Annapolis Field Office
Region III
Environmental Protection Agency

1967 Data Report

Number 15

WATER QUALITY SURVEY

OF THE

PATUXENT RIVER

Staff

James W. Marks, Chief, Laboratory Section
Orterio Villa, Jr., Chemist
Anna R. Favorite, Statistician
Evelyn P. McPherson, Technician

TABLE OF CONTENTS

		Page
I	INTRODUCTION.....	1
II	STATION LOCATIONS.....	5
III	SURVEY RESULTS.....	8
IV	MAP.....appendix	i

I INTRODUCTION

A. Purpose and Scope

During the year of 1967 the Annapolis Field Office, Region III, Environmental Protection Agency, formerly the Chesapeake Technical Support Laboratory conducted four separate intensive surveys of the Patuxent River Basin in cooperation with the State of Maryland, Department of Water Resources, Water Quality Investigation and Analysis Division. The purpose of these surveys was to aid in model verification and to determine the extent of BOD loading to the river.

B. General Remarks

The four intensive surveys were performed during the months of March, July-August, September and October. During each of the surveys the major sewage treatment plants were also sampled on a eight hour composite basis. The analysis presented in this report were performed by the Annapolis Field Office with the exception of a special run made on September 7th. The DO and BOD on this special run were performed by the Maryland Department of Water Resources.

C. Sampling Procedures

Samples for chemical analysis were obtained by dipping a plastic bucket into the river water with a minimum of agitation. The water sample was then transferred to a plastic one-gallon

cubitainer. Dissolved oxygen (DO) samples were obtained by siphoning from the bucket through plastic tubing extended to the bottom of a conventional 300 ml DO bottle. The bottle was overfilled twice without excessive agitation and the DO fixed immediately. Temperature was measured in the dipped bucket immediately after sampling. All samples were stored on ice. Analysis was started immediately on return to the Annapolis Field Office, generally within two hours of sampling.

D. Measured Parameters and Analytical Methods

1. Water temperature was determined using a mercury thermometer inserted into the sample container immediately upon collection.

2. Total Phosphorus

Reference: Menzel, D.W. and Corwin, N., 1965. The Measurement of Total Phosphorus in Seawater Based on the Liberation of Organically Bound Fractions by Persulfate Oxidation. Limonology and Oceanography, 10: 280-282.

Murphy, J. and Riley, J.P., 1962. A Modified Single Solution Method for the Determination of Phosphate in Natural Water. Analytica Chimica Acta, 27: 31-36.

Total Phosphorus was determined after persulfate oxidation of the sample in an autoclave at 15 psi for 30 minutes. The resultant ortho-phosphate was then determined colorimetrically as the molybdenum-blue complex with the optical density measured at 882 mμ.

3. Inorganic Phosphorus

Reference: Murphy, J. and Riley, J.P., 1962. A Modified Single Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

Inorganic Phosphorus was determined colorimetrically as the molybdenum-blue complex with the optical density measured at 882 mμ.

4. Total Kjeldahl Nitrogen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

Total Kjeldahl Nitrogen includes ammonia and organic nitrogen and was determined by the standard micro-kjeldahl procedure. The sample was digested in the presence of strong acid to convert the organic nitrogen to ammonia. The ammonia was then distilled, collected in boric acid solution, nesslerized and determined colorimetrically.

5. Nitrate + Nitrite

Reference: A Manual of Sea Water Analysis, J.D.H. Strickland and T.R. Parsons, 2nd. ed.. Queen's Printer and Controller of Stationery, Ottawa, Canada. 1965.

Nitrate plus nitrite was determined by the cadmium reduction of nitrate to nitrite and subsequent diazotization with sulphanilamide and N-(1-napthl)-ethylenediamine dihydrochloride.

The results were reported as nitrogen.

6. Turbidity was determined with a Hach photoelectric nephelometer, calibrated in Jackson Turbidity Units.

7. Dissolved Oxygen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

Dissolved Oxygen was determined by the azide modification of the basic Winkler method with the titration done potentiometrically with a Fisher automatic "titralyzer."

8. Biochemical Oxygen Demand

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

The Biochemical Oxygen Demand was determined by the azide modification of the basic Winkler method with the titration done potentiometrically with a Fisher automatic "titralyzer." The samples as received were diluted if necessary and transferred to standard 300 ml BOD bottles in triplicate. One initial DO and two final DO determinations were used throughout. Incubation was started immediately at 20°C and continued for five days after which they were titrated.

II STATION LOCATIONS

PATUXENT RIVER

Station Number	Location
5	Maryland Route 4 Bridge
7	Maryland Route 214 Bridge
8	John Hanson Highway, Route 50 and 301
9	Defense Highway Bridge, Maryland Route 3
10	Priest Bridge
11	Bridge behind Bowie Racetrack
12	Pennsylvania RR Bridge, Lemon Bridge Road
13	Duvall Bridge
14	Baltimore-Washington Expressway Bridge
15	Maryland Route 198 Bridge
L1	upstream from confluence with Patuxent River
L2	Maryland Route 424 Bridge
L3	Bridge upstream of Woodwardville
L4	Old Forge Bridge
L5	Maryland Route 198, Simmons Bridge
L6	Baltimore-Washington Expressway
L6A	Maryland Route 32 Bridge, Dorsey Run
L7	U.S. Route 1 Bridge, Savage

PATUXENT RIVER SPECIAL RUN

Brock Bridge

Swamp drainage below Bowie STP

Priest Bridge

Above sanitary landfill

Below Bowie STP

Below Bowie STP

Bowie Effluent at river

Trib to Patuxent above Bowie

Above Bowie STP

Above Bowie STP

* Patuxent Wildlife Refuge

* Patuxent Wildlife Refuge

Below Parkway

Below Parkway

Parkway STP Effluent

Above Parkway STP

Above Parkway STP

* Patuxent Wildlife Refuge

* Patuxent Wildlife Refuge

* Same as Duvall Bridge - Station 13

SEWAGE TREATMENTS PLANTS

Andrews Air Force Base - Plant # 3

Bowie - Bel Air

Fort Meade - Plant # 1

Fort Meade - Plant # 2

Laurel - Parkway

Maryland City

Maryland House of Correction

Patuxent Water Treatment Plant

Savage

III SURVEY RESULTS
1967
PATUXENT RIVER
ANNAPOLIS FIELD OFFICE

Sample Number	Date Sample Taken	Time Sample Taken	Water Temp °C	Gage Height Feet	Total P PO_4 mg/l	Inorganic P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	Turbidity JTU	DO mg/l	BOD mg/l
				Station 5 - Maryland Route 4 Bridge							
67073101	7-31	1005			1.147	1.114	.829	2.396	16		
080123	8-01	0915			1.453	1.246	.564	1.990	13		
0223	8-02	1140			1.149	1.202	.912	2.040	14.5		
090601	9-06	0645	18.5		.777	.576	.768			5.82	3.62
20		1035	20							6.48	4.28
36		1433	21							7.05	9.06
0701	9-07	0635	19		.988	.611	.523			6.38	2.56
18		1016	20.5							6.39	5.84
41		1430	21							7.00	3.18
0801	9-08	0637	20		.777	.647	.968			6.36	3.76
18		1030	22.5							5.95	1.98
102401	10-23	1103	11.6		2.500						
2501	10-24	1140	11.5		2.443						
2601	10-25	1030	12.5		1.701						
				Station 7 - Maryland Route 214 Bridge							
67032009	3-20	0825			.722	.529	.540	.914	16		
2209	3-22	0805			.840	.628	.739	1.008	22		
2309	3-23	0810			.859	.602	.654	.948	26		
2409	3-24	0855			1.351	.745	4.662	.930	34		
073123	7-31	1047			1.893	2.640	.653	2.005	[illegible]		
080123	8-01	0940			2.104	2.722	.441	1.070	11		
0225	8-02	1100			2.734	2.543	.780	1.760	17.5		
090602	9-06	0620	18.5		1.309	1.099	.934			6.89	4.60
21		1015	19							6.96	3.68
37		1452	20							6.84	4.82
0702	9-07	0620	18		1.179	.962	.726			6.66	1.90
19		1113	20							6.53	6.72
42		1410	20							6.73	5.68
0802	9-08	0653	18.5		1.564	1.339	.886			7.05	2.52
19		1015	19.5							6.97	1.78
102402	10-23	1140	10.1		3.031						
2502	10-24	1205	9.5		3.330						
2602	10-25	1100	11.8		3.496						

Sample Number	Date Sample Taken	Time Sample Taken	Water Temp °C	Gage Height Feet	Total P PO_4 mg/l	Inorganic P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	Turbidity JTU	DO mg/l	BOD mg/l
				Station 8 - John Hanson Highway, Route 50 and 301							
67032010	3-20	0855			.909	.691	.720	.918	16		
2110	3-21	0845			1.090	.814	1.008	.930	13		
2210	3-22	0830			.918	.648	.822	.828	29		
2310	3-23	0835			1.012	.681	.708	.905	34		
2410	3-24	0910			1.195	.747	1.458	.830	31		
073124	7-31	1105			2.630	2.722	.962	1.900	12.5		
080126	8-01	1020			2.736	3.547	.821	2.046	7.5		
0226	8-02	1035			3.489	3.245	.943	3.696	9		
090603	9-06	0705	18.5	3	1.426	1.090	.787			6.62	4.52
22		1104	19	3						6.44	4.62
38		1512	20	3.63						6.22	7.50
0703	9-07	0705	18	3	1.359	1.248	1.268			6.25	3.08
20		1131	19.5	3.57						6.12	6.26
43		1455	21	3						6.40	3.52
0803	9-08	0708	18.5	3.57	3.064	1.817	1.156			6.46	3.70
20		1055	19.5	3.73						6.26	2.56
102403	10-23	1210	10		3.802						
2503	10-24	1110	10		4.140						
2603	10-25	1130	12.5		4.120						
				Station 9 - Defense Highway Bridge, Maryland Route 3							
67032011	3-20	1030			.933	.746	.798	1.005	17		
2111	3-21	1000			1.093	.806	1.134	.850	15		
2211	3-22	1000			.955	.731	1.032	.870	31		
2311	3-23	1005			1.202	.839	.900	.875	40		
2411	3-24	1005			1.043	.715	1.350	.875	27		
073125	7-31	1000			2.947	3.547	1.079	2.260	8		
080127	8-01	0912			3.684	3.960	1.391	2.440	6		
0227	8-02	0930			4.191	3.947	1.390	2.760	7		
090604	9-06	0725	18.5	5	1.692	1.835	1.085			6.77	6.48
23		1200	20	5						6.94	8.32
39		1533	20	5.10						6.66	7.64
0704	9-07	0805	17.8	5.05	2.166	1.832	1.563			6.55	4.88
21		1145	19.5	5.06						6.55	7.48
44		1525	20.5	5						6.69	3.16
0804	9-08	0723	19	5.05	2.223	2.012	1.470			6.44	5.88
21		1125	20	5.05						6.58	4.52
102404	10-23	1115	10		3.719						
2504	10-24	1055	9.9		4.313						
2604	10-25	1058	11.5		4.806						

Sample Number	Date Sample Taken	Time Sample Taken	Water Temp °C	Gage Height Feet	Total P PO_4 mg/l	Inorganic P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	Tur-bidity JTU	DO mg/l	BOD mg/l
				Station 10 - Priest Bridge							
67032012	3-20	1110			1.119	.844	.840	.680	19		
2112	3-21	1030			1.258	.888	1.326	.722	22		
2212	3-22	1020			.981	.779	1.254	.793	31		
2312	3-23	1035			1.023	.691	.720	.673	48		
2412	3-24	1015			1.110	.680	1.206	.670	21		
073126	7-31	1130			6.210	6.848	1.869	2.403	9.5		
080128	8-01	1058			7.368	8.415	2.243	3.190	7.5		
0228	8-02	1000			7.340	6.666	.742	3.320	6.5		
090618	9-06	1005			1.798	1.649	.951			6.38	9.88
19		1005			1.830	1.472	3.677			6.40	31.64
40		1606	21.5							6.67	9.60
0707	9-07	0820	18		2.039	1.805	1.003			6.22	5.76
22		1210	20							6.48	6.96
45		1515	20.5							6.52	2.46
0805	9-08	0750	19		2.106	1.950	1.143			6.32	5.08
22		1110	20							6.38	4.52
102405	10-23	1228	10.6		7.917						
2505	10-24	1342	10.5		5.273						
2605	10-25	1150	12.6		6.366						
				Station 11 - Bridge behind Bowie Racetrack							
67032013	3-20	1135			.820	.743	.618	.622	18		
2113	3-21	1045			.842	.588	.744	.704	13		
2213	3-22	1045			.744	.610	1.482	.720	33		
2313	3-23	1035			.883	.612	.738	.670	10		
2413	3-24	1030			.819	.306	.678	.660	22		
073127	7-31	1135			4.105	4.785	.770	1.[illegible]	[illegible]		
080129	8-01	1115			3.368	3.[illegible]12	.496	[illegible].726	5.[illegible]		
0229	8-02	0938			4.425	4.649	1.16	4.6[illegible]	4		
090606	9-06	0830	17.8		1.245	1.020	.543			6.83	2.86
24		1315	18.9							6.93	7.28
41		1430	19							6.58	4.54
0706	9-0[illegible]	0815	17.5		1.179	1.062	.554			7.01	1.12
23		1017	18							6.96	5.62
46		1610	19.5							6.94	2.92
0806	9-0[illegible]	0630	17.5		1.485	1.480	1.099			6.78	4.88
23		1330	19.5							6.79	2.44
102406	10-[illegible]	1[illegible]	10.[illegible]		5.208						
2506	10-24	1405	10		5.103						
2606	10-2[illegible]	1235	12		4.827						

Sample Number	Date Sample Taken	Time Sample Taken	Water Temp °C	Gage Height Feet	Total P PO_4 mg/l	Inorganic P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	Turbidity JTU	DO mg/l	BOD mg/l
				Station 12 - Pennsylvania Railroad Bridge, Lemon Bridge Road							
67032001	3-20	1035			.675	.441	.792	.650	21		
2101	3-21	1140			.732	.472	.966	.663	21		
2201	3-22	1105			.551	.379	1.254	.645	34		
2301	3-23	1140			.573	.336	.534	.645	26		
2401	3-24	1055			LA	.483	.702	.675	22		
073128	7-31	0934			5.052	6.023	1.060	2.550	8		
080130	8-01	1015			4.946	5.858	1.483	2.740	6.5		
0230	8-02	0925				5.789	.529	3.302	5		
090607	9-06	0820	17.5		1.819	1.560	.738			6.64	3.06
25		1245	19.2							6.36	7.00
41		1430	19							6.58	4.54
0707	9-07	0800	17.5		1.827	1.460	.480			6.68	2.32
24		1030	18							6.33	5.98
47		1600	20.1							6.57	3.14
0807	9-08	0645	18		1.840	1.649	.980			6.18	4.66
24		1313	19.8							6.14	3.58
102407	10-23	1345	10.1		6.864						
2507	10-24	1422	10		6.292						
2607	10-25	1255	12.5		7.848						
				Station 13 - Duvall Bridge							
67032002	3-20	1010			.561	.330	.510	.693	24		
2102	3-21	1120			.837	.522	.780	.685	23		
2202	3-22	1040			.508	.329	1.038	.651	29		
2302	3-23	1130			.597	.333	.690	.673	24		
2402	3-24	1040			.648	.374	.876	.696	22		
073131	7-31	1049			5.157	6.023	3.303	1.760	9.5		
080133	8-01	1135			7.262	7.425	2.880	1.928	7		
0233	8-02	1030			5.530	5.175	1.852	2.226	7.5		
090608	9-06	0800	19		2.170	1.729	1.616			6.37	8.76
26		1225	18.9							7.30	2.78
42		1445	20							6.15	8.82
0708	9-07	0730	18.5		2.644	2.292	1.145			6.14	3.52
25		1050	19							6.91	6.44
48		1545	19.9							6.99	1.02
0808	9-08	0830	19		2.628	2.314	1.018			6.03	4.16
25		1210	19.5								3.36
102408	10-23	1420	11.2		6.833						
2508	10-24	1450	11.5		9.265						
2608	10-25	1335	13.8		7.405						

LA Laboratory accident

Sample Number	Date Sample Taken	Time Sample Taken	Water Temp °C	Gage Height Feet	Total P PO_4 mg/l	Inorganic P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	Turbidity JTU	DO mg/l	BOD mg/l
					Station 14 - Baltimore-Washington Expressway Bridge						
67032003	3-20	0950			.234	.070	.336	.725	23		
2103	3-21	1040			.366	.183	.474.	.730	23		
2203	3-22	1000			.390	.103	.162	.713	24		
2303	3-23	1100			.347	ND	.552	.705	24		
2403	3-24	1030			.246	.083	.738	.770	19		
073134	7-31	1130			1.188	.887	.999	1.145	9.5		
080136	8-01	1230			.244	.090	1.183	.638	20		
0236	8-02	1120			.928	.876	.950	.660	9.5		
090609	9-06	0745	17.8	2.37	.319	.062	.329			7.70	3.28
27		1205	18.9	2.36						7.59	8.20
44		1525	19.5	2.35						7.52	3.06
0709	9-07	0715	18.5	2.33	.329	.099	.357			7.51	2.10
26		1110	19	2.36						7.60	1.72
49		1535	21.2	2.35						7.57	1.76
0809	9-08	0710	18	2.35	.084	.007	.534			7.65	2.88
26		1155	19.5	2.39						7.16	2.58
102409	10-23	1445	12.2		1.135						
2509	10-24	1512	12		1.081						
2609	10-[illegible]	1400	14		1.331						
					Station 15 - Maryland Route 195 Bridge						
67032004	3-[illegible]	0915			.166	ND	.210	.656	14		
2104	3-21	1015			.238	.065	.546	.700	17		
2204	3-22	0925			.174	.014	.372	.768	18		
2304	3-23	1000			.186	.142	.300	.720	20		
2404	3-24	0920			.117	.014	.372	.705	14		
073136	7-31	1200			.131	.033	1.060	.233	9		
080138	8-01	1255			.102	.019	1.692	.510	44		
0238	8-02	1200			.084	.048	.843	.540	9		
090610	9-06	0700	18		.087	ND	.457			7.70	.66
28		1100	19							7.72	2.32
45		1545	22							7.36	3.54
0710	9-07	0640	18.5		.159	ND	.443			7.64	1.10
27		1125	20							7.68	4.90
50		1455	21.5							7.52	2.32
0810	9-08	0725	18.5		.062	ND	.465			7.71	2.80
27		1100	19.8							7.60	1.92
102410	10-23	1500	13.5		.193						
2510	10-24	1530	12.5		.171						
2610	10-25	1425	15.1		.128						

