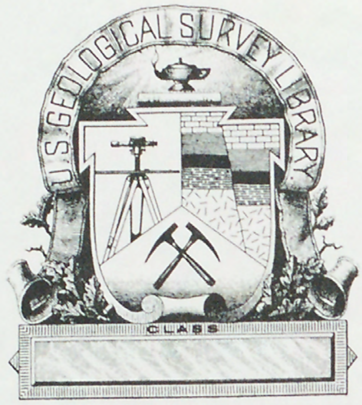

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REPORT ON THE BEACH DYNAMICS, GEOLOGY AND OIL SPILL SUSCEPTIBILITY OF THE GULF OF ALASKA COASTLINE IN GLACIER BAY NATIONAL MONUMENT-- SEA OTTER CREEK TO ICY POINT

By

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Menlo Park, California

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This report is preliminary
and has not been edited or
reviewed for conformity
with Geological Survey
standards and nomenclature.

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Menlo Park, California
March 1978

INTRODUCTION

Observations of the Gulf of Alaska coastline in Glacier Bay National Monument were conducted between June 1975 and July 1977 to: (1) characterize the beach environment, and (2) assess the effects of an oil spill (fig. 1). These included overflights in June 1975, June 1976, July 1976, January 1977, May 1977, and July 1977 when photographic observations were made from small fixed-wing aircraft and field observations in June 1975, July 1976, January 1977, and July 1977. Field observations consisted of measuring beach morphology, sediment distribution, and vegetation type, and characterization of beach dynamics between Fairweather Glacier and La Perouse Glacier.

Ninety sediment samples were collected and analyzed for grain size in the Menlo Park USGS sediment laboratory. Beach morphology at selected sites was determined by profiling from the limit of storm deposited debris (mostly wood) to the surf zone. In 1976, 30 profiles were made, ten of which were revisited in 1977. In all 55 profiles were measured.

A qualitative estimate of the effects of an oil spill for the Monument coastline between Sea Otter Creek and Icy Point as well as each of the profile stations has been made based on field observations and a susceptibility scheme by Hayes and Owens (Hayes et al., 1976; Owens, 1977).

ACKNOWLEDGMENTS

The following have greatly helped in the collection of field data during the three periods of beach observation by serving as field assistants: Daniel Bishop, Terry Bruns, John Cudnohufsky, John Hampson, Nancy Hardin, Lee Kmith, Greg Streveler and Richard Weissbrod. Laboratory analyses of beach sediments were performed by John Hampson, Steve Kittelson, Bill Levy and Jorge Rodriguez.

GEOLOGY OF THE COASTAL AREA, GLACIER BAY NATIONAL MONUMENT

The Coastal and Fairweather provinces, two of five geologically distinct provinces in Glacier Bay National Monument (MacKevett et al., 1971) comprise almost one-third of the area of the monument (fig. 2).

The Coastal province extends northwest from Icy Point to the northern boundary of the monument, a distance of approximately 75 km. The eastern boundary of the Coastal province is the long, narrow, northwest-trending valley that is the surface expression of the Fairweather fault. A terraced lowland rises gently from the coastline to the 600 to 1,000 m high Coast Range. This belt of low mountains increases in elevation and width to the northwest. Lituya Bay, a T-shaped inlet from the Pacific Ocean, divides the Coastal province. The upper end of the bay, a fjord-like pass through the Coast Range, ends in the Fairweather fault trench and is bounded to the north by Lituya Glacier and to the south by North Crillon Glacier.

The Fairweather province lies east of the Fairweather fault, extends east to the Brady Glacier, and spans over 100 km from Cape Spencer, at the southeast end of the province, northwest to the northern boundary of the monument. The land surface northeast of the Fairweather fault trench rises steeply into the rugged mountainous area of the Fairweather province. The precipitous peaks of the Fairweather Range commonly rise to elevations over 3,000 m, and culminate to the northwest at the 4,600 m Mount Fairweather.

Valley glaciers originating in the Fairweather Range descend east to the Brady Glacier and other glaciers in the Geikie province and west to the Coastal province. Here they flow through parts of the Fairweather fault trench and form broad piedmont lobes that flow through the Coast Range onto the terraced lowland.

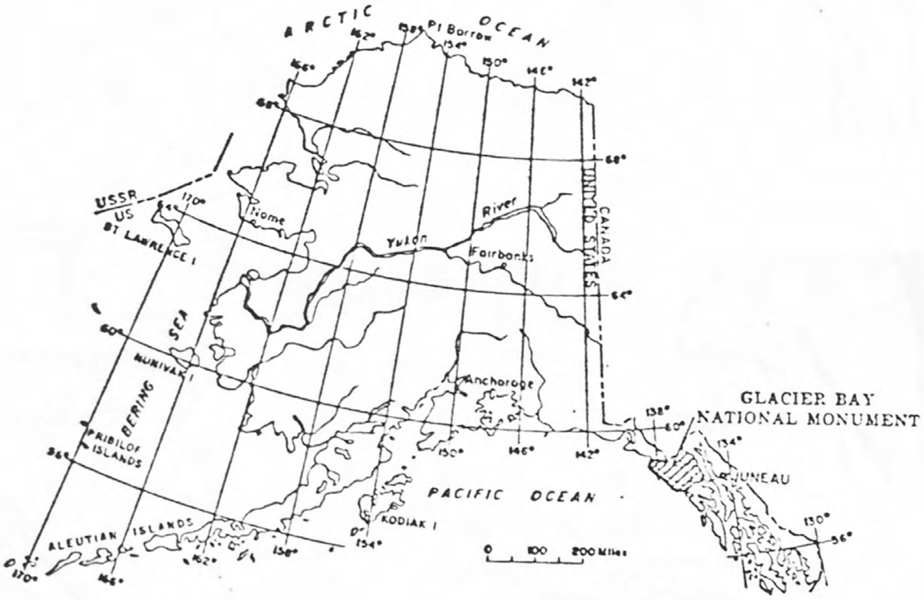
ARCTIC OCEAN
Pt Barrow
162°
158°
154°
150°
146°
142°
166°
68°
68°
USSR
US
170°
64°
ST LAWRENCE I
Nome
Yukon
River
Fairbanks
CANADA
UNITED STATES
64°
BERING SEA
60°
NUNIVAK I
Anchorage
GLACIER BAY
NATIONAL MONUMENT
138°
60°
150°
146°
142°
134°
JUNEAU
PRIBILOF ISLANDS
56°
PACIFIC OCEAN
KODIAK I
130°
56°
ALEUTIAN ISLANDS
154°
158°
162°
166°
170°
0 100 200 Miles

Figure 1. Map of Alaska showing the location of Glacier Bay National Monument.

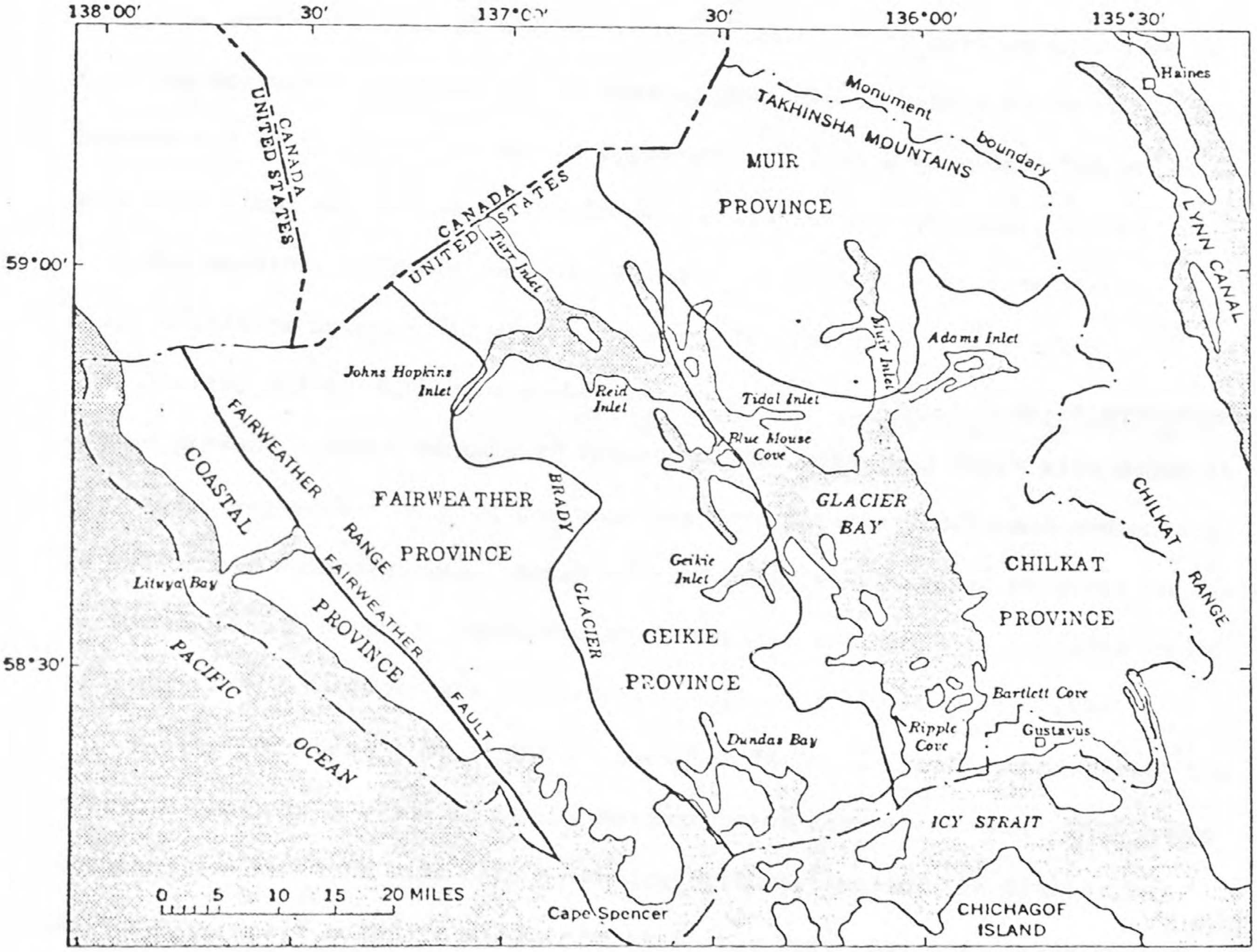
138°00'
30'
137°00'
30'
136°00'
135°30'
59°00'
58°30'
Haines
Monument boundary
TAKHINSHA MOUNTAINS
MUIR PROVINCE
CANADA UNITED STATES
CANADA UNITED STATES
Tarr Inlet
LYNN CANAL
Adams Inlet
Muir Inlet
Johns Hopkins Inlet
Reid Inlet
Tidal Inlet
Blue Mouse Cove
FAIRWEATHER RANGE
COASTAL
FAIRWEATHER PROVINCE
BRADY
GLACIER BAY
CHILKAT RANGE
CHILKAT PROVINCE
Geikie Inlet
Lituya Bay
FAIRWEATHER
PROVINCE
GLACIER
GEIKIE PROVINCE
FAULT
PACIFIC OCEAN
Bartlett Cove
Gustavus
Ripple Cove
Dundas Bay
ICY STRAIT
0 5 10 15 20 MILES
Cape Spencer
CHICHAGOF ISLAND

Figure 2.—Index map showing Glacier Bay National Monument, Alaska, and geologic provinces within the monument.

Geology of the Coastal and Fairweather Provinces

Stratigraphy

The bedrock stratigraphic section in the Coastal and Fairweather provinces ranges in age from early Mesozoic to middle or late Pleistocene. The oldest rocks are in a Mesozoic volcanic unit of unknown thickness. Earlier described as the "slate-greenstone group" (Mertie, 1931), this unit crops out in a belt along the southwest side of the Fairweather fault. This belt extends from beyond the northwest boundary of the Coastal province to within 12 km of the southeastern end of the province and is approximately 2 to 8 km wide. The volcanic unit also crops out on the peninsula west of Taylor Bay (Rossman, 1963b).

The Mesozoic volcanic sequence is composed primarily of dark gray to black, slaty argillite interbedded with greenstone derived from flows, volcanic breccias, tuffs, and volcanic graywackes (Miller, 1961). Some intrusive greenstone may be present. Minor amounts of limestone, dolomite, and chert also occur in the bedded sequence. Much of the rock has been intensely deformed and mildly to moderately metamorphosed. Based on lithologic similarities to rocks on strike to the southeast on Yakobi and Chichagof Islands, this unit is believed to be of early to mid-Mesozoic age (Kennedy and Walton, 1946; Rossman, 1963a).

On the northeast side of the Fairweather fault, in fault contact with the volcanic unit, is a group of highly metamorphosed Mesozoic rocks. This group occupies a 6 to 18 km wide belt extending northwest beyond the Glacier Bay National Monument boundary and southeast to the Torch Bay and Graves Harbor area. These are predominantly amphibole and biotite schists and are believed to be the metamorphic equivalents of the volcanic unit. The amphibole schist is typically dark green or gray in outcrop. The biotite schist varies in outcrop from a light gray to a stained, rusty red appearance. Both rock types are medium- to fine-grained and are believed to be of Mesozoic age on the basis of similarities to rocks on Chichagof Island (Rossman, 1963a).

A sequence of Tertiary strata unconformably overlies the Mesozoic volcanic unit in the Coastal province. This sequence has been divided into three distinct units by Miller (1961) and Plafker (1967). The Tertiary Cenotaph Volanics unit (Formation "B" of Miller, 1961) consists of about 380 m (1,250 ft.) of unfossiliferous green, red, and purple andesite breccia, tuff, and flows interbedded with green and red tuffaceous siltstone, glauconitic sandstone, green pebble-cobble conglomerate, and minor coal. The type section is designated along the south shore of Cenotaph Island in Lituya Bay (Plafker, 1967).

The Tertiary Topsy Formation (Formation "A" of Miller, 1961) is a sparsely fossiliferous marine unit which intertongues with, and in part unconformably overlies, the Cenotaph Volcanics Formation. It consists of approximately 365 m (1,200 ft.) of gray, hard, calcareous siltstone and sandstone. The type locality is designated along upper Topsy Creek, 11 km southeast of the mouth of Lituya Bay (Plafker, 1967).

The Tertiary-Quaternary Yakataga Formation was geographically extended by Plafker in 1967 to include lithogenetically equivalent rocks in the Lituya district (Formation "C" of Miller, 1961). At least 2,050 m (10,000 ft.) of the Yakataga Formation are exposed in nearly continuous outcrops near the Crillon River and in an area just south of Fairweather Glacier. Comprising most of this thickness are interbedded light olive-gray to dark-gray siltstone and light-gray to greenish-gray sandstone. Interbedded with the siltstone and sandstone in the upper 2,400 m (8,000 ft.) is a gray to greenish-gray conglomeratic sandy mudstone (Miller, 1961). Marine invertebrate fossils, chiefly mollusks, have been found throughout the Yakataga Formation (Plafker and Addicot, 1976).

