Distributions of Surficial Sediment and Eelgrass in Great South Bay, New York (from Smith Point, West to Wantagh State Parkway)

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MAP 3?

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DISTRIBUTIONS OF SURFICIAL SEDIMENT AND EELGRASS IN GREAT SOUTH BAY, NEW YORK (FROM SMITH POINT, WEST TO WANTAGH STATE PARKWAY)

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Approved for Distribution

J.R. Schubel

J.R. Schubel, Director

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INTRODUCTION

Great South Bay is a bar-built estuary located along the south shore of Long Island (Figure 1). It is shallow, averaging less than two meters in depth. The Bay is bounded by the mainland to the north and by a barrier beach, Fire Island, to the south. The Bay receives runoff from more than forty streams and rivers. The largest, based on mean annual discharge and listed in order of decreasing discharge are the: Connetquot River, Carlls River, Carmans River and the Patchogue River (Hair and Buckner, 1973), Figure 2. Fire Island acts as a barrier between Great South Bay and the Atlantic Ocean. The only breach in the barrier island between Smith Point and Wantagh State Parkway is Fire Island Inlet, Figure 2. Fire Island is principally a recreational and resort area. Population increases dramatically from May to September because of the influx of summer vacationers and related seasonal service personnel. Population of the north shore is relatively stable year round.

In addition to being a seasonal recreational area, Great South Bay is noted for its tremendous harvest of hard clams *(Mercenaria mercenaria)*. The hard clam fishery has an estimated annual retail value of over 100 million dollars, directly employs thousands of baymen and shippers, and indirectly contributes to a variety of supporting businesses (Greene *et al.*, 1977). Aside from the shellfish, the Bay abounds with many varieties of finfish that support commercial and recreational fisheries.

With increases in population along the shorelines, stresses on the bay have increased. The amounts of pollutants added to streams have intensified. Since many of these, including most metals and chlorinated hydrocarbons, are relatively insoluble in water, they are scavenged rapidly from solution near their points of introduction by suspended particulate matter. Once adsorbed, their fate is determined primarily by the fine particle sediment system. Many end up on the bottom of Great South Bay in channels and other areas where fine-grained sediments are accumulating. Shipping, recreational boating and ferry traffic all have increased and routine dredging of major channels is necessary. Knowledge of the distribution of surficial sediments is important for a variety of management and planning purposes. The texture and quality of the sediment play an important role in determining the diversity and productivity of benthic communities.

The objectives of this study were to map the texture of the surficial sediments, their organic content, and the distribution of eelgrass. This report summarizes the data in tabular form (Appendix 1) and on a series of maps (packet). Tabulated data are presented as percent (by mass) of gravel (> 2.0 mm), sand (> 62.5 μm), silt (> 3.9 μm), clay (< 3.9 μm), shell fragments and organic carbon content for each sample. A station location map and contour maps of percent (by mass) silt plus clay, organic carbon, depth and eelgrass have been prepared, and are located in a packet at the end of the report.

METHODS

An area of approximately 290 km^2 (112 mi^2) was sampled in Great South Bay from Smith Point on the east to Wantagh State Parkway on the west--a distance of approximately 57 km (35.5 mi). A total of 582 samples were collected from April 1977 to October 1978. (The eastern part of the Bay from Smith Point to Homans Creek was sampled by Greene *et al.* from April to August 1977). The distance between each station was 800 m (0.5 mi), or less, and station locations were determined by horizontal sextant. Information recorded at each station included: (1) date and time of day; (2) position; (3) depth in meters; (4) any unusual features; and (5) presence or absence of eelgrass.

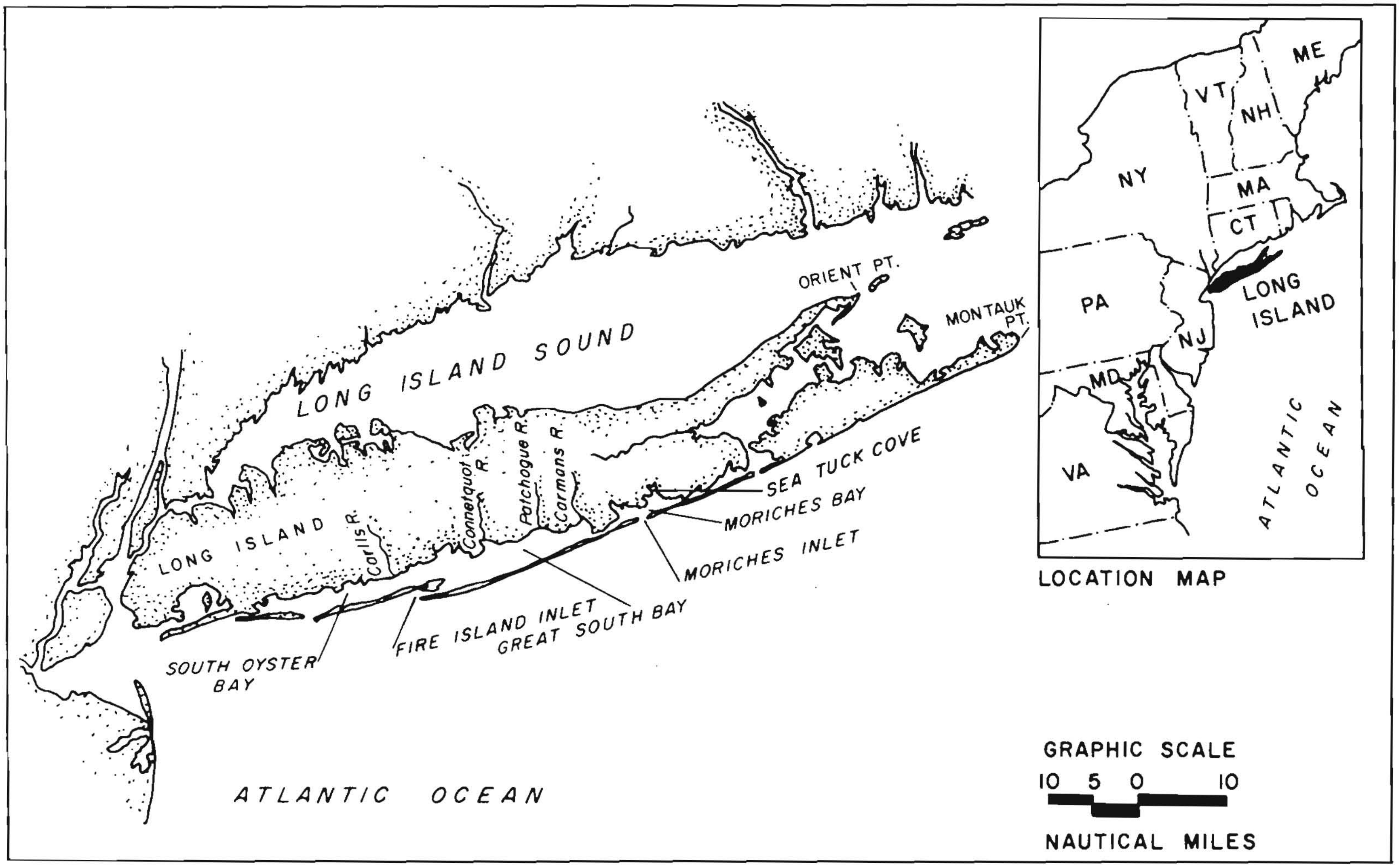

Figure 1. Map of Great South Bay.

