136 | 173.3 | 0.433 |
| 11.0 | 1752.5 | 1.138 | 178.9 | 0.447 |
| 12.0 | 1751.5 | 1.138 | 173.3 | 0.433 |
| 13.0 | 1755.5 | 1.140 | 173.3 | 0.433 |
| 14.0 | 1750.5 | 1.137 | 166.1 | 0.415 |
| 15.0 | 1751.0 | 1.137 | 193.1 | 0.483 |
| 16.0 | 1757.0 | 1.141 | 226.5 | 0.566 |
| 17.0 | 1760.5 | 1.144 | 186.8 | 0.467 |
| 18.0 | 1761.5 | 1.144 | 226.5 | 0.566 |
| 19.0 | 1759.5 | 1.143 | 259.6 | 0.649 |

Cruise: Suncoaster Station: NS07-4 date: 11 Nov 94
lat: 26 19.48 N long: 80 03.80 W depth: 19 m

calc for: 27.0 deg C 36.0 o/oo 19.0 m 400 kHz
ref core: 22.5 deg C 79.95 delta-t 406.2 H 0.001 V/D
smp core: 36.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1538.3 | 0.999 | 0.0 | 0.000 |
| 0.0 | 1648.5 | 1.071 | 151.1 | 3.776 |
| 1.0 | 1748.0 | 1.135 | 118.7 | 2.966 |
| 2.0 | 1754.0 | 1.139 | 129.1 | 3.228 |
| 3.0 | 1758.0 | 1.142 | 141.9 | 3.547 |
| 4.0 | 1752.5 | 1.138 | 146.4 | 3.660 |
| 5.0 | 1742.0 | 1.132 | 171.4 | 4.286 |
| 6.0 | 1740.1 | 1.130 | 216.1 | 5.403 |
| 7.0 | 1736.6 | 1.128 | 240.6 | 6.014 |
| 8.0 | 1747.0 | 1.135 | 151.1 | 3.776 |
| 9.0 | 1747.0 | 1.135 | 146.4 | 3.660 |
| 10.0 | 1752.5 | 1.138 | 160.9 | 4.022 |
| 11.0 | 1767.1 | 1.148 | 169.6 | 4.240 |
| 12.0 | 1765.6 | 1.147 | 155.9 | 3.897 |
| 13.0 | 1766.6 | 1.148 | 160.9 | 4.022 |
| 14.0 | 1769.6 | 1.150 | 159.2 | 3.980 |
| 15.0 | 1774.2 | 1.152 | 164.3 | 4.108 |
| 16.0 | 1777.8 | 1.155 | 175.1 | 4.378 |
| 17.0 | 1772.2 | 1.151 | 186.8 | 4.671 |
| 18.0 | 1765.1 | 1.147 | 180.9 | 4.522 |
| 19.0 | 1764.1 | 1.146 | 182.8 | 4.571 |
| 20.0 | 1761.5 | 1.144 | 191.0 | 4.774 |
| 21.0 | 1769.1 | 1.149 | 191.0 | 4.774 |

Cruise: Suncoaster Station: ns1 date: 8 Nov 94
lat: 26-15.5 N long: 80-04.8 W depth: .5 m

calc for: 27.0 deg C 36.0 o/oo 0.5 m 400 kHz
ref core: 24.0 deg C 79.87 delta-t 387.5 H 0.001 V/D
smp core: 36.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1535.8 | 0.998 | 0.0 | 0.000 |
| 0.0 | 1651.7 | 1.073 | 154.2 | 0.385 |
| 1.0 | 1804.0 | 1.172 | 206.9 | 0.517 |
| 2.0 | 1825.5 | 1.186 | 448.9 | 1.122 |
| 3.0 | 1842.0 | 1.197 | 470.7 | 1.177 |
| 4.0 | 1800.3 | 1.170 | 520.7 | 1.302 |
| 5.0 | 1772.2 | 1.151 | 295.2 | 0.738 |
| 6.0 | 1762.0 | 1.145 | 259.8 | 0.650 |
| 7.0 | 1772.2 | 1.151 | 539.8 | 1.349 |

Cruise: Suncoaster Station: NS2 date: 8 Nov 94
lat: 26 15.5 N long: 80 04.8 W depth: 0.5 m

calc for: 27.0 deg C 36.0 o/oo 0.5 m 400 kHz
ref core: 24.0 deg C 79.88 delta-t 393.8 H 0.001 V/D
smp core: 36.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1536.1 | 0.998 | 0.0 | 0.000 |
| 0.0 | 1652.9 | 1.074 | 143.5 | 0.359 |
| 1.0 | 1782.7 | 1.158 | 108.0 | 0.270 |
| 2.0 | 1784.3 | 1.159 | 167.0 | 0.417 |
| 3.0 | 1654.3 | 1.075 | 564.0 | 1.410 |

Cruise: Suncoaster Station: ns4 date: 8 Nov 94
lat: 26-15 N long: 80-04.8 W depth: 0.5 m

calc for: 27.0 deg C 35.0 o/oo 0.5 m 400 kHz
ref core: 23.8 deg C 79.90 delta-t 393.8 H 0.001 V/D
smp core: 35.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1535.0 | 0.998 | 2.3 | 0.006 |
| 0.0 | 1544.7 | 1.004 | 188.6 | 0.472 |
| 17.0 | 1690.0 | 1.099 | 539.5 | 1.349 |

Cruise: Suncoaster Station: ns5 date: 8 Nov 94
lat: 26-15.5 N long: 80-04.8 W depth: 0.5 m

calc for: 27.0 deg C 35.0 o/oo 0.5 m 400 kHz
ref core: 23.8 deg C 79.90 delta-t 384.4 H 0.001 V/D
smp core: 35.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1536.6 | 0.999 | -2.3 | -0.006 |
| 0.0 | 1546.6 | 1.006 | 185.2 | 0.463 |
| 1.0 | 1803.9 | 1.173 | 349.0 | 0.873 |
| 2.0 | 1787.1 | 1.162 | 161.7 | 0.404 |
| 3.0 | 1780.9 | 1.158 | 95.3 | 0.238 |
| 4.0 | 1783.4 | 1.159 | 84.4 | 0.211 |
| 5.0 | 1781.9 | 1.158 | 90.8 | 0.227 |
| 6.0 | 1776.7 | 1.155 | 149.6 | 0.374 |
| 7.0 | 1751.8 | 1.139 | 290.4 | 0.726 |
| 8.0 | 1728.6 | 1.124 | 255.8 | 0.640 |
| 9.0 | 1769.0 | 1.150 | 315.7 | 0.789 |
| 10.0 | 1796.0 | 1.168 | 398.3 | 0.996 |
| 11.0 | 1597.0 | 1.038 | 396.4 | 0.991 |
| 12.0 | 1819.5 | 1.183 | 400.2 | 1.000 |
| 13.0 | 1799.2 | 1.170 | 210.7 | 0.527 |
| 14.0 | 1803.9 | 1.173 | 414.4 | 1.036 |
| 17.0 | 1592.5 | 1.035 | 536.0 | 1.340 |

