

PARTICULATE CARBON AND NITROGEN AND SUSPENDED PARTICULATE MATTER  
IN THE SACRAMENTO RIVER AT RIO VISTA, CALIFORNIA,  
JANUARY 3 - MAY 26, 1983 AND OCTOBER 31, 1983 - NOVEMBER 29, 1984

By Stephen W. Hager

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San Francisco Bay estuary

Menlo Park, California  
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U.S. DEPARTMENT OF THE INTERIOR

BRUCE BABBITT, Secretary

U.S. GEOLOGICAL SURVEY

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#### CONVERSION FACTORS

International System (SI) units are used in this report. Nutrient data in this report are in micromoles per liter (SI unit of concentration is moles per cubic meter) and conversion factors to microgram per liter and moles per cubic meter are also given.

<u>Multiply</u>	<u>by</u>	<u>to obtain</u>
$\mu\text{m}$ (micrometers)	0.00003937	inches
mm (millimeters)	0.03937	inches
L (liters)	0.2642	gallons (U.S) <sub>2</sub>
kPa (kiloPascals)	0.147	pounds per in <sup>2</sup>

for N;

$\mu\text{M}$ (microMolar, micromoles per liter)	14.01	$\mu\text{g}$ N per liter
	0.001	moles per m <sup>3</sup>

for C;

$\mu\text{M}$ (microMolar, micromoles per liter)	12.01	$\mu\text{g}$ C per liter
	0.001	moles per m <sup>3</sup>

#### TRADE NAMES

The use of brand or trade names in this report is for identification purposes only and does not constitute endorsement by the U.S. Geological Survey.

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ABSTRACT

Particulate matter was collected at Rio Vista, California, in two study periods; the first, January 3 - April 29, 1983; the second October 31, 1983 - November 29, 1984. Concentrations of suspended particulate matter were measured gravimetrically on silver membrane filters. The pooled standard deviation on replicated samples was 1.4 milligrams per liter, giving a coefficient of variation of 5.7 percent. Concentrations of particulate carbon and nitrogen were measured using a Perkin-Elmer model 240C elemental analyzer to combust material collected on glass fiber filters. Refrigeration of samples prior to filtration was shown to have no discernable effects. Volume of sample filtered was shown to be a likely influence on precision of duplicate analyses. Median deviations between duplicates for carbon were 5.4 percent during the first study period and 8.9 percent during the second. For nitrogen, median deviations were 4.9 percent and 7.2 percent respectively. This report presents the data for concentrations of suspended particulate material, the duplicate analyses for particulate carbon and nitrogen, and the volumes of sample filtered for the particulate carbon and nitrogen analyses for both studies. Not all samples collected during the second study have been analyzed for particulate carbon and nitrogen.

## INTRODUCTION

In order to evaluate the trophic state of an estuary, it is necessary to characterize the inputs of particulate organic nitrogen and carbon by sources other than in-estuary primary production (Smith and Mackenzie, 1987), including freshwater inflows. The Sacramento River supplies much of the particulate material entering northern San Francisco Bay, (Arthur and Ball, 1979; Krone, 1979), particularly during winter and spring high-flow periods. To quantify this source, we have measured the concentrations of particulate nitrogen and carbon and suspended particulate matter at Rio Vista on the tidal river. The first part of the study was done in the spring of 1983. The specific conductivity values, and alkalinity, dissolved nutrient and suspended particulate matter concentrations from this study were reported by Harmon and others (1986). The second part of the study extended from the late fall of 1983 to the late fall of 1984. The specific conductivity values, and alkalinity, dissolved nutrient and suspended particulate matter concentrations from this study were reported by Ota and others (1986).

### Acknowledgements

Particular thanks go to C.T. Henderson, Rio Vista drawbridge operator, whose sampling skill and dedication made this study possible.

## METHODS

Samples were collected from the Sacramento River at Rio Vista, California, approximately 100 km from the Pacific Ocean and about 60 km downstream from the city of Sacramento (fig. 1), between January 3 and May 26, 1983 (first study period) and between October 31, 1983 and November 29, 1984 (second study period). Samples were collected daily or twice daily from the ship-channel span of the highway bridge with a PC-72 sampler, using 1-liter linear polyethylene bottles. The sampler was operated to obtain an integrated sample from approximately 1 meter above the bottom to 1 meter below the surface of the river. More details concerning the sampler are given by Harmon and others (1986) and by Ota and others (1986). Samples were refrigerated for periods of up to one week before being returned to the laboratory for processing. At times of sample pick-up, replicate samples were collected to test for the effects of this storage, some being returned to the laboratory for immediate processing and one being stored in the refrigerator until the next pick-up.

After the samples arrived at the laboratory, duplicate aliquots of 4 to 100 mL of sample (depending on the perceived suspended sediment concentration) were filtered at about 13 kPa vacuum through precombusted (450°C for 2 to 4 hours) 13 mm glass fiber filters (Gelman Type A/E). Filters were then placed on dry 47mm glass fiber filters to remove residual water, folded, placed in nickel capsules (Perkin-Elmer part number 0240-0643), and stored in a desiccator over Drierite or magnesium perchlorate until analysis.

Analysis was by Perkin-Elmer Model 240C elemental analyzer, equipped with an autosampler. This analyzer combusts the sample at 950°C in an oxygen enriched helium carrier, reduces the combustion products with copper, sequentially removes water and carbon dioxide, and detects carbon dioxide and nitrogen using thermal conductivity detectors. Instrument blanks were run every 5 to 20 samples, and standards (acetanilide) every 15 to 25

samples. Blanks and standards were averaged for each daily run, and sample concentrations calculated as the sample reading minus the instrument zero reading and the instrument blank, divided by the standard factor.

Concentrations were also corrected for the carbon content of the glass fiber filters (filter blanks). During the first sampling period, the median value from analyses of 7 unused filters collected over the period of sampling ( $1.5 \mu\text{g C}$  per filter) was used. During the second sampling period, mean concentrations of three batches of filters were used to correct the carbon concentrations of samples for which that batch of filters was used. Their carbon contents were  $6.7$  ( $n=4$ ; one,  $15.7$ , discarded),  $8.5$  ( $n=5$ ) and  $9.1$  ( $n=8$ )  $\mu\text{g C}$  per filter. It is not known why there is an apparent increase in carbon content of the filters as the studies proceeded.

The median for the nitrogen filter blanks during the first study was  $-0.14 \mu\text{g N}$  per filter. During the second study, their nitrogen contents were  $-0.06$  ( $n=5$ ),  $0.14$  ( $n=5$ ), and  $0.16$  ( $n=8$ )  $\mu\text{g N}$  per filter. These were considered negligible and not subtracted from the sample readings.

Instrument blanks were stable and low through most of the period of analysis. Carbon blanks rarely varied from the mean value by more than  $0.5 \mu\text{g C}$  in both study periods. Nitrogen blanks rarely varied by more than  $0.3 \mu\text{g N}$  in the first study period and  $0.4 \mu\text{g N}$  in the second study period.

Standards were generally very reproducible during both studies (fig. 2). For carbon, the coefficient of variation for the standard factors was 1.0 percent during the first study period, and 1.4 percent during the second study period (fig. 3a). For nitrogen, the coefficient of variation for the standard factors was 2.3 percent during the first study period and 3.8 percent during the second study period (fig. 3b). There was no apparent trend with time in the factors.

Standard factors for carbon were relatively independent of the weight of the standard, with the slight upward tailing at the low weight end (fig. 4a) attributed to the filter blank of the glass fiber filter used to hold the standard in the capsule. There was a slight dependence of the standard factor for nitrogen on the weight of the standard (fig. 4b). If this trend is due to the instrument and not the standard itself, this could lead to nitrogen concentrations being slightly over-estimated (worst case, less than 10 percent; typical, about 4 percent) during these studies.

The concentration of suspended particulate matter (SPM) in each sample was measured gravimetrically. Sediment was collected on pre-weighed 47mm silver filters (Selas Flotronics FM-47), air dried and then reweighed. No replicates were taken in the first study, but the pooled standard deviation of 32 replicates in the second study was  $1.4 \text{ mg/L}$ , giving a coefficient of variation of 5.7 percent.

## FACTORS THAT MAY AFFECT RESULTS

### Effects of storage on samples

There is no clear pattern in comparisons of the particulate carbon (PC) concentrations of the fresh and stored samples (fig. 5a) or in the particulate nitrogen (PN) concentrations (fig. 5b). If the changes were caused by consumption and respiration of the particulate organic material or bacterial growth on the particulate organic material, stored samples would tend to have lower C:N ratios. Plots of the C:N ratios of the stored samples as compared with those of the fresh samples (fig. 5c) also show little consistent evidence for biologically-caused changes. Harmon and others (1986) and Ota and others (1986) also showed that dissolved ammonium

concentrations changed very little during storage of these samples. Plots of the suspended particulate matter (SPM) concentrations in samples processed on the day of sampling (fresh) and samples stored under refrigeration for up to 1 week before processing (stored) (not shown) suggest that not much variation was introduced by having used separate samples rather than a split of a single sample for this test. Although subtle changes might have gone undetected, it does not seem that there was any substantial degradation of the samples during storage.

#### Replication

In the first study period, there is a slight trend toward the second set of replicates being consistently higher than the first (Model II linear regression slope [95 percent confidence limits] 1.09 - 1.21). For nitrogen, there is also a small trend toward higher concentrations in the second replicate during the first study (slope, 1.02 - 1.09). Whether these differences have any significance is uncertain. During the second study period, no significant differences were seen (C slope, 0.94-1.14; N slope, 0.93 - 1.09).

Average deviations of duplicate samples for carbon were 8.2 percent during the first study period and 10.7 percent during the second study period. Median deviations were 5.4 percent for the first study period and 8.9 percent for the second (fig. 6). For nitrogen, average deviations were 7.6 percent for the first sampling period and 9.6 percent for the second. Median deviations were 4.9 percent during the first study period and 7.2 percent during the second (fig. 7):

The effects of aliquot size on replication are shown in figure 8 for carbon and figure 9 for nitrogen. There is no clear relation between filtration of low volumes of water and differences between duplicates.

#### Possible contamination

It is possible that the samples from the first study prior to January 29, 1983 were contaminated with oil from a nearby vacuum pump. Tests on filters deliberately exposed to the pump exhaust showed that this would affect carbon, but that nitrogen in the exhaust was below detection. To check the possibility that such contamination occurred, C : N ratios are plotted against sampling date in figure 10a. Although the very early data look suspect, typical C : N ratios began appearing as early as January 18. Another possible indicator of this contamination is a comparison of the replication data for carbon with those for nitrogen. The average difference between replicates for the period in question was 20.9 percent for carbon and 21.5 percent for nitrogen. Compared with the average differences for the whole first study (8.2 percent for carbon and 7.6 percent for nitrogen), there does not seem to be any support for the carbon contamination hypothesis. Therefore, although the samples prior to January 29 are suspect, they cannot be discarded. The relatively small volumes of water filtered and consequent low masses of carbon on the filters (fig. 10b) prior to January 29 would have made any kind of contamination (for example, filter blanks) more of a problem in these earliest samples. The earliest filter blanks were the most poorly characterized in these studies.

#### Particulate inorganic carbon

No direct estimates of the fraction of the measured PC that is particulate inorganic carbon (PIC) were made during these studies. However, we have recently estimated the concentration of PIC in a sample of water



taken at Rio Vista on January 27, 1993. Aliquots of the sample (about 180 mL per replicate) were filtered onto precombusted 47 mm GF/C filters. The filters were rinsed with 10 to 15 mL of distilled water, folded and placed into 20 mL glass scintillation vials, and air dried. Just prior to analysis, 10 mL of distilled water was added, and each filter disaggregated. Analysis involved addition of 0.1 mL of 10 percent phosphoric acid, and measurement of the quantity of carbon dioxide released with a Beckman Model 864 Infrared Analyzer. Standards were solutions of sodium bicarbonate. Blanks were run on unused filters.

We found  $9.9 \pm 0.8 \mu\text{M}$  inorganic carbon (95 percent confidence limit,  $n = 5$ ) in the sample, which contained  $202.6 \pm 1.3 \text{ mg/L}$  (mean deviation,  $n = 2$ ) of SPM. Concentrations of PC in samples from the two studies reported here which had concentrations of SPM in the range of 198 to 208 mg/L were typically  $212 \mu\text{M}$ . Thus, PIC would have constituted less than 5 percent of the PC in the samples from these studies if these samples were similar to that used in the test. Further measurements of PIC over a range of environmental conditions are warranted.

#### DATA TABLES

A list of the variables for which data are reported is given as table 1. In it are also given the abbreviations used in the data tables and units for each variable. The data are presented in tables 2 and 3. In each table, the date and time of sampling, the sample identifier, and the measured concentrations of SPM and the two replicates for PN and the two replicates for PC are presented. Not all of the PC and PN samples from the second study were analyzed, and they remain in desiccated storage. The table distinguishes between these samples and samples for which no value can be obtained.

The SPM data are the same as those presented by Harmon and others (1986) and Ota and others (1986), except that they did not present values for the stored replicates. Also, there were four instances where Ota and others (1986) used a different rounding protocol on the means of duplicated samples, and one typographical error (June 13, 1984, 1115 h. was given as 334.6 mg/L; correct value 34.6 mg/L).

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- Smith, S.V. and Mackenzie, F.T., 1987, The ocean as a net heterotrophic system: Implications from the carbon biogeochemical cycle: Global Biogeochemical Cycles, v.1, no. 3, p. 187-198.