ND Not detectable

Sample Number	Date Sample Taken	Time Sample Taken	Water Temp °C	Gage Height Feet	Total P PO_4 mg/l	Inorganic P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	Turbidity JTU	DO mg/l	BOD mg/l
				Station L 1 - upstream from confluence with Patuxent River							
67032014	3-20	1010			.922	.674	.750	1.145	16		
2114	3-21	0950			1.039	.785	.978	1.085	17		
2214	3-22	0945			.894	.608	.942	.980	33		
2314	3-23	0950			.797	.491	.510	1.010	49		
2414	3-24	0935			.910	.579	.606	1.046	26		
073137	7-31	1000			6.104	3.135	1.276	1.020	9		
080139	8-01	0922			3.788	3.382	1.128	2.270	6		
0239	8-02	0945			3.617	3.684	1.093	3.158	4.5		
090611	9-06	0750	18	* 4	2.074	1.800	1.006			7.01	3.30
29		1150	18.5	2.56						7.47	3.76
46		1550	20	2.54						6.77	7.38
0711	9-07	0755	18	2.50	2.113	1.876	1.151			6.91	4.30
28		1157	19	2.51						6.77	4.88
51		1550	20.5							7.00	4.58
0811	9-08	0735	19.5	2.50	2.202	2.012	1.062			6.78	3.92
28		1135	20							6.06	9.82
102411	10-23	1115	9		3.062						
2511	10-24	1040	10		3.600						
2611	10-25	1100	12		3.528						
				Station L 2 - Maryland Route 424 Bridge							
67032015	3-20	0945			.631	.446	.456	1.071	12		
2115	3-21	0925			.746	.545	.828	1.060	16		
2215	3-22	0915			.632	.449	.720	1.065	28		
2315	3-23	0930			.745	.427	.450	1.090	51		
2415	3-24	0940			.603	.398	.660	1.090	20		
073138	7-31	1050			2.420	2.310	1.017	1.633	6.5		
080140	8-01	0941			2.947	2.887	1.397	1.830	6		
0240	8-02	1005			3.298	3.157	2.179	2.460	2		
090612	9-06	0845	18.5		2.213	1.924	1.378			6.84	3.26
30		1135	19.2							6.85	5.64
47		1625	21							7.01	4.80
0712	9-07	0735	18		2.421	2.150	1.538			6.29	3.98
29		1225	20.5							6.96	5.52
52		1610	21							7.41	5.68
0812	9-08	0803	20		2.947	1.638	2.105			6.16	7.04
29		1210	20							8.11	2.48
102413	10-23	1158	10		2.271						
2513	10-24	1110	10.2		3.254						
2613	10-25	1145	13.2		2.958						

* Estimated

Sample Number	Date Sample Taken	Time Sample Taken	Water Temp °C	Gage Height Feet	Total P PO_4 mg/l	Inorganic P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	Tur-bidity JTU	DO mg/l	BOD mg/l
				Station L 3 - Bridge upstream of Woodwardville							
67032016	3-20	0930			.354	.266	.270	1.172	11		
2116	3-21	0910			.626	.456	.786	1.195	17		
2216	3-22	0855			.414	.327	.408	1.095	27		
2316	3-23	0915			.579	.305	.312	.954	51		
2416	3-24	0930			.528	.330	.750	1.060	19		
073139	7-31	1107			1.294	1.114	.999	.970	10		
080141	8-01	0957			1.642	1.502	.950	1.540	4.5		
0241	8-02	1020			1.734	1.754	.701	1.990	[illegible]		
090613	9-06	0855	18		1.266	1.144	.659			7.43	2.48
31		1125	19							8.18	2.60
48		1640	20.5							7.97	3.30
0713	9-07	0724	17.5		.457	.469	.597			7.87	1.76
30		1238	20.[illegible]							8.34	3.12
53		1620	20.5							8.33	1.92
0813	9-08	0814	19.5		1.417	1.[illegible]21	.[illegible]73			7.04	4.12
30		1150	20							7.08	3.46
102414	10-23	1116	9		1.125						
2514	10-24	1135	10		1.346						
2614	10-25	1235	12		1.437						
				Station L 4 - Old Forge Bridge							
67032007	3-20	0810			.362	.276	.342	1.223	13		
2105	3-21	0840			.546	.388	.672	1.210	12		
2205	3-22	0825			.418	.334	.636	1.155	21		
2305	3-23	1035			.740	.457	.876	1.090	57		
2405	3-24	0843			.[illegible]76	.314	.492	1.120	21		
073140	7-31	1135			1.665	1.460	1.263	1.100	17		
080142	8-01	1027			1.558	1.453	1.073	1.272	[illegible]		
0242	8-02	1058			1.808	1.693	1.071	1.6[illegible]	[illegible]		
090614	9-06	0715	17		1.064	.966	.664			8.08	1.50
32		1120	17.5							7.48	4.66
49		1645	19.5							7.82	3.88
0714	9-07	0650	17		1.221	1.009	.597			7.66	1.98
31		1215	18.5							7.86	5.28
54		1510	19.5							8.10	9.00
0814	9-08	0850	17.5		1.[illegible]4	1.223	.647			7.57	3.54
31		1130	18.3							7.66	4.52
102415	10-23	1310	10		1.917						
2515	10-24	1325	10.3		2.476						
2615	10-25	1315	13.5		2.229						

Sample Number	Date Sample Taken	Time Sample Taken	Water Temp °C	Gage Height Feet	Total P PO_4 mg/l	Inorganic P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	Turbidity JTU	DO mg/l	BOD mg/l
				Station L 5 - Maryland Route 198, Simmons Bridge							
67032006	3-20	0750			.249	.177	.180	1.210	14		
2106	3-21	0825			.300	.202	.480	1.225	12		
2206	3-22	0810			.360	.267	2.178	1.239	27		
2306	3-23	1040			.571	.233	.630	1.182	59		
2406	3-24	0830			.317	.166	.522	1.180	21		
073141	7-31	1150			.873	.661	.601	.930	14		
080143	8-01	1039			.889	.715	.637	.894	7		
0243	8-02	1047			.906	.876	.428	1.280	5		
090615	9-06	0725	16		.819	.683	.213			8.87	1.20
33		1130	17							9.02	2.76
50		1630	18							8.72	4.76
0715	9-07	0700	16		.860	.717	.455			8.04	.74
32		1205	18							9.25	3.72
55		1520	19.2							8.91	14.70
0815	9-08	0810	17		.830	.771	.427			8.49	4.10
32		1140	18.1							9.28	2.90
102416	10-23	1324	9.8		.667						
2516	10-24	1230	9.8		2.850						
2616	10-25	1330	12		.961						
				Station L 6 - Baltimore-Washington Expressway							
67032007	3-20	0835			.269	.191	.192	1.255	12		
2107	3-21	0930			.356	.217	.564	1.270	26		
2207	3-22	0845			.304	.220	.426	1.223	25		
2307	3-23	0925			.502	.183	.486	1.108	53		
2407	3-24	0855			.347	.186	4.962	1.180	19		
073142	7-31	1205			1.063	1.957	1.066	.835	8		
080144	8-01	1052			4.558	1.056	1.919	.870	5.5		
0244	8-02	1110			1.681	1.693	1.425	.580	3		
				Station L 6A - Maryland Route 32 Bridge, Dorsey Run							
67090616	9-06	0640	17		5.777	5.133	5.384			3.12	6.24
34		1040	17							4.72	2.24
51		1605	20.5							3.31	11.04
0716	9-07	0615	17		2.209	1.956	1.883			4.57	1.52
33		1155	19.5							5.25	4.92
56		1435	20.9							3.56	34.50
0816	9-08	0755	17		1.787	1.676	1.966			5.10	6.28
33		1035	17.5							4.95	2.46
102417	10-23	1338	12.5		3.021						
2517	10-24	1345	12.8		3.795						
2617	10-25	1350			4.320						

* Gage missing from building. Staff gages out of water.

Sample Number	Date Sample Taken	Time Sample Taken	Water Temp °C	Gage Height Feet	Total P PO_4 mg/l	Inorganic P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	Turbidity JTU	DO mg/l	BOD mg/l
				Station L 7 - U.S. Route 1 Bridge, Savage							
67032008	3-20	0855			.092	.062	.066	1.374	9		
2108	3-21	0955			.331	.152	.528	1.226	32		
2208	3-22	0905			.267	.152	.312	1.240	28		
2308	3-23	0940			.344	ND	.522	1.090	44		
2408	3-24	0905			.476	.210	4.434	1.280	24		
073144	7-31	1240			.167	.050	.343	.732	7		
080146	8-01	1120			.133	.070	.227	.600	4		
0246	8-02	1135			.113	.087	.261	.966	3		
090617	9-06	0650	15.5		.110	.074	.030			9.20	.56
35		1050	16.9							10.06	2.36
52		1555	20.5							9.14	4.68
0717	9-07	0630	16		.112	.048	.166			8.95	.16
34		1145	18.5							10.62	3.38
57		1445	20.5							9.84	4.56
0817	9-08	0740	16		.087	.052	.333			9.05	3.12
34		1050	17.8							10.30	1.94
102420	10-23	1412	10.5		.130						
2520	10-24	1410	10.5		.142						
2620	10-[illegible]	1440	13		.142						

ND Not detectable

III SURVEY RESULTS
SPECIAL RUN
PATUXENT RIVER
ANNAPOLIS FIELD OFFICE
September 7, 1967

Sample Number	River Location	Station Number	Total P PO_4 mg/l	TKN mg/l N	DO * mg/l	BOD * mg/l
67090758	Brock Bridge	17A	.611	.207	9.7	7.2
59	Swamp drainage below Bowie STP	B5	1.831	5.076	6.0	180.0
60	Priest Bridge	B4	2.415	1.294	6.0	3.2
61	Above sanitary landfill	B3	2.085	1.074	6.7	2.6
62	Below Bowie STP	B2	2.649	1.388	6.9	1.2
63	Below Bowie STP	B1	2.585	1.294	6.8	1.0
64	Bowie Effluent at river	B	40.138	12.660	5.2	8.9
65	Trip to Patuxent above Bowie	1AB	35.883	10.957	2.2	1.0
66	Above Bowie STP	1B	3.160	1.200	6.9	3.5
67	Above Bowie STP	2B	1.330	.477	7.4	7.5
68	Patuxent Wildlife Refuge	E4 (13A)	1.589	1.125	7.2	3.2
69	Patuxent Wildlife Refuge	E3 (13B)	1.952	1.106	4.2	3.7
70	Below Parkway	E2	3.181	1.301	7.4	1.9
71	Below Parkway	E1	3.186	1.131	7.6	1.2
72	Parkway STP Effluent	E	34.819	10.235	7.1	6.5
73	Above Parkway STP	1E	.436	.402	7.7	1.9
74	Above Parkway STP	2E	.213	.421	7.6	1.5
75	Patuxent Wildlife Refuge	13A		.748	7.32	
76	Patuxent Wildlife Refuge	13B		1.068	7.32	

* Analysis determined by Maryland Department of Water Resources.

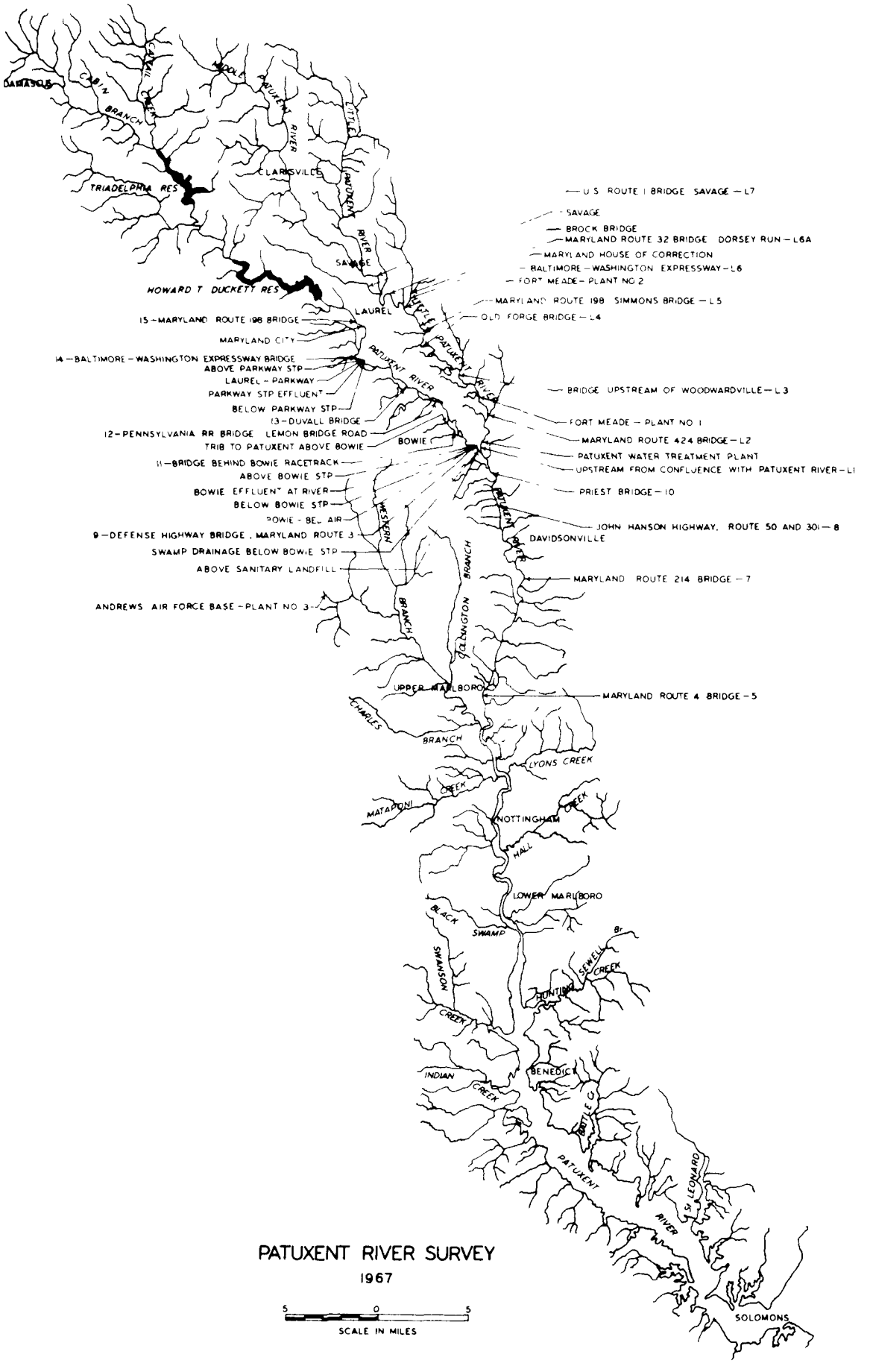
III SURVEY RESULTS
1967
PATUXENT RIVER
SEWAGE TREATMENT PLANTS FINAL EFFLUENT
ANNAPOLIS FIELD OFFICE

Sample Number	Date Sample Taken	Time Sample Taken	Total P PO_4 mg/l	Inorganic P PO_4 mg/l	TKN mg/l	NO_2+NO_3 mg/l NO_3-N	Turbidity JTU	BOD mg/l
			Andrews Air Force Base - Plant # 3					
67080116	[illegible]-31		28.842	19.389	LA	5.140	16	
0216	8-01		26.950		4.565	.402	45	
0316	[illegible]		27.058		4.299	.680		
			Bowie-Bel Air					
67032226	[illegible]-01	Afternoon	50.0[illegible]	38.543	31.650	2.000		
27	[illegible]	Morning	50.209	44.223	34.9[illegible]0	1.730		
28		Afternoon	49.844	37.649	34.650	1.900		
080114	[illegible]-31		42.525	38.283	LA	1.650	10	
0214	[illegible]-1		45.988		3.999	1.280	13	
0314	[illegible]		47.164		8.112	2.080		
090653	[illegible]		45.664	42.389	17.784			1.44
0735	[illegible]		44.[illegible]87	43.085	20.800/2[illegible].458			2.24
102421	1[illegible]		41.145					
2521	1[illegible]-14		48.648					
2621	1[illegible]		44.470					
			Fort Meade - Plant # 1					
67032417	[illegible]	0900-1500	32.112	26.176	24.210	2.31[illegible]		
080121	[illegible]-1		20.326	15.399	LA	1.2[illegible]	1[illegible]	
0221	[illegible]-01		1.9[illegible]4		3.9[illegible]	.036	[illegible]	
0321	[illegible]		2[illegible].424		.934	1.[illegible]00		
090656	9-06		[illegible].298	22.566	16.[illegible]4			10.40
0738	9-07		28.404	22.518	2[illegible].160 [illegible].364			16.50
102424	10-23		27.499					
2524	10-24		27.366					
2624	10-[illegible]		[illegible].523					
			Fort Meade - Plant # 2					
67032319	3-22	0700-1700	[illegible].67	[illegible].647	30.4[illegible]0	.[illegible]5		
080120	[illegible]-1		20.736	16.914	LA	1.3[illegible]0	41	
0220	[illegible]-01		26.950		4.73[illegible]	.410	4[illegible]	
0320	[illegible]		30.159		[illegible].350	.400		
090657	[illegible]		26.973	2[illegible].[illegible]75	18.154			28.40
0739	[illegible]		28.191	2[illegible].621	24.49[illegible] [illegible].709			31.60
102425	10-23		24.165					
2525	10-24		26.918					
2625	10-[illegible]		23.239					

LA Laboratory accident

Sample Number	Date Sample Taken	Time Sample Taken	Total P PO_4 mg/l	Inorganic P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	Tur-bidity JTU	BOD mg/l
			Laurel - Parkway					
67032229	3-22	Morning	24.860	20.717	14.550	1.000		
2317		Noon	22.528	20.920	15.450	1.170		
2318		Afternoon	20.740	20.210	17.570	1.250		
080115	7-31		45.894	25.082	LA	1.510	17	
0215	8-01		32.084		3.259	1.260	26	
0315	8-02		30.801		6.152	1.730		
090654	9-06	0730-1530	31.858	28.142	12.482			3.32
0736	9-07		30.831	29.344	14.400/14.224			3.16
102422	10-23		29.270					
2422	10-24		27.458					
2622	10-25		26.830					
			Maryland City					
67032230	3-21		45.944	43.326	11.310	6.525		
080117	7-31		38.420	32.260	LA	10.185	28	
0217	8-01		47.271		5.613	.456	85	
0317	8-02		40.106		4.656	.780		
090655	9-06		34.832	35.044	8.160			2.52
0737	9-07		39.681	34.840	7.215/7.040			2.68
102423	10-23		37.500					
2523	10-24		43.783					
2623	10-25		36.865					
			Maryland House of Correction					
67080119	7-31		18.631	13.118	LA	.540	30	
0219	8-01		17.754		2.736	1.556	48	
0319	8-02		18.181		6.152	2.090		
			Patuxent Water Treatment Plant					
67032231	3-21		34.854	29.581	7.360	8.200		
080122	7-31		29.052	25.082	LA	.500	3.5	
0222	8-01		32.726		3.536	.432	7	
0322	8-02		38.288		1.710	1.800		
090658	9-06	0800-1600	30.265	29.292	4.382			1.20
0740	9-07		29.574	30.142	5.964/5.993			1.08
102426	10-23		38.437					
2526	10-24		45.296					
2626	10-25		37.182					
			Savage					
67080118	7-31		16.315	16.006	LA	9.440	2	
0218	8-01		21.603		1.054	8.912	4.5	
0318	8-02		22.245		.825	12.160		

LA Laboratory accident



PATUXENT RIVER SURVEY

1967

Annapolis Field Office
Region III
Environmental Protection Agency

1968 Data Report

Number 16

WATER QUALITY SURVEY

OF THE

PATUXENT RIVER

Staff

James W. Marks, Chief, Laboratory Section
Orterio Villa, Jr., Chemist
Anna R. Favorite, Statistician
Evelyn P. McPherson, Technician

TABLE OF CONTENTS

Page

I INTRODUCTION..... 1

II STATION LOCATIONS..... 5

III SURVEY RESULTS..... 10

IV MAP.....appendix i

I INTRODUCTION

A. Purpose and Scope

During the year of 1968 the Annapolis Field Office, Region III, Environmental Protection Agency, formerly the Chesapeake Technical Support Laboratory in cooperation with the State of Maryland, Department of Water Resources, Water Quality Investigations and Analysis Division conducted surveys of the Patuxent River, including the estuary portion. Twenty-six sewage treatment plants were also included. The purpose of the surveys was to upgrade data from previous years, establish a model verification of the estuary portion of the river and to determine the stress placed on the river by the sewage treatment plants discharging into the river directly or its tributaries.