Cruise: Suncoaster Station: ns6 date: 8 Nov 94
lat: 26-15.5 N long: 80-04.8 W depth: 0.5 m

calc for: 27.0 deg C 35.0 o/oo 0.5 m 400 kHz
ref core: 23.8 deg C 79.92 delta-t 381.2 H 0.001 V/D
smp core: 35.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1536.9 | 0.999 | -2.3 | -0.006 |
| 0.0 | 1648.2 | 1.072 | 108.4 | 0.271 |
| 1.0 | 1781.4 | 1.158 | 140.4 | 0.351 |
| 2.0 | 1753.3 | 1.140 | 283.9 | 0.710 |
| 3.0 | 1745.8 | 1.135 | 197.4 | 0.493 |
| 4.0 | 1758.4 | 1.143 | 142.0 | 0.355 |
| 5.0 | 1759.4 | 1.144 | 169.9 | 0.425 |
| 6.0 | 1757.9 | 1.143 | 166.0 | 0.415 |
| 7.0 | 1750.3 | 1.138 | 204.6 | 0.511 |
| 8.0 | 1727.6 | 1.123 | 593.5 | 1.484 |
| 9.0 | 1677.5 | 1.091 | 506.1 | 1.265 |
| 10.0 | 1786.6 | 1.162 | 146.9 | 0.367 |
| 11.0 | 1677.5 | 1.091 | 506.1 | 1.265 |
| 12.0 | 1774.1 | 1.153 | 110.9 | 0.277 |
| 13.0 | 1776.2 | 1.155 | 98.7 | 0.247 |
| 14.0 | 1772.1 | 1.152 | 101.0 | 0.253 |
| 15.0 | 1754.3 | 1.141 | 175.8 | 0.440 |
| 16.0 | 1756.9 | 1.142 | 240.7 | 0.602 |
| 17.0 | 1773.6 | 1.153 | 190.5 | 0.476 |
| 18.0 | 1773.6 | 1.153 | 162.3 | 0.406 |
| 19.0 | 1794.4 | 1.167 | 157.0 | 0.392 |

# APPENDIX D.

Raw data from the Indian Rocks Beach and Lower Tampa Bay study areas.

Cruise: TBAC
lat: 27-56.34 N

Station: IRB6-1
long: 82-54.47 W

date: 3 JUN 95
depth: 7 m

calc for: 28.5 deg C 35.0 o/oo 7.0 m 400 kHz
ref core: 24.2 deg C 82.56 delta-t 290.6 H 0.001 V/D
smp core: 35.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1539.0 | 0.998 | 0.0 | 0.000 |
| 0.0 | 1455.4 | 0.944 | 205.3 | 0.513 |
| 1.0 | 1725.5 | 1.119 | 196.5 | 0.491 |
| 2.0 | 1740.7 | 1.129 | 197.7 | 0.494 |
| 3.0 | 1757.1 | 1.140 | 161.1 | 0.403 |
| 4.0 | 1760.1 | 1.142 | 143.3 | 0.358 |
| 5.0 | 1761.2 | 1.143 | 163.5 | 0.409 |
| 6.0 | 1755.1 | 1.139 | 158.8 | 0.397 |
| 7.0 | 1762.2 | 1.143 | 187.1 | 0.468 |
| 8.0 | 1759.1 | 1.141 | 205.3 | 0.513 |
| 9.0 | 1746.1 | 1.133 | 358.5 | 0.896 |
| 10.0 | 1709.6 | 1.109 | 405.2 | 1.013 |
| 11.0 | 1702.5 | 1.104 | 619.4 | 1.549 |
| 12.0 | 1694.5 | 1.099 | 317.5 | 0.794 |
| 13.0 | 1695.9 | 1.100 | 280.2 | 0.700 |

Cruise: TBAC
lat: 27-56.34 N

Station: IRB6-2
long: 82-54.47 W

date: 3 JUN 95
depth: 7 m

calc for: 28.5 deg C 35.0 o/oo 7.0 m 400 kHz
ref core: 27.2 deg C 82.58 delta-t 290.6 H 0.001 V/D
smp core: 35.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1541.0 | 1.000 | -1.5 | -0.004 |
| 0.0 | 1542.2 | 1.000 | 60.0 | 0.150 |
| 1.0 | 1773.8 | 1.151 | 370.4 | 0.926 |
| 2.0 | 1725.2 | 1.119 | 420.5 | 1.051 |
| 3.0 | 1710.7 | 1.110 | 439.4 | 1.098 |
| 4.0 | 1726.1 | 1.120 | 453.5 | 1.134 |
| 5.0 | 1746.9 | 1.133 | 543.1 | 1.358 |
| 6.0 | 1699.7 | 1.103 | 873.4 | 2.184 |
| 7.0 | 1681.5 | 1.091 | 1005.0 | 2.513 |
| 8.0 | 1686.1 | 1.094 | 1098.2 | 2.745 |
| 13.0 | 1659.5 | 1.077 | 1068.6 | 2.671 |
| 14.0 | 1692.6 | 1.098 | 744.3 | 1.861 |
| 15.0 | 1721.3 | 1.117 | 484.3 | 1.211 |
| 16.0 | 1691.2 | 1.097 | 569.9 | 1.425 |
| 17.0 | 1681.5 | 1.091 | 795.4 | 1.988 |
| 18.0 | 1676.8 | 1.088 | 1208.3 | 3.021 |

Cruise: TBAC
lat: 27-56.34 N

Station: IRB6-3
long: 82-54.47 W

date: 3 JUN 95
depth: 7 m

calc for: 28.5 deg C 35.0 o/oo 7.0 m 400 kHz
ref core: 24.8 deg C 82.58 delta-t 284.4 H 0.001 V/D
smp core: 35.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1538.3 | 0.998 | 1.6 | 0.004 |
| 0.0 | 1543.3 | 1.001 | 178.4 | 0.446 |
| 1.0 | 1709.9 | 1.109 | 247.5 | 0.619 |
| 2.0 | 1730.2 | 1.122 | 219.3 | 0.548 |
| 3.0 | 1721.9 | 1.117 | 321.7 | 0.804 |
| 4.0 | 1739.5 | 1.128 | 321.7 | 0.804 |
| 5.0 | 1739.5 | 1.128 | 256.7 | 0.642 |
| 6.0 | 1746.9 | 1.133 | 195.8 | 0.490 |
| 7.0 | 1745.4 | 1.132 | 181.1 | 0.453 |
| 8.0 | 1734.6 | 1.125 | 223.0 | 0.558 |
| 9.0 | 1724.3 | 1.119 | 234.8 | 0.587 |
| 10.0 | 1714.2 | 1.112 | 252.0 | 0.630 |

Cruise: TBAC
lat: 27-56.34 N

Station: IRB6-4
long: 82-54.47 W

date: 3 JUN 95
depth: 7 m

calc for: 28.5 deg C 35.0 o/oo 7.0 m 400 kHz
ref core: 25.0 deg C 82.59 delta-t 284.4 H 0.001 V/D
smp core: 35.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1537.9 | 0.998 | 1788.2 | 4.470 |
| 0.0 | 1549.6 | 1.005 | 184.0 | 0.460 |
| 1.0 | 1701.0 | 1.103 | 261.5 | 0.654 |
| 2.0 | 1721.0 | 1.116 | 314.4 | 0.786 |
| 3.0 | 1710.5 | 1.110 | 468.0 | 1.170 |
| 4.0 | 1699.1 | 1.102 | 529.9 | 1.325 |
| 5.0 | 1719.1 | 1.115 | 397.0 | 0.993 |
| 6.0 | 1713.3 | 1.111 | 342.7 | 0.857 |
| 7.0 | 1673.1 | 1.085 | 543.6 | 1.359 |
| 8.0 | 1685.1 | 1.093 | 431.3 | 1.078 |
| 9.0 | 1701.9 | 1.104 | 335.9 | 0.840 |
| 10.0 | 1702.9 | 1.105 | 295.8 | 0.739 |
| 11.0 | 1697.7 | 1.101 | 335.9 | 0.840 |

Cruise: TBAC
lat: 27-33.50 N

Station: LTB1-1
long: 82-41.20 W

date: 4 JUN 95
depth: 5 m

calc for: 27.7 deg C 33.0 o/oo 5.0 m 400 kHz
ref core: 25.5 deg C 82.56 delta-t 300.0 H 0.001 V/D
smp core: 33.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1535.2 | 0.998 | 0.0 | 0.000 |
| 0.0 | 1539.1 | 1.001 | 268.2 | 0.670 |
| 1.0 | 1685.4 | 1.096 | 359.3 | 0.898 |
| 2.0 | 1691.9 | 1.100 | 397.2 | 0.993 |
| 3.0 | 1692.4 | 1.101 | 584.7 | 1.462 |
| 4.0 | 1685.4 | 1.096 | 821.0 | 2.052 |
| 5.0 | 1655.8 | 1.077 | 1048.6 | 2.622 |
| 6.0 | 1620.7 | 1.054 | 681.7 | 1.704 |
| 7.0 | 1697.1 | 1.104 | 630.2 | 1.575 |
| 8.0 | 1695.7 | 1.103 | 394.8 | 0.987 |
| 9.0 | 1696.2 | 1.103 | 387.8 | 0.970 |
| 10.0 | 1708.5 | 1.111 | 332.4 | 0.831 |
| 11.0 | 1696.2 | 1.103 | 407.2 | 1.018 |
| 12.0 | 1695.7 | 1.103 | 352.1 | 0.880 |
| 13.0 | 1699.5 | 1.105 | 381.2 | 0.953 |

