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DISTRIBUTION OF BENTHIC CHLOROPHYLL IN SAN FRANCISCO BAY, CALIFORNIA

FEBRUARY 1980 - FEBRUARY 1981

by

✓
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ABSTRACT

Benthic microalgae biomass (chlorophyll a) data from San Francisco Bay are presented for the period February 1980 through February 1981. Benthic chlorophyll a was sampled throughout the bay (maximum of 54 stations) at bimonthly intervals and at monthly intervals at up to 14 stations in the southern bay. Ancillary data collected concurrently with the benthic chlorophyll a data include sediment phaeopigment concentration and grain size, and water column salinity, temperature, chlorophyll a (in vivo fluorescence), and extinction coefficient.

INTRODUCTION

The benthic microalgae of San Francisco Bay may be an important constituent of the biomass of primary producers in the bay. Studies in other estuaries have shown the benthic microalgae to be 2 to 10 times more productive and more seasonally stable than the phytoplankton (Cadee and Hegeman 1974 and 1977, Joint 1978, and Marshall et al 1971). Therefore the benthic microalgae can be a large and stable food source in an estuary. Because the benthic microalgae have never been studied in San Francisco Bay, this study was designed as a first step in understanding their role in the

primary production of the Bay. The goal of the study was to describe the temporal and spatial distribution of the biomass of these benthic microalgae for one year.

Surface sediment samples were collected and analyzed for chlorophyll a, an estimate of microalgae biomass, at 54 stations (Figure 1, Table 1) in the bay from February 1980 through February 1981. Successful sample collection was dependent on favorable tide and weather conditions, but most stations were sampled every other month. Some stations, located in the southern portion of the bay, were sampled at near monthly intervals. Samples were usually collected immediately after cruises by the U. S. Geological Survey Bay and Estuarine Study Group (Menlo Park, California).

Other parameters in the sediment and water column were measured concurrently with the benthic chlorophyll a sample collection to aid in the interpretation of the benthic chlorophyll a data. Sediment was analyzed for phaeopigments, the degradation products of chlorophyll pigments, and grain size (% gravel, % sand, and % silt/clay). Salinity, temperature, in vivo fluorescence, and extinction coefficient were measured in the water column.

Special thanks are due A.E. Alpine for her assistance in the development of the benthic chlorophyll extraction technique and data reduction.

METHODS

Bottom samples were collected from the U.S. Geological Survey research vessel Estero, a 28-foot shallow-draft boat, with a corer capable of taking 10 cores simultaneously (Figure 2). The corer consists of polycarbonate core barrels (25 cm long, 9.6 mm i.d.) attached to a 30 cm-diameter, 0.64 cm thick stainless steel plate mounted on a weighted (5 kg above and below the plate)

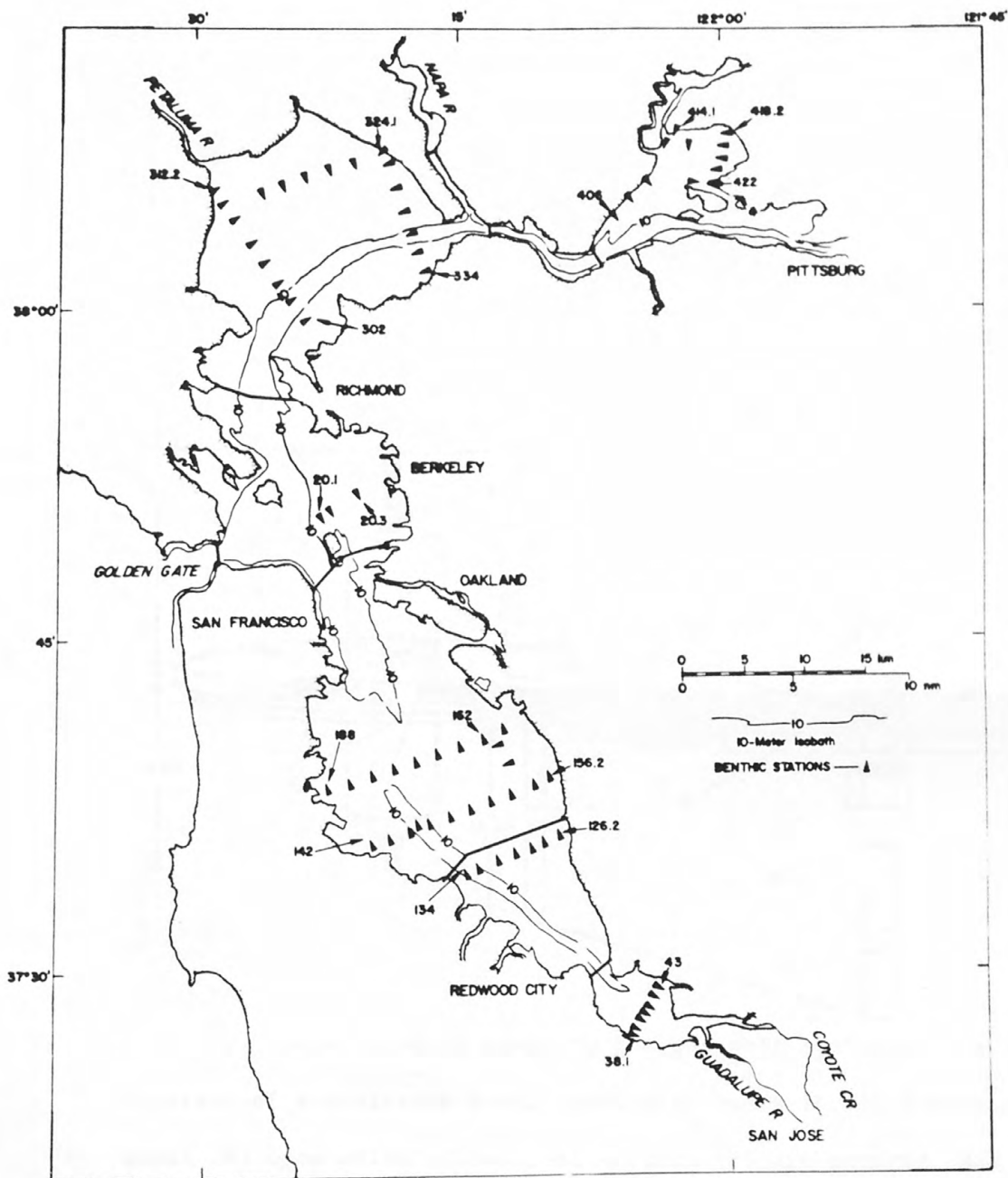


Figure 1. San Francisco Bay benthic stations.

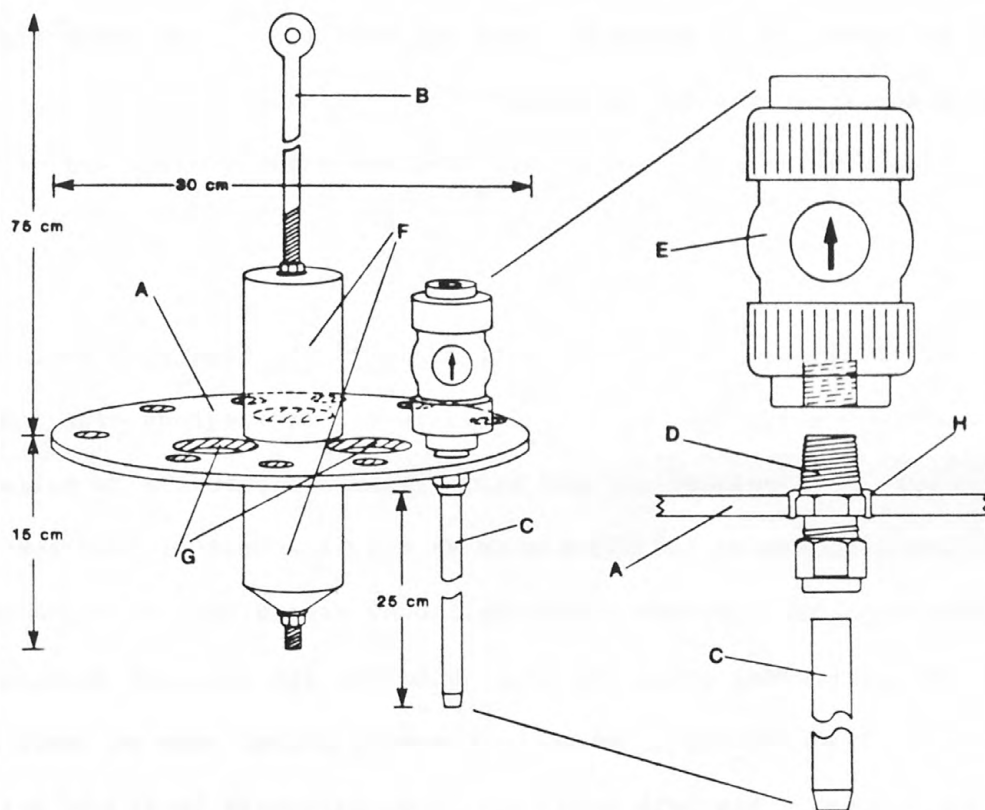


Figure 2. Corer used in sampling the sediment surface. The frame consists of a stainless steel plate with vents (A,G), a vertical shaft (B) upon which molded lead weights (F) are mounted, and 10 coring devices consisting of polycarbonate core barrels (C), stainless steel tube connectors with nylon ferrules (D), and PVC check valves (E) for core retention. The tube connectors are welded (H) to the plate; all other fittings are threaded fittings.

vertical shaft. The barrels, which have a sharpened edge to aid in penetration of the sediment, are mounted on the plate by means of stainless steel male tube connectors welded into holes in the plate. PVC check valves attached to the exposed upper end of the connectors assist in retention of the sediment in the core barrels during retrieval.

Undisturbed sediment samples were collected by slowly lowering the corer with a small winch on the stern of the boat, allowing it to remain in place for several seconds to insure full penetration of the sediment, and bringing it slowly to the surface where the ends of the core barrels were capped while still under water. The corer was then brought on board the boat to remove the cores.

Four cores were used for chlorophyll a and phaeopigment analysis, three for sediment size analysis at all stations, and one was preserved for cell identification at selected stations. Only the top centimeter of sediment of each core was used in each analysis as no significant chlorophyll was found below this depth in preliminary investigations. Sediment for chlorophyll a and phaeopigment analysis was extruded, with the water immediately above the sediment, from the core onto a pre-weighed Gelman type AE glass fiber filter, covered with 100 μ l of saturated MgCO_3 , filtered dry, and frozen until analyzed. The filters were ground in 90% acetone while immersed in an ice bath, the total volume of the acetone brought to 10 or 11 ml, and the suspension was refrigerated for 24-72 hours. The samples were then centrifuged, and absorbances of the supernatant were determined with a Varian 735D spectrophotometer. Phaeopigment absorbance was determined after acidification with HCl of the extract to a concentration of 3×10^{-3} M as suggested by Riemann (1978). Benthic chlorophyll a and phaeopigments were calculated areally (mg/m^2) and per unit sediment weight (mg/g) based on

Lorenzen's (1967) equations, substituting the area of the core (0.98 cm^2) or the weight of the sediment for the volume of water factor (V) in the equations.

Cores used for sediment size analysis were extruded into vials and frozen until analyzed. The sediment was sieved through 2.00 mm and $63 \mu\text{m}$ sieves and the gravel ($>2.00 \text{ mm}$) and sand ($>63 \mu\text{m}$) fractions were filtered and dried on pre-weighed Nuclepore polycarbonate membrane filters ($8.0 \mu\text{m}$ opening). The clay/silt fraction ($<63 \mu\text{m}$) was dried and weighed on similar filters with $0.4 \mu\text{m}$ openings.

One core was preserved in 2% formalin buffered with methenamine (100 g/liter 37% formalin) and saved for later cell identification.

Salinity, temperature, in vivo fluorescence, and turbidity were continuously measured during each cruise at 0.5 m water depth. Water was collected for these measurements at a through-the-hull intake on the bow and pumped to the instruments where discrete water samples were collected for calibration purposes. Salinity was measured with a flow-through induction salinometer (Schemel and Dedini, 1979) calibrated at approximately 2 ppt intervals, using discrete samples analyzed with a high-precision Beckman^R salinometer. Agreement between continuous and discrete results was usually $\pm 0.05 \text{ ppt}$.

Temperature was measure by probes inserted into the sample stream (Schemel and Dedini, 1979). The sensors are linearized thermistor elements, calibrated during every hydrographic cruise at ice point and near 20°C . Although there were some instrument problems late in the year, all measurements were accurate to $\pm 1^\circ\text{C}$.

In vivo fluorescence was measured with a Turner Designs model 10 fluorometer calibrated with discrete samples. In cases when in vivo fluorescence readings were low and fairly constant throughout the sampling period, the calibration equations from the most recent hydrographic cruise were used; an exception to this was the February 1981 cruise when the fluorescence values and hydrographic conditions more closely matched the hydrographic cruise of March 1980. When in vivo fluorescence was high, and areally variable, discrete samples were collected at a minimum of four stations in each geographic area (Table 1), and were selected to represent the full range of in vivo fluorescence values seen in the area. The discrete samples were filtered through Gelman type AE glass fiber filters and frozen for later analysis. Samples were ground in 8 ml of 90% acetone, held in the freezer for 12-24 hours, centrifuged, and the absorbances of the of the supernatant determined in the same way as described for the benthic chlorophyll analysis. Chlorophyll a and phaeopigment calculations were based on Lorenzen's equations (1967). The regression equations used for conversion of fluorescence values to calculated chlorophyll a values are shown in Table 2. The correlation between fluorescence and chlorophyll a is variable, and calculated chlorophyll a values based on a correlation coefficient less than 0.70 should be used with caution (Alpine, in prep). The measured chlorophyll a and phaeopigment values in Appendix 1 represent discrete samples (discrete samples were sometimes taken at other than benthic stations and these are not shown in the table) and are the only data shown for the 21 January 1981 cruise when the fluorometer was not functioning.

Extinction coefficients were measured in two ways. A Turner Designs model 10 fluorometer, equipped with a 10-033 nephelometry attachment, was used

to profile turbidity which was correlated to extinction coefficients on the hydrographic cruises as described by Alpine et al (1981). These regression equations (Table 3) were used to convert nephelometer readings to extinction coefficients (calculated extinction coefficient in Appendix 1) in this report: any calculated extinction coefficient based on a regression equation with a correlation coefficient less than 0.70 should be used with caution. As turbidity is affected by tide and weather conditions, the regressions from the most recent hydrographic cruise were not always used. Cruises with similar turbidity measurements and in the same geographic area were given preference over the date of the cruise.

The second method of measuring extinction coefficient was based on Secchi depth readings taken at each station on the benthic cruises. The Secchi depth (m) was divided by 1.5 which approximates the extinction coefficient (Perkins, 1975) and is listed as the measured extinction coefficient in Appendix 1.

The continuous flow system was not operating on the December 1980 cruise, so the data from the preceding hydrographic cruise are shown in Appendix 1.

Tidal phase was noted at each station by visual observation and recorded as ebb (e), low slack (ls), flood (f), or high slack (hs).

TABLE 1. STATION LOCATIONS AND GEOGRAPHIC LOCATIONS

Station	Station Location		UTM		NAME
	N. Latitude	W. Longitude	X	Y	
20.1	37°50.8'	122°22.6'	554842	4188781	Central Bay
20.2	37°51.1'	122°21.8'	556012	4189343	" "
20.3	37°51.8'	122°20.0'	558642	4190656	" "
38	37°27.40'	122°05.40'	580484	4145718	S. Dumbarton Bridge
38.1	37°27.25'	122°05.5'	580340	4145439	" " "
39	37°27.80'	122°04.95'	581140	4146464	" " "
40	37°28.25'	122°04.40'	581943	4147304	" " "
41	37°28.45'	122°04.15'	582308	4147678	" " "
42	37°28.70'	122°03.90'	582672	4148144	" " "
43	37°29.15'	122°03.40'	583400	4148983	" " "
126	37°36.1'	122°11.1'	571942	4161728	S. San Mateo Bridge
126.1	37°36.40'	122°10.10'	573409	4162296	" " " "
126.2	37°36.60'	122°09.20'	574730	4162677	" " " "
128	37°35.8'	122°12.0'	570673	4161162	" " " "
130	37°35.5'	122°13.0'	569156	4160595	" " " "
132	37°35.2'	122°14.2'	567395	4160026	" " " "
134	37°34.9'	122°15.0'	566222	4159462	" " " "
142	37°36.0'	122°20.1'	558703	4161439	South Bay
144	37°36.3'	122°18.8'	560611	4162007	" "
146	37°36.7'	122°17.8'	562077	4162758	" "
148	37°37.0'	122°16.5'	563985	4163327	" "
152	37°37.8'	122°14.1'	567503	4164834	" "
156	37°38.3'	122°12.2'	570290	4165782	" "
156.1	37°38.8'	122°10.5'	572781	4166728	" "
156.2	37°39.0'	122°09.8'	573807	4167107	" "
160	37°40.2'	122°13.4'	568496	4169281	" "
162	37°41.1'	122°14.0'	567600	4170938	" "
162.1	37°31.4'	122°12.8'	569514	4153016	" "

TABLE 1. STATION LOCATIONS AND GEOGRAPHIC LOCATIONS (cont'd)

Station	Station Location		UTM		NAME
	N. Latitude	W. Longitude	X	Y	
172	37°42.7'	122°17.9'	561847	4173851	South Bay
176	37°41.9'	122°20.4'	558185	4172345	" "
178	37°41.6'	122°21.4'	556719	4171780	" "
180	37°41.2'	122°22.9'	554520	4171026	" "
188	37°38.5'	122°22.6'	554994	4166036	" "
190	37°38.9'	122°21.3'	556900	4166789	" "
192	37°39.2'	122°20.2'	558514	4167355	" "
196	37°39.9'	122°17.8'	562033	4168675	" "
198	37°40.3'	122°16.6'	563791	4169428	" "
200	37°40.6'	122°15.4'	565550	4169997	" "
302	37°59.6'	122°23.4'	553563	4205045	San Pablo Bay
304	38°00.6'	122°24.25'	552307	4206886	" " "
306	38°01.4'	122°25.1'	551054	4208358	" " "
308	38°02.5'	122°25.9'	549871	4210385	" " "
310	38°03.5'	122°26.6'	548836	4212228	" " "
312	38°04.2'	122°27.2'	547952	4213517	" " "
312.1	38°05.25'	122°28.1'	546625	4215451	" " "
312.2	38°05.8'	122°28.6'	545888	4216464	" " "
318	38°05.3'	122°23.5'	553348	4215585	" " "
324	38°06.0'	122°19.9'	558600	4216915	" " "
324.1	38°06.8'	122°20.3'	558005	4218390	" " "
326	38°05.1'	122°19.4'	559343	4215256	" " "
328	38°04.1'	122°19.0'	559941	4213411	" " "
330	38°03.25'	122°18.5'	560684	4211845	" " "
332	38°02.3'	122°18.0'	561428	4210094	" " "
334	38°01.5'	122°17.6'	562024	4208619	" " "
406	38°04.0'	122°05.9'	579095	4213390	Suisun Bay
408	38°04.9'	122°04.9'	580541	4215068	" "
410	38°05.8'	122°04.0'	581839	4216746	" "

TABLE 1. STATION LOCATIONS AND GEOGRAPHIC LOCATIONS (cont'd)

Station	Station Location		UTM		NAME	
	N. Latitude	W. Longitude	X	Y		
414.1	38°06.9'	122°03.3'	582842	4218790	Suisun Bay	
416	38°07.0'	122°02.4'	584155	4218989	"	"
418	38°06.8'	122°00.7'	586643	4218645	"	"
418.1	38°07.4'	122°00.4'	587069	4219759	"	"
418.2	38°08.0'	122°00.1'	587495	4220873	"	"
420	38°06.4'	122°01.0'	586212	4217901	"	"
422	38°05.8'	122°01.3'	585785	4216786	"	"