B. General Remarks

The Patuxent Estuary was sampled monthly between April and September with an intensive survey during July. The fresh water portion of the river was sampled during the July intensive by the Maryland Department of Water Resources. The sewage treatment plants were also sampled during the July intensive on an eight-hour composite basis.

C. Sampling Procedures

Samples for chemical analysis were obtained by dipping a plastic bucket into the river water with a minimum of agitation.

The water sample was then transferred to a plastic one-quart cubitainer. Dissolved oxygen (DO) samples were obtained by siphoning from the bucket through plastic tubing extended to the bottom of a conventional 300 ml DO bottle. The bottle was overfilled twice without excessive agitation, and the DO fixed immediately. Temperature was measured in the dipped bucket immediately after sampling. The pH of the sample was determined immediately using a portable pH meter. All samples were stored on ice. Analysis was started immediately on return to the Annapolis Field Office, generally within two hours of sampling.

D. Measured Parameters and Analytical Methods

1. Water temperature was determined using a mercury thermometer inserted into the sample container immediately upon collection.

2. Water temperature was also read from a Beckman Salinometer.

3. Conductivity was read from a calibrated Beckman Salinometer.

4. Salinity was determined with a calibrated Beckman Salinometer.

5. The pH measurements were made with a field pH meter.

6. Light extinction, in inches, was made with a 12 " (30 cm) white secchi disk.

7. Total Phosphorus

Reference: Menzel, D.W. and Corwin, N., 1965. The

Measurement of Total Phosphorus in Seawater Based on the Liberation of Organically Bound Fractions by Persulfate Oxidation. Limonology and Oceanography, 10: 280-282.

Murphy, J. and Riley, J.P., 1962. A Modified Single Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

Total Phosphorus was determined after persulfate oxidation of the sample in an autoclave at 15 psi for 30 minutes. The resultant ortho-phosphate was then determined colorimetrically as the molybdenum-blue complex with the optical density measured at 882mμ.

8. Total Kjeldahl Nitrogen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

Total Kjeldahl Nitrogen includes ammonia and organic nitrogen and was determined by the standard micro-kjeldahl procedure. The sample was digested in the presence of strong acid to convert the organic nitrogen to ammonia. The ammonia was then distilled, collected in boric acid solution, nesslerized and determined colorimetrically.

9. Nitrate + Nitrite

Reference: A Manual of Sea Water Analysis, J.D.H. Strickland and T.R. Parsons, 2nd ed.. Queen's Printer and Controller Stationery, Ottawa, Canada. 1965.

Nitrate plus nitrite nitrogen was determined by the cadmium

reduction of nitrate to nitrite and subsequent diazotization with sulphanilamide and N-(1-naphthyl)-ethylenediamine dihydrochloride. The results were reported as nitrogen.

10. Ammonia

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

The water samples as received were adjusted to a pH of 7.2-7.4. An aliquot portion was distilled collecting the distillate in 2% boric acid. An aliquot of the distillate was nesslerized and read on a spectrophotometer at 425 mμ. The results were calculated as NH_3-N.

11. Turbidity was determined with a Hach photoelectric nephelometer, calibrated in Jackson Turbidity Units.

12. Chlorophyll a

Reference: A Manual of Sea Water Analysis, J.D.H. Strickland and T.R. Parsons, 2nd. ed., Queen's Printer and Controller of Stationery, Ottawa, Canada, 1965.

Chlorophyll a was determined by extraction of millipore filtered samples in 90% acetone and read spectrophotometrically.

13. Dissolved Oxygen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

Dissolved Oxygen was determined by the azide modification of the basic Winkler method with the titration done potentiometrically with a Fisher automatic "titralyzer."

II STATION LOCATIONS

PATUXENT ESTUARY

Station Number	Location
E1	Route 50 Bridge
E2	Queen Anne's Bridge
E3	Bell's Junk Yard
E4	Trailer Court
E5	Wayson's Corner, Route 4 Bridge
E5A	Western Branch
E6	Mouth of Western Branch
E6A	Middle of Jug Bay
E7	Mouth of Lyon's Creek
E8	Nottingham
E9	Lower Marlboro, opposite wharf
E10	High Power Lines
E11	Halfway between Trueman Point and Deep Landing
E11A	*Pepco Canal
E12	500 yards east of PEPCO Canal
E13	Chalk Point
E14	Benedict Bridge Channel
E15	Sheridan Point, Buoy 21

* Not included on map because of scatter

PATUXENT RIVER INTENSIVE

Station Number	Location
6	Queen Anne's Bridge
8	Route 50 Bridge
9	Defense Highway Bridge, Route 3
10	Priest Bridge
10A	100 feet upstream Bowie-Bel Air STP discharge
11	Bridge, Bowie Racetrack
12	Pennsylvania Railroad Bridge, Lemon Bridge Road
13	Wildlife Refuge, Duvall Road
13B	Wildlife Refuge, off Riva Road
14	Baltimore- Washington Expressway Bridge
14C	Upstream Fairview Trailer Park, Brock Bridge Road
15	Maryland Route 198 Bridge
16	Below Howard T. Duckett Dam (Rocky Gorge Dam)
L1	Upstream from confluence with Patuxent River
L2	Maryland Route 424 Bridge
L2A	Towsers Bridge, Waugh Chapel Road
L2B	Old Washington 304, Annapolis right of way
L3	Woodwardville Bridge
L4	Old Forge Bridge
L5	Simmons Bridge, Route 198
L6	Baltimore-Washington Expressway Bridge

Station Number	Location
L6A	Maryland Route 32, Dorsey Run
L7	U.S. Route 1 Bridge, Savage
L7A	Brock Bridge Road
L7B	U.S. Route 1, Hammond Branch

SEWAGE TREATMENT PLANTS

Bowie - Bel Air

* Elkton

* Emmitsburg

* Fort Detrick

Fort Meade

* Frederick

* Holly Hill

Jessup

Laurel

Maryland City

* Meadowview

* Middletown

* Mount Saint Mary's Lagoon

* Myersville

* New Market

* New Windsor

NSA

Parkway

Patuxent

* Perryville

* Rising Sun Lagoon

* Not included on map because of scatter

SEWAGE TREATMENT PLANTS

Savage

* Taneytown

* Union Bridge

* Victor Cullen

* Westminister

* Not included on map because of scatter

III SURVEY RESULTS
1968
PATUXENT ESTUARY
ANNAPOLIS FIELD OFFICE

Sample Number	Date Sample Taken	Time Sample Taken	Salinometer Cond µmhos	Salinometer Sal ‰	Salinometer Temp °C	Water Temp °C Mer	pH Field	pH Lab	Secchi Disk Inches	Total P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Turbidity JTU	Chlorophyll a µg/l	DO mg/l
						Station E 1 - Route 50 Bridge										
68040901	4-[illegible]	0930				12.5				1.549	1.870	1.078	* .58	8	12.00	8.61
050601	5-06	0940				13				2.142	1.990	1.219		3.5		6.59
0701	5-0[illegible]	0915				12				2.366	1.340	1.390	.572	6.9	4.5	7.05
060301	6-0[illegible]	1035				19.5		6.70		1.171	1.280	1.052	.542	17	2.15	7.15
080823	8-06	1110				24.5				NSQ	NSQ				6.00	4.10
091211	9-12	1255				21				1.114	1.108	.621	.221	150	27.00	5.37
						Station E 2 - Queen Anne's Bridge										
68040902	4-09	0950				13				1.391	1.350	1.205	* .34	11	10.50	8.77
050602	5-06	1005				13.5				1.716	.990	1.098		3.5		6.75
[illegible]	[illegible]	0915				12.2				1.971	.840	1.142	.322		3.00	7.34
060302	[illegible]	1205				12.5		7.70		[illegible]	.85	[illegible]	[illegible]	12	7.50	7.18
080824	[illegible]	1140				24				2.020	.941	2.191	.114		3.75	5.46
091212	[illegible]	1240				19.5				1.074	.940	.713	.114	10	9.75	5.87
						Station E 3 - Bell's Junk Yard										
68040903	4-09	1030				13				1.918	1.770	.917	* .01		11.25	8.57
050603	5-06	1020				13.0				1.417	.910	1.072		1		6.71
[illegible]	[illegible]	1000				12.5				1.572	.440	1.300	[illegible]	[illegible]	4.50	.37
060303	6-13	1147				19.5		6.[illegible]5		[illegible]	.250	[illegible]	[illegible]	1	16.50	7.06
080825	8-06	1110				[illegible]				1.[illegible]	1.40	2.21	[illegible]		1.50	5.31
091213	9-12	1215				19				1.30	[illegible]	.471	[illegible]	[illegible]	55.70	5.64
						Station E 4 - Trailer Court										
68040904	4-09	1035				14				1.499	2.130	[illegible]	* .50	1[illegible]	12.75	9.10
050604	5-06	1040				15				1.375	.840	.943		[illegible]		7.74
0704	5-[illegible]	1020				14				1.953	1.040	1.050	.89	9	3.75	7.29
060304	6-03	1130				15.5		6.93		.801	.83	.764	[illegible]	1	7.50	7.08
080826	8-06	1040				29				1.056	1.210	1.466	.331		5.25	4.56
091214	9-12	1147				[illegible]				1.409	1.096	.489	.01	240	4.50	4.92

NSQ Not sufficient quantity
* Analysis run by Maryland State Department of Water Resources

Sample Number	Date Sample Taken	Time Sample Taken	Salinometer Cond µmhos	Salinometer Sal °/oo	Salinometer Temp °C	Water Temp °C Mer	pH Field	pH Lab	Secchi Disk Inches	Total P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Turbidity JTU	Chlorophyll a µg/l	DO mg/l
Station E 5 - Wayson's Corner, Route 4 Bridge																
68040507	4-05	1100				12.5				.890	1.460	.939	* .04	10.5	9.75	8.13
060607	6-06	1105				15				1.396	.920	.960		4.8		6.41
[illegible]	[illegible]	1045				15				1.417	.710	1.062	.222	14	7.50	7.02
060307	6-03	1125				18.5		6.90		.722	.752	.797	.285	14	5.25	6.03
071501	7-15	1155	0	0	24.2	24			14	.815	1.795	1.439		11	16.50	ND
1601	7-16	1105				24			15	1.274	.363	1.634	.085	9.3	2.25	
1701	7-17	0002				24		6.7								
1714		1125				23	6.63			1.316	.885	1.076	.640	49		
080827	8-08	1325				29			6	1.183	.753	1.779	.221		3.00	5.64
091215	9-1	1330				20.5				2.148	1.144	.392	.093	> 0	1.50	4.93
Station E 5A - Western Branch																
68060316	6-03	1345				19.5		7.12	14	.505	.470	.281	.155	4	2.25	7.23
071502	7-15	1135				26.5				.448	.733	.498	ND	9.5	84.00	
1602	7-16	1045				25			14	.596	.628	.297	.190	10	68.25	
1702	7-17	0025				26		6.75								
1715		1020				24.1	6.7			1.068	.477	1.576	.225	9.9	5.25	
080838	8-08	1325				29.5				.628	.753	.801	.110		8.25	3.56
091216	9-12	1420				19.5			12	.660	1.090	.285	.086	60	1.50	5.04
Station E 6 - Mouth of Western Branch																
68040906	4-09	1410				13.5	6.1		18	1.055	.980	.919	* .20	14.5	9.00	8.77
050706	5-07	1335				17.5			15	1.151	.920	.874	.261	15.5	3.75	8.37
060306	6-03	1335				19.5		6.85	14	.659	.480	.673	.250	27	8.25	5.48
071503	7-15	1130	0	0	26.3				13	.424	.807	.073	ND	9.5	102.75	
1603	7-16	1055				25.8			14	.576	.879	.104	.339	7.2	68.25	
1703	7-17	0030				26		6.55								
1716		1015	0	0	24.74		6.75			.908	.379	1.357	.154	15		
080828	8-08	1315				30			12	.706	.753	.929	.397		7.50	4.05
091217	9-12	1415				19.5				.705	1.390	.402	.043	180	4.50	4.86
Station E 6A - Middle of Jug Bay																
68060317	6-03					19.5		7.00	8	.687	.720	.526	.299	48	7.50	5.08
071504	7-15	1120				26			18	.334	.665	.044	ND	7.2	54.75	
1604	7-16	1030				25.5			14	.617	.936	.031	.259	7.1	84.00	
1704	7-17	0045				26		6.7								
1717		1005				26	6.91			.486	.776	.093	.154	12	66.75	
080839	8-08	1220				29				.410	.722	.306	.037		30.70	6.54
091218	9-12	1400				19.5				1.047	.976	.324	.079	160	118.50	4.95

ND Not detectable
* Analysis run by Maryland State Department of Water Resources

Sample Number	Date Sample Taken	Time Sample Taken	Salinometer Cond µmhos	Salinometer Sal °/oo	Salinometer Temp °C	Water Temp °C Mer	pH Field	pH Lab	Secchi Disk Inches	Total P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Turbidity JTU	Chlorophyll a µg/l	DO mg/l
						Station E 7 - Mouth of Lyon's Creek										
68040907	4-09	1345				14	6.3		12	.072	.920	.739	* .17	24	14.25	8.86
050707	5-07	1315				17.5			12	.597	.870	.172	0	16	176.25	12.72
060307	6-03	1315				21.5		6.88	8	.597	2.740	.550	.264	69	20.25	6.09
071505	7-15	1100	.32	0		26	8.1		17	.229	.634	.026	ND	6.5	27.75	
1605	7-16	1020	0	0		26			14	.542	.981	.038	.281	8.5		
1705	7-17	0100				26		6.7								
1718		0955	0	0		26.2	7.0			.716	.879	ND	.191	14		
080829	8-08	1210				28.9				.487	1.105	.511	.037		69.75	5.85
091219	9-12	1340				20				.483	.281	.396	.114	270	.75	5.27
						Station E 8 - Nottingham										
68040908	4-09	1300				14.5	6.3		10	.504	.730	.773	* .02	25	17.25	9.21
050708	5-07	1255				17.5			12	.706	LA	.052	.039	27	126.75	10.84
060308	6-03	1245				21.5		6.91	8	.573	.473	.353	.153	50	43.50	7.81
071506	7-15	1045	.56	0		26	6.0		11	.348	.703	.073	ND	12.5	133.50	
1606	7-16	1005	.73	0		26			10	.430	.656	.104	.274	14	40.50	
1706	7-17	0145				26		6.65								
1719		0935	.83	0		26.5	7.1			.495	.615	ND	.103	13		
080830	8-08	1145				30			15	.321	1.167	.294	.071		53.25	6.52
091220	9-12	1320				20				.752	.922	.388	.107	190	11.25	4.69
						Station E 9 - Lower Marlboro, opposite wharf										
68040909	4-09	1245				14.5	6.3		12	.438	.500	.813	* .02	31	15.75	8.95
050709	5-07	1225				17.5	6.0		13	.417	.600	.052	.111	[illegible]	61.50	9.83
060309	6-03	1230				20.5		7.02	10	.787	.649	.344	.137	40	49.50	8.53
071507	7-15	1020	3.78	.32		26.8	6.15		13	.278	.584	.193	ND	11	27.00	
1607	7-16	0945	4.14	.53		26.5	6.7		13	.391	.624	.240	.396			
1707	7-17	1242				27		6.7								
1720		0920	2.54	0		26.8	6.[illegible]			.433	LA	.755	[illegible]	15		
080831	8-08	1120				30			18	.242	.747	.097	.044		46.50	6.38
091221	9-12	1242				22				.979	.784	.171	.030	54	58.50	6.20

LA Laboratory accident
ND Not detectable
* Analysis run by Maryland State Department of Water Resources