Cruise: TBAC
lat: 27-33.50 N

Station: LTB1-2
long: 82-41.20 W

date: 4 JUN 95
depth: 5 m

calc for: 27.7 deg C 33.0 o/oo 5.0 m 400 kHz
ref core: 25.5 deg C 82.56 delta-t 300.0 H 0.001 V/D
smp core: 33.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1539.9 | 1.001 | -1.5 | -0.004 |
| 0.0 | 1540.3 | 1.002 | 66.9 | 0.167 |
| 1.0 | 1669.3 | 1.086 | 280.4 | 0.701 |
| 2.0 | 1686.8 | 1.097 | 316.5 | 0.791 |
| 3.0 | 1721.5 | 1.120 | 357.4 | 0.894 |
| 4.0 | 1729.2 | 1.125 | 280.4 | 0.701 |
| 5.0 | 1740.1 | 1.132 | 260.6 | 0.651 |
| 6.0 | 1747.0 | 1.136 | 223.4 | 0.558 |
| 7.0 | 1764.2 | 1.147 | 229.2 | 0.573 |
| 8.0 | 1756.1 | 1.142 | 434.2 | 1.085 |
| 9.0 | 1702.8 | 1.107 | 821.0 | 2.052 |
| 10.0 | 1702.8 | 1.107 | 584.7 | 1.462 |
| 11.0 | 1714.7 | 1.115 | 348.6 | 0.871 |
| 12.0 | 1727.3 | 1.123 | 333.9 | 0.835 |
| 13.0 | 1733.7 | 1.127 | 276.2 | 0.690 |
| 14.0 | 1742.1 | 1.133 | 319.2 | 0.798 |
| 15.0 | 1729.7 | 1.125 | 498.4 | 1.246 |
| 16.0 | 1754.0 | 1.141 | 440.6 | 1.102 |
| 17.0 | 1752.5 | 1.140 | 488.8 | 1.222 |
| 18.0 | 1721.0 | 1.119 | 469.6 | 1.174 |

Cruise: TBAC Station: LTB1-3 date: 4 JUN 95
lat: 27-33.50 N long: 82-41.20 W depth: 5 m

calc for: 27.7 deg C 33.0 o/oo 5.0 m 400 kHz
ref core: 25.5 deg C 82.56 delta-t 303.1 H 0.001 V/D
smp core: 33.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1537.2 | 1.000 | 1.5 | 0.004 |
| 0.0 | 1538.7 | 1.001 | 295.2 | 0.738 |
| 1.0 | 1637.1 | 1.065 | 497.3 | 1.243 |
| 2.0 | 1678.9 | 1.092 | 539.0 | 1.348 |
| 3.0 | 1679.9 | 1.093 | 457.6 | 1.144 |
| 4.0 | 1709.9 | 1.112 | 323.5 | 0.809 |
| 5.0 | 1708.5 | 1.111 | 275.6 | 0.689 |
| 6.0 | 1712.8 | 1.114 | 286.2 | 0.715 |
| 7.0 | 1722.9 | 1.121 | 304.9 | 0.762 |
| 8.0 | 1726.3 | 1.123 | 288.4 | 0.721 |
| 9.0 | 1729.7 | 1.125 | 297.6 | 0.744 |
| 10.0 | 1717.6 | 1.117 | 309.9 | 0.775 |
| 11.0 | 1705.6 | 1.109 | 277.7 | 0.694 |
| 12.0 | 1706.1 | 1.110 | 275.6 | 0.689 |
| 13.0 | 1704.2 | 1.108 | 262.0 | 0.655 |
| 14.0 | 1705.1 | 1.109 | 258.4 | 0.646 |
| 15.0 | 1715.2 | 1.115 | 262.0 | 0.655 |
| 16.0 | 1702.3 | 1.107 | 256.6 | 0.642 |
| 17.0 | 1714.2 | 1.115 | 307.4 | 0.768 |
| 18.0 | 1722.9 | 1.121 | 323.5 | 0.809 |
| 19.0 | 1739.1 | 1.131 | 461.2 | 1.153 |
| 20.0 | 1726.8 | 1.123 | 575.9 | 1.440 |
| 21.0 | 1710.4 | 1.112 | 723.8 | 1.809 |
| 22.0 | 1698.5 | 1.105 | 623.2 | 1.558 |
| 23.0 | 1705.1 | 1.109 | 632.8 | 1.582 |

Cruise: TBAC
lat: 27-33.50 N

Station: LTB1-4
long: 82-41.20 W

date: 4 JUN 95
depth: 5 m

calc for: 27.7 deg C 33.0 o/oo 5.0 m 400 kHz
ref core: 25.5 deg C 82.58 delta-t 303.1 H 0.001 V/D
smp core: 33.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1538.3 | 1.000 | 1.5 | 0.004 |
| 0.0 | 1548.1 | 1.007 | 149.3 | 0.373 |
| 1.0 | 1660.7 | 1.080 | 323.5 | 0.809 |
| 2.0 | 1683.6 | 1.095 | 351.8 | 0.879 |
| 3.0 | 1685.9 | 1.096 | 443.7 | 1.109 |
| 4.0 | 1674.3 | 1.089 | 921.2 | 2.303 |
| 5.0 | 1457.7 | 0.948 | 692.6 | 1.731 |
| 6.0 | 1681.7 | 1.094 | 651.2 | 1.628 |
| 7.0 | 1684.5 | 1.096 | 438.8 | 1.097 |
| 8.0 | 1706.1 | 1.110 | 382.7 | 0.957 |
| 9.0 | 1709.0 | 1.111 | 322.1 | 0.805 |
| 10.0 | 1708.5 | 1.111 | 288.4 | 0.721 |
| 11.0 | 1717.6 | 1.117 | 295.2 | 0.738 |
| 12.0 | 1728.3 | 1.124 | 286.2 | 0.715 |
| 13.0 | 1727.3 | 1.123 | 297.6 | 0.744 |
| 14.0 | 1716.1 | 1.116 | 267.7 | 0.669 |
| 15.0 | 1711.8 | 1.113 | 269.6 | 0.674 |
| 16.0 | 1706.1 | 1.110 | 256.6 | 0.642 |
| 17.0 | 1686.3 | 1.097 | 295.2 | 0.738 |

Cruise: TBAC
lat: 27-32.99 N

Station: LTB2-1
long: 82-41.20 W

date: 4 JUN 95
depth: 5 m

calc for: 27.8 deg C 34.0 o/oo 5.0 m 400 kHz
ref core: 25.5 deg C 82.60 delta-t 296.9 H 0.001 V/D
smp core: 34.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1539.1 | 1.000 | -1.5 | -0.004 |
| 0.0 | 1662.4 | 1.080 | 266.7 | 0.667 |
| 1.0 | 1682.1 | 1.093 | 169.0 | 0.422 |
| 2.0 | 1703.6 | 1.107 | 214.9 | 0.537 |
| 3.0 | 1718.5 | 1.117 | 184.5 | 0.461 |
| 4.0 | 1727.7 | 1.123 | 198.9 | 0.497 |
| 5.0 | 1725.3 | 1.121 | 219.0 | 0.548 |
| 6.0 | 1729.2 | 1.124 | 203.2 | 0.508 |
| 7.0 | 1732.6 | 1.126 | 205.7 | 0.514 |
| 8.0 | 1739.0 | 1.130 | 214.9 | 0.537 |
| 9.0 | 1737.0 | 1.129 | 208.3 | 0.521 |
| 10.0 | 1743.5 | 1.133 | 219.0 | 0.548 |
| 11.0 | 1743.9 | 1.133 | 217.6 | 0.544 |
| 12.0 | 1744.9 | 1.134 | 235.3 | 0.588 |