TABLE 2. REGRESSION EQUATIONS USED FOR CONVERTING
FLUORESCENCE READINGS TO CALCULATED CHLOROPHYLL A VALUES

							Equation Source		
Date	Geographic Location	a	b	r ²	syx	n	Date	Cruise	Location
6 Mar 80	Suisun Bay	1.06	2.81	0.06	0.31	3	5 Mar 80	hydro	Suisun
6 Mar 80	San Pablo Bay	-4.28	37.55	0.94	1.23	5	5 Mar 80	hydro	San Pablo Bay
7 Mar 80	Central Bay	-4.35	52.31	0.97	1.22	7	4 Mar 80	hydro	South Bay
7 Mar 80	South Bay (162-200)	-4.35	52.31	0.97	1.22	7	4 Mar 80	hydro	South Bay
13 Mar 80	South Bay (142-156.2)	-10.64	82.73	0.94	3.64	7	13 Mar 80	benthic	South Bay/ S.Dumbarton Br.
13 Mar 80	S.Dumbarton Br.	-10.64	82.73	0.94	3.64	7	13 Mar 80	benthic	South Bay/ S.Dumbarton Br.
28 Mar 80	S.San Mateo Br.	-8.26	61.23	1.00	0.99	4	28 Mar 80	benthic	S.San Mateo Br.
28 Mar 80	S.Dumbarton Br.	-0.74	43.36	0.74	4.60	4	28 Mar 80	benthic	S.Dumbarton Br.
24 Apr 80	Suisun Bay	-4.18	44.97	1.00	0.05	3	24 Apr 80	benthic	Suisun
24 Apr 80	San Pablo Bay	-6.96	80.72	0.97	0.68	6	23 Apr 80	hydro	San Pablo Bay
25 Apr 80	Central Bay	-8.54	65.04	0.45	3.08	7	22 Apr 80	hydro	South Bay
25 Apr 80	South Bay (156-200)	-8.54	65.04	0.45	3.08	7	22 Apr 80	hydro	South Bay
12 May 80	South Bay (142-148)	-0.57	22.49	0.28	1.49	6	12 May 80	benthic	South Bay/ S.San Mateo Br./ S.Dumbarton Br.
12 May 80	S.San Mateo Br.	-0.57	22.49	0.28	1.49	6	12 May 80	benthic	"
12 May 80	S.Dumbarton Br.	-0.57	22.49	0.28	1.49	6	12 May 80	benthic	"
19 Jun 80	Suisun Bay	-12.18	102.38	0.89	4.96	6	18 Jun 80	hydro	Suisun Bay
20 Jun 80	San Pablo Bay	-11.49	101.35	0.89	7.14	5	18 Jun 80	hydro	San Pablo Bay
20 Jun 80	Central Bay	0.56	11.66	0.16	0.59	9	17 Jun 80	hydro	South Bay
20,25 Jun	South Bay	0.56	11.66	0.16	0.59	9	17 Jun 80	hydro	South Bay
1980									
25 Jun 80	S.San Mateo Br.	0.56	11.66	0.16	0.59	9	17 Jun 80	hydro	South Bay
26 Jun 80	S.Dumbarton Br.	0.56	11.66	0.16	0.59	9	17 Jun 80	hydro	South Bay
7 Aug 80	S.San Mateo Br.	0.57	11.99	0.13	0.48	7	4 Aug 80	hydro	South Bay
7 Aug 80	S.Dumbarton Br.	0.57	11.99	0.13	0.48	7	4 Aug 80	hydro	South Bay

TABLE 2. REGRESSION EQUATIONS USED FOR CONVERTING
FLUORESCENCE READINGS TO CALCULATED CHLOROPHYLL A VALUES (cont'd)

							Equation Source		
Date	Geographic Location	a	b	r ²	syx	n	Date	Cruise	Location
20 Aug 80	Suisun Bay	-11.23	88.18	0.86	4.38	3	20 Aug 80	benthic	Suisun Bay
20 Aug 80	San Pablo Bay	0.78	49.91	0.82	2.17	4	20 Aug 80	benthic	San Pablo Bay
21 Aug 80	Central Bay	-9.23	115.71	0.30	0.53	3	21 Aug 80	benthic	Central Bay
21 Aug 80	South Bay	-3.60	52.18	0.58	1.25	7	18 Aug 80	hydro	South Bay
21 Aug 80	S.San Mateo Br.	-3.60	52.18	0.58	1.25	7	18 Aug 80	hydro	South Bay
25 Aug 80	S.Dumbarton Br.	-3.60	52.18	0.58	1.25	7	18 Aug 80	hydro	South Bay
19 Sep 80	S.San Mateo Br.	-0.91	38.97	0.57	0.94	7	16 Sep 80	hydro	South Bay
19 Sep 80	S.Dumbarton Br.	-0.91	38.97	0.57	0.94	7	16 Sep 80	hydro	Suisun Bay
30 Oct 80	Suisun Bay	-17.48	110.72	0.77	4.41	4	30 Oct 80	benthic	Suisun Bay
30 Oct 80	San Pablo Bay	-1.72	45.39	0.91	0.84	4	30 Oct 80	benthic	San Pablo Bay
30 Oct 80	Central Bay	-1.76	37.05	0.44	0.53	7	28 Oct 80	hydro	South Bay
31 Oct 80	South Bay	-1.76	37.05	0.44	0.53	7	28 Oct 80	hydro	South Bay
31 Oct 80	S.San Mateo Br.	-1.76	37.05	0.44	0.53	7	28 Oct 80	hydro	South Bay
3 Nov 80	S.Dumbarton Br.	-1.76	37.05	0.44	0.53	7	28 Oct 80	hydro	South Bay
25 Nov 80	S.San Mateo Br.	-0.30	21.09	0.45	0.70	6	25 Nov 80	benthic	S.San Mateo Br./ S.Dumbarton Br.
25 Nov 80	S.San Mateo Br.	-0.30	21.09	0.45	0.70	6	25 Nov 80	benthic	"
18 Dec 80	Suisun Bay	-6.45	81.93	0.92	1.54	4	17 Dec 80	hydro	Suisun Bay
18 Dec 80	San Pablo Bay	-2.53	41.40	0.81	0.46	7	17 Dec 80	hydro	San Pablo Bay
19 Dec 80	South Bay	-3.79	53.72	0.95	0.36	7	16 Dec 80	hydro	South Bay
19 Dec 80	S.San Mateo Br.	-3.79	53.72	0.95	0.36	7	16 Dec 80	hydro	South Bay
11 Feb 81	Suisun Bay	0.88	7.58	0.04	1.29	4	11 Feb 81	benthic	Suisun Bay
11 Feb 81	San Pablo Bay	-3.15	50.30	0.97	0.68	4	11 Feb 81	benthic	San Pablo Bay
11 Feb 81	Central Bay	1.03	9.33	0.30	0.27	4	11 Feb 81	benthic	Central Bay/ South Bay
12 Feb 81	South Bay	1.03	9.33	0.30	0.27	4	11 Feb 81	benthic	"
19 Feb 81	S.San Mateo Br.	0.05	20.40	0.86	0.19	4	19 Feb 81	benthic	S.San Mateo Br.
19 Feb 81	S.Dumbarton Br.	5.78	-7.24	0.01	3.37	5	19 Feb 81	benthic	S.Dumbarton Br.

TABLE 3. REGRESSION EQUATIONS USED FOR CONVERTING
NEPHELOMETER READINGS TO EXTINCTION COEFFICIENTS

							Equation Source		
Date	Geographic Location	a	b	r ²	syx	n	Date	Cruise	Location
6 Mar 80	Suisun Bay	3.74	1.94	-	-	2	5 Mar 80	hydro	Suisun Bay
6 Mar 80	San Pablo Bay	4.54	8.23	0.74	5.81	3	5 Mar 80	hydro	San Pablo Bay
7 Mar 80	Central Bay	1.89	0.72	0.07	0.97	7	4 Mar 80	hydro	South Bay
7 Mar 80	South Bay (162-200)	1.89	0.72	0.07	0.97	7	4 Mar 80	hydro	South Bay
13 Mar 80	South Bay (142-156.2)	1.89	0.72	0.07	0.97	7	4 Mar 80	hydro	South Bay
13 Mar 80	S.Dumbarton Br.	1.89	0.72	0.07	0.97	7	4 Mar 80	hydro	South Bay
28 Mar 80	S.San Mateo Br.	0.20	3.38	0.99	0.26	6	2 Apr 80	hydro	South Bay
28 Mar 80	S.Dumbarton br.	0.20	3.38	0.99	0.26	6	2 Apr 80	hydro	South Bay
24 Apr 80	Suisun Bay	-12.30	10.22	-	-	2	7 May 80	hydro	Suisun Bay
24 Apr 80	San Pablo Bay	-0.85	7.28	0.92	0.19	6	23 Apr 80	hydro	San Pablo Bay
25 Apr 80	Central Bay	-0.28	4.00	0.99	0.29	7	22 Apr 80	hydro	South Bay
25 Apr 80	South Bay (156-200)	-0.28	4.00	0.99	0.29	7	22 Apr 80	hydro	South Bay
12 May 80	South Bay (142-148)	-0.18	3.18	0.37	0.44	8	7 May 80	hydro	South Bay
12 May 80	S.San Mateo Br.	-0.18	3.18	0.37	0.44	8	7 May 80	hydro	South Bay
12 May 80	S.Dumbarton Br.	-0.18	3.18	0.37	0.44	8	7 May 80	hydro	South Bay
19 Jun 80	Suisun Bay	-1.58	5.47	0.77	2.31	5	18 Jun 80	hydro	Suisun Bay
20 Jun 80	San Pablo Bay	-1.58	5.47	0.77	2.31	5	18 Jun 80	hydro	Suisun Bay
20 Jun 80	Central Bay	0.30	2.36	-	-	2	17 Jun 80	hydro	South Bay
20 Jun 80	South Bay	0.30	2.36	-	-	2	17 Jun 80	hydro	South Bay
25 Jun 80	South Bay	0.30	2.36	-	-	2	17 Jun 80	hydro	South Bay
25 Jun 80	S.San Mateo Br.	0.30	2.36	-	-	2	17 Jun 80	hydro	South Bay
26 Jun 80	S.Dumbarton Br.	0.30	2.36	-	-	2	17 Jun 80	hydro	South Bay
7 Aug 80	S.San Mateo Br.	0.07	4.34	0.94	0.19	7	4 Aug 80	hydro	South Bay
7 Aug 80	S.Dumbarton Br.	0.07	4.34	0.94	0.19	7	4 Aug 80	hydro	South Bay
20 Aug 80	Suisun Bay	-0.99	5.14	0.99	0.21	4	19 Aug 80	hydro	Suisun Bay
20 Aug 80	San Pablo Bay	-0.26	3.91	0.93	0.35	6	19 Aug 80	hydro	San Pablo Bay

TABLE 3. REGRESSION EQUATIONS USED FOR CONVERTING
NEPHELOMETER READINGS TO EXTINCTION COEFFICIENTS (cont'd)

							Equation Source		
Date	Geographic Location	a	b	r ²	syx	n	Date	Cruise	Location
21 Aug 80	Central Bay	-0.26	3.91	0.93	0.35	6	19 Aug 80	hydro	San Pablo Bay
21 Aug 80	South Bay	-0.16	4.15	0.38	0.59	7	18 Aug 80	hydro	South Bay
21 Aug 80	S.San Mateo Br.	-0.16	4.15	0.38	0.59	7	18 Aug 80	hydro	South Bay
25 Aug 80	S.Dumbarton Br.	-0.16	4.15	0.38	0.59	7	18 Aug 80	hydro	South Bay
19 Sep 80	S.San Mateo Br.	1.08	0.70	0.28	0.38	7	16 Sep 80	hydro	South Bay
19 Sep 80	S.Dumbarton Br.	1.08	0.70	0.28	0.38	7	16 Sep 80	hydro	South Bay
30 Oct 80	Suisun Bay	1.76	1.66	0.28	1.19	4	29 Oct 80	hydro	Suisun Bay
30 Oct 80	San Pablo Bay	1.76	1.66	0.28	1.19	4	29 Oct 80	hydro	Suisun Bay
30 Oct 80	Central Bay	1.97	-1.26	0.21	0.26	7	28 Oct 80	hydro	South Bay
31 Oct 80	South Bay	1.97	-1.26	0.21	0.26	7	28 Oct 80	hydro	South Bay
31 Oct 80	S.San Mateo Br.	1.97	-1.26	0.21	0.26	7	28 Oct 80	hydro	South Bay
3 Nov 80	S.Dumbarton Br.	1.97	-1.26	0.21	0.26	7	28 Oct 80	hydro	South Bay
25 Nov 80	S.San Mateo Br.	-1.62	5.34	0.51	0.15	7	12 Nov 80	hydro	South Bay
25 Nov 80	S.Dumbarton Br.	-1.62	5.34	0.51	0.15	7	12 Nov 80	hydro	South Bay
18 Dec 80	Suisun Bay	0.86	2.88	0.88	0.32	4	17 Dec 80	hydro	Suisun Bay
18 Dec 80	San Pablo Bay	0.71	2.38	0.92	0.08	5	17 Dec 80	hydro	Suisun Bay
19 Dec 80	South Bay	3.21	-3.72	0.32	0.21	7	16 Dec 80	hydro	South Bay
19 Dec 80	S.San Mateo Br.	3.21	-3.72	0.32	0.21	7	16 Dec 80	hydro	South Bay
11 Feb 81	Suisun Bay	-4.54	8.23	0.74	5.81	3	5 Mar 80	hydro	San Pablo Bay
11 Feb 81	San Pablo Bay	-4.54	8.23	0.74	5.81	3	5 Mar 80	hydro	San Pablo Bay
11 Feb 81	Central Bay	1.89	0.72	0.07	0.97	7	4 Mar 80	hydro	South Bay
12 Feb 81	South Bay	1.89	0.72	0.07	0.97	7	4 Mar 80	hydro	South Bay
19 Feb 81	S.San Mateo Br.	1.89	0.72	0.07	0.97	7	4 Mar 80	hydro	South Bay
19 Feb 81	S.Dumbarton Br.	1.89	0.72	0.07	0.97	7	4 Mar 80	hydro	South Bay

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Cruise No. 1

Sampling Dates: 26 February, 6, 7, 13 March 1990 (Julian dates 57, 66, 67, and 73)

Benthic Data

Julian Date	Station	Water Depth m	Core Section cm	Chlorophyll a				Phaeopigments				Gravel			Sand		Silt/Clay		
				n	mean	s	mean	s	mean	s	mean	s	n	mean	s	mean	s	mean	s
					ug/g		ug/cm		ug/g		ug/cm		%		%		%		
66	422.0	9.4	0-1	4	3.41	1.16	4.16	1.40	4.97	0.95	5.97	0.37	3	0.3	0.5	74.8	9.1	24.9	8.9
66	420.0	1.6	0-1	4	9.14	1.98	5.17	2.14	22.84	2.99	12.83	4.52	3	0.0	0.0	12.6	5.2	87.4	5.2
66	418.2	1.1	0-1	4	30.72	9.10	18.76	5.97	21.62	7.25	13.19	4.73	3	0.0	0.0	30.1	15.6	69.9	15.6
66	413.1	1.5	0-1	4	12.17	1.37	9.40	0.93	29.75	6.43	15.14	1.42	3	0.0	0.0	21.3	1.8	78.7	1.8
66	418.0	1.6	0-1	4	18.88	2.57	10.59	1.18	29.11	4.38	16.44	3.24	3	0.0	0.0	43.8	12.5	56.2	12.5
66	416.0	1.6	0-1	4	9.12	1.26	6.12	0.97	12.99	1.30	8.77	1.59	3	0.0	0.0	12.4	4.9	87.6	4.9
66	414.1	2.1	0-1	3	12.15	0.74	8.47	0.58	16.71	2.72	11.59	1.33	3	0.0	0.0	16.6	6.1	83.4	6.1
66	410.0	8.5	0-1	4	2.43	1.44	3.18	1.60	9.97	7.34	12.79	8.29	3	0.1	0.2	77.4	14.5	22.5	14.3
66	406.0	9.1	0-1	4	1.05	0.09	0.96	0.19	10.74	1.01	9.61	0.51	3	0.0	0.0	37.3	19.5	62.7	19.5
66	334.0	1.5	0-1	4	2.13	0.75	1.86	0.43	17.62	6.52	15.19	4.16	3	0.0	0.0	47.1	13.8	52.9	13.8
66	332.0	3.0	0-1	4	1.83	0.45	1.47	0.41	5.69	1.58	4.49	1.09	3	1.0	0.9	44.2	11.9	54.8	11.6
66	330.0	0.9	0-1	4	3.08	0.80	1.50	0.19	9.93	2.09	4.90	0.50	3	0.0	0.0	26.5	1.7	73.5	1.7
66	328.0	2.1	0-1	4	3.40	0.76	1.96	0.41	10.12	0.86	5.86	0.24	3	0.0	0.0	3.1	0.2	96.9	0.2
66	326.0	1.5	0-1	4	2.13	0.43	1.11	0.23	13.47	2.02	7.00	0.71	3	0.6	1.0	49.5	19.0	49.9	18.1
66	324.1	0.9	0-1	4	1.68	0.44	1.11	0.21	10.39	2.06	6.92	0.72	3	0.8	0.9	5.1	3.5	94.2	4.4
66	324.0	1.6	0-1	4	2.37	0.62	1.22	0.24	14.61	1.47	7.62	0.90	3	0.0	0.0	7.9	1.2	92.1	1.2
66	318.0	2.2	0-1	4	2.19	0.57	1.26	0.17	13.05	2.21	7.66	1.22	3	0.0	0.0	4.9	1.8	95.1	1.8
66	312.2	0.9	0-1	4	4.68	0.51	2.62	0.24	16.45	1.19	9.23	0.74	3	0.0	0.0	2.7	1.0	97.3	1.0
66	312.1	1.5	0-1	4	2.27	0.37	1.31	0.04	12.89	1.54	7.62	1.81	3	1.1	2.0	2.3	0.3	96.5	2.3
66	312.0	2.1	0-1	4	3.43	0.73	1.47	0.32	15.61	1.35	6.70	0.90	3	5.2	5.6	5.6	0.6	89.2	5.7
66	310.0	2.6	0-1	4	1.25	0.31	0.90	0.18	9.46	2.13	6.90	1.55	3	0.0	0.0	16.2	2.5	83.8	2.5
66	308.0	3.0	0-1	4	3.62	0.60	1.74	0.10	14.69	0.59	7.20	1.19	3	0.0	0.0	8.3	5.5	91.7	5.5
66	306.0	4.9	0-1	4	4.08	0.49	1.71	0.70	14.05	3.75	6.10	3.61	3	0.0	0.0	5.8	2.0	94.2	2.0
67	200.0	4.0	0-1	4	1.16	0.72	0.85	0.55	13.68	1.78	10.06	2.08	3	17.6	1.7	15.9	4.0	66.5	3.8
67	192.0	8.2	0-1	4	1.32	0.53	0.64	0.13	25.46	2.25	13.16	3.19	3	2.7	2.9	31.6	8.2	65.7	11.1
67	190.0	4.0	0-1	4	0.57	0.56	0.27	0.23	41.42	2.77	18.27	4.16	3	0.0	0.0	19.9	7.6	80.1	7.6
67	188.0	1.3	0-1	4	14.12	10.86	7.64	4.96	43.05	14.33	24.16	6.33	3	0.5	0.9	14.1	0.3	85.5	0.7
67	180.0	1.4	0-1	4	16.16	5.99	6.56	1.76	41.83	7.74	17.78	3.11	3	0.0	0.0	14.3	2.1	85.7	2.1
67	178.0	7.3	0-1	4	1.64	0.38	0.86	0.14	29.71	3.94	15.56	0.78	2	3.6	----	19.2	----	77.3	----
67	176.0	0.1	0-1	4	-0.11	0.13	-0.14	0.16	10.62	1.20	12.60	1.61	3	0.6	1.1	49.5	10.2	49.8	9.8
67	172.0	7.3	0-1	4	1.04	0.56	0.78	0.37	13.86	2.88	10.55	1.21	3	3.0	2.7	25.2	4.0	71.8	6.6
67	162.1	1.7	0-1	4	4.12	0.35	3.24	0.46	17.76	2.85	13.89	2.38	3	11.1	12.2	22.9	11.1	65.9	9.6
73	156.2	1.5	0-1	4	6.94	4.96	3.93	2.25	16.43	5.49	9.68	3.53	3	5.8	4.3	21.4	4.0	72.8	7.7
73	156.1	1.8	0-1	4	5.94	2.07	3.66	0.38	24.37	10.81	15.49	5.91	3	9.6	1.9	47.7	15.3	42.7	16.6
73	152.0	3.4	0-1	4	4.24	1.91	2.95	0.94	25.76	3.48	19.54	5.54	3	15.6	15.5	19.7	1.1	64.7	14.5
73	148.0	3.7	0-1	4	2.06	1.53	1.10	0.63	29.05	7.10	16.84	3.61	3	0.9	1.5	49.0	9.0	50.1	10.5
73	146.1	3.1	0-1	4	11.93	5.76	4.53	1.26	43.51	11.26	17.32	1.92	3	5.3	9.2	57.2	21.1	37.4	17.6
73	144.0	3.0	0-1	4	-0.82	0.98	-0.35	0.35	47.46	5.60	19.50	0.96	3	1.0	1.7	49.6	12.9	49.4	14.4
73	142.0	1.7	0-1	4	25.27	10.65	14.04	2.81	46.05	14.40	25.71	2.66	3	8.3	4.9	58.1	2.7	33.6	7.5
57	134.0	4.0	0-1	5	1.21	0.55	1.05	0.28	17.56	5.52	15.45	1.67	3	4.3	1.9	50.6	16.8	45.2	15.4
57	132.0	3.9	0-1	7	1.21	0.46	0.90	0.41	18.70	1.59	13.70	2.62	3	7.9	5.6	30.5	22.8	61.5	28.2
57	130.0	----	0-1	5	4.59	4.99	1.67	1.10	22.58	13.18	8.95	2.51	3	2.6	1.7	7.0	1.0	90.4	0.9
57	128.0	----	0-1	7	8.09	6.08	3.15	2.33	36.01	7.85	14.50	2.46	3	4.3	3.8	10.9	1.9	84.8	2.8
57	126.2	4.0	0-1	6	10.31	2.47	7.48	2.38	31.25	4.82	22.76	6.90	3	1.6	0.2	18.7	3.9	79.7	3.8
57	126.1	----	0-1	5	35.36	17.48	14.04	7.91	45.71	15.69	17.92	7.33	3	4.6	3.6	11.7	4.8	83.7	5.2