Sample Number	Date Sample Taken	Time Sample Taken	Salinometer Cond µmhos	Salinometer Sal °/oo	Salinometer Temp °C	Water Temp °C Mer	pH Field	pH Lab	Secchi Disk Inches	Total P PO_4 mg/l	TKN mg/l N	NO_3+NO_2 mg/l NO_3-N	NH_3 mg/l	Turbidity JTU	Chlorophyll a µg/l	DO mg/l
						Station E 10 - High Power Lines										
68040910	4-09	1230				14.5	6.3		14	.376	.660	.631	* .11	23	11.25	8.87
050710	5-07	1210				17.5	6.0		17	.293	.560	.029	.145	19	36.00	9.62
060310	[illegible]	1205				20.5		6.91	12	.308	.400	.221	0	27	15.75	7.51
071509	7-15	1000	9.28	2.24	27.33	27	6.3		16	.293	.640	.135	.094	.1	44.25	
1608	7-16	0930	9.24	2.8	27.74	27.2	6.8		14	.352	.637	.095	.137	6.6		
1708	7-17	0305				27		6.6								
1711		0905	6.64	1.88	27.64	27	6.8			.381	.454	.511	.14	11		
080832	8-08	1105				30			18	.219	.753	.142	.154		26.25	5.22
091222	9-12	1225				23				.550	.659	ND	.064	30	39.00	6.58
						Station E 11 - Halfway between Trueman Point and Deep Landing										
68040911	4-09	1210				14	6.2		14	.290	.750	.464	* .07	19	9.75	8.68
050711	5-07	1155				16.5	5.5		20	.274	.370	.071	.239	16.5	30.00	9.46
060311	6-03	1155				21.5		7.01	14	.388	.321	.275	0	18	39.00	7.92
071509	7-15	0945	9.52	3.42	28.06	28.2	6.6		18	.404	.901	.021	ND	7.1	358.50	
1609	7-16	0913	9.9	3.66	28.06	27.8	6.7		20	.355	.713	.120	.086	6.7		
1709	7-17	0313				27		6.75								
1722		0850	8.72	2.96	28.04	27.5	6.9			.423	.345	.412	.044	10		
080833	8-08	1050				30			18	.254	.593	.146	.125		30.00	5.47
091223	9-12	1210				23				.817	.383	ND	.114	39	26.25	6.14
						Station E 11A - PEPCO Canal										
68040915	4-09	1145				16.5	6.1		12	.367						8.03
						Station E 12 - 500 yards east of PEPCO Canal										
68050712	5-07	1135				17	5.1		22	.225	.160	0	.172	17	27.00	9.20
060312	6-03	1140				22.5		7.09	23	.225	.079	.123	.368	11	22.50	7.64
071510	7-15	0928	12.6	4.94	30.38	30.2	6.85		24	.278	.553	.006	.094	4.9	298.50	
1610	7-16	0855	13.24	5.58	27.7	27	7		19	.368	.592	.025	.159	4.6		
1710	7-17	0327				29		6.8								
1723		0825	13.08	5.44	28.06	27.5	7.04			.534	.489	ND	.066	6.7		
080834	8-08	1040				30			18	.334	.753	.042	.140		45.75	6.08
091224	9-12	1150				23				.523	.587	ND	.186	24	24.00	5.73

ND Not detectable
* Analysis run by Maryland State Department of Water Resources

Sample Number	Date Sample Taken	Time Sample Taken	Salinometer Cond µmhos	Salinometer Sal °/oo	Salinometer Temp °C	Water Temp °C Mer	pH Field	pH Lab	Secchi Disk Inches	Total P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Turbidity JTU	Chlorophyll a µg/l	DO mg/l
						Station E 13 - Chalk Point										
68040912	4-09	1130				14	6.2		20	.320	LA	.401	* .04	15.5	7.50	8.43
050713	5-07	1120				15.5	6.75		38	.175	.08	0	.117	10	22.50	8.42
060313	6-03	1130				21.5		7.09	24	.190	.37	.032	.299	8	24.75	7.91
071511	7-15	0915	14.00	6.1	27.2	27	6.75			.264	.447	.021	.245	3.5	24.75	
1611	7-16	0840	14.62	6.48	27.1	26.5	5.3		26	.347	.497	ND	.122	4.4		
1711	7-17	0329				28		6.9								
1724		0815	14.91	6.54	27.58	27	7.2			.348	.293	ND	.088	2.8		
080835	8-08	1025				30				.334	.396	.019	.074		30.75	6.06
091225	9-12	1140				24				.462	.461	.009	.143	20	18.75	6.00
						Station E 14 - Benedict Bridge Channel										
68040913	4-09	1105				14	6.55		30	.285	.61	.323	* .02	11	8.25	8.25
050714	5-07	1120				15.5	6.75		38	.175	.08	0	.117	10	22.50	8.42
060314	6-03	1115				21.5		7.15		.173	.39	.047	.757	9.6	9.00	7.67
071512	7-15	0900	15.80	7.24	26.52	26	8.6		32	.334	.783	.009	.022	2.2	64.50	
1612	7-16	0830	15.70	7.2	26.4	26	7.25		36	.309	.618	.025		2.9		
1712	7-17	0402				26		6.85								
1725		0800	16.71	7.43	26.6	26.5	7.1				.446	ND	.051	3.9		
080836	8-08	1015				29.5			24	.414	.994	0	.051		32.25	5.92
091226	9-12	1135				24				.373	.605	ND	.121	19	27.75	6.45
						Station E 15 - Sheridan Point, Buoy 21										
68040914	4-09	1045				14	6.4		30	.275	.79	.226	* .02	3.2	6.75	8.37
050715	5-07	1050				16	6.85		42	.106	0	.33	.194	1.5	33.00	9.64
060315	6-03	1100				22.5		7.15	48	.148	0	.2	.03	3.5	8.25	7.83
071513	7-15	0830	17.66	8.5	25.84	26	7.0		71	.281	.683	.006	.034	.5	42.00	
1613	7-16	0820	17.14	8.14	26	26	7.35		4[illegible]	.380	.669	ND	.0[illegible]	2.2		
1713	7-17	0424			26.11	27.5		6.85								
1726		0745	17.44	8.31		26.5	7.1			.446	.628	ND	.038	4		
080837	8-08	1000				29			12	.336	.111	.004	.071		25.50	5.60
091227	9-12	1100				24				.491	.663	.016	.11[illegible]	1[illegible]	6.00	6.47

LA Laboratory accident
ND Not detectable
* Analysis run by Maryland State Department of Water Resources

III SURVEY RESULTS
1968
PATUXENT RIVER INTENSIVE
ANNAPOLIS FIELD OFFICE

Sample Number	Date Sample Taken	Time Sample Taken	Total P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Turbidity JTU	Chlorophyll a µg/l
		Station 6 - Queen Anne's Bridge						
68071614	7-15	Run starting 0700	1.528	.826	2.035	.087	12	8.25
1614	7-16		2.018	.548	2.044	.259	19	
1727	7-17	Run starting 1100	1.316	1.759	1.093	.346	47	
1817	7-18	First run of the day	.790	1.414				
1914	7-19		1.965	.826				
		Station 8 - Route 50 Bridge						
68071515	7-15	Run starting 0700	2.563	.981	2.114	.029	8.1	4.50
1615	7-16		2.071	1.542	1.284	.411	42	
1728	7-17	Run starting 1100	1.421	1.598	1.035	.596	41	
1818	7-18	First run of the day	.776	.632				
1915	7-19		2.774	1.030				
		Station 9 - Defense Highway Bridge, Route 3						
68071516	7-15	Run starting 0700	2.987	1.267	2.090	.367	6.9	3.00
1616	7-16		1.487	1.994	.975	.252	40	
1729	7-17	Run starting 1100	1.737	1.868	1.364	.625	38	
1819	7-18	First run of the day	1.049	1.764				
1916	7-19		3.123	1.401				
		Station 10 - Priest Bridge						
68071517	7-15	Run starting 0700	4.208	1.752	2.290	.793	6.7	3.75
1617	7-16		2.177	1.329	1.001	.339	41	
1730	7-17	Run starting 1100	2.411	1.190	.961	.713	28	
1820	7-18	First run of the day	1.916	1.402				
1917	7-19		4.329	.907				
		Station 10A - 100 feet upstream Bowie-Bel Air STP discharge						
68071518	7-15	Run starting 0700	2.918	.876	2.532	.288	6.6	0
1618	7-16		1.805	1.090	.887	.238	46	
1731	7-17	Run starting 1100	1.200	1.994	.898	.221	24	
1821	7-18	First run of the day	1.141	1.437				
1918	7-19		3.489	.773				
		Station 11 - Bridge, Bowie Racetrack						
68071519	7-15	Run starting 0700	3.126	.814	2.590	.151	4.7	4.50
1619	7-16		1.434	1.865	.860	.202	48	
1732	7-17	Run starting 1100	1.442	1.299	LA	.199	19	
1822	7-18	First run of the day	.833	1.868				
1919	7-19		3.194	.733				
		Station 12 - Pennsylvania Railroad Bridge, Lemon Bridge Road						
68071520	7-15	Run starting 0700	2.952	1.106	2.532	.324	4.3	0
1620	7-16		1.529	1.387	.758	.259	47	
1733	7-1	Run starting 1100	2.421	1.213	1.049	.610	16	
1823	7-18	First run of the day	1.004	.948				
1920	7-19		2.490	2.186				

All samples taken by Maryland State Department of Water Resources
LA Laboratory accident

Sample Number	Date Sample Taken	Time Sample Taken	Total P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Turbidity JTU	Chlorophyll a µg/l
		Station 13 - Wildlife Refuge, Duvall Road						
68071521	7-15	Run starting 0700	5.347	3.839	1.422		[illegible]	6.[illegible]
1621	7-16		.134	1.181	.7[illegible]		47	
1734	7-17	Run starting 1100	[illegible].332	[illegible].339	.53[illegible]	1.390	14	
1824	7-18	First run of the day	[illegible].373	[illegible].761				
1921	7-19		[illegible].961	[illegible].413				
		Station 13B - Wildlife Refuge, off Ritz Road						
68071522	7-15	Run starting 0700	5.074	[illegible].280	.984	[illegible].241	6.4	[illegible]
1622	7-16		.860	1.587	.632	.71[illegible]	48	
1735	7-17	Run starting 1100	[illegible].674	[illegible].05	.35[illegible]	1.759	13	
1825	7-18	First run of the day	[illegible].030	[illegible].241				
1922	7-19		3.646	.191				
		Station 14 - Baltimore-Washington Expressway Bridge						
68071523	7-15	Run starting 0700	.789	1.137	.736	.375	6.9	[illegible]
1623	7-16		.136	.946	.[illegible]43	.411	47	
1736	7-17	Run starting 1100	.411	.352	.392	.26[illegible]	16	
1826	7-18	First run of the day	.438	.460				
1923	7-19		.970	.669				
		Station 14C - Upstream Fairview Trailer Park, Brock Bridge Road						
68071524	7-15	Run starting 0700	1.354	1.348	.361	.331	8	.[illegible]5
1624	7-16		.372	.839	.566	.439	38	
1737	7-17	Run starting 1100	3.968	3.741	.277	2.949	19	
1827	7-18	First run of the day	1.905	1.920				
1924	7-19		4.077	1.616				
		Station 15 - Maryland Route 198 Bridge						
68071525	7-15	Run starting 0700	.064	.876	.480	.267	7.4	1.50
1625	7-16		.067	.903	.432	.555	30	
1738	7-17	Run starting 1100	.[illegible]40	.793	.340	.357	12	
1828	7-18	First run of the day	.088	.086				
1925	7-19		.756	.808				
		Station 16 - Below Howard T. Duckett Dam (Rocky Gorge Dam)						
68071526	7-15	Run starting 0700	.048	.708	.324	.317	11	3.00
1626	7-16		1.842	.516	.412	.562	9.9	
1739	7-17	Run starting 1100	.126	.828	.266	.478	13	
1829	7-18	First run of the day	.[illegible]06	.626				
1926	7-19		.014	.744				

All samples taken by Maryland State Department of Water Resources

Sample Number	Date Sample Taken	Time Sample Taken	Total P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Turbidity JTU	Chlorophyll a µg/l
		Station L 1 - Upstream from confluence with Patuxent River						
6907/0527	7-15	Run starting 0700	1.879	.975	.152	.058	7	0
1627	7-16		2.177	1.355	.975	.411	38	
1740	7-17	Run starting 1100	1.526	1.270	1.450	.588	39	
1830	7-18	First run of the day	1.118	.770				
1927	7-19		2.637	1.244				
		Station L 2 - Maryland Route 424 Bridge						
6807/1528	7-15	Run starting 0700	1.957	1.484	1.432	.893	5.1	1.50
1628	7-16		1.922	2.755	1.245	.591	37	
1741	7-17	Run starting 1100	1.358	LA	1.350	.471	26	
1831	7-18	First run of the day	.947	1.747				
1928	7-19		2.333	1.878				
		Station L 2A - Towsers Bridge, Waugh Chapel Road						
6807/1529	7-15	Run starting 0700	1.212	1.671	1.320	.764	7.9	6.00
1629	7-16		.956	1.147	.639	.591	23	
1742	7-17	Run starting 1100	11.579	1.140	.926	1.007	11	
1832	7-18	First run of the day	.776	1.408				
1929	7-19		4.960	5.727				
		Station L 2B - Old Washington 304, Annapolis right of way						
6807/1530	7-15	Run starting 0700	1.740	1.795	1.380	.267	4.1	.75
1630	7-16		2.973	LA	1.224	.281	14	
1743	7-17	Run starting 1100	1.316	1.529	1.165	.632	34	
1833	7-18	First run of the day	1.061	1.098				
1930	7-19		2.312	1.471				
		Station L 3 - Woodwardville Bridge						
6807/1531	7-15	Run starting 0700	1.134	.671	1.024	.007	3.1	2.25
1631	7-16		3.239	4.732	2.013	.533	13	
1744	7-17	Run starting 1100	9.368	.954	1.082	.279	31	
1834	7-18	First run of the day	.326	.960				
1931	7-19		1.543	.942				
		Station L 4 - Old Forge Bridge						
6807/1532	7-15	Run starting 0700	1.307	.944	.984	ND	4.2	4.50
1632	7-16		2.549	2.631	1.345	.367	22	
1745	7-17	Run starting 1100	13.579	1.580	1.029	.757	22	
1835	7-18	First run of the day	2.259	.914				
1932	7-19		15.678	.959				
		Station L 5 - Simmons Bridge, Route 198						
6807/1533	7-15	Run starting 0700	.784	.484	.940	ND	2.6	5.25
1633	7-16		.398	2.312	1.282	.180	31	
1746	7-17	Run starting 1100	.893	.690	.967	.404	17	
1836	7-18	First run of the day	.212	.948				
1933	7-19		1.166	.453				

All samples taken by Maryland State Department of Water Resources
LA Laboratory accident
ND Not detectable

Sample Number	Date Sample Taken	Time Sample Taken	Total P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Turbidity JTU	Chlorophyll a µg/l
		Station L 6 - Baltimore-Washington Expressway Bridge						
68071534	7-15	Run starting 0700	.710	.671	.920	ND	2.3	6.75
1634	7-16		.159	2.172	1.370	.641	34	
1747	7-17	Run starting 1100	.760	.552	.920	.081	15	
1837	7-18	First run of the day	.181	.753				
1934	7-19		1.[illegible]	.47[illegible]				
		Station L 6A - Maryland Route 32, Dorsey Run						
68071535	7-15	Run starting 0700	1.532	1.820	1.180	1.246	7.1	6.75
1635	7-16		1.911	1.847	1.038	1.088	34	
1748	7-17	Run starting 1100	3.684	3.386	LA	4.368	19	
1838	7-18	First run of the day	.662	2.207				
1935	7-19		2.102	2.483				
		Station L 7 - U.S. Route 1 Bridge, Savage						
68071536	7-15	Run starting 0700	.035	.280	.452	.043	1.6	7.50
1636	7-16		1.715	2.057	1.241	.139	34	
1749	7-17	Run starting 1100	3.895	.368	LA	.037	14	
1839	7-18	First run of the day	.333	.299				
1936	7-19		.498	.407				
		Station L 7A - Brock Bridge Road						
68071537	7-15	Run starting 0700	2.137	.298	.840	.072	1.[illegible]	6.75
1637	7-16		.393	2.153	1.349	.166	34	
1750	7-17	Run starting 1100	2.368	.489	.842	.515	14	
1840	7-18	First run of the day	.436	.569				
1937	7-19		1.230	LA				
		Station L 7B - U.S. Route 1, Hammond Branch						
68071538	7-15	Run starting 0700	.286	1.043	4.000	.223	8.5	39.00
1638	7-16		.787	1.166	2.075	.367	29	
1751	7-17	Run starting 1100	.379	.960	3.080	.162	12	
1841	7-18	First run of the day	.194	1.316				
1938	7-19		1.258	1.122				

All samples taken by Maryland State Department of Water Resources
LA Laboratory accident
ND Not detectable

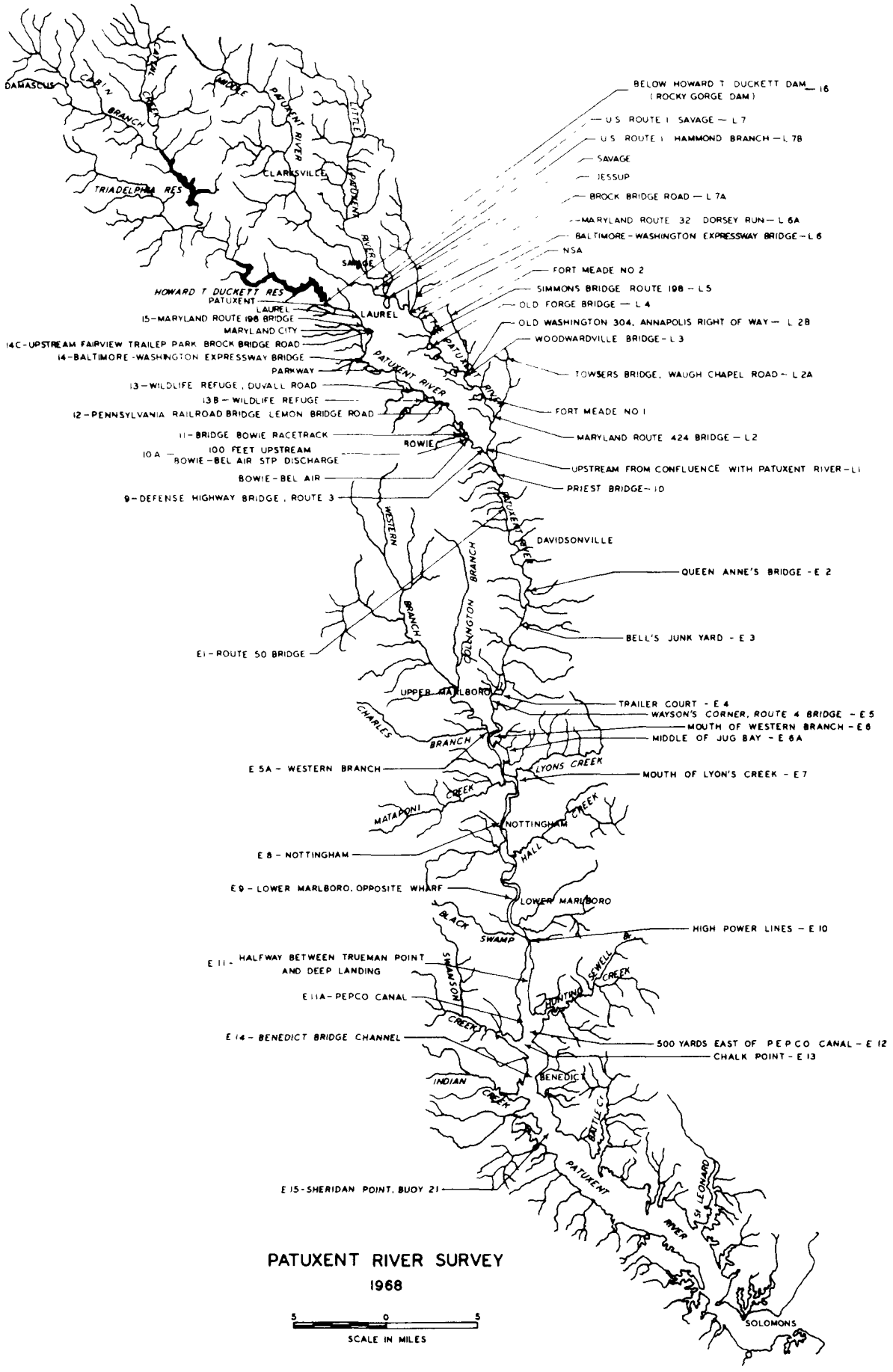
III SURVEY RESULTS
1968
PATUXENT RIVER
SEWAGE TREATMENT PLANTS 8-HOUR COMPOSITES
ANNAPOLIS FIELD OFFICE