Cruise: TBAC
lat: 27-32.99 N

Station: LTB2-2
long: 82-41.20 W

date: 4 JUN 95
depth: 5 m

calc for: 27.8 deg C 34.0 o/oo 5.0 m 400 kHz
ref core: 25.6 deg C 82.58 delta-t 303.1 H 0.001 V/D
smp core: 34.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1539.8 | 1.001 | 1.5 | 0.004 |
| 0.0 | 1658.9 | 1.078 | 191.9 | 0.480 |
| 1.0 | 1715.6 | 1.115 | 174.4 | 0.436 |
| 2.0 | 1733.6 | 1.127 | 190.2 | 0.476 |
| 3.0 | 1740.0 | 1.131 | 204.9 | 0.512 |
| 4.0 | 1736.6 | 1.128 | 201.9 | 0.505 |
| 5.0 | 1732.6 | 1.126 | 190.2 | 0.476 |
| 6.0 | 1720.0 | 1.118 | 224.8 | 0.562 |
| 7.0 | 1725.3 | 1.121 | 238.3 | 0.596 |
| 8.0 | 1736.6 | 1.128 | 229.2 | 0.573 |
| 9.0 | 1740.0 | 1.131 | 212.6 | 0.531 |
| 10.0 | 1742.0 | 1.132 | 219.3 | 0.548 |
| 11.0 | 1719.0 | 1.117 | 313.9 | 0.785 |
| 12.0 | 1693.3 | 1.100 | 301.2 | 0.753 |
| 13.0 | 1676.1 | 1.089 | 284.0 | 0.710 |
| 14.0 | 1673.4 | 1.087 | 295.2 | 0.738 |
| 15.0 | 1672.9 | 1.087 | 265.8 | 0.664 |
| 16.0 | 1671.6 | 1.086 | 271.6 | 0.679 |
| 17.0 | 1679.4 | 1.091 | 355.3 | 0.888 |
| 18.0 | 1689.1 | 1.098 | 281.8 | 0.705 |
| 19.0 | 1690.0 | 1.098 | 295.2 | 0.738 |
| 20.0 | 1700.8 | 1.105 | 414.0 | 1.035 |

Cruise: TBAC
lat: 27-32.99 N

Station: LTB2-3
long: 82-41.20 W

date: 4 JUN 95
depth: 5 m

calc for: 27.8 deg C 34.0 o/oo 5.0 m 400 kHz
ref core: 25.6 deg C 82.59 delta-t 300.0 H 0.001 V/D
smp core: 34.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1537.9 | 0.999 | 1.5 | 0.004 |
| 0.0 | 1655.3 | 1.076 | 139.7 | 0.349 |
| 1.0 | 1679.4 | 1.091 | 229.2 | 0.573 |
| 2.0 | 1709.9 | 1.111 | 239.9 | 0.600 |
| 3.0 | 1729.2 | 1.124 | 180.6 | 0.452 |
| 4.0 | 1737.6 | 1.129 | 183.3 | 0.458 |
| 5.0 | 1743.0 | 1.133 | 183.3 | 0.458 |
| 6.0 | 1743.0 | 1.133 | 180.6 | 0.452 |
| 7.0 | 1733.6 | 1.127 | 197.4 | 0.493 |
| 8.0 | 1732.6 | 1.126 | 183.3 | 0.458 |
| 9.0 | 1735.1 | 1.127 | 180.6 | 0.452 |
| 10.0 | 1738.1 | 1.129 | 183.3 | 0.458 |
| 11.0 | 1739.0 | 1.130 | 213.1 | 0.533 |

Cruise: TBAC
lat: 27-32.99 N

Station: LTB2-4
long: 82-41.20 W

date: 4 JUN 95
depth: 5 m

calc for: 27.8 deg C 34.0 o/oo 5.0 m 400 kHz
ref core: 25.5 deg C 82.56 delta-t 303.1 H 0.001 V/D
smp core: 34.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1537.5 | 0.999 | 1.5 | 0.004 |
| 0.0 | 1647.7 | 1.071 | 267.7 | 0.669 |
| 1.0 | 1697.5 | 1.103 | 212.6 | 0.531 |
| 2.0 | 1715.1 | 1.115 | 195.3 | 0.488 |
| 3.0 | 1723.3 | 1.120 | 174.4 | 0.436 |
| 4.0 | 1729.2 | 1.124 | 201.9 | 0.505 |
| 5.0 | 1725.3 | 1.121 | 208.1 | 0.520 |
| 6.0 | 1719.9 | 1.118 | 211.3 | 0.528 |
| 7.0 | 1715.6 | 1.115 | 198.9 | 0.497 |
| 8.0 | 1730.1 | 1.124 | 217.9 | 0.545 |
| 9.0 | 1728.2 | 1.123 | 211.3 | 0.528 |
| 10.0 | 1735.5 | 1.128 | 208.1 | 0.520 |
| 11.0 | 1743.9 | 1.133 | 233.6 | 0.584 |
| 12.0 | 1732.6 | 1.126 | 230.6 | 0.577 |
| 13.0 | 1727.2 | 1.122 | 269.6 | 0.674 |

Cruise: TBAC
lat: 27-33.00 N

Station: LTB3-1
long: 82-40.50 W

date: 4 JUN 95
depth: 5 m

calc for: 27.7 deg C 34.0 o/oo 5.0 m 400 kHz
ref core: 25.5 deg C 82.59 delta-t 303.1 H 0.001 V/D
smp core: 34.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1539.2 | 1.000 | 0.0 | 0.000 |
| 0.0 | 1664.5 | 1.082 | 233.6 | 0.584 |
| 1.0 | 1697.3 | 1.103 | 190.2 | 0.476 |
| 2.0 | 1702.0 | 1.106 | 198.9 | 0.497 |
| 3.0 | 1715.8 | 1.115 | 208.1 | 0.520 |
| 4.0 | 1729.4 | 1.124 | 239.8 | 0.600 |
| 5.0 | 1748.7 | 1.136 | 230.6 | 0.577 |
| 6.0 | 1756.7 | 1.142 | 226.3 | 0.566 |
| 7.0 | 1751.2 | 1.138 | 241.4 | 0.604 |
| 8.0 | 1757.2 | 1.142 | 236.7 | 0.592 |
| 9.0 | 1762.8 | 1.146 | 215.2 | 0.538 |
| 10.0 | 1745.2 | 1.134 | 208.7 | 0.522 |
| 11.0 | 1739.2 | 1.130 | 230.6 | 0.577 |
| 12.0 | 1737.8 | 1.129 | 246.3 | 0.616 |
| 13.0 | 1724.0 | 1.120 | 307.4 | 0.768 |

Cruise: TBAC Station: LTB3-2 date: 4 JUN 95
lat: 27-33.00 N long: 82-40.50 W depth: 5 m

calc for: 27.7 deg C 34.0 o/oo 5.0 m 400 kHz
ref core: 26.8 deg C 82.63 delta-t 287.5 H 0.001 V/D
smp core: 34.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1536.0 | 0.998 | 0.0 | 0.000 |
| 0.0 | 1658.3 | 1.078 | 166.9 | 0.417 |
| 1.0 | 1676.5 | 1.090 | 272.2 | 0.681 |
| 2.0 | 1677.9 | 1.090 | 230.7 | 0.577 |
| 3.0 | 1732.6 | 1.126 | 315.9 | 0.790 |
| 4.0 | 1763.2 | 1.146 | 182.3 | 0.456 |
| 5.0 | 1775.0 | 1.154 | 171.9 | 0.430 |
| 6.0 | 1778.6 | 1.156 | 177.2 | 0.443 |
| 7.0 | 1782.7 | 1.159 | 185.5 | 0.464 |
| 8.0 | 1782.2 | 1.158 | 182.7 | 0.457 |