The Cenotaph Volcanics Formation unconformably overlies the Mesozoic volcanic unit; the base of the Topsy Formation is not exposed. The Yakataga Formation unconformably overlies the Mesozoic volcanic unit in the area just south of Fairweather Glacier. In the southeastern part of the Lituya district the Yakataga Formation appears to conformably overlie the Topsy and Cenotaph Formations. Based on fossil evidence, the age of the Yakataga Formation is believed to range from early Miocene to Holocene. The Topsy and Cenotaph Volcanics Formations are tentatively assigned a post-early Oligocene to pre-middle Miocene age (Plafker, 1967; Plafker and Addicott, 1976).

Most of the Quaternary deposits occur in the Coastal province and are primarily Pleistocene and Holocene morainal debris and beach sands. Other surficial deposits include lagoonal and tidal-estuary deposits, stream alluvium, and talus.

Comparison of onshore samples of the Yakataga Formation with the Holocene sediment collected in cores and grabs from the offshore shows a distinctive similarity in mineralogy of clay fraction, gross physical appearance and likely mode of deposition. Clay mineral assemblages are identical, with similar percentage ranges for each clay mineral present. The samples contain predominantly chlorite, illite, and kaolinite with minor montmorillonite. The Chugach, St. Elias, and Fairweather Mountains are the major source areas for these sediments, which enter the gulf mainly as rock flour and are distributed by surface currents from east to west (Molnia and Fuller, 1977).

Sediment samples from Lituya Bay are very similar to those from offshore and further exemplify the uniformity of non-terrestrial deposition in the region.

Intrusives

Three large, layered gabbroic plutons occur in a northwest-trending zone in the Fairweather province. Several smaller bodies of compositionally similar gabbroic rock occur in a southeastward extension of this zone on western Chichagof Island. All of these stocks are of approximately the same age, probably post-early Cretaceous, and are believed to be genetically related (Rossman, 1963a).

The largest of the plutons in the Fairweather province is the Crillon-La Perouse pluton, located in the Mount Crillon and Mount La Perouse area. Elliptical in plan, it is about 27 km long and 11 to 13 km wide; its long axis trends northwest. The total exposed thickness is almost 9,750 m (32,000 ft.) and it is probable that "many more thousands of feet of layered rock exist below the lowest layers exposed" (Rossman, 1963a).

The northernmost pluton underlies an area along the southwest flank of Mount Fairweather. The extreme northwestern end of the Fairweather pluton extends just beyond the boundary of the monument. The pluton is almost 10 km long and 6 km wide, with the long axis trending northwest.

The Astrolabe-De Langle pluton, the southernmost of the three, makes up the southern part of Mount De Langle and the Astrolabe Peninsula. Most of the pluton is concealed by the sea. The exposed stock is about 8 km long and 3 km wide, and up to 600 m (2,000 ft.) thick. The known outline of the Astrolabe-De Langle pluton suggests an elliptical shape similar to the other two plutons in the Fairweather province (Rossman, 1963a).

The rocks of all three plutons are mostly gabbroic. The primary rock-forming minerals are virtually unaltered plagioclase, clinopyroxene, orthopyroxene, and olivine. Accessory constituents include ilmenite, magnetite, sulfides, spinel-group minerals, hornblende, chromite, and traces of rutile, apatite, and graphite. Ilmenite is common in the Crillon-La Perouse pluton and magnetite and ilmenite make up as much as 10 to 15 percent of some layers in the Astrolabe-De Langle and Fairweather plutons. Some ultramafic rocks occur, mainly in the northern part of the Fairweather pluton and in the Crillon-La Perouse pluton near Brady Glacier. These are primarily pyroxenite, wehrlite, and dunite, and contain concentrations of up to 15 percent sulfides and a few percent of chromite (Rossman, 1963a; Plafker and MacKevett, 1970).

Well-developed layering is present in all three plutons. These layers are commonly 5 cm to 1.5 m thick and are formed by variations in texture and mineral proportions. These variations were produced during fractional crystallization and crystal settling in the magma chamber.

Layering in both the Crillon-La Perouse and Astrolabe-De Langle plutons seems to form northwest-striking, gently to moderately dipping synclinal basins (Rossman, 1963a). Layering in the Fairweather pluton along the southwest flank of Mount Fairweather appears to dip moderately to the northeast. The northeasterr contact of the pluton is concealed beneath snow and ice (Plafker and MacKevett, 1970). Thus, the overall pattern of layering in the Fairweather pluton is not known, but may be inferred to be similar to those in the other two plutons.

The host rocks for these plutons are the Mesozoic amphibole and biotite schists, which have been thoroughly recrystallized in the contact areas. The minerals in the recrystallized rocks include alamandine garnet, andalusite, staurolite, hornblende, biotite, kyanite, magnetite, ilmenite, and sulfides (Rossman, 1963a).

A similar gabbroic pluton on Chichagof Island intrudes a graywacke unit of probable early Cretaceous age. Rossman (1963a) thus believes that the plutons in the Fairweather province were intruded sometime during or after the early Cretaceous.

Several small bodies of Cretaceous or younger diorite and quartz diorite occur northeast of Palma Bay. Quartz diorite crops out northeast of Graves Harbor near Taylor Bay. Diorite also occurs just southwest of the Fairweather fault near the head of Lituya Bay and in several areas in the eastern part of the Fairweather province. Both the quartz diorite and diorite are fairly widespread in southeastern Alaska, and may be genetically related in some areas. In general, the quartz diorite appears to be intrusive and the diorite seems to be mainly metamorphic (Rossman, 1963a).

Regional Structure

A northwest trend is characteristic of most structural features in the Coastal and Fairweather provinces. Outcrop patterns, faults, and the strike of bedded rocks generally follow this northwest trend.

The bedding in the Mesozoic schists generally strikes northwest. Close to the Fairweather fault, the bedding dips steeply to the northeast, except towards the southeast near Palma Bay, where it dips steeply to the southwest (Miller, 1961; Rossman, 1963a). Near Brady Glacier, north of Mount De Langle, the schists form an anticline and syncline which strike approximately northwest (Rossman, 1963a).

Rossman (1963a) believed that emplacement of the layered gabbro caused the overlying schists to be pushed up and subsequently eroded. The dioritic stocks, however, do not appear to have significantly displaced or structurally deformed the bedded rocks which they intrude. These stocks seem to have been formed partly by magmatic intrusion and partly by recrystallization of the adjacent bedded rocks.

The Astrolabe-De Langle pluton is offset by several right-lateral faults which trend northeast, normal to the regional trend. These faults show strong strike-slip displacement (Rossman, 1963a).

The Tertiary strata are generally gently to moderately folded, except in some areas, where they are overturned. A northwest-trending syncline occurs in these strata just southeast of Fairweather Glacier. In the area between Lituya Bay and Crillon Lake, Tertiary strata form a syncline and an anticline with northwest-trending axes. The anticline is displaced vertically near its axis by a thrust fault. This fault extends approximately 8 km southeast from an area near the mouth of Lituya Bay, where it is concealed by glacial debris. The northeast side of the fault is the upper plate.

```
   SEDIMENT SIZE ANALYSIS--GLACIER BAY BEACH SAMPLES - SUMMER 1977
                         SAMPLE        TOTAL    SAMPLE    SAMPLE
CRUISE    STATION    TYPE,NUMBER    LENGTH    CENTER    LENGTH    METHODS
           S77-2                        .  M       . CM       .  CM    1

#F:SV=12,ST= 0,H=0;WT:SV= 0.0000,ST= 0.0000,H/P= 0.0800; PHI LIM:CS= 0.00,FN= 0.00

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE_RANGE__        __METHOD_________
    4.0000-  0.0625MM    SIEVES
    0.0625-  0.0001MM    PAN

 UNEDITED SAMPLE WEIGHTS IN GRAMS:
_SIEVES__    __RSA____   HYDROPHOTOMETER_     __PAN____    _TOTAL___
  14.5200                        0.0800           0.0800      14.6000 (G)

PARTICLE SIZE DISTRIBUTION:
                                       CUM
   _PHI___      __MM__   PERCENT   PERCENT
   -1.5000      2.8284     1.438     1.433
   -1.0000      2.0000     5.411     6.849
   -0.5000      1.4142     5.000    11.849
    0.0000      1.0000     1.849    13.699
    0.5000      0.7071    12.466    26.164
    1.0000      0.5000    16.575    42.740
    1.5000      0.3536    22.123    64.863
    2.0000      0.2500    17.329    82.192
    2.5000      0.1768    10.753    92.945
    3.0000      0.1250     4.384    97.329
    3.5000      0.0884     0.890    98.219
    4.0000      0.0625     0.685    98.904
   13.2800      0.0001     0.548    99.452

 SIZE CLASS RATIOS:
      GRAVEL=     6.849PCT   GRAVEL/SAND=     0.074
      SAND  =    92.055PCT   SAND/SILT   =  389.760
      SILT  =     0.236PCT   SILT/CLAY   =    0.275
      CLAY  =     0.860PCT   SAND/CLAY   =  107.077
      MUD   =     1.096PCT   SAND/MUD    =   84.000
                             GRAVEL/MUD  =    6.250
```

Profile S77-2
Sample S77-2

```
   SEDIMENT SIZE ANALYSIS--GLACIER BAY BEACH SAMPLES - SUMMER 1977
                          SAMPLE         TOTAL     SAMPLE    SAMPLE
  CRUISE     STATION    TYPE,NUMBER    LENGTH     CENTER    LENGTH    METHODS
              S77-3                       .  M       . CM      .  CM    1

 #F:SV=11,ST= 0,H=0;WT:SV= C.0000,ST= 0.0000,H/P= 0.0000; PHI LIM:CS= 0.00,FN= 0.00

 SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE_RANGE__      __METHOD_________
    2.8284-  0.0625MM     SIEVES

  UNEDITED SAMPLE WEIGHTS IN GRAMS:
 _SIEVES__    __RSA____   HYDROPHOTOMETER_    __PAN____    _TOTAL___
    9.5200                                                    9.5200 (G)

 PARTICLE SIZE DISTRIBUTION:
                                             CUM
    _PHI___       __MM__     PERCENT      PERCENT
    -1.0000       2.0000      50.105       50.105
    -0.5000       1.4142      32.353       82.458
     0.0000       1.0000      10.399       92.857
     0.5000       0.7071       2.626       95.483
     1.0000       0.5000       1.366       96.849
     1.5000       0.3536       0.735       97.584
     2.0000       0.2500       0.735       98.319
     2.5000       0.1768       0.735       99.055
     3.0000       0.1250       0.630       99.685
     3.5000       0.0884       0.105       99.790
     4.0000       0.0625       0.210      100.000

 SIZE CLASS RATIOS:
       GRAVEL=     50.105PCT    GRAVEL/SAND=      1.004
       SAND   =    49.895PCT    SAND/SILT   =99999.999
       SILT   =     0.000PCT    SILT/CLAY   =     0.000
       CLAY   =     0.000PCT    SAND/CLAY   =     0.000
       MUD    =     0.000PCT    SAND/MUD    =99999.999
                                GRAVEL/MUD  =99999.999
```

Profile S77-2
Sample S77-3

```
    SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

   SAMPLE NO. 24            GLACIER BAY 76

  DATA SPECIFICATION INPUT:
#OF FRC:CS=10,FN=9;WTS:CS=  0.0   ,FN=  0.125,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
  ____SIZE RANGE__      __METHOD__________
   1.4000-  0.0630MM    SIEVES
   0.0442-  0.0001MM    HYDROPHOTOMETER

PARTICLE SIZE DISTRIBUTION:
                                     CUM
  __PHI___     __MM__   PERCENT   PERCENT
  -0.4854      1.4000     1.123     1.123
   0.0         1.0000     2.619     3.742
   0.5002      0.7070    11.974    15.716
   1.0000      0.5000    27.877    43.592
   1.4982      0.3540    29.373    72.965
   2.0000      0.2500    15.903    88.868
   2.4982      0.1770     6.922    95.790
   3.0000      0.1250     1.684    97.474
   3.5063      0.0880     0.187    97.661
   3.9885      0.0630     0.0      97.661
   4.4998      0.0442     0.112    97.774
   5.0023      0.0312     0.426    98.200
   5.4998      0.0221     0.231    98.431
   6.0023      0.0156     0.338    98.769
   6.5063      0.0110     0.273    99.042
   7.0023      0.0078     0.239    99.281
   7.5063      0.0055     0.211    99.492
   8.0023      0.0039     0.208    99.700
  13.2877      0.0001     0.300   100.000

SIZE CLASS RATIOS:
     GRAVEL=     0.0  PCT    GRAVEL/SAND=      0.0
     SAND  =   97.664PCT     SAND/SILT   =    47.999
     SILT  =    2.035PCT     SILT/CLAY   =     6.750
     CLAY  =    0.301PCT     SAND/CLAY   =   324.010
     MUD   =    2.336PCT     SAND/MUD    =    41.806
                             GRAVEL/MUD  =     0.0
```

Profile 76-12

Sample 76-24

```
SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

  SAMPLE NO. 25            GLACIER BAY 76

   DATA SPECIFICATION INPUT:
#OF FRC:CS=10,FN=0;WTS:CS=   0.0   ,FN=   0.0   ,PAN=   0.0   ;PHI LIM:CS= 0.0 ,FN=   0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE RANGE___    ___METHOD_________
   4.0000-  0.1770MM    SIEVES

PARTICLE SIZE DISTRIBUTION:
                                      CUM
   _PHI___       __MM__   PERCENT   PERCENT
   -2.0000       4.0000     8.035     8.035
   -1.5008       2.8300     8.294    16.328
   -1.0000       2.0000     8.855    25.184
   -0.4854       1.4000    10.367    35.551
    0.0          1.0000    21.598    57.149
    0.5002       0.7070    27.214    84.363
    1.0000       0.5000    13.132    97.495
    1.4982       0.3540     1.901    99.395
    2.0000       0.2500     0.432    99.827
    2.4982       0.1770     0.173   100.000

SIZE CLASS RATIOS:
     GRAVEL=    25.184PCT    GRAVEL/SAND=     0.337
     SAND   =   74.816PCT    SAND/SILT   =    0.0
     SILT   =     0.0  PCT   SILT/CLAY   =    0.0
     CLAY   =     0.0  PCT   SAND/CLAY   =    0.0
     MUD    =     0.0  PCT   SAND/MUD    =    0.0
                             GRAVEL/MUD  =    0.0
```