Julian Date	Station	Time	Tide	Salinity	Temperature	Discrete Chlorophyll a	Discrete Phaeopigments	Calculated Chlorophyll a	Measured Extinction Coefficient	Calculated Extinction Coefficient
				ppt	C	ug/L	ug/L	ug/L	/m	/m
66	422.0	0917	e	0.1	11.6	-----	-----	1.45	----	6.42
66	420.0	0902	hs	0.1	11.7	-----	-----	1.50	----	7.90
66	418.2	0809	hs	0.2	11.5	-----	-----	1.68	----	9.43
66	418.1	0833	hs	0.2	12.3	-----	-----	1.64	----	8.88
66	418.0	0846	hs	0.1	11.7	-----	-----	1.47	----	7.46
66	416.0	0939	e	0.1	11.5	-----	-----	1.45	----	6.90
66	414.1	0954	e	0.4	12.3	-----	-----	1.75	----	8.24
66	410.0	1009	e	0.1	11.7	-----	-----	1.44	----	6.77
66	406.0	1031	e	0.1	11.7	-----	-----	1.48	----	7.06
66	334.0	1205	e	2.8	12.6	-----	-----	0.65	----	4.42
66	332.0	1228	e	3.9	13.4	-----	-----	-0.08	----	3.12
66	330.0	1240	e	0.2	12.3	-----	-----	1.97	----	9.59
66	328.0	1255	e	1.8	13.3	-----	-----	7.71	----	9.27
66	326.0	1309	e	1.8	13.2	-----	-----	6.94	----	20.40
66	324.1	1341	e	1.4	13.2	-----	-----	8.59	----	27.05
66	324.0	1325	e	1.7	13.1	-----	-----	7.63	----	23.72
66	318.0	1410	e	2.4	12.9	-----	-----	0.44	----	4.02
66	312.2	1517	e	2.5	13.8	-----	-----	14.60	----	13.93
66	312.1	1503	e	2.4	13.1	-----	-----	1.17	----	5.67
66	312.0	1450	e	2.4	12.8	-----	-----	0.58	----	4.97
66	310.0	1551	e	2.2	12.6	-----	-----	1.11	----	4.73
66	308.0	1612	e	2.3	12.5	-----	-----	1.65	----	5.15
66	306.0	1626	e	3.6	12.3	-----	-----	1.02	----	2.95
67	200.0	1225	f	13.2	13.6	-----	-----	12.27	----	2.25
67	192.0	1157	f	13.4	13.2	-----	-----	2.06	----	2.10
67	190.0	1141	f	12.2	12.9	-----	-----	0.83	----	2.16
67	188.0	1114	f	12.1	12.7	-----	-----	0.25	----	2.14
67	180.0	1047	f	11.0	12.5	-----	-----	-0.06	----	2.07
67	178.0	1032	ls	11.3	12.3	-----	-----	0.31	----	2.05
67	176.0	1025	ls	12.0	12.5	-----	-----	0.43	----	2.01
67	172.0	1000	ls	13.5	12.8	-----	-----	3.12	----	2.17
67	162.1	1248	f	10.3	13.1	-----	-----	7.26	----	2.43
73	156.2	1019	e	10.7	13.3	-----	-----	62.66	----	3.22
73	156.1	1028	e	12.3	12.9	-----	-----	61.09	----	3.15
73	152.0	1120	e	12.5	12.8	-----	-----	1.93	----	2.61
73	148.0	1154	e	12.6	13.4	4.93	2.05	5.08	----	2.33
73	146.1	1208	e	12.7	13.5	-----	-----	8.29	----	2.50
73	144.0	1221	e	12.4	12.9	6.11	1.73	2.27	----	2.55
73	142.0	1238	e	12.0	13.3	-----	-----	4.37	----	2.46
57	134.0	1230	e	-----	-----	-----	-----	-----	----	-----
57	132.0	1215	e	-----	-----	-----	-----	-----	----	-----
57	130.0	1140	e	-----	-----	-----	-----	-----	----	-----
57	128.0	-----	e	-----	-----	-----	-----	-----	----	-----
57	126.2	0945	hs	-----	-----	-----	-----	-----	----	-----
57	126.1	1000	e	-----	-----	-----	-----			

Cruise No. 1
 Sampling Dates: 26 February, 6, 7, 13 March 1980 (Julian dates 57, 66, 67, and 73)

Benthic Data

Julian Date	Station	Water Depth m	Core Section cm	Chlorophyll a				Phaeopigments				Gravel			Sand		Silt/Clay		
				n	mean	s	mean ²	s	mean	s	mean ²	s	n	mean	s	mean	s	mean	s
					ug/g		ug/cm		ug/g		ug/cm		%		%		%		
57	126.0	----	0-1	6	19.20	10.03	7.35	3.69	37.88	5.02	13.82	1.57	2	1.3	----	18.9	----	79.8	----
73	43.0	1.1	0-1	3	38.58	10.16	13.88	2.05	72.23	18.06	25.96	1.93	3	1.3	1.8	4.5	1.1	94.2	0.9
73	42.0	1.4	0-1	4	44.26	16.36	19.02	8.27	45.16	9.73	18.39	5.03	3	3.3	5.7	4.6	1.5	92.1	6.3
73	41.0	8.2	0-1	4	5.65	1.92	2.46	0.42	27.32	3.16	12.45	2.97	3	3.5	3.1	6.9	2.0	89.6	2.0
73	40.0	1.8	0-1	4	22.34	24.23	10.57	6.94	23.90	23.83	11.61	6.34	3	2.8	2.0	10.3	1.6	87.0	0.9
73	39.0	1.7	0-1	4	10.74	2.88	5.71	1.75	17.00	2.07	9.05	1.53	3	7.1	3.2	9.4	2.0	83.5	4.8
73	38.0	1.2	0-1	4	8.73	2.76	4.80	1.35	19.72	0.77	11.00	2.14	3	0.9	1.5	2.6	0.4	96.5	1.2
67	20.3	2.7	0-1	4	0.71	0.83	0.45	0.53	16.53	4.11	12.47	2.90	3	0.4	0.8	28.5	7.5	71.1	7.8
67	20.2	3.0	0-1	4	3.11	0.53	1.81	0.17	26.54	1.67	15.56	1.27	3	4.1	3.7	17.3	3.1	78.7	1.9
67	20.1	9.1	0-1	4	-0.62	0.19	-0.51	0.19	25.27	2.03	20.21	1.58	3	11.7	10.7	39.3	16.8	49.0	27.6

Cruise No. 1
 Sampling Dates: 26 February, 6, 7, 13 March 1980 (Julian dates 57, 66, 67, and 73)

Julian Date	Station	Time	Tide	Water Column Data						
				Salinity	Temperature	Discrete Chlorophyll a	Discrete Phaeopigments	Calculated Chlorophyll a	Measured Extinction Coefficient	Calculated Extinction Coefficient
				psu	C	ug/L	ug/L	ug/L	/m	/m
57	126.0	1050	e	---	---	----	----	----	----	----
73	43.0	0745	f	9.9	12.8	----	----	17.09	----	2.33
73	42.0	0734	f	10.6	13.2	----	----	16.73	----	2.39
73	41.0	0717	f	10.7	13.2	----	----	17.32	----	2.25
73	40.0	0802	f	11.1	13.3	14.98	2.95	18.97	----	2.35
73	39.0	0811	f	9.3	12.7	----	----	31.31	----	2.28
73	38.0	0819	f	9.5	12.6	44.59	11.67	40.86	----	2.46
67	20.3	0813	e	8.8	12.1	----	----	0.63	----	2.09
67	20.2	0826	e	12.0	12.2	----	----	0.48	----	2.07
67	20.1	0833	e	12.5	12.3	----	----	0.28	----	2.07

Cruise No. 2

Sampling Dates: 28 March 1980 (Julian date 88)

				Benthic Data															
				Chlorophyll a				Phaeopigments				Gravel			Sand		Silt/Clay		
Julian Date	Station	Water Depth m	Core Section cm	n	mean	s	mean ²	s	mean	s	mean ²	s	n	mean	s	mean	s	mean	s
					ug/g		ug/cm		ug/g		ug/cm		%		%		%		
88	134.0	----	0-1	4	4.83	2.88	1.73	0.79	28.45	1.20	10.93	2.96	3	7.6	6.9	16.0	0.5	76.4	6.5
88	132.0	----	0-1	4	4.89	1.14	1.93	0.43	44.36	6.48	17.72	3.92	3	2.8	4.8	10.7	0.6	86.5	5.0
88	130.0	----	0-1	4	3.87	1.37	1.95	0.53	25.54	4.01	13.19	2.99	3	4.8	8.3	10.7	3.0	84.5	8.0
88	128.0	----	0-1	3	8.94	8.79	4.17	3.88	29.74	6.44	14.63	3.75	3	3.8	2.9	14.4	2.0	81.8	1.3
88	126.2	----	0-1	4	11.07	4.71	5.68	2.70	40.81	10.90	20.86	6.64	3	2.9	2.1	10.6	1.0	86.4	2.7
88	126.1	----	0-1	4	11.75	5.32	6.63	2.55	32.44	8.10	18.48	2.69	3	0.7	1.3	22.8	4.7	76.4	3.6
88	126.0	----	0-1	4	6.31	2.84	3.42	1.12	26.00	5.90	14.45	1.44	3	5.8	7.5	14.1	2.5	80.0	5.1
88	43.0	----	0-1	4	16.16	5.27	7.63	2.39	42.64	6.16	20.18	2.87	3	0.6	1.0	6.2	0.6	93.2	1.6
88	42.0	----	0-1	4	85.65	9.16	27.08	5.33	48.32	19.20	16.11	4.33	3	0.0	0.0	4.4	0.8	95.6	0.8
88	41.0	----	0-1	4	11.62	2.78	4.27	0.68	30.24	8.29	11.08	2.18	3	3.0	5.2	7.6	0.6	89.4	5.3
88	40.0	----	0-1	4	91.11	18.79	33.62	3.89	54.98	15.41	20.42	5.18	3	1.6	1.5	10.7	3.2	87.7	4.7
88	39.0	----	0-1	4	30.95	15.97	14.32	6.73	37.21	26.98	17.19	11.65	3	9.9	3.1	14.4	4.5	75.7	2.2
88	38.0	----	0-1	4	16.91	4.02	5.93	1.29	28.46	6.41	10.36	4.24	3	2.2	2.6	9.0	1.8	88.8	3.8

Cruise No. 2
 Sampling Dates: 28 March 1980 (Julian date 88)

Julian Date	Station	Time	Tide	Water Column Data						
				Salinity	Temperature	Discrete Chlorophyll a	Discrete Phaeopigments	Calculated Chlorophyll a	Measured Extinction Coefficient	Calculated Extinction Coefficient
				pot	C	ug/L	ug/L	ug/L	/m	/m
88	134.0	0720	f	14.7	12.7	-----	-----	5.95	-----	1.79
88	132.0	0730	f	14.9	12.7	-----	-----	4.74	-----	2.34
88	130.0	0737	f	14.6	12.8	5.13	3.90	5.64	-----	2.72
88	128.0	0752	f	14.5	12.7	-----	-----	5.95	-----	2.18
88	126.2	0827	f	12.7	12.4	33.66	9.64	33.50	-----	6.16
88	126.1	0817	f	13.6	12.9	10.68	6.31	11.40	-----	4.99
88	126.0	0803	f	14.3	12.8	6.41	3.10	5.34	-----	2.56
88	43.0	0953	f	11.3	13.8	-----	-----	19.42	-----	2.43
88	42.0	1005	f	11.6	13.7	13.84	18.34	19.42	-----	2.80
88	41.0	1010	f	11.5	13.8	-----	-----	20.37	-----	2.35
88	40.0	1015	f	11.9	13.9	-----	-----	19.77	-----	2.29
88	39.0	1027	hs	10.8	13.8	29.05	9.35	26.49	-----	1.89
88	38.0	1035	hs	10.0	13.6	-----	-----	31.04	-----	1.90

Cruise No. 3
 Sampling Dates: 23,24,25 April, 12 May 1980 (Julian dates 114,115,116, and 133)

Benthic Data

Julian Date	Station	Water Depth m	Core Section cm	Chlorophyll a								Phaeopigments				Gravel			Sand		Silt/Clay	
				n	mean		s		mean	s		mean	s		n	mean		s		mean	s	
					ug/g	ug/cm	ug/g	ug/cm		ug/g	ug/cm		%	%		%	%					
115	422.0	10.1	0-1	4	2.37	0.84	1.47	0.77	3.42	0.64	2.04	0.50	3	0.3	0.5	69.5	10.0	30.2	10.4			
115	420.0	1.7	0-1	4	21.46	3.50	9.85	1.76	23.26	4.62	10.56	1.14	3	0.0	0.0	31.0	2.3	69.0	2.3			
115	418.2	1.1	0-1	4	38.64	10.97	20.42	4.44	17.09	3.03	9.07	1.00	3	3.4	5.9	27.4	11.8	69.2	9.3			
115	418.1	1.5	0-1	4	25.30	1.23	13.45	1.43	26.06	9.60	13.47	3.92	3	0.0	0.0	35.9	13.6	64.1	13.6			
115	418.0	1.7	0-1	4	17.97	2.44	8.33	1.43	21.54	4.66	9.77	0.50	3	0.0	0.0	39.0	12.6	61.0	12.6			
115	416.0	1.0	0-1	4	8.55	1.32	3.68	0.26	19.21	6.35	8.12	2.16	3	0.0	0.0	11.3	0.7	88.7	0.7			
115	414.1	2.2	0-1	4	17.22	2.79	7.55	2.24	22.24	0.98	9.56	1.07	3	0.0	0.0	46.8	16.5	53.2	16.5			
115	410.0	7.9	0-1	4	6.41	3.79	4.46	1.70	15.48	7.70	11.07	4.20	3	0.0	0.0	47.9	14.6	52.1	14.6			
115	406.0	9.4	0-1	4	12.07	2.43	4.46	0.46	24.08	7.84	8.90	2.34	3	0.0	0.0	5.6	5.7	94.4	5.7			
114	334.0	1.2	0-1	4	2.82	1.27	1.88	0.73	11.88	3.80	7.97	1.95	3	0.4	0.6	30.7	2.9	68.9	3.1			
114	332.0	2.2	0-1	4	2.87	1.98	2.07	1.04	5.00	2.82	4.29	1.22	3	0.1	0.2	34.4	6.3	65.4	6.1			
115	330.0	3.4	0-1	3	6.17	0.99	5.08	0.84	16.96	0.88	13.96	1.03	3	0.0	0.0	41.2	18.9	58.8	18.9			
114	328.0	1.2	0-1	4	9.29	3.69	4.37	1.90	15.12	4.96	7.08	2.64	3	0.0	0.0	5.7	4.1	94.3	4.1			
115	326.0	0.7	0-1	4	3.59	2.94	1.93	1.54	15.45	1.75	8.36	1.54	3	0.6	1.0	16.5	10.7	82.9	12.0			
115	324.0	0.6	0-1	4	5.55	2.34	2.11	0.65	16.45	3.80	6.36	1.03	3	0.0	0.0	3.1	0.1	96.9	0.1			
115	318.0	1.1	0-1	4	4.41	2.63	1.73	0.83	19.86	6.85	8.01	2.27	3	0.2	0.3	7.8	1.0	92.0	0.7			
115	312.0	0.7	0-1	4	4.09	1.64	2.64	1.22	13.27	1.73	8.41	0.50	3	2.1	3.6	9.0	1.7	88.9	4.2			
115	310.0	1.2	0-1	4	1.55	0.46	0.87	0.23	6.85	1.05	3.84	0.37	3	1.0	0.8	10.6	4.7	80.4	5.5			
115	308.0	1.8	0-1	4	4.81	4.18	2.32	2.01	20.92	13.15	10.07	6.35	3	1.5	2.5	15.5	4.1	83.1	3.2			
115	306.0	3.4	0-1	4	6.18	2.34	3.06	1.38	18.77	3.79	9.19	2.50	3	2.6	4.6	7.8	4.1	89.6	5.8			
116	200.0	4.6	0-1	4	4.14	1.96	3.02	2.07	37.20	5.58	24.92	5.88	3	3.9	3.6	20.1	0.8	76.0	3.5			
116	198.0	6.1	0-1	4	2.00	1.52	1.00	0.76	48.01	9.21	24.42	4.75	3	7.1	4.0	14.7	2.7	78.2	5.4			
116	192.0	7.9	0-1	4	0.94	0.93	0.55	0.57	30.16	12.83	17.89	8.60	3	6.6	8.4	11.5	2.2	81.9	8.3			
116	190.0	4.9	0-1	4	0.95	0.91	0.42	0.38	55.43	5.56	22.75	1.12	3	1.5	2.6	9.2	2.1	89.3	2.3			
116	188.0	2.1	0-1	4	25.99	14.27	9.85	5.45	63.91	12.36	24.21	4.32	3	0.0	0.0	11.4	1.0	88.6	1.0			
116	162.1	1.8	0-1	4	10.77	3.59	7.37	1.65	29.94	5.85	20.86	3.74	3	19.4	8.6	16.6	2.8	64.1	6.5			
116	156.2	0.8	0-1	4	8.39	3.15	4.71	1.08	29.19	8.54	16.50	2.66	3	13.6	5.5	14.2	3.6	72.1	3.3			
116	156.1	1.2	0-1	4	4.29	0.80	2.44	0.17	17.70	3.96	10.04	0.85	3	10.5	5.6	17.7	0.4	71.8	5.8			
133	146.1	13.7	0-1	4	3.42	2.54	1.70	1.12	17.92	4.71	9.28	0.55	3	3.3	2.9	18.9	11.6	77.8	14.5			
133	144.0	3.7	0-1	4	2.04	1.45	1.06	0.71	20.89	3.21	11.17	0.70	3	0.9	1.5	6.2	2.5	92.9	2.2			
133	142.0	2.3	0-1	4	4.53	3.65	2.28	1.87	30.96	8.85	15.90	3.99	3	8.5	5.8	11.1	0.2	80.5	6.0			
133	134.0	14.6	0-1	4	2.52	1.14	2.18	0.69	9.13	1.85	8.37	2.41	3	13.8	3.0	49.8	7.7	36.4	4.7			
133	132.0	4.9	0-1	4	0.94	0.67	0.58	0.38	4.19	1.10	2.61	0.62	3	2.6	4.5	12.3	0.3	85.1	4.6			
133	130.0	3.4	0-1	4	0.67	0.53	0.37	0.29	5.21	2.01	3.09	1.03	3	0.0	0.0	15.8	3.3	84.2	3.3			
133	128.0	3.0	0-1	4	0.34	0.31	0.21	0.21	4.36	2.31	2.54	1.33	3	2.7	0.3	9.0	1.0	88.3	1.2			
133	126.2	1.0	0-1	4	2.46	0.37	1.52	0.23	1.62	0.64	1.01	0.37	3	2.9	1.9	9.2	2.7	87.9	1.8			
133	126.1	1.9	0-1	4	1.49	1.47	0.88	0.88	1.88	1.48	1.11	0.85	3	3.1	3.0	32.2	7.3	64.7	10.3			
133	126.0	2.3	0-1	4	0.92	0.48	0.46	0.20	3.53	1.39	1.82	0.63	3	11.5	11.8	20.0	7.1	68.6	5.1			
133	43.0	0.8	0-1	4	6.61	1.71	3.43	0.98	42.18	4.24	21.88	3.18	3	0.7	0.6	7.3	1.6	92.0	1.6			
133	42.0	1.3	0-1	4	16.04	4.54	7.24	2.50	64.75	14.92	28.97	9.52	3	3.8	3.5	5.3	1.0	91.0	4.5			
133	41.0	0.0	0-1	4	4.85	2.42	2.21	1.26	63.11	24.56	27.86	9.75	2	0.0	---	3.3	---	96.8	---			
133	40.0	1.3	0-1	4	9.06	6.11	4.30	2.80	42.09	13.36	20.17	7.47	3	6.9	6.1	8.4	1.0	84.7	5.1			
133	39.0	0.7	0-1	4	11.49	1.35	5.61	0.80	43.74	11.74	21.52	6.75	3	3.6	1.2	6.3	0.7	90.1	1.9			
133	38.0	0.7	0-1	4	7.88	1.99	3.78	1.23	48.20	8.25	22.83	4.10	3	3.2	1.0	4.1	0.7	92.7	1.7			
116	20.3	3.1	0-1	4	7.65	7.22	3.84	3.27	28.01	11.79	14.56	5.11	3	3.2	0.6	27.2	0.5	69.7	1.0			