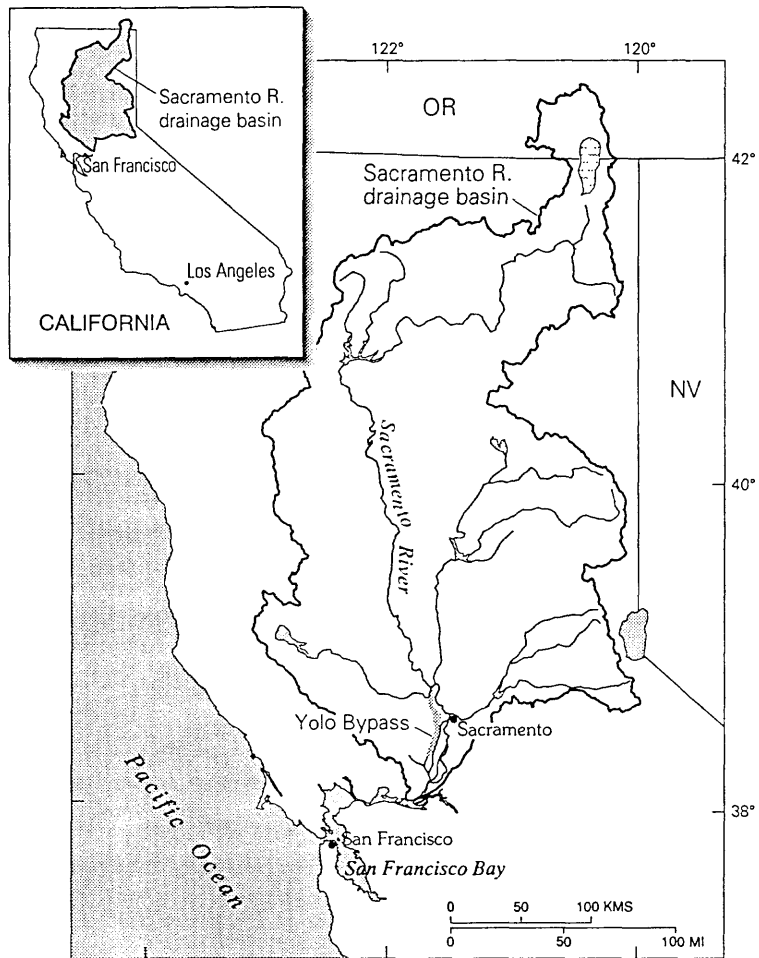


Figure 1. Map of the San Francisco Bay estuarine system showing the location of Rio Vista

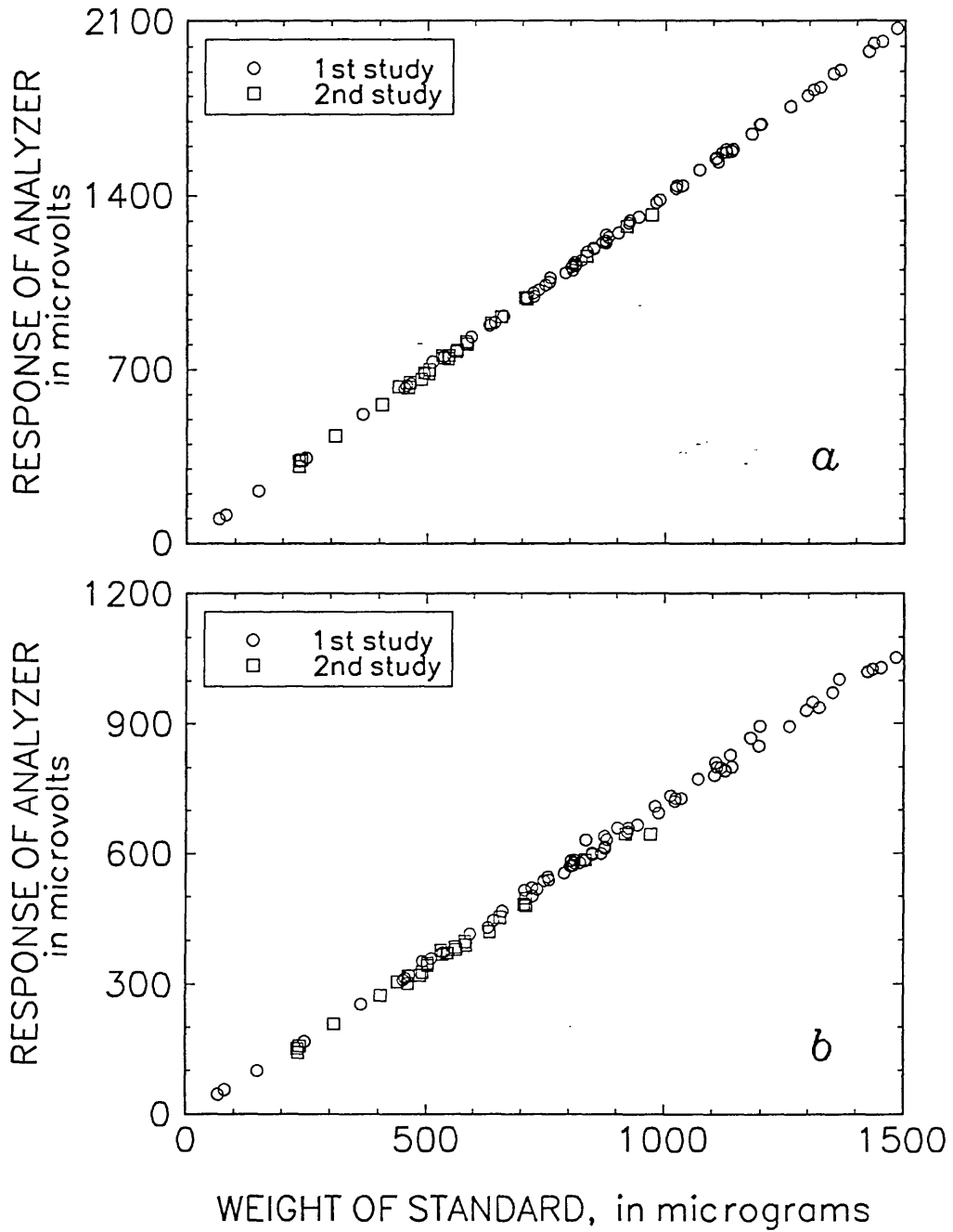


Figure 2. Instrument responses to standards as a function of the weights of the standards for both studies: a. carbon, b. nitrogen

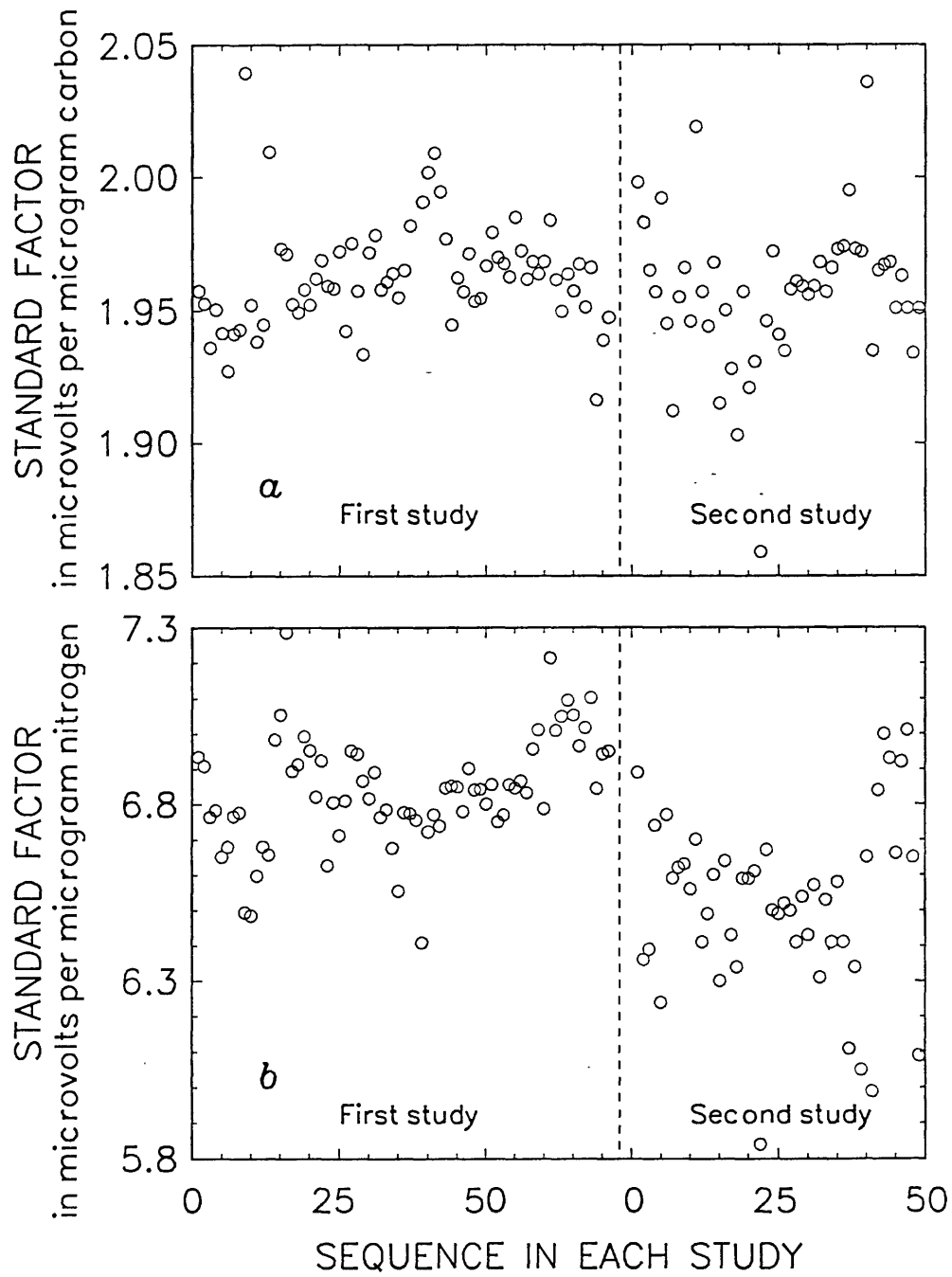


Figure 3. Time sequence of standard factors: a. carbon, b. nitrogen

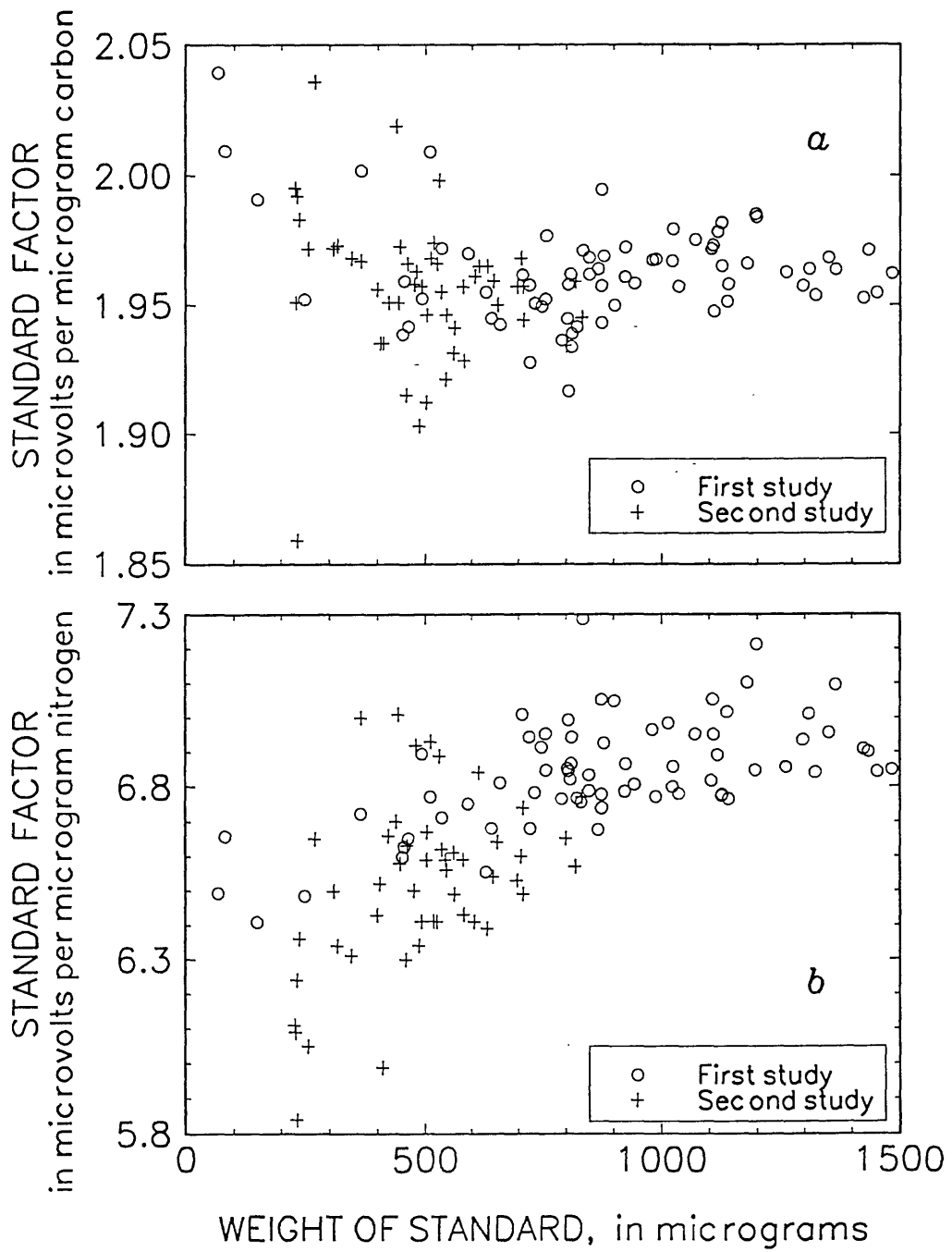


Figure 4. Standard factors as a function of the weight of the standard: a. carbon, b. nitrogen

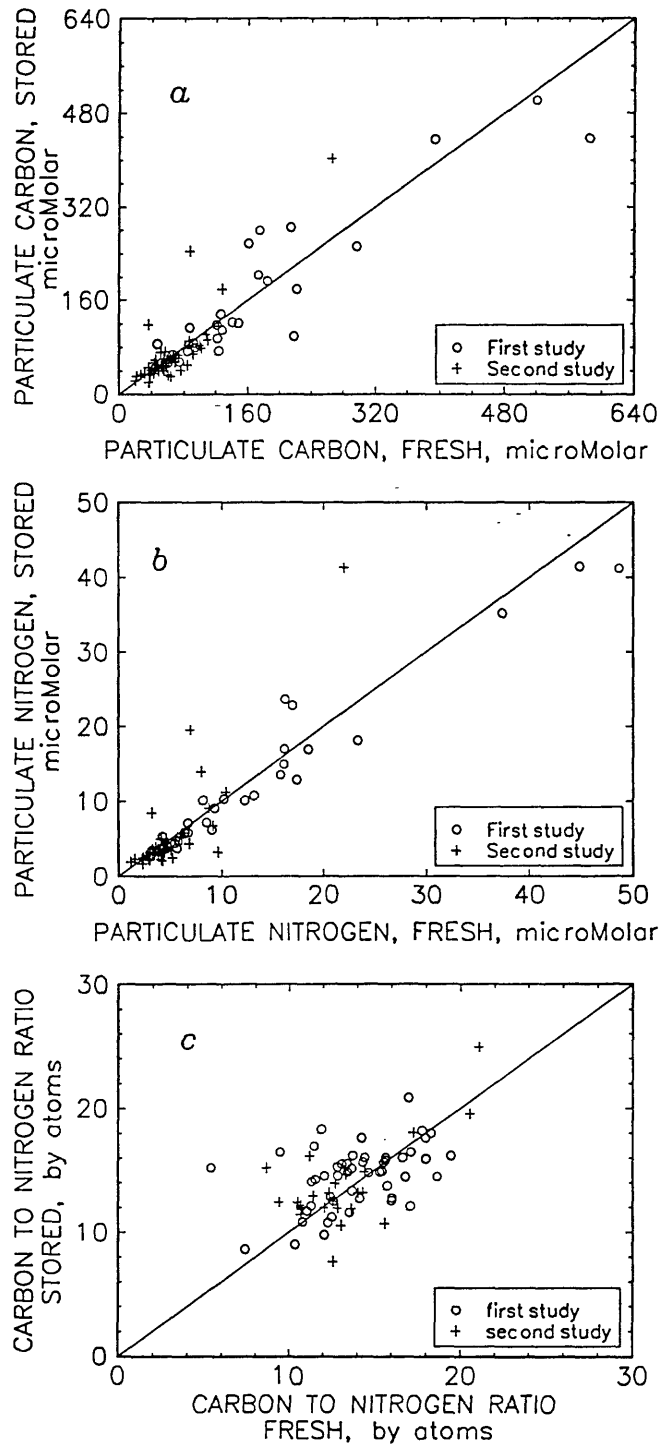


Figure 5. Comparison of freshly processed samples with samples stored before processing: a. concentration of carbon in the samples, b. concentration of nitrogen, c. C:N ratio