Sediment samples were taken using a cylindrical plastic (PVC) scoop attached at 90 degrees to the end of a 5 m (16.5 ft) telescoping aluminum pole. The pole was calibrated to determine water depth. Penetration into the sediment was 4 to 8 cm (1.5 to 3 in), depending upon compaction of the sediment. Each sample was sealed in a plastic bag and stored in the field in an ice chest until it was refrigerated in the laboratory.

Each sample was homogenized in its plastic bag. Two subsamples were taken; one sample for particle size analysis, the other for analysis of combustible organic matter. Particle size distributions were determined by wet sieving and pipette analysis (Folk, 1964). Subsamples were dispersed with a 1% Calgon solution (sodium hexametaphosphate) and mechanically shaken for 1 hour. The subsample was wet sieved into a 1000 mℓ graduated cylinder using a combination of a 2 mm mesh sieve and a 63 μm mesh sieve to separate the gravel, sand, and mud fractions. The mud fraction remaining in the graduated cylinder was separated into silt and clay by taking two pipette withdrawals. The gravel, sand, silt, and clay fractions were then dried in an oven at 80-90°C, cooled to room temperature, and weighed. Those gravel fractions containing shell fragments were weighed before and after removal of the shells. Mass percentages of the four particle size categories were calculated with and without the shell fragments. No correction was made for salt content in the pipetted samples because the error introduced was considered insignificant.

Percent (by mass) loss on ignition was determined from the second sub-sample. After drying in an oven, each sample was disaggregated and dry-sieved through a 2 mm mesh sieve to remove the gravel. Approximately 20 grams of each subsample were combusted at 550°C for 5 hours, cooled to room temperature, and weighed to determine percent (by mass) loss on ignition.

An eelgrass survey was made during the following periods: August 1977, Smith Point to Homans Creek; July 1978, Homans Creek to Champlin Creek; October 1978, Champlin Creek to Wantagh State Parkway. Using methods of Greene *et al*. (1977), a scale of thin, medium, and thick coverage was used to map the distribution of eelgrass in Great South Bay. Visual observations were made while crossing the bay on a pre-determined grid system. Observations from a small boat were supplemented with bottom grabs and underwater observations. Visual estimates of seagrass density were quantified by sampling a square meter of thick, medium and thin seagrass cover. The seagrass was washed in a sieve and returned to the laboratory where it was re-washed, dried in an oven at 65°C for 48 hours and weighed. Estimates of coverage were divided into quartiles of 100 percent. Estimates of average dry weight per meter of seagrass were determined by combining density and percent coverage data. Total biomass of seagrass in the study area was estimated by multiplying percent cover by area and summing. An area of thin cover has a value ranging from > 0-125 g/m^2, medium cover: > 125-250 g/m^2, and thick cover: > 250-375 g/m^2.

RESULTS

Sediment Grain Sizes

Figure 2 shows the texture of the surficial sediments. Less than 10% of the 582 samples taken contained > 80% (by mass) silt and clay. This is < 5% of the entire bay bottom. More than 70% of all samples taken contained > 80% (by mass) sand. This area represents > 75% of the entire Bay bottom. As can be seen from Figure 3, the areas of high concentration of silt and clay are near the north shore where currents are sluggish and the water depths are generally greater than 2 meters (6.5 ft).

There are four major muddy areas (> 80%, by mass, silt and clay) in Great South Bay.

They occur in basins that trap fine-grained sediment and are located: (1) near Bellport and the Carmans River, (2) south of the Patchogue River, (3) south of the Bayport and Sayville area, and (4) a small area at Great Cove (Figure 3).

Transition zones where sediment grades from mud to sand indicate a decrease in depth. The north shore has a relatively sharp increase in water depth as compared to a more gradual increase in depth along the south shore. The entire section of the Bay west of the Robsert Moses Bridge is very shallow, being predominently 1 meter (3.2 ft), or less.

Sediment in the southern region of the Bay, east of the Fire Island Inlet, are swept clean of any fine-grained material. Sediments in the southern portion of the Bay are predominently sand, 90-99% (by mass). The sources of this sand are wind blown, wash over, and suspended sediment transport through Fire Island Inlet. There are 22 stations with gravel portions ranging from 10 to 60% (by mass). All these stations are located along the north shore, except for Station 13 which is at Smith Point, and most are in depths of approximately 1 meter (3.2 ft). Exceptions are stations 253, 254, 313, and 474 which are in 2 meters (6.5 ft) of water. The presence of gravel is not surprising since southern Long Island is an outwash plain consisting of unconsolidated glacial till left by the Wisconsin glacier.

Loss On Ignition

The organic carbon content of the sediment estimated by loss on ignition is presented in Figure 4. The areas of highest organic content are located: (1) near Smith Point, (2) near the Carmans River and Bellport area, (3) south of the Patchogue River in a region extending westward to Sayville, and (4) a small area off the mouth of the Connetquot River. These areas all have combustible organic carbon contents of 6%, or greater. The high organic content is positively correlated with high mud content (Figure 3), and with increasing depth (Figure 5). In the past the Carmans River carried large amounts of duck sludge into Great South Bay which contributed to organic-rich muds deposited in the Bellport area.

There are other stations scattered throughout the Bay near the entrances to small creeks and rivers where the percentage of combustible organic matter is greater than 6%. Stations 30, 43, 45 and 100 have organic carbon contents of 12, 31, 34 and 10% respectively. These stations all lie within small maintained channels leading to the barrier beach. In the western-most section of the Bay south of Nassau and Biltmore Shores is an area where organic carbon contents average 2% and are surrounded by an area with organics of 1%, or less. The patches of high organic carbon are associated with thick eelgrass cover in the area (Figure 6) which tends to produce and trap organic detritus.

Distribution and Abundance of Seagrass

Seagrass is relatively abundant in Great South Bay with eelgrass *(Zostera marina)* the predominant species. Wigeon grass *(Ruppia maritima)* is much less abundant, accounting for less than 2% of the standing crop. Eelgrass is most abundant in the southern portion of the Bay where water depths are less than 2 meters (6.4 ft). Eelgrass coverage is thick south of Biltmore Shores where it thrives because of shallow water, suitable substrate and excellent light penetration. According to Elder (1976), a salinity of 30‰ is ideal for eelgrass growth and this area of the Bay has a salinity of 30-31‰. Other areas of thick coverage are located: (1) near Smith Point and the Old Inlet area, (2) east of Davis Park, (3) on the east side of Fire Island Pines, (4) near East and West Fire Island, and (5) in the area north of

Captree Island.

Factors limiting the growth of eelgrass are insufficient light, strong wave action, and fast currents. Along the northern parts of the Bay where little eelgrass is found, and in deeper parts of the Bay, light may be limiting.

In 1977, baymen noted a decline in eelgrass abundance that may be attributed to the very long, cold winter of 1976-1977. The Bay froze solid up to 0.6 m thick causing possible scouring and permanent damage to the Bay bottom. As recently as the summer of 1979, baymen reported an increase in eelgrass abundance. This report provides baseline data on the distributions of sediment and eelgrass in Great South Bay that may be useful for management of the Bay.