Profile 76-12

Sample 76-25

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

   SAMPLE NO. 26            GLACIER BAY 76

  DATA SPECIFICATION INPUT:
#OF FRC:CS= 6,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE RANGE__     __METHOD_________
    2.8000-  0.5000MM   SIEVES

PARTICLE SIZE DISTRIBUTION:
                                        CUM
   _PHI___      __MM__   PERCENT   PERCENT
   -1.4854      2.8000     3.974     3.974
   -1.0000      2.0000    35.628    39.603
   -0.4854      1.4000    55.926    95.529
    0.0         1.0000     3.974    99.503
    0.5002      0.7070     0.426    99.929
    1.0000      0.5000     0.071   100.000

SIZE CLASS RATIOS:
     GRAVEL=    39.602PCT    GRAVEL/SAND=     0.656
     SAND   =   60.398PCT    SAND/SILT   =    0.0
     SILT   =     0.0  PCT   SILT/CLAY   =    0.0
     CLAY   =     0.0  PCT   SAND/CLAY   =    0.0
     MUD    =     0.0  PCT   SAND/MUD    =    0.0
                             GRAVEL/MUD  =    0.0
```

Profile 76-12

Sample 76-26

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

   SAMPLE NO. 27A            GLACIER BAY 76

    DATA SPECIFICATION INPUT:
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SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE RANGE__     __METHOD_________
    1.4000-  0.0630MM   SIEVES

PARTICLE SIZE DISTRIBUTION:
                                        CUM
   _PHI___      __MM__  PERCENT  PERCENT
   -0.4854      1.4000    0.351    0.351
    0.0         1.0000    2.339    2.690
    0.5002      0.7070    4.912    7.602
    1.0000      0.5000   14.269   21.871
    1.4982      0.3540   30.877   52.749
    2.0000      0.2500   29.006   81.754
    2.4982      0.1770   14.620   96.374
    3.0000      0.1250    3.275   99.649
    3.5063      0.0880    0.234   99.883
    3.9885      0.0630    0.117  100.000

SIZE CLASS RATIOS:
       GRAVEL=      0.0  PCT    GRAVEL/SAND=      0.0
       SAND   =  100.000PCT    SAND/SILT   =      0.0
       SILT   =     0.0  PCT    SILT/CLAY   =      0.0
       CLAY   =     0.0  PCT    SAND/CLAY   =      0.0
       MUD    =     0.0  PCT    SAND/MUD    =      0.0
                                GRAVEL/MUD  =      0.0
```

Profile 76-13

Sample 76-27A

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

   SAMPLE NO. 28             GLACIER BAY 76

  DATA SPECIFICATION INPUT:
#OF FRC:CS= 7,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE RANGE__      __METHOD_________
   1.0000- 0.1250MM     SIEVES

PARTICLE SIZE DISTRIBUTION:
                                      CUM
   _PHI___        __MM__   PERCENT   PERCENT
   0.0            1.0000     1.902     1.902
   0.5002         0.7070     8.424    10.326
   1.0000         0.5000    27.717    38.043
   1.4982         0.3540    37.772    75.815
   2.0000         0.2500    18.750    94.565
   2.4982         0.1770     5.163    99.728
   3.0000         0.1250     0.272   100.000

SIZE CLASS RATIOS:
        GRAVEL=     0.0  PCT    GRAVEL/SAND=     0.0
        SAND  =  100.000PCT     SAND/SILT   =    0.0
        SILT  =     0.0  PCT    SILT/CLAY   =    0.0
        CLAY  =     0.0  PCT    SAND/CLAY   =    0.0
        MUD   =     0.0  PCT    SAND/MUD    =    0.0
                                GRAVEL/MUD  =    0.0
```

Profile 76-13
Sample 76-28

```
      SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

    SAMPLE NO. 29            GLACIER BAY 76

   DATA SPECIFICATION INPUT:
  #OF FRC:CS= 9,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

  SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
      ____SIZE RANGE__      __METHOD_________
       1.4000-  0.0880MM    SIEVES

  PARTICLE SIZE DISTRIBUTION:
                                           CUM
      _PHI___     __MM__   PERCENT   PERCENT
      -0.4854     1.4000     0.102     0.102
       0.0        1.0000     1.628     1.729
       0.5002     0.7070    12.614    14.344
       1.0000     0.5000    32.553    46.897
       1.4982     0.3540    29.908    76.806
       2.0000     0.2500    13.428    90.234
       2.4982     0.1770     7.121    97.355
       3.0000     0.1250     2.442    99.797
       3.5063     0.0880     0.203   100.000

  SIZE CLASS RATIOS:
         GRAVEL=     0.0   PCT    GRAVEL/SAND=     0.0
         SAND   =  100.000PCT    SAND/SILT   =     0.0
         SILT   =     0.0   PCT    SILT/CLAY   =     0.0
         CLAY   =     0.0   PCT    SAND/CLAY   =     0.0
         MUD    =     0.0   PCT    SAND/MUD    =     0.0
                                  GRAVEL/MUD  =     0.0
```

Profile 76-13
Sample 76-29

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

    SAMPLE NO. 30            GLACIER BAY 76

  DATA SPECIFICATION INPUT:
#OF FRC:CS=11,FN=0;WTS:CS=  0.0   ,FN=  0.0   ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ___SIZE_RANGE__     __METHOD_________
    8.0000-  0.1770MM   SIEVES

PARTICLE SIZE DISTRIBUTION:
                                     CUM
   _PHI___      __MM__  PERCENT   PERCENT
   -3.0000      8.0000   21.639    21.639
   -2.0000      4.0000    3.060    24.699
   -1.5008      2.8300    1.676    26.375
   -1.0000      2.0000    2.004    28.379
   -0.4854      1.4000   12.969    41.348
    0.0         1.0000   16.976    58.324
    0.5002      0.7070   33.297    91.621
    1.0000      0.5000    6.995    98.616
    1.4982      0.3540    1.020    99.636
    2.0000      0.2500    0.291    99.927
    2.4982      0.1770    0.073   100.000

SIZE CLASS RATIOS:
        GRAVEL=    28.379PCT    GRAVEL/SAND=       0.396
        SAND   =   71.621PCT    SAND/SILT    =     0.0
        SILT   =     0.0  PCT   SILT/CLAY    =     0.0
        CLAY   =     0.0  PCT   SAND/CLAY    =     0.0
        MUD    =     0.0  PCT   SAND/MUD     =     0.0
                                GRAVEL/MUD  =      0.0
```

Profile 76-13
Sample 76-30

```
      SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

    SAMPLE NO. 31             GLACIER BAY 76

   DATA SPECIFICATION INPUT:
 #OF FRC:CS=13,FN=0:WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  :PHI LIM:CS= 0.0 ,FN=  0.0

 SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
    ____SIZE RANGE__      __METHOD________
     4.0000-  0.0630MM    SIEVES

 PARTICLE SIZE DISTRIBUTION:
                                       CUM
    __PHI___      __MM__   PERCENT  PERCENT
    -2.0000       4.0000    3.224     3.224
    -1.5008       2.8300    3.224     6.447
    -1.0000       2.0000    6.184    12.632
    -0.4854       1.4000   12.303    24.934
     0.0          1.0000   13.487    38.421
     0.5002       0.7070   17.237    55.658
     1.0000       0.5000   14.276    69.934
     1.4982       0.3540    8.684    78.618
     2.0000       0.2500    7.566    86.184
     2.4982       0.1770    9.276    95.460
     3.0000       0.1250    4.145    99.605
     3.5063       0.0880    0.329    99.934
     3.9885       0.0630    0.066   100.000

 SIZE CLASS RATIOS:
      GRAVEL=    12.632PCT   GRAVEL/SAND=     0.145
      SAND  =    87.368PCT   SAND/SILT   =    0.0
      SILT  =     0.0  PCT   SILT/CLAY   =    0.0
      CLAY  =     0.0  PCT   SAND/CLAY   =    0.0
      MUD   =     0.0  PCT   SAND/MUD    =    0.0
                             GRAVEL/MUD  =    0.0
```

Profile 76-13
Sample 76-31

```
      SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1977

    SAMPLE NO. 77-3          GLACIER BAY 77

   DATA SPECIFICATION INPUT:
  #OF FRC:CS=10,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

  SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
  ____SIZE RANGE___     __METHOD_________
     2.0000-  0.0880MM   SIEVES

  PARTICLE SIZE DISTRIBUTION:
                                           CUM
     _PHI___     __MM__   PERCENT  PERCENT
     -1.0000    2.0000     1.897     1.897
     -0.4854    1.4000     8.641    10.537
      0.0       1.0000    15.174    25.711
      0.5002    0.7070    13.488    39.199
      1.0000    0.5000    17.914    57.113
      1.4982    0.3540    21.918    79.031
      2.0000    0.2500    14.542    93.572
      2.4982    0.1770     5.269    98.841
      3.0000    0.1250     0.843    99.684
      3.5063    0.0880     0.316   100.000

  SIZE CLASS RATIOS:
          GRAVEL=     1.897PCT   GRAVEL/SAND=     0.019
          SAND  =    98.103PCT   SAND/SILT   =    0.0
          SILT  =     0.0  PCT   SILT/CLAY   =    0.0
          CLAY  =     0.0  PCT   SAND/CLAY   =    0.0
          MUD   =     0.0  PCT   SAND/MUD    =    0.0
                                 GRAVEL/MUD =     0.0
```

Profile J 77-13
Sample J 77-3

```
    SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1977

   SAMPLE NO. 77-4          GLACIER BAY 77

  DATA SPECIFICATION INPUT:
#OF FRC:CS=10,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE RANGE__      __METHOD_________
    2.0000-  0.0880MM    SIEVES

PARTICLE SIZE DISTRIBUTION:
                                       CUM.
   _PHI___       __MM__   PERCENT   PERCENT
   -1.0000       2.0000     7.468     7.468
   -0.4854       1.4000     4.434    11.902
    0.0          1.0000     7.701    19.603
    0.5002       0.7070    12.835    32.439
    1.0000       0.5000    25.671    58.110
    1.4982       0.3540    27.305    85.414
    2.0000       0.2500    10.969    96.383
    2.4982       0.1770     3.034    99.417
    3.0000       0.1250     0.467    99.883
    3.5063       0.0880     0.117   100.000

SIZE CLASS RATIOS:
     GRAVEL=      7.468PCT    GRAVEL/SAND=     0.081
     SAND   =    92.532PCT    SAND/SILT  =     0.0
     SILT   =     0.0  PCT    SILT/CLAY  =     0.0
     CLAY   =     0.0  PCT    SAND/CLAY  =     0.0
     MUD    =     0.0  PCT    SAND/MUD   =     0.0
                              GRAVEL/MUD =     0.0
```

Profile J 77-13
Sample J 77-4

```
   SEDIMENT SIZE ANALYSIS--GLACIER BAY BEACH SAMPLES - SUMMER 1977
                          SAMPLE         TOTAL    SAMPLE    SAMPLE
 CRUISE    STATION    TYPE,NUMBER    LENGTH    CENTER    LENGTH    METHODS
           S77-13                        .  M       . CM      .  CM    1

 #F:SV=10,ST= 0,H=0;WT:SV= 0.0000,ST= 0.0000,H/P= 0.0000; PHI LIM:CS= 0.00,FN= 0.00

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE_RANGE__      __METHOD_________
   2.0000-  0.0625MM     SIEVES

 UNEDITED SAMPLE WEIGHTS IN GRAMS:
_SIEVES__   __BSA____  HYDROPHOTOMETER_    __PAN____    _TOTAL___
  13.0000                                                13.0000 (G)

PARTICLE SIZE DISTRIBUTION:
                                     CUM
   _PHI___      __MM__   PERCENT   PERCENT
   -0.5000      1.4142     0.231     0.231
    0.0000      1.0000     0.231     0.462
    0.5000      0.7071     1.077     1.538
    1.0000      0.5000     4.462     6.000
    1.5000      0.3536    16.769    22.769
    2.0000      0.2500    33.385    56.154
    2.5000      0.1768    30.769    86.923
    3.0000      0.1250    12.533    99.462
    3.5000      0.0884     0.462    99.923
    4.0000      0.0625     0.077   100.000

SIZE CLASS RATIOS:
     GRAVEL=     0.000PCT    GRAVEL/SAND=    0.000
     SAND  =   100.000PCT    SAND/SILT   =*********
     SILT  =    -0.000PCT    SILT/CLAY   =    0.000
     CLAY  =     0.000PCT    SAND/CLAY   =    0.000
     MUD   =    -0.000PCT    SAND/MUD    =*********
                             GRAVEL/MUD  =    0.000
```

Profile S77-9

Sample S77-13

```
   SEDIMENT SIZE ANALYSIS--GLACIER BAY BEACH SAMPLES - SUMMER 1977
                          SAMPLE         TOTAL    SAMPLE    SAMPLE
 CRUISE     STATION     TYPE,NUMBER     LENGTH    CENTER    LENGTH    METHODS
            S77-14                        .  M       . CM      .  CM    1

 #F:SV=14,ST= 0,H=0;WT:SV= 0.0000,ST= 0.0000,H/P= 0.0020; PHI LIM:CS= 0.00,FN= 0.00

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE_RANGE__      __METHOD_________
   64.0011-  0.0625MM    SIEVES
    0.0625-  0.0001MM    PAN

 UNEDITED SAMPLE WEIGHTS IN GRAMS:
_SIEVES__   __RSA____  HYDROPHOTOMETER_    __PAN____   _TOTAL___
 139.7520                   0.0020           0.0020     139.7540 (G)

PARTICLE SIZE DISTRIBUTION:
                                          CUM
   _PHI___       __MM__    PERCENT    PERCENT
   -4.0000     16.0002     55.440     55.440
   -2.0000      4.0000      8.229     63.669
   -1.5000      2.8284      5.574     69.243
   -1.0000      2.0000      5.510     74.753
   -0.5000      1.4142      3.478     78.230
    0.0000      1.0000      2.461     80.692
    0.5000      0.7071      1.975     82.667
    1.0000      0.5000      1.975     84.642
    1.5000      0.3536      3.148     87.790
    2.0000      0.2500      4.937     92.727
    2.5000      0.1768      4.508     97.235
    3.0000      0.1250      2.576     99.811
    3.5000      0.0884      0.172     99.983
    4.0000      0.0625      0.014     99.997
   13.2800      0.0001      0.001     99.999

 SIZE CLASS RATIOS:
      GRAVEL=    74.753PCT    GRAVEL/SAND=      2.961
      SAND  =    25.244PCT    SAND/SILT   =40912.869
      SILT  =     0.001PCT    SILT/CLAY   =     0.275
      CLAY  =     0.002PCT    SAND/CLAY   =11235.410
      MUD   =     0.003PCT    SAND/MUD    = 8814.727
                              GRAVEL/MUD  =26101.888
```