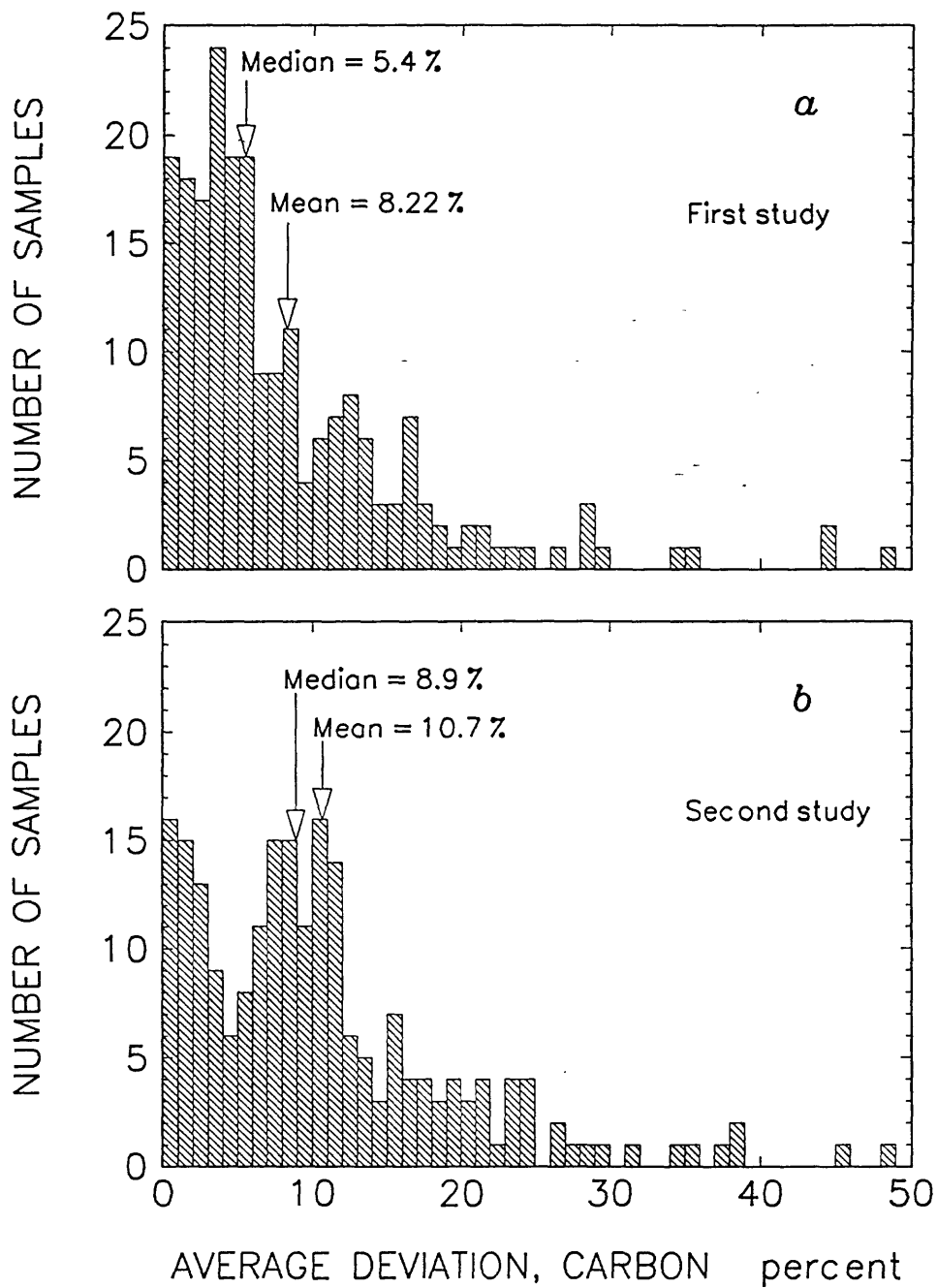


Figure 6. Frequency plot of the differences between duplicate samples for carbon, as a percentage of the mean concentration: a. January 3 - May 26, 1983, b. October 31, 1983 - November 29, 1984



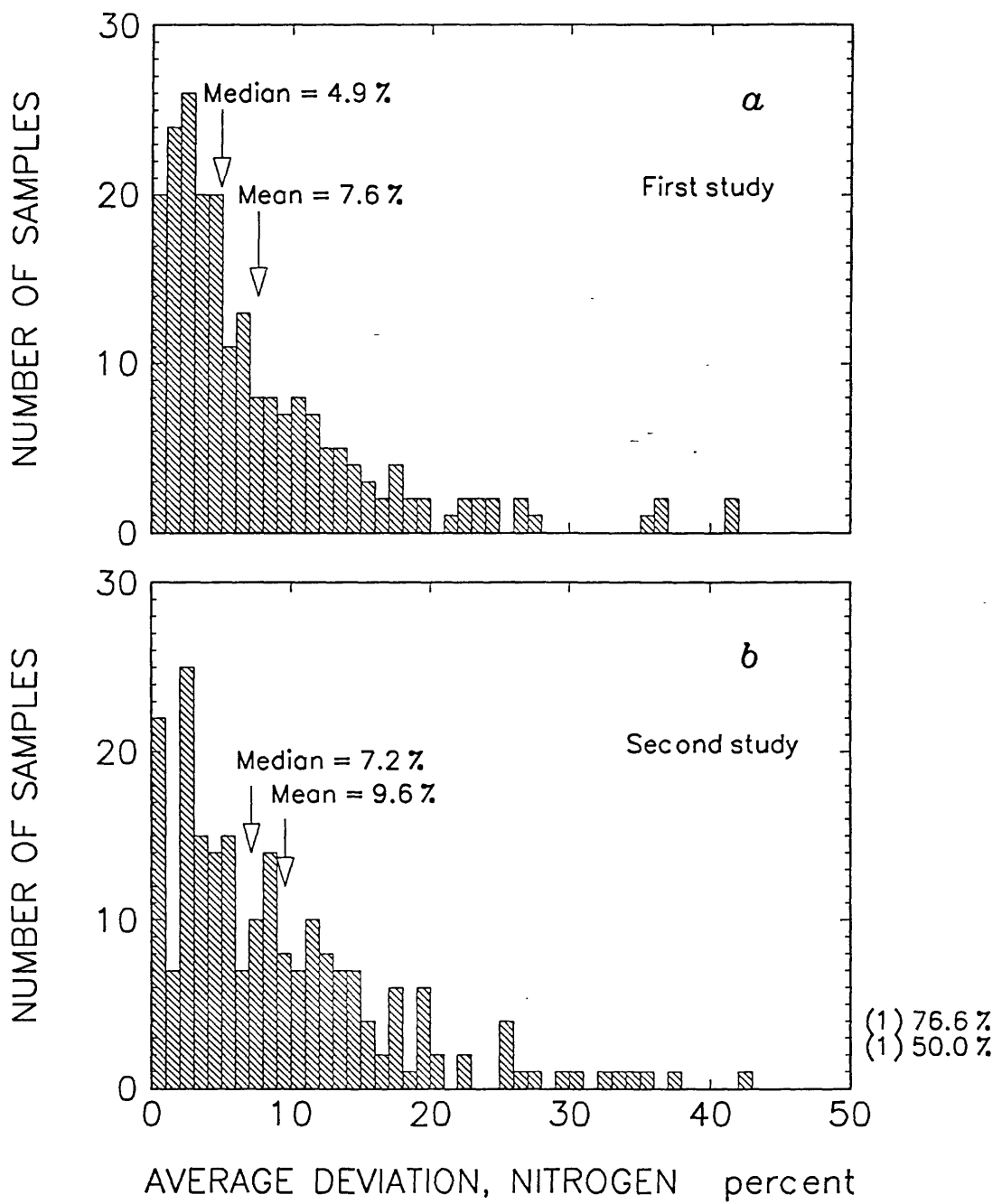


Figure 7. Frequency plot of the differences between duplicate samples for nitrogen, as a percentage of the mean concentration: a. January 3 - May 26, 1983, b. October 31, 1983 - November 29, 1984

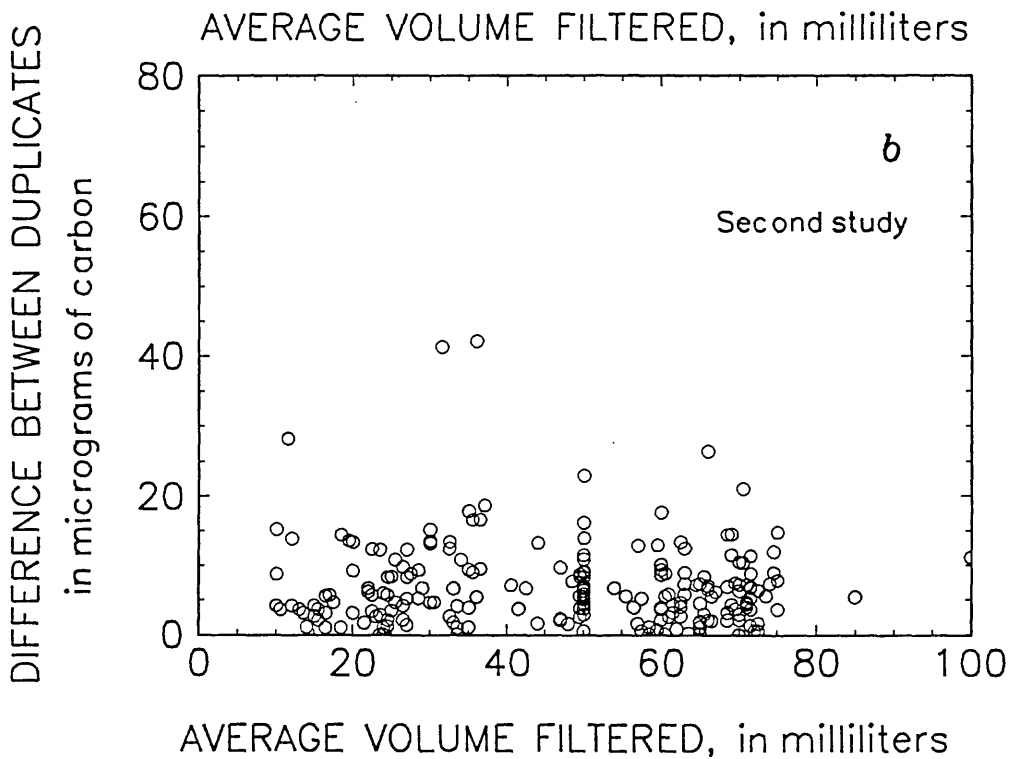
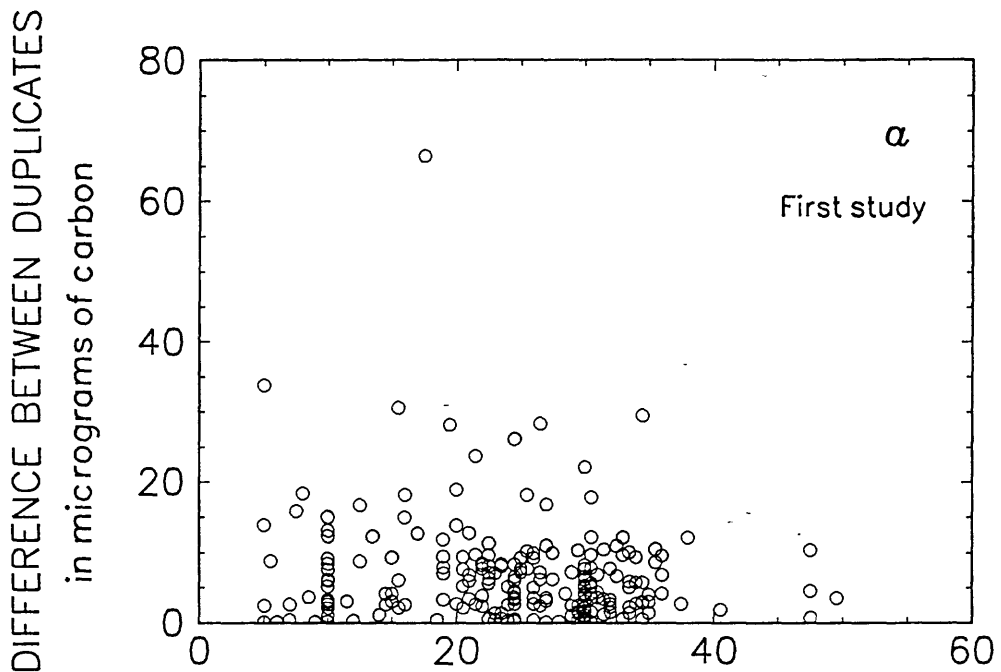


Figure 8. Differences between duplicates for carbon as a function of average volume filtered: a. January 3 - May 26, 1983, b. October 31, 1983 - November 29, 1984