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Appendix 1

Data for Surficial Sediments of Great South Bay

Station Number	Depth (Meters)	% Loss On Ignition	% Gravel	% Sand	% Silt	% Clay	% Shells
1	0.6	18.0	0.0	1.6	74.1	24.3	*
2	1.2	12.0	0.0	5.4	71.0	23.6	*
3	1.2	4.0	0.2	33.6	55.9	10.3	*
4	0.8	1.0	8.3	88.3	1.8	1.6	*
5	2.0	6.9	0.0	12.6	67.7	19.7	*
6	1.2	8.9	0.0	19.1	63.1	17.8	*
7	0.5	1.0	0.4	91.2	5.3	3.1	*
8	2.0	7.3	0.0	27.5	54.5	18.0	*
9	1.5	0.7	0.0	5.5	63.9	30.6	*
10	2.0	2.3	5.2	74.5	10.8	9.5	*
11	2.4	0.4	0.4	98.8	0.0	0.8	*
12	1.2	0.3	0.0	98.9	0.3	0.8	*
13	1.2	10.7	23.3	74.4	1.1	1.2	*
14	2.4	14.8	0.6	22.4	54.7	22.3	*
15	0.9	1.7	0.0	94.9	4.0	1.1	*
16	0.3	0.4	0.3	97.1	0.4	2.2	*
17	0.6	2.0	0.2	93.5	2.1	4.1	*
18	1.2	1.1	0.3	87.5	8.1	4.1	*
19	1.5	2.2	0.0	80.7	16.2	3.1	*
20	1.5	3.1	0.0	35.1	56.5	8.4	*
21	0.9	1.1	3.3	89.2	5.5	2.0	*
22	1.2	4.6	13.4	55.5	16.2	14.9	*
23	1.5	0.6	0.0	96.8	1.0	2.2	*
24	2.3	6.8	0.0	96.8	1.0	2.2	*
25	2.3	7.4	0.0	6.4	72.9	20.7	*
26	2.4	7.6	0.0	32.7	59.7	7.6	*
27	1.2	1.4	0.0	87.1	9.0	3.9	*
28	0.3	0.8	0.0	95.3	3.5	1.2	*
29	0.6	0.9	0.0	93.0	4.4	2.6	*
30	2.3	12.4	0.0	22.0	51.6	26.4	*
31	0.5	0.4	0.0	98.7	0.0	1.3	*
32	0.9	0.8	0.0	90.7	7.5	1.8	*
33	0.5	0.7	0.0	97.3	0.9	1.8	*
34	2.0	4.3	0.0	31.6	59.4	9.0	*
35	1.4	2.6	0.0	76.7	19.0	4.3	*
36	0.9	1.0	0.0	92.0	4.9	3.1	*
37	1.5	1.4	0.0	93.4	3.5	3.1	*
38	1.2	1.3	0.4	89.9	4.6	5.1	*
39	1.8	3.7	0.0	38.5	53.1	8.4	*
40	2.0	2.0	0.0	71.0	19.8	9.2	*
41	0.6	0.3	0.0	97.4	1.0	1.6	*
42	0.5	0.5	0.0	96.8	1.6	1.6	*

* % shells not calculated

Appendix 1

Data for Surficial Sediments (continued)

Station Number	Depth (Meters)	% Loss On Ignition	% Gravel	% Sand	% Silt	% Clay	% Shells
43	2.4	31.4	0.0	12.9	52.7	34.4	*
44	0.6	1.6	0.0	93.3	3.5	3.2	*
45	2.4	34.4	0.0	8.0	49.3	42.7	*
46	0.5	0.4	0.0	98.6	0.5	0.9	*
47	1.4	0.4	0.1	97.9	0.4	1.6	*
48	1.8	1.0	0.0	91.4	5.4	3.2	*
49	2.0	3.2	0.0	46.7	44.0	9.3	*
50	2.0	4.8	0.0	12.9	71.8	15.3	*
51	2.1	6.2	0.0	18.4	71.1	10.5	*
52	1.2	1.0	3.4	93.2	1.8	1.6	*
53	1.8	22.9	0.0	12.8	51.1	36.1	*
54	1.4	2.7	0.3	76.9	12.6	10.2	*
55	2.1	6.2	0.0	13.9	70.8	15.3	*
56	1.5	2.4	0.5	80.2	9.7	9.6	*
57	2.4	3.2	0.0	32.9	58.4	8.7	*
58	1.7	0.6	0.6	97.6	0.8	0.7	*
59	2.1	0.6	0.0	94.7	4.8	0.5	*
60	0.8	0.4	0.0	98.2	0.6	1.2	*
61	0.8	0.5	0.0	97.9	0.6	1.5	*
62	0.6	0.5	0.9	97.3	0.5	1.3	*
63	0.8	0.4	0.0	99.2	0.0	0.8	*
64	0.6	0.4	0.0	99.6	0.4	0.0	*
65	0.6	0.3	0.0	98.8	0.0	1.2	*
66	1.1	1.3	0.0	94.4	3.6	2.0	*
67	0.6	0.4	0.0	98.4	0.8	0.8	*
68	1.2	1.6	0.0	95.3	0.0	4.7	*
69	2.0	0.9	0.0	94.4	3.0	2.6	*
70	1.8	0.9	1.2	90.8	5.4	2.6	*
71	0.9	0.7	1.5	96.1	0.7	1.7	*
72	1.1	0.5	1.7	96.2	0.7	1.4	*
73	0.9	0.5	0.0	98.5	0.9	0.6	*
74	1.5	0.4	0.0	98.8	0.0	1.2	*
75	2.0	0.5	0.1	99.0	0.1	0.8	*
76	1.2	1.5	0.0	93.5	3.7	2.8	*
77	1.4	0.8	0.0	93.4	4.5	2.1	*
78	1.2	0.6	0.0	96.1	2.2	1.7	*
79	1.2	0.4	0.0	97.6	1.2	1.2	*
80	1.2	0.4	0.1	98.3	0.4	1.2	*
81	0.9	0.4	0.0	98.5	0.3	1.2	*
82	0.9	0.4	0.0	98.6	0.5	0.9	*
83	1.2	0.9	0.0	96.5	1.2	2.3	*
84	1.8	0.5	0.0	97.3	0.9	1.8	*

* shells not calculated

Data for Surficial Sediments(continued)

Station Number	Depth (Meters)	% Loss On Ignition	% Gravel	% Sand	% Silt	% Clay	% Shells
85	2.6	1.4	0.0	84.4	12.5	3.1	*
86	2.6	2.7	0.0	52.3	32.6	15.1	*
87	2.3	2.9	0.1	35.9	61.4	2.6	*
88	0.9	0.7	2.0	96.5	0.1	1.4	*
89	1.5	21.6	0.0	27.1	39.3	33.6	*
90	0.6	0.7	1.5	96.1	0.6	1.8	*
91	2.4	18.3	0.0	3.1	52.5	44.4	*
92	0.8	1.7	1.6	89.1	1.8	7.5	*
93	2.3	4.7	0.0	12.4	78.2	9.4	*
94	2.7	1.7	0.0	64.4	32.1	3.5	*
95	2.4	0.6	0.0	90.2	3.9	5.9	*
96	2.7	1.8	0.0	77.8	17.0	5.2	*
97	2.0	0.8	0.0	92.2	1.6	6.2	*
98	1.5	0.7	0.1	96.1	1.6	2.2	*
99	0.8	0.7	0.0	97.9	0.0	2.1	*
100	2.4	10.2	1.8	78.3	10.2	9.7	*
101	0.9	0.7	0.0	96.3	1.4	2.3	*
102	1.2	0.7	0.0	95.4	2.1	2.5	*
103	2.3	4.9	0.0	63.5	25.5	11.0	*
104	0.8	0.3	0.5	98.6	0.3	0.6	*
105	1.5	1.2	0.0	93.2	3.5	3.3	*
106	0.5	0.6	0.0	95.4	0.0	4.6	*
107	2.4	0.8	0.0	97.0	1.2	1.8	*
108	2.9	2.4	0.0	59.2	35.5	5.3	*
109	2.3	3.8	0.0	20.8	71.4	7.8	*
110	0.9	0.8	33.7	63.2	0.0	3.1	*
111	2.7	22.6	0.0	2.4	41.9	55.7	*
112	0.8	0.5	0.1	97.8	0.7	1.4	*
113	1.2	0.4	10.0	88.6	0.1	1.3	*
114	1.2	0.5	1.8	95.5	0.7	2.0	*
115	1.8	0.8	2.5	86.8	5.1	5.6	*
116	1.7	0.6	27.2	68.8	0.6	3.4	*
117	2.4	4.3	5.1	9.4	78.4	7.1	*
118	2.4	2.9	0.0	12.8	78.3	8.9	*
119	2.7	2.8	0.0	26.3	54.0	19.7	*
120	3.0	3.5	0.0	51.9	47.5	0.6	*
121	3.4	2.8	0.0	50.0	43.7	6.3	*
122	3.4	1.6	0.0	67.0	29.4	5.6	*
123	3.4	1.3	0.0	82.9	14.0	3.1	*
124	3.4	1.6	0.0	81.9	14.6	3.5	*
125	2.3	0.4	0.0	98.3	0.4	1.3	*
126	2.3	0.6	0.0	95.3	1.1	3.6	*
127	3.1	0.4	0.0	96.7	0.0	3.3	*