Profile S77-9
Sample S77-14

```
  SEDIMENT SIZE ANALYSIS--GLACIER BAY BEACH SAMPLES - SUMMER 1977
                              SAMPLE          TOTAL     SAMPLE     SAMPLE
CRUISE       STATION     TYPE/NUMBER     LENGTH     CENTER     LENGTH     METHODS
             S77-11                           .  M        . CM       .  CM     1

#F:SV=11,ST= 0,H=0;WT:SV= 0.0000,ST= 0.0000,H/P= 0.0030; PHI LIM:CS= 0.00,FN= 0.00

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE_RANGE__      __METHOD_________
    2.8284-  0.0625MM    SIEVES
    0.0625-  0.0001MM    PAN

 UNEDITED SAMPLE WEIGHTS IN GRAMS:
_SIEVES__    __BSA____   HYDROPHOTOMETER_     __PAN____    _TOTAL___
   8.9318                       0.0030           0.0030        8.9348 (G)

PARTICLE SIZE DISTRIBUTION:
                                         CUM
   _PHI___       __MM__    PERCENT    PERCENT
   -1.0000      2.0000      1.567      1.567
   -0.5000      1.4142      2.238      3.805
    0.0000      1.0000      5.988      9.793
    0.5000      0.7071     12.647     22.440
    1.0000      0.5000     24.287     46.727
    1.5000      0.3536     29.212     75.939
    2.0000      0.2500     17.908     93.847
    2.5000      0.1768      5.148     98.995
    3.0000      0.1250      0.895     99.890
    3.5000      0.0884      0.032     99.923
    4.0000      0.0625      0.010     99.933
   13.2800      0.0001      0.034     99.966

SIZE CLASS RATIOS:
     GRAVEL=      1.567PCT    GRAVEL/SAND=      0.016
     SAND   =    98.366PCT    SAND/SILT    = 6796.532
     SILT   =     0.014PCT    SILT/CLAY    =    0.275
     CLAY   =     0.053PCT    SAND/CLAY    = 1867.201
     MUD    =     0.067PCT    SAND/MUD     = 1464.733
                              GRAVEL/MUD =     23.333
```

Profile S 77-8
Sample S 77-11

```
  SEDIMENT SIZE ANALYSIS--GLACIER BAY BEACH SAMPLES - SUMMER 1977
                      SAMPLE        TOTAL    SAMPLE    SAMPLE
CRUISE    STATION   TYPE,NUMBER    LENGTH    CENTER    LENGTH   METHODS
          S77-12                      .  M      . CM      .  CM    1

#F:SV=14,ST= 0,H=0;WT:SV= 0.0000,ST= 0.0000,H/P= 0.0000; PHI LIM:CS= 0.00,FN= 0.00

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE_RANGE__      __METHOD_________
   64.0011-  0.0625MM    SIEVES

UNEDITED SAMPLE WEIGHTS IN GRAMS:
_SIEVES__    __RSA____  HYDROPHOTOMETER_    __PAN____    _TOTAL___
 131.3600                                                 131.3600 (G)

PARTICLE SIZE DISTRIBUTION:
                                   CUM
   _PHI___     __MM__   PERCENT  PERCENT
   -4.0000   16.0002    36.914   36.914
   -2.0000    4.0000    13.619   50.533
   -1.5000    2.8284     7.247   57.780
   -1.0000    2.0000    10.467   68.248
   -0.5000    1.4142    17.167   85.414
    0.0000    1.0000     9.219   94.633
    0.5000    0.7071     2.474   97.107
    1.0000    0.5000     1.401   98.508
    1.5000    0.3536     1.066   99.574
    2.0000    0.2500     0.274   99.848
    2.5000    0.1768     0.084   99.931
    3.0000    0.1250     0.046   99.977
    3.5000    0.0884     0.015   99.992
    4.0000    0.0625     0.008  100.000

SIZE CLASS RATIOS:
     GRAVEL=   68.248PCT   GRAVEL/SAND=     2.149
     SAND  =   31.752PCT   SAND/SILT  =*********
     SILT  =   -0.000PCT   SILT/CLAY  =    0.000
     CLAY  =    0.000PCT   SAND/CLAY  =    0.000
     MUD   =   -0.000PCT   SAND/MUD   =*********
                           GRAVEL/MUD =*********
```

Profile S 77-8
Sample S 77-12

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

   SAMPLE NO. 32            GLACIER BAY 76

  DATA SPECIFICATION INPUT:
#OF FRC:CS= 9,FN=0;WTS:CS=   0.0   ,FN=   0.0   ,PAN=  0.010;PHI LIM:CS= 0.0 ,FN=   0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
    ____SIZE RANGE__       __METHOD_________
     1.0000-  0.0630MM    SIEVES
     0.0630-  0.0001MM    PAN

PARTICLE SIZE DISTRIBUTION:
                                              CUM
    _PHI__        __MM__   PERCENT    PERCENT
     0.0          1.0000     0.415      0.415
     0.5002       0.7070     0.727      1.142
     1.0000       0.5000     3.115      4.258
     1.4982       0.3540    10.800     15.057
     2.0000       0.2500    26.376     41.433
     2.4982       0.1770    35.929     77.362
     3.0000       0.1250    19.938     97.300
     3.5063       0.0880     2.077     99.377
     3.9885       0.0630     0.415     99.792
    13.2877       0.0001     0.208    100.000

SIZE CLASS RATIOS:
      GRAVEL=      0.0  PCT    GRAVEL/SAND=      0.0
      SAND   =   99.793PCT    SAND/SILT   = 1116.995
      SILT   =    0.089PCT    SILT/CLAY   =      0.757
      CLAY   =    0.118PCT    SAND/CLAY   =   845.071
      MUD    =    0.207PCT    SAND/MUD    =   481.095
                              GRAVEL/MUD =      0.0
```

Profile 76-14
Sample 76-32

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

   SAMPLE NO. 33            GLACIER BAY 76

  DATA SPECIFICATION INPUT:
#OF FRC:CS= 8,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE RANGE__    __METHOD_________
   1.0000-  0.0880MM   SIEVES

PARTICLE SIZE DISTRIBUTION:
                                     CUM
   _PHI___      __MM__  PERCENT  PERCENT
    0.0         1.0000    0.237    0.237
    0.5002      0.7070    0.949    1.186
    1.0000      0.5000    2.610    3.796
    1.4982      0.3540   14.947   18.743
    2.0000      0.2500   28.351   47.094
    2.4982      0.1770   33.215   80.308
    3.0000      0.1250   17.556   97.865
    3.5063      0.0880    2.135  100.000

SIZE CLASS RATIOS:
     GRAVEL=     0.0  PCT   GRAVEL/SAND=     0.0
     SAND   =  100.000PCT   SAND/SILT   =    0.0
     SILT   =     0.0  PCT   SILT/CLAY   =    0.0
     CLAY   =     0.0  PCT   SAND/CLAY   =    0.0
     MUD    =     0.0  PCT   SAND/MUD    =    0.0
                            GRAVEL/MUD  =    0.0
```

Profile 76-14
Sample 76-33

```
      SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

     SAMPLE NO. 34            GLACIER BAY 76

    DATA SPECIFICATION INPUT:
#OF FRC:CS= 7,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
    ____SIZE RANGE__     __METHOD_________
     0.5000-  0.0630MM   SIEVES

PARTICLE SIZE DISTRIBUTION:
                                         CUM
    _PHI___      __MM__   PERCENT   PERCENT
     1.0000      0.5000     0.493     0.493
     1.4982      0.3540     5.425     5.919
     2.0000      0.2500    20.469    26.387
     2.4982      0.1770    40.197    66.584
     3.0000      0.1250    30.333    96.917
     3.5063      0.0880     2.959    99.877
     3.9885      0.0630     0.123   100.000

SIZE CLASS RATIOS:
    GRAVEL=     0.0  PCT   GRAVEL/SAND=     0.0
    SAND  =   100.000PCT   SAND/SILT   =    0.0
    SILT  =     0.0  PCT   SILT/CLAY   =    0.0
    CLAY  =     0.0  PCT   SAND/CLAY   =    0.0
    MUD   =     0.0  PCT   SAND/MUD    =    0.0
                           GRAVEL/MUD  =    0.0
```

Profile 76-14
Sample 76-34

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1977

   SAMPLE NO. 77-2             GLACIER BAY 77

  DATA SPECIFICATION INPUT:
#OF FRC:CS= 9,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
  ____SIZE RANGE__    __METHOD_________
   1.0000-  0.0630MM   SIEVES

PARTICLE SIZE DISTRIBUTION:
                                      CUM.
  __PHI___     __MM__   PERCENT   PERCENT
    0.0         1.0000     0.109     0.109
    0.5002      0.7070     0.869     0.977
    1.0000      0.5000     5.646     6.623
    1.4982      0.3540    24.756    31.379
    2.0000      0.2500    34.745    66.124
    2.4982      0.1770    26.059    92.182
    3.0000      0.1250     7.166    99.349
    3.5063      0.0880     0.434    99.783
    3.9885      0.0630     0.217   100.000

SIZE CLASS RATIOS:
      GRAVEL=     0.0  PCT    GRAVEL/SAND=     0.0
      SAND   =  100.000PCT    SAND/SILT   =    0.0
      SILT   =     0.0  PCT   SILT/CLAY   =    0.0
      CLAY   =     0.0  PCT   SAND/CLAY   =    0.0
      MUD    =     0.0  PCT   SAND/MUD    =    0.0
                              GRAVEL/MUD  =    0.0
```

Profile J 77-14

Sample J 77-2

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1977

    SAMPLE NO. 77-1          GLACIER BAY 77

  DATA SPECIFICATION INPUT:
#OF FRC:CS=11,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
    ____SIZE_RANGE__      __METHOD________
     2.0000-  0.0630MM    SIEVES

PARTICLE SIZE DISTRIBUTION:
                                              CUM
    _PHI___       __MM__   PERCENT   PERCENT
    -1.0000       2.0000     0.103     0.103
    -0.4854       1.4000     0.0       0.103
     0.0          1.0000     0.826     0.929
     0.5002       0.7070     4.334     5.263
     1.0000       0.5000    16.305    21.569
     1.4982       0.3540    35.913    57.482
     2.0000       0.2500    27.245    84.727
     2.4982       0.1770    12.384    97.110
     3.0000       0.1250     2.270    99.381
     3.5063       0.0880     0.413    99.794
     3.9885       0.0630     0.206   100.000

SIZE CLASS RATIOS:
     GRAVEL=      0.103PCT    GRAVEL/SAND=     0.001
     SAND  =     99.897PCT    SAND/SILT   =    0.0
     SILT  =      0.0  PCT    SILT/CLAY   =    0.0
     CLAY  =      0.0  PCT    SAND/CLAY   =    0.0
     MUD   =      0.0  PCT    SAND/MUD    =    0.0
                              GRAVEL/MUD  =    0.0
```

Profile J 77-14
Sample J 77-1

```
   SEDIMENT SIZE ANALYSIS--GLACIER BAY BEACH SAMPLES - SUMMER 1977
                          SAMPLE        TOTAL    SAMPLE    SAMPLE
 CRUISE    STATION    TYPE/NUMBER    LENGTH    CENTER    LENGTH    METHODS
           S77-15                        .  M       . CM      .  CM    1

 #F:SV=10,ST= 0,H=0;WT:SV= 0.0000,ST= 0.0000,H/P= 0.0000; PHI LIM:CS= 0.00,FN= 0.00

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE_RANGE__       __METHOD_________
    2.0000-  0.0625MM     SIEVES

 UNEDITED SAMPLE WEIGHTS IN GRAMS:
_SIEVES__    __RSA____  HYDROPHOTOMETER_    __PAN____    _TOTAL___
  12.5800                                                   12.5800 (G)

PARTICLE SIZE DISTRIBUTION:
                                       CUM
   _PHI___      __UM__   PERCENT   PERCENT
   -0.5000      1.4142     0.238     0.238
    0.0000      1.0000     0.318     0.556
    0.5000      0.7071     0.238     0.795
    1.0000      0.5000     2.941     3.736
    1.5000      0.3536    22.576    26.312
    2.0000      0.2500    36.804    63.116
    2.5000      0.1768    23.347    86.963
    3.0000      0.1250    11.685    98.649
    3.5000      0.0884     1.033    99.682
    4.0000      0.0625     0.318   100.000

SIZE CLASS RATIOS:
      GRAVEL=      0.000PCT    GRAVEL/SAND=      0.000
      SAND   =   100.000PCT    SAND/SILT   =     0.000
      SILT   =     0.000PCT    SILT/CLAY   =     0.000
      CLAY   =     0.000PCT    SAND/CLAY   =     0.000
      MUD    =     0.000PCT    SAND/MUD    =     0.000
                               GRAVEL/MUD  =     0.000
```

Profile S77-10
Sample S77-15

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

    SAMPLE NO. 35            GLACIER BAY 76

   DATA SPECIFICATION INPUT:
 #OF FRC:CS=10,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

 SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
    ____SIZE RANGE__      __METHOD_________
     8.0000-  0.2500MM    SIEVES

 PARTICLE SIZE DISTRIBUTION:
                                        CUM
    _PHI___      __MM__  PERCENT  PERCENT
    -3.0000      8.0000   17.239   17.239
    -2.0000      4.0000   14.515   31.754
    -1.5008      2.8300   10.075   41.828
    -1.0000      2.0000   21.194   63.022
    -0.4854      1.4000   22.052   85.075
     0.0         1.0000   10.784   95.858
     0.5002      0.7070    3.246   99.105
     1.0000      0.5000    0.784   99.888
     1.4982      0.3540    0.075   99.963
     2.0000      0.2500    0.037  100.000

 SIZE CLASS RATIOS:
         GRAVEL=    63.022PCT   GRAVEL/SAND=      1.704
         SAND  =    36.978PCT   SAND/SILT   =     0.0
         SILT  =     0.0  PCT   SILT/CLAY   =     0.0
         CLAY  =     0.0  PCT   SAND/CLAY   =     0.0
         MUD   =     0.0  PCT   SAND/MUD    =     0.0
                                GRAVEL/MUD  =     0.0
```

Profile 76-15
Sample 76-35

```
    SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

   SAMPLE NO. 36            GLACIER BAY 76

  DATA SPECIFICATION INPUT:
#OF FRC:CS= 6,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE_RANGE__      __METHOD_________
    4.0000-  0.7070MM    SIEVES