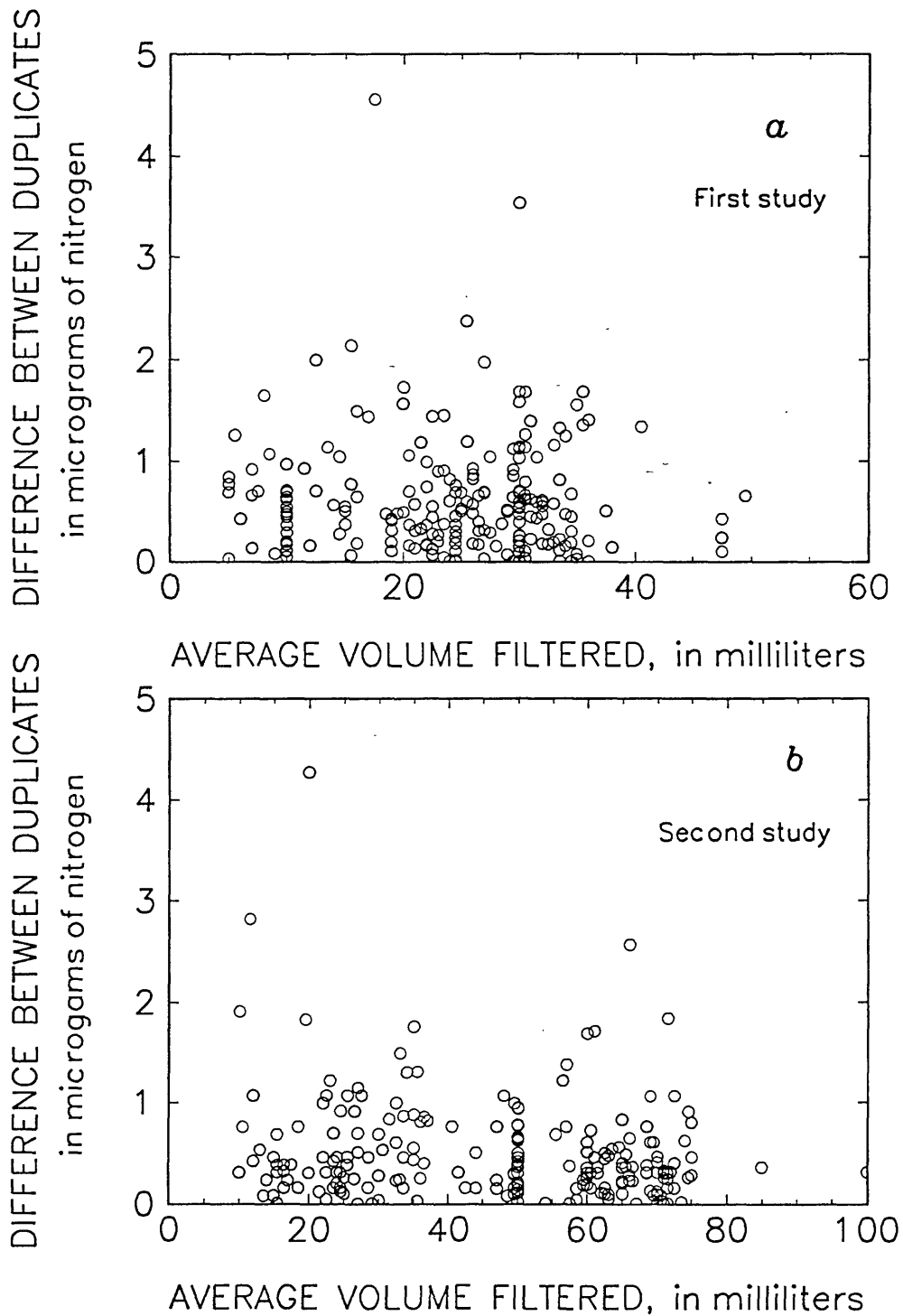


Figure 9. Differences between duplicates for nitrogen as a function of average volume filtered: a. January 3 - May 26, 1983, b. October 31, 1983 - November 29, 1984

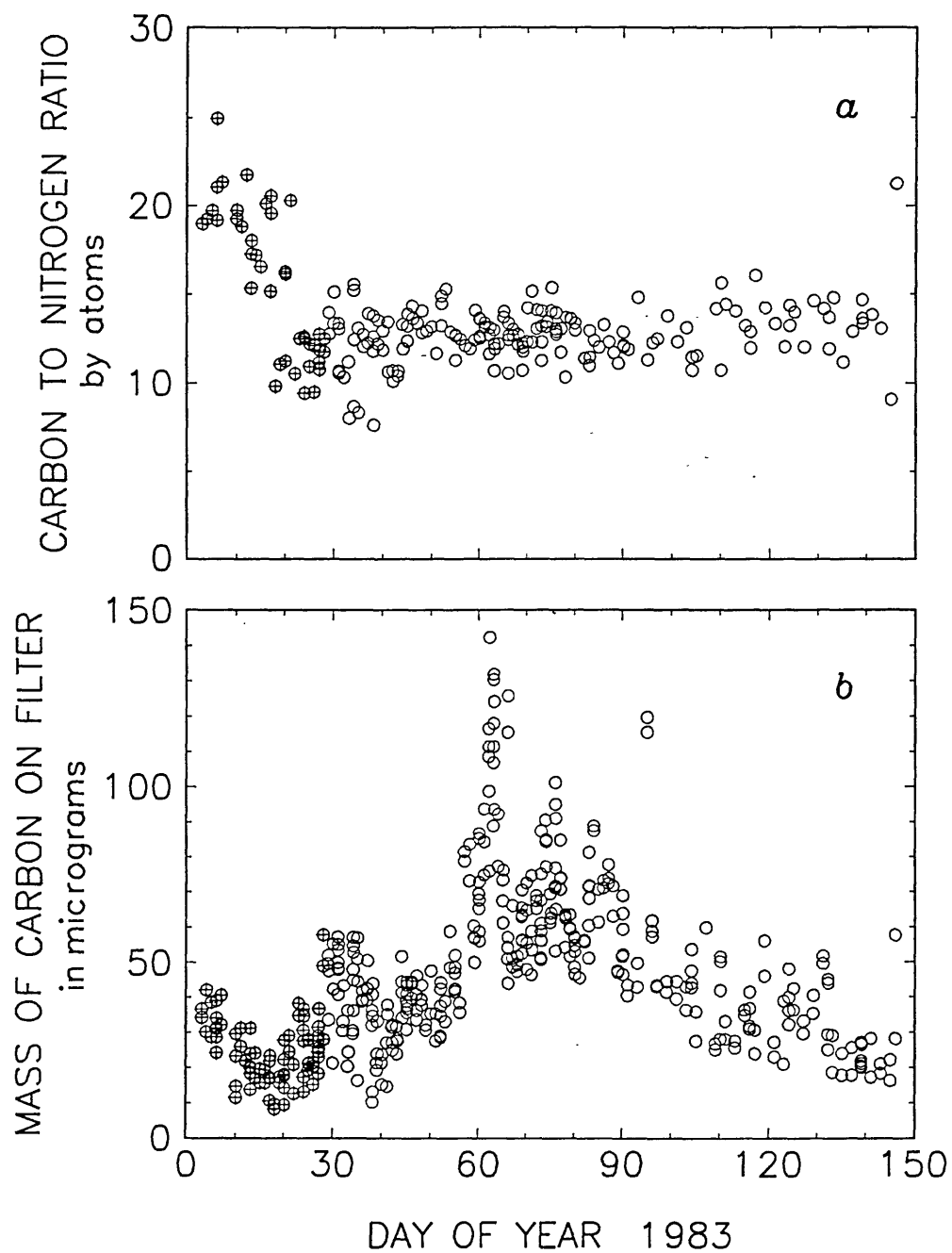


Figure 10. Possible indicators of carbon contamination early in the first study as a function of sampling day: a. C:N ratios, b. masses of carbon on the filters. The symbols with a plus sign in them are those for which carbon contamination is suspected

Table 1: Summary of measurements reported, abbreviations used in the data tables, and units for each variable.

VARIABLE	ABBREVIATION	UNITS
Date	DATE	day month year
Local time	TIME	hours (24 hour)
Unique sample identifier	IDENT	--
Concentration of suspended particulate material	SPM	milligrams per liter, mg/L
Concentration of particulate nitrogen, first replicate	PN1	microMolar, $\mu\text{M}$
Concentration of particulate nitrogen, second replicate	PN2	microMolar, $\mu\text{M}$
Concentration of particulate carbon, first replicate	PC1	microMolar, $\mu\text{M}$
Concentration of particulate carbon, second replicate	PC2	microMolar, $\mu\text{M}$
Volume of sample filtered for PC and PN, first replicate	VOL1	milliliters, mL
Volume of sample filtered for PC and PN, second replicate	VOL2	milliliters, mL

Table 2: Data for particulate material at Rio Vista; 03 January 1983 to 26 May 1983

[ -- indicates that the replicate either was not taken, was lost, or was deleted from the record based on quality control considerations.]

DATE	TIME	IDENT	Concentrations						VOL1 --- mL ---	VOL2 ---
			SPM mg/L	PN1 -----	PN2 microMolar	PC1 -----	PC2 -----			
03 JAN 1983	1200	1006B	38.4	5.02	6.75	109.2	114.3	28	25	
04 JAN 1983	750	7	40.7	7.55	8.80	175.2	139.7	20	18	
05 JAN 1983	735	8	32.4	6.97	6.21	145.8	114.2	22	21	
06 JAN 1983	730	9	28.0	5.91	5.92	123.2	103.9	21	23	
06 JAN 1983	1200	1009A	24.8	5.81	5.69	130.4	112.1	20	18	
06 JAN 1983	1200	1009B	27.6	4.48	4.95	123.3	112.2	23	29	
07 JAN 1983	725	10	36.8	5.00	8.00	116.3	161.1	23	21	
10 JAN 1983	755	13	17.6	5.23	4.97	98.9	97.5	25	20	
10 JAN 1983	1200	1013A	--	1.85	4.00	58.9	56.6	21	17	
11 JAN 1983	800	14	21.2	6.37	4.14	94.2	103.9	23	25	
12 JAN 1983	744	15	29.6	2.93	3.94	73.0	76.6	25	24	
13 JAN 1983	730	16	25.6	3.18	4.34	65.3	50.1	26	23	
13 JAN 1983	1200	1016A+B	19.6	3.49	7.33	78.9	108.2	21	24	
13 JAN 1983	1200	1016C	--	3.92	4.89	63.7	95.1	24	21	
14 JAN 1983	740	17	26.4	3.64	5.18	64.4	87.3	22	23	
15 JAN 1983	715	18	24.4	3.98	4.11	62.7	71.2	21	23	
16 JAN 1983	715	19	19.2	3.05	2.90	54.9	64.7	24	25	
17 JAN 1983	722	20	18.4	3.49	4.50	53.5	67.7	27	21	
17 JAN 1983	1200	1020A	14.8	3.30	3.12	47.0	85.0	19	23	
17 JAN 1983	1200	1020B+C	18.0	3.62	3.30	70.2	65.3	26	28	
18 JAN 1983	725	21	12.8	3.35	3.31	32.3	33.2	25	21	
19 JAN 1983	730	22	10.4	3.14	5.35	43.9	49.9	30	29	
20 JAN 1983	715	23	17.2	4.09	4.30	84.7	51.8	22	23	
20 JAN 1983	1200	1023A+B	16.0	4.26	4.14	39.4	54.9	20	27	
20 JAN 1983	1200	1023C	18.0	4.75	5.85	65.9	105.2	23	22	
21 JAN 1983	745	24	18.0	5.70	3.45	110.0	75.7	22	27	
22 JAN 1983	725	25	16.8	6.10	4.81	72.6	42.0	24	25	
23 JAN 1983	720	26	33.6	6.02	9.98	96.4	103.4	33	28	
24 JAN 1983	743	27	44.0	8.96	9.37	109.1	121.6	28	21	
24 JAN 1983	1200	1027A	51.0	8.96	9.66	78.9	96.6	14	15	
24 JAN 1983	1200	1027B+	42.8	8.64	9.45	125.5	99.9	23	23	
25 JAN 1983	715	28-1	78.7	13.60	12.42	161.4	156.1	10	15	
25 JAN 1983	1530	28-2	82.7	13.07	14.01	148.6	147.0	12	12	
26 JAN 1983	700	29-1	77.3	12.20	15.18	106.2	153.2	12	15	
26 JAN 1983	1530	29-2	61.3	9.65	11.04	130.7	119.2	13	15	
27 JAN 1983	705	30-1	88.0	17.70	16.42	176.4	204.0	13	10	
27 JAN 1983	1200	1030A+B	158	14.19	18.21	172.9	175.4	14	15	
27 JAN 1983	1200	1030C	152	25.10	22.24	305.6	255.1	10	6	
27 JAN 1983	1605	30-2	132	11.21	27.37	136.5	354.2	14	6	
28 JAN 1983	715	31-1	518	66.93	70.74	814.7	801.2	5	6	
28 JAN 1983	1610	31-2	254	37.65	37.27	466.9	468.2	5	5	

continued.

03 January 1983 to 26 May 1983, continued.

Concentrations									
DATE	TIME	IDENT	SPM mg/L	PN1 -----	PN2 microMolar	PC1 -----	PC2 -----	VOL1 --- mL ---	VOL2 ---
29 JAN 1983	705	32-1	644	55.78	69.88	721.4	1031.7	6	4
29 JAN 1983	1615	32-2	452	48.11	57.97	560.2	791.4	5	5
30 JAN 1983	708	33-1	396	41.83	53.83	356.7	918.9	5	5
30 JAN 1983	1630	33-2	224	35.86	44.12	503.2	705.1	7	5
31 JAN 1983	658	34-1	358	42.99	38.82	495.0	595.6	9	8
31 JAN 1983	1200	1034A+B	396	43.14	46.58	503.9	666.6	8	6
31 JAN 1983	1200	1034C	354	39.74	43.10	415.8	458.7	10	10
31 JAN 1983	1605	34-2	333	35.56	34.16	403.1	340.4	10	10
01 FEB 1983	715	35-1	331	37.35	36.01	394.2	363.9	7	7
01 FEB 1983	1609	35-2	307	31.37	38.12	515.3	--	7	7
02 FEB 1983	653	36-1	208	23.53	34.01	212.4	431.6	8	7
02 FEB 1983	1605	36-2	192	27.89	28.51	226.4	226.7	9	9
03 FEB 1983	725	37-1	145	16.73	15.53	254.7	246.9	10	10
03 FEB 1983	1200	1037A+B	124	18.48	18.49	158.4	162.6	30	28
03 FEB 1983	1200	1037C	154	16.04	17.79	265.9	249.2	15	15
03 FEB 1983	1545	37-2	145	23.01	24.84	301.3	293.6	10	15
04 FEB 1983	10	38-1	136	16.64	16.28	192.9	237.2	22	20
04 FEB 1983	801	38-2	116	16.21	15.26	173.9	194.8	20	19
05 FEB 1983	15	39-1	94.0	15.11	12.53	181.6	170.2	18	19
05 FEB 1983	810	39-2	104	13.31	12.82	148.5	166.2	22	21
06 FEB 1983	15	40-1	82.0	14.12	12.41	163.4	161.3	20	22
06 FEB 1983	810	40-2	77.0	12.73	12.71	153.2	200.3	21	23
07 FEB 1983	10	41-1	92.5	16.34	16.13	167.1	215.5	16	14
07 FEB 1983	1200	1041A+B	81.5	16.04	18.63	192.4	243.9	15	15
07 FEB 1983	1200	1041C	76.5	9.41	16.33	110.5	85.8	10	10
07 FEB 1983	815	41-2	--	14.38	15.05	212.2	192.6	15	16
08 FEB 1983	12	42-1	116	13.60	14.37	161.4	178.6	10	10
08 FEB 1983	805	42-2	132	17.78	17.45	275.9	199.8	10	10
09 FEB 1983	20	43-1	95.0	10.46	15.39	127.5	178.6	10	10
09 FEB 1983	745	43-2	94.5	13.60	11.55	127.5	197.3	10	10
10 FEB 1983	703	44-1	107	10.46	15.53	123.2	225.6	10	10
10 FEB 1983	1610	44-2	--	11.77	11.59	122.0	126.0	24	25
11 FEB 1983	803	45-1	110	10.91	11.20	114.4	121.7	23	22
11 FEB 1983	1553	45-2	83.5	10.46	10.50	104.1	107.4	20	21
12 FEB 1983	755	46-1	88.5	9.41	10.78	99.8	110.0	20	24
12 FEB 1983	1603	46-2	86.5	9.55	9.80	99.7	106.2	23	22
13 FEB 1983	750	47-1	116	11.77	12.24	153.8	165.0	24	26
13 FEB 1983	1620	47-2	98.5	8.59	11.49	101.5	137.6	28	25
14 FEB 1983	810	48-1	97.5	8.59	10.10	106.1	124.3	28	26
14 FEB 1983	1200	1048A+B	106	9.76	10.63	123.0	129.0	30	28
14 FEB 1983	1200	1048C	99.5	10.32	10.26	142.6	128.5	22	20
14 FEB 1983	1605	48-2	84.0	7.57	8.80	105.4	121.4	29	28
15 FEB 1983	804	49-1	109	9.65	10.35	127.3	159.1	26	23
15 FEB 1983	1610	49-2	104	10.11	8.21	123.0	126.2	30	29

continued.