Cruise: TBAC
lat: 27-33.00 N

Station: LTB3-3
long: 82-40.50 W

date: 4 JUN 95
depth: 5 m

calc for: 27.7 deg C 34.0 o/oo 5.0 m 400 kHz
ref core: 26.8 deg C 82.62 delta-t 287.5 H 0.001 V/D
smp core: 34.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1537.2 | 0.999 | 0.0 | 0.000 |
| 0.0 | 1659.2 | 1.078 | 148.2 | 0.370 |
| 1.0 | 1695.6 | 1.102 | 364.7 | 0.912 |
| 2.0 | 1712.2 | 1.113 | 226.1 | 0.565 |
| 3.0 | 1729.7 | 1.124 | 169.4 | 0.423 |
| 4.0 | 1740.0 | 1.131 | 171.9 | 0.430 |
| 5.0 | 1764.2 | 1.147 | 166.9 | 0.417 |
| 6.0 | 1771.9 | 1.152 | 182.7 | 0.457 |
| 7.0 | 1781.2 | 1.158 | 429.7 | 1.074 |
| 9.0 | 1704.6 | 1.108 | 482.7 | 1.207 |
| 10.0 | 1728.2 | 1.123 | 274.3 | 0.686 |
| 11.0 | 1737.1 | 1.129 | 247.3 | 0.618 |
| 12.0 | 1742.5 | 1.132 | 249.1 | 0.623 |
| 13.0 | 1740.0 | 1.131 | 213.1 | 0.533 |
| 14.0 | 1745.0 | 1.134 | 233.9 | 0.585 |
| 15.0 | 1727.7 | 1.123 | 283.1 | 0.708 |
| 16.0 | 1718.5 | 1.117 | 280.8 | 0.702 |
| 17.0 | 1716.6 | 1.116 | 360.8 | 0.902 |
| 18.0 | 1709.8 | 1.111 | 327.9 | 0.820 |
| 19.0 | 1712.7 | 1.113 | 280.8 | 0.702 |
| 20.0 | 1721.4 | 1.119 | 256.4 | 0.641 |
| 21.0 | 1728.7 | 1.124 | 272.2 | 0.681 |
| 22.0 | 1717.0 | 1.116 | 254.5 | 0.636 |
| 23.0 | 1707.4 | 1.110 | 256.4 | 0.641 |
| 24.0 | 1705.5 | 1.108 | 313.2 | 0.783 |

| | | | | |
|---|---|---|---|---|
| 25.0 | 1720.4 | 1.118 | 287.7 | 0.719 |
| 26.0 | 1741.0 | 1.132 | 292.4 | 0.731 |
| 27.0 | 1738.1 | 1.130 | 297.3 | 0.743 |
| 28.0 | 1742.5 | 1.132 | 280.8 | 0.702 |
| 29.0 | 1761.1 | 1.145 | 252.7 | 0.632 |
| 30.0 | 1756.6 | 1.142 | 262.1 | 0.655 |
| 31.0 | 1753.5 | 1.140 | 316.0 | 0.790 |

Cruise: TBAC
lat: 27-33.00 N

Station: LTB3-4
long: 82-40.50 W

date: 4 JUN 95
depth: 5 m

calc for: 27.7 deg C 34.0 o/oo 5.0 m 400 kHz
ref core: 26.8 deg C 82.61 delta-t 290.6 H 0.001 V/D
smp core: 34.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1537.6 | 0.999 | 0.0 | 0.000 |
| 0.0 | 1767.8 | 1.149 | 263.6 | 0.659 |
| 1.0 | 1723.3 | 1.120 | 178.8 | 0.447 |
| 2.0 | 1727.7 | 1.123 | 200.2 | 0.500 |
| 3.0 | 1742.0 | 1.132 | 188.2 | 0.471 |
| 4.0 | 1758.6 | 1.143 | 165.9 | 0.415 |
| 5.0 | 1767.8 | 1.149 | 165.9 | 0.415 |
| 6.0 | 1767.8 | 1.149 | 184.2 | 0.461 |
| 7.0 | 1764.7 | 1.147 | 189.9 | 0.475 |
| 8.0 | 1756.6 | 1.142 | 202.1 | 0.505 |
| 9.0 | 1757.1 | 1.142 | 202.1 | 0.505 |
| 10.0 | 1756.1 | 1.141 | 187.1 | 0.468 |
| 11.0 | 1755.1 | 1.141 | 215.3 | 0.538 |
| 12.0 | 1752.0 | 1.139 | 232.3 | 0.581 |
| 13.0 | 1739.6 | 1.131 | 291.6 | 0.729 |
| 14.0 | 1723.3 | 1.120 | 294.0 | 0.735 |
| 15.0 | 1717.0 | 1.116 | 275.8 | 0.690 |
| 16.0 | 1730.2 | 1.124 | 306.6 | 0.766 |
| 17.0 | 1740.5 | 1.131 | 261.7 | 0.654 |
| 18.0 | 1736.6 | 1.129 | 230.7 | 0.577 |
| 19.0 | 1736.6 | 1.129 | 294.0 | 0.735 |
| 20.0 | 1744.0 | 1.133 | 428.1 | 1.070 |
| 21.0 | 1748.0 | 1.136 | 564.9 | 1.412 |
| 22.0 | 1733.6 | 1.127 | 661.0 | 1.653 |
| 23.0 | 1715.6 | 1.115 | 498.8 | 1.247 |

Cruise: TBAC
lat: 27-33.OO N

Station: LTB4-1
long: 82-40.00 W

date: 4 JUN 95
depth: 5 m

calc for: 27.7 deg C 34.0 o/oo 5.0 m 400 kHz
ref core: 26.8 deg C 82.60 delta-t 290.6 H 0.001 V/D
smp core: 34.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1535.5 | 0.998 | 0.0 | 0.000 |
| 0.0 | 1768.1 | 1.149 | 233.8 | 0.585 |
| 1.0 | 1727.5 | 1.123 | 210.5 | 0.526 |
| 2.0 | 1697.3 | 1.103 | 181.5 | 0.454 |
| 3.0 | 1689.8 | 1.098 | 205.3 | 0.513 |
| 4.0 | 1689.3 | 1.098 | 223.2 | 0.558 |
| 5.0 | 1711.6 | 1.112 | 240.3 | 0.601 |
| 6.0 | 1739.9 | 1.131 | 210.5 | 0.526 |
| 7.0 | 1748.3 | 1.136 | 204.0 | 0.510 |
| 8.0 | 1748.8 | 1.137 | 207.9 | 0.520 |
| 9.0 | 1741.8 | 1.132 | 206.6 | 0.516 |
| 10.0 | 1737.4 | 1.129 | 256.0 | 0.640 |
| 11.0 | 1729.5 | 1.124 | 271.7 | 0.679 |
| 12.0 | 1750.3 | 1.138 | 261.7 | 0.654 |
| 13.0 | 1747.3 | 1.136 | 261.7 | 0.654 |