* % shells not calculated

Appendix 1

Data for Surficial Sediments(continued)

Station Number	Depth (Meters)	% Loss On Ignition	% Gravel	% Sand	% Silt	% Clay	% Shells
128	1.8	0.4	0.0	97.7	0.9	1.4	*
129	0.9	0.2	0.0	99.0	0.0	1.0	*
130	0.8	0.4	0.0	98.0	0.5	1.4	*
131	1.2	0.4	0.0	98.5	0.0	1.5	*
132	1.2	0.4	0.0	98.5	0.1	1.4	*
133	2.6	0.8	0.0	93.2	0.2	6.6	*
134	3.0	3.1	0.0	62.0	22.7	15.3	*
135	2.7	1.0	0.0	92.2	5.2	2.6	*
136	3.0	6.5	0.0	7.7	60.4	31.9	*
137	2.7	4.5	0.0	19.8	72.2	8.0	*
138	2.1	3.1	0.0	5.1	88.3	6.6	*
139	2.1	6.5	0.0	8.5	79.2	12.3	*
140	1.5	1.4	50.0	43.1	4.0	2.9	*
141	3.4	14.4	0.0	2.5	68.3	29.2	*
142	1.7	10.1	0.0	23.3	58.8	17.9	*
143	1.7	13.1	0.0	7.1	73.6	19.3	*
144	1.8	0.6	0.3	94.4	1.9	3.4	*
145	1.8	13.7	0.0	3.4	71.5	25.1	*
146	1.5	0.4	1.7	95.4	0.8	2.1	*
147	1.6	1.4	0.0	90.9	6.3	2.8	*
148	1.8	6.5	0.0	17.6	68.0	14.4	*
149	1.5	0.3	2.9	93.9	0.7	2.5	*
150	1.8	1.2	0.0	95.8	1.2	3.0	*
151	3.0	7.2	0.0	28.6	56.4	15.0	*
152	3.0	1.7	0.0	78.8	17.3	3.9	*
153	3.2	1.4	0.0	78.4	19.4	2.2	*
154	3.2	1.1	0.0	87.1	11.1	1.8	*
155	1.8	0.3	0.0	98.6	0.2	1.2	*
156	1.5	0.4	0.0	98.7	0.2	1.1	*
157	0.5	0.2	0.0	99.2	0.0	0.8	*
158	0.8	0.3	0.0	98.8	0.0	1.2	*
159	1.8	0.6	0.0	96.3	1.8	1.9	*
160	2.4	0.5	0.0	96.8	1.9	1.3	*
161	2.9	0.9	0.0	94.6	2.9	2.5	*
162	3.5	1.8	0.0	72.9	22.4	4.7	*
163	3.2	1.0	0.0	90.7	7.7	1.6	*
164	3.2	1.4	0.0	88.9	7.3	3.8	*
165	3.7	8.2	0.0	34.1	35.2	30.7	*
166	3.2	8.3	0.0	17.6	65.1	17.3	*
167	3.0	6.4	0.0	15.5	72.3	12.2	*
168	2.6	7.0	0.0	12.6	71.4	16.0	*
169	1.4	0.4	0.8	98.1	0.0	1.1	*

* % shells not calculated

Appendix 1

Data for Surficial Sediments(continued)

Station Number	Depth (Meters)	% Loss On Ignition	% Gravel	% Sand	% Silt	% Clay	% Shells
170	1.4	0.5	5.8	92.4	0.6	1.2	*
171	3.0	8.0	0.0	9.7	75.7	14.6	*
172	3.5	6.3	0.0	26.8	58.0	15.2	*
173	3.0	5.6	0.0	57.7	24.4	17.9	*
174	2.9	3.9	0.0	81.9	12.0	6.1	*
175	1.4	0.5	0.0	98.1	0.7	1.2	*
176	1.8	0.3	0.0	98.6	0.5	0.9	*
177	1.5	0.4	0.0	98.7	0.3	1.0	*
178	1.2	0.4	0.0	97.4	0.9	1.7	*
179	1.8	0.4	0.0T	98.6	0.3	1.1	0.1
180	2.1	0.5	0.0	97.7	0.7	1.6	0.0T
181	2.3	0.5	0.0	98.3	0.6	1.1	0.0T
182	2.6	0.5	0.1	98.0	0.6	1.3	0.1
183	2.7	2.0	0.0	92.2	3.7	4.1	15.8
184	2.9	1.3	0.0	96.2	2.0	1.8	2.4
185	3.7	5.0	0.0	66.6	25.7	7.7	2.5
186	3.8	5.0	0.0	36.5	54.0	9.5	1.8
187	3.2	6.9	0.0	14.1	74.1	11.8	6.6
188	2.7	7.3	0.0	10.5	76.0	13.5	7.9
189	2.3	6.4	0.0	8.3	82.5	9.2	2.1
190	1.1	0.8	0.1	97.3	0.7	1.9	0.4
191	1.1	0.4	0.0	98.6	0.1	1.3	0.0
192	1.4	8.0	0.0	13.5	80.5	6.0	0.5
193	1.7	13.7	0.0	3.1	78.8	18.1	0.0
194	2.1	0.8	0.0	95.9	2.4	1.7	0.1
195	3.4	6.8	0.0	18.8	75.8	5.4	4.7
196	3.7	6.1	0.0	15.2	69.7	15.1	5.9
197	3.8	3.7	0.0	55.2	35.4	9.4	10.4
198	4.0	8.0	0.0	25.7	56.2	18.1	0.0
199	3.7	2.0	0.0	91.7	5.1	3.2	0.4
200	3.0	1.5	0.0	97.8	0.8	1.4	1.1
201	3.5	1.0	0.0	90.3	7.0	2.7	0.1
202	2.1	0.5	0.0	98.9	0.1	1.0	0.2
203	2.0	0.4	0.0	98.6	0.1	1.3	0.1
204	1.8	0.4	0.0	98.5	0.2	1.4	0.0T
205	1.4	0.4	0.0	98.9	0.1	1.0	0.0
206	1.4	0.4	0.1	98.7	0.2	1.0	0.0
207	1.7	0.5	0.0	98.4	0.4	1.2	0.0
208	1.5	0.4	0.0	98.8	0.2	1.1	0.0T
209	1.5	0.4	0.0	98.6	0.2	1.3	0.0
210	1.5	0.4	0.0	98.7	0.3	1.0	0.0