Sample Number	Date Sample Taken	Location		Total P PO_4 mg/l	TKN mg/l N
68071801	7-17	Patuxent	Influent	36.842	33.330
02		Patuxent	Effluent	46.315	2.605
03		Fort Meade # 1	Influent	57.894	24.518
04		Fort Meade # 1	Effluent	44.210	24.097
05		Parkway	Influent	24.105	28.943
06		Parkway	Effluent	43.157	17.297
07		Bowie - Bel Air	Influent	45.263	36.835
08		Bowie - Bel Air	Effluent	46.210	21.262
09		Savage	Influent	27.894	14.711
10		Savage	Effluent	23.157	3.237
11		NSA	Influent	32.210	36.356
12		NSA	Effluent	27.784	22.641
13		Maryland City	Influent	50.420	31.050
14		Maryland City	Effluent	7.368	3.446
15		Jessup	Influent	8.000	19.557
16		Jessup	Effluent	8.210	16.952
68072401	7-23	Elkton	Influent	30.192	26.228
02		Elkton	Effluent	23.076	20.322
03		Holly Hill	Influent	67.307	46.960
04		Holly Hill	Effluent	38.461	3.626
05		Meadowview	Influent	46.153	32.690
06		Meadowview	Effluent	25.865	4.094
07		Taneytown	Influent	46.153	32.456
08		Taneytown	Effluent	29.807	31.024
09		Westminister	Influent	41.345	34.357
10		Westminister	Effluent	36.538	17.719
11		New Windsor	?	24.519	7.076
12		Rising Sun Lagoon *	Effluent	19.711	9.152
13		Union Bridge	Effluent	9.134	6.637
68072612	7-25	Fort Detrick	Influent	7.826	9.524
13		Fort Detrick	Effluent	5.722	.357
14		Frederick	Influent	20.448	36.280
15		Frederick	Effluent	14.894	20.327
16		Emmitsburg	Influent	24.151	24.405
17		Emmitsburg	Effluent	14.305	13.185
18		Myersville	Influent	64.880	51.042
19		Myersville	Effluent	33.071	37.202
20		New Market	Influent	30.799	39.970
21		Mew Market	Effluent	19.859	32.530
22		Mount Saint Mary's Lagoon *	Effluent	5.133	4.583

All samples received from Maryland State Department of Health
* Grab sample

Sample Number	Date Sample Taken	Location		Total P PO_4 mg/l	TKN mg/l N
68081415	8-13	Elkton	Influent	27.246	20.153
16		Elkton	Effluent	29.082	15.316
17		Holly Hill	Influent	59.120	30.823
18		Holly Hill	Effluent	43.168	7.000
19		Perryville	Influent	20.483	16.719
20		Perryville	Effluent	39.806	27.373
21		Westminster	Influent	38.164	31.391
22		Westminster	Effluent	45.736	16.536
23		Jessup	Influent	1.565	22.437
24		Jessup	Effluent	1.130	11.962
25		New Windsor	?	20.483	38.344
26		Union Bridge	?	16.521	15.443
68081615	8-15	Victor Cullen	Influent	18.813	9.880
16		Victor Cullen	Effluent	15.355	LA
17		Laurel	Influent	45.253	26.747
18		Laurel	Effluent	24.915	21.657
19		Frederick	Influent	28.067	28.012
20		Frederick	Effluent	22.372	21.175
21		Middletown	Influent	40.575	25.874
22		Middletown	Effluent	71.185	25.452
23		Myersville	Influent	69.151	35.723
24		Myersville	Effluent	71.185	40.783
25		New Market	Influent	7.321	1.416
26		New Market	Effluent	63.050	5.271
27		Fort Detrick	Influent	5.288	9.006
28		Mount Saint Mary's Lagoon	Effluent	5.084	6.958
68100328	10-03	Parkway	Effluent	36.885	12.500

All samples received from Maryland State Department of Health
LA Laboratory accident



PATUXENT RIVER SURVEY

1968

Annapolis Field Office
Region III
Environmental Protection Agency

1969 Data Report

Number 17

WATER QUALITY SURVEY

OF THE

PATUXENT RIVER

Staff

James W. Marks, Chief, Laboratory Section
Orterio Villa, Jr., Chemist
Anna R. Favorite, Statistician
Evelyn P. McPherson, Technician

TABLE OF CONTENTS

Page

I INTRODUCTION..... 1

II STATION LOCATIONS..... 6

III SURVEY RESULTS..... 7

IV MAP.....appendix i

I INTRODUCTION

A. Purpose and Scope

During the year of 1969 the Annapolis Field Office, Region III, Environmental Protection Agency continued surveys of the estuary portion of the Patuxent River. The purpose of the surveys was to continue upgrading data from previous years and model verification.

B. General Remarks

The Patuxent estuary was sampled six times during the year. Monthly sample runs were made during the summer months of June through August.

C. Sampling Procedures

Samples for chemical analysis were obtained by dipping a plastic bucket into the river water with a minimum of agitation. The water sample was then transferred to a plastic one-quart cubitainer. Dissolved oxygen (DO) samples were obtained by siphoning from the bucket through plastic tubing extended to the bottom of a conventional 300 ml DO bottle. The bottle was overfilled twice without excessive agitation, and the DO fixed immediately. All samples were stored on ice. Analysis was started immediately on return to the Annapolis Field Office, generally within two hours of sampling.

D. Measured Parameters and Analytical Methods

1. Water temperature was determined using a mercury thermometer inserted into the sample container immediately upon collection.

2. Water temperature was read from a Beckman Salinometer.

3. Conductivity was read from a calibrated Beckman Salinometer.

4. Salinity was determined with a calibrated Beckman Salinometer.

5. Total Phosphorus

Reference: Menzel, D.W. and Corwin, N., 1965. The Measurement of Total Phosphorus in Seawater Based on the Liberation of Organically Bound Fractions by Persulfate Oxidation. Limonology and Oceanography, 10: 280-282.

Murphy, J. and Riley, J.P., 1962. A Modified Single Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

Total Phosphorus was determined after persulfate oxidation of the sample in an autoclave at 15 psi for 30 minutes. The resultant ortho-phosphate was then determined colorimetrically as the molybdenum-blue complex with the optical density measured at 882 mμ.

6. Inorganic Phosphorus

Reference: Murphy, J. and Riley, J.P., 1962. A Modified

Single Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

Inorganic Phosphorus was determined by automation of the above procedure using the Technicon "AutoAnalyzer." The molybdenum-blue complex formed was determined colorimetrically with the optical density measured at 885 mμ.

7. Total Kjeldahl Nitrogen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

Total Kjeldahl Nitrogen includes ammonia and organic nitrogen and was determined by the standard micro-kjeldahl procedure. The sample was digested in the presence of strong acid to convert the organic nitrogen to ammonia. The ammonia was then distilled, collected in boric acid solution, nesslerized and determined colorimetrically.

8. Nitrate and Nitrite

Reference: A Practical Handbook of Seawater Analysis, J.D.H. Strickland and T.R. Parsons, Bulletin 167, Fisheries Reasearch Board of Canada, Ottawa, Canada. 1968.

Nitrate plus nitrite nitrogen was determined by automation of the above procedure using the Technicon "Auto-Analyzer." This procedure utilizes cadmium reduction of nitrate to nitrite and subsequent diazotization with sulfanilamide

and N-(1-naphthyl)-ethylenediamine dihydrochloride with the optical density measured at 540 mμ. The results were reported as nitrogen.

9. Ammonia

Reference: Southeast Water Laboratory, FWQA, Methodology for the colorimetric determination of ammonia by the phenol-hypochlorite reaction.

FWPCA Methods for Chemical Analysis of Water and Wastes, November 1969.

Ammonia nitrogen was determined by automation of the phenol-hypochlorite procedure as described in the Southeast Water Laboratory Methodology and later adopted as the official FWPCA procedure. The intensity of the indophenol blue color, formed by the reaction of ammonia with alkaline phenol-hypochlorite, was increased using sodium nitroprusside as an intensifying agent. The optical density was measured at 630 mμ and calculated as NH_3-N.

10. Chlorophyll a

Reference: A Practical Handbook of Seawater Analysis, J.D.H. Strickland and T.R. Parsons, Bulletin 167, Fisheries Reasearch Board of Canada, Ottawa, Canada. 1968.

Chlorophyll a was determined by extraction of millipore filtered samples in 90% acetone and read spectrophotometrically.

11. Turbidity was determined with a Hach photoelectric nephelometer, calibrated in Jackson Turbidity Units.

12. Dissolved Oxygen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

Dissolved Oxygen was determined by the azide modification of the basic Winkler method with the titration done potentiometrically with a Fisher automatic "titralyzer."

II STATION LOCATIONS

Station	Location
E 1	Route 50 Bridge
E 2	Queen Anne's Bridge
E 3	Bell's Junk Yard
E 4	Trailer Court
E 5	Wayson's Corner, Route 4 Bridge
E 5A	Western Branch
E 6	Mouth of Western Branch
E 6A	Middle of Jug Bay
E 7	Mouth of Lyon's Creek
E 8	Nottingham
E 9	Lower Marlboro, opposite wharf
E 10	High Power Lines
E 11	Halfway between Trueman Point and Deep Landing
E 12	500 yards east of PEPCO Canal
E 13	Chalk Point
E 14	Benedict Bridge Channel
E 15	Sheridan Point, Buoy 21

III SURVEY RESULTS
1969
PATUXENT ESTUARY
ANNAPOLIS FIELD OFFICE

Sample Number	Date Sample Taken	Time Sample Taken	Water Temp °C	Secchi Disk Inches	Conductivity µmhos	Salinity °/oo	Gage Height Feet	Total P PO_4 mg/l	Inorganic P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	Turbidity JTU	DO mg/l
						Station E 1 - U.S. Route 50 Bridge									
69020301	2-03	0945	4.5				4.50	2.286		1.883	1.224	1.160	2.25	17.5	10.37
060901	6-09	0945	20			1.1	3.70	3.632		2.843	1.905	1.033	6.75	72	4.15
070201	7-02	0915	22.9			0		5.206	4.735	1.744	3.496	.780	11.25		2.62
082501	8-25	1045	20				3.39	2.530		1.413	1.75	.77	6.00		5.75
102701	10-27	0925	10					4.85	>3.0		1.75	1.95	ND		7.07
121801	12-18	0910	1					3.08	2.71	.957	1.07	2.37	7.50		11.32
						Station E 2 - Queen Anne's Bridge									
69020302	2-03	1010	5					1.429		1.463	.997	.835	1.50	29	10.51
060902	6-09	1145	21			.8		3.027		1.529	2.543	.948	4.50	25	4.50
070202	7-02	0850	23			0		3.619	3.260	.943	3.248	.360	9.75		4.22
082502	8-25	1025	19.5					2.130		1.250	1.64	.73	3.75		6.13
102702	10-27	1055	9.5					4.74	>3.0		> 1.80	1.74	ND		LA
121802	12-18	1035	1					2.70	1.28	1.10	1.04	1.45	3.75		11.58
						Station E 3 - Bell's Junk Yard									
69020303	2-03	1040	4.5					1.771		1.790	.906	.923	5.25	36	10.27
060903	6-09	1120	20.5			0		2.368		1.674	2.270	.385	7.50	24	4.88
070203	7-02	0830	27			0		2.984	2.533	.951	2.744	.116	11.25		4.99
082503	8-25	1010	20					2.032		1.069	1.63	.64	3.00		6.09
102703	10-27	1115	9					4.31	>3.0		> 1.80	1.36	[illegible]		7.94
121803	12-18	1030	1					2.42	2.00	1.98	.969	1.46	6.00		11.61

LA Laboratory accident
ND Not detectable

Sample Number	Date Sample Taken	Time Sample Taken	Water Temp °C	Secchi Disk Inches	Conductivity µmhos	Salinity °/oo	Gage Height Feet	Total P PO_4 mg/l	Inorganic P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	Turbidity JTU	DO mg/l
						Station E 4 - Trailer Court									
69020304	2-03	1055	4.5					.892		1.265	1.302	.648	9.75	14	8.85
060904	6-09	1110	21			0		2.638		1.773	2.230	.693	9.75	27	4.42
070204	7-02	0800	27			0		1.725	1.299	1.273	2.212	.252	7.50		3.87
082504	8-25	1000	20.5					1.395		1.456	1.22	.39	3.75		5.50
102704	10-27	1135	11					2.82	2.12		1.75	.63	ND		8.41
121804	12-18	1110	1					2.09	1.64	1.91	1.01	1.17	3.75		11.32
						Station E 5 - Route 4 Bridge, Wayson's Corner									
69020305	2-03	1140	5					1.543		1.222	1.032	1.025	3.00	25	9.61
060905	6-09	1045	21.5			0		1.731		1.291	1.954	.660	5.25	21	3.97
070205	7-02	0730	26	14		0		1.196	.866	.858	2.120	.230	5.25		3.20
082505	8-25	0945	21					1.514		1.238	1.26	.40	8.25		5.21
102705	10-27	1015	9.5					3.73	2.73		1.66	.87	3.75		7.94
121805	12-18	1015	1					1.92	1.26	1.66	1.18	1.96	5.75		11.03
						Station E 5A - Western Branch									
69020306	2-03	1255	2.4	33				.290		1.049	.748	.145	2.25	12	10.61
060906	6-09	1105	22			0		.844		.756	1.006	.423	6.00	19	3.61
070206	7-02	0745	22	13		0		.693	.188	1.170	2.212	.030	10.50		6.33
082506	8-25	1000	21					.581		.400	.20	.13	3.75		4.48
102706	10-27	1035	9.5					.858	.400		.49	.17	ND		8.70
121806	12-18	1035	1.5					1.53	1.11	1.17	.932	.873	[illegible].00		11.24
						Station E 6 - Mouth of Western Branch									
69020307	2-03	1245	2.5	27				.994		1.049	.937	.733	4.50	15	9.74
060907	6-09	1110	22.5			.6		.688		LA	.727	.343	14.25	17.5	3.38
070207	7-02	0750	28	18		0		.488	.125	.790	.006	.010	16.50		6.60
082507	8-25	1005	22					1.006		.806	.87	.35	8.25		4.45
102707	10-27	1045	10					2.20	1.33		1.34	.42	.75		7.11
121807	12-18	1040	1					1.49	.915	2.11	.885	.820	6.75		11.20
						Station E 6A - Middle of Jug Bay									
69020308	2-03	1235	2.4	25				.887		.926	.898	.833	2.25	14.5	9.34
060908	6-09	1121	24			.7		.548		.802	.371	.190	44.25	27.5	5.34
070208	7-02	0805	28	20		0		.431	.095	.886	ND	.005	41.25		6.79
082508	8-25	1020	23.5					.795		.781	.46	.23	6.75		3.93
102708	10-27	1058	11					1.03	.408		.85	.28	24.25		10.09
121808	12-18	1050	1					1.03	.625	1.03	.871	.559	5.25		11.55

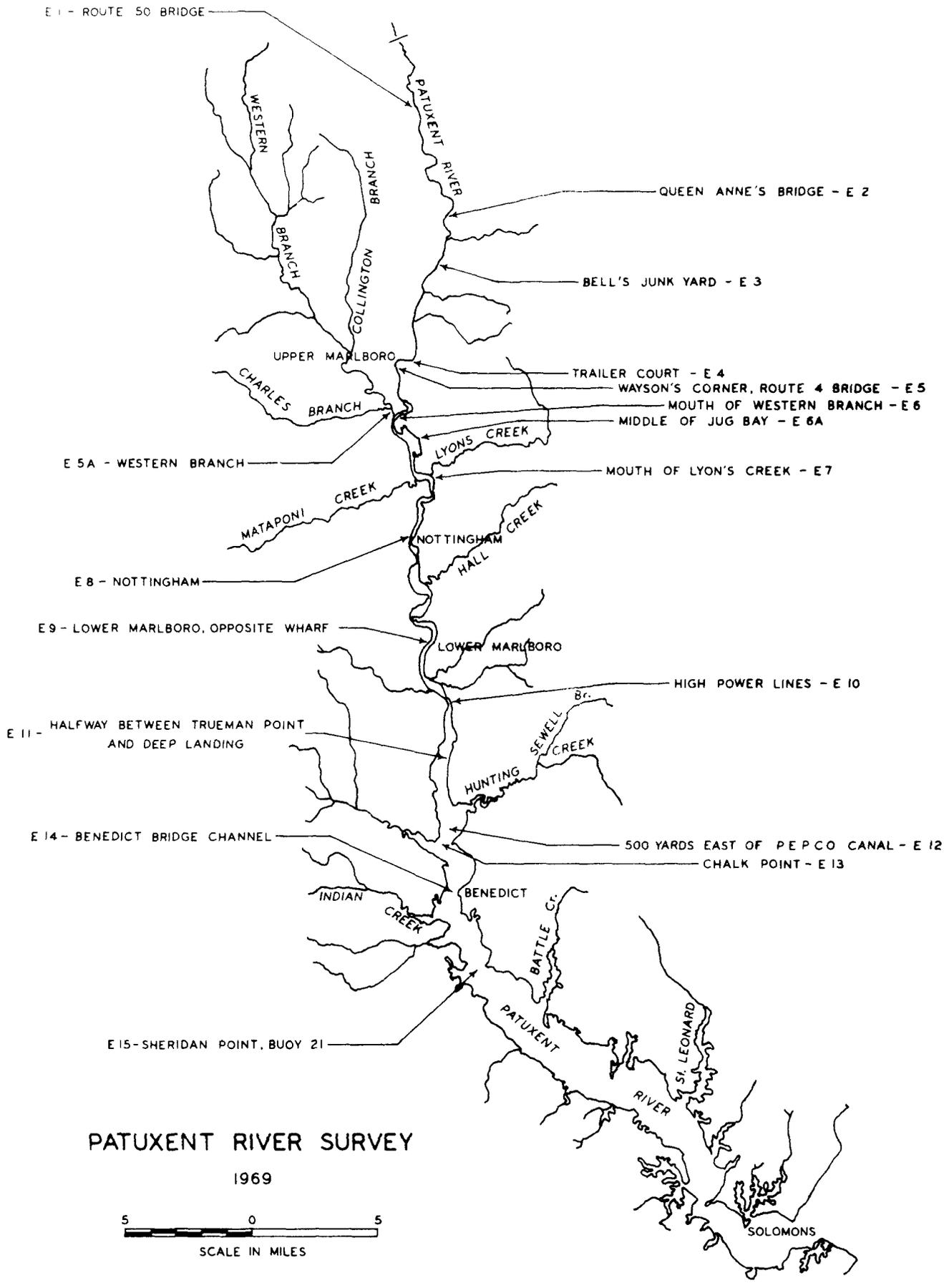
LA Laboratory accident
ND Not detectable