Cruise: TBAC
lat: 27-33.00 N

Station: LTB4-2
long: 82-40.00 W

date: 4 JUN 95
depth: 5 m

calc for: 27.7 deg C 34.0 o/oo 5.0 m 400 kHz
ref core: 26.8 deg C 82.61 delta-t 290.6 H 0.001 V/D
smp core: 34.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1537.0 | 0.999 | 0.0 | 0.000 |
| 0.0 | 1544.4 | 1.004 | 64.8 | 0.162 |
| 1.0 | 1658.6 | 1.078 | 202.7 | 0.507 |
| 2.0 | 1676.8 | 1.090 | 263.6 | 0.659 |
| 3.0 | 1733.4 | 1.127 | 267.6 | 0.669 |
| 4.0 | 1742.3 | 1.132 | 213.3 | 0.533 |
| 5.0 | 1755.9 | 1.141 | 223.2 | 0.558 |
| 6.0 | 1772.2 | 1.152 | 201.4 | 0.504 |
| 7.0 | 1771.7 | 1.151 | 226.1 | 0.565 |
| 8.0 | 1750.3 | 1.138 | 286.9 | 0.717 |
| 9.0 | 1739.9 | 1.131 | 340.7 | 0.852 |
| 10.0 | 1730.5 | 1.125 | 498.8 | 1.247 |
| 11.0 | 1715.4 | 1.115 | 749.9 | 1.875 |
| 14.0 | 1675.4 | 1.089 | 779.3 | 1.948 |
| 15.0 | 1678.2 | 1.091 | 526.8 | 1.317 |
| 16.0 | 1685.1 | 1.095 | 465.1 | 1.163 |
| 17.0 | 1678.6 | 1.091 | 434.4 | 1.086 |
| 18.0 | 1658.6 | 1.078 | 530.0 | 1.325 |
| 19.0 | 1674.5 | 1.088 | 613.5 | 1.534 |
| 20.0 | 1704.4 | 1.108 | 390.3 | 0.976 |

Cruise: TBAC
lat: 27-33.00 N

Station: LTB4-3
long: 82-40.00 W

date: 4 JUN 95
depth: 5 m

calc for: 27.7 deg C 34.0 o/oo    5.0 m  400 kHz
ref core: 26.8 deg C 82.64 delta-t    290.6 H 0.001 V/D
smp core: 34.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1540.1 | 1.001 | 0.0 | 0.000 |
| 0.0 | 1653.6 | 1.075 | 88.4 | 0.221 |
| 1.0 | 1646.5 | 1.070 | 201.4 | 0.504 |
| 2.0 | 1673.6 | 1.088 | 370.4 | 0.926 |
| 3.0 | 1687.9 | 1.097 | 218.8 | 0.547 |
| 4.0 | 1678.6 | 1.091 | 227.7 | 0.569 |
| 5.0 | 1700.6 | 1.105 | 259.8 | 0.649 |
| 6.0 | 1695.9 | 1.102 | 259.8 | 0.649 |
| 7.0 | 1708.2 | 1.110 | 291.6 | 0.729 |
| 8.0 | 1711.1 | 1.112 | 271.7 | 0.679 |
| 9.0 | 1675.9 | 1.089 | 229.2 | 0.573 |
| 10.0 | 1667.2 | 1.084 | 271.7 | 0.679 |
| 11.0 | 1666.7 | 1.083 | 351.1 | 0.878 |
| 12.0 | 1732.0 | 1.126 | 706.8 | 1.767 |
| 13.0 | 1679.1 | 1.091 | 602.6 | 1.507 |
| 14.0 | 1684.2 | 1.095 | 463.0 | 1.158 |
| 15.0 | 1687.4 | 1.097 | 536.4 | 1.341 |
| 16.0 | 1697.3 | 1.103 | 448.0 | 1.120 |

Cruise: TBAC
lat: 27-33.00 N

Station: LTB4-4
long: 82-40.00 W

date: 4 JUN 95
depth: 5 m

calc for: 27.7 deg C 34.0 o/oo 5.0 m 400 kHz
ref core: 26.9 deg C 82.59 delta-t 290.6 H 0.001 V/D
smp core: 34.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1537.0 | 0.999 | 0.0 | 0.000 |
| 0.0 | 1651.4 | 1.073 | 127.4 | 0.319 |
| 1.0 | 1712.1 | 1.113 | 265.6 | 0.664 |
| 2.0 | 1698.3 | 1.104 | 184.2 | 0.461 |
| 3.0 | 1688.4 | 1.097 | 209.2 | 0.523 |
| 4.0 | 1695.0 | 1.102 | 257.9 | 0.645 |
| 5.0 | 1702.1 | 1.106 | 213.3 | 0.533 |
| 6.0 | 1733.5 | 1.127 | 320.4 | 0.801 |
| 7.0 | 1762.5 | 1.145 | 200.2 | 0.500 |
| 8.0 | 1760.5 | 1.144 | 201.4 | 0.504 |

Cruise: TBAC
lat: 27-32.99 N

Station: LTB5-1
long: 82-39.99 W

date: 6 JUN 95
depth: 4 m

calc for: 27.9 deg C 33.0 o/oo 4.0 m 400 kHz
ref core: 27.0 deg C 82.62 delta-t 303.1 H 0.001 V/D
smp core: 33.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1538.3 | 1.000 | 4.5 | 0.011 |
| 0.0 | 1546.9 | 1.006 | 143.1 | 0.358 |
| 1.0 | 1677.8 | 1.091 | 223.4 | 0.559 |
| 2.0 | 1677.8 | 1.091 | 219.3 | 0.548 |
| 3.0 | 1687.6 | 1.097 | 239.8 | 0.600 |
| 4.0 | 1690.9 | 1.099 | 258.4 | 0.646 |
| 5.0 | 1717.0 | 1.116 | 299.9 | 0.750 |
| 6.0 | 1740.5 | 1.132 | 297.6 | 0.744 |
| 7.0 | 1747.0 | 1.136 | 269.6 | 0.674 |

Cruise: TBAC
lat: 27-32.99 N

Station: LTB5-2
long: 82-39.99 W

date: 6 JUN 95
depth: 4 m

calc for: 27.9 deg C 33.0 o/oo    4.0 m  400 kHz
ref core: 26.0 deg C 82.52 delta-t    303.1 H 0.001 V/D
smp core: 33.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1534.0 | 0.997 | 0.0 | 0.000 |
| 0.0 | 1536.3 | 0.999 | 195.7 | 0.489 |
| 1.0 | 1655.3 | 1.076 | 226.3 | 0.566 |
| 2.0 | 1691.4 | 1.100 | 288.4 | 0.721 |
| 3.0 | 1694.2 | 1.102 | 202.5 | 0.506 |
| 4.0 | 1678.0 | 1.091 | 262.0 | 0.655 |
| 5.0 | 1681.7 | 1.093 | 253.1 | 0.633 |
| 6.0 | 1692.4 | 1.100 | 251.4 | 0.628 |
| 7.0 | 1691.0 | 1.099 | 265.8 | 0.664 |
| 8.0 | 1697.5 | 1.104 | 315.2 | 0.788 |
| 9.0 | 1706.1 | 1.109 | 341.7 | 0.854 |
| 10.0 | 1710.4 | 1.112 | 372.3 | 0.931 |
| 11.0 | 1694.7 | 1.102 | 406.1 | 1.015 |
| 12.0 | 1697.5 | 1.104 | 477.1 | 1.193 |
| 13.0 | 1685.4 | 1.096 | 351.8 | 0.879 |
| 14.0 | 1670.6 | 1.086 | 428.0 | 1.070 |

Cruise: TBAC
lat: 27-37.49 N

Station: EK1-2
long: 82-51.00 W

date: 6 JUN 95
depth: 8 m

calc for: 27.9 deg C 35.0 o/oo 8.0 m 400 kHz
ref core: 26.1 deg C 82.55 delta-t 306.2 H 0.001 V/D
smp core: 35.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1538.3 | 0.999 | 0.0 | 0.000 |
| 0.0 | 1546.9 | 1.004 | 155.0 | 0.387 |
| 1.0 | 1613.0 | 1.047 | 448.5 | 1.121 |
| 2.0 | 1692.5 | 1.099 | 292.1 | 0.730 |
| 3.0 | 1701.9 | 1.105 | 271.1 | 0.678 |
| 4.0 | 1694.3 | 1.100 | 423.6 | 1.059 |
| 5.0 | 1672.1 | 1.086 | 480.7 | 1.202 |
| 6.0 | 1650.4 | 1.072 | 437.1 | 1.093 |
| 7.0 | 1640.7 | 1.065 | 415.4 | 1.039 |
| 8.0 | 1631.9 | 1.060 | 340.0 | 0.850 |
| 9.0 | 1632.8 | 1.060 | 267.2 | 0.668 |
| 10.0 | 1647.8 | 1.070 | 294.4 | 0.736 |
| 11.0 | 1659.4 | 1.077 | 299.0 | 0.748 |
| 12.0 | 1668.4 | 1.083 | 346.5 | 0.866 |
| 13.0 | 1654.9 | 1.074 | 310.1 | 0.775 |
| 14.0 | 1669.3 | 1.084 | 319.4 | 0.799 |