03 January 1983 to 26 May 1983, continued.

Concentrations									
DATE	TIME	IDENT	SPM mg/L	PN1 -----	PN2 microMolar	PC1 -----	PC2 -----	VOL1 --- mL ---	VOL2 ---
16 FEB 1983	756	50-1	78.5	8.37	7.70	93.4	121.4	30	28
16 FEB 1983	1615	50-2	79.0	7.84	10.89	107.6	142.3	28	27
17 FEB 1983	755	51-1	80.0	7.83	8.82	112.6	121.4	29	27
17 FEB 1983	1200	1051A+B	87.2	8.29	8.98	108.3	112.8	29	32
18 FEB 1983	755	52	51.2	6.66	6.01	81.0	82.4	33	31
19 FEB 1983	805	53	72.4	8.67	7.12	112.7	94.8	35	31
20 FEB 1983	805	54	66.0	7.42	6.59	74.0	89.0	31	33
21 FEB 1983	757	55	55.6	6.07	4.98	76.7	69.2	31	35
21 FEB 1983	1200	1055A+B	59.6	6.34	6.35	106.7	76.6	33	48
21 FEB 1983	1200	1055C	--	5.08	6.64	82.5	91.8	35	34
22 FEB 1983	805	56	55.6	5.16	6.27	76.5	98.0	36	33
23 FEB 1983	759	57	68.0	7.04	7.65	82.3	106.4	49	46
24 FEB 1983	755	58	59.2	7.19	6.70	81.3	75.0	48	47
24 FEB 1983	1200	1058A+B	60.0	7.09	6.28	86.5	82.4	50	49
24 FEB 1983	1200	1058C	54.5	5.91	5.68	73.3	73.7	48	47
25 FEB 1983	758	59	53.0	7.53	5.69	84.8	79.8	35	40
26 FEB 1983	758	60	154	15.48	17.07	188.3	204.9	36	32
27 FEB 1983	755	61	158	17.00	17.79	224.2	190.1	31	32
28 FEB 1983	752	62-1	93.5	12.09	12.55	153.2	152.1	31	33
28 FEB 1983	1605	62-2	89.5	9.98	10.35	138.4	147.6	30	32
01 MAR 1983	751	63-1	147	13.07	14.37	180.8	192.5	30	30
01 MAR 1983	1200	1063A+B	197	17.19	16.68	218.3	208.6	33	34
01 MAR 1983	1200	1063C	186	24.12	21.55	288.6	281.4	21	20
01 MAR 1983	1608	63-2	177	15.92	19.45	222.1	257.1	21	19
02 MAR 1983	755	64-1	267	25.53	26.70	327.9	369.4	19	19
02 MAR 1983	1605	64-2	232	28.02	26.92	371.4	350.9	21	20
03 MAR 1983	750	65-1	543	41.03	43.90	485.2	502.5	20	18
03 MAR 1983	1605	65-2	472	39.12	42.72	488.4	548.4	19	15
03 MAR 1983	2345	66-1	426	32.90	44.83	394.7	623.5	16	19
04 MAR 1983	755	66-2	446	40.07	38.31	523.5	492.6	17	15
04 MAR 1983	1200	1066A+B	471	45.59	51.76	548.8	491.2	20	20
04 MAR 1983	1200	1066C	593	41.97	40.51	516.6	488.3	21	19
04 MAR 1983	2340	67-1	774	52.22	45.55	645.6	518.9	16	15
05 MAR 1983	758	67-2	773	59.78	55.90	767.0	642.3	10	10
06 MAR 1983	805	68-1	659	44.58	41.05	610.3	560.6	10	10
06 MAR 1983	1608	68-2	636	38.50	43.07	508.6	633.7	10	10
07 MAR 1983	753	69-1	512	33.48	32.09	423.9	451.0	10	10
07 MAR 1983	1200	1069A+B	521	39.97	34.78	402.2	384.5	26	25
07 MAR 1983	1200	1069C	488	36.47	33.87	449.3	422.6	10	10
07 MAR 1983	1557	69-2	466	35.46	31.06	474.7	365.9	10	10
08 MAR 1983	756	70-1	391	33.63	30.46	403.9	405.0	10	10
08 MAR 1983	1605	70-2	377	24.45	22.34	283.5	323.5	15	17
09 MAR 1983	750	71-1	282	19.00	23.95	246.4	274.7	16	15
09 MAR 1983	1605	71-2	253	17.98	23.46	240.2	286.5	17	15

continued.



03 January 1983 to 26 May 1983, continued.

DATE	TIME	IDENT	Concentrations						VOL1 --- mL ---	VOL2 ---
			SPM mg/L	PN1 -----	PN2 microMolar	PC1 -----	PC2 -----			
10 MAR 1983	805	72-1	218	16.98	19.41	217.9	226.9	24	24	
10 MAR 1983	1200	1072A+B	206	14.94	17.36	175.7	170.2	30	31	
10 MAR 1983	1200	1072C	208	17.63	16.33	194.3	213.3	24	22	
10 MAR 1983	1615	72-2	188	16.52	17.52	174.6	225.8	25	26	
11 MAR 1983	755	73-1	168	16.17	14.24	179.4	194.5	30	31	
11 MAR 1983	1615	73-2	176	14.45	15.01	199.3	219.9	20	21	
12 MAR 1983	815	74-1	156	12.31	12.65	148.4	230.0	26	27	
12 MAR 1983	1610	74-2	148	13.65	11.78	143.6	168.7	31	29	
13 MAR 1983	759	75-1	141	14.32	12.13	175.0	169.9	31	33	
13 MAR 1983	1555	75-2	177	14.29	15.01	208.7	204.3	26	28	
14 MAR 1983	755	76-1	175	14.11	18.12	161.9	200.5	26	28	
14 MAR 1983	1200	1076A+B	172	15.81	15.71	215.5	226.9	29	32	
14 MAR 1983	1200	1076C	164	13.86	13.30	170.1	188.0	25	27	
14 MAR 1983	1555	76-2	177	16.71	13.30	195.6	173.0	25	27	
15 MAR 1983	750	77-1	266	20.76	21.10	259.8	289.6	27	26	
15 MAR 1983	1610	77-2	239	19.16	21.12	256.8	282.4	25	25	
16 MAR 1983	755	78-1	202	16.13	16.96	212.6	251.1	24	23	
16 MAR 1983	1605	78-2	172	15.90	13.37	212.6	236.5	25	22	
17 MAR 1983	805	79-1	245	20.38	18.45	246.2	258.9	24	23	
17 MAR 1983	1200	1079A+B	290	24.15	22.55	292.9	300.8	27	28	
17 MAR 1983	1200	1079C	245	15.75	20.53	201.0	304.4	22	21	
17 MAR 1983	1610	79-2	241	19.95	21.12	225.0	302.8	24	25	
18 MAR 1983	755	80-1	229	22.50	19.13	236.2	252.0	26	28	
18 MAR 1983	1555	80-2	194	19.24	18.47	245.1	246.3	24	25	
19 MAR 1983	803	81-1	160	18.39	18.12	187.9	188.4	24	28	
19 MAR 1983	1600	81-2	137	16.42	12.92	207.8	193.5	25	27	
20 MAR 1983	758	82-1	125	13.82	15.13	191.6	202.9	26	26	
20 MAR 1983	1558	82-2	103	11.90	14.73	171.8	189.8	25	26	
21 MAR 1983	803	83-1	99.0	12.03	11.63	157.0	158.6	29	30	
21 MAR 1983	1200	1083A+B	101	12.32	11.20	157.4	146.9	30	30	
21 MAR 1983	1200	1083C	106	--	12.39	--	139.2	31	29	
21 MAR 1983	1625	83-2	102	--	10.67	--	154.6	30	25	
22 MAR 1983	745	84	94.8	--	10.01	--	126.2	31	30	
23 MAR 1983	750	85	139	16.42	17.07	185.5	194.8	25	24	
24 MAR 1983	748	86	146	16.97	16.82	193.2	177.3	26	24	
24 MAR 1983	1200	1086A+B	142	15.89	16.36	182.9	185.8	31	32	
24 MAR 1983	1200	1086C	133	15.23	14.66	192.6	193.5	31	35	
25 MAR 1983	750	87	166	17.01	16.86	211.0	207.8	35	35	
26 MAR 1983	758	88	127	14.37	12.55	168.0	154.7	35	33	
27 MAR 1983	750	89	120	14.19	12.86	179.3	179.2	34	33	
28 MAR 1983	758	90	126	--	--	--	--	33	35	
28 MAR 1983	1200	1090A+B	129	14.25	15.14	170.5	190.3	36	34	
28 MAR 1983	1200	1090C	133	--	15.25	--	171.8	40	35	
29 MAR 1983	803	91	104	12.32	14.67	149.6	165.4	35	36	

continued.

03 January 1983 to 26 May 1983, continued.

DATE	TIME	IDENT	Concentrations						VOL1 --- mL ---	VOL2 ---
			SPM mg/L	PN1 -----	PN2 microMolar	PC1 -----	PC2 -----			
30 MAR 1983	749	92	80.0	10.26	10.35	116.2	111.8	34	35	
31 MAR 1983	755	93	69.5	9.99	9.72	113.0	139.7	38	38	
31 MAR 1983	1200	1093A+B	90.0	12.26	12.26	137.1	159.3	36	36	
31 MAR 1983	1200	1093C	107	10.88	9.30	131.4	110.3	33	35	
01 APR 1983	757	94	64.5	9.97	6.80	103.1	96.0	35	35	
03 APR 1983	758	95	64.5	7.62	6.81	101.8	111.7	35	37	
05 APR 1983	758	96	236	23.46	24.90	284.5	259.8	35	37	
06 APR 1983	1200	1096A+B	119	11.73	12.07	139.8	151.2	35	34	
06 APR 1983	1200	1096C	113	0.00	12.32	0.0	158.6	30	30	
07 APR 1983	810	97	94.8	9.92	9.32	120.2	119.1	30	30	
09 APR 1983	755	98	83.6	8.55	8.75	123.1	114.7	30	30	
11 APR 1983	802	99	100	10.26	8.63	123.1	109.2	30	30	
13 APR 1983	753	100	74.8	10.26	6.50	118.8	100.6	30	30	
14 APR 1983	1200	10100A+B	84.8	12.96	13.31	131.8	148.9	30	30	
14 APR 1983	1200	10100C	75.6	11.52	9.90	118.0	126.7	31	28	
15 APR 1983	805	101	66.8	6.30	8.97	76.5	99.3	30	30	
17 APR 1983	810	102	123	10.84	11.35	160.5	--	31	31	
19 APR 1983	759	103	35.2	5.25	4.90	69.5	74.1	30	30	
20 APR 1983	1200	10103A+B	90.0	7.12	9.24	112.5	143.0	31	30	
20 APR 1983	1200	10103C	84.0	5.95	14.37	78.0	139.5	30	30	
21 APR 1983	753	104	52.4	6.44	5.18	89.2	78.0	31	30	
23 APR 1983	803	105	63.6	4.55	5.95	70.9	76.5	30	30	
25 APR 1983	750	106	54.4	6.65	8.28	96.4	100.7	30	30	
26 APR 1983	1200	10106A+B	58.0	6.42	6.95	73.3	98.7	36	31	
26 APR 1983	1200	10106C	52.4	7.88	6.29	86.1	82.9	40	31	
27 APR 1983	745	107	42.8	4.74	3.96	64.5	75.1	31	34	
29 APR 1983	755	108	94.0	7.88	9.90	119.6	133.1	32	35	
01 MAY 1983	800	109	56.8	5.25	5.01	63.8	72.8	30	31	
03 MAY 1983	803	110	64.4	4.90	8.61	58.2	104.2	30	31	
04 MAY 1983	1200	10110A+B	74.8	10.50	6.50	133.2	110.5	30	30	
04 MAY 1983	1200	10110C	62.0	7.00	7.35	89.3	100.2	30	30	
05 MAY 1983	755	111	56.8	7.35	8.28	117.6	100.7	30	30	
07 MAY 1983	755	112	52.0	5.42	8.63	89.2	79.6	31	31	
09 MAY 1983	803	113	65.6	5.95	8.40	97.8	111.9	30	30	
11 MAY 1983	755	114	99.2	10.15	9.66	137.4	143.2	30	30	
12 MAY 1983	1200	10114A+B	85.6	8.40	9.66	124.7	122.0	30	30	
12 MAY 1983	1200	10114C	73.2	5.25	7.08	65.2	81.5	32	30	
13 MAY 1983	805	115	58.0	3.85	5.25	53.8	80.7	29	30	
15 MAY 1983	800	116	48.4	4.90	5.52	49.6	66.7	30	30	
17 MAY 1983	815	117	41.6	3.85	5.52	49.6	71.0	30	30	
19 MAY 1983	745	118	27.6	4.07	4.45	54.9	60.9	31	30	
19 MAY 1983	1200	10118A+B	65.2	5.60	5.60	73.7	75.5	30	30	
19 MAY 1983	1200	10118C	54.8	5.09	2.39	58.9	50.7	30	33	
21 MAY 1983	747	119	45.6	4.20	4.14	67.2	48.1	35	30	

continued.