*% shells not calculated
T = Trace, < 0.05

Appendix 1

Data for Surficial Sediments(continued)

Station Number	Depth (Meters)	% Loss On Ignition	% Gravel	% Sand	% Silt	% Clay	% Shells
211	1.2	0.3	0.1	99.0	0.1	0.8	0.0T
212	0.9	0.2	0.2	98.4	0.5	0.9	0.0
213	1.4	0.3	0.0	99.4	0.0	0.6	0.0T
214	1.2	0.4	0.0	98.9	0.1	1.0	1.1
215	3.4	1.3	0.0T	88.7	8.4	2.9	0.0T
216	3.4	2.5	0.1	84.5	9.9	5.6	1.8
217	3.7	1.9	0.0	83.4	11.3	5.3	1.5
218	3.8	3.5	0.0	50.6	43.7	5.7	1.3
219	3.7	4.2	0.0	71.4	20.5	8.1	2.0
220	3.4	6.1	0.0	15.7	67.9	16.4	2.3
221	3.0	8.6	0.0	9.1	71.6	19.3	1.1
222	2.3	2.0	0.0	83.8	11.7	4.5	0.4
223	1.8	0.7	0.0	98.5	0.5	1.0	0.7
224	1.8	0.8	0.8	95.8	1.4	1.8	0.3
225	1.2	0.4	11.2	87.3	0.2	1.3	0.2
226	1.2	4.0	27.4	70.7	0.7	1.2	0.0
227	2.4	5.4	0.5	74.6	17.8	7.1	6.0
228	3.0	5.8	0.0	23.8	62.3	13.9	1.7
229	3.4	6.7	1.9	15.9	69.2	13.0	0.0
230	3.5	3.6	0.0	38.2	52.2	9.6	0.6
231	3.5	1.2	0.0	91.7	6.0	2.3	0.7
232	3.7	1.2	0.0	85.2	12.2	2.6	3.9
233	3.4	2.7	0.0	73.9	20.8	5.3	0.2
234	2.4	0.5	0.0	97.6	0.7	1.7	0.0T
235	1.8	0.4	0.0	98.4	0.4	1.3	0.1
236	2.3	0.5	0.0	97.7	0.8	1.5	0.0T
237	2.0	0.4	0.0	98.7	0.1	1.2	0.1
238	1.1	0.3	0.2	98.9	0.1	0.8	0.0T
239	1.1	0.3	0.0T	99.1	0.0T	0.9	0.0T
240	1.2	0.3	0.0	99.0	0.2	0.8	0.3
241	2.6	1.0	0.0	93.8	4.0	2.2	0.1
242	1.8	0.4	0.0	98.6	0.5	0.9	0.0T
243	2.4	0.7	0.0	96.5	1.9	1.6	0.0T
244	2.1	0.5	0.0	97.9	0.6	1.5	0.1
245	3.0	1.0	0.0	93.5	4.0	2.5	0.3
246	2.9	0.3	0.0	97.5	1.1	1.4	0.2
247	3.4	2.8	0.7	80.9	12.9	5.5	10.6
248	2.4	0.5	0.6	98.1	1.2	0.1	1.0
249	2.1	0.7	0.1	97.8	1.2	1.2	3.3
250	1.8	0.4	0.1	97.7	0.6	1.6	0.3
251	1.1	0.8	8.0	87.7	2.3	2.0	1.0
252	1.4	3.4	2.0	96.4	0.7	0.9	0.6

T = Trace, < 0.05

Appendix 1

Data for Surficial Sediments(continued)

Station Number	Depth (Meters)	% Loss On Ignition	% Gravel	% Sand	% Silt	% Clay	% Shells
253	2.1	0.4	15.6	83.1	0.3	1.0	4.1
254	3.0	1.7	10.8	83.6	3.6	2.0	13.7
255	3.2	5.2	0.3	90.6	6.6	2.5	19.1
256	1.8	0.5	0.0	98.8	0.1	1.1	0.1
257	1.8	0.4	0.1	98.7	0.2	1.0	0.1
258	2.6	0.5	0.0	98.2	0.6	1.2	0.1
259	2.1	0.4	0.0	98.6	0.3	1.1	0.0T
260	1.7	0.4	0.0	98.1	0.5	1.4	1.3
261	1.8	0.5	0.0	98.3	0.4	1.3	0.1
262	2.7	1.0	0.0	94.0	3.3	2.7	0.3
263	1.5	0.4	0.0	98.7	0.3	1.0	0.5
264	0.8	0.3	0.0	99.1	0.0	0.9	0.1
265	0.9	0.3	0.0T	98.9	0.1	1.0	0.3
266	2.3	0.7	0.0	95.9	2.4	1.7	0.5
267	2.6	0.9	0.0	95.3	3.0	1.7	0.2
268	2.0	0.4	0.0T	98.5	0.4	1.1	0.3
269	2.4	0.4	0.0	98.5	0.4	1.1	0.1
270	2.6	0.3	0.0	98.0	0.3	1.7	0.5
271	2.4	0.5	0.0	98.3	0.5	1.2	0.1
272	2.4	0.3	0.0	97.8	0.9	1.3	1.9
273	3.4	1.3	0.0	91.4	6.0	2.6	0.1
274	3.2	5.5	0.1	30.4	61.3	8.2	2.0
275	2.6	2.3	1.7	68.5	23.9	5.9	2.2
276	2.3	2.1	0.0	81.1	14.4	4.5	0.3
277	1.4	0.6	24.2	73.3	1.4	1.1	0.7
278	0.8	0.5	0.1	98.2	0.4	1.3	0.0
279	1.7	5.6	0.0	19.2	73.7	7.1	1.4
280	2.3	2.4	1.3	74.5	17.7	6.5	0.5
281	2.6	7.8	0.0	11.7	71.0	17.3	0.7
282	2.9	0.6	1.2	96.6	1.1	1.1	1.2
283	2.7	0.8	0.0	95.4	2.5	2.1	0.2
284	2.6	0.7	0.0	95.9	1.8	2.3	0.8
285	2.4	0.2	0.0	98.2	0.2	1.6	0.9
286	3.4	3.5	0.0	69.8	61.6	8.6	0.0
287	2.7	1.1	0.0	93.5	3.3	3.2	0.0
288	2.4	1.4	0.0	91.5	5.4	3.1	0.3
289	1.1	0.4	0.0	98.9	0.3	0.8	0.0T
290	1.7	0.5	0.0	98.1	0.4	1.5	0.1
291	1.7	0.5	0.0	98.0	0.6	1.4	0.1
292	1.7	0.5	0.0	98.0	0.9	1.1	0.0
293	0.9	0.4	0.0T	99.1	0.1	0.8	0.0T
294	0.9	0.4	0.0	99.1	0.0	0.9	0.0

T = Trace, <0.05

Appendix 1

Data for Surficial Sediments(continued)