Cruise: TBAC
lat: 27-37.49 N

Station: EK1-1
long: 82-51.00 W

date: 6 JUN 95
depth: 8 m

calc for: 27.9 deg C 35.0 o/oo 8.0 m 400 kHz
ref core: 26.5 deg C 82.56 delta-t 306.2 H 0.001 V/D
smp core: 35.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1538.7 | 0.999 | 4.4 | 0.011 |
| 0.0 | 1651.9 | 1.072 | 95.8 | 0.240 |
| 1.0 | 1771.6 | 1.150 | 146.6 | 0.367 |
| 2.0 | 1771.1 | 1.150 | 178.4 | 0.446 |
| 3.0 | 1733.4 | 1.125 | 360.3 | 0.901 |
| 4.0 | 1670.8 | 1.085 | 299.0 | 0.748 |
| 5.0 | 1653.7 | 1.074 | 271.1 | 0.678 |
| 6.0 | 1669.9 | 1.084 | 299.0 | 0.748 |
| 7.0 | 1667.7 | 1.083 | 308.9 | 0.772 |
| 8.0 | 1666.7 | 1.082 | 367.8 | 0.920 |
| 9.0 | 1658.6 | 1.077 | 501.3 | 1.253 |
| 10.0 | 1660.4 | 1.078 | 557.9 | 1.395 |
| 11.0 | 1659.0 | 1.077 | 327.8 | 0.820 |
| 12.0 | 1661.3 | 1.079 | 281.2 | 0.703 |
| 13.0 | 1654.6 | 1.074 | 292.1 | 0.730 |
| 14.0 | 1653.2 | 1.073 | 267.2 | 0.668 |

Cruise: TBAC  Station: EK1-3  date: 6 JUN 95
lat: 27-37.49 N  long: 82-51.00 W  depth: 8 m

calc for: 27.9 deg C 35.0 o/oo  8.0 m  400 kHz
ref core: 26.0 deg C 82.56 delta-t  306.2 H 0.001 V/D
smp core: 35.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1537.1 | 0.998 | 0.0 | 0.000 |
| 0.0 | 1651.7 | 1.072 | 170.9 | 0.427 |
| 1.0 | 1761.1 | 1.143 | 166.2 | 0.416 |
| 2.0 | 1755.1 | 1.139 | 232.1 | 0.580 |
| 3.0 | 1673.4 | 1.086 | 316.7 | 0.792 |
| 4.0 | 1658.9 | 1.077 | 258.1 | 0.645 |
| 5.0 | 1650.8 | 1.072 | 275.0 | 0.688 |
| 6.0 | 1638.5 | 1.064 | 254.6 | 0.636 |
| 7.0 | 1658.9 | 1.077 | 400.1 | 1.000 |
| 8.0 | 1621.1 | 1.053 | 426.6 | 1.066 |
| 9.0 | 1633.2 | 1.060 | 351.5 | 0.879 |
| 10.0 | 1660.7 | 1.078 | 390.8 | 0.977 |

Cruise: TBAC
lat: 27-37.49 N

Station: EK1-4
long: 82-51.00 W

date: 6 JUN 95
depth: 8 m

calc for: 27.9 deg C 35.0 o/oo 8.0 m 400 kHz
ref core: 26.0 deg C 82.57 delta-t 306.2 H 0.001 V/D
smp core: 35.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1537.1 | 0.998 | -1.4 | -0.004 |
| 0.0 | 1544.1 | 1.003 | 56.3 | 0.141 |
| 1.0 | 1763.6 | 1.145 | 183.6 | 0.459 |
| 2.0 | 1752.5 | 1.138 | 277.1 | 0.693 |
| 3.0 | 1726.7 | 1.121 | 219.3 | 0.548 |
| 4.0 | 1734.1 | 1.126 | 173.4 | 0.433 |
| 5.0 | 1732.6 | 1.125 | 448.5 | 1.121 |
| 6.0 | 1649.4 | 1.071 | 319.4 | 0.799 |
| 7.0 | 1647.7 | 1.070 | 333.8 | 0.834 |
| 8.0 | 1648.5 | 1.070 | 325.0 | 0.812 |
| 9.0 | 1650.3 | 1.071 | 379.9 | 0.950 |
| 10.0 | 1658.4 | 1.077 | 462.7 | 1.157 |
| 11.0 | 1669.2 | 1.084 | 534.2 | 1.336 |
| 12.0 | 1651.2 | 1.072 | 320.8 | 0.802 |
| 13.0 | 1654.8 | 1.074 | 329.3 | 0.823 |
| 14.0 | 1662.0 | 1.079 | 325.0 | 0.812 |

Cruise: TBAC Station: EK2-1 date: 7 JUN 95
lat: 27-37.48 N long: 82-50.50 W depth: 7 m

calc for: 28.1 deg C 35.0 o/oo 7.0 m 400 kHz
ref core: 28.0 deg C 82.66 delta-t 293.8 H 0.001 V/D
smp core: 35.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1539.2 | 0.999 | -3.0 | -0.007 |
| 0.0 | 1654.4 | 1.074 | 97.2 | 0.243 |
| 1.0 | 1760.0 | 1.142 | 191.5 | 0.479 |
| 2.0 | 1753.4 | 1.138 | 183.0 | 0.458 |
| 3.0 | 1763.6 | 1.145 | 180.3 | 0.451 |
| 4.0 | 1775.9 | 1.153 | 230.7 | 0.577 |
| 5.0 | 1758.0 | 1.141 | 279.5 | 0.699 |
| 6.0 | 1665.3 | 1.081 | 267.1 | 0.668 |
| 7.0 | 1796.8 | 1.166 | 226.2 | 0.565 |
| 8.0 | 1802.1 | 1.170 | 269.1 | 0.673 |
| 9.0 | 1674.4 | 1.087 | 394.2 | 0.985 |

Cruise: TBAC
lat: 27-37.48 N

Station: EK2-2
long: 82-50.50 W

date: 7 JUN 95
depth: 7 m

calc for: 28.1 deg C 35.0 o/oo 7.0 m 400 kHz
ref core: 26.8 deg C 82.59 delta-t 300.0 H 0.001 V/D
smp core: 35.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1538.3 | 0.998 | 1.5 | 0.004 |
| 0.0 | 1775.8 | 1.153 | 200.4 | 0.501 |
| 1.0 | 1761.9 | 1.144 | 152.0 | 0.380 |
| 2.0 | 1772.7 | 1.151 | 168.0 | 0.420 |
| 3.0 | 1781.0 | 1.156 | 158.7 | 0.397 |
| 4.0 | 1782.5 | 1.157 | 154.2 | 0.386 |
| 5.0 | 1778.9 | 1.155 | 163.3 | 0.408 |
| 6.0 | 1765.5 | 1.146 | 243.2 | 0.608 |
| 7.0 | 1747.3 | 1.134 | 233.7 | 0.584 |
| 8.0 | 1747.3 | 1.134 | 243.2 | 0.608 |
| 9.0 | 1719.8 | 1.116 | 236.8 | 0.592 |
| 10.0 | 1744.8 | 1.133 | 293.7 | 0.734 |
| 11.0 | 1731.5 | 1.124 | 341.9 | 0.855 |
| 12.0 | 1706.3 | 1.108 | 335.5 | 0.839 |
| 13.0 | 1710.1 | 1.110 | 293.7 | 0.734 |
| 14.0 | 1704.4 | 1.106 | 452.5 | 1.131 |
| 15.0 | 1711.1 | 1.111 | 484.3 | 1.211 |