Sample Number	Date Sample Taken	Time Sample Taken	Water Temp °C	Secchi Disk Inches	Conductivity µmhos	Salinity °/oo	Gage Height Feet	Total P PO_4 mg/l	Inorganic P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	Turbidity JTU	DO mg/l
						Station E 7 - Mouth of Lyon's Creek									
69020309	2-03	1215	2.3	18				.920		1.060	.888	.663	6.75	23	9.66
060909	6-09	1128	24			1.5		.918		.640	.340	.310	54.00	34	5.86
070209	7-02	0810	28	20		0		.426	.072	.830	ND	.008	51.75		6.34
082509	8-25	1035	23.5					.586		.756	.35	.21	8.25		3.96
102709	10-27	1105	11					.775	.152		.39	.29	22.50		11.13
121809	12-18	1100	1.5					1.07	.660	.797	.864	.476	16.50		10.98
						Station E 8 - Nottingham									
69020310	2-03	1140	2	12				.815		.864	.181	.545	9.75	35	10.36
060910	6-09	1145	24			13.9		.398		.849	.163	.213	41.25	18	6.64
070210	7-02	0830	28	18		2.5		.438	.116	.608	ND	.028	21.50		5.66
082510	8-25	1050	25					.624		.800	.36	.23	17.75		4.63
102710	10-27	1120	12					.739	.145		.12	.03	5.00		9.65
121810	12-18	1115	1.5					1.28	.625	.846	.802	.465	30.00		10.89
						Station E 9 - Lower Marlboro, opposite wharf									
69020311	2-03	1125	2	14	.6			.405		.583	.698	.495	5.25	25	10.25
060911	6-09	1207	24.5					.292		.750	.055	.173	33.00	16.5	6.21
070211	7-02	0850	28	18		4.9		.447	.115	.695	ND	ND	[illegible]		6.23
082511	8-25	1115	27					.612		.925	.43	.1	10.75		5.19
102711	10-27	1140	13					.309	.140		.0[illegible]	.0[illegible]	9.00		8.59
121811	12-18	1135	2					.459	.261	.601	.451	.489	1[illegible].00		10.61
						Station E 10 - High Power Lines									
69020312	2-03	1115	2.2	14	2.9	1.0		.226		.654	.381	.533	3.75	17	10.09
060912	6-09	1220	25			5.6		.282		.538	.018	.158	9.25	12	6.76
070212	7-02	0915	28	22		6.7		.370	.149	.727	ND	ND	133.50		7.37
082512	8-25	1135	27.5					.560		1.200	.33	.21	13.50		5.47
102712	10-27	1100	13.5					.251	.117		.03	.06	.75		8.46
121812	12-18	1145	2					.377	.223	1.68	.724	.414	14		10.85
						Station E 11 - Halfway between Trueman Point and Deep Landing									
69020313	2-03	1110	2.6	19	4.1	2.0		.211		.517	.611	.445	ND	12.5	10.00
060913	6-09	1230	25.5			9.8		.248		.413	ND	.053	7.75	12	6.76
070213	7-02	0925	29	30		8.8		.371	.166	.574	ND	ND	17.75		6.89
082513	8-25	1145	28					.304		.650	.21	.26	17.00		6.14
102713	10-27	1210	14					.279	.078		.04	.04	5.75		8.57
121813	12-18	1215	2					.277	.120	LA	.452	.06	11.25		10.93

LA Laboratory accident
ND Not detectable

Sample Number	Date Sample Taken	Time Sample Taken	Water Temp °C	Secchi Disk Inches	Conductivity µmhos	Salinity °/oo	Gage Height Feet	Total P PO_4 mg/l	Inorganic P PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	Turbidity JTU	DO mg/l
						Station E 12 - 500 yards east of PEPCO Canal									
69020314	2-03	1105	3.5	24	6.0	3.6		.198		.691	.453	.135	ND	13	9.69
060914	6-09	1245	25.5			11.6		.258		.401	ND	.415	16.50	8.4	6.76
070214	7-02	0930	29	24		11.3		.392	.171	.568	ND	.005	51.00		6.17
082514	8-25	1155	28.5					.405		1.244	.10	.10	6.75		7.60
102714	10-27	1230	14					.278	.102		.005	.03	.75		8.76
121814	12-18	1215	2					.254	.128	.368	.293	.170	19.50		11.19
						Station E 13 - Chalk Point									
69020315	2-03	1055	3.7	28	9.4	6.9		.201		.593	.375	.118	4.50	10	9.69
060915	6-09	1250				12.5		.224		.413	ND	.278	15.75	6.4	6.63
070215	7-02	0940	29	42		11.7		.415	.162	.614	ND	.008	32.25		6.38
082515	8-25	1205	28.5					.545		.800	.02	.04	12.00		9.51
102715	10-27	1240	14					.278	.127		.005	.04	.75		8.91
121815	12-18	1225	2					.221	.121	.797	.336	.211	2.25		11.25
						Station E 14 - Benedict Bridge channel									
69020316	2-03	1045	3.5	36	10.6	8.1		.139		.444	.382	.073	9.00	8	9.85
060916	6-09	1305	24			12.8		.229		.186	ND	.343	17.25	7	6.83
070216	7-02	0950	28.5	46		12.1		.332	.150	.449	ND	.005	30.00		6.21
082516	8-25	1220	28					.389		.456	.02	.14	12.00		7.06
102716	10-27	1250	14					.251	.137		.005	.03	3.75		8.99
121816	12-18	1235	2					.223	.068	.724	.181	.108	22.50		11.55
						Station E 15 - Sheridan Point, Buoy 21									
69020317	2-03	1030	2.1	75	11.5	9.3		.121		.716	.265	.043	8.25	4.5	10.13
060917	6-09	1320				13.8		.187		.401	ND	.423	14.25	3.2	6.44
070217	7-02	1015	28	46		13.7		.540	.231	1.131	ND	.063	63.75		8.74
082517	8-25	1230	28					.417		.500	.03	.05	21.00		7.58
102717	10-27	1305	14					.241	.127		ND	.03	3.75		9.14

ND Not detectable


E 1 - ROUTE 50 BRIDGE
PATUXENT RIVER
WESTERN BRANCH
COLLINGTON BRANCH
QUEEN ANNE'S BRIDGE - E 2
BELL'S JUNK YARD - E 3
UPPER MARLBORO
TRAILER COURT - E 4
WAYSON'S CORNER, ROUTE 4 BRIDGE - E 5
CHARLES BRANCH
MOUTH OF WESTERN BRANCH - E 6
MIDDLE OF JUG BAY - E 6A
LYONS CREEK
E 5A - WESTERN BRANCH
MOUTH OF LYON'S CREEK - E 7
MATAPONI CREEK
NOTTINGHAM
HALL CREEK
E 8 - NOTTINGHAM
E 9 - LOWER MARLBORO, OPPOSITE WHARF
LOWER MARLBORO
HIGH POWER LINES - E 10
E 11 - HALFWAY BETWEEN TRUEMAN POINT AND DEEP LANDING
SEWELL Br.
CREEK
HUNTING
E 14 - BENEDICT BRIDGE CHANNEL
500 YARDS EAST OF PEPCO CANAL - E 12
CHALK POINT - E 13
INDIAN CREEK
BENEDICT
BATTLE Cr.
PATUXENT RIVER
ST. LEONARD
E 15 - SHERIDAN POINT, BUOY 21
SOLOMONS
PATUXENT RIVER SURVEY
1969
5 0 5
SCALE IN MILES

Annapolis Field Office
Region III
Environmental Protection Agency

1969 Data Report

Number 18

WATER QUALITY

OF THE

POTOMAC ESTUARY

TRANSECTS, INTENSIVE AND

SOUTHEAST WATER LABORATORY

COOPERATIVE STUDIES

Staff

James W. Marks, Chief, Laboratory Section
Orterio Villa, Jr., Chemist
Anna R. Favorite, Statistician
Evelyn P. McPherson, Technician

TABLE OF CONTENTS

		Page
I	INTRODUCTION	1
II	STATION LOCATIONS	8
III	SURVEY RESULTS	10
IV	MAP appendix	i

I INTRODUCTION

A. Purpose and Scope

From June through December, 1969, the Annapolis Field Office, Environmental Protection Agency, Region III conducted water quality surveys on the estuarine portion of the Potomac River. The results of these investigations are presented in this report.

B. General Remarks

Transect stations were sampled from June through December. Transects were made across the river with the following designations: RSM/RCM - right shore Maryland/right channel Maryland; MC - mid channel; LSV/LCV - left shore Virginia/left channel Virginia.

A 10-station 3-day intensive study was made August 12, 13 and 14. This intensive included influent and effluent samples from twelve sewage treatment plants discharging into the Potomac Estuary. Four selected stations included three embayments of the creek, #3 being the mouth and #1 being the headwaters.

The third survey was a cooperative study with Southeast Water Laboratory (SEWL) and FWPCA-DC pilot plant, conducted on October 14, 15 and 16. The objective of this survey was to determine the contribution of the carbonate system to the over-

all eutrophication problem in the Potomac Estuary.

C. Sampling Procedures

Samples were obtained using a small submersible pump attached to a wire cable calibrated in feet. The pump was lowered to the desired depth and allowed to run for two minutes before receiving samples in plastic cubitainers. Dissolved oxygen (DO) samples were obtained directly from the pump outlet extending to the bottom of a conventional 300 ml DO bottle. The sample was allowed to overflow the bottle several times and then fixed immediately. All samples were stored on ice and the analysis started upon return to the laboratory, generally within two hours of sampling. Determinations of free, dissolved CO_2 were carried out in the field by the Annapolis Field Office. SEWL independently determined free, dissolved CO_2 using gas chromatography at a later date.

D. Measured Parameters and Analytical Methods

1. Water temperature was determined using a mercury thermometer inserted into the sample container immediately upon collection.

2. Water temperature was read from a Beckman Salinometer.

3. Light extinction, in inches, was made with a 12" (30 cm) white secchi disk.

4. The pH measurements were made with a field pH meter.

5. Conductivity was read from a calibrated Beckman Salinometer.

6. Salinity was determined with a calibrated Beckman Salinometer.

7. Total Phosphorus

Reference: Menzel, D.W. and Corwin, N., 1965. The Measurement of Total Phosphorus in Seawater Based on the Liberation of Organically Bound Fractions by Persulfate Oxidation. Limonology and Oceanography, 10: 280-282.

Murphy, J. and Riley, J.P., 1962. A Modified Single Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

Total Phosphorus was determined after persulfate oxidation of the sample in an autoclave at 15 psi for 30 minutes. The resultant ortho-phosphate was then determined colorimetrically as the molybdenum-blue complex with the optical density measured at 882 mμ.

8. Inorganic Phosphorus

Reference: Murphy, J. and Riley, J.P., 1962. A Modified Single Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

Inorganic Phosphorus was determined by automation

of the above procedure using the Technicon "Auto Analyzer." The molybdenum-blue complex formed was determined colorimetrically with the optical density measured at 885 mμ.

9. Total Kjeldahl Nitrogen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

Total Kjeldahl Nitrogen includes ammonia and organic nitrogen and was determined by the standard micro-kjeldahl procedure. The sample was digested in the presence of strong acid to convert the organic nitrogen to ammonia. The ammonia was then distilled, collected in boric acid solution, nesslerized and determined colorimetrically.

10. Total Kjeldahl Nitrogen, millipore filtered (Dissolved)

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

The sample as received was filtered through a Type HA millipore filter. Total millipore filtered Kjeldahl Nitrogen includes ammonia and organic nitrogen and was determined by the standard micro-kjeldahl procedure. The sample was digested in the presence of strong acid to convert the organic nitrogen to ammonia. The ammonia was then distilled, collected in boric acid solution, nesslerized and determined colorimetrically.

11. Nitrate + Nitrite

Reference: A Practical Handbook of Sea Water Analysis, J.D.H. Strickland and T.R. Parsons, Bulletin 167, Fisheries Research Board of Canada, Ottawa, Canada, 1968.

Nitrate plus nitrite nitrogen was determined by automation of the above procedure using the Technicon "Auto Analyzer." This procedure utilizes cadmium reduction of nitrate to nitrite and subsequent diazotization with sulfanilamide and N-(1-naphthyl)-ethylenediamine dihydrochloride with the optical density measured at 540 mμ. The results were reported as nitrogen.

12. Ammonia

Reference: Southeast Water Laboratory, FWQA, Methodology for the colorimetric determination of ammonia by the phenol-hypochlorite reaction.

FWPCA Methods for Chemical Analysis of Water and Wastes, November 1969.

Ammonia nitrogen was determined by automation of the phenol-hypochlorite procedure as described in the Southeast Water Laboratory Methodology and later adopted as the official FWPCA procedure. The intensity of the indophenol blue color, formed by the reaction of ammonia with alkaline phenol-hypochlorite, was increased using sodium nitroprusside

as an intensifying agent. The optical density was measured at 630 mμ and calculated as NH_3-N.

13. Chlorophyll a

Reference: A Practical Handbook of Seawater Analysis, J.D.H. Strickland and T.R. Parsons, Bulletin 167, Fisheries Research Board of Canada, Ottawa, Canada. 1968.

Chlorophyll a was determined by extraction of millipore filtered samples in 90% acetone and read spectrophotometrically.

14. Dissolved Oxygen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

Dissolved Oxygen was determined by the azide modification of the basic Winkler method with the titration done potentiometrically with a Fisher automatic "titralyzer."

15. Biochemical Oxygen Demand

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

The Biochemical Oxygen Demand was determined by the azide modification of the basic Winkler method with the titration done potentiometrically with a Fisher automatic "titralyzer." The samples as received were diluted if necessary and transferred to standard 300 ml BOD bottles in triplicate. One initial DO and two final DO determinations were used throughout.

Incubation was started immediately at 20°C and continued for five days after which they were titrated.

16. Total Organic Carbon

Reference: Beckman Instruments, Bulletin 4059.

Total Organic Carbon was determined with a Dow-Beckman Carbonaceous Analyser after the sample had been purged with nitrogen gas for five minutes.

17. Free Carbon Dioxide

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965, pp. 77-85.

Free Carbon dioxide was determined in the field by a titrimetric procedure. Carbon dioxide reacts with sodium carbonate to form sodium bicarbonate. Reaction completion is indicated by development of a pink color characteristic of phenolphthalein indicator.

II STATION LOCATIONS

Station	Location
1	Key Bridge
2	14th Street Bridge
3	Haines Point
4	Bellevue
5	Woodrow Wilson Bridge
6	Broad Creek embayment
7	Piscataway Creek embayment
8	Dogue Creek embayment
8A	Gunston Cove embayment
9	Hallowing Point
10	Indian Head
10A	Occoquan Bay embayment
11	Possum Point
12	Sandy Point
13	Smith Point
14	Maryland Point
15	Nanjemoy Creek
15A	Mathias Point
16	Route 301 Bridge
17	Upper Machodoc
18	Kettle Bottom

Station	Location
19	Wicomico Point
20	Kingcopisco Point
21	Ragged Point
23	Point Lookout
24	Smith Point
25	Point Lookout (Bay)
	Alexandria STP
	Arlington STP
	Andrews Air Force Base STP #1
	Andrews Air Force Base STP #4
	Blue Plains STP
	Fairfax STP-Dogue Creek
	Fairfax STP-Little Hunting Creek
	Fairfax STP-Westgate
	Fort Belvoir STP #1
	Fort Belvoir STP #2
	Pentagon STP
	Piscataway STP

III SURVEY RESULTS

1969
POTOMAC ESTUARY TRANSECTS
ANNAPOLIS FIELD OFFICE

Sample Number	Time Sample Taken	Location	Sample Depth Feet	Secchi Disk Inches	Field pH	Salinometer Cond µmhos	Salinometer Salinity 0/00	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	TKN mf	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	DO mg/l	TOC mg/l	CO_2 mg/l
								Station 1 - Key Bridge										
69061327	1330	LS	Surface		7.9			27	.389		.419		.059	ND	60.75	8.37	8.64	
1328	1320	M	Surface		7.95			26	.389		.314		.199	.167	9.75	8.82	6.58	
		M	15					24.5								7.12		
1329	1315	RS	Surface		8.25			27	.422		.384		.179	.245	51.00	8.91	5.36	
		RS	15													5.31		
070118	0925		Surface	34	7.1			29	.430	.143	1.153	.932	.007	.290		6.02		
0119			20		6.9			29	.426		.994		.001	.225		.19		
2459	1430		Surface	6	7.8	.26	.06	26.3	.363	.006	.755	.594	.380	.170	43.50	6.50	7.80	
2460			Bottom		7.6	.26	.08	26	.436		.589		.385	.160		5.95	8.52	
092415	1105	MC	Surface	14	8.3			20.5	.248	.185	.675		.150	.010	39.75	9.12	6.5	5.2
2416		MC	Bottom		8.2			20.0	.281	.175	1.043		.180	.040		7.72	5.7	6.6
								Station 2 - 14th Street Bridge										
69061324	1245	LS	Surface		6.8			26	.530		.547		.092	.49	14.25	2.76	6.20	
		LS	10													2.32		
1325	1240	M	Surface		7.0			26	.411		.558		.064	.46	9.75	3.32	6.39	
		M	8													1.32		
1326	1235	RS	Surface		6.8			25.5	.605		1.052		.053	.635	8.25	2.44	6.32	
070116	0855		Surface	26	7.05			28	.392	.174	.955	2.284	.036	.271		2.80		
0117			15		6.95			29	1.222		1.778		.098	.810		2.30		
2457	1420		Surface	12	6.8	.36	.1	28.8	.373	.140	.644	.694	.345	.285	31.50	4.71	7.12	
2458			Bottom		7		.1	26.7	.407		.922		.330	.280		4.61	8.63	
092413	1045	MC	Surface	15	7.5			20.0	.280	.215	1.362		.310	.07	50.25	8.32	4.8	7.8
2414		MC	Bottom		7.6			20.0	.404	.225	.497		.320	.17		7.16	5.49	8.4
								Station 3 - Haines Point										
69061321	1222	LS	Surface		6.8			26	.454		.477		.095	.053	8.25	2.93	5.64	
1322	1216	M	Surface		6.9			26.5	.530		.523		.087	.053	16.50	4.66	5.26	
		M	8													1.74		
1323	1212	RS	Surface		6.85			26.5	1.935		1.267		.160	2.00	32.25	2.05	7.87	
070114	0835		Surface	23	6.95			29	3.152	2.845	3.881	3.074	.305	2.350		1.14		
0115			15		6.85			29	3.587		4.080		.403	2.308		0.79		
2455	1410		Surface	8	6.5	.35	.1	27.1	.592	.256	.855	1.111	.480	.475	25.50	4.64	6.79	
2456			Bottom		6.6	.34	.1	27	.577		1.055		.475	.450		2.85	7.85	
092411	1030	MC	Surface	13	6.75			21.0	.938	.755	.718		.27	.69	25.50	3.90	5.6	14.6
2412		MC	Bottom		7.3			20.5	.648	.342	1.301		.18	.25		6.43	5.4	10.2