Cruise No. 3
 Sampling Dates: 23,24,25 April, 12 May 1980 (Julian dates 114,115,116, and 133)

Julian Date	Station	Time	Tide	water Column Data						
				Salinity	Temperature	Discrete Chlorophyll a	Discrete Phaeopigments	Calculated Chlorophyll a	Measured Extinction Coefficient	Calculated Extinction Coefficient
				ppt	C	ug/L	ug/L	ug/L	/m	/m
115	422.0	0945	hs	0.8	15.3	-----	-----	5.30	6.00	4.56
115	420.0	0936	f	0.4	15.4	-----	-----	4.18	5.00	3.00
115	418.2	0904	f	0.4	13.7	-----	-----	10.98	15.00	24.00
115	418.1	0915	f	0.2	14.3	-----	-----	5.19	5.00	2.03
115	418.0	0925	f	0.4	15.4	5.30	4.27	5.26	5.00	3.39
115	416.0	0845	f	0.6	15.2	-----	-----	5.56	7.50	4.01
115	414.1	0836	f	0.8	15.0	-----	-----	6.43	10.00	5.00
115	410.0	0821	f	0.8	14.9	-----	-----	5.85	10.00	5.10
115	406.0	0803	f	1.8	14.7	-----	-----	5.89	7.50	4.36
114	334.0	1552	f	10.2	16.0	-----	-----	5.45	-----	3.14
114	332.0	1605	f	11.7	15.6	-----	-----	2.64	3.33	3.30
115	330.0	1136	e	14.2	15.1	-----	-----	18.63	3.75	6.20
114	328.0	1625	f	10.6	15.5	-----	-----	17.26	5.00	6.35
115	326.0	1205	e	12.8	15.4	-----	-----	15.64	-----	3.09
115	324.0	1225	e	13.7	16.8	-----	-----	21.70	3.75	4.22
115	318.0	1254	e	13.7	15.8	-----	-----	17.09	3.33	4.44
115	312.0	1325	e	15.3	15.7	-----	-----	26.70	3.75	7.01
115	310.0	1335	e	14.1	15.7	-----	-----	15.77	3.33	5.51
115	308.0	1346	e	13.2	16.0	-----	-----	2.06	1.00	2.79
115	306.0	1358	e	13.9	16.2	-----	-----	1.52	1.67	3.11
116	200.0	1028	e	22.5	14.8	-----	-----	4.02	0.94	2.60
116	198.0	1000	hs	23.5	14.4	-----	-----	1.23	-----	1.09
116	192.0	0935	hs	24.4	13.8	-----	-----	-2.12	-----	0.97
116	190.0	0924	hs	24.6	13.8	-----	-----	-1.51	0.60	0.95
116	188.0	0906	hs	24.7	13.9	-----	-----	-0.53	0.94	1.13
116	162.1	1058	e	17.9	15.8	-----	-----	5.88	3.00	3.66
116	156.2	1140	e	17.9	15.9	-----	-----	11.97	5.00	6.50
116	156.1	1157	e	18.7	15.6	-----	-----	8.31	7.50	7.62
133	146.1	1020	f	24.5	15.7	0.94	4.32	1.92	1.36	1.22
133	144.0	1006	f	25.0	15.4	-----	-----	2.26	-----	0.96
133	142.0	0956	f	25.7	15.1	2.99	1.79	4.01	1.00	1.06
133	134.0	1048	f	23.6	16.0	1.45	1.84	1.72	1.25	0.87
133	132.0	1110	f	23.4	15.5	-----	-----	1.85	1.00	0.84
133	130.0	1120	f	22.5	15.8	-----	-----	2.05	1.36	1.11
133	128.0	1130	f	22.6	15.7	-----	-----	2.47	-----	0.95
133	126.2	1205	hs	21.3	14.3	-----	-----	5.03	3.00	4.05
133	126.1	1155	hs	23.4	15.1	2.69	3.46	2.48	3.75	2.93
133	126.0	1140	hs	22.4	15.5	-----	-----	2.49	1.36	1.27
133	43.0	1335	e	18.0	16.0	-----	-----	3.66	2.50	6.14
133	42.0	1345	e	18.6	16.3	-----	-----	3.37	2.50	1.60
133	41.0	1350	e	19.5	16.4	5.47	2.43	2.91	1.36	1.27
133	40.0	1358	e	18.9	16.2	-----	-----	2.51	-----	1.65
133	39.0	1405	e	18.5	15.0	-----	-----	2.37	2.14	1.70
133	38.0	1405	e	18.0	15.4	2.56	2.58	3.07	2.50	1.65
116	20.3	0721	f	22.1	13.8	-----	-----	22.33	1.50	1.52

Cruise No. 3

Sampling Dates: 23,24,25 April, 12 May 1980 (Julian dates 114,115,116, and 133)

Benthic Data

Julian Date	Station	Water Depth m	Core Section cm	Chlorophyll a				Phaeopigments				Gravel			Sand		Silt/Clay		
				n	mean	s	mean	s	mean	s	mean	s	n	mean	s	mean	s	mean	s
					ug/g		ug/cm		ug/g		ug/cm		%		%		%		%
116	20.2	3.4	0-1	3	4.18	1.29	2.05	0.71	32.20	9.93	15.83	5.47	2	2.2	----	20.0	----	77.9	----
116	20.1	10.1	0-1	4	0.90	0.40	0.69	0.29	31.19	8.21	24.04	6.89	3	1.4	2.1	50.1	12.9	48.5	14.9

Cruise No. 3
 Sampling Dates: 23,24,25 April, 12 May 1980 (Julian dates 114,115,116, and 133)

Julian Date	Station	Time	Tide	Water Column Data						
				Salinity	Temperature	Discrete Chlorophyll a	Discrete Phaeopigments	Calculated Chlorophyll a	Measured Extinction Coefficient	Calculated Extinction Coefficient
				ppt	C	ug/L	ug/L	ug/L	/m	/m
116	20.2	0724	f	23.4	12.9	-----	-----	-0.09	1.07	1.12
116	20.1	0725	f	23.0	13.0	-----	-----	-0.31	0.94	1.11

Cruise No. 4
 Sampling Dates: 19, 20, 25, 26 June 1980 (Julian dates 171, 172, 177, and 178)

Benthic Data																			
Julian Date	Station	Water Depth m	Core Section cm	Chlorophyll a				Phaeopigments				Gravel			Sand		Silt/Clay		
				n	mean	s	mean	s	mean	s	mean	s	n	mean	s	mean	s	mean	s
					ug/g		ug/cm		ug/g		ug/cm		%		%		%		
171	429.0	1.8	0-1	2	20.65	-----	11.57	-----	21.98	-----	12.67	-----	3	0.0	0.0	16.1	2.5	83.9	2.5
171	418.2	1.1	0-0	4	25.98	11.19	21.02	5.43	12.27	2.10	10.40	2.07	3	0.0	0.0	16.9	4.6	83.4	4.6
171	418.1	1.6	0-1	4	22.87	0.78	13.34	0.51	24.60	4.64	14.29	2.28	3	0.0	0.0	23.6	5.5	76.4	5.5
171	418.0	1.7	0-1	4	21.94	3.67	11.32	3.23	29.67	6.80	14.70	1.26	3	0.0	0.0	4.7	1.4	95.3	1.4
171	416.0	1.9	0-1	3	15.19	5.68	8.19	5.05	26.28	1.59	13.56	4.04	3	0.0	0.0	12.0	5.7	88.0	5.7
171	414.1	2.4	0-1	4	11.16	1.67	5.36	1.60	27.34	2.89	12.73	1.88	3	0.0	0.0	25.7	12.3	74.3	12.3
171	410.0	7.5	0-1	4	19.75	7.72	7.22	1.85	35.97	8.07	13.57	2.36	3	0.0	0.0	9.5	2.0	90.5	2.0
171	406.0	0.7	0-1	4	14.70	1.80	5.11	0.76	34.68	2.55	12.06	1.49	3	0.0	0.0	12.2	9.3	87.8	9.3
172	334.0	1.8	0-1	4	2.76	0.37	2.28	0.46	11.39	0.89	9.41	1.63	3	0.0	0.0	82.8	8.7	17.2	8.7
172	332.0	3.5	0-1	4	7.30	6.21	4.46	3.09	21.24	7.57	13.76	5.62	3	0.0	0.0	64.7	16.0	35.3	16.0
172	318.0	2.0	0-1	4	1.97	1.02	1.22	0.57	11.92	4.59	7.36	2.30	3	0.0	0.0	62.8	1.1	37.2	1.1
172	312.2	0.6	0-1	4	4.90	1.38	3.17	0.84	21.78	1.77	14.10	0.80	2	0.0	----	46.8	----	53.2	----
172	312.1	1.0	0-1	4	5.51	2.30	3.31	1.07	25.07	4.27	15.53	3.55	3	0.0	0.0	58.0	1.7	42.0	1.7
172	312.0	1.4	0-1	4	5.89	1.32	3.29	0.82	35.70	9.30	20.04	6.11	3	0.0	0.0	39.8	8.7	60.2	8.7
172	310.0	2.0	0-1	4	4.79	3.43	2.52	1.25	25.56	17.54	13.62	6.52	3	4.1	3.6	58.1	14.1	37.8	14.5
172	308.0	2.9	0-1	4	5.53	2.62	2.76	1.01	46.54	17.84	23.43	6.73	3	4.2	7.2	69.5	6.2	26.4	3.4
172	306.0	4.4	0-1	4	2.91	1.39	1.57	0.65	33.30	6.76	18.38	2.77	3	0.0	0.0	56.1	11.0	43.9	11.0
177	200.0	4.4	0-1	4	0.33	1.64	0.18	0.99	42.28	6.70	26.03	4.39	3	0.0	0.0	52.4	21.6	47.6	21.6
177	198.0	6.2	0-1	4	-1.56	0.94	-0.74	0.38	40.14	8.20	20.06	3.72	3	0.0	0.0	55.6	8.2	44.4	8.2
172	192.0	7.6	0-1	4	-0.23	0.35	-0.16	0.24	34.24	26.01	25.86	14.72	3	2.4	4.2	65.4	8.9	32.2	8.3
172	190.0	3.6	0-1	4	0.23	2.11	0.05	0.95	51.94	8.29	24.58	1.67	3	0.0	0.0	41.4	14.4	58.6	14.4
172	188.0	0.5	0-1	4	4.80	1.28	2.93	0.43	40.60	4.67	25.26	3.66	3	0.0	0.0	49.8	18.1	50.2	18.1
177	156.2	1.1	0-1	4	2.01	0.66	1.66	0.46	8.53	2.31	7.06	1.44	3	1.6	2.8	70.5	0.7	27.9	3.0
177	156.1	1.6	0-1	4	1.54	0.92	1.15	0.69	17.25	3.84	13.66	3.73	3	0.0	0.0	66.1	4.9	33.9	4.9
177	152.0	3.3	0-1	4	3.15	2.47	1.84	1.41	26.78	4.11	15.86	1.42	3	0.0	0.0	54.8	1.5	45.2	1.5
172	144.0	2.7	0-1	4	0.80	0.52	0.42	0.27	35.59	8.67	18.42	2.84	3	0.0	0.0	50.7	22.0	49.3	22.0
172	142.0	1.1	0-1	4	2.65	2.93	1.31	1.44	47.79	8.36	25.05	4.75	3	0.0	0.0	62.9	20.5	37.1	20.5
177	132.0	4.6	0-1	4	1.75	0.81	0.97	0.45	19.20	3.33	10.73	2.08	3	4.2	7.3	61.0	11.1	34.8	13.1
177	130.0	3.1	0-1	3	4.95	0.43	2.99	0.23	18.61	3.83	11.28	2.58	3	0.0	0.0	57.8	15.8	42.2	15.8
177	123.0	2.9	0-1	4	37.40	12.66	17.78	6.27	48.57	10.21	22.90	4.49	3	0.0	0.0	55.5	24.4	44.5	24.4
177	126.2	0.7	0-1	4	2.15	0.19	1.40	0.28	12.31	2.51	7.85	0.87	3	0.0	0.0	46.0	7.2	54.0	7.2
177	126.1	1.5	0-1	4	5.72	1.94	4.20	1.49	12.59	5.03	9.17	3.45	3	6.9	1.5	48.4	3.5	44.8	3.6
177	126.0	2.0	0-1	4	9.29	7.45	6.13	4.01	12.15	6.19	8.36	2.81	3	1.7	2.9	40.8	12.6	57.6	11.8
178	43.0	0.8	0-1	4	1.20	0.41	0.87	0.33	18.18	1.59	13.03	0.76	3	0.0	0.0	39.8	3.7	60.2	3.7
178	42.0	1.1	0-1	4	1.28	0.62	0.81	0.42	14.53	1.01	9.12	0.97	3	0.0	0.0	44.4	4.0	55.6	4.0
178	41.0	8.2	0-1	4	1.60	1.24	0.71	0.57	22.85	2.15	9.94	1.21	3	0.0	0.0	27.6	15.8	72.4	15.8
178	40.0	1.5	0-1	4	2.95	1.02	1.65	0.75	21.60	4.53	11.56	1.43	3	4.7	1.0	15.9	0.5	79.4	1.5
178	39.0	1.3	0-1	4	1.86	0.61	1.04	0.32	23.66	0.75	13.41	1.21	3	6.5	1.0	13.3	0.6	80.2	0.9
178	38.0	1.6	0-1	4	1.56	0.50	0.88	0.23	27.12	2.40	15.49	1.28	3	1.7	3.0	7.0	0.7	91.2	3.0
172	20.3	2.2	0-1	4	6.20	2.52	3.92	1.41	39.52	6.30	25.42	2.13	3	0.0	0.0	65.1	11.9	34.9	11.9
172	20.2	2.6	0-1	4	2.07	0.69	1.49	0.64	66.64	19.66	45.11	9.82	3	0.0	0.0	55.4	18.0	44.6	18.0
172	20.1	8.9	0-1	4	0.19	0.25	0.21	0.22	19.65	8.92	20.77	3.60	3	0.0	0.0	73.6	8.4	26.4	8.4

Cruise No. 4
 Sampling Dates: 19, 20, 25, 26 June 1980 (Julian dates 171, 172, 177, and 178)

Julian Date	Station	Time	Tide	Water Column Data						
				Salinity	Temperature	Discrete Chlorophyll a	Discrete Phaeopigments	Calculated Chlorophyll a	Measured Extinction Coefficient	Calculated Extinction Coefficient
				ppt	C	ug/L	ug/L	ug/L	/m	/m
171	420.0	0800	hs	1.1	18.9	-----	-----	29.86	7.50	15.93
171	418.2	0828	e	1.6	18.5	-----	-----	43.61	15.00	18.61
171	418.1	0817	e	1.5	19.1	-----	-----	42.49	7.50	16.84
171	418.0	0810	e	1.6	19.2	-----	-----	34.01	7.50	16.12
171	416.0	0854	e	2.1	19.2	-----	-----	16.48	7.50	7.57
171	414.1	0905	e	2.3	19.1	-----	-----	16.07	5.00	6.49
171	410.0	0916	e	3.5	19.1	-----	-----	22.01	5.00	5.82
171	406.0	0935	e	4.9	19.0	-----	-----	12.96	5.00	3.51
172	334.0	0658	hs	19.8	16.8	-----	-----	4.55	5.00	4.74
172	332.0	0709	hs	14.5	17.7	-----	-----	4.11	1.88	0.97
172	318.0	0753	e	16.7	17.3	-----	-----	11.06	3.00	4.75
172	312.2	0835	e	19.2	18.2	-----	-----	-4.88	5.00	5.59
172	312.1	0847	e	18.4	18.3	-----	-----	5.35	2.50	2.27
172	312.0	0900	e	17.3	17.9	-----	-----	9.27	2.50	2.29
172	310.0	0914	e	16.8	17.8	-----	-----	2.44	2.14	1.57
172	308.0	0925	e	17.7	17.7	-----	-----	1.53	2.50	1.30
172	306.0	0935	e	17.4	17.2	-----	-----	1.49	-----	0.55
177	200.0	1034	f	26.8	18.5	-----	-----	1.70	-----	0.98
177	198.0	1022	f	26.9	18.3	-----	-----	1.84	5.00	0.94
172	192.0	1330	ls	26.8	17.4	-----	-----	1.33	-----	0.99
172	190.0	1316	ls	27.9	16.4	-----	-----	1.90	2.14	1.06
172	188.0	1306	ls	-----	-----	-----	-----	0.56	-----	0.30
177	156.2	1140	f	26.8	19.9	-----	-----	2.36	5.00	3.51
177	156.1	1130	f	26.9	19.5	-----	-----	1.58	15.00	1.10
177	152.0	1211	f	26.8	18.9	-----	-----	1.87	-----	0.98
172	144.0	1415	f	27.5	17.5	-----	-----	2.46	2.14	1.36
172	142.0	1402	f	27.9	18.0	-----	-----	1.99	7.50	1.34
177	132.0	1246	hs	26.3	19.0	-----	-----	1.42	1.88	0.98
177	130.0	1256	hs	26.4	19.2	-----	-----	2.54	3.00	1.03
177	128.0	1304	hs	26.5	19.2	-----	-----	2.48	3.00	1.09
177	126.2	1332	e	25.9	20.2	-----	-----	3.81	5.00	6.58
177	126.1	1322	hs	26.8	19.8	-----	-----	1.64	3.75	1.13
177	126.0	1313	hs	26.6	19.4	-----	-----	2.40	2.14	1.17
178	43.0	1210	hs	24.3	20.6	-----	-----	2.28	3.00	3.06
178	42.0	1218	f	24.8	20.3	-----	-----	2.32	3.75	3.37
178	41.0	1225	f	24.9	20.1	-----	-----	2.16	3.75	2.79
178	40.0	1244	f	25.4	19.9	-----	-----	1.94	2.50	2.10
178	39.0	1252	f	23.7	20.8	-----	-----	2.21	3.75	2.01
178	38.0	1301	hs	23.8	20.4	-----	-----	2.29	3.00	2.15
172	20.3	1058	e	26.3	16.0	-----	-----	1.34	3.75	1.03
172	20.2	1114	e	27.3	15.8	-----	-----	1.33	2.14	0.97
172	20.1	1125	e	27.9	15.9	-----	-----	1.46	2.14	1.01