03 January 1983 to 26 May 1983, continued.

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DATE	TIME	IDENT	Concentrations						
			SPM mg/L	PN1 -----	PN2 microMolar	PC1 -----	PC2 -----	VOL1 --- mL ---	VOL2 ---
23 MAY 1983	745	120	45.2	3.28	4.60	47.9	54.8	32	32
25 MAY 1983	755	121	28.0	5.09	5.48	54.3	41.2	34	33
26 MAY 1983	1000	10121A+B	72.4	4.50	5.28	140.8	66.8	34	35

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Table 3: Data for particulate material at Rio Vista; 31 October 1983 to 29 November 1984

[ na indicates that the replicate was taken, but not yet analyzed.  
 -- indicates that the replicate either was not taken, was lost, or was deleted from the record based on quality control considerations.]

DATE	TIME	IDENT	Concentrations.						VOL1 --- mL ---	VOL2 ---
			SPM mg/L	PN1 -----	PN2 microMolar	PC1 -----	PC2 -----			
31 OCT 1983	1300	10150A+B	15.6	na	5.04	na	58.2	79	80	
31 OCT 1983	1300	10150C	12.0	na	3.38	na	48.1	96	87	
01 NOV 1983	810	151	11.2	na	6.37	na	35.5	95	94	
02 NOV 1983	745	152	18.4	na	4.47	na	39.1	94	95	
03 NOV 1983	745	153	12.2	na	--	na	32.6	88	97	
04 NOV 1983	748	154	19.6	na	6.76	na	37.8	98	95	
05 NOV 1983	750	155	20.1	na	7.22	na	47.7	95	92	
06 NOV 1983	740	156	17.9	na	3.67	na	42.7	93	98	
07 NOV 1983	744	157	9.9	na	2.84	na	28.9	93	96	
08 NOV 1983	755	158	12.0	na	3.67	na	34.2	97	95	
08 NOV 1983	1300	10158A+B	12.5	na	2.89	na	37.9	100	98	
08 NOV 1983	1300	10158C	13.2	na	2.27	na	35.2	93	91	
09 NOV 1983	805	159	13.2	na	2.28	na	31.9	72	67	
10 NOV 1983	745	160	13.2	na	2.72	na	30.2	92	92	
11 NOV 1983	730	161	15.2	na	2.87	na	35.7	97	91	
12 NOV 1983	735	162	14.0	na	2.83	na	42.7	84	77	
13 NOV 1983	740	163	21.6	na	4.00	na	57.2	68	68	
14 NOV 1983	748	164	92.8	na	11.19	na	114.0	36	36	
14 NOV 1983	1300	10164A+B	68.0	na	3.23	na	36.6	43	42	
14 NOV 1983	1300	10164C	70.4	na	8.43	na	118.6	58	31	
15 NOV 1983	745	165	120.0	na	11.88	na	138.6	35	33	
16 NOV 1983	743	166	74.5	na	9.30	na	97.9	32	48	
17 NOV 1983	748	167	79.5	na	8.08	na	99.3	32	31	
18 NOV 1983	755	168	79.5	na	7.83	na	102.8	35	32	
19 NOV 1983	749	169	102.0	na	10.19	na	133.7	30	31	
20 NOV 1983	740	170	118.0	na	13.14	na	100.6	30	29	
21 NOV 1983	735	171	84.0	na	11.25	na	146.7	30	30	
21 NOV 1983	1200	10171A+B	98.0	na	8.75	na	123.6	57	56	
21 NOV 1983	1200	10171C	86.7	na	9.07	na	115.2	38	36	
22 NOV 1983	730	172	120.7	na	13.00	na	164.0	32	31	
23 NOV 1983	735	173	43.3	na	4.08	na	71.2	24	24	
24 NOV 1983	800	174	56.0	na	5.83	na	84.0	28	28	
25 NOV 1983	805	175	54.0	na	6.05	na	73.6	37	36	
28 NOV 1983	1300	10176A+B	106.7	8.71	9.33	122.5	151.1	30	28	
01 DEC 1983	745	177	66.7	7.26	4.28	63.3	35.1	27	28	
02 DEC 1983	744	178	62.0	5.86	6.15	52.6	66.9	26	23	
03 DEC 1983	750	179	44.0	4.36	3.63	34.2	55.2	25	24	
04 DEC 1983	742	180	62.7	5.90	8.07	83.7	107.6	24	27	
05 DEC 1983	750	181	72.0	8.05	5.44	76.2	94.6	23	28	
05 DEC 1983	1200	10181A+B	58.7	10.50	7.83	106.8	96.2	34	32	

continued.

31 October 1983 to 29 November 1984, continued.

Concentrations.									
DATE	TIME	IDENT	SPM mg/L	PN1 -----	PN2 microMolar	PC1 -----	PC2 -----	VOL1 ---	VOL2 mL ---
05 DEC 1983	1200	10181C	60.0	6.80	6.63	86.4	70.6	22	23
06 DEC 1983	730	182	62.7	6.68	7.26	90.0	110.4	24	24
07 DEC 1983	725	183	146.7	13.57	13.71	139.6	140.9	26	27
08 DEC 1983	720	184	54.0	6.04	6.53	52.6	53.4	23	20
09 DEC 1983	725	185	50.7	6.24	5.21	63.0	55.7	24	23
10 DEC 1983	715	186	44.0	5.35	5.68	53.2	55.7	26	23
11 DEC 1983	705	187	70.7	7.81	8.17	98.1	94.4	26	24
12 DEC 1983	710	188	110.7	9.80	8.05	124.3	85.5	24	23
12 DEC 1983	1100	10188A+B	63.3	6.87	8.79	88.0	90.4	28	26
12 DEC 1983	1100	10188C	62.7	--	19.60	--	245.0	16	15
13 DEC 1983	700	189	219.3	7.49	7.98	--	51.3	16	15
14 DEC 1983	700	190	304.7	--	17.82	--	128.2	10	11
15 DEC 1983	703	191	299.3	7.62	22.87	177.4	232.9	20	20
16 DEC 1983	710	192	239.3	7.78	9.74	118.0	117.0	21	19
17 DEC 1983	710	193	177.3	17.42	17.69	202.3	208.3	15	16
18 DEC 1983	715	194	118.0	9.19	10.25	157.6	163.4	16	17
19 DEC 1983	719	195	86.7	11.98	9.53	156.7	136.2	15	16
19 DEC 1983	1100	10195A+B	80.0	7.62	8.38	123.1	133.1	25	26
19 DEC 1983	1100	10195C	74.0	15.20	12.70	163.8	192.3	12	12
20 DEC 1983	705	196	70.0	8.79	5.86	108.5	85.5	13	13
21 DEC 1983	720	197	46.0	3.50	4.19	76.3	62.5	14	13
22 DEC 1983	710	198	36.0	8.79	6.53	108.5	88.3	13	15
23 DEC 1983	700	199	49.3	6.47	6.65	69.4	87.8	16	18
24 DEC 1983	710	200	38.0	6.61	5.44	70.2	74.8	14	16
25 DEC 1983	750	201	39.3	5.14	3.84	40.4	65.4	18	17
26 DEC 1983	700	202	70.0	11.21	10.11	--	116.0	17	14
27 DEC 1983	740	203	381.3	14.35	--	--	--	11	12
27 DEC 1983	1100	10203A+B	386.7	28.85	15.24	329.1	203.0	10	10
27 DEC 1983	1100	10203C	399.3	41.57	41.04	388.5	417.5	11	13
28 DEC 1983	740	204	415.3	40.38	--	477.2	--	12	12
29 DEC 1983	750	205	306.0	--	33.75	316.2	388.9	10	10
30 DEC 1983	725	206	283.3	13.16	32.67	117.5	341.9	12	11
31 DEC 1983	718	207	174.7	21.78	22.99	217.2	256.4	12	9
01 JAN 1984	715	208	171.3	18.51	20.69	179.5	213.7	10	10
02 JAN 1984	722	209	134.7	7.49	5.65	96.2	58.6	27	27
03 JAN 1984	730	210	104.0	12.34	10.16	125.4	148.2	15	15
03 JAN 1984	955	10210A+B	101.3	14.04	6.81	139.4	76.1	19	20
03 JAN 1984	955	10210C	101.0	11.57	10.89	112.2	90.5	17	16
04 JAN 1984	723	211	90.0	6.05	8.60	49.9	110.2	18	19
05 JAN 1984	720	212	57.5	6.12	6.41	74.8	75.4	16	17
06 JAN 1984	715	213	48.0	5.44	5.73	76.0	76.5	18	19
07 JAN 1984	720	214	41.0	3.48	6.35	61.5	92.6	25	24
08 JAN 1984	715	215	38.0	4.54	4.15	69.4	30.5	24	21
09 JAN 1984	715	216	39.5	4.54	5.21	60.5	63.2	24	23

continued.

31 October 1983 to 29 November 1984, continued.

Concentrations.									
DATE	TIME	IDENT	SPM mg/L	PN1 -----	PN2 microMolar	PC1 -----	PC2 -----	VOL1 ---	VOL2 mL ---
10 JAN 1984	705	217	41.0	4.95	5.03	106.8	87.1	22	26
10 JAN 1984	930	10217A+B	41.5	4.04	4.08	61.0	66.8	35	32
10 JAN 1984	930	10217C	41.0	0.52	3.92	28.5	32.5	21	25
11 JAN 1984	707	218	37.5	3.96	5.44	40.8	66.0	22	22
12 JAN 1984	703	219	50.7	3.92	8.71	49.6	85.5	25	20
13 JAN 1984	719	220	44.7	4.90	5.99	70.5	109.0	20	20
14 JAN 1984	707	221	56.0	4.08	5.44	112.2	112.2	24	24
15 JAN 1984	708	222	50.7	4.67	7.84	68.7	109.4	28	25
16 JAN 1984	704	223	38.7	3.11	4.13	48.8	73.7	28	29
17 JAN 1984	710	224	38.7	5.24	5.24	74.4	58.6	27	27
17 JAN 1984	1145	10224A+B	48.5	6.59	7.09	90.0	93.4	38	43
17 JAN 1984	1145	10224C	45.5	3.69	5.08	60.7	75.5	31	30
18 JAN 1984	715	225	46.0	3.81	5.44	38.5	51.3	30	30
19 JAN 1984	715	226	54.5	6.98	9.13	98.8	--	32	31
20 JAN 1984	735	227	46.5	4.20	5.44	51.3	67.0	35	30
21 JAN 1984	740	228	34.5	3.36	6.65	50.3	49.9	34	36
22 JAN 1984	740	229	37.5	4.64	7.38	86.7	59.3	34	31
23 JAN 1984	743	230	42.0	5.44	7.78	53.1	75.7	33	35
24 JAN 1984	744	231	40.5	6.24	7.47	65.4	50.1	32	35
24 JAN 1984	1130	10231A+B	37.3	4.70	7.92	35.0	58.3	22	22
24 JAN 1984	1130	10231C	44.1	4.48	7.10	47.8	52.0	34	23
25 JAN 1984	725	232	43.0	na	7.74	na	74.2	45	38
26 JAN 1984	735	233	45.0	--	6.81	--	64.1	48	32
27 JAN 1984	735	234	47.0	--	13.31	--	112.4	28	27
28 JAN 1984	735	235	69.5	9.58	10.89	88.9	91.6	25	28
29 JAN 1984	720	236	50.0	7.23	7.15	67.4	76.1	34	32
30 JAN 1984	735	237	46.5	6.75	8.64	71.8	85.5	25	29
31 JAN 1984	740	238	42.5	7.47	7.15	61.0	64.1	35	32
31 JAN 1984	1200	10238A+B	38.0	4.91	6.84	58.4	74.5	37	35
31 JAN 1984	1200	10238C	32.4	5.29	5.28	70.4	57.6	71	66
01 FEB 1984	708	239	34.4	4.83	5.36	56.6	68.7	71	61
02 FEB 1984	730	240	28.8	4.11	5.44	76.8	61.5	49	50
03 FEB 1984	735	241	33.6	5.11	5.14	59.3	72.6	49	50
04 FEB 1984	720	242	28.8	5.23	5.53	70.9	61.4	50	63
05 FEB 1984	740	243	30.0	5.12	4.26	69.1	59.8	68	69
06 FEB 1984	745	244	21.2	3.63	5.53	36.8	50.6	72	71
07 FEB 1984	750	245	17.6	3.89	4.20	55.6	64.1	70	70
07 FEB 1984	1200	10245A+B	26.8	5.00	4.44	54.9	57.4	74	76
07 FEB 1984	1200	10245C	28.8	3.27	4.62	91.4	53.3	50	50
08 FEB 1984	745	246	18.9	2.36	2.50	31.5	35.7	59	61
09 FEB 1984	730	247	16.0	2.45	1.63	32.6	25.6	61	60
10 FEB 1984	736	248	16.0	2.93	2.81	36.3	35.2	62	62
11 FEB 1984	725	249	12.8	2.84	2.18	44.6	34.8	64	65
12 FEB 1984	730	250	14.0	1.99	1.87	32.1	28.7	70	70

continued.