PARTICLE SIZE DISTRIBUTION:
                                        CUM
   _PHI___      __MM__   PERCENT  PERCENT
   -2.0000      4.0000    13.423   13.423
   -1.5008      2.8300    20.929   34.353
   -1.0000      2.0000    31.851   66.203
   -0.4854      1.4000    26.886   93.090
    0.0         1.0000     6.791   99.881
    0.5002      0.7070     0.119  100.000

SIZE CLASS RATIOS:
     GRAVEL=    66.203PCT   GRAVEL/SAND=    1.959
     SAND  =    33.797PCT   SAND/SILT   =   0.0
     SILT  =     0.0  PCT   SILT/CLAY   =   0.0
     CLAY  =     0.0  PCT   SAND/CLAY   =   0.0
     MUD   =     0.0  PCT   SAND/MUD    =   0.0
                            GRAVEL/MUD  =   0.0
```

Profile 76-16
Sample 76-36

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

   SAMPLE NO. 37            GLACIER BAY 76

  DATA SPECIFICATION INPUT:
#OF FRC:CS= 8,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE RANGE____    ___METHOD__________
    1.0000-  0.0880MM    SIEVES

PARTICLE SIZE DISTRIBUTION:
                                         CUM
   __PHI___       __MM__   PERCENT  PERCENT
    0.0          1.0000      2.111     2.111
    0.5002       0.7070      7.652     9.763
    1.0000       0.5000     14.248    24.011
    1.4982       0.3540     23.219    47.230
    2.0000       0.2500     32.718    79.947
    2.4982       0.1770     17.150    97.098
    3.0000       0.1250      2.639    99.736
    3.5063       0.0880      0.264   100.000

SIZE CLASS RATIOS:
      GRAVEL=      0.0  PCT    GRAVEL/SAND=     0.0
      SAND   =   100.000PCT    SAND/SILT   =    0.0
      SILT   =      0.0  PCT    SILT/CLAY   =    0.0
      CLAY   =      0.0  PCT    SAND/CLAY   =    0.0
      MUD    =      0.0  PCT    SAND/MUD    =    0.0
                               GRAVEL/MUD =     0.0
```

Profile 76-19
Sample 76-37

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

    SAMPLE NO. 38             GLACIER BAY 76

   DATA SPECIFICATION INPUT:
#OF FRC:CS= 9,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
    ____SIZE RANGE__    __METHOD__________
     2.0000-  0.1250MM   SIEVES

PARTICLE SIZE DISTRIBUTION:
                                         CUM
    _PHI___      __MM__  PERCENT   PERCENT
    -1.0000      2.0000    1.423     1.423
    -0.4854      1.4000    6.504     7.927
     0.0         1.0000   10.366    18.293
     0.5002      0.7070    9.756    28.049
     1.0000      0.5000   21.748    49.797
     1.4982      0.3540   31.098    80.894
     2.0000      0.2500   15.244    96.138
     2.4982      0.1770    3.659    99.797
     3.0000      0.1250    0.203   100.000

SIZE CLASS RATIOS:
     GRAVEL=     1.423PCT    GRAVEL/SAND=     0.014
     SAND   =   98.577PCT    SAND/SILT   =    0.0
     SILT   =     0.0  PCT   SILT/CLAY   =    0.0
     CLAY   =     0.0  PCT   SAND/CLAY   =    0.0
     MUD    =     0.0  PCT   SAND/MUD    =    0.0
                             GRAVEL/MUD  =    0.0
```

Profile 76-19
Sample 76-38

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

    SAMPLE NO. 39             GLACIER BAY 76

  DATA SPECIFICATION INPUT:
#OF FRC:CS= 7,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
    ____SIZE_RANGE__      __METHOD_________
      0.7070-  0.0880MM    SIEVES

PARTICLE SIZE DISTRIBUTION:
                                     CUM
    _PHI___      __MM__  PERCENT  PERCENT
     0.5002      0.7070    0.248    0.248
     1.0000      0.5000    4.467    4.715
     1.4982      0.3540   28.784   33.499
     2.0000      0.2500   44.665   78.164
     2.4982      0.1770   19.355   97.519
     3.0000      0.1250    2.233   99.752
     3.5063      0.0880    0.248  100.000

SIZE CLASS RATIOS:
        GRAVEL=      0.0  PCT    GRAVEL/SAND=      0.0
        SAND   =  100.000PCT    SAND/SILT   =      0.0
        SILT   =      0.0  PCT    SILT/CLAY   =      0.0
        CLAY   =      0.0  PCT    SAND/CLAY   =      0.0
        MUD    =      0.0  PCT    SAND/MUD    =      0.0
                                 GRAVEL/MUD  =      0.0
```

Profile 76- 19
Sample 76-39

```
   SEDIMENT SIZE ANALYSIS--GLACIER BAY BEACH SAMPLES - SUMMER 1977
                          SAMPLE          TOTAL    SAMPLE    SAMPLE
 CRUISE     STATION    TYPE,NUMBER       LENGTH    CENTER    LENGTH    METHODS
            S77-17                          . M        . CM      .  CM    1

 #F:SV=10,ST= 0,H=0;WT:SV= 0.0000,ST= 0.0000,H/P= 0.0000; PHI LIM:CS= 0.00,FN= 0.00

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE_RANGE__       __METHOD_________
    2.8284-  0.0884MM     SIEVES

 UNEDITED SAMPLE WEIGHTS IN GRAMS:
_SIEVES__     __RSA____   HYDROPHOTOMETER_     __PAN____    _TOTAL___
  12.4200                                                     12.4200 (G)

PARTICLE SIZE DISTRIBUTION:
                                              CUM
   _PHI___        __MM__    PERCENT    PERCENT
   -1.0000        2.0000      0.886      0.886
   -0.5000        1.4142      3.784      4.670
    0.0000        1.0000     14.251     18.921
    0.5000        0.7071     33.333     52.254
    1.0000        0.5000     24.638     76.892
    1.5000        0.3536     14.815     91.707
    2.0000        0.2500      6.522     98.229
    2.5000        0.1768      1.369     99.597
    3.0000        0.1250      0.242     99.839
    3.5000        0.0884      0.161    100.000

SIZE CLASS RATIOS:
       GRAVEL=      0.886PCT   GRAVEL/SAND=     0.009
       SAND   =    99.114PCT   SAND/SILT   =    0.000
       SILT   =     0.000PCT   SILT/CLAY   =    0.000
       CLAY   =     0.000PCT   SAND/CLAY   =    0.000
       MUD    =     0.000PCT   SAND/MUD    =    0.000
                               GRAVEL/MUD  =    0.000
```

Profile S77-12
Sample S77-17

```
  SEDIMENT SIZE ANALYSIS--GLACIER BAY BEACH SAMPLES - SUMMER 1977
                         SAMPLE          TOTAL    SAMPLE    SAMPLE
CRUISE      STATION    TYPE,NUMBER     LENGTH    CENTER    LENGTH    METHODS
            S77-18                        .  M       . CM      .  CM    1

#F:SV=12,ST= 0,H=0;WT:SV= 0.0000,ST= 0.0000,H/P= 0.0100; PHI LIM:CS= 0.00,FN= 0.00

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE_RANGE__     __METHOD_________
    5.6569-  0.0625MM    SIEVES
    0.0625-  0.0001MM    PAN

 UNEDITED SAMPLE WEIGHTS IN GRAMS:
_SIEVES__   __RSA____  HYDROPHOTOMETER_    __PAN____   _TOTAL___
 10.7400                     0.0100          0.0100     10.7500 (G)

PARTICLE SIZE DISTRIBUTION:
                                        CUM
   _PHI___      __MM__   PERCENT   PERCENT
   -2.0000     4.0000     2.140     2.140
   -1.5000     2.8284     1.674     3.814
   -0.5000     1.4142     1.395     5.209
    0.0000     1.0000     2.977     8.186
    0.5000     0.7071     5.488    13.674
    1.0000     0.5000    21.395    35.070
    1.5000     0.3536    35.256    70.326
    2.0000     0.2500    20.186    90.512
    2.5000     0.1768     7.907    98.419
    3.0000     0.1250     1.209    99.628
    3.5000     0.0884     0.093    99.721
    4.0000     0.0625     0.093    99.814
   13.2500     0.0001     0.093    99.907

 SIZE CLASS RATIOS:
      GRAVEL=    4.512PCT   GRAVEL/SAND=     0.047
      SAND  =   95.302PCT   SAND/SILT   = 2376.837
      SILT  =    0.040PCT   SILT/CLAY   =    0.275
      CLAY  =    0.146PCT   SAND/CLAY   =  652.982
      MUD   =    0.186PCT   SAND/MUD    =  512.252
                            GRAVEL/MUD  =   24.250
```

Profile S77-12
Sample S77-18

```
   SEDIMENT SIZE ANALYSIS--GLACIER BAY BEACH SAMPLES - SUMMER 1977
                          SAMPLE        TOTAL    SAMPLE    SAMPLE
 CRUISE     STATION    TYPE,NUMBER    LENGTH    CENTER    LENGTH    METHODS
            S77-19                       .  M       . CM      .  CM    1

 #F:SV=11,ST= 0,H=0;WT:SV= 0.0000,ST= 0.0000,H/P= 0.0400; PHI LIM:CS= 0.00,FN= 0.00

 SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
    ____SIZE_RANGE__      __METHOD_________
     2.8284-  0.0625MM    SIEVES
     0.0625-  0.0001MM    PAN

  UNEDITED SAMPLE WEIGHTS IN GRAMS:
 _SIEVES__   __RSA____  HYDROPHOTOMETER_    __PAN____    _TOTAL____
  12.5800                     0.0400          0.0400      12.6200 (G)

 PARTICLE SIZE DISTRIBUTION:
                                            CUM
    _PHI___      __MM__    PERCENT    PERCENT
    -1.0000      2.0000      0.158      0.158
    -0.5000      1.4142      0.158      0.317
     0.0000      1.0000      0.634      0.951
     0.5000      0.7071      1.426      2.377
     1.0000      0.5000      7.052      9.429
     1.5000      0.3536     30.269     39.699
     2.0000      0.2500     39.144     78.843
     2.5000      0.1768     15.769     94.612
     3.0000      0.1250      4.120     98.732
     3.5000      0.0884      0.396     99.128
     4.0000      0.0625      0.238     99.366
    13.2800      0.0001      0.317     99.683

 SIZE CLASS RATIOS:
      GRAVEL=      0.158PCT   GRAVEL/SAND=     0.002
      SAND   =    99.208PCT   SAND/SILT   =  726.160
      SILT   =     0.137PCT   SILT/CLAY   =    0.275
      CLAY   =     0.497PCT   SAND/CLAY   =  199.495
      MUD    =     0.634PCT   SAND/MUD    =  156.500
                              GRAVEL/MUD  =    0.250
```

Profile S77-13
Sample S77-19

```
 SEDIMENT SIZE ANALYSIS--GLACIER BAY BEACH SAMPLES - SUMMER 1977
                        SAMPLE          TOTAL    SAMPLE    SAMPLE
CRUISE    STATION    TYPE/NUMBER       LENGTH    CENTER    LENGTH    METHODS
          S77-20                           .  M      . CM      .  CM    1

#F:SV=10/ST= 0/H=0;WT:SV= 0.0000/ST= 0.0000/H/P= 0.0000; PHI LIM:CS= 0.00/FN= 0.00

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
  ____SIZE_RANGE__      __METHOD_________
   2.8284-  0.0884MM    SIEVES

 UNEDITED SAMPLE WEIGHTS IN GRAMS:
_SIEVES__   __RSA____  HYDROPHOTOMETER_    __PAN____   _TOTAL___
  9.8400                                                  9.8400 (G)

PARTICLE SIZE DISTRIBUTION:
                                          CUM
  _PHI___      __MM__   PERCENT    PERCENT
  -1.0000     2.0000      1.016      1.016
  -0.5000     1.4142      0.915      1.931
   0.0000     1.0000      2.439      4.370
   0.5000     0.7071      9.248     13.618
   1.0000     0.5000     30.894     44.512
   1.5000     0.3536     34.146     78.659
   2.0000     0.2500     17.581     96.240
   2.5000     0.1768      3.354     99.593
   3.0000     0.1250      0.305     99.898
   3.5000     0.0884      0.102    100.000

 SIZE CLASS RATIOS:
      GRAVEL=     1.016PCT    GRAVEL/SAND=     0.010
      SAND  =    98.984PCT    SAND/SILT   =    0.000
      SILT  =     0.000PCT    SILT/CLAY   =    0.000
      CLAY  =     0.000PCT    SAND/CLAY   =    0.000
      MUD   =     0.000PCT    SAND/MUD    =    0.000
                              GRAVEL/MUD  =    0.000
```

Profile S77-13
Sample S77-20

```
      SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

    SAMPLE NO. 40              GLACIER BAY 76

   DATA SPECIFICATION INPUT:
 #OF FRC:CS= 8,FN=0;WTS:CS=  0.0   ,FN=  0.0   ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

 SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
    ____SIZE_RANGE___   __METHOD_________
     0.7070-  0.0630MM   SIEVES

 PARTICLE SIZE DISTRIBUTION:
                                        CUM
    _PHI___      __MM__   PERCENT  PERCENT
     0.5002      0.7070     0.632     0.632
     1.0000      0.5000     7.376     8.008
     1.4982      0.3540    26.133    34.141
     2.0000      0.2500    36.670    70.811
     2.4982      0.1770    23.815    94.626
     3.0000      0.1250     5.058    99.684
     3.5063      0.0880     0.211    99.895
     3.9885      0.0630     0.105   100.000

 SIZE CLASS RATIOS:
         GRAVEL=     0.0  PCT   GRAVEL/SAND=     0.0
         SAND   =  100.000PCT   SAND/SILT   =     0.0
         SILT   =     0.0  PCT   SILT/CLAY   =     0.0
         CLAY   =     0.0  PCT   SAND/CLAY   =     0.0
         MUD    =     0.0  PCT   SAND/MUD    =     0.0
                                 GRAVEL/MUD  =     0.0
```

Profile 76-20
Sample 76-40

```
       SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

     SAMPLE NO. 41             GLACIER BAY 76

    DATA SPECIFICATION INPUT:
  #OF FRC:CS= 7,FN=0:WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  :PHI LIM:CS= 0.0 ,FN=  0.0

  SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
     ____SIZE RANGE__        __METHOD__________
      0.5000-  0.0630MM     SIEVES

  PARTICLE SIZE DISTRIBUTION:
                                              CUM
     _PHI____        __MM__   PERCENT   PERCENT
      1.0000         0.5000     0.917     0.917
      1.4982         0.3540    12.844    13.761
      2.0000         0.2500    38.349    52.110
      2.4982         0.1770    38.349    90.459
      3.0000         0.1250     8.991    99.450
      3.5063         0.0880     0.367    99.817
      3.9885         0.0630     0.183   100.000

  SIZE CLASS RATIOS:
       GRAVEL=      0.0  PCT    GRAVEL/SAND=      0.0
       SAND   =   100.000PCT    SAND/SILT   =     0.0
       SILT   =     0.0  PCT    SILT/CLAY   =     0.0
       CLAY   =     0.0  PCT    SAND/CLAY   =     0.0
       MUD    =     0.0  PCT    SAND/MUD    =     0.0
                                GRAVEL/MUD  =     0.0
```