Cruise No. 5
 Sampling Dates: 7 August 1980 (Julian date 220)

				Benthic Data															
				Chlorophyll a				Phaeopigments				Gravel			Sand		Silt/Clay		
Julian Date	Station	Water Depth m	Core Section cm	n	mean	s	mean	s	mean	s	mean	s	n	mean	s	mean	s	mean	s
					ug/g		ug/cm		ug/g		ug/cm		%		%		%		
220	134.0	2.0	0-1	4	0.11	0.38	0.04	0.15	33.48	15.66	13.74	6.06	3	5.9	4.1	8.3	6.2	85.8	3.1
220	132.0	5.5	0-1	4	19.36	10.25	8.76	5.23	110.13	76.87	49.70	38.99	3	0.0	0.0	9.8	6.9	90.2	6.9
220	130.0	3.3	0-1	4	6.39	3.43	3.33	2.01	24.56	7.19	12.51	3.96	3	0.7	1.2	22.4	5.9	76.9	6.9
220	128.0	3.0	0-1	3	2.68	1.46	1.30	0.71	33.10	18.10	15.68	7.25	3	7.5	6.2	14.4	6.5	78.2	12.4
220	126.2	1.0	0-1	6	2.77	0.76	2.13	0.42	8.81	1.03	6.90	0.81	3	1.4	1.6	21.7	5.5	76.9	5.9
220	126.1	1.7	0-1	3	4.46	2.07	3.86	1.94	15.99	3.17	13.70	3.45	3	7.2	1.0	43.5	3.0	49.3	2.4
220	126.0	2.2	0-1	3	2.77	1.30	1.72	0.64	24.10	7.03	14.89	2.39	3	10.4	11.3	18.6	1.6	71.0	11.5
220	43.0	0.9	0-1	4	1.40	0.51	0.87	0.32	16.98	2.30	10.50	1.55	3	0.8	1.4	6.4	1.0	92.8	1.1
220	42.0	1.3	0-1	4	12.03	7.92	6.07	4.00	40.53	9.71	20.37	4.58	3	1.3	1.4	5.2	1.1	93.5	1.7
220	41.0	---	0-1	4	0.67	0.57	0.28	0.26	23.19	1.08	10.26	2.29	3	2.1	3.6	5.5	2.6	92.4	5.3
220	40.0	1.6	0-1	4	1.68	0.90	0.96	0.52	20.83	3.30	11.58	0.80	3	0.5	0.9	14.0	3.5	85.5	2.7
220	39.0	1.4	0-1	4	2.78	1.42	1.59	0.61	21.23	4.56	12.70	3.28	3	3.7	2.1	9.6	1.7	86.7	3.6
220	38.1	0.5	0-1	4	1.90	0.60	1.11	0.27	16.03	1.39	9.53	0.95	3	1.0	0.9	5.2	1.8	93.8	1.8
220	38.0	1.0	0-1	4	1.01	0.45	0.58	0.25	22.11	2.58	12.95	1.91	3	0.7	0.6	4.3	1.2	95.0	0.8

Cruise No. 5
Sampling Dates: 7 August 1980 (Julian date 220)

Julian Date	Station	Time	Tide	Water Column Data						
				Salinity	Temperature	Discrete Chlorophyll a	Discrete Phaeopigments	Calculated Chlorophyll a	Measured Extinction Coefficient	Calculated Extinction Coefficient
				ppt	°C	ug/L	ug/L	ug/L	/m	/m
220	134.0	1015	f	28.1	21.5	-----	-----	1.72	1.25	1.99
220	132.0	1025	f	28.0	21.3	-----	-----	2.06	0.83	1.39
220	130.0	1035	f	27.8	21.6	-----	-----	2.18	1.50	1.74
220	128.0	1045	f	27.9	21.6	-----	-----	2.21	1.25	1.88
220	126.2	1115	f	27.3	21.2	-----	-----	2.03	3.00	2.29
220	126.1	1103	f	28.7	21.7	-----	-----	1.94	2.50	2.18
220	126.0	1053	f	28.3	21.6	-----	-----	1.89	1.88	1.95
220	43.0	1244	hs	26.1	23.6	-----	-----	2.57	3.00	2.54
220	42.0	1252	e	26.0	23.5	-----	-----	2.70	3.00	2.68
220	41.0	1257	e	26.2	23.4	-----	-----	2.83	3.00	2.51
220	40.0	1306	e	27.0	23.0	-----	-----	2.62	2.14	2.13
220	39.0	1314	e	24.9	23.1	-----	-----	3.53	2.14	2.80
220	38.1	1329	e	24.1	22.8	-----	-----	3.76	2.50	2.96
220	38.0	1321	e	24.6	22.9	-----	-----	3.58	2.50	2.63

Cruise No. 6
 Sampling Dates: 20, 21, 25 August 1980 (Julian dates 233, 234, and 238)

Julian Date	Station	Water Depth m	Core Section cm	n	Benthic Data															
					Chlorophyll a				Phaeopigments				Gravel			Sand		Silt/Clay		
					mean	s	mean	s	mean	s	mean	s	n	mean	s	mean	s	mean	s	
					ug/g		ug/cm		ug/g		ug/cm		%		%		%			
233	422.0	10.0	0-1	4	23.89	19.51	17.60	10.04	14.48	9.71	11.08	4.58	3	0.0	0.0	60.9	16.8	39.1	16.8	
233	420.0	1.4	0-1	4	20.57	23.13	10.24	8.97	19.66	12.30	10.59	3.82	3	0.0	0.0	7.6	2.6	92.4	2.6	
233	418.2	0.9	0-1	4	24.12	8.76	16.33	6.75	15.93	1.77	10.70	1.59	3	0.0	0.0	8.1	2.2	91.9	2.2	
233	418.1	1.3	0-1	4	12.63	4.43	8.12	1.74	12.43	1.86	8.16	1.00	2	0.0	----	24.2	----	75.8	----	
233	418.0	1.4	0-1	4	18.22	11.76	12.51	5.28	16.40	8.83	11.53	4.09	3	0.0	0.0	30.3	13.6	69.7	13.6	
233	416.0	1.8	0-1	4	15.62	3.28	6.72	2.02	22.17	3.50	9.51	2.31	3	0.0	0.0	6.1	3.7	93.9	3.7	
233	414.1	2.3	0-1	4	12.47	4.89	4.65	1.57	25.75	4.69	9.71	1.46	3	0.0	0.0	8.1	4.7	91.9	4.7	
233	410.0	7.9	0-1	4	23.82	13.58	8.73	7.09	28.92	4.70	9.68	5.45	3	0.0	0.0	5.5	2.2	94.5	2.2	
233	408.0	9.1	0-1	4	1.15	0.87	1.40	1.12	3.92	2.54	4.71	3.19	3	7.7	13.1	58.8	10.0	33.5	20.0	
233	406.0	9.5	0-1	4	3.58	2.88	3.63	2.86	9.01	3.37	9.18	3.10	3	0.0	0.0	7.9	5.6	92.1	5.6	
233	336.0	1.7	0-1	4	1.08	0.18	0.87	0.27	9.08	0.78	7.13	1.08	3	0.0	0.0	24.2	5.4	75.8	5.4	
233	332.0	3.1	0-1	4	1.97	0.61	1.31	0.31	15.35	4.11	10.21	1.75	3	3.9	2.6	31.6	9.8	64.6	7.2	
233	330.0	9.8	0-1	3	3.22	0.97	1.56	0.50	21.18	5.36	10.24	2.77	2	0.0	----	50.1	----	50.0	----	
233	328.0	1.8	0-1	4	0.07	2.32	0.09	1.47	15.72	6.09	10.34	3.64	3	0.7	1.3	13.7	5.7	85.5	6.6	
233	324.1	0.6	0-1	4	1.10	0.46	0.76	0.24	10.37	2.98	7.33	2.11	3	0.0	0.0	3.4	0.1	96.6	0.1	
233	324.0	0.9	0-1	4	2.01	1.75	1.72	1.65	10.70	2.91	8.83	2.30	3	0.0	0.0	6.0	1.6	94.0	1.6	
233	318.0	1.6	0-1	4	1.72	0.38	1.20	0.30	14.93	3.33	10.38	2.34	3	0.0	0.0	14.7	4.0	85.3	4.0	
233	312.1	0.6	0-1	4	3.95	1.95	2.25	0.86	20.46	5.50	12.01	2.20	3	0.0	0.0	8.8	2.2	91.2	2.2	
233	312.0	1.1	0-1	4	2.68	1.06	1.45	0.55	16.68	4.42	9.06	2.29	3	0.3	0.5	13.6	5.3	86.1	5.6	
233	310.0	1.8	0-1	4	1.15	0.22	0.85	0.17	13.62	3.15	10.06	2.33	3	1.8	1.6	24.8	5.1	73.4	4.0	
233	308.0	2.5	0-1	4	2.14	0.39	1.08	0.25	20.51	1.57	10.21	1.00	3	2.2	3.9	22.1	7.8	75.7	10.6	
233	306.0	4.4	0-1	4	2.89	0.64	1.38	0.46	33.62	1.62	15.84	2.55	3	1.8	3.1	11.6	0.7	86.6	3.1	
233	304.0	13.0	0-1	4	1.76	0.34	1.01	0.21	9.94	1.03	5.75	1.01	3	0.0	0.0	10.5	10.5	89.5	10.5	
233	302.0	1.5	0-1	4	1.03	0.23	1.03	0.29	13.62	3.03	13.27	1.86	2	0.0	----	58.5	----	41.5	----	
234	200.0	4.9	0-1	4	0.59	1.35	0.30	0.65	41.01	10.71	21.38	5.56	3	19.1	27.6	11.2	0.3	69.7	27.4	
234	198.0	6.0	0-1	4	2.58	1.99	1.24	0.96	28.51	4.38	14.18	2.60	3	8.5	9.5	15.6	8.5	75.9	17.9	
234	196.0	6.6	0-1	4	0.49	0.97	0.27	0.60	21.08	10.33	13.82	4.38	3	8.7	7.3	23.5	6.7	67.8	4.5	
234	194.0	8.5	0-1	4	0.86	1.64	0.81	1.39	18.00	9.17	15.89	7.32	3	2.6	1.6	44.4	4.9	53.0	3.8	
234	192.0	8.1	0-1	4	-0.72	0.24	-0.42	0.12	31.98	2.53	18.72	2.37	3	8.1	5.3	10.3	0.6	81.6	5.9	
234	190.0	5.3	0-1	3	-0.00	2.68	0.09	1.33	47.91	9.12	23.11	2.93	3	2.6	2.3	9.0	0.7	88.4	2.8	
234	188.0	1.9	0-1	4	18.95	16.62	8.85	7.10	51.64	12.83	25.36	4.53	3	0.0	0.0	19.5	1.9	80.5	1.9	
234	160.0	3.0	0-1	4	3.06	1.05	1.77	0.67	31.67	6.34	18.45	4.74	3	0.0	0.0	11.9	2.6	88.1	2.6	
234	156.2	1.0	0-1	4	0.92	0.30	1.03	0.43	8.95	0.44	9.80	1.60	3	4.5	2.5	36.0	20.3	59.6	22.6	
234	156.1	1.6	0-1	4	7.76	3.13	4.23	1.44	34.34	6.31	18.80	1.04	3	2.8	2.5	26.3	5.3	70.9	3.9	
234	152.0	3.3	0-1	4	26.62	4.99	16.21	2.87	49.33	13.16	29.70	5.65	3	11.5	2.6	19.5	5.5	69.0	2.9	
234	146.1	13.0	0-1	4	-0.38	0.75	-0.19	0.41	48.14	6.77	25.39	4.07	3	8.4	3.6	9.3	1.6	82.4	2.9	
234	144.0	3.5	0-1	4	15.18	6.04	6.95	2.76	58.26	33.44	27.48	18.16	3	0.0	0.0	9.3	1.6	90.7	1.6	
234	142.0	2.1	0-1	4	14.88	7.88	8.10	3.42	92.26	34.15	50.80	13.19	2	8.5	----	14.2	----	77.4	----	
234	134.0	14.0	0-1	4	1.05	0.54	0.85	0.41	18.91	4.73	14.92	2.54	3	8.8	5.6	37.1	14.0	54.0	14.2	
234	132.0	3.7	0-1	4	22.88	23.31	10.72	11.30	76.32	15.95	33.91	8.40	3	2.7	3.7	26.4	12.8	70.9	16.0	
234	130.0	2.5	0-1	4	7.27	2.31	4.53	1.41	25.00	8.36	15.50	4.42	3	7.8	13.5	33.9	13.6	58.3	6.7	
234	128.0	2.1	0-1	4	2.70	2.85	1.45	1.61	40.12	7.71	23.06	6.12	3	0.1	0.2	34.2	4.5	65.7	4.4	
234	126.1	0.8	0-1	4	6.98	6.44	5.80	3.98	13.20	3.94	12.30	1.73	3	6.7	3.4	40.7	10.8	52.6	12.5	
234	126.0	1.4	0-1	4	1.90	1.49	0.85	0.67	22.70	11.00	10.48	3.06	3	0.7	0.7	30.3	13.0	69.0	12.4	
238	43.0	1.0	0-1	4	0.66	0.59	0.48	0.47	14.61	1.05	10.53	1.45	3	0.0	0.0	27.8	19.2	72.2	19.2	

Cruise No. 6
 Sampling Dates: 20, 21, 25 August 1980 (Julian dates 233, 234, and 238)

Julian Date	Station	Time	Tide	Water Column Data						
				Salinity	Temperature	Discrete Chlorophyll a	Discrete Phaeopigments	Calculated Chlorophyll a	Measured Extinction Coefficient	Calculated Extinction Coefficient
				ppt	C	ug/L	ug/L	ug/L	/m	/m
233	422.0	0808	f	---	----	-----	-----	-----	5.00	-----
233	420.0	0818	f	---	----	-----	-----	-----	4.29	-----
233	418.2	0842	f	---	----	-----	-----	-----	6.00	-----
233	418.1	0834	f	---	----	-----	-----	-----	5.00	-----
233	418.0	0828	f	---	----	-----	-----	-----	6.00	-----
233	416.0	0914	f	6.6	19.3	42.72	24.86	40.27	5.00	8.40
233	414.1	0925	f	6.4	19.2	-----	-----	39.03	5.00	8.00
233	410.0	0935	f	7.6	19.2	32.47	15.62	35.95	3.75	6.41
233	408.0	0952	f	8.7	19.2	26.66	15.21	25.63	3.75	4.64
233	406.0	1012	f	9.4	19.1	-----	-----	25.67	3.75	4.34
233	334.0	1153	e	22.1	19.2	-----	-----	6.70	3.00	1.77
233	332.0	1210	e	22.2	18.9	-----	-----	6.17	1.88	1.47
233	330.0	1218	e	20.4	19.1	5.13	3.61	6.48	2.50	1.39
233	328.0	1230	e	21.5	19.1	-----	-----	6.55	2.50	1.80
233	324.1	1304	e	21.5	19.9	10.77	7.89	12.19	7.50	7.45
233	324.0	1253	e	21.7	19.4	-----	-----	8.30	3.75	3.30
233	318.0	1330	e	22.1	19.6	10.59	4.48	8.28	3.75	3.46
233	312.1	1408	e	21.4	21.0	15.38	10.10	14.91	5.00	6.89
233	312.0	1423	e	21.6	20.5	-----	-----	9.79	3.75	4.04
233	310.0	1433	e	22.4	20.0	-----	-----	8.81	3.75	4.22
233	308.0	1443	e	22.3	19.4	-----	-----	7.13	1.15	3.24
233	306.0	1453	e	23.1	19.3	-----	-----	8.41	1.36	1.64
233	304.0	1504	e	23.3	19.4	-----	-----	8.88	1.15	1.79
233	302.0	1518	e	23.8	19.8	-----	-----	5.83	2.14	1.40
234	200.0	1012	f	29.0	19.9	-----	-----	1.04	1.00	1.08
234	198.0	1001	f	29.3	19.5	-----	-----	2.16	0.83	1.01
234	196.0	0951	f	29.4	19.3	-----	-----	1.98	0.70	0.94
234	174.0	0935	f	29.6	18.9	-----	-----	1.47	0.61	0.85
234	192.0	0924	f	29.8	18.8	-----	-----	1.16	0.64	0.95
234	190.0	0914	f	29.9	18.5	-----	-----	2.46	1.00	1.06
234	188.0	0903	f	30.0	18.9	-----	-----	5.03	1.76	2.62
234	160.0	1053	hs	29.1	20.2	-----	-----	1.04	1.67	1.01
234	156.2	1128	hs	27.8	20.7	-----	-----	2.20	2.14	1.53
234	156.1	1135	e	28.9	20.6	-----	-----	1.93	2.50	1.58
234	152.0	1206	e	28.9	19.9	-----	-----	1.54	0.73	0.94
234	146.1	1236	e	28.9	20.4	-----	-----	0.30	0.83	1.02
234	144.0	1248	e	29.4	20.1	-----	-----	1.39	0.83	1.35
234	142.0	1256	e	29.8	19.9	-----	-----	2.41	1.07	1.22
234	134.0	1333	e	28.3	21.3	-----	-----	1.72	1.00	1.17
234	132.0	1351	e	28.5	20.6	-----	-----	0.76	0.79	0.98
234	130.0	1402	e	28.3	21.0	-----	-----	1.70	0.94	1.16
234	128.0	1409	e	28.3	21.3	-----	-----	4.13	1.15	1.26
234	126.1	1428	e	28.8	21.4	-----	-----	5.10	2.14	2.03
234	126.0	1417	e	28.8	21.3	-----	-----	3.72	1.88	1.66
238	43.0	1231	f	26.1	21.8	-----	-----	4.09	4.29	4.12

Cruise No. 6
 Sampling Dates: 20, 21, 25 August 1980 (Julian dates 233, 234, and 238)

				Benthic Data																
Julian Date	Station	Water Depth m	Core Section cm	Chlorophyll a				Phaeopigments				Gravel			Sand		Silt/Clay			
				n	mean	s	mean	s	mean	s	mean	s	n	mean	s	mean	s	mean	s	
					ug/q		ug/cm		ug/q		ug/cm		%		%		%			
239	42.0	1.3	0-1	3	1.60	0.88	0.83	0.29	20.24	3.81	11.17	1.31	2	4.0	----	7.9	----	88.2	----	
238	41.0	8.0	0-1	4	0.91	0.33	0.39	0.15	27.03	2.87	13.30	2.42	3	0.0	0.0	14.8	4.6	85.2	4.6	
238	40.0	1.8	0-1	4	4.46	2.59	2.42	1.26	30.24	9.73	16.46	4.26	3	2.1	3.6	37.8	9.0	60.1	6.3	
238	39.0	1.7	0-1	4	1.94	0.79	1.38	0.50	19.13	3.40	13.63	2.98	3	0.0	0.0	46.6	2.3	53.4	2.3	
239	38.1	2.6	0-1	4	2.49	0.71	1.57	0.48	22.49	1.57	14.13	1.12	3	0.0	0.0	35.6	1.2	64.4	1.2	
238	38.0	1.4	0-1	4	0.89	0.37	0.53	0.27	25.31	2.68	14.01	1.95	3	0.3	0.5	43.2	6.8	56.5	6.4	
234	20.3	2.8	0-1	4	0.01	0.32	0.02	0.25	18.05	2.45	13.01	1.74	2	0.0	----	22.4	----	77.7	----	
234	20.2	3.4	0-1	4	1.24	0.64	0.78	0.40	48.42	4.36	30.43	3.99	3	1.4	2.4	27.6	4.6	71.0	6.9	
234	20.1	9.6	0-1	4	0.14	0.73	0.12	0.48	30.40	9.28	21.15	4.55	2	9.4	----	34.7	----	56.0	----	