ND Not detectable

Sample Number	Time Sample Taken	Location	Sample Depth Feet	Secchi Disk Inches	Field pH	Salinometer Cond µmhos	Salinometer Salinity 0/00	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	TKN mg/l N mf	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	DO mg/l	TOC mg/l	CO_2 mg/l
								Station 7 Piscataway Creek Embayment										
69061301	1000	1	Surface		7.3			24	1.557		1.622		.647	ND	168.00	7.71	20.37	
1302	1007	2	Surface		7.0			25	1.405		1.174		.725	ND	202.50	8.81	12.77	
1303	1012	3	Surface		6.7			25	1.611		1.052		1.788	ND	76.50	3.14	8.08	
1304	1040	LS	Surface		6.8			24.5	2.119		.645		1.961	.195	63.00	3.20	7.69	
1305	1035	M	Surface		6.8			24.5	2.043		.500		2.011	.208	59.25	1.50	7.22	
		M	20					24.5								.75		
1306	1030	RS	Surface		6.7			25	1.957		.488		2.011	ND	61.50	3.38	8.90	
070106	0730		Surface	19	7.2		0	28.5	1.152	1.209	1.551	.761	1.403	.108		3.83		
0107			40		6.75		0	28.5	1.804		1.466		1.403	.070		3.72		
2444	1150		Surface	18	6.7	.4	.12	27.8	2.483	2.015	1.900	1.039	1.525	.980	3.75	.81	8.63	
2445			Bottom		6.7	.38	.13	27.4	2.450		1.689		1.635	.855		.65	9.38	
092403	0915	MC	Surface	14	6.8			21.5	1.39	1.185	.442		1.99	.63	54.00	2.86	6.4	
2404		MC	Bottom		6.85			21.0	1.60	1.205	1.264		1.92	.67		3.15	7.4	
120301	0908	MC	Surface						3.05	1.94	2.56	3.73	.880	1.76	91.50	9.39		
0302		MC	40						3.11		2.63		.898	1.72		9.33		
								Station 8 - Dogue Creek Embayment										
69061227		1	Surface		7.5			25	2.908		2.773		1.615	.050	115.50	8.25	9.58	
1228	1447	2	Surface		7.1			24	2.542		2.674		1.460	.202	116.25	8.06	12.13	
1229	1455	3	Surface		7.0			24.5	1.718		1.599		1.618	ND	126.00	2.84	9.91	
1230	1435	LS	Surface		7.3			24	1.534		1.308		1.891	.018	82.50	6.48	7.47	
1231	1427	LC	Surface		6.9			24.5	1.740		1.105		2.015	.024	60.00	2.16	7.56	
1232	1418	M	Surface		6.8			24.5	1.855		.692		2.082	.095	50.25	1.87	6.90	
		M	15		.45			24								.29		
1233	1412	RC	Surface		6.9			24.5	1.672		.959		1.982	.018	66.75	2.28	6.03	
		RC	10		.30			24								.62		
1234	1405	RS	Surface		6.8			24.5	1.168		.930		1.445	.037	58.50	4.37	6.58	
3021	1210		Surface	18	7.3	.48		27.3	1.599	1.360	1.574		1.350	.070	70.50	6.85		
3022			10		7.25	.60		26.5	1.471		1.489		1.255	ND	75.75	4.05		
3023			Surface							.25			.550	.168	159.75			
3024			Surface							.20			.225	.320	12442.50			
072442	1140		Surface		7.1	.4	.1	28.2	2.755	2.105	1.700	.361	2.105	.460	89.25	1.36	10.07	
2443			Bottom	24	7.1	.4	.1	27.7	2.592		1.444		2.275	.340		1.20	9.02	
092401	0845	MC	Surface	6	7.0			21.5	1.15	.790	1.417		1.320	.090	96.75	5.15	6.3	14.6
2402		MC	Bottom		7.0			21.0	1.15	.925	.534		1.680	.250		4.05	7.2	
120303	0918	MC	Surface						2.18	1.79	2.010	3.340	.860	1.650	99.75	10.19		
0304		MC	25						3.05		1.900		.812	1.740		9.92		
								Station 8A - Gunston Cove Embayment										
69061219	1344	1 Buoy 3	Surface		8.6			24	.927		1.419		.664	.008	138.75	8.88	10.55	
1220	1351	2 Buoy 3	Surface		7.3			24	.882		1.302		.633	.062	157.50	6.15	10.43	
1221	1357	3 Buoy 2	Surface		7.1			25	1.088		1.151		1.676	.017	61.50	4.45	6.70	
1222	1336	LS	Surface		6.8			25	1.156		.930		1.591	.030	60.00	5.40	6.96	
1223	1325	LC	Surface		7.0			25	1.225		1.145		1.782	.030	51.00	3.88	6.91	

ND Not detectable

Sample Number	Time Sample Taken	Location	Sample Depth Feet	Secchi Disk Inches	Field pH	Salinometer Cond µmhos	Salinometer Salinity 0/00	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	TKN mg/l N mf	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	DO mg/l	TOC mg/l	CO_2 mg/l
								Station 4 - Bellevue										
69061318	1200	LS	Surface		7.0			26	3.178		1.977		.132	>3	24.00	3.40	7.07	
		LS	8													1.70		
1319	1155	M	Surface		7.15			25.5	2.389		1.256		.118	2.67	12.75	1.77	6.87	
		M	10					25								.87		
1320	1150	RS	Surface		6.1			26	3.557		2.000		.137	>3	29.25	1.14	8.10	
070112	0820		Surface	20	6.95			28.5	3.620	2.936	3.796	3.830	.617	2.250		2.22		
0113			20		6.9			29	3.359		4.307		.604	2.280		1.01		
2453	1355		Surface	12	6.4	.4	.12	27.5	1.547	.967	1.833	1.400	.440	1.170	18.75	4.97	8.74	
2454			Bottom		6.9	.4	.12	27.2	1.436		1.644		.450	1.015		2.56	8.41	
092409	1000	MC	Surface	20	6.7			22.5	2.54	2.28	.331		.37	2.05	9.75	1.55	7.8	23.0
2410		MC	Bottom		6.8			22.0	2.45	2.17	.472		.36	1.910		1.79	5.8	22.2
								Station 5 - Woodrow Wilson Bridge										
69061315	1132	LS	Surface		6.85			26	3.762		.756		.101	>3	22.50	3.18	7.05	
		LS	15					25								.43		
1316	1137	M	Surface		6.8			26	4.476		2.570		.098	>3	28.50	2.05	8.54	
		M	15					25								.53		
1317	1141	RS	Surface		7.0			26.5	3.124		1.750		.123	>3	33.00	1.52	7.28	
070110	0805		Surface	15	7.1			28	2.826	2.191	2.966	2.040	1.061	1.323		2.32		
0111			20		6.8			28.5	2.935		2.960		1.039	1.320		1.30		
2451	1330		Surface	10	6.6	.4	.14	27.5	1.447	.953	1.866	1.472	.480	1.210	22.50	4.50	8.23	
2452			Bottom		6.7	.36	.1	27.25	1.558		1.744		.605	1.240		1.89	8.34	
092407	0950	MC	Surface	18	6.7			23.0	2.29	2.09	.319		.45	1.95	15.00	2.55	5.7	20.6
2408		MC	Bottom		6.8			22.0	2.56	2.22	.325		.63	2.15		1.01	6.8	25.0
								Station 6 - Broad Creek Embayment										
69061307	1116	1	Surface		6.9			26	1.751		.959		1.592	ND	146.25	10.64	9.73	
1308	1112	2	Surface		6.9			25.5	1.838		.814		1.771	ND	180.00	9.16	9.82	
1309		3	Surface		6.45			25	2.692		1.424		1.283	1.40	61.50	7.12	7.11	
1310	1050	LS	Surface		6.7			24.5	2.205		.715		2.015	ND	71.25	1.82	8.28	
1311	1055	LC	Surface		6.8			24.5	3.059		.674		1.135	1.74	65.25	3.64	7.28	
1312	1100	M	Surface		6.85			24.5	2.508		1.192		1.434	1.30	53.25	2.98	7.51	
		M	15					25								1.06		
1313	1105	RC	Surface		6.8			24.5	2.692		1.442		1.286	1.43	70.50	1.50	8.22	
1314	1108	RS	Surface		6.8			25	3.092		2.308		1.071	2.02	74.25	2.30	7.73	
070108	0750		Surface	20	7.0			28	1.957	1.855	2.034	1.472	1.367	.522		3.84		
0109			25		7.0			28	2.217		1.966		1.367	.541		1.57		
2449	1320		Surface	13	6.8	.44	.16	27.7	2.115	2.114	2.200	1.728	.880	1.315	43.50	3.47	8.63	
2450			Bottom		6.7	.4	.16	27.4	2.082		2.166		.895	1.360		.89	7.84	
092405	0930	MC	Surface	14	6.7			22.0	1.66	1.475	.534		1.57	1.35	13.50	2.70	6.4	20.8
2406		MC	Bottom		6.8			21.0	1.85	1.500	.706		1.61	1.33		2.57	5.8	17.8

ND Not detectable

Sample Number	Time Sample Taken	Location	Sample Depth Feet	Secchi Disk Inches	Field pH	Salinometer Cond µmhos	Salinometer Salinity 0/00	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	TKN mf	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	DO mg/l	TOC mg/l	CO_2 mg/l
								Station 8A - Gunston Cove Embayment -continued										
69061224	1316	M	Surface		7.0			24.5	1.397		.988		1.785	.018	61.50	2.72	6.47	
		M	20					24								1.96		
1225	1307	RC	Surface		7.1			24	.893		.814		1.642	.019	43.50	3.90	5.25	
1226	1304	RS	Surface		7.4			24	.824		1.000		1.100	.016	80.25	6.86	8.36	
3019	1255		Surface	19	7.55	.50		28.1	1.023	.727	1.546		1.025	ND	95.25	9.92		
3020			25		7.55	.50		26.5	1.119		1.386		.995	ND	78.00	5.66		
072440	1130		Surface	22	6.6	.4	.12	27.8	2.483	1.978	1.611	.583	2.255	ND	116.25	2.30	9.53	
2441			Bottom		6.7	.36	.1	27.05	1.938		1.344		1.815	.076		3.02	10.53	
092335	1230	MC	Surface	15	6.9			22.1	1.068	.490	1.257		1.38	.130	67.50	5.19	4.9	15.4
2336		MC	Bottom		6.9			21.3	1.354	.591	.037		1.90	.267		4.02	6.5	16.6
120305	0930	MC	Surface						2.13	1.76	2.72	3.04	.882	1.65	123.00	10.47		
0306		MC	30						2.28		5.62		.898	1.57		10.72		
								Station 9 - Hallowing Point										
69061214	1255	LS	Surface		7.0			24	.824		.808		1.260	.054	47.25	6.22	7.25	
1215	1250	LC	Surface		7.1			24	.950		.826		1.303	.009	69.75	6.54	6.33	
		LC	15					23.5								5.73		
1216	1243	M	Surface		7.0			24	1.168		.628		1.618	.01	53.25	3.10	6.58	
		M	25					24								3.16		
1217	1235	RC	Surface		7.1			24	.962		.802		1.418	.025	51.00	5.11	6.36	
1218	1230	RS	Surface		7.1			24	.847		1.035		1.267	.028	51.00	4.89	6.05	
3017	1145		Surface	16	7.5	.40		26.7	1.460	1.378	1.233		.995	ND	87.00	7.71		
3018			35		7.4	.50		26.6	1.449		.875		1.019	ND	77.25	7.05		
072438	1115		Surface	15	6.7	.38	.14	27.5	1.829	1.461	1.344	.694	1.860	ND	83.25	3.27	9.02	
2439			Bottom		6.6	.42	.14	27.6	1.361		1.144		1.350	.097		4.32	9.11	
092333	1215	MC	Surface	10	8.4			22.9	1.043	.418	3.902		1.06	.072	63.00	6.65	7.8	9.8
2334		MC	Bottom		7.8			20.9	1.301	.426	.712		1.02	.084		6.12	6.4	10.6
120307	0950	MC	Surface						2.51	1.60	2.55	4.08	.886	1.64	78.75	10.62		
0308		MC	25						1.91		3.55		.898	1.61		10.68		
								Station 10 - Indian Head										
69061209	1212	LS	Surface		6.9			23	.607		1.023		.964	.025	81.75	8.48	7.25	
1210	1205	LC	Surface		7.3			24	.698		.727		1.148	.030	65.25	6.22	7.54	
		LC	8					23.5								6.33		
1211	1155	M	Surface		7.1			24	.779		.721		1.415	.018	45.75	4.77	7.14	
		M	8					24								4.56		
1212	1145	RC	Surface		7.0			24.5	.824		.674		1.433	.050	51.75	4.19	8.47	
		RC	30					24								3.99		
1213	1140	RS	Surface		6.9			24	.687		.523		1.370	.015	34.50	4.69	5.70	
3015	1130		Surface	18	7.3	.56		26.1	1.066	.641	1.449		.914	.290	61.50	6.31		
3016			35		7.1	.56		26.1	1.311		1.006		.895	ND	82.50	6.49		
072436	1105		Surface	20	7.3	.5	.16	27.75	1.557	.950	1.178	.422	1.220	.077	63.00	4.39	8.20	
2437			Bottom		7.4	.5	.18	27.65	1.361		.989		1.200	.104		4.17	8.20	
092331	1200	MC	Surface		7.9			22.2	1.005	.375	1.571		.76	.080	56.25	6.64	10.2	10.6
2332		MC	Bottom		7.65			20.8	1.136	.356	.957		.72	.085		6.23	11.7	9.6
120309	1000	MC	Surface						1.64	1.25	2.09	3.590	.864	1.44	86.25	11.02		
0310		MC	30						1.42		2.41		.944	1.41		11.00		

ND Not detectable

Sample Number	Time Sample Taken	Location	Sample Depth Feet	Secchi Disk Inches	Field pH	Salinometer Cond Ωmhos	Salinometer Salinity 0/00	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	TKN mg/l N mf	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a mg/l	DO mg/l	TOC mg/l	CO_2 mg/l
								Station 10A - Occoquan Bay Embayment										
69061201	1035	1 Buoy 8	Surface		6.8			22	.355		1.262		ND	ND	81.00	7.41	16.13	
1202	1045	2 Buoy 6	Surface		7.4			23	.366		1.029		.006	ND	76.50	7.67	10.10	
120[illegible]3	1055	3 Buoy 2	Surface		7.9			23'	.527		.616		.027	.020	97.50	8.90	11.02	
1204	1100	LS	Surface		7.9			23	.653		1.087		.215	.008	83.25	8.87	9.03	
1205	1105	LC	Surface		7.0			24	.630		.453		1.024	.012'	64.50	5.80	7.44	
1206	1115	M	Surface		7.4			24	.721		.680		1.503	.063	28.50	4.04	6.36	
		M	15					24								3.93		
1207	1121	RC	Surface		7.1			24	.618		.488		1.436	.025	32.25	6.18	8.92	
		RC	10					24								4.29		
1208	1130	RS	Surface		6.8			24	.641		.605		1.491	.040	30.75	4.98	6.36	
3013	1120		Surface	18	7.15	.60		24.2	.853	.519	1.074		.813	.070	58.50	9.76		
3014			20		7.05	1.1		25.9	.080		.920		.593	ND	47.75	6.36		
072434	1055		Surface	15	6.7	.62	.22	27.8	1.106	.724	.811	.605	.900	.145	54.75	4.95	8.39	
2435	1055		Bottom		7.1	.59	.22	27.7	1.162		1.300		.900	.140		4.37	9.62	
080533	1005	LS	Surface	0	7.0		0	26.2	LA	.454	16.528	.858	.660	.009	1411.50	4.75	8.20	5.6
0534		LS	5		6.6		0	26	.865		1.252		.770	.059		5.58	8.61	4.0
0535	1050	LC	Surface	18	6.8		0	26	1.004	.618	2.012	.800	1.020	.067	168.75	4.05	7.37	6.4
0536		LC	5		6.7		0	26	.853		1.570		1.030	.067		4.03	7.17	6.8
0537	0930	MC	Surface	24	5.7		0	26	.710	.626	1.460	.845	1.040	.080	108.00	4.06	7.72	6.8
0538		MC	20		6.3		0	25	.940		1.202		1.060	.082		3.71	6.92	6.8
0539	0910	RC	Surface	24	6.7		0	28.3	.936	.615	1.239	.955	1.100	.087	102.75	3.68	7.87	8.4
0540		RC	Surface		6.6			25	.924		1.031		1.070	.093		3.56	7.84	9.2
0541	0850	RS	Surface	24					1.530	.587	5.080	.807	1.090	.005	394.[illegible]	3.47	6.66	9.2
0542		RS	10		6.8		0	24.9	.948		1.276		1.100	.080		4.06	8.35	12.0
0543	1040	3	Surface	12	6.8		0	25.6	.883	.281	2.380	.974	ND	ND	210.75	7.05	13.10	0
0544	1030	2	Surface	11	6.1		0	24	.857	.218	2.540	.852	.034	.026	196.50	6.25	11.48	0
0545	1020	1	Surface	12	5.9			24.5	.341	.026	.994	1.058	.042	.280	57.75	6.13	8.35	4.8
092329	1050	MC	Surface	12	7.3	.22		21.5	.862	.331	1.043		.780	.067	85.50	5.20	7.20	10.8
2330		MC	Bottom		7.4	.24		21.5	1.268	.341	.712		.770	.100		5.63	6.10	10.2
120311	1010	MC	Surface					21.2	1.750	1.410	1.900	4.160	.862	1.580	44.25	10.45		
0312		MC	25						1.890		1.510		.847	1.580		9.91		
								Station 11 - Possum Point										
69063011	1055		Surface	22	7.1	1.46		26.3	1.076	.805	1.386		.970	ND	33.75	8.88		
3012			25		7.0	2.90		25.8	.842		.483		.873	.064	28.50	5.94		
072432	1035		Surface	22	7.0	2.48	1.3	27.5	.826	.565	.711	.672	.195	.235	29.25	6.08	4.83	
2433			Bottom		6.7	2.50	1.3	27.54	.805		.689		.185	.240		6.11	5.68	
080546	1125	LS	Surface	15	6.8		0	26	1.160	.626	2.245	.923	.520	.059	198.75	7.02	8.22	2.4
0547		LS	10		6.2		0	26	.999		1.632		.580	.040		6.73	8.14	2.8
0548		LC	Surface	24	6.6		0	26	.927	.667	1.215	.807	.920	.100	96.75	4.82	8.43	6.0
0549		LC	20		6.7		0	26	.927		1.301		.890	.118		5.09	9.24	5.2
0550		MC	Surface	22	6.7		0	26	1.004	.699	1.278	.852	.91	.108	96.75	5.15	8.71	6.0
0551		MC	25		6.4		0	26.1	.883		1.166		.88	.120		4.99	10.13	6.0
0552		RS	Surface	24	6.6		0	26	.971	.718	1.153	.697	.83	.128	86.25	5.24	8.92	4.8
0553		RS	15		6.2		0	25.9	.951		1.583		.660	.080		6.61	7.61	3.2