31 October 1983 to 29 November 1984, continued.

Concentrations.									
DATE	TIME	IDENT	SPM mg/L	PN1 -----	PN2 microMolar	PC1 -----	PC2 -----	VOL1 ---	VOL2 mL ---
13 FEB 1984	735	251	16.0	2.67	2.49	30.0	36.0	72	70
14 FEB 1984	738	252	22.5	3.72	3.48	47.0	57.0	69	72
14 FEB 1984	1200	10252A+B	17.0	--	4.14	51.6	52.4	72	71
14 FEB 1984	1200	10252C	19.2	3.51	2.97	50.7	47.9	64	66
15 FEB 1984	745	253	26.0	4.70	3.16	70.9	66.9	50	69
16 FEB 1984	723	254	48.4	6.01	5.78	84.6	95.9	48	49
17 FEB 1984	747	255	39.2	6.14	5.79	92.0	109.1	47	47
18 FEB 1984	758	256	36.0	6.86	4.79	96.6	91.4	46	50
19 FEB 1984	800	257	52.0	8.35	8.40	121.0	133.1	30	35
20 FEB 1984	745	258	28.4	5.56	4.40	72.7	69.1	47	47
21 FEB 1984	1200	259	30.0	4.26	4.41	68.8	72.2	46	42
21 FEB 1984	1200	10259A+B	42.0	6.36	5.82	119.5	99.4	45	43
21 FEB 1984	1200	10259C	43.2	6.11	5.44	89.6	94.6	41	42
22 FEB 1984	744	260	27.2	4.40	4.08	74.0	58.8	52	56
23 FEB 1984	735	261	18.8	2.81	2.94	60.7	42.1	62	63
24 FEB 1984	743	262	17.6	3.03	2.90	59.6	48.4	61	60
25 FEB 1984	733	263	18.0	1.98	3.51	42.0	57.2	55	59
26 FEB 1984	746	264	16.8	3.32	2.50	49.2	42.7	59	61
27 FEB 1984	747	265	21.6	3.78	3.92	55.0	58.1	49	50
28 FEB 1984	742	266	21.6	3.81	3.16	56.3	57.9	60	62
28 FEB 1984	1200	10266A+B	16.8	4.58	3.88	66.4	55.6	76	73
28 FEB 1984	1200	10266C	16.0	1.98	2.15	32.4	33.7	66	71
29 FEB 1984	748	267	20.4	2.33	2.33	61.9	37.8	71	70
01 MAR 1984	743	268	18.8	2.68	2.24	53.3	42.2	69	73
02 MAR 1984	720	269	21.6	2.44	2.44	47.2	39.6	67	67
03 MAR 1984	729	270	18.0	2.37	3.00	60.1	42.7	69	69
04 MAR 1984	720	271	--	2.09	2.21	31.0	38.4	73	69
05 MAR 1984	719	272	15.2	2.15	2.21	36.7	37.0	71	74
06 MAR 1984	725	273	15.6	2.21	2.15	35.3	34.3	69	71
06 MAR 1984	1200	10273A+B	24.8	3.09	3.45	54.1	57.0	60	60
06 MAR 1984	1200	10273C	22.8	2.72	3.03	60.5	59.6	60	61
07 MAR 1984	718	274	14.4	2.45	2.12	36.1	41.6	71	72
08 MAR 1984	705	275	14.4	1.97	1.66	32.6	33.2	72	72
09 MAR 1984	740	276	12.4	1.69	1.38	28.3	33.7	71	71
10 MAR 1984	716	277	15.6	2.11	2.39	44.0	38.0	67	73
11 MAR 1984	705	278	11.2	1.97	2.30	40.4	33.1	72	71
12 MAR 1984	731	279	12.0	1.81	1.99	35.6	31.9	72	71
13 MAR 1984	725	280	18.0	2.15	3.09	49.4	46.8	71	74
14 MAR 1984	733	281	19.6	2.88	3.37	54.7	56.6	68	71
14 MAR 1984	1200	10281A+B	17.6	2.45	2.97	44.5	51.8	71	66
14 MAR 1984	1200	10281C	18.4	2.80	2.68	45.8	53.9	70	73
15 MAR 1984	736	282	24.4	3.00	3.36	50.8	54.0	69	68
16 MAR 1984	745	283	28.4	3.25	4.20	66.7	69.0	57	57
17 MAR 1984	749	284	33.6	3.75	3.82	72.2	72.7	58	57

continued.

31 October 1983 to 29 November 1984, continued.

Concentrations.									
DATE	TIME	IDENT	SPM mg/L	PN1 -----	PN2 microMolar	PC1 -----	PC2 -----	VOL1 ---	VOL2 mL ---
18 MAR 1984	710	285	36.0	4.14	4.79	77.8	78.6	50	50
19 MAR 1984	738	286	51.2	4.36	4.79	82.0	73.5	50	50
20 MAR 1984	730	287	39.2	4.41	4.05	97.7	82.5	42	43
21 MAR 1984	742	288	25.6	na	na	na	na	43	42
22 MAR 1984	734	289	29.2	na	na	na	na	50	50
22 MAR 1984	1200	10289A+B	48.6	5.31	5.77	95.5	103.7	48	46
22 MAR 1984	1200	10289C	45.2	4.20	5.31	79.0	88.6	50	50
23 MAR 1984	738	290	17.6	na	na	na	na	70	70
24 MAR 1984	732	291	15.2	na	na	na	na	79	78
25 MAR 1984	725	292	19.2	na	na	na	na	79	76
26 MAR 1984	735	293	18.0	na	na	na	na	67	70
27 MAR 1984	720	294	26.4	na	na	na	na	70	69
28 MAR 1984	715	295	22.8	na	na	na	na	69	72
29 MAR 1984	718	296	23.6	na	na	na	na	62	62
29 MAR 1984	1200	10296A+B	22.4	4.08	4.09	84.2	68.2	68	70
29 MAR 1984	1200	10296C	20.4	2.87	2.69	34.9	45.8	73	67
30 MAR 1984	717	297	33.2	na	na	na	na	60	62
31 MAR 1984	715	298	25.6	na	na	na	na	60	62
01 APR 1984	750	299	16.4	na	na	na	na	65	64
02 APR 1984	703	300	15.2	na	na	na	na	72	68
03 APR 1984	710	301	22.4	na	na	na	na	83	81
04 APR 1984	713	302	24.4	na	na	na	na	64	66
05 APR 1984	715	303	16.0	na	na	na	na	66	62
05 APR 1984	1100	10303A+B	30.2	3.10	4.09	43.1	46.9	68	70
05 APR 1984	1100	10303C	26.0	3.74	4.15	41.1	47.3	62	64
06 APR 1984	718	304	13.2	na	na	na	na	70	72
07 APR 1984	710	305	12.4	na	na	na	na	72	74
08 APR 1984	710	306	13.6	na	na	na	na	79	77
09 APR 1984	714	307	16.4	na	na	na	na	68	68
10 APR 1984	720	308	16.8	na	na	na	na	72	72
11 APR 1984	715	309	22.4	na	na	na	na	66	64
12 APR 1984	720	310	23.2	na	na	na	na	64	60
12 APR 1984	1015	10310A+B	23.4	3.79	4.16	38.0	47.8	76	74
12 APR 1984	1015	10310C	20.8	3.01	3.59	30.2	41.3	66	65
13 APR 1984	745	311	28.8	na	na	na	na	50	50
14 APR 1984	738	312	25.6	na	na	na	na	50	50
15 APR 1984	715	313	27.6	na	na	na	na	50	50
16 APR 1984	705	314	31.6	na	na	na	na	50	50
17 APR 1984	743	315	27.6	na	na	na	na	50	50
18 APR 1984	740	316	25.2	na	na	na	na	58	50
19 APR 1984	730	317	17.2	na	na	na	na	66	63
19 APR 1984	1045	10317A+B	32.2	3.99	4.88	45.8	56.2	50	50
19 APR 1984	1045	10317C	34.0	3.75	4.67	64.6	78.4	50	50
20 APR 1984	735	318	18.8	na	na	na	na	68	65

continued.



31 October 1983 to 29 November 1984, continued.

Concentrations.									
DATE	TIME	IDENT	SPM mg/L	PN1 -----	PN2 microMolar	PC1 -----	PC2 -----	VOL1 ---	VOL2 mL ---
21 APR 1984	733	319	16.8	na	na	na	na	68	67
22 APR 1984	735	320	14.8	na	na	na	na	67	67
23 APR 1984	740	321	23.2	na	na	na	na	59	61
24 APR 1984	737	322	18.0	na	na	na	na	70	68
25 APR 1984	730	323	18.0	na	na	na	na	67	67
25 APR 1984	1030	10323A+B	18.6	3.11	3.94	56.9	61.5	50	70
25 APR 1984	1030	10323C	18.4	2.84	3.61	44.9	48.6	70	50
26 APR 1984	715	324	20.4	na	na	na	na	70	50
27 APR 1984	715	325	22.8	na	na	na	na	70	50
28 APR 1984	710	326	24.8	na	na	na	na	50	50
29 APR 1984	711	327	30.8	na	na	na	na	50	50
30 APR 1984	708	328	32.8	na	na	na	na	50	50
01 MAY 1984	705	329	34.0	na	na	na	na	50	50
02 MAY 1984	705	330	22.8	na	na	na	na	70	62
03 MAY 1984	705	331	18.8	na	na	na	na	70	62
03 MAY 1984	945	10331A+B	23.2	na	na	na	na	50	50
03 MAY 1984	945	10331C	--	8.43	8.33	78.9	69.5	60	65
04 MAY 1984	710	332	18.4	na	na	na	na	62	62
05 MAY 1984	703	333	18.4	na	na	na	na	66	66
06 MAY 1984	714	334	14.8	na	na	na	na	67	68
07 MAY 1984	715	335	15.6	na	na	na	na	65	66
08 MAY 1984	720	336	13.2	na	na	na	na	65	68
09 MAY 1984	725	337	16.0	na	na	na	na	66	68
10 MAY 1984	710	338	26.5	na	na	na	na	66	67
10 MAY 1984	915	10338A+B	16.0	3.87	4.42	49.2	57.5	63	60
10 MAY 1984	915	10338D	16.8	3.03	2.99	39.7	47.9	62	64
11 MAY 1984	730	339	21.6	na	na	na	na	59	59
12 MAY 1984	740	340	21.2	na	na	na	na	50	49
13 MAY 1984	743	341	34.4	na	na	na	na	50	50
14 MAY 1984	742	342	28.4	na	na	na	na	50	50
15 MAY 1984	743	343	31.2	na	na	na	na	50	50
16 MAY 1984	747	344	26.4	na	na	na	na	50	-9
17 MAY 1984	738	345	18.8	na	na	na	na	58	60
17 MAY 1984	1100	10345A+B	30.8	4.21	5.31	67.9	79.2	50	50
17 MAY 1984	1100	10345C	27.2	3.75	5.09	54.4	77.5	50	50
18 MAY 1984	735	346	17.6	na	na	na	na	61	60
19 MAY 1984	740	347	17.6	na	na	na	na	67	62
20 MAY 1984	748	348	14.8	na	na	na	na	62	64
21 MAY 1984	740	349	16.8	na	na	na	na	59	57
22 MAY 1984	735	350	15.2	na	na	na	na	61	58
23 MAY 1984	748	351	15.6	na	na	na	na	57	59
23 MAY 1984	1100	10351A+B	15.0	2.77	3.21	35.4	41.5	72	76
23 MAY 1984	1100	10351C	14.8	1.72	2.57	33.2	32.3	64	66
24 MAY 1984	720	352	18.8	na	na	na	na	50	53

continued.

31 October 1983 to 29 November 1984, continued.

Concentrations.									
DATE	TIME	IDENT	SPM mg/L	PN1 -----	PN2 microMolar	PC1 -----	PC2 -----	VOL1 ---	VOL2 mL ---
25 MAY 1984	729	353	18.4	na	na	na	na	58	61
26 MAY 1984	735	354	20.0	na	na	na	na	59	59
27 MAY 1984	748	355	25.2	na	na	na	na	50	50
28 MAY 1984	720	356	24.8	na	na	na	na	50	50
29 MAY 1984	730	357	26.0	na	na	na	na	50	50
30 MAY 1984	745	358	26.4	na	na	na	na	49	50
30 MAY 1984	1100	10358A+B	26.2	4.44	4.46	45.8	64.8	50	50
30 MAY 1984	1100	10358C	27.6	2.94	3.36	34.0	46.9	60	60
31 MAY 1984	715	359	28.0	na	na	na	na	60	59
01 JUN 1984	715	360	22.8	na	na	na	na	60	60
02 JUN 1984	725	361	26.8	na	na	na	na	55	60
03 JUN 1984	718	362	18.0	na	na	na	na	65	65
04 JUN 1984	719	363	15.6	na	na	na	na	65	65
05 JUN 1984	724	364	16.4	na	na	na	na	65	65
06 JUN 1984	720	365	19.6	na	na	na	na	65	65
06 JUN 1984	1145	10365A+B	21.6	3.25	3.24	43.2	44.0	58	59
06 JUN 1984	1145	10365C	22.8	3.50	3.78	53.1	54.9	60	59
07 JUN 1984	716	366	20.0	na	na	na	na	59	60
08 JUN 1984	735	367	24.8	na	na	na	na	50	50
09 JUN 1984	735	368	28.4	na	na	na	na	50	50
10 JUN 1984	740	369	28.4	na	na	na	na	55	54
11 JUN 1984	745	370	33.2	na	na	na	na	55	54
12 JUN 1984	742	371	32.0	na	na	na	na	50	50
13 JUN 1984	740	372	39.2	na	na	na	na	50	50
13 JUN 1984	1115	10372A+B	34.6	4.75	4.25	67.5	72.4	49	50
13 JUN 1984	1115	10372C	28.8	3.31	3.82	46.7	64.7	50	50
14 JUN 1984	717	373	33.6	na	na	na	na	50	50
15 JUN 1984	725	374	28.4	na	na	na	na	50	50
16 JUN 1984	744	375	22.8	na	na	na	na	60	60
17 JUN 1984	710	376	19.2	na	na	na	na	55	55
18 JUN 1984	720	377	17.6	na	na	na	na	60	60
19 JUN 1984	735	378	16.0	na	na	na	na	75	75
20 JUN 1984	720	380	16.4	na	na	na	na	75	75
20 JUN 1984	1115	10380A+B	18.2	2.56	2.78	32.0	41.3	65	65
20 JUN 1984	1115	10380C	20.0	2.49	3.13	41.3	49.6	64	61
21 JUN 1984	726	381	17.2	na	na	na	na	60	61
22 JUN 1984	725	382	21.2	na	na	na	na	60	58
23 JUN 1984	720	383	20.8	na	na	na	na	57	59
24 JUN 1984	715	384	24.4	na	na	na	na	50	50
25 JUN 1984	759	385	20.8	na	na	na	na	50	50
26 JUN 1984	740	386	18.0	na	na	na	na	60	60
27 JUN 1984	715	387	23.2	na	na	na	na	60	60
27 JUN 1984	1115	10387A+B	24.8	3.33	3.61	50.1	56.2	50	50
27 JUN 1984	1115	10387C	21.6	2.93	3.08	35.8	53.6	64	62

continued.