Cruise No. 6
 Sampling Dates: 20, 21, 25 August 1980 (Julian dates 233, 234, and 238)

Julian Date	Station	Time	Tide	Water Column Data						
				Salinity	Temperature	Discrete Chlorophyll a	Discrete Phaeopigments	Calculated Chlorophyll a	Measured Extinction Coefficient	Calculated Extinction Coefficient
				ppt	C	ug/L	ug/L	ug/L	/m	/m
233	42.0	1220	f	26.7	21.5	-----	-----	3.77	4.29	4.05
238	41.0	1205	f	27.0	21.2	-----	-----	3.62	3.00	3.76
238	40.0	1247	f	27.2	21.3	-----	-----	3.16	2.14	3.58
238	39.0	1256	f	26.0	22.0	-----	-----	3.50	2.14	3.12
238	38.1	1312	f	24.5	21.4	-----	-----	3.43	-----	3.23
238	38.0	1304	f	25.0	22.0	-----	-----	3.08	1.88	2.81
234	20.3	0717	f	29.6	17.1	2.90	1.46	2.58	1.67	1.06
234	20.2	0730	f	29.1	16.8	-----	-----	2.03	1.25	0.86
234	20.1	0741	f	28.4	16.6	3.12	1.10	3.04	1.25	0.90

Cruise No. 7
 Sampling Dates: 19 September 1980 (Julian date 263)

				Benthic Data															
Julian Date	Station	Water Depth m	Core Section cm	Chlorophyll a				Phaeopigments				Gravel			Sand		Silt/Clay		
				n	mean	s	mean	s	n	mean	s	n	mean	s	mean	s	mean	s	
					ug/g		ug/cm		ug/g		ug/cm		%		%		%		%
263	134.0	15.0	0-1	4	1.28	0.37	1.04	0.29	24.41	7.36	19.79	5.91	3	13.8	17.4	44.4	5.0	41.8	13.4
263	132.0	6.5	0-1	4	2.04	1.23	1.03	0.60	36.76	13.85	18.20	6.25	3	1.4	2.5	30.4	3.5	68.2	5.8
263	130.0	3.3	0-1	4	7.79	4.44	4.19	1.84	48.45	8.84	27.32	5.27	3	0.0	0.0	33.7	6.1	66.3	6.1
263	128.0	3.0	0-1	4	3.22	0.86	1.82	0.53	34.30	6.06	19.29	3.41	3	0.0	0.0	22.6	9.8	77.4	9.8
263	126.2	1.0	0-1	4	2.19	0.30	2.19	0.42	11.75	2.20	11.60	1.35	3	4.9	2.4	41.2	19.8	53.8	22.1
263	126.1	1.8	0-1	4	5.72	2.30	4.65	2.32	17.78	4.51	14.06	1.64	3	5.5	3.9	33.5	7.2	61.0	7.4
263	126.0	2.3	0-1	4	5.91	1.64	3.87	0.99	29.37	3.10	19.47	3.00	3	0.0	0.0	27.5	11.7	72.5	11.7
263	43.0	0.7	0-1	4	8.90	5.69	4.88	2.83	27.27	3.97	15.22	2.19	3	0.9	0.8	5.4	0.5	93.7	1.2
263	42.0	1.2	0-1	4	2.22	0.67	1.27	0.38	18.98	2.50	11.02	3.15	3	0.7	1.3	16.3	18.7	82.9	18.1
263	41.0	8.1	0-1	4	0.38	0.26	0.18	0.12	23.39	1.30	10.83	0.87	3	0.0	0.0	40.6	5.9	59.4	5.9
263	40.0	1.5	0-1	4	4.91	1.62	2.70	0.66	23.15	4.45	13.04	2.72	3	0.0	0.0	44.9	2.8	55.1	2.8
263	39.0	1.1	0-1	4	5.51	1.36	2.69	0.76	25.58	4.38	12.33	1.97	3	1.8	0.6	42.6	2.7	55.6	2.8
263	38.1	0.5	0-1	4	5.31	0.79	2.41	0.37	28.25	3.77	12.98	2.73	2	0.7	---	30.1	---	69.2	---
263	38.0	0.7	0-1	4	5.46	0.51	2.53	0.16	25.78	2.73	11.97	1.25	3	2.2	2.4	39.6	7.5	58.2	5.1

Cruise No. 7
 Sampling Dates: 19 September 1980 (Julian date 263)

Julian Date	Station	Time	Tide	Water Column Data						
				Salinity	Temperature	Discrete Chlorophyll a	Discrete Phaeopigments	Calculated Chlorophyll a	Measured Extinction Coefficient	Calculated Extinction Coefficient
				ppt	C	ug/L	ug/L	ug/L	/m	/m
263	134.0	0850	f	29.4	19.0	-----	-----	2.27	0.88	1.28
263	132.0	0903	f	29.3	18.9	-----	-----	1.86	0.65	1.27
263	130.0	0911	f	29.2	19.0	-----	-----	2.82	0.79	1.28
263	128.0	0919	f	29.5	18.8	-----	-----	4.17	1.25	1.34
263	126.2	0949	f	28.5	18.5	-----	-----	4.78	2.50	1.52
263	124.1	0938	f	29.8	18.7	-----	-----	4.24	1.36	1.35
263	126.0	0928	f	29.7	18.8	-----	-----	4.41	2.14	1.41
263	43.0	1113	hs	26.0	19.7	-----	-----	3.83	1.50	1.35
263	42.0	1120	e	26.1	19.9	-----	-----	4.24	1.25	1.35
263	41.0	1126	e	26.3	19.9	-----	-----	4.00	1.25	1.32
263	40.0	1131	e	27.1	19.9	-----	-----	3.74	1.15	1.32
263	39.0	1139	e	24.4	19.8	-----	-----	4.19	1.67	1.37
263	38.1	1151	e	23.6	19.0	-----	-----	4.81	2.50	1.57
263	38.0	1145	e	24.1	19.5	-----	-----	4.19	2.14	1.39

Cruise No. 2

Sampling Dates: 30, 31 October, 3 November 1980 (Julian dates 304, 305, and 308)

Benthic Data

Julian Date	Station	Water Depth m	Core Section cm	Chlorophyll a				Phaeopigments				Gravel			Sand		Silt/Clay		
				n	mean	s	mean	s	mean	s	mean	s	n	mean	s	mean	s	mean	s
					ug/g		ug/cm		ug/g		ug/cm		%		%	%			
304	422.0	9.8	0-1	4	11.52	17.21	8.90	10.85	10.44	9.73	9.32	5.06	3	0.0	0.1	70.9	19.6	29.0	19.6
304	420.0	1.8	0-1	4	85.57	10.20	24.77	5.53	65.76	6.31	19.07	4.33	3	0.0	0.0	1.9	1.4	98.1	1.4
304	418.2	1.3	0-1	4	49.31	15.09	21.53	6.89	32.71	10.16	13.97	3.34	3	0.0	0.0	5.5	1.1	94.5	1.1
304	418.1	1.6	0-1	4	50.97	23.05	23.23	6.18	27.19	7.45	12.82	0.93	3	0.0	0.0	39.4	17.3	60.6	17.3
304	418.0	1.8	0-1	4	90.36	15.11	26.71	4.61	62.81	12.68	18.38	2.00	3	0.0	0.0	10.4	8.9	89.6	8.9
304	416.0	2.0	0-1	4	63.61	18.66	19.57	6.94	50.20	2.14	15.32	1.76	3	0.0	0.0	5.3	2.8	94.7	2.8
304	414.1	2.0	0-1	4	23.77	5.02	8.14	2.11	41.50	5.29	14.03	0.61	3	0.0	0.0	10.3	10.7	89.7	10.7
304	410.0	7.7	0-1	4	9.93	3.98	5.94	2.45	19.22	5.19	11.52	3.21	3	0.0	0.0	42.9	14.9	57.1	14.9
304	408.0	10.0	0-1	4	1.12	1.14	1.29	1.16	2.66	1.37	3.18	1.45	3	1.3	2.3	76.9	6.9	21.8	8.9
304	406.0	10.0	0-1	3	1.05	0.70	0.61	0.36	8.26	0.86	5.01	0.21	3	0.0	0.0	32.3	5.2	67.7	5.2
304	334.0	1.8	0-1	4	34.07	11.01	17.39	5.20	42.93	20.17	21.88	9.74	3	0.4	0.6	41.6	3.2	58.1	2.7
304	332.0	2.6	0-1	4	2.49	0.38	1.52	0.29	19.38	3.53	11.83	2.39	3	0.0	0.0	45.9	6.9	54.1	6.9
304	330.0	9.1	0-1	4	0.52	0.43	0.64	0.57	1.78	1.14	2.15	1.29	3	0.0	0.0	52.4	2.9	47.6	2.9
304	328.0	1.6	0-1	4	3.90	0.33	2.23	0.31	21.05	3.73	11.94	2.08	3	0.0	0.0	30.3	10.7	69.7	10.7
304	324.0	0.8	0-1	4	14.49	1.20	8.19	0.64	19.70	3.10	11.09	1.20	3	0.0	0.0	20.5	3.3	79.5	3.3
304	318.0	1.6	0-1	4	4.53	0.75	2.23	0.14	24.86	1.92	12.25	1.10	3	1.7	3.0	27.7	4.7	70.5	3.2
304	312.0	1.1	0-1	4	2.45	1.39	1.29	0.57	21.80	7.13	11.85	3.51	3	0.0	0.0	27.3	5.1	72.7	5.1
304	310.0	1.8	0-1	4	1.96	0.86	1.20	0.44	18.55	2.01	11.68	1.20	3	0.0	0.0	38.3	3.7	61.7	3.7
304	308.0	2.8	0-1	4	1.69	0.87	0.90	0.51	23.93	6.18	12.56	1.14	3	0.0	0.0	39.5	4.2	60.5	4.2
304	306.0	4.3	0-1	4	1.52	0.69	0.73	0.25	35.70	4.59	18.02	2.15	3	0.0	0.0	38.1	2.9	61.9	2.9
304	304.0	12.0	0-1	4	0.72	0.12	0.48	0.15	11.04	1.70	7.10	0.48	3	4.2	7.2	54.8	2.7	41.1	4.5
304	302.0	1.0	0-1	4	2.72	0.92	3.63	1.25	6.33	1.56	8.48	2.33	3	0.0	0.0	96.0	0.8	4.0	0.8
305	200.0	4.8	0-1	4	0.50	0.43	0.34	0.32	29.36	10.50	18.72	6.75	3	1.0	1.8	23.1	10.8	75.8	9.8
305	198.0	6.6	0-1	4	-0.51	0.51	-0.27	0.29	26.73	3.54	14.04	1.12	3	0.0	0.0	37.1	11.7	62.9	11.7
305	196.0	7.1	0-1	4	-0.31	0.28	-0.14	0.13	27.00	4.68	14.18	3.92	3	1.2	1.5	49.0	5.2	49.8	6.2
305	192.0	9.0	0-1	4	0.09	0.35	0.04	0.22	22.87	12.21	14.37	4.81	3	7.5	8.0	50.0	3.9	42.6	4.6
305	190.0	5.8	0-1	4	-0.80	1.87	-0.39	0.94	37.46	6.37	19.11	3.23	3	0.0	0.0	43.8	3.4	56.2	3.4
305	188.0	2.7	0-1	4	3.71	1.09	1.66	0.57	40.12	0.89	17.81	2.28	3	0.0	0.0	44.2	8.2	55.8	8.2
305	160.0	2.8	0-1	4	10.35	9.16	5.34	5.05	37.94	8.00	19.12	4.40	2	8.2	----	21.2	----	70.7	----
305	156.2	0.7	0-1	4	30.03	4.90	20.26	1.64	40.43	9.01	28.32	9.87	3	5.3	1.2	38.7	1.5	56.1	2.3
305	156.1	1.0	0-1	4	9.47	2.60	6.40	1.62	34.94	12.19	23.13	5.56	3	5.4	1.0	35.7	0.3	58.9	0.8
305	152.0	2.7	0-1	4	1.70	1.01	0.92	0.52	36.70	3.67	20.09	3.52	3	0.0	0.0	25.1	3.5	74.9	3.5
305	146.1	13.0	0-1	4	-0.09	0.27	-0.02	0.11	18.66	4.38	9.50	2.76	3	0.0	0.0	28.0	3.7	72.0	3.7
305	144.0	3.0	0-1	4	3.27	3.22	2.28	2.73	63.05	12.25	37.44	11.37	3	2.6	4.5	27.5	9.1	70.0	13.5
305	142.0	1.7	0-1	4	15.18	6.89	7.41	4.54	92.28	18.31	42.51	3.74	3	5.4	9.3	30.1	7.0	64.5	8.7
305	132.0	3.5	0-1	4	2.62	0.58	1.31	0.32	51.02	11.68	25.28	4.89	3	3.2	5.5	31.0	2.5	65.8	3.7
305	130.0	2.1	0-1	4	1.60	1.20	1.10	0.76	29.97	9.14	19.64	4.33	3	0.0	0.0	27.0	4.6	73.0	4.6
305	128.0	1.8	0-1	4	0.81	1.89	0.39	0.98	43.87	12.43	24.28	6.37	2	1.8	----	27.0	----	71.3	----
305	126.0	1.0	0-1	4	3.90	3.24	3.01	2.69	33.94	8.61	24.44	5.51	3	10.2	5.8	23.0	3.2	66.7	8.4
308	43.0	1.1	0-1	4	28.55	6.63	13.27	2.49	64.42	10.13	30.06	4.03	3	3.9	3.4	8.3	0.4	87.8	3.3
308	42.0	1.5	0-1	4	5.69	3.26	3.40	1.24	34.33	2.57	20.39	1.57	3	4.6	0.6	8.3	2.3	87.1	2.8
308	41.0	8.3	0-1	4	1.24	0.41	0.57	0.18	25.05	1.89	11.60	1.68	3	4.6	0.7	11.4	2.6	83.9	3.0
308	40.0	1.7	0-1	4	4.50	3.66	2.44	2.10	30.09	4.53	15.93	2.10	3	1.9	3.2	17.3	7.0	80.8	6.7
308	39.0	1.5	0-1	4	1.98	1.51	0.97	0.53	21.73	5.21	11.89	1.33	3	6.1	2.5	11.6	2.6	82.3	4.1
308	38.1	0.9	0-1	4	2.55	1.18	1.22	0.69	30.30	3.89	14.09	2.79	3	1.5	1.4	5.7	1.3	92.8	2.5

Cruise No. R
 Sampling Dates: 30, 31 October, 3 November 1980 (Julian dates 304, 305, and 308)

Julian Date	Station	Time	Tide	Water Column Data						Measured Extinction Coefficient /m	Calculated Extinction Coefficient /m
				Salinity	Temperature	Discrete Chlorophyll a	Discrete Phaeopigments	Calculated Chlorophyll a			
				ppt	C	ug/L	ug/L	ug/L			
304	422.0	0801	f	5.4	16.2	-----	-----	0.39		3.00	16.68
304	420.0	0812	f	4.5	16.3	-----	-----	0.76		3.00	15.52
304	418.2	0837	hs	5.3	15.2	17.26	7.02	20.83		2.50	2.81
304	418.1	0828	hs	4.0	16.2	16.23	6.25	12.30		3.75	3.76
304	418.0	0816	f	4.1	16.5	-----	-----	0.80		3.00	15.69
304	416.0	0855	hs	6.2	16.1	-----	-----	15.81		3.75	3.86
304	414.1	0901	hs	6.5	16.3	25.63	11.33	23.50		5.00	5.50
304	410.0	0914	hs	7.7	16.4	-----	-----	21.15		3.75	5.11
304	408.0	0925	e	12.3	16.5	7.18	3.59	9.67		3.00	8.12
304	406.0	0939	e	13.2	16.6	-----	-----	-4.07		2.14	2.50
304	334.0	1106	e	21.3	16.3	-----	-----	0.81		-----	1.90
304	332.0	1117	e	20.3	16.9	1.03	0.47	1.10		0.79	2.22
304	330.0	1129	e	21.6	16.4	-----	-----	1.82		0.88	3.07
304	328.0	1138	e	22.0	16.3	-----	-----	2.07		1.50	2.80
304	324.0	1150	e	20.6	16.3	5.38	1.32	4.41		0.83	2.12
304	318.0	1231	e	21.1	16.4	-----	-----	3.53		1.67	2.42
304	312.0	1314	e	21.4	15.8	5.30	3.97	5.90		2.14	2.60
304	310.0	1326	ls	21.9	16.0	-----	-----	4.42		1.36	2.58
304	308.0	1336	ls	21.6	16.5	-----	-----	2.52		1.50	2.26
304	306.0	1348	ls	22.9	16.4	1.97	1.09	2.27		1.50	2.31
304	304.0	1400	ls	23.6	16.3	-----	-----	2.63		1.00	2.27
304	302.0	1413	ls	23.8	16.5	-----	-----	1.77		1.15	3.02
305	200.0	0941	e	29.5	16.7	-----	-----	1.55		0.94	1.48
305	198.0	0931	e	29.6	17.0	-----	-----	1.04		1.00	1.48
305	196.0	0923	e	29.8	17.1	-----	-----	1.08		0.94	1.53
305	192.0	0858	e	29.9	16.5	-----	-----	0.83		0.75	1.58
305	190.0	0847	e	29.9	16.6	-----	-----	1.84		0.79	1.62
305	188.0	0836	e	29.9	16.2	-----	-----	6.48		2.14	1.42
305	160.0	1020	e	29.3	16.5	-----	-----	2.32		0.83	1.48
305	156.2	1052	e	28.4	16.2	-----	-----	3.89		1.50	1.26
305	156.1	1100	e	29.0	16.5	-----	-----	3.96		1.25	1.38
305	152.0	1126	e	29.7	17.1	-----	-----	3.90		0.88	1.47
305	146.1	1148	e	29.7	17.3	-----	-----	1.42		1.07	1.46
305	144.0	1203	e	29.9	17.2	-----	-----	1.76		1.07	1.48
305	142.0	1211	e	29.9	17.2	-----	-----	2.25		1.36	1.40
305	132.0	1258	e	29.5	17.6	-----	-----	1.15		0.94	1.42
305	130.0	1303	e	29.3	17.8	-----	-----	1.69		1.00	1.44
305	128.0	1314	e	29.2	17.9	-----	-----	2.16		1.15	1.39
305	126.0	1325	e	28.8	18.0	-----	-----	3.47		1.25	1.34
308	43.0	1022	hs	26.4	17.2	-----	-----	3.08		1.88	1.23
308	42.0	1030	hs	27.0	17.2	-----	-----	2.88		1.58	1.31
308	41.0	1039	hs	26.9	17.3	-----	-----	2.45		1.43	1.33
308	40.0	1045	e	27.5	17.3	-----	-----	2.98		1.43	1.39
308	39.0	1052	e	25.8	17.8	-----	-----	5.40		1.88	1.18
308	38.1	1106	e	24.7	17.3	-----	-----	4.89		-----	1.09

Cruise No. 8

Sampling Dates: 30, 31 October, 3 November 1980 (Julian dates 304, 305, and 308)