Profile 76-20
Sample 76-41

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

   SAMPLE NO. 42            GLACIER BAY 76

  DATA SPECIFICATION INPUT:
#OF FRC:CS=10,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ___SIZE RANGE___     __METHOD__________
   2.0000-  0.0880MM    SIEVES

PARTICLE SIZE DISTRIBUTION:
                                        CUM
   __PHI___      __MM__   PERCENT   PERCENT
   -1.0000      2.0000      5.280     5.280
   -0.4854      1.4000      0.422     5.702
    0.0         1.0000      0.422     6.125
    0.5002      0.7070      1.901     8.025
    1.0000      0.5000     23.654    31.679
    1.4982      0.3540     48.363    80.042
    2.0000      0.2500     14.995    95.037
    2.4982      0.1770      4.224    99.261
    3.0000      0.1250      0.634    99.894
    3.5063      0.0880      0.106   100.000

SIZE CLASS RATIOS:
     GRAVEL=      5.280PCT    GRAVEL/SAND=      0.056
     SAND  =     94.720PCT    SAND/SILT  =      0.0
     SILT  =      0.0  PCT    SILT/CLAY  =      0.0
     CLAY  =      0.0  PCT    SAND/CLAY  =      0.0
     MUD   =      0.0  PCT    SAND/MUD   =      0.0
                              GRAVEL/MUD =      0.0
```

Profile 76-20
Sample 76-42

```
   SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

  SAMPLE NO. 43           GLACIER BAY 76

 DATA SPECIFICATION INPUT:
#OF FRC:CS= 7,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
 ___SIZE RANGE__    __METHOD_________
  2.0000-  0.2500MM   SIEVES

PARTICLE SIZE DISTRIBUTION:
                                     CUM
  _PHI___      __MM__  PERCENT  PERCENT
  -1.0000      2.0000   15.521   15.521
  -0.4854      1.4000   20.422   35.943
   0.0         1.0000   33.628   69.571
   0.5002      0.7070   21.239   90.810
   1.0000      0.5000    7.624   98.434
   1.4982      0.3540    1.498   99.932
   2.0000      0.2500    0.068  100.000

SIZE CLASS RATIOS:
    GRAVEL=    15.521PCT   GRAVEL/SAND=     0.184
    SAND   =   84.479PCT   SAND/SILT   =    0.0
    SILT   =     0.0  PCT  SILT/CLAY   =    0.0
    CLAY   =     0.0  PCT  SAND/CLAY   =    0.0
    MUD    =     0.0  PCT  SAND/MUD    =    0.0
                           GRAVEL/MUD  =    0.0
```

Profile 76-20
Sample 76-43

```
      SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

     SAMPLE NO. 44            GLACIER BAY 76

    DATA SPECIFICATION INPUT:
 #OF FRC:CS=10,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

 SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
     ____SIZE RANGE__    __METHOD__________
      2.0000-  0.0880MM   SIEVES

 PARTICLE SIZE DISTRIBUTION:
                                          CUM
     _PHI___     __MM__   PERCENT   PERCENT
     -1.0000     2.0000     2.570     2.570
     -0.4854     1.4000     7.243     9.813
      0.0        1.0000    19.860    29.673
      0.5002     0.7070    25.234    54.907
      1.0000     0.5000    21.495    76.402
      1.4982     0.3540    14.486    90.888
      2.0000     0.2500     6.308    97.196
      2.4982     0.1770     2.103    99.299
      3.0000     0.1250     0.467    99.766
      3.5063     0.0880     0.234   100.000

 SIZE CLASS RATIOS:
      GRAVEL=     2.570PCT    GRAVEL/SAND=     0.026
      SAND   =   97.430PCT    SAND/SILT   =    0.0
      SILT   =     0.0  PCT   SILT/CLAY   =    0.0
      CLAY   =     0.0  PCT   SAND/CLAY   =    0.0
      MUD    =     0.0  PCT   SAND/MUD    =    0.0
                              GRAVEL/MUD  =    0.0
```

Profile 76-20
Sample 76-44

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

   SAMPLE NO. 46              GLACIER BAY 76

    DATA SPECIFICATION INPUT:
 #OF FRC:CS=14,FN=9;WTS:CS=  0.0  ,FN=  0.160,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

 SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
     ____SIZE_RANGE__      __METHOD________
      8.0000-  0.0630MM     SIEVES
      0.0442-  0.0001MM     HYDROPHOTOMETER

 PARTICLE SIZE DISTRIBUTION:
                                      CUM
     _PHI___       __MM__   PERCENT   PERCENT
     -3.0000       8.0000   15.501    15.501
     -2.0000       4.0000   57.821    73.322
     -1.5008       2.8300   18.935    92.257
     -1.0000       2.0000    5.345    97.602
     -0.4854       1.4000    1.301    98.903
      0.0          1.0000    0.366    99.268
      0.5002       0.7070    0.152    99.421
      1.0000       0.5000    0.086    99.507
      1.4982       0.3540    0.056    99.563
      2.0000       0.2500    0.030    99.594
      2.4982       0.1770    0.030    99.624
      3.0000       0.1250    0.036    99.660
      3.5063       0.0880    0.036    99.695
      3.9885       0.0630    0.224    99.919
      4.4998       0.0442    0.003    99.921
      5.0023       0.0312    0.033    99.954
      5.4998       0.0221    0.015    99.969
      6.0023       0.0156    0.002    99.970
      6.5063       0.0110    0.009    99.979
      7.0023       0.0078    0.005    99.985
      7.5063       0.0055    0.003    99.988
      8.0023       0.0039    0.004    99.992
     13.2877       0.0001    0.007   100.000

 SIZE CLASS RATIOS:
      GRAVEL=     97.602PCT    GRAVEL/SAND=     42.129
      SAND   =     2.317PCT    SAND/SILT   =    31.415
      SILT   =     0.074PCT    SILT/CLAY   =     9.724
      CLAY   =     0.008PCT    SAND/CLAY   =   305.491
```

Profile 76-21
Sample 76-46

Sample 76-45 collected at this profile location was not analyzed as it consisted of Yakataga fragments which broke down in size during analysis. The majority of grains were pea gravel size or coarse sand size

```
   SEDIMENT SIZE ANALYSIS--GLACIER BAY BEACH SAMPLES - SUMMER 1977
                             SAMPLE         TOTAL    SAMPLE    SAMPLE
 CRUISE    STATION    TYPE,NUMBER    LENGTH    CENTER    LENGTH    METHODS
           S77-25                         . M       . CM      . CM     1

 #F:SV= 8,ST= 0,H=0;WT:SV= 0.0000,ST= 0.0000,H/P= 0.0110; PHI LIM:CS= 0.00,FN= 0.00

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE_RANGE__      __METHOD_________
    2.8284-  0.1768MM    SIEVES
    0.1768-  0.0001MM    PAN

 UNEDITED SAMPLE WEIGHTS IN GRAMS:
_SIEVES__   __RSA____  HYDROPHOTOMETER_    __PAN____   _TOTAL___
  12.0829                     0.0110          0.0110      12.0939 (G)

PARTICLE SIZE DISTRIBUTION:
                                   CUM
   _PHI___      __MM__   PERCENT   PERCENT
   -1.0000     2.0000     3.142     3.142
   -0.5000     1.4142    13.726    16.868
    0.0000     1.0000    33.488    50.356
    0.5000     0.7071    33.571    83.927
    1.0000     0.5000    13.478    97.404
    1.5000     0.3536     2.315    99.720
    2.0000     0.2500     0.083    99.802
    2.5000     0.1768     0.016    99.818
   13.2800     0.0001     0.091    99.909

SIZE CLASS RATIOS:
      GRAVEL=      3.142PCT   GRAVEL/SAND=      0.032
      SAND  =    96.689PCT   SAND/SILT   = 2864.885
      SILT  =      0.034PCT   SILT/CLAY   =      0.249
      CLAY  =      0.136PCT   SAND/CLAY   =   713.550
      MUD   =      0.169PCT   SAND/MUD    =   571.266
                              GRAVEL/MUD  =    18.564
```

Profile S77-18
Sample S77-25

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

   SAMPLE NO. 48            GLACIER BAY 76

  DATA SPECIFICATION INPUT:
#OF FRC:CS= 9,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.010;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE_RANGE___      __METHOD__________
    1.0000-  0.0630MM    SIEVES
    0.0630-  0.0001MM    PAN

PARTICLE SIZE DISTRIBUTION:
                                          CUM
   _PHI___         __MM__   PERCENT   PERCENT
    0.0           1.0000     0.211     0.211
    0.5002        0.7070     0.423     0.634
    1.0000        0.5000     3.805     4.440
    1.4982        0.3540    12.474    16.913
    2.0000        0.2500    28.541    45.455
    2.4982        0.1770    30.655    76.110
    3.0000        0.1250    18.816    94.926
    3.5063        0.0880     3.805    98.732
    3.9885        0.0630     1.057    99.789
   13.2877        0.0001     0.211   100.000

SIZE CLASS RATIOS:
     GRAVEL=      0.0  PCT    GRAVEL/SAND=     0.0
     SAND   =   99.789PCT    SAND/SILT   = 1097.460
     SILT   =     0.091PCT   SILT/CLAY   =     0.756
     CLAY   =     0.120PCT   SAND/CLAY   =  830.130
     MUD    =     0.211PCT   SAND/MUD    =  472.629
                             GRAVEL/MUD =     0.0
```

Profile 76-22
Sample 76-48

```
    SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

   SAMPLE NO. 49              GLACIER BAY 76

  DATA SPECIFICATION INPUT:
#OF FRC:CS=11,FN=9;WTS:CS=  0.0  ,FN=  0.400,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE_RANGE__     __METHOD_________
    2.0000-  0.0630MM   SIEVES
    0.0442-  0.0001MM   HYDROPHOTOMETER

PARTICLE SIZE DISTRIBUTION:
                                         CUM
   _PHI___       __MM__   PERCENT   PERCENT
   -1.0000       2.0000     2.168     2.168
   -0.4854       1.4000    14.306    16.474
    0.0          1.0000    20.087    36.561
    0.5002       0.7070    18.931    55.491
    1.0000       0.5000    13.584    69.075
    1.4982       0.3540    13.006    82.081
    2.0000       0.2500     7.514    89.595
    2.4982       0.1770     2.890    92.486
    3.0000       0.1250     0.867    93.353
    3.5063       0.0880     0.578    93.931
    3.9885       0.0630     0.289    94.220
    4.4998       0.0442     1.103    95.322
    5.0023       0.0312     0.349    95.671
    5.4998       0.0221     0.341    96.012
    6.0023       0.0156     0.420    96.432
    6.5063       0.0110     0.761    97.193
    7.0023       0.0078     0.781    97.975
    7.5063       0.0055     0.648    98.623
    8.0023       0.0039     0.610    99.234
   13.2877       0.0001     0.766   100.000

SIZE CLASS RATIOS:
     GRAVEL=      2.168PCT    GRAVEL/SAND=      0.024
     SAND   =    92.077PCT    SAND/SILT   =    18.465
     SILT   =     4.986PCT    SILT/CLAY   =     6.484
     CLAY   =     0.769PCT    SAND/CLAY   =   119.727
     MUD    =     5.756PCT    SAND/MUD    =    15.998
                              GRAVEL/MUD  =     0.377
```

Profile 76-23
Sample 76-49

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

   SAMPLE NO. 50            GLACIER BAY 76

  DATA SPECIFICATION INPUT:
#OF FRC:CS=11,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
 ____SIZE RANGE__      __METHOD________
  2.0000-  0.0630MM    SIEVES

PARTICLE SIZE DISTRIBUTION:
                                   CUM
  _PHI___      __MM__   PERCENT   PERCENT
  -1.0000     2.0000     3.855     3.855
  -0.4854     1.4000     9.398    13.253
   0.0        1.0000    25.783    39.036
   0.5002     0.7070    23.614    62.651
   1.0000     0.5000    16.145    78.795
   1.4982     0.3540    11.325    90.121
   2.0000     0.2500     6.265    96.386
   2.4982     0.1770     2.410    98.795
   3.0000     0.1250     0.723    99.518
   3.5063     0.0880     0.241    99.759
   3.9885     0.0630     0.241   100.000

SIZE CLASS RATIOS:
     GRAVEL=      3.855PCT     GRAVEL/SAND=      0.040
     SAND  =     96.145PCT     SAND/SILT  =      0.0
     SILT  =      0.0  PCT     SILT/CLAY  =      0.0
     CLAY  =      0.0  PCT     SAND/CLAY  =      0.0
     MUD   =      0.0  PCT     SAND/MUD   =      0.0
                               GRAVEL/MUD =      0.0
```

Profile 76-23
Sample 76-50

```
   SEDIMENT SIZE ANALYSIS--GLACIER BAY BEACH SAMPLES - SUMMER 1977
                             SAMPLE        TOTAL    SAMPLE    SAMPLE
 CRUISE     STATION     TYPE/NUMBER     LENGTH     CENTER     LENGTH     METHODS
            S77-21                            .  M        . CM      .  CM     1

 #F:SV=10,ST= 0,H=0;WT:SV= 0.0000,ST= 0.0000,H/P= 0.0000; PHI LIM:CS= 0.00,FN= 0.00

 SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
    ____SIZE_RANGE__       __METHOD_________
     2.0000-  0.0625MM     SIEVES

 UNEDITED SAMPLE WEIGHTS IN GRAMS:
 _SIEVES__    __RSA____   HYDROPHOTOMETER_    __PAN____    _TOTAL___
   12.9100                                                     12.9100 (G)

 PARTICLE SIZE DISTRIBUTION:
                                         CUM
    _PHI___      __MM__   PERCENT   PERCENT
    -0.5000      1.4142     0.310     0.310
     0.0000      1.0000     0.232     0.542
     0.5000      0.7071     0.232     0.775
     1.0000      0.5000     0.620     1.394
     1.5000      0.3536     5.190     6.584
     2.0000      0.2500    25.252    31.836
     2.5000      0.1768    42.525    74.361
     3.0000      0.1250    22.851    97.211
     3.5000      0.0884     2.324    99.535
     4.0000      0.0625     0.465   100.000

 SIZE CLASS RATIOS:
        GRAVEL=      0.000PCT    GRAVEL/SAND=      0.000
        SAND   =   100.000PCT    SAND/SILT    =*********
        SILT   =    -0.000PCT    SILT/CLAY    =    0.000
        CLAY   =     0.000PCT    SAND/CLAY    =    0.000
        MUD    =    -0.000PCT    SAND/MUD     =*********
                                 GRAVEL/MUD =      0.000
```