Station Number	Depth (Meters)	% Loss On Ignition	% Gravel	% Sand	% Silt	% Clay	% Shells
295	4.7	1.4	0.0	90.6	6.2	3.2	0.2
296	1.2	0.3	0.1	98.8	0.1	1.0	0.0
297	2.4	0.5	0.1	97.0	1.1	1.8	0.5
298	3.5	3.4	0.0	64.1	29.1	6.8	0.7
299	3.4	3.4	0.0	67.6	24.2	8.2	0.5
300	2.9	1.2	0.0	89.1	7.9	3.0	0.2
301	2.7	0.8	0.0	96.0	1.9	2.1	0.9
302	3.7	2.9	0.0	77.3	15.4	7.3	0.1
303	3.0	1.1	0.0T	94.0	3.1	2.9	0.9
304	2.6	0.4	0.0T	98.1	0.8	1.1	0.1
305	2.9	3.8	0.4	60.7	31.8	7.1	0.7
306	2.4	1.6	3.4	87.7	5.7	3.2	0.9
307	1.8	0.5	2.8	95.5	0.6	1.1	0.6
308	1.5	0.5	0.8	97.2	0.9	1.1	0.1
309	1.7	6.7	0.0	17.5	63.4	19.1	0.9
310	1.1	2.0	2.4	80.0	12.1	5.5	0.0
311	1.4	0.7	29.5	67.8	1.3	1.4	0.2
312	2.1	0.5	2.3	93.7	2.5	1.5	0.1
313	2.7	2.6	27.6	64.1	4.4	3.9	0.0
314	2.4	0.7	0.1	95.1	1.8	3.0	1.4
315	2.1	0.3	1.7	97.2	0.1	1.0	0.5
316	2.4	0.6	0.0	96.9	1.7	1.4	0.2
317	3.4	3.1	0.0	68.7	23.8	7.5	0.0
318	2.9	2.0	0.0	82.9	11.5	5.6	0.0
319	2.4	0.8	0.0	95.6	2.3	2.1	0.0
320	2.3	1.0	0.0	91.4	5.5	3.1	0.3
321	1.8	0.6	0.0	96.1	1.8	2.1	0.0
322	2.1	0.4	0.0T	97.9	0.5	1.6	1.3
323	1.1	0.1	0.1	98.9	0.0	1.0	0.0
324	1.1	0.3	1.6	97.3	0.1	1.0	0.0
325	4.1	1.8	0.0T	90.5	5.8	3.7	2.5
326	1.1	0.5	0.0	98.4	0.7	0.9	0.0T
327	1.4	0.5	0.0	97.5	1.3	1.2	0.0
328	1.4	0.5	0.0	98.1	0.9	1.0	0.0
329	1.7	0.7	0.0	96.6	1.6	1.8	0.0
330	2.1	0.5	0.0	98.4	0.5	1.0	0.7
331	2.1	0.5	0.0	98.4	0.2	1.4	0.0T
332	3.2	1.4	0.0	91.9	3.9	4.2	0.2
333	3.0	0.7	8.8	88.8	1.1	1.3	1.6
334	1.5	0.3	4.4	94.8	0.0	0.8	0.0
335	2.3	1.0	6.6	87.5	3.3	2.6	0.2
336	1.2	0.5	0.7	97.9	0.3	1.1	1.3

T = Trace, <0.05

Appendix 1

Data for Surficial Sediments(continued)

Station Number	Depth (Meters)	% Loss On Ignition	% Gravel	% Sand	% Silt	% Clay	% Shells
337	1.4	0.7	0.8	97.4	0.4	1.4	0.2
338	3.4	1.6	4.1	85.3	6.5	4.1	0.9
339	4.3	1.9	0.1	83.1	9.9	6.3	3.4
340	3.7	4.0	0.0	75.1	17.6	7.3	4.8
341	1.2	0.6	0.0	96.8	1.1	2.1	0.2
342	0.8	0.8	0.0	95.7	2.7	1.6	0.2
343	0.6	1.6	0.0	87.5	9.2	3.3	0.0T
344	0.9	0.7	0.0	96.6	1.7	1.7	0.0T
345	1.2	0.6	0.2	97.0	1.4	1.4	0.0
346	1.4	0.4	3.1	95.3	0.7	0.9	0.0
347	1.1	0.7	0.0	96.5	2.0	1.5	0.0
348	0.6	0.8	0.0	95.3	2.8	1.9	0.0
349	0.9	0.8	0.0	96.0	2.3	1.7	0.0
350	1.2	0.6	0.0	97.6	1.0	1.4	0.0T
351	1.5	0.6	0.0	98.0	0.4	1.6	0.1
352	3.7	5.1	0.0	64.2	24.3	11.5	8.7
353	4.0	2.1	0.0T	84.4	9.9	5.7	5.6
354	3.0	1.5	0.1	93.5	2.9	3.5	11.2
355	1.4	0.8	0.3	97.7	0.5	1.5	0.2
356	1.5	0.7	16.0	81.9	0.8	1.3	0.0T
357	2.7	1.1	0.2	92.2	4.4	3.2	1.6
358	3.4	1.1	0.0	92.0	4.4	3.6	0.5
359	3.5	1.6	0.1	85.5	10.3	4.1	0.8
360	2.0	0.7	0.0	96.0	1.8	2.2	0.0
361	2.0	0.8	0.0	95.1	2.9	2.0	0.4
362	1.4	0.5	0.0	97.2	1.1	1.7	0.0
363	0.6	0.7	0.0	96.6	1.8	1.6	0.0
364	0.5	1.0	0.0	93.6	4.5	1.9	0.0
365	1.1	0.6	2.0	96.1	0.5	1.4	0.0
366	1.2	0.4	0.0	97.9	0.6	1.5	0.0
367	2.7	0.8	0.0T	95.8	2.1	2.1	0.4
368q	0.9	0.3	0.6	98.8	0.1	0.5	0.0
369	0.8	1.1	0.0	95.5	2.3	2.2	0.0T
370	1.7	0.5	0.0	98.1	0.6	1.3	0.0
371	2.4	1.0	0.0	93.6	3.8	2.6	0.0
372	2.4	0.9	0.0	93.6	3.1	3.3	0.1
373	3.0	1.2	0.0	91.4	4.8	3.8	0.1
374	2.4	0.9	0.0	92.0	4.5	3.5	0.1
375	2.1	0.5	0.3	97.2	0.8	1.7	1.0
376	0.8	0.5	15.0	83.6	0.5	0.9	0.1
377	0.9	0.7	59.8	38.8	0.6	0.8	0.1
378	1.5	0.9	0.0	95.1	2.2	2.7	0.1

T = Trace, < 0.05

Appendix 1

Data for Surficial Sediments(continued)