Benthic Data

Julian Date	Station	Water Depth m	Core Section cm	Chlorophyll a								Phaeopigments				Gravel			Sand		Silt/Clay		
				n	mean	s	mean	s	mean	s	mean	s	n	mean	s	mean	s	mean	s				
					ug/g		ug/cm ²													ug/g		ug/cm ²	
308	38.0	1.1	0-1	3	15.90	2.14	5.87	0.74	53.07	8.42	19.59	2.76	2	0.0	----	8.3	----	91.7	----				
304	20.3	3.2	0-1	4	5.96	5.60	4.09	3.11	16.29	4.35	11.80	3.89	3	0.0	0.0	50.6	11.0	49.4	11.0				
304	20.2	3.6	0-1	4	0.47	0.43	0.25	0.23	25.81	5.44	13.71	3.59	3	0.0	0.0	56.4	8.3	43.6	8.3				
304	20.1	10.0	0-1	4	-0.06	0.28	-0.04	0.19	22.00	3.59	14.42	1.19	3	3.6	6.2	55.7	3.6	40.8	5.5				

Cruise No. 8

Sampling Dates: 30, 31 October, 3 November 1980 (Julian dates 304, 305, and 308)

Water Column Data

Julian Date	Station	Time	Tide	Salinity	Temperature	Discrete Chlorophyll a	Discrete Phaeopigments	Calculated Chlorophyll a	Measured Extinction Coefficient	Calculated Extinction Coefficient
				pot	C	ug/L	ug/L	ug/L	/m	/m
308	38.0	1100	e	24.8	17.7	-----	-----	8.76	2.31	1.12
304	20.3	1551	f	28.2	15.9	-----	-----	2.04	0.88	0.49
304	20.2	1540	f	29.0	15.6	-----	-----	2.43	0.94	0.99
304	20.1	1530	f	28.7	15.6	-----	-----	1.77	0.83	1.40

Cruise No. 2
 Sampling Dates: 25 November 1980 (Julian date 330)

				Benthic Data															
				Chlorophyll a				Phaeopigments				Gravel			Sand		Silt/Clay		
Julian Date	Station	Water Depth m	Core Section cm	n	mean	s	mean	s	mean	s	mean	s	n	mean	s	mean	s	mean	s
					ug/g		ug/cm		ug/g		ug/cm		%		%		%		
330	134.0	14.0	0-1	3	0.50	0.94	0.26	0.59	27.97	1.25	17.44	2.81	3	6.2	4.5	31.2	4.2	62.7	3.7
330	132.0	4.8	0-1	4	0.41	0.96	0.14	0.37	47.05	7.33	18.58	4.15	3	1.1	1.5	10.1	0.4	88.8	1.6
330	130.0	2.5	0-1	4	0.97	0.40	0.53	0.26	25.91	9.84	14.05	6.26	3	4.6	2.6	19.7	10.1	75.7	12.8
330	128.0	2.3	0-1	4	0.52	2.89	0.25	1.46	43.20	12.17	21.44	6.16	3	2.6	0.8	8.3	1.1	89.0	1.7
330	126.2	0.5	0-1	4	5.70	1.87	3.87	1.28	26.64	5.80	17.95	3.19	3	4.1	2.0	28.9	2.3	67.1	1.5
330	126.1	1.1	0-1	4	3.59	2.25	2.34	1.54	19.52	2.94	12.56	2.37	3	7.4	4.0	44.0	9.5	48.6	5.6
330	126.0	1.5	0-1	4	3.36	2.37	1.52	1.08	46.30	6.48	21.71	4.03	3	7.3	2.4	13.1	1.2	79.7	1.4
330	43.0	1.0	0-1	4	5.53	4.23	2.42	1.46	46.37	7.34	21.41	3.73	3	1.0	0.7	4.7	1.2	94.3	1.9
330	42.0	1.4	0-1	4	0.90	0.86	0.48	0.44	30.71	4.46	17.34	3.44	3	0.2	0.3	6.1	1.1	93.7	0.9
330	41.0	8.6	0-1	4	1.62	1.22	0.67	0.43	29.76	3.40	12.89	2.20	3	3.6	4.3	8.9	1.7	87.5	2.7
330	40.0	1.8	0-1	4	0.93	0.47	0.46	0.20	29.12	4.38	14.68	2.45	3	0.6	1.0	14.9	1.3	84.5	1.4
330	39.0	1.6	0-1	4	1.70	1.05	0.85	0.53	27.41	3.81	13.68	1.88	3	3.1	1.7	8.7	1.0	88.2	2.2
330	38.1	0.6	0-1	4	6.77	1.40	2.00	0.42	48.06	1.35	14.19	0.57	3	1.3	1.2	2.4	0.3	96.3	1.4
330	38.0	1.5	0-1	3	4.86	1.47	1.84	0.42	44.96	4.02	17.30	1.55	3	2.7	2.2	4.1	0.9	93.2	2.9

Cruise No. 9
 Sampling Dates: 25 November 1980 (Julian date 330)

Julian Date	Station	Time	Tide	Water Column Data						
				Salinity	Temperature	Discrete Chlorophyll a	Discrete Phaeopigments	Calculated Chlorophyll a	Measured Extinction Coefficient	Calculated Extinction Coefficient
				psu	C	ug/L	ug/L	ug/L	/m	/m
330	134.0	0955	f	29.3	14.2	1.54	1.53	1.63	1.88	0.86
330	132.0	1005	f	29.5	14.0	-----	-----	1.63	1.88	1.60
330	130.0	1013	f	29.4	14.0	-----	-----	1.73	2.14	2.00
330	128.0	1023	f	29.2	13.9	1.77	1.82	1.69	1.88	1.27
330	126.2	1100	f	27.4	11.4	1.79	1.97	2.34	2.50	1.22
330	126.1	1045	f	29.1	13.3	-----	-----	1.73	1.88	1.15
330	126.0	1031	f	29.3	13.6	-----	-----	1.63	1.88	1.00
330	43.0	1215	f	26.9	14.0	2.65	5.37	3.12	3.75	6.87
330	42.0	1225	f	27.5	14.0	-----	-----	2.81	3.75	6.26
330	41.0	1233	f	27.8	13.9	2.31	3.73	2.46	3.75	4.66
330	40.0	1239	f	27.8	14.2	-----	-----	2.41	3.00	4.03
330	39.0	1248	f	26.7	14.0	-----	-----	2.71	3.00	3.37
330	38.1	1301	f	25.2	12.7	-----	-----	3.00	3.00	3.38
330	38.0	1255	f	25.7	13.3	3.84	1.96	2.65	2.50	2.72

Cruise No. 10
Sampling Dates: 18, 19, 22 December 1980

				Benthic Data															
				Chlorophyll a				Phaeopigments				Gravel			Sand		Silt/Clay		
Julian Date	Station	Water Depth m	Core Section cm	n	mean	s	mean	s	mean	s	mean	s	n	mean	s	mean	s	mean	s
					ug/g		ug/cm		ug/g		ug/cm		%		%		%		
353	422.0	10.0	0-1	4	7.54	5.41	6.38	4.41	11.14	7.60	9.23	5.68	3	0.2	0.4	69.9	26.4	29.9	26.0
353	420.0	2.2	0-1	4	63.92	6.55	22.22	4.45	50.43	2.84	17.55	3.18	3	0.0	0.0	2.3	1.5	97.7	1.5
353	418.2	1.5	0-1	4	63.96	26.91	26.47	7.47	42.99	16.32	17.86	3.83	3	0.0	0.0	5.2	1.0	94.8	1.0
353	418.1	1.9	0-1	4	38.60	8.92	22.36	5.27	24.91	6.37	14.43	3.70	3	1.0	1.7	15.8	8.9	83.2	7.2
353	418.0	2.1	0-1	4	81.90	14.56	24.84	5.82	55.88	2.64	16.82	1.09	3	0.0	0.0	7.2	2.8	92.8	2.8
353	416.0	2.4	0-1	4	22.44	9.31	7.40	3.32	40.57	2.91	13.24	1.25	3	0.0	0.0	2.1	0.8	97.9	0.8
353	414.1	2.7	0-1	4	18.73	5.26	6.90	1.91	35.66	2.82	13.12	1.19	3	0.0	0.0	3.6	0.4	96.4	0.4
353	410.0	8.4	0-1	4	10.82	2.06	6.16	1.14	34.60	12.60	20.34	9.72	3	0.0	0.0	25.1	15.2	74.9	15.2
353	408.0	11.0	0-1	4	3.02	1.60	2.57	1.25	7.95	2.75	6.82	1.78	3	0.0	0.0	74.0	16.4	26.0	16.4
353	334.0	2.1	0-1	4	7.86	1.32	3.44	0.56	37.98	5.62	16.50	0.53	2	0.7	----	31.5	----	67.8	----
353	332.0	2.8	0-1	4	4.21	1.02	1.95	0.53	32.90	4.87	14.99	1.43	3	1.1	2.0	34.3	1.3	64.5	0.8
353	330.0	9.3	0-1	4	0.90	0.74	0.81	0.60	5.50	4.35	4.73	3.12	3	0.0	0.0	54.5	29.6	45.5	29.6
353	328.0	1.7	0-1	4	3.18	0.53	1.15	0.15	20.91	1.63	7.64	1.03	3	0.0	0.0	13.2	6.2	86.8	6.2
353	324.0	0.9	0-1	4	5.74	0.94	2.42	0.27	31.15	2.01	13.24	1.23	3	0.0	0.0	6.7	1.4	93.3	1.4
353	318.0	1.2	0-1	4	4.87	3.16	1.79	1.10	28.22	3.60	10.71	1.71	3	0.0	0.0	11.2	3.6	88.8	3.6
353	312.0	0.8	0-1	4	2.65	0.32	1.20	0.26	20.89	3.26	9.28	0.61	3	1.0	1.1	9.6	1.0	89.4	0.9
353	310.0	1.3	0-1	4	2.38	0.61	1.29	0.41	18.43	2.92	9.91	1.85	3	0.0	0.0	19.9	1.7	80.1	1.7
353	308.0	2.1	0-1	4	1.94	0.56	0.85	0.12	32.45	4.02	14.52	1.84	3	4.5	1.9	17.8	0.8	77.7	2.2
353	306.0	3.4	0-1	4	2.00	0.53	1.08	0.34	34.68	3.32	18.57	2.16	3	3.0	2.7	6.8	1.9	90.2	4.4
353	304.0	12.0	0-1	3	0.99	0.35	0.50	0.00	10.81	2.11	5.59	0.94	2	0.0	----	14.6	----	85.4	----
353	302.0	0.6	0-1	4	3.20	0.70	2.05	0.44	21.41	3.77	13.65	0.74	3	2.3	1.6	46.0	4.2	51.7	3.2
354	200.0	6.1	0-1	4	0.98	0.55	0.81	0.60	35.10	7.32	26.81	2.21	3	3.5	4.2	19.2	4.4	77.3	5.3
354	198.0	7.3	0-1	4	-0.67	0.76	-0.51	0.62	22.27	3.54	16.56	3.05	3	0.0	0.0	23.7	4.2	76.3	4.2
354	196.0	8.1	0-1	4	0.29	0.56	0.18	0.37	24.03	6.12	17.74	4.51	3	0.0	0.0	23.5	2.2	76.5	2.2
354	192.0	9.2	0-1	3	-0.66	0.73	-0.33	0.41	32.68	4.55	19.56	3.49	3	4.3	1.2	16.4	0.7	79.4	1.0
354	190.0	6.2	0-1	4	-0.76	1.39	-0.30	0.62	44.99	9.96	21.64	2.63	3	4.8	1.7	5.7	1.9	89.5	2.3
354	188.0	2.3	0-1	4	3.25	0.40	1.66	0.51	29.04	6.19	14.24	1.77	3	0.0	0.0	16.1	4.0	83.9	4.0
354	160.0	3.9	0-1	4	3.21	1.51	2.05	0.27	33.51	12.62	22.22	2.48	3	10.2	9.2	16.2	12.2	73.6	5.0
354	156.2	1.3	0-1	4	5.78	2.94	6.23	3.31	28.99	11.89	30.81	11.81	3	1.3	1.7	35.5	2.8	63.1	4.1
354	156.1	1.8	0-1	4	5.64	2.29	4.88	1.40	38.42	8.41	33.64	2.78	3	3.8	3.9	35.4	5.4	60.8	4.3
354	146.1	14.0	0-1	4	-0.82	2.33	-0.44	1.61	20.18	4.57	16.91	3.13	3	1.0	1.7	21.2	7.6	77.8	9.2
354	144.0	3.6	0-1	3	1.15	0.82	0.87	0.64	26.23	6.54	20.05	4.55	2	8.5	----	16.4	----	75.1	----
354	142.0	1.9	0-1	4	0.78	0.68	0.64	0.51	27.44	4.08	23.81	3.10	3	6.3	11.0	17.8	10.6	75.8	21.6
354	132.0	4.4	0-1	4	0.75	0.17	0.65	0.23	20.14	1.50	17.36	3.57	3	4.1	4.4	27.2	4.4	68.6	2.3
354	130.0	2.3	0-1	4	1.46	1.35	1.33	1.16	12.57	5.76	11.66	4.75	3	0.0	0.0	18.8	9.3	81.2	9.3
354	128.0	2.4	0-1	4	0.78	0.22	0.76	0.32	24.06	4.14	22.60	4.22	3	2.8	3.5	21.2	8.1	76.0	10.5
354	126.0	1.1	0-1	4	3.82	1.69	3.70	1.38	17.06	6.54	16.77	5.45	3	10.1	3.3	19.8	5.2	70.1	6.9
357	43.0	1.4	0-1	4	0.22	0.13	0.19	0.12	21.15	0.87	19.16	2.05	2	1.4	----	4.6	----	94.1	----
357	42.0	1.9	0-1	4	-0.14	0.35	-0.14	0.26	21.51	3.24	18.28	4.12	3	2.0	1.7	5.3	0.3	92.7	1.5
357	41.0	9.2	0-1	4	1.21	0.59	0.83	0.39	10.99	1.80	7.56	1.14	2	2.7	----	7.7	----	89.7	----
357	40.0	2.3	0-1	4	0.35	0.29	0.27	0.21	17.33	1.75	13.88	2.16	3	4.4	0.8	12.5	4.2	83.1	5.1
357	39.0	2.1	0-1	4	0.36	0.41	0.35	0.47	15.19	1.63	13.95	2.44	3	1.2	2.1	6.4	1.2	92.4	3.3
357	38.1	3.2	0-1	4	1.35	0.49	0.74	0.24	21.10	1.59	11.71	0.83	3	1.7	1.6	1.8	0.5	96.4	1.8
357	38.0	1.3	0-1	4	1.61	0.60	1.04	0.38	21.21	1.74	14.01	2.89	3	1.6	2.8	4.0	1.3	94.4	3.0
354	20.3	4.0	0-1	4	33.94	20.08	16.58	5.54	36.09	11.27	19.02	5.80	3	0.3	0.5	37.2	8.2	62.5	8.7

Cruise No. 10
Sampling Dates: 18,19,22 December 1980

Water Column Data										
Julian Date	Station	Time	Tide	Salinity	Temperature	Discrete Chlorophyll a	Discrete Phaeopigments	Calculated Chlorophyll a	Measured Extinction Coefficient	Calculated Extinction Coefficient
				psu	C	ug/L	ug/L	ug/L	/m	/m
353	422.0	0836	f	5.4	10.9	-----	-----	3.66	4.29	3.05
353	420.0	0849	f	3.9	11.1	-----	-----	4.18	3.75	2.73
353	418.2	0910	f	---	---	-----	-----	---	5.00	-----
353	418.1	0903	f	---	---	-----	-----	---	5.00	-----
353	418.0	0855	f	3.3	10.8	11.28	5.39	11.03	3.75	2.16
353	416.0	0928	f	4.4	11.3	-----	-----	3.56	7.50	2.71
353	414.1	0937	f	---	---	-----	-----	---	7.50	-----
353	410.0	0951	f	7.2	12.8	-----	-----	6.78	5.00	3.45
353	408.0	1007	f	14.0	12.1	-----	-----	2.11	3.75	3.11
353	334.0	1243	e	21.3	11.8	0.43	1.91	1.14	1.88	2.11
353	332.0	1251	e	26.6	12.1	-----	-----	0.87	1.88	2.11
353	330.0	1301	e	23.8	11.2	1.15	1.36	0.74	1.88	1.92
353	328.0	1314	e	18.2	11.2	-----	-----	1.01	3.00	2.14
353	324.0	1336	e	18.8	10.2	3.42	1.55	3.10	2.14	2.23
353	318.0	1404	e	18.8	10.8	1.37	1.56	1.60	2.50	2.04
353	312.0	1435	e	20.0	11.4	1.37	1.98	1.65	3.75	2.55
353	310.0	1445	e	20.5	12.1	-----	-----	1.15	5.00	2.26
353	308.0	1456	e	25.6	11.6	-----	-----	1.07	4.29	2.14
353	306.0	1506	e	24.9	11.5	1.03	1.70	0.87	3.00	2.02
353	304.0	1515	e	22.5	11.8	-----	-----	0.43	2.50	1.73
353	302.0	1531	e	22.2	11.7	0.78	1.11	0.64	3.00	1.73
354	200.0	1021	hs	---	---	-----	-----	---	1.58	-----
354	198.0	1013	hs	---	---	-----	-----	---	1.58	-----
354	196.0	1003	hs	---	---	-----	-----	---	1.50	-----
354	192.0	0947	hs	---	---	-----	-----	---	1.50	-----
354	190.0	0935	hs	---	---	-----	-----	---	-----	-----
354	188.0	0925	f	---	---	-----	-----	---	-----	-----
354	160.0	1141	e	28.4	11.2	-----	-----	4.44	1.50	0.80
354	156.2	1200	e	---	---	-----	-----	---	1.50	-----
354	156.1	1210	e	---	---	-----	-----	---	1.15	-----
354	146.1	1250	e	---	---	-----	-----	---	1.25	-----
354	144.0	1301	e	29.4	11.9	-----	-----	1.11	2.14	0.51
354	142.0	1311	e	29.5	11.7	1.88	1.11	2.50	1.36	1.37
354	132.0	1350	e	29.3	11.7	-----	-----	0.63	2.31	1.09
354	130.0	1400	e	29.2	11.7	-----	-----	0.97	2.00	0.77
354	128.0	1410	e	29.2	11.9	-----	-----	0.80	1.76	0.67
354	126.0	1418	e	28.9	11.8	1.03	0.71	0.68	1.25	1.24
357	43.0	1105	f	---	---	-----	-----	---	3.75	-----
357	42.0	1114	f	---	---	-----	-----	---	3.00	-----
357	41.0	1120	f	---	---	-----	-----	---	3.75	-----
357	40.0	1126	f	---	---	-----	-----	---	2.50	-----
357	39.0	1136	f	---	---	-----	-----	---	2.14	-----
357	38.1	1149	f	---	---	-----	-----	---	-----	-----
357	38.0	1143	f	---	---	-----	-----	---	2.31	-----
354	20.3	0745	f	---	---	-----	-----	---	1.36	-----

Cruise No. 10

Sampling Dates: 18,19,22 December 1980

				Benthic Data															
				Chlorophyll a				Phaeopigments				Gravel			Sand		Silt/Clay		
Julian Date	Station	Water Depth m	Core Section cm	n	mean	s	mean	s	mean	s	mean	s	n	mean	s	mean	s	mean	s
					ug/g		ug/cm		ug/g		ug/cm			%		%		%	
354	20.2	4.4	0-1	3	0.96	0.72	0.52	0.40	34.44	8.47	18.08	5.75	2	3.9	----	21.9	----	74.3	----
354	20.1	11.0	0-1	4	-0.88	1.74	-0.51	1.17	19.95	6.45	12.17	2.82	3	1.9	1.8	34.2	6.9	63.9	6.2

Cruise No. 10
 Sampling Dates: 18, 19, 22 December 1990

Julian Date	Station	Time	Tide	Water Column Data						
				Salinity	Temperature	Discrete Chlorophyll a	Discrete Phaeopigments	Calculated Chlorophyll a	Measured Extinction Coefficient /m	Calculated Extinction Coefficient /m
				ppt	C	ug/L	ug/L	ug/L		
354	20.2	0755	f	---	----	-----	-----	----	1.36	----
354	20.1	0805	f	---	----	-----	-----	----	1.00	----