Profile S77-15
Sample S77-21

```
   SEDIMENT SIZE ANALYSIS--GLACIER BAY BEACH SAMPLES - SUMMER 1977
                             SAMPLE         TOTAL    SAMPLE    SAMPLE
 CRUISE     STATION     TYPE,NUMBER     LENGTH    CENTER    LENGTH     METHODS
            S77-22                          .  M        . CM      .  CM    1

 #F:SV=13,ST= 0,H=0;WT:SV= 0.0000,ST= 0.0000,H/P= 0.0010; PHI LIM:CS= 0.00,FN= 0.00

 SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
    ____SIZE_RANGE__        __METHOD_________
     5.6569-  0.0625MM    SIEVES
     0.0625-  0.0001MM    PAN

  UNEDITED SAMPLE WEIGHTS IN GRAMS:
 _SIEVES__    __BSA____  HYDROPHOTOMETER_     __PAN____   _TOTAL___
   44.3710                        0.0010          0.0010      44.3720 (G)

 PARTICLE SIZE DISTRIBUTION:
                                             CUM
     _PHI___        __MM__   PERCENT   PERCENT
     -2.0000        4.0000     3.403     3.403
     -1.5000        2.8284     1.848     5.251
     -1.0000        2.0000     3.426     8.677
     -0.5000        1.4142     9.646    18.322
      0.0000        1.0000    15.505    33.828
      0.5000        0.7071    16.903    50.730
      1.0000        0.5000    13.094    63.824
      1.5000        0.3536    12.395    76.219
      2.0000        0.2500    14.469    90.688
      2.5000        0.1768     7.212    97.900
      3.0000        0.1250     1.938    99.838
      3.5000        0.0884     0.135    99.973
      4.0000        0.0625     0.023    99.995
     13.2800        0.0001     0.002    99.998

  SIZE CLASS RATIOS:
       GRAVEL=      8.677PCT    GRAVEL/SAND=     0.095
       SAND   =    91.319PCT    SAND/SILT   =93969.337
       SILT   =     0.001PCT    SILT/CLAY   =    0.275
       CLAY   =     0.004PCT    SAND/CLAY   =25823.828
       MUD    =     0.005PCT    SAND/MUD    =20256.982
                                GRAVEL/MUD = 1924.713
```

Profile S77-15
Sample S77-22

```
   SEDIMENT SIZE ANALYSIS--GLACIER BAY BEACH SAMPLES - SUMMER 1977
                         SAMPLE         TOTAL     SAMPLE    SAMPLE
 CRUISE     STATION    TYPE,NUMBER    LENGTH    CENTER    LENGTH    METHODS
            S77-23                        .  M       . CM      .  CM    1

 #F:SV=10,ST= 0,H=0;WT:SV= 0.0000,ST= 0.0000,H/P= 0.0040; PHI LIM:CS= 0.00,FN= 0.00

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE_RANGE__       __METHOD_________
    2.8284-  0.0625MM     SIEVES
    0.0625-  0.0001MM     PAN

 UNEDITED SAMPLE WEIGHTS IN GRAMS:
_SIEVES__   __RSA____  HYDROPHOTOMETER_    __PAN____   _TOTAL___
   8.7302                      0.0040         0.0040      8.7342 (6)

PARTICLE SIZE DISTRIBUTION:
                                     CUM
   _PHI___      __MM__  PERCENT   PERCENT
   -1.0000      2.0000    0.229     0.229
   -0.5000      1.4142    5.038     5.267
    0.0000      1.0000   18.777    24.043
    1.0000      0.5000   20.494    44.538
    1.5000      0.3536   23.700    68.238
    2.0000      0.2500   20.723    88.961
    2.5000      0.1768    9.274    98.235
    3.0000      0.1250    1.603    99.837
    3.5000      0.0884    0.057    99.895
    4.0000      0.0625    0.014    99.908
   13.2800      0.0001    0.046    99.954

SIZE CLASS RATIOS:
      GRAVEL=     0.229PCT    GRAVEL/SAND=     0.002
      SAND  =    99.679PCT    SAND/SILT   = 5049.589
      SILT  =     0.020PCT    SILT/CLAY   =    0.275
      CLAY  =     0.072PCT    SAND/CLAY   = 1387.312
      MUD   =     0.092PCT    SAND/MUD    = 1088.312
                              GRAVEL/MUD  =    2.500
```

Profile S77-16
Sample S77-23

```
  SEDIMENT SIZE ANALYSIS--GLACIER BAY BEACH SAMPLES - SUMMER 1977
                          SAMPLE         TOTAL    SAMPLE    SAMPLE
CRUISE    STATION   TYPE,NUMBER    LENGTH    CENTER    LENGTH    METHODS
          S77-24                        .  M      . CM      .  CM    1

#F:SV=14,ST= 0,H=0;WT:SV= 0.0000,ST= 0.0000,H/P= 0.0060; PHI LIM:CS= 0.00,FN= 0.00

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE_RANGE__       __METHOD_________
  64.0011-  0.0625MM      SIEVES
   0.0625-  0.0001MM      PAN

 UNEDITED SAMPLE WEIGHTS IN GRAMS:
_SIEVES__    __RSA____  HYDROPHOTOMETER_     __PAN____    _TOTAL___
 234.6060                       0.0060          0.0060     234.6120 (G)

PARTICLE SIZE DISTRIBUTION:
                                        CUM
   _PHI___      __MM__    PERCENT   PERCENT
   -4.0000    16.0002     38.314    38.314
   -2.0000     4.0000     11.862    50.176
   -1.5000     2.8284     13.836    64.012
   -1.0000     2.0000     18.899    82.911
   -0.5000     1.4142     12.212    95.123
    0.0000     1.0000      3.414    98.537
    0.5000     0.7071      0.443    98.980
    1.0000     0.5000      0.149    99.130
    1.5000     0.3536      0.153    99.283
    2.0000     0.2500      0.213    99.496
    2.5000     0.1768      0.213    99.709
    3.0000     0.1250      0.175    99.884
    3.5000     0.0884      0.068    99.952
    4.0000     0.0625      0.043    99.995
   13.2800     0.0001      0.003    99.997

SIZE CLASS RATIOS:
     GRAVEL=    82.911PCT   GRAVEL/SAND=     4.853
     SAND  =    17.084PCT   SAND/SILT  =15495.998
     SILT  =     0.001PCT   SILT/CLAY  =     0.275
     CLAY  =     0.004PCT   SAND/CLAY  = 4255.969
     MUD   =     0.005PCT   SAND/MUD   = 3338.933
                            GRAVEL/MUD =16204.820
```

Profile S77-16
Sample S77-24

```
      SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

    SAMPLE NO. 51             GLACIER BAY 76

   DATA SPECIFICATION INPUT:
 #OF FRC:CS= 9,FN=9;WTS:CS=  0.0  ,FN=  0.750,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

 SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
    ____SIZE RANGE__      __METHOD_________
     1.0000-  0.0630MM    SIEVES
     0.0442-  0.0001MM    HYDROPHOTOMETER

 PARTICLE SIZE DISTRIBUTION:
                                     CUM
    _PHI__       __MM__   PERCENT  PERCENT
     0.0         1.0000    0.169    0.169
     0.5002      0.7070    0.847    1.017
     1.0000      0.5000    3.898    4.915
     1.4982      0.3540   13.559   18.475
     2.0000      0.2500   27.797   46.271
     2.4982      0.1770   27.119   73.390
     3.0000      0.1250   12.034   85.424
     3.5063      0.0880    1.525   86.949
     3.9885      0.0630    0.339   87.288
     4.4998      0.0442    3.989   91.277
     5.0023      0.0312    2.204   93.482
     5.4998      0.0221    1.064   94.546
     6.0023      0.0156    1.396   95.942
     6.5063      0.0110    0.517   96.459
     7.0023      0.0078    0.693   97.152
     7.5063      0.0055    0.580   97.732
     8.0023      0.0039    0.789   98.521
    13.2877      0.0001    1.479  100.000

 SIZE CLASS RATIOS:
      GRAVEL=     0.0  PCT    GRAVEL/SAND=     0.0
      SAND   =   87.378PCT    SAND/SILT   =    7.844
      SILT   =   11.139PCT    SILT/CLAY   =    7.511
      CLAY   =    1.483PCT    SAND/CLAY   =   58.921
      MUD    =   12.622PCT    SAND/MUD    =    6.923
                              GRAVEL/MUD  =    0.0
```

Profile 76-24
Sample 76-51

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

    SAMPLE NO. 52            GLACIER BAY 76

   DATA SPECIFICATION INPUT:
 #OF FRC:CS= 7,FN=0;WTS:CS=   0.0   ,FN=   0.0   ,PAN=   0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

 SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
    ___SIZE_RANGE___     __METHOD__________
     0.5000-  0.0630MM   SIEVES

 PARTICLE SIZE DISTRIBUTION:
                                           CUM
    _PHI___     __MM__   PERCENT   PERCENT
     1.0000     0.5000     0.229     0.229
     1.4982     0.3540     1.376     1.606
     2.0000     0.2500    19.037    20.642
     2.4982     0.1770    53.440    74.083
     3.0000     0.1250    23.624    97.706
     3.5063     0.0880     2.064    99.771
     3.9885     0.0630     0.229   100.000

 SIZE CLASS RATIOS:
        GRAVEL=     0.0  PCT   GRAVEL/SAND=     0.0
        SAND  =  100.000PCT    SAND/SILT   =    0.0
        SILT  =     0.0  PCT   SILT/CLAY   =    0.0
        CLAY  =     0.0  PCT   SAND/CLAY   =    0.0
        MUD   =     0.0  PCT   SAND/MUD    =    0.0
                               GRAVEL/MUD  =    0.0
```

Profile 76-24
Sample 76-52

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

    SAMPLE NO. 53           GLACIER BAY 76

   DATA SPECIFICATION INPUT:
 #OF FRC:CS= 7,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.005;PHI LIM:CS= 0.0 ,FN=  0.0

 SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
    ___SIZE_RANGE__      __METHOD_________
     0.5000-  0.0630MM   SIEVES
     0.0630-  0.0001MM   PAN

 PARTICLE SIZE DISTRIBUTION:
                                      CUM
    _PHI___      __MM__  PERCENT  PERCENT
     1.0000      0.5000    0.227    0.227
     1.4982      0.3540    2.270    2.497
     2.0000      0.2500   30.647   33.144
     2.4982      0.1770   62.429   95.573
     3.0000      0.1250    2.043   97.616
     3.5063      0.0880    2.043   99.660
     3.9885      0.0630    0.227   99.887
    13.2877      0.0001    0.114  100.000

 SIZE CLASS RATIOS:
         GRAVEL=     0.0  PCT   GRAVEL/SAND=      0.0
         SAND   =   99.887PCT   SAND/SILT   = 2046.318
         SILT   =    0.049PCT   SILT/CLAY   =    0.756
         CLAY   =    0.065PCT   SAND/CLAY   = 1547.924
         MUD    =    0.113PCT   SAND/MUD    =  881.283
                                GRAVEL/MUD  =    0.0
```

Profile 76-24
Sample 76-53

```
      SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

    SAMPLE NO. 54             GLACIER BAY 76

  DATA SPECIFICATION INPUT:
#OF FRC:CS=13,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
    ____SIZE RANGE___    __METHOD_________
     8.0000-  0.0630MM   SIEVES

PARTICLE SIZE DISTRIBUTION:
                                    CUM
    _PHI___     __MM__  PERCENT  PERCENT
    -3.0000     8.0000   47.739   47.739
    -1.5008     2.8300    0.421   48.160
    -1.0000     2.0000    0.158   48.318
    -0.4854     1.4000    0.053   48.370
     0.0        1.0000    0.158   48.528
     0.5002     0.7070    0.158   48.686
     1.0000     0.5000    0.736   49.422
     1.4982     0.3540    3.891   53.312
     2.0000     0.2500   14.458   67.771
     2.4982     0.1770   21.504   89.274
     3.0000     0.1250    9.884   99.159
     3.5063     0.0880    0.789   99.947
     3.9885     0.0630    0.053  100.000

SIZE CLASS RATIOS:
     GRAVEL=    48.318PCT    GRAVEL/SAND=      0.935
     SAND   =   51.682PCT    SAND/SILT   =     0.0
     SILT   =     0.0  PCT   SILT/CLAY   =     0.0
     CLAY   =     0.0  PCT   SAND/CLAY   =     0.0
     MUD    =     0.0  PCT   SAND/MUD    =     0.0
                             GRAVEL/MUD  =     0.0
```

Profile 76-24
Sample 76-54

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

   SAMPLE NO. 55            GLACIER BAY 76

    DATA SPECIFICATION INPUT:
 #OF FRC:CS= 8,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

 SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
    ____SIZE RANGE__     __METHOD_________
     1.0000-  0.0880MM   SIEVES

 PARTICLE SIZE DISTRIBUTION:
                                        CUM
    _PHI___       __MM__  PERCENT   PERCENT
     0.0          1.0000    0.195     0.195
     0.5002       0.7070    0.585     0.780
     1.0000       0.5000    4.483     5.263
     1.4982       0.3540   19.298    24.561
     2.0000       0.2500   42.495    67.057
     2.4982       0.1770   28.070    95.127
     3.0000       0.1250    4.678    99.805
     3.5063       0.0880    0.195   100.000

 SIZE CLASS RATIOS:
      GRAVEL=      0.0  PCT    GRAVEL/SAND=     0.0
      SAND   =  100.000PCT    SAND/SILT   =    0.0
      SILT   =      0.0  PCT    SILT/CLAY   =    0.0
      CLAY   =      0.0  PCT    SAND/CLAY   =    0.0
      MUD    =      0.0  PCT    SAND/MUD    =    0.0
                               GRAVEL/MUD  =    0.0
```

Profile 76-25
Sample 76-55

```
      SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

     SAMPLE NO. 56            GLACIER BAY 76

    DATA SPECIFICATION INPUT:
 #OF FRC:CS= 9,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

  SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
     ____SIZE RANGE___     __METHOD__________
     2.0000-  0.1250MM     SIEVES