Station Number	Depth (Meters)	% Loss On Ignition	% Gravel	% Sand	% Silt	% Clay	% Shells
379	2.0	0.5	0.0	97.0	1.4	1.6	0.5
380	2.6	2.0	0.0	89.3	7.4	3.3	2.1
381	2.7	1.7	0.0	90.6	6.2	4.2	0.1
382	2.4	1.1	0.0	91.7	5.1	3.2	0.1
383	1.4	0.6	0.0	97.7	1.0	1.3	0.0
384	1.4	0.5	0.0	98.3	0.4	1.3	0.0T
385	1.5	0.7	0.0	96.1	2.2	1.7	0.2
386	1.1	0.4	23.5	75.7	0.2	0.6	0.5
387	3.2	2.9	0.0	82.1	15.0	2.9	11.4
388	2.7	1.5	0.0	93.5	3.6	2.9	0.0
389	1.8	0.6	0.0	95.4	2.8	1.8	0.0
390	1.8	1.0	0.0	89.2	6.7	4.1	0.1
391	1.5	0.5	0.0	97.9	0.8	1.3	0.1
392	0.9	1.3	0.0	91.1	5.2	3.7	0.2
393	0.8	0.3	0.0	99.0	0.2	0.8	0.8
394	0.9	0.3	4.2	94.9	0.2	0.7	0.2
395	0.9	1.8	0.0	92.6	4.4	3.0	0.4
396	0.3	0.3	0.0	98.9	0.3	0.8	0.7
397	1.5	0.4	0.0	98.8	0.2	1.0	0.2
398	0.8	0.3	0.0T	98.9	0.4	0.7	0.0
399	1.5	0.5	0.0	97.6	1.2	1.2	0.1
400	1.5	0.6	0.0	97.4	1.1	1.5	0.0T
401	1.2	0.3	0.0	97.7	1.7	0.6	0.0
402	1.2	0.5	0.0	99.1	0.0	0.9	0.1
403	1.2	0.4	0.0	98.2	0.7	1.1	0.0T
404	3.0	2.2	0.0	75.7	18.2	6.1	0.1
405	3.0	1.0	0.6	92.6	5.0	1.8	2.8
406	1.7	0.4	0.4	99.1	0.3	0.2	0.0
407	1.8	0.6	5.7	92.9	0.4	1.0	0.3
408	1.8	0.9	13.9	83.1	1.3	1.7	0.2
409	1.2	0.7	54.2	43.7	1.3	0.8	0.4
410	1.5	3.8	2.2	76.7	14.5	6.6	3.1
411	2.4	4.4	0.0	15.4	76.8	7.8	2.5
412	3.0	4.3	0.0	6.7	83.0	10.3	1.7
413	2.7	1.4	5.1	66.4	23.9	4.6	5.2
414	2.7	1.4	0.0	86.5	8.2	5.3	1.7
415	1.7	0.5	0.0	98.1	0.7	1.2	0.4
416	2.1	0.4	0.0	98.5	0.2	1.3	0.2
417	1.8	0.5	0.0	97.9	0.8	1.3	0.0T
418	2.0	0.6	0.0T	97.2	1.0	1.8	0.2
419	1.1	0.4	0.1	98.6	0.7	0.7	0.3
420	1.2	0.4	0.1	97.9	0.9	1.1	0.4

T = Trace, < 0.05

Appendix 1

Data for Surficial Sediments(continued)

Station Number	Depth (Meters)	% Loss On Ignition	% Gravel	% Sand	% Silt	% Clay	% Shells
421	0.9	0.3	0.1	99.0	0.2	0.7	0.0
422	1.5	0.7	0.1	95.9	1.9	2.1	0.0
423	0.6	0.4	0.4	98.3	0.1	1.2	0.0T
424	1.4	0.2	0.0	98.9	0.3	0.8	0.0
425	1.4	0.3	0.0	98.9	0.5	0.6	0.1
426	1.7	0.3	0.0	98.8	0.6	0.6	0.0
427	0.6	0.4	0.1	98.4	0.7	0.8	0.1
428	1.2	0.4	0.0	97.4	0.9	1.7	0.0
429	1.5	0.6	0.0	97.6	0.6	1.8	0.1
430	2.7	2.6	0.0	82.4	9.4	8.2	1.2
431	2.7	2.5	0.3	62.1	31.2	6.4	1.6
432	2.9	2.1	0.0	39.3	54.9	5.8	0.2
433	0.9	0.9	9.1	82.5	5.5	2.9	0.1
434	3.0	3.5	0.0	32.5	59.2	8.3	2.4
435	3.0	2.8	0.0	61.4	29.7	8.9	0.1
436	1.1	0.6	0.0	97.8	0.3	1.9	0.1
437	1.1	0.6	0.0	98.5	0.4	1.1	0.1
438	1.7	0.7	0.0	98.2	0.5	1.3	0.0
439	0.8	0.5	0.0	98.8	0.1	1.1	0.0
440	0.6	0.8	0.0	95.5	2.5	2.0	0.0
441	0.6	0.3	0.9	98.2	0.1	0.8	0.0T
442	1.5	0.2	1.0	98.2	0.1	0.7	0.0
443	0.6	0.4	2.9	96.8	0.2	0.1	0.1
444	1.1	0.3	0.1	99.4	0.0	0.5	0.0T
445	1.8	1.2	0.0	98.1	0.8	1.1	2.7
446	1.4	0.3	0.1	98.9	0.2	0.8	0.0
447	0.6	0.6	0.0	96.2	2.1	1.7	0.1
448	0.6	0.5	0.0	98.8	0.2	1.0	0.8
449	1.4	0.5	0.0	97.2	1.4	1.4	0.0
450	1.8	0.5	0.0	96.0	2.0	2.0	0.0
451	2.4	1.4	0.0	83.1	12.2	4.7	3.5
452	0.9	0.7	3.3	95.1	0.7	0.9	0.1
453	2.1	1.3	0.0	85.3	10.9	3.8	0.2
454	1.8	0.9	0.0	93.6	3.8	2.6	0.0
455	2.0	1.1	0.0	93.9	3.3	2.8	0.0
456	1.7	0.5	0.0	94.8	2.6	2.6	0.0T
457	1.1	2.1	0.0	84.8	9.6	5.6	0.6
458	0.8	0.5	0.7	98.7	0.3	0.3	1.8
459	1.1	0.5	6.8	91.2	0.9	1.1	0.0
460	1.8	2.8	0.0	75.0	17.9	7.1	0.1
461	1.7	0.8	0.0	95.5	2.3	2.2	0.1
462	2.0	1.9	0.1	56.3	39.6	4.0	0.2

T = Trace, <0.05

Appendix 1

Data for Surficial Sediments (continued)

Station Number	Depth (Meters)	% Loss On Ignition	% Gravel	% Sand	% Silt	% Clay	% Shells
463	0.9	0.6	1.6	96.5	0.3	1.6	0.1
464	0.9	0.7	4.8	93.5	0.2	1.5	0.2
465	2.1	5.0	0.2	67.3	25.2	7.3	5.6
466	2.1	1.5	0.0	88.6	7.3	4.1	0.0
467	1.2	0.6	0.0	97.2	1.1	1.7	0.0
468	1.1	1.1	0.0	91.3	5.6	3.1	0.0
469	0.8	0.8	0.0	96.6	1.6	1.8	0.0
470	1.5	0.9	0.0	95.0	2.5	2.5	0.0
471	2.4	1.9	0.0	78.3	16.8	4.9	0.0
472	1.4	0.4	6.7	91.9	0.4	1.0	0.0
473	1.2	0.6	2.1	95.6	0.8	1.5	0.0
474	2.4	1.2	10.1	71.7	13.9	4.3	0.6
475	2.7	1.4	0.0	69.7	25.7	4.6	0.0
476	0.5	1.3	0.0	90.8	4.9	4.3	0.0
477	1.1	0.8	0.0	93.6	4.2	2.2	0.2
478	1.0	0.7	0.0	95.6	2.3	2.1	0.1
479	1.2	16.0	0.0	12.5	56.6	30.9	0.0
480	0.6	2.2	0.0	86.1	8.5	5.4	1.0
481	1.5	0.7	0.0	95.7	2.2	2.1	0.0
482	1.5	0.6	0.0	97.0	1.1	1.9	1.8
483	2.3	1.5	0.7	79.5	15.0	4.8	4.7
484	1.5	0.6	0.6	97.4	0.4	1.6	1.8
485	2.1	16.1	0.0	5.4	57.2	37.4	0.0
486	1.5	0.9	10.1	83.5	3.3	3.1	0.2
487	1.2	1.1	0.0	84.8	11.6	3.6	0.6
488	1.8	0.9	0.0	92.4	5.0	2.6	0.3
489	1.2	0.7	0.0	97.2	1.1	1.7	0.0
490	0.6	0.9	0.0	93.2	3.9	2.9	0.7
491	0.5	0.6	0.0	97.3	1.1	1.6	0.1
492	0.6	0.6	0.0	98.0	0.4	1.6	0.0
493	1.2	0.8	0.1	96.2	1.4	2.3	0.0
494	2.0	0.9	0.0	93.5	4.1	2.4	0.0T
495	1.8	3.6	0.0	33.5	52.1	14.4	0.2
496	2.4	6.2	0.1	31.7	55.2	13.0	0.8
497	1.4	1.7	1.4	85.0	9.0	4.6	3.3
498	1.7	1.8	0.0	62.4	29.4	8.2	0.9
499	1.4	0.9	0.0	94.3	3.2	2.5	0.1
500	0.9	0.8	0.0	96.5	1.2	2.3	0.0T
501	0.8	0.8	0.0	95.6	2.4	2.0	0.1
502	0.6	1.0	0.0	92.1	5.0	2.9	0.7
503	1.4	0.7	0.0	95.1	2.7	2.2	0.2
504	1.7	1.3	0.0	83.5	12.1	4.4	0.2