31 October 1983 to 29 November 1984, continued.

Concentrations.									
DATE	TIME	IDENT	SPM mg/L	PN1 -----	PN2 microMolar	PC1 -----	PC2 -----	VOL1 ---	VOL2 mL ---
05 JUL 1984	1130	10388A+B	26.8	3.47	3.48	51.0	64.6	64	62
05 JUL 1984	1130	10388C	20.8	2.66	3.17	42.5	50.8	58	57
06 JUL 1984	748	389	19.6	na	na	na	na	58	56
07 JUL 1984	750	390	21.2	na	na	na	na	61	62
08 JUL 1984	755	391	17.6	na	na	na	na	63	63
09 JUL 1984	735	392	22.0	na	na	na	na	59	59
10 JUL 1984	725	393	23.2	na	na	na	na	57	58
11 JUL 1984	735	394	28.0	na	na	na	na	59	58
11 JUL 1984	1100	10394A+B	25.8	3.33	4.25	63.6	75.0	50	50
11 JUL 1984	1100	10394C	25.6	3.06	2.93	53.4	54.4	59	58
12 JUL 1984	736	395	30.4	na	na	na	na	57	59
13 JUL 1984	740	396	28.0	na	na	na	na	57	59
14 JUL 1984	745	397	23.2	na	na	na	na	56	59
15 JUL 1984	740	398	16.0	na	na	na	na	61	62
16 JUL 1984	735	399	2.4	na	na	na	na	61	65
17 JUL 1984	742	400	12.0	na	na	na	na	67	65
18 JUL 1984	730	401	11.6	na	na	na	na	70	71
18 JUL 1984	1115	10401A+B	19.8	3.55	3.40	49.2	59.6	50	50
18 JUL 1984	1115	10401C	23.2	2.71	3.08	44.6	48.1	61	62
19 JUL 1984	735	402	13.2	na	na	na	na	70	71
20 JUL 1984	745	403	11.2	na	na	na	na	69	72
21 JUL 1984	715	404	12.8	na	na	na	na	72	78
22 JUL 1984	717	405	20.4	na	na	na	na	65	66
23 JUL 1984	715	406	22.8	na	na	na	na	61	63
24 JUL 1984	710	407	22.4	na	na	na	na	50	50
25 JUL 1984	717	408	26.0	na	na	na	na	50	50
25 JUL 1984	1115	10408A+B	30.0	4.44	4.25	78.9	89.9	50	50
25 JUL 1984	1115	10408C	24.4	2.71	3.42	41.8	57.4	61	59
26 JUL 1984	723	409	23.6	na	na	na	na	59	58
27 JUL 1984	750	410	26.0	na	na	na	na	50	50
28 JUL 1984	723	411	29.6	na	na	na	na	50	50
29 JUL 1984	719	412	32.8	na	na	na	na	50	50
30 JUL 1984	720	413	20.0	na	na	na	na	58	57
31 JUL 1984	710	414	13.6	na	na	na	na	70	71
01 AUG 1984	725	415	16.8	3.00	na	44.5	na	64	60
01 AUG 1984	1130	10415A+B	28.2	3.33	4.25	55.2	63.5	50	50
01 AUG 1984	1130	10415C	24.4	3.53	3.82	53.5	62.6	50	50
02 AUG 1984	740	416	21.2	3.43	na	41.5	na	61	58
03 AUG 1984	750	417	18.0	3.34	na	43.6	na	61	58
04 AUG 1984	750	418	18.4	2.47	na	34.9	na	64	64
05 AUG 1984	755	419	20.0	2.46	na	33.6	na	62	64
06 AUG 1984	735	420	20.0	2.96	na	44.9	na	63	63
07 AUG 1984	730	421	24.0	3.16	na	46.3	na	50	50
08 AUG 1984	740	422	22.8	2.96	na	41.8	na	63	64

continued.

31 October 1983 to 29 November 1984, continued.

Concentrations.									
DATE	TIME	IDENT	SPM mg/L	PN1 -----	PN2 microMolar	PC1 -----	PC2 -----	VOL1 ---	VOL2 mL ---
08 AUG 1984	1045	10422A+B	20.0	2.32	2.36	39.9	40.2	67	63
08 AUG 1984	1045	10422C	18.8	2.68	2.53	37.0	41.6	62	63
09 AUG 1984	740	423	24.8	3.22	na	46.1	na	65	61
10 AUG 1984	740	424	26.4	3.73	na	48.0	na	50	50
11 AUG 1984	740	425	24.8	4.86	na	60.4	na	50	50
12 AUG 1984	750	426	24.8	3.18	na	43.5	na	64	67
13 AUG 1984	740	427	18.4	2.78	na	41.2	na	63	65
14 AUG 1984	745	428	15.2	2.02	na	31.7	na	67	68
15 AUG 1984	725	429	14.0	1.54	na	24.0	na	77	81
22 AUG 1984	1540	10436C	12.4	2.29	2.43	20.9	25.3	63	70
23 AUG 1984	720	437	19.6	2.26	na	41.7	na	50	50
24 AUG 1984	725	438	22.8	3.50	na	54.8	na	50	50
25 AUG 1984	723	439	26.0	3.16	na	60.0	na	50	50
26 AUG 1984	724	440	29.2	3.84	na	66.8	na	50	50
27 AUG 1984	720	441	26.8	3.84	na	60.4	na	50	50
28 AUG 1984	730	442	21.2	3.05	na	49.7	na	50	50
29 AUG 1984	750	443	8.0	1.67	na	35.9	na	61	64
29 AUG 1984	1200	10443A+B	30.4	4.98	4.46	60.6	68.6	49	50
29 AUG 1984	1200	10443C	33.2	3.31	4.25	53.5	60.9	50	50
30 AUG 1984	735	444	18.4	2.10	na	36.7	na	62	61
31 AUG 1984	745	445	17.2	2.35	na	36.8	na	60	60
01 SEP 1984	740	446	24.0	3.62	na	54.0	na	50	50
02 SEP 1984	743	447	15.2	1.77	na	31.9	na	64	69
03 SEP 1984	740	448	19.2	2.66	na	43.1	na	68	60
04 SEP 1984	750	449	19.2	3.23	na	40.2	na	63	61
05 SEP 1984	740	450	21.2	4.41	na	42.1	na	50	50
05 SEP 1984	945	10450A+B	20.0	6.18	4.18	52.9	45.0	61	61
05 SEP 1984	945	10450C	20.4	1.97	2.89	35.6	44.5	56	55
06 SEP 1984	735	451	24.8	na	na	na	na	50	50
07 SEP 1984	725	452	22.4	na	na	na	na	50	50
08 SEP 1984	733	453	20.4	na	na	na	na	50	49
09 SEP 1984	733	454	21.6	na	na	na	na	50	50
10 SEP 1984	740	455	26.8	na	na	na	na	61	63
11 SEP 1984	743	456	24.0	na	na	na	na	57	60
12 SEP 1984	750	457	19.6	na	na	na	na	60	61
12 SEP 1984	1945	10457A+B	11.0	na	na	na	na	71	70
12 SEP 1984	1945	10457C	13.6	2.62	3.03	30.1	35.6	72	70
13 SEP 1984	735	458	12.4	1.22	na	24.7	na	74	77
14 SEP 1984	748	459	11.6	1.81	na	22.0	na	81	81
15 SEP 1984	746	460	10.0	2.34	na	30.3	na	75	77
16 SEP 1984	740	461	11.2	2.04	na	30.2	na	83	84
17 SEP 1984	735	462	13.2	2.41	na	23.8	na	82	84
18 SEP 1984	726	463	12.0	3.34	na	31.8	na	83	83
18 SEP 1984	1545	10463A+B	9.4	--	--	--	--	--	--

continued.

31 October 1983 to 29 November 1984, continued.

Concentrations.									
DATE	TIME	IDENT	SPM mg/L	PN1	PN2	PC1	PC2	VOL1	VOL2
				-----	microMolar	-----	-----	---	mL ---
18 SEP 1984	1545	10463C	12.0	1.70	2.00	21.5	26.8	85	85
19 SEP 1984	725	464	20.4	3.10	na	44.9	na	71	59
20 SEP 1984	715	465	24.0	2.83	na	50.6	na	50	50
21 SEP 1984	710	466	16.4	2.62	na	53.2	na	56	57
22 SEP 1984	715	467	28.0	3.39	na	58.2	na	50	50
23 SEP 1984	716	468	22.8	3.05	na	59.5	na	50	50
24 SEP 1984	725	469	29.2	3.16	na	46.8	na	50	62
25 SEP 1984	710	470	31.6	3.50	na	58.7	na	50	50
25 SEP 1984	1015	10470A+B	34.0	4.21	4.46	56.0	71.2	50	50
25 SEP 1984	1015	10470C	28.8	3.75	4.46	56.1	65.2	50	50
26 SEP 1984	720	471	22.0	3.83	na	54.0	na	65	65
27 SEP 1984	710	472	19.2	1.36	na	29.3	na	50	50
28 SEP 1984	725	473	23.2	3.16	na	46.3	na	50	50
29 SEP 1984	715	474	18.8	2.61	na	44.8	na	65	64
30 SEP 1984	730	475	18.8	3.96	na	46.4	na	60	60
01 OCT 1984	735	476	15.2	2.26	na	36.5	na	60	65
02 OCT 1984	740	477	16.0	1.88	na	29.3	na	66	65
03 OCT 1984	735	478	16.4	1.91	na	36.3	na	65	65
03 OCT 1984	930	10478A+B	13.6	2.11	2.33	27.2	36.4	100	100
03 OCT 1984	930	10478D	14.0	2.08	2.49	33.2	38.3	69	64
04 OCT 1984	740	479	16.8	1.74	na	25.2	na	65	65
05 OCT 1984	735	480	17.2	1.91	na	44.8	na	65	65
06 OCT 1984	745	481	18.8	2.70	na	46.4	na	65	65
07 OCT 1984	740	482	19.2	2.00	na	30.1	na	65	65
08 OCT 1984	737	483	20.8	2.78	na	43.8	na	65	65
09 OCT 1984	745	484	22.0	3.04	na	46.8	na	65	65
10 OCT 1984	730	485	17.6	2.43	na	35.0	na	65	65
10 OCT 1984	1600	10485B	16.0	1.71	1.47	18.9	24.6	65	65
10 OCT 1984	1600	10485C	16.4	2.55	2.05	30.1	31.3	65	62
11 OCT 1984	730	486	19.2	2.15	na	44.5	na	63	64
12 OCT 1984	730	487	16.4	3.74	na	42.9	na	59	60
13 OCT 1984	715	488	13.2	1.79	na	24.3	na	63	69
14 OCT 1984	744	489	18.4	1.88	na	35.1	na	57	57
15 OCT 1984	730	490	15.2	2.11	na	24.8	na	67	70
16 OCT 1984	745	491	15.2	2.11	na	28.2	na	67	71
17 OCT 1984	745	492	12.0	1.55	na	23.6	na	73	71
17 OCT 1984	1030	10492A+B	11.9	1.98	2.62	29.6	44.0	73	77
17 OCT 1984	1030	10492C	13.2	1.81	1.49	18.4	23.0	67	64
18 OCT 1984	746	493	14.8	2.06	na	27.0	na	63	66
19 OCT 1984	750	494	15.2	1.71	na	20.6	na	66	61
20 OCT 1984	730	495	15.6	1.99	na	23.4	na	68	67
21 OCT 1984	715	496	18.0	1.69	na	24.4	na	67	67
22 OCT 1984	720	497	16.0	1.86	na	30.1	na	67	66
23 OCT 1984	717	498	25.6	3.00	na	46.2	na	64	62

continued.

31 October 1983 to 29 November 1984, continued.

Concentrations.									
DATE	TIME	IDENT	SPM mg/L	PN1 -----	PN2 microMolar	PC1 -----	PC2 -----	VOL1 --- mL	VOL2 ---
24 OCT 1984	711	499	23.6	1.56	na	21.9	na	65	67
24 OCT 1984	1600	10499A+B	26.4	2.65	5.55	27.9	62.6	67	65
24 OCT 1984	1600	10499D	24.0	4.85	5.15	54.1	62.9	66	66
25 OCT 1984	710	500	14.4	2.19	na	37.8	na	67	69
26 OCT 1984	745	501	16.8	3.60	na	54.5	na	69	69
27 OCT 1984	747	502	14.8	3.16	na	50.3	na	68	71
28 OCT 1984	746	503	14.8	2.91	na	36.1	na	70	70
29 OCT 1984	745	504	12.4	1.97	na	33.0	na	69	69
30 OCT 1984	730	505	11.6	1.61	na	36.1	na	70	72
31 OCT 1984	735	506	12.8	1.50	na	27.2	na	68	69
31 OCT 1984	1015	10506A+B	12.4	3.12	2.93	35.3	39.0	71	76
31 OCT 1984	1015	10506D	12.8	2.84	3.54	30.2	38.4	66	66
01 NOV 1984	740	507	12.0	1.74	na	34.3	na	65	65
02 NOV 1984	737	508	12.8	1.71	na	28.7	na	66	65
03 NOV 1984	738	509	12.8	1.54	na	22.9	na	66	67
04 NOV 1984	734	510	11.6	1.74	na	31.1	na	65	67
05 NOV 1984	744	511	11.6	1.56	na	27.2	na	65	67
06 NOV 1984	745	512	15.6	1.56	na	30.4	na	65	65
07 NOV 1984	730	513	13.2	1.74	--	20.6	--	65	--
08 NOV 1984	720	514	12.8	1.58	na	18.0	na	76	75
08 NOV 1984	545	10514A+B	12.8	1.37	0.98	18.9	21.3	65	65
08 NOV 1984	545	10514D	10.8	1.79	1.96	18.2	27.2	73	76
09 NOV 1984	710	515	12.4	1.31	na	21.1	na	75	75
10 NOV 1984	720	516	10.4	1.84	na	25.5	na	77	77
11 NOV 1984	720	517	14.0	2.01	na	27.0	na	76	75
12 NOV 1984	725	518	10.8	1.79	2.21	21.7	29.3	73	72
13 NOV 1984	723	519	10.8	1.29	na	18.6	na	76	76
14 NOV 1984	719	520	9.2	1.58	na	20.2	na	76	74
15 NOV 1984	750	521	18.4	2.49	2.61	34.8	44.2	70	69
15 NOV 1984	1000	10521A+B	17.6	2.21	2.24	21.1	32.7	69	71
15 NOV 1984	1000	10521C	16.8	2.06	2.46	27.7	38.0	74	69
16 NOV 1984	748	522	48.8	4.57	5.16	64.1	90.9	50	50
17 NOV 1984	740	523	61.5	5.44	6.09	76.9	118.9	30	30
18 NOV 1984	715	524	61.7	5.44	7.08	74.1	111.5	30	30
19 NOV 1984	735	525	47.5	4.63	na	66.2	na	40	37
20 NOV 1984	734	526	48.7	5.08	5.01	68.4	104.8	30	30
20 NOV 1984	1015	10526A+B	36.0	4.79	4.25	53.8	68.6	50	50
20 NOV 1984	1015	10526C	36.0	4.23	4.88	42.7	62.8	36	37
21 NOV 1984	725	527	58.5	5.01	4.73	66.7	71.4	50	50
22 NOV 1984	734	528	51.0	4.23	na	65.3	na	36	37
23 NOV 1984	715	529	52.5	3.73	5.52	57.1	99.5	35	35
24 NOV 1984	714	530	26.5	1.87	1.77	18.3	38.5	35	36
25 NOV 1984	745	531	48.0	3.73	4.85	55.0	77.3	35	35
26 NOV 1984	735	532	50.0	2.49	5.01	40.3	77.5	35	36

continued.

31 October 1983 to 29 November 1984, continued.

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Concentrations.

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DATE	TIME	IDENT	SPM mg/L	PN1 -----	PN2 microMolar	PC1 -----	PC2 -----	VOL1 ---	VOL2 ---
27 NOV 1984	748	533	26.0	1.24	2.12	23.2	32.3	35	35
28 NOV 1984	747	534	54.5	2.65	4.42	37.0	76.3	37	36
29 NOV 1984	750	535	51.0	3.93	4.42	59.4	156.8	36	36
29 NOV 1984	1651	10535A+B	59.0	5.30	6.88	65.8	107.7	37	37
29 NOV 1984	1651	10535D	58.8	4.79	5.52	76.9	104.8	25	25

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