  PARTICLE SIZE DISTRIBUTION:
                                           CUM
     _PHI___     __MM__    PERCENT    PERCENT
     -1.0000     2.0000      5.865      5.865
     -0.4854     1.4000      6.452     12.317
      0.0        1.0000     16.422     28.739
      0.5002     0.7070     28.446     57.185
      1.0000     0.5000     27.566     84.751
      1.4982     0.3540     12.610     97.361
      2.0000     0.2500      1.760     99.120
      2.4982     0.1770      0.587     99.707
      3.0000     0.1250      0.293    100.000

  SIZE CLASS RATIOS:
         GRAVEL=     5.865PCT    GRAVEL/SAND=     0.062
         SAND   =   94.135PCT    SAND/SILT   =    0.0
         SILT   =    0.0  PCT    SILT/CLAY   =    0.0
         CLAY   =    0.0  PCT    SAND/CLAY   =    0.0
         MUD    =    0.0  PCT    SAND/MUD    =    0.0
                                 GRAVEL/MUD  =    0.0
```

Profile 76-26

Sample 76-56

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

    SAMPLE NO. 57            GLACIER BAY 76

   DATA SPECIFICATION INPUT:
#OF FRC:CS= 7,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
      SIZE RANGE        METHOD
   0.7070-  0.0880MM  SIEVES

PARTICLE SIZE DISTRIBUTION:
                                     CUM
    PHI         MM     PERCENT   PERCENT
   0.5002     0.7070     0.513     0.513
   1.0000     0.5000     2.821     3.333
   1.4982     0.3540    17.436    20.769
   2.0000     0.2500    37.949    58.718
   2.4982     0.1770    32.564    91.282
   3.0000     0.1250     8.462    99.744
   3.5063     0.0880     0.256   100.000

SIZE CLASS RATIOS:
        GRAVEL=     0.0  PCT    GRAVEL/SAND=     0.0
        SAND  =  100.000PCT     SAND/SILT   =    0.0
        SILT  =     0.0  PCT    SILT/CLAY   =    0.0
        CLAY  =     0.0  PCT    SAND/CLAY   =    0.0
        MUD   =     0.0  PCT    SAND/MUD    =    0.0
                                GRAVEL/MUD  =    0.0
```

Profile 76-27
Sample 76-57

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

   SAMPLE NO. 58            GLACIER BAY 76

  DATA SPECIFICATION INPUT:
#OF FRC:CS=12,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE RANGE__    __METHOD________
    8.0000-  0.1250MM   SIEVES

PARTICLE SIZE DISTRIBUTION:
                                        CUM
   _PHI___      __MM__   PERCENT  PERCENT
   -3.0000      8.0000   23.066   23.066
   -2.0000      4.0000   36.094   59.160
   -1.5008      2.8300   28.967   88.127
   -1.0000      2.0000   11.577   99.703
   -0.4854      1.4000    0.255   99.959
    0.0         1.0000    0.013   99.972
    0.5002      0.7070    0.003   99.975
    1.0000      0.5000    0.007   99.982
    1.4982      0.3540    0.003   99.985
    2.0000      0.2500    0.010   99.995
    2.4982      0.1770    0.003   99.999
    3.0000      0.1250    0.002  100.001

SIZE CLASS RATIOS:
     GRAVEL=    99.703PCT    GRAVEL/SAND=  335.686
     SAND  =     0.297PCT    SAND/SILT   =     0.0
     SILT  =     0.0  PCT    SILT/CLAY   =     0.0
     CLAY  =     0.0  PCT    SAND/CLAY   =     0.0
     MUD   =     0.0  PCT    SAND/MUD    =     0.0
                             GRAVEL/MUD  =     0.0
```

Profile 76-27
Sample 76-58

```
    SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

  SAMPLE NO. 60            GLACIER BAY 76

 DATA SPECIFICATION INPUT:
#OF FRC:CS=10,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
  ____SIZE_RANGE__    __METHOD_________
   2.0000-  0.0630MM   SIEVES

PARTICLE SIZE DISTRIBUTION:
                                    CUM
   _PHI___      __MM__   PERCENT   PERCENT
  -1.0000      2.0000     0.733     0.733
  -0.4854      1.4000     0.733     1.465
   0.0         1.0000     1.954     3.419
   0.5002      0.7070     8.547    11.966
   1.0000      0.5000    33.455    45.421
   1.4982      0.3540    36.142    81.563
   2.0000      0.2500    15.629    97.192
   2.4982      0.1770     2.442    99.634
   3.5063      0.0880     0.244    99.878
   3.9885      0.0630     0.122   100.000

SIZE CLASS RATIOS:
    GRAVEL=     0.733PCT    GRAVEL/SAND=     0.007
    SAND  =    99.267PCT    SAND/SILT   =    0.0
    SILT  =     0.0  PCT    SILT/CLAY   =    0.0
    CLAY  =     0.0  PCT    SAND/CLAY   =    0.0
    MUD   =     0.0  PCT    SAND/MUD    =    0.0
                            GRAVEL/MUD  =    0.0
```

Profile 76-28
Sample 76-60

```
   SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

  SAMPLE NO. 61              GLACIER BAY 76

 DATA SPECIFICATION INPUT:
#OF FRC:CS=10,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
  ___SIZE RANGE__      __METHOD__________
   2.0000-  0.0880MM   SIEVES

PARTICLE SIZE DISTRIBUTION:
                                      CUM
  _PHI___      __MM__   PERCENT   PERCENT
  -1.0000      2.0000     1.875     1.875
  -0.4854      1.4000     0.833     2.708
   0.0         1.0000     4.792     7.500
   0.5002      0.7070    17.917    25.417
   1.0000      0.5000    33.021    58.438
   1.4982      0.3540    25.313    83.750
   2.0000      0.2500    11.042    94.792
   2.4982      0.1770     3.958    98.750
   3.0000      0.1250     1.042    99.792
   3.5063      0.0880     0.208   100.000

SIZE CLASS RATIOS:
     GRAVEL=      1.875PCT   GRAVEL/SAND=     0.019
     SAND   =    98.125PCT   SAND/SILT  =     0.0
     SILT   =     0.0  PCT   SILT/CLAY  =     0.0
     CLAY   =     0.0  PCT   SAND/CLAY  =     0.0
     MUD    =     0.0  PCT   SAND/MUD   =     0.0
                             GRAVEL/MUD =     0.0
```

Profile 76-28
Sample 76-61

```
    SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

   SAMPLE NO. 62            GLACIER BAY 76

  DATA SPECIFICATION INPUT:
#OF FRC:CS=10,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE_RANGE___     __METHOD_________
    1.4000-  0.0630MM    SIEVES

PARTICLE SIZE DISTRIBUTION:
                                      CUM
   _PHI___      __MM__   PERCENT   PERCENT
   -0.4854      1.4000     9.836     9.836
    0.0         1.0000    25.137    34.973
    0.5002      0.7070    20.492    55.465
    1.0000      0.5000    16.667    72.131
    1.4982      0.3540    13.934    86.066
    2.0000      0.2500     8.197    94.262
    2.4982      0.1770     4.098    98.361
    3.0000      0.1250     1.093    99.454
    3.5063      0.0880     0.273    99.727
    3.9885      0.0630     0.273   100.000

SIZE CLASS RATIOS:
        GRAVEL=     0.0  PCT    GRAVEL/SAND=     0.0
        SAND  =  100.000PCT     SAND/SILT  =     0.0
        SILT  =     0.0  PCT    SILT/CLAY  =     0.0
        CLAY  =     0.0  PCT    SAND/CLAY  =     0.0
        MUD   =     0.0  PCT    SAND/MUD   =     0.0
                                GRAVEL/MUD =     0.0
```

Profile 76-28
Sample 76-62

```
    SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

   SAMPLE NO. 63             GLACIER BAY 76

  DATA SPECIFICATION INPUT:
#OF FRC:CS= 9,FN=0;WTS:CS=  0.0   ,FN=  0.0   ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
    ____SIZE RANGE__     __METHOD________
     1.0000-  0.0630MM   SIEVES

PARTICLE SIZE DISTRIBUTION:
                                         CUM
    _PHI___      __MM__   PERCENT   PERCENT
     0.0         1.0000     1.458     1.458
     0.5002      0.7070     4.167     5.625
     1.0000      0.5000    16.250    21.875
     1.4982      0.3540    37.292    59.167
     2.0000      0.2500    29.375    88.542
     2.4982      0.1770     8.958    97.500
     3.0000      0.1250     1.667    99.167
     3.5063      0.0880     0.625    99.792
     3.9885      0.0630     0.208   100.000

SIZE CLASS RATIOS:
        GRAVEL=      0.0  PCT    GRAVEL/SAND=      0.0
        SAND   =  100.000PCT     SAND/SILT   =     0.0
        SILT   =     0.0  PCT    SILT/CLAY   =     0.0
        CLAY   =     0.0  PCT    SAND/CLAY   =     0.0
        MUD    =     0.0  PCT    SAND/MUD    =     0.0
                                 GRAVEL/MUD  =     0.0
```

Profile 76-28
Sample 76-63

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

    SAMPLE NO. 64            GLACIER BAY 76

  DATA SPECIFICATION INPUT:
#OF FRC:CS= 9,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
    ____SIZE RANGE__     __METHOD_________
     1.4000-  0.0880MM   SIEVES

PARTICLE SIZE DISTRIBUTION:
                                      CUM
    _PHI___      __MM__   PERCENT   PERCENT
    -0.4854      1.4000     1.636     1.636
     0.0         1.0000     1.168     2.804
     0.5002      0.7070     2.103     4.907
     1.0000      0.5000    13.785    18.692
     1.4982      0.3540    27.804    46.495
     2.0000      0.2500    27.804    74.299
     2.4982      0.1770    18.224    92.523
     3.0000      0.1250     5.374    97.897
     3.5063      0.0880     2.103   100.000

SIZE CLASS RATIOS:
        GRAVEL=     0.0  PCT    GRAVEL/SAND=      0.0
        SAND  =  100.000PCT    SAND/SILT   =      0.0
        SILT  =     0.0  PCT    SILT/CLAY   =      0.0
        CLAY  =     0.0  PCT    SAND/CLAY   =      0.0
        MUD   =     0.0  PCT    SAND/MUD    =      0.0
                                GRAVEL/MUD  =      0.0
```

Profile 76-29
Sample 76-64

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

    SAMPLE NO. 65             GLACIER BAY 76

   DATA SPECIFICATION INPUT:
#OF FRC:CS=11,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
    ____SIZE RANGE__     __METHOD_________
    2.0000-  0.0630MM    SIEVES

PARTICLE SIZE DISTRIBUTION:
                                        CUM
    _PHI___       __MM__   PERCENT   PERCENT
    -1.0000       2.0000    10.037    10.037
    -0.4854       1.4000     9.854    19.891
     0.0          1.0000    12.226    32.117
     0.5002       0.7070    10.766    42.883
     1.0000       0.5000     9.124    52.007
     1.4982       0.3540    10.401    62.409
     2.0000       0.2500    15.511    77.920
     2.4982       0.1770    15.328    93.248
     3.0000       0.1250     6.022    99.270
     3.5063       0.0880     0.547    99.818
     3.9885       0.0630     0.182   100.000

SIZE CLASS RATIOS:
        GRAVEL=    10.037PCT    GRAVEL/SAND=     0.112
        SAND   =   89.963PCT    SAND/SILT   =    0.0
        SILT   =     0.0  PCT   SILT/CLAY   =    0.0
        CLAY   =     0.0  PCT   SAND/CLAY   =    0.0
        MUD    =     0.0  PCT   SAND/MUD    =    0.0
                                GRAVEL/MUD  =    0.0
```

Profile 76-29
Sample 76-65

```
     SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

    SAMPLE NO. 66            GLACIER BAY 76

   DATA SPECIFICATION INPUT:
 #OF FRC:CS=10,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.0  ;PHI LIM:CS= 0.0 ,FN=  0.0

 SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
   ____SIZE RANGE__     __METHOD________
    2.0000-  0.0880MM   SIEVES

 PARTICLE SIZE DISTRIBUTION:
                                         CUM
    _PHI___       __MM__   PERCENT   PERCENT
    -1.0000      2.0000     0.216     0.216
    -0.4854      1.4000     2.165     2.381
     0.0         1.0000    12.121    14.502
     0.5002      0.7070    23.810    38.312
     1.0000      0.5000    21.429    59.740
     1.4982      0.3540    14.502    74.242
     2.0000      0.2500    12.771    87.013
     2.4982      0.1770     9.091    96.104
     3.0000      0.1250     3.247    99.351
     3.5063      0.0880     0.649   100.000

 SIZE CLASS RATIOS:
     GRAVEL=      0.216PCT    GRAVEL/SAND=      0.002
     SAND  =     99.784PCT    SAND/SILT  =      0.0
     SILT  =      0.0  PCT    SILT/CLAY  =      0.0
     CLAY  =      0.0  PCT    SAND/CLAY  =      0.0
     MUD   =      0.0  PCT    SAND/MUD   =      0.0
                              GRAVEL/MUD =      0.0
```

Profile 76-29
Sample 76-66

```
      SEDIMENT SIZE ANALYSIS:  GLACIER BAY BEACH SAMPLES--1976

     SAMPLE NO. 67             GLACIER BAY 76

    DATA SPECIFICATION INPUT:
  #OF FRC:CS=10,FN=0;WTS:CS=  0.0  ,FN=  0.0  ,PAN=  0.030;PHI LIM:CS= 0.0 ,FN=  0.0

  SAMPLE ANALYZED BY THE FOLLOWING METHOD(S):
     ____SIZE RANGE___     ___METHOD__________
      1.4000-  0.0630MM    SIEVES
      0.0630-  0.0001MM    PAN

  PARTICLE SIZE DISTRIBUTION:
                                         CUM
     _PHI___      ___MM__   PERCENT  PERCENT
     -0.4854      1.4000      0.393    0.393
      0.0         1.0000      0.786    1.179
      0.5002      0.7070      2.750    3.929
      1.0000      0.5000      6.090   10.020
      1.4982      0.3540     17.485   27.505
      2.0000      0.2500     31.238   58.743
      2.4982      0.1770     26.326   85.069
      3.0000      0.1250     11.002   96.071
      3.5063      0.0880      2.750   98.821
      3.9885      0.0630      0.589   99.411
     13.2877      0.0001      0.589  100.000

  SIZE CLASS RATIOS:
        GRAVEL=      0.0  PCT    GRAVEL/SAND=      0.0
        SAND  =   99.411PCT    SAND/SILT   =  392.117
        SILT  =    0.254PCT    SILT/CLAY   =    0.756
        CLAY  =    0.335PCT    SAND/CLAY   =  296.595
        MUD   =    0.589PCT    SAND/MUD    =  168.866
                               GRAVEL/MUD  =    0.0
```

Profile 76-30
Sample 76-67

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