T = Trace, < 0.05

Appendix 1

Data for Surficial Sediments(continued)

Station Number	Depth (Meters)	% Loss On Ignition	% Gravel	% Sand	% Silt	% Clay	% Shells
505	1.5	8.2	0.0	34.5	43.8	21.7	4.8
506	1.2	1.0	0.2	90.6	5.6	3.6	0.1
507	0.9	0.9	0.0	95.2	2.2	2.6	0.0
508	0.9	8.5	0.0	28.7	55.6	15.7	0.0
509	1.2	0.6	0.0	79.6	17.8	2.6	0.0T
510	1.7	1.0	0.0	32.7	66.4	0.9	0.0T
511	1.1	7.2	0.4	43.8	38.8	17.0	15.7
512	1.7	3.7	0.2	52.9	36.5	10.4	0.5
513	1.5	0.7	0.0	93.7	4.1	2.2	0.0
514	1.1	0.9	0.0	95.2	2.7	2.1	0.0
515	0.9	4.6	0.0	53.6	36.6	9.8	0.0
516	0.8	0.9	0.0	95.7	2.1	2.2	0.0
517	0.9	1.6	0.0	84.6	11.7	3.7	0.0
518	0.9	0.6	0.1	94.4	4.0	1.6	0.0
519	2.1	1.1	0.5	89.1	6.7	3.7	0.8
520	1.8	1.9	0.7	79.3	13.9	6.1	0.0
521	1.5	1.1	0.0	89.5	7.2	3.3	0.1
522	1.1	1.7	0.0	85.8	10.1	4.1	0.0
523	0.9	1.2	0.0T	92.0	4.7	3.3	0.1
524	1.2	2.4	0.0	84.4	9.6	6.0	0.0
525	0.6	0.9	0.0	95.1	2.2	2.7	0.0
526	1.1	1.5	0.0	86.1	9.7	4.2	0.0
527	2.0	2.1	1.3	79.7	12.0	7.0	0.5
528	1.2	0.7	7.5	89.5	1.3	1.7	0.0T
529	1.5	2.1	0.0	76.9	17.6	5.5	0.0T
530	0.3	1.9	0.0	82.5	11.3	6.2	0.0
531	0.3	1.2	0.0	94.2	2.6	3.2	0.0T
532	2.1	8.9	0.0	36.9	42.9	20.2	0.0T
533	1.4	2.5	0.0	84.1	8.8	7.1	0.0
534	1.5	1.9	0.0	75.8	16.6	7.6	0.0
535	0.8	0.7	0.0	93.0	4.0	3.0	0.0
536	1.5	1.8	0.0	80.5	14.4	5.1	0.0
537	1.4	0.7	10.1	86.7	1.4	1.8	0.1
538	1.4	8.3	0.0	7.3	72.7	20.0	0.0
539	1.2	0.8	3.3	93.8	1.1	1.8	0.4
540	2.0	1.7	0.0	81.7	12.7	5.6	0.0
541	1.1	3.3	0.0	54.8	33.4	11.8	0.0
542	0.8	2.3	0.0	79.0	13.1	7.9	0.1
543	0.6	5.1	0.0	54.6	32.6	12.8	0.2
544	0.6	0.5	0.4	97.6	0.5	1.5	0.0T
545	1.1	1.7	0.0	74.8	17.8	7.4	0.3
546	0.8	4.8	0.0	54.0	34.6	11.4	0.6

T = Trace, <0.05

Appendix 1

Data for Surficial Sediments(continued)

Station Number	Depth (Meters)	% Loss On Ignition	% Gravel	% Sand	% Silt	% Clay	% Shells
547	2.1	1.6	0.0	82.0	12.7	5.3	0.0
548	2.1	5.4	0.1	60.4	26.2	13.3	1.4
549	1.1	4.4	1.4	47.1	35.1	15.9	0.2
550	1.5	2.1	0.3	74.7	18.6	6.4	0.0
551	1.7	3.2	0.0	68.7	22.5	8.8	0.1
552	1.5	2.4	0.0	71.7	22.0	6.3	0.0
553	1.4	3.4	0.0	63.5	24.0	12.5	0.0
554	1.2	1.5	0.0	87.3	8.3	4.4	0.0
555	1.2	2.7	0.0	66.8	23.1	10.1	0.0
556	0.9	3.3	0.0	64.1	24.8	11.1	0.0
557	0.9	0.7	2.5	94.4	0.9	2.2	0.6
558	1.1	3.3	0.0	54.3	35.2	10.5	0.1
559	1.2	2.8	0.0	57.3	33.2	9.3	0.0
560	0.9	2.3	0.0	76.4	17.5	6.1	0.0
561	0.9	1.3	0.0	87.2	8.2	4.6	0.6
562	1.4	1.2	0.0	90.7	5.6	3.7	0.0
563	1.1	0.7	0.0	96.2	1.2	2.6	0.8
564	1.1	1.2	0.0	91.2	5.6	3.2	1.1
565	0.6	2.2	0.0	81.8	12.7	5.5	0.7
566	1.5	1.8	0.0	72.2	20.7	7.1	0.0
567	1.7	1.3	0.3	87.7	7.8	4.2	0.7
568	1.1	8.6	0.0	26.1	52.0	21.9	0.0
569	1.2	3.5	0.0	62.8	28.1	9.1	0.0
570	1.4	2.5	0.0	74.4	16.7	8.9	0.0
571	1.4	0.8	0.0	92.6	4.0	3.4	0.3
572	1.5	0.7	0.0	95.8	1.9	2.3	0.0
573	1.4	5.0	0.0	44.3	41.3	14.4	0.1
574	1.5	0.7	0.0	96.1	1.9	2.0	0.0
575	0.6	2.3	0.0	70.9	19.9	9.2	0.0
576	1.8	1.3	0.0T	79.1	13.5	7.4	0.2
577	1.5	0.4	0.0	99.0	0.3	0.7	0.1
578	2.0	4.9	0.0	54.5	32.1	13.4	0.0
579	1.7	0.8	0.0T	96.4	0.9	2.7	1.3
580	0.9	1.0	0.0	96.5	1.9	1.6	1.6
581	0.9	0.7	0.2	93.7	3.6	2.5	0.2
582	0.8	2.6	0.0	61.9	28.8	9.3	0.0

T = Trace, <0.05