Cruise: TBAC
lat: 27-37.48 N

Station: EK2-3
long: 82-50.50 W

date: 7 JUN 95
depth: 7 m

calc for: 28.1 deg C 35.0 o/oo 7.0 m 400 kHz
ref core: 26.8 deg C 82.60 delta-t 287.5 H 0.001 V/D
smp core: 35.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1537.5 | 0.998 | -3.1 | -0.008 |
| 0.0 | 1773.2 | 1.151 | 188.4 | 0.471 |
| 1.0 | 1758.4 | 1.141 | 143.8 | 0.360 |
| 2.0 | 1747.8 | 1.134 | 143.8 | 0.360 |
| 3.0 | 1748.8 | 1.135 | 159.6 | 0.399 |
| 4.0 | 1758.4 | 1.141 | 169.4 | 0.423 |
| 5.0 | 1766.0 | 1.146 | 139.7 | 0.349 |
| 6.0 | 1763.5 | 1.145 | 157.2 | 0.393 |
| 7.0 | 1751.8 | 1.137 | 162.0 | 0.405 |
| 8.0 | 1753.3 | 1.138 | 171.9 | 0.430 |
| 9.0 | 1734.9 | 1.126 | 254.5 | 0.636 |
| 10.0 | 1726.1 | 1.120 | 274.3 | 0.686 |
| 11.0 | 1702.0 | 1.105 | 305.0 | 0.763 |
| 12.0 | 1702.0 | 1.105 | 270.1 | 0.675 |

Cruise: TBAC
lat: 27-37.48 N

Station: EK2-4
long: 82-50.50 W

date: 7 JUN 95
depth: 7 m

calc for: 28.1 deg C 35.0 o/oo 7.0 m 400 kHz
ref core: 26.7 deg C 82.59 delta-t 303.1 H 0.001 V/D
smp core: 35.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1538.8 | 0.999 | 3.0 | 0.007 |
| 0.0 | 1777.9 | 1.154 | 176.9 | 0.442 |
| 1.0 | 1764.5 | 1.145 | 145.1 | 0.363 |
| 2.0 | 1762.0 | 1.144 | 151.4 | 0.378 |
| 3.0 | 1775.3 | 1.152 | 167.1 | 0.418 |
| 4.0 | 1787.2 | 1.160 | 147.2 | 0.368 |
| 5.0 | 1788.8 | 1.161 | 153.5 | 0.384 |
| 6.0 | 1780.5 | 1.156 | 167.1 | 0.418 |
| 7.0 | 1761.5 | 1.143 | 219.3 | 0.548 |
| 8.0 | 1754.4 | 1.139 | 201.3 | 0.503 |
| 9.0 | 1738.4 | 1.128 | 254.8 | 0.637 |
| 10.0 | 1750.9 | 1.136 | 275.6 | 0.689 |
| 11.0 | 1726.6 | 1.121 | 317.9 | 0.795 |
| 12.0 | 1714.5 | 1.113 | 490.3 | 1.226 |
| 13.0 | 1733.0 | 1.125 | 408.6 | 1.022 |
| 14.0 | 1729.1 | 1.122 | 271.6 | 0.679 |
| 15.0 | 1744.4 | 1.132 | 279.8 | 0.699 |
| 16.0 | 1740.9 | 1.130 | 317.9 | 0.795 |
| 17.0 | 1711.1 | 1.111 | 414.0 | 1.035 |

Cruise: TBAC
lat: 27 55.96 N

Station: IRB5-1
long: 82-52.65 W

date: 3 JUN 95
depth: 4 m

calc for: 28.6 deg C 35.0 o/oo 4.0 m 400 kHz
ref core: 24.5 deg C 82.60 delta-t 290.6 H 0.001 V/D
smp core: 35.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1540.3 | 0.999 | 0.0 | 0.000 |
| 0.0 | 1651.9 | 1.072 | 170.9 | 0.427 |
| 1.0 | 1767.1 | 1.146 | 149.7 | 0.374 |
| 2.0 | 1782.5 | 1.156 | 131.2 | 0.328 |
| 3.0 | 1784.6 | 1.158 | 125.6 | 0.314 |
| 4.0 | 1785.1 | 1.158 | 125.6 | 0.314 |
| 5.0 | 1787.2 | 1.159 | 135.1 | 0.338 |
| 6.0 | 1791.3 | 1.162 | 123.7 | 0.309 |

Cruise: TBAC
lat: 27-55.96 N

Station: IRB5-2
long: 82-52.65 W

date: 3 JUN 95
depth: 4 m

calc for: 28.6 deg C 35.0 o/oo 4.0 m 400 kHz
ref core: 24.5 deg C 82.56 delta-t 290.6 H 0.001 V/D
smp core: 35.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1540.3 | 0.999 | 0.0 | 0.000 |
| 0.0 | 1652.8 | 1.072 | 165.9 | 0.415 |
| 1.0 | 1772.7 | 1.150 | 116.6 | 0.292 |
| 2.0 | 1780.4 | 1.155 | 131.2 | 0.328 |
| 3.0 | 1776.8 | 1.153 | 120.1 | 0.300 |
| 4.0 | 1775.8 | 1.152 | 120.1 | 0.300 |
| 5.0 | 1774.2 | 1.151 | 139.1 | 0.348 |
| 6.0 | 1763.5 | 1.144 | 133.2 | 0.333 |
| 7.0 | 1767.6 | 1.147 | 135.1 | 0.338 |
| 8.0 | 1775.3 | 1.152 | 131.2 | 0.328 |
| 9.0 | 1781.5 | 1.156 | 143.3 | 0.358 |
| 10.0 | 1766.1 | 1.146 | 158.8 | 0.397 |
| 11.0 | 1767.1 | 1.146 | 173.5 | 0.434 |
| 12.0 | 1765.6 | 1.145 | 220.3 | 0.551 |
| 13.0 | 1761.0 | 1.142 | 267.6 | 0.669 |
| 14.0 | 1744.0 | 1.131 | 314.7 | 0.787 |

Cruise: TBAC
lat: 27-55.96 N

Station: IRB5-3
long: 82-52.65 W

date: 3 JUN 95
depth: 4 m

calc for: 28.6 deg C 35.0 o/oo 4.0 m 400 kHz
ref core: 24.5 deg C 82.54 delta-t 290.6 H 0.001 V/D
smp core: 35.0 o/oo 6.1 cm thickness

| Depth (cm) | Vp(m/SEC) | Vp RATIO | ALPHA(dB/m) | k |
|---|---|---|---|---|
| -1.0 | 1539.6 | 0.999 | 0.0 | 0.000 |
| 0.0 | 1647.5 | 1.069 | 207.9 | 0.520 |
| 1.0 | 1771.7 | 1.149 | 143.3 | 0.358 |
| 2.0 | 1778.9 | 1.154 | 123.7 | 0.309 |
| 3.0 | 1775.8 | 1.152 | 127.4 | 0.319 |
| 4.0 | 1766.6 | 1.146 | 137.1 | 0.343 |
| 5.0 | 1761.5 | 1.143 | 137.1 | 0.343 |
| 6.0 | 1767.6 | 1.147 | 133.2 | 0.333 |
| 7.0 | 1771.2 | 1.149 | 123.7 | 0.309 |
| 8.0 | 1771.2 | 1.149 | 141.2 | 0.353 |
| 9.0 | 1772.7 | 1.150 | 137.1 | 0.343 |
| 10.0 | 1775.3 | 1.152 | 129.3 | 0.323 |
| 11.0 | 1781.5 | 1.156 | 131.2 | 0.328 |
| 12.0 | 1774.8 | 1.151 | 151.9 | 0.380 |
| 13.0 | 1765.1 | 1.145 | 151.9 | 0.380 |
| 14.0 | 1759.5 | 1.141 | 181.5 | 0.454 |