Cruise No. 11

Sampling Dates: 21 January 1981 (Julian date 21)

				Benthic Data															
Julian Date	Station	Water Depth m	Core Section cm	Chlorophyll a				Phaeopigments				Gravel			Sand		Silt/Clay		
				n	mean	s	mean ²	s	mean	s	mean ²	s	n	mean	s	mean	s	mean	s
					ug/g		ug/cm		ug/g		ug/cm		%		%		%		
21	132.0	---	0-1	4	0.60	0.54	0.28	0.25	22.00	5.44	10.21	2.34	3	6.9	6.5	12.7	0.5	80.4	6.7
21	130.0	3.6	0-1	4	0.15	0.69	0.11	0.31	17.78	7.89	8.25	2.37	3	5.2	5.6	23.2	11.4	71.6	8.4
21	128.0	3.6	0-1	4	1.75	1.41	0.67	0.47	37.65	6.17	15.46	2.76	3	5.6	1.3	11.6	4.3	82.9	5.6
21	126.2	1.4	0-1	4	3.79	0.74	2.64	0.64	22.69	4.63	15.73	3.47	3	2.2	1.4	32.1	1.4	65.7	2.7
21	126.1	2.1	0-1	4	14.23	6.72	10.24	5.29	36.41	7.10	25.70	6.97	3	4.8	2.7	37.8	3.2	57.4	1.8
21	126.0	2.6	0-1	4	8.36	6.71	3.75	2.74	37.75	9.50	17.66	3.22	3	6.8	5.3	12.7	2.0	80.5	5.1
21	43.0	1.7	0-1	4	1.06	0.12	0.46	0.04	28.56	4.81	12.59	2.92	3	0.3	0.6	6.1	3.3	93.6	2.8
21	42.0	2.0	0-1	4	4.00	3.23	1.63	1.16	35.70	1.78	15.58	1.56	3	1.0	1.1	5.6	1.7	93.4	0.9
21	41.0	1.0	0-1	4	2.75	0.24	1.20	0.23	31.27	5.51	13.61	3.30	3	0.0	0.0	4.6	1.3	95.4	1.3
21	40.0	2.4	0-1	4	1.57	1.57	0.80	0.74	33.69	2.50	17.49	1.34	3	1.3	1.3	10.5	0.5	88.2	1.2
21	39.0	2.2	0-1	4	2.49	1.02	1.20	0.48	32.36	1.69	15.72	1.24	3	2.9	1.0	7.9	1.3	89.1	2.3
21	38.1	0.6	0-1	4	7.38	0.98	2.49	0.32	42.98	0.96	15.00	4.55	3	0.0	0.0	2.0	0.2	98.0	0.2
21	38.0	1.9	0-1	4	4.06	1.57	1.80	0.65	34.22	4.59	15.24	1.40	3	1.6	1.9	2.9	0.3	95.5	2.1

Cruise No. 11
 Sampling Dates: 21 January 1981 (Julian date 21)

Water Column Data

Julian Date	Station	Time	Tide	Salinity	Temperature	Discrete Chlorophyll a	Discrete Phaeopigments	Calculated Chlorophyll a	Measured Extinction Coefficient	Calculated Extinction Coefficient
				psu	C	ug/L	ug/L	ug/L	/m	/m
21	132.0	1030	f	28.7	11.9	1.48	3.26	-----	1.88	-----
21	130.0	1036	f	28.6	11.9	-----	-----	-----	2.50	-----
21	128.0	1045	f	28.5	12.0	-----	-----	-----	2.50	-----
21	126.2	1115	f	27.6	12.5	2.14	1.87	-----	1.00	-----
21	126.1	1102	f	28.2	12.2	-----	-----	-----	1.00	-----
21	126.0	1054	f	28.6	12.0	1.75	1.24	-----	1.36	-----
21	43.0	1228	f	26.5	13.3	2.73	2.11	-----	1.25	-----
21	42.0	1235	f	27.3	12.8	-----	-----	-----	-----	-----
21	41.0	1242	f	27.6	12.8	2.05	1.57	-----	2.14	-----
21	40.0	1252	f	27.4	12.8	-----	-----	-----	1.67	-----
21	39.0	1300	f	26.8	13.0	2.95	1.63	-----	1.88	-----
21	38.1	1313	f	25.5	13.0	-----	-----	-----	1.88	-----
21	38.0	1306	f	25.7	13.0	6.11	2.14	-----	-----	-----

Cruise No. 12

Sampling Dates: 11,12,19 February 1991 (Julian dates 42,43, and 50)

Julian Date	Station	Water Depth m	Core Section cm	Benthic Data															
				Chlorophyll a				Phaeopigments				Gravel			Sand		Silt/Clay		
				n	mean	s	mean	s	mean	s	mean	s	n	mean	s	mean	s	mean	s
					ug/g		ug/cm		ug/g		ug/cm			%		%	%		
42	422.0	10.0	0-1	4	3.39	0.92	2.05	0.65	4.89	3.27	3.02	2.22	3	3.9	4.5	45.5	2.7	50.6	6.8
42	420.0	2.3	0-1	4	10.13	1.31	2.67	0.49	21.14	4.41	5.52	1.00	3	0.0	0.0	8.5	3.8	91.5	3.8
42	418.2	1.4	0-1	4	31.79	6.30	10.77	0.86	26.79	7.11	9.03	1.07	3	0.0	0.0	9.2	2.4	90.8	2.4
42	418.1	2.0	0-1	4	29.84	6.75	8.35	1.36	34.12	3.24	9.70	1.69	3	0.0	0.0	25.8	7.1	74.2	7.1
42	418.0	2.1	0-1	4	14.13	3.31	3.57	1.00	24.55	2.94	6.19	1.11	3	0.0	0.0	13.5	5.5	86.5	5.5
42	416.0	2.6	0-1	4	7.70	0.90	1.93	0.64	22.62	4.89	5.67	2.08	3	0.0	0.0	4.5	1.4	95.5	1.4
42	414.1	2.4	0-1	4	5.02	1.44	1.42	0.14	19.16	4.03	5.49	0.76	3	0.0	0.0	12.9	4.4	87.1	4.4
42	410.0	8.1	0-1	4	5.43	0.89	1.52	0.04	22.59	4.05	6.46	1.71	3	0.6	1.0	43.9	18.2	55.6	19.0
42	408.0	9.7	0-1	4	1.38	1.18	1.04	0.87	6.35	4.14	4.79	2.91	3	0.0	0.0	78.1	22.5	21.9	22.5
42	406.0	9.9	0-1	4	1.30	0.76	0.85	0.53	12.09	5.07	6.91	1.06	3	0.0	0.0	41.3	22.0	58.7	22.0
42	334.0	1.1	0-1	4	4.10	1.33	1.93	0.42	22.53	6.38	10.62	1.51	3	1.3	1.1	32.5	3.9	66.3	5.0
42	332.0	2.2	0-1	4	2.93	0.57	1.20	0.26	26.25	1.08	10.72	0.50	3	5.5	1.7	25.6	9.7	68.8	8.3
42	330.0	9.1	0-1	4	0.55	0.71	0.37	0.38	4.76	2.87	3.65	1.05	3	2.3	4.0	55.6	26.3	42.1	28.3
42	328.0	1.2	0-1	4	3.86	1.22	0.99	0.15	27.15	4.35	7.13	0.55	2	0.4	---	7.9	---	91.8	---
42	326.0	0.6	0-1	4	1.39	0.51	1.01	0.18	9.73	3.54	7.04	0.68	3	0.0	0.0	71.8	9.1	28.2	9.1
42	324.0	0.6	0-1	4	3.39	0.86	0.90	0.23	21.33	1.30	5.75	1.05	2	0.0	---	5.0	---	95.0	---
42	318.0	0.8	0-1	4	1.86	0.48	0.62	0.18	17.11	3.13	5.62	0.58	3	3.3	5.7	26.8	33.7	69.9	39.3
42	312.0	0.5	0-1	4	1.46	0.03	0.73	0.07	11.07	0.77	5.47	0.25	3	0.1	0.2	16.0	1.6	83.9	1.5
42	310.0	1.2	0-1	4	0.86	0.32	0.46	0.21	9.27	1.49	4.88	1.28	3	0.8	0.8	20.4	5.0	78.8	5.4
42	308.0	2.1	0-1	4	1.49	0.64	0.67	0.22	19.72	1.80	8.42	1.96	3	5.4	1.4	13.6	1.6	81.1	0.2
42	306.0	3.4	0-1	4	0.70	0.59	0.27	0.23	20.60	0.79	7.71	1.19	3	7.1	2.3	10.7	2.5	82.2	4.8
42	304.0	13.0	0-1	4	0.60	0.18	0.32	0.07	7.66	1.53	4.09	0.25	3	2.2	2.3	10.4	6.1	87.4	8.3
42	302.0	13.0	0-1	4	0.46	0.18	0.60	0.27	2.72	1.14	3.50	1.45	3	0.1	0.1	87.0	7.2	13.0	7.1
43	200.0	4.4	0-1	4	0.48	0.29	0.21	0.13	23.13	3.15	10.21	1.14	3	1.7	2.9	10.3	4.3	88.0	3.6
43	198.0	5.8	0-1	4	0.11	0.47	0.05	0.21	25.26	4.18	11.84	2.09	3	2.7	1.7	21.1	4.9	76.2	6.0
43	196.0	5.7	0-1	4	0.04	0.34	0.02	0.19	19.20	1.88	11.02	1.02	3	2.5	2.8	32.5	12.1	65.0	10.7
43	192.0	6.8	0-1	4	-0.93	0.78	-0.37	0.27	41.39	7.19	17.37	1.79	3	3.6	2.4	10.3	2.8	86.0	3.0
43	190.0	5.3	0-1	4	-0.85	0.90	-0.32	0.34	49.74	4.45	19.59	1.75	3	0.9	1.6	7.9	2.0	91.2	0.4
43	188.0	1.7	0-1	4	45.30	18.04	15.20	5.27	48.97	8.20	16.83	2.40	3	3.5	6.1	20.1	13.0	76.4	12.1
43	162.1	1.1	0-1	4	11.11	7.16	5.80	3.46	48.96	20.39	25.20	6.50	3	5.2	4.3	16.7	7.0	78.1	3.2
43	162.0	2.2	0-1	4	12.11	1.98	6.48	1.24	30.54	13.14	16.45	7.34	3	19.8	12.1	18.8	2.3	61.4	10.7
43	160.0	2.0	0-1	4	4.72	1.58	2.67	0.83	56.04	4.17	32.39	6.63	3	11.0	5.7	17.8	6.6	71.2	10.8
43	146.1	12.0	0-1	4	-0.14	0.54	-0.07	0.24	20.55	1.58	9.17	0.53	3	4.8	5.0	10.0	2.3	85.2	5.0
43	144.0	2.3	0-1	4	2.47	2.65	0.80	0.72	36.84	3.01	13.27	2.73	3	0.0	0.0	6.3	0.5	93.7	0.5
43	142.0	0.9	0-1	3	4.74	3.16	1.65	0.91	42.67	21.18	15.08	5.00	3	0.6	1.1	13.4	1.3	86.0	2.2
50	134.0	14.0	0-1	4	0.38	0.34	0.11	0.09	21.02	3.34	6.25	1.11	3	3.4	3.2	13.0	4.3	83.6	3.8
50	132.0	4.2	0-1	4	-0.08	1.45	0.00	0.59	27.71	5.35	11.65	1.34	3	0.6	1.0	14.5	2.0	84.9	1.3
50	130.0	3.1	0-1	4	2.06	1.47	0.83	0.58	24.61	5.90	9.99	1.85	3	0.5	0.8	18.4	5.4	81.1	4.8
50	128.0	2.8	0-1	4	4.14	3.18	1.47	1.11	45.53	10.68	16.02	3.09	2	5.7	---	9.4	---	84.9	---
50	126.2	0.8	0-1	4	4.75	1.22	2.83	0.74	25.92	5.30	15.57	4.11	3	6.1	1.9	24.9	6.4	69.0	8.4
50	126.1	1.4	0-1	4	13.31	5.99	7.02	2.91	34.44	11.34	17.72	3.31	3	7.3	5.5	42.3	7.7	50.4	5.3
50	126.0	2.1	0-1	4	16.02	19.40	6.95	6.91	36.70	20.08	17.61	5.16	2	4.8	---	14.8	---	80.4	---
50	43.0	1.3	0-1	4	17.97	8.70	7.02	3.58	33.32	1.37	12.90	1.06	3	0.2	0.3	5.4	0.7	94.4	0.4
50	42.0	1.8	0-1	4	15.43	17.71	5.59	5.33	31.46	6.60	12.73	1.90	3	0.4	0.8	7.5	2.1	92.1	1.5
50	41.0	8.8	0-1	4	0.98	0.34	0.34	0.12	13.09	1.43	4.47	0.24	3	0.0	0.0	8.2	2.9	91.8	2.9

Cruise No. 12
Sampling Dates: 11,12,19 February 1981

Julian Date	Station	Time	Tide	Water Column Data						
				Salinity	Temperature	Discrete Chlorophyll a	Discrete Phaeopigments	Calculated Chlorophyll a	Measured Extinction Coefficient	Calculated Extinction Coefficient
				psu	C	ug/L	ug/L	ug/L	/m	/m
42	422.0	0740	hs	1.0	11.1	1.45	2.20	2.22	5.00	16.48
42	420.0	0804	e	0.3	11.2	-----	-----	2.05	6.00	13.57
42	418.2	0830	e	0.4	12.0	3.57	1.65	2.26	6.00	10.93
42	418.1	0822	e	0.4	11.4	-----	-----	2.09	5.00	11.51
42	418.0	0811	e	0.3	11.2	-----	-----	2.06	6.00	13.83
42	416.0	0849	e	1.2	11.3	1.37	2.18	2.19	7.50	14.48
42	414.1	0859	e	1.4	11.4	-----	-----	2.18	6.00	14.50
42	410.0	0910	e	1.6	11.3	-----	-----	2.15	5.00	13.29
42	408.0	0922	e	5.2	11.4	2.01	1.49	1.83	3.75	4.29
42	406.0	0935	e	5.8	11.5	-----	-----	1.78	3.75	3.19
42	334.0	1042	e	15.4	12.7	0.90	1.50	1.28	2.14	1.12
42	332.0	1051	e	15.5	12.4	-----	-----	1.97	2.14	3.13
42	330.0	1100	e	12.3	12.1	-----	-----	1.79	1.88	0.99
42	328.0	1117	e	14.0	12.6	-----	-----	1.87	1.88	0.26
42	326.0	1127	e	13.9	12.6	-----	-----	1.95	1.67	0.26
42	324.0	1142	e	12.9	13.1	4.06	1.26	3.23	1.88	-0.05
42	318.0	1213	e	12.1	12.8	-----	-----	3.74	3.00	3.95
42	312.0	1250	e	12.3	12.9	8.20	2.76	8.42	5.00	6.39
42	310.0	1302	e	12.0	13.0	-----	-----	5.41	3.00	3.52
42	308.0	1313	e	12.5	13.0	-----	-----	4.32	3.00	2.66
42	306.0	0325	ls	13.4	12.8	-----	-----	2.43	3.33	2.06
42	304.0	1337	ls	15.5	12.5	1.41	1.22	1.64	2.14	1.78
42	302.0	1350	ls	21.3	13.5	-----	-----	0.74	2.14	0.68
43	200.0	1012	e	27.0	12.6	-----	-----	2.04	1.20	2.25
43	198.0	1000	e	27.2	12.5	-----	-----	1.92	1.76	2.34
43	196.0	0953	e	26.9	12.4	-----	-----	1.89	2.14	2.38
43	192.0	0931	e	26.3	12.6	1.58	1.71	1.81	1.88	2.36
43	190.0	0924	e	26.4	12.8	2.09	1.56	1.85	1.67	2.29
43	188.0	0908	e	26.2	13.2	-----	-----	2.22	1.15	2.23
43	162.1	1045	e	24.2	14.0	-----	-----	2.14	1.50	2.29
43	162.0	1027	e	25.5	13.0	-----	-----	2.03	0.75	2.23
43	160.0	1104	e	26.2	13.5	1.97	1.41	2.11	0.83	2.23
43	146.1	1205	e	26.9	12.9	-----	-----	1.76	1.67	2.28
43	144.0	1218	e	26.7	13.4	-----	-----	1.92	0.75	2.19
43	142.0	1228	e	26.7	13.7	-----	-----	2.02	1.15	2.24
50	134.0	0946	f	26.6	14.1	1.66	1.90	1.85	1.88	2.25
50	132.0	0954	f	26.8	14.4	-----	-----	2.42	2.14	2.30
50	130.0	1032	f	26.5	14.4	2.19	1.85	2.03	1.76	2.22
50	128.0	1011	f	26.5	14.6	-----	-----	1.83	1.00	2.08
50	126.2	1039	f	25.0	15.1	2.67	1.97	2.72	2.14	2.22
50	126.1	1028	f	26.2	15.1	-----	-----	2.28	1.07	2.11
50	126.0	1018	f	26.5	14.7	2.08	1.84	2.00	0.94	2.08
50	63.0	1131	f	24.5	16.1	3.10	1.69	5.04	2.14	2.26
50	42.0	1216	f	24.8	16.0	-----	-----	5.04	1.88	2.27
50	41.0	1220	hs	24.8	16.0	2.51	1.90	5.07	1.88	2.24

Cruise No. 12

Sampling Dates: 11,12,19 February 1981 (Julian dates 42,43, and 50)

Benthic Data

Julian Date	Station	Water Depth m	Core Section cm	Benthic Data															
				Chlorophyll a				Phaeopigments				Gravel			Sand		Silt/Clay		
				n	mean	s	mean	s	mean	s	mean	s	n	mean	s	mean	s	mean	s
					ug/q		ug/cm		ug/q		ug/cm		%		%		%		
50	40.0	2.1	0-1	3	11.63	7.35	4.34	2.87	32.52	9.22	11.92	3.95	2	5.0	----	14.9	----	80.2	----
50	39.0	1.8	0-1	4	5.31	3.80	1.88	1.18	27.73	12.85	10.33	4.37	3	2.3	1.1	11.4	1.8	86.4	1.7
50	38.1	0.8	0-1	4	7.62	3.79	2.62	1.33	32.02	2.85	10.94	0.70	3	0.5	0.8	4.4	2.3	95.1	2.8
50	38.0	1.5	0-1	4	5.52	1.15	2.19	0.49	25.78	2.17	10.21	0.97	3	1.0	1.7	5.4	1.1	93.6	2.1
42	20.3	2.8	0-1	3	8.68	3.08	4.65	1.88	34.17	13.87	17.73	5.13	3	1.9	2.2	30.8	6.2	67.3	8.3
42	20.2	3.1	0-1	4	0.64	0.92	0.30	0.45	39.10	8.12	18.67	4.02	3	0.7	0.6	18.2	2.9	81.1	2.6
42	20.1	9.2	0-1	4	-0.08	0.46	-0.04	0.27	27.49	1.90	15.07	1.74	3	6.6	6.1	30.4	4.1	63.0	6.0

Cruise No. 12

Sampling Dates: 11, 12, 19 February 1981 (Julian dates 42, 43, and 50)

Julian Date	Station	Time	Tide	Water Column Data						
				Salinity	Temperature	Discrete Chlorophyll a	Discrete Phaeopigments	Calculated Chlorophyll a	Measured Extinction Coefficient	Calculated Extinction Coefficient
				psu	C	ug/L	ug/L	ug/L	/m	/m
50	40.0	1226	hs	25.4	15.7	-----	-----	5.04	1.88	3.36
50	39.0	1235	hs	24.2	16.4	3.68	1.70	4.89	2.14	3.21
50	38.1	1247	hs	22.5	15.8	9.75	2.31	5.17	3.00	3.41
50	38.0	1241	hs	23.0	15.9	5.55	2.07	4.43	2.73	3.40
42	20.3	1524	f	24.4	13.6	-----	-----	1.86	1.00	1.99
42	20.2	1510	f	22.5	13.3	-----	-----	1.84	1.25	2.00
42	20.1	5.01	f	22.0	13.1	-----	-----	1.74	1.36	2.00

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