LA Laboratory accident
ND Not detectable

Sample Number	Time Sample Taken	Location	Sample Depth Feet	Secchi Disk Inches	Field pH	Salinometer Cond µmhos	Salinometer Salinity 0/00	Salinometer Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	TKN mg/l N mf	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	DO mg/l	TOC mg/l	CO_2 mg/l
								Station 11 - Possum Point -continued										
69092327	1130	MC	Surface	18	7.3	1.42	.72	21.3	.727	.303	.687		.482	.106	85.50	7.24	6.0	7.8
2328		MC	Bottom		7.4	2.16	1.12	21.2	.859	.327	.895		.410	.165		6.50	7.0	8.0
120313	1018	MC	Surface						1.04	.890	.640	2.075	.917	1.14	31.50	10.47		
0314		MC	25						.720		.496		.804	.861		10.60		
								Station 12 - Sandy Point										
69063009	1035		Surface	17	7.4	4.18	.56	26.6	.565	.418	.591		.822	.056	12.75	9.49		
3010			20		6.85	5.5	1.3	25.8	.533		.636		.762	ND	34.50	7.01		
072430	1015		Surface	20	6.6	4.3	2.3	27.6	.780	.490	.544	.689	.125	.137	44.25	7.13	5.90	
2431			Bottom		6.7	5.3	2.9	27.7	.621		.522		.120	.116		7.08	5.52	
080701	1030	LS	Surface	28	7.3	2.0	99.44	24.26	.790	.608	.858		.340	.050	54.75	7.49	7.54	
0702	1020	LC	Surface	24	7.5	1.0	98.84	24.9	.772	.638	1.019		.680	.121	75.00	5.14	7.54	
0703		LC	12		7.4	1.5	99.2	24.68	.829		1.026		.660	.207		4.63	8.71	
0704	1010	MC	Surface	24	7.4	1.1	98.9	24.8	.866	.640	1.052		.770	.142	65.25	5.71	7.87	
0705		MC	12		7.4	1.4	99.1	24.68	.870		.903		.780	.201		4.44	6.57	
0706	1000	RC	Surface	24	7.1	1.1	98.9	24.8	.856	.605	1.155		.790	.185	52.50	5.22	8.92	
0707		RC	20		7.2	1.2	98.9	24.4	.839		1.187		.780	.191		4.51	7.61	
0708	0955	RS	Surface	26	7.0	1.3	99.1	24.6	.855	.644	.955		.730	.188	[illegible]	5.28	6.97	
0709		RS	15		7.0	1.5	99.1	24.2	.759		.942		.680	.168		5.04	8.34	
092325	1115	MC	Surface	6	7.8	2.82	1.62	21.4	.837	.322	1.399		.330	.072	24.75	8.15	5.0	8.0
2326		MC	Bottom		7.6	3.0	1.8	21.1	.993	.325	.528		.312	.091		7.57	11.0	8.4
120315	1031	MC	Surface							.652	.850	2.046	.780	.759	9.00	10.81		
0316		MC	20								.483		.767	.551		10.43		
								Station 13 - Smith Point										
69063007	1020		Surface	24	7.2	7.25	2.3	26	.863	.668	.494		.792	.068	16.50	7.29		
3008			20		7.1	7.7	2.6	25.73	1.151		.563		.800	.070	16.50	6.31		
072428	1000		Surface	15	6.7	6.02	3.3	27.62	.657	.430	.478	.500	.150	.084	33.75	7.10	4.87	
2429			Bottom		6.6	7.5	4.1	27.9	.607		.367		.165	.104		6.92	4.95	
080710	1130	LS	Surface	18	7.6	3.6	.3	25.4	.779	.578	1.019		.100	<.01	58.50	8.91	9.1	
0711	1120	LC	Surface	28	7.4	2.54	99.86	25.1	.784	.635	.858		.418	.100	40.50	6.85	8.15	
0712		LC	12		7.5	3.0	99.9	24.36	.915		.716		.329	.116		6.10	7.42	
0713	1105	MC	Surface	36	7.8	2.72	99.78	25.5	1.590	.526	4.587		.382	ND	307.50	10.93	8.67	
0714		MC	12		7.1	2.76	99.8	24.68	.928		.987		.420	.165		5.47	7.58	
0715	1055	RC	Surface	32	6.9	2.4	99.54	24.84	.767	.600	.852		.455	.124	52.5	6.24	7.13	
0716		RC	20		7.0	3.0	.1	24.32	.745		.910		.407	.152		6.16	7.54	
0717	1050	RS	Surface	32	6.8	2.9	99.84	24.54	.724	.612	.800		.392	.119	34.50	6.43	6.52	
0718		RS	12		6.9	3.32	.2	2.43	.826		.755		.366	.130		6.56	6.88	
0719	1140	1	Surface	12	9.1	4.6	.8	25.3	.270	.004	1.000		ND	ND	81.00	9.69	11.26	
0720	1155	2	Surface	14	9.1	4.2	.6	24.4	.485	.093	1.058		ND	ND	114.00	10.15	10.86	
0721	1200	3	Surface	12	7.7	2.6	99.9	24.7	.796	.427	1.258		ND	ND	103.50	8.02	8.92	
092323	1055	MC	Surface	15	7.7	4.2	2.5	21.5	.768	.333	1.018		.251	.066	36.75	8.27	4.9	9.0
2324		MC	Bottom		7.4	4.5	2.7	21.3	1.123	.355	.859		.248	.092		7.86	13.8	10.8

ND Not detectable

Sample Number	Time Sample Taken	Location	Sample Depth Feet	Secchi Disk Inches	Field pH	Salinometer Cond µmhos	Salinometer Salinity 0/00	Salinometer Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	TKN mg/l N mf	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	DO mg/l	TOC mg/l	CO_2 mg/l
								Station 13 - Smith Point -continued										
69120317	1047	MC	Surface						.436	.452	.300	2.00	.581	.408	18.75	10.21		
0318		MC	20						.355		.170		.424	.346				
								Station 14 - Maryland Point										
69063005	1000		Surface	25	6.9	10.26	4.1	25.5	.416	.310	.449		.650	.056	7.50	5.81		
3006			20		6.8	11.57	4.85	25.36	.405		.415		.552	ND	14.25	5.36		
072426	0940		Surface	20	6.4	8.68	8.4	27.7	.702	.303	1.366	.455	.200	.052	57.75	7.29	6.97	
2427			Bottom		6.5	9.75	5.4	27.7	.495		.256		.280	.088		5.96	5.52	
080722	1255	LS	Surface	15	7.5	5.1	1.1	25.4	.769	.509	1.032		ND	ND	47.25	10.56	9.56	
0723	1300	LC	Surface	24	7.6	5.12	1.2	25.4	.633	.464	.690		.010	ND	67.50	9.65	8.49	
0724		LC	20		7.5	6.14	1.8	24.8	.689		.639		.088	.007		6.81	7.82	
0725	1315	MC	Surface	26	7.7	5.6	1.3	25.4	.602	.452	.639		.041	.007	64.50	9.04	6.97	
0726		MC	35		7.5	7.2	2.4	24.8	.966		.865		.103	.014		6.27	8.15	
0727	1320	RC	Surface	14	7.7	6.2	1.7	25.5	.655	.515	.736		ND	ND	79.50	8.75	7.54	
0728		RC	12		7.5	5.6	1.5	25.3	1.229		.819		.065	ND		7.40	8.00	
0729	1330	RS	Surface	12	8.8	5.4	1.3	25.6	.721	.533	.774		ND	ND	52.50	12.70	9.89	
0730	1240	1	Surface	4	6.9	1.62	09.14	24	.549	.133	1.136		<.010	.008	70.50	5.82	15.08	
0731		2	Surface		6.9	3.4	.2	25	.370	.085	1.019		<.010	ND	77.25	12.58	12.57	
0732	1225	3	Surface	15	8.9	4.7	.9	26	.768	.420	1.381		ND	ND	114.75	7.87	12.12	
092321	1040	MC	Surface	18	7.1	5.7	3.5	21.5	.800	.365	.650		.240	.100	33.00	7.55	5.4	10.6
2322		MC	Bottom		7.2	6.74	4.2	21.2	.894	.373	.773		.201	.107		6.94	5.8	13.4
120319	1101	MC	Surface						.382	.405	.300	1.78	.441	.311	11.25	10.21		
0320		MC	25						.376		1.13		.264	.189		9.20		
								Station 15 - Nanjemoy Creek										
69063003	0920		Surface	22	7.0	13.5	6.0	25.22	.437	.295	.648		.367	.070	12.00	6.49		
3004			18		6.9	16.45	7.92	24.68	.980		.477		.283	.080	6.75	2.95		
072424	0920		Surface	24	6.4	12.8	7.3	27.6	.394	.246	.489	.428	.385	.062	27.75	5.22	4.37	
2425			Bottom		6.7	13.8	7.8	27.6	.440		.244		.390	.058		4.63	3.72	
080801	0930	LS	Surface	24	7.8	9.0	3.4	25	.511	.296	.690		ND	ND	23.25	10.12	8.51	
0802	0940	LC	Surface	24	7.2	6.64	2.0	25	.692	.396	.813		.029	ND	59.25	7.46	9.00	
0803		LC	15		7.0	9.16	3.5	24.9	.491		.884		.055	ND		6.34	6.81	
0804	0955	MC	Surface	26	7.0	7.4	2.44	25	.593	.387	.845		.032	ND	36.75	8.15	6.52	
0805		MC	20		6.5	14.54	6.6	24.9	.469		.561		.251	ND		2.94	5.27	
0806	1010	RC	Surface	26	7.4	8.64	3.3	25.2	.599	.364	.961		.021	ND	30.00	7.96	6.93	
0807		RC	15		6.9	14.74	6.9	25.02	.466		.490		.267	ND		3.19	6.08	
0808	1020	RS	Surface	30	7.1	9.16	3.46	25.4	.444	.342	.697		.066	ND	19.2	7.20	6.48	
0809	1040	1	Surface	18	7.1	11.32	4.62	25.5	.238	ND	.632		ND	ND	12.75	7.88	8.34	
0810	1035	2	Surface	24	7.6	11.2	4.5	25.8	.380	.202	.755		ND	ND	9.75	8.32	6.57	
0811	1030	3	Surface	15	7.6	10.0	4.0	25.4	.593	.389	.587		.056	ND	29.25	6.92	6.00	
092319	1015	MC	Surface	24	7.0	10.22	6.3	21.9	.769	.329	.540		.185	.150	22.50	6.76	5.0	12.2
2320		MC	Bottom		6.9	13.1	8.2	21.8	.768	.318	.168		.179	.165		5.45	5.7	15.4
120321	1122	MC	Surface						.338	.325	.940	1.43	.349	.217	11.25	10.09		
0322		MC	20						.295		.952		.133	.121		9.65		

ND Not detectable

Sample Number	Time Sample Taken	Location	Sample Depth Feet	Secchi Disk Inches	Field pH	Salinometer Cond µmhos	Salinometer Salinity 0/00	Salinometer Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	TKN mg/l N mf	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	DO mg/l	TOC mg/l	CO_2 mg/l
								Station 15A - Mathias Point										
69063001	0845		Surface	48	6.85	14.26	6.53	24.94	1.300	1.063	3.165		.153	.248	9.75	6.89		
3002			25		6.9	17.8	8.86	24.44	.607		.818		.143	.013	8.25	3.53		
072422	0900		Surface	25	6.5	15.4	8.9	27.15	.393	.222	.456	.377	.340	.081	19.50	4.87	4.37	
2423			Bottom		6.3	16.4	9.5	27.15	.401		.622		.360	.080		4.49	4.37	
080812	1120	LS	Surface	20	7.5	9.2	3.5	25.9	.597	.396	.761		ND	ND	21.75	9.11	7.09	
0813	1130	LC	Surface	24	7.9	9.22	3.66	25.9	.573	.342	.800		ND	ND	48.00	9.22	7.25	
0814		LC	20		7.4	18.68	9.22	25.2	.481		.677		.323	ND		1.31	4.69	
0815	1145	MC	Surface		8.3	9.6	3.8	25.9	.547	.350	.774		ND	ND	24.75	8.54	6.76	
0816		MC	40		7.1	20.12	10.28	24.88	.468		.490		.321	ND		.93	6.40	
0817	1150	RC	Surface	36	7.5	11.28	4.6	26	.455	.308	.658		ND	ND	32.25	8.99	6.60	
0818	1200	RS	Surface	40	7.4	11.54	4.82	26.1	.490	.304	.619		.061	ND	26.25	7.78	6.12	
0819	1225	1	Surface	32	7.7	14.3	6.5	26.1	.168	.004	.632		ND	ND	28.50	8.33	9.24	
0820	1210	2	Surface	38	9.1	13.9	6.4	26	.358	.165	.716		ND	ND	33.00	10.15	10.05	
0821	1205	3	Surface	40	7.6	12.32	5.2	26.22	.418	.235	.549		ND	ND	27.75	8.29	7.61	
092317	0955	MC	Surface	24	6.9	13.52	8.4	21.9	.713	.306	2.576		.186	.186	96.00	5.90	4.4	15.0
2318		MC	Bottom		7.0	15.6	9.9	21.9	.896	.318	.466		.162	.197		5.13	4.5	16.2
120323	1142	MC	Surface						.327	.330	.978	.939	.339	.181	22.50	10.64		
0324		MC	20						.256		.965		.127	.101		9.82		
								Station 16 - Route 301 Bridge										
69062645	1145		Surface	36	6.7	15.6	7.6	23.5	.291	.206	.716	.500	.175	.077	13.5	5.27		
			40			18.7	9.7	22.7								1.93		
072313			Surface	37	6.5		10.6	28.5	.399	.224	1.133	.867	.058	.138	48.0	7.59	7.32	
2314			40		5.7		13.6	29	.436		.633		.270	.055	3.75	1.15	3.88	
092201	1255	MC	Surface	36	6.5	16.4	10.3	22.3	.555	.443	1.006		.174	.154	15.75	5.41	3.63	16.0
2202		MC	Bottom		6.5	17.04	10.7	22.0	.608		2.221		.163	.186		4.77	4.07	15.4
120325	1146	MC	Surface						.311	.302	.609	.863	.250	.173	19.50	10.43		
0326		MC	40						.196		1.23		.040	.072		9.71		
								Station 17 - Upper Machodoc										
69062644	1125		Surface	36	6.7	17.3	8.5	23.4	.396	.170	1.489	.614	.067	.050	13.50	5.57		
			30			18.4	9.6	23.0								1.92		
072311			Surface	36	6.8		11.3	28	.329	.206	.467	.722	.068	.088	17.25	7.09	5.25	
2312			25		5.8		15.2	27	.598		.589		.300	.038	3.75	.47	4.19	
092203	1235	MC	Surface	48	6.5	17.5	10.9	22.5	.566	.446	.773		.148	.206	16.50	5.79	4.50	18.8
2204		MC	Bottom		6.7	17.34	11.0	22.2	.585		.982		.141	.164		5.24	4.0	18.0
								Station 18 - Kettle Bottom										
69062643	1100		Surface	48	7.1	17.1	8.5	24.1	.272	.088	1.375	.642	.010	.012	13.5	6.95		
			25			20.4	11.1	21.6								.29		
072309			Surface	49	6.3		11.9	28	.417	.177	.844	.722	.055	.023	18.75	10.93	5.96	
2310			15		5.8		15.4	26.5	.489		.811		.260	.030	3.0	10.92	4.87	
092205	1220	MC	Surface	84	6.5	17.62	11.4	21.5	.556	.374	2.503		.081	.070	19.50	7.66	5.09	15.6
2206		MC	Bottom		6.5	17.7	11.3	21.2	.448		.601		.060	.030		7.18	4.6	16.0

ND Not detectable

Sample Number	Time Sample Taken	Location	Sample Depth Feet	Secchi Disk Inches	Field pH	Salinometer Cond µmhos	Salinometer Salinity 0/00	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	TKN mf	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	DO mg/l	TOC mg/l	CO2 mg/l
								Station 19 - Wicomico Point										
69062642	1035		Surface	60	7.5	18.5	9.4	23.4	.213	.107	.818	.426	.014	ND	18.75	6.52		
			25			22.4	12.52	21.1								1.03		
072307			Surface	50	6.8		12.9	28.5	.375	.202	.500	.717	.056	.037	15.0	6.51	4.99	
2308			20		6.0		15.2	26	.439		.589		.270	.035	2.25	.60	3.74	
092207	1200	MC	Surface	60	6.4	19.1	12.3	21.9	.435	.284	.454		.102	.090	23.25	6.77	4.6	15.0
2208		MC	Bottom		6.6	19.0	12.2	21.5	.419		5.485		.109	.095		5.97	6.1	18.0
								Station 20 - Kingcopisco Point										
69062641	1005		Surface	60	7.3	19.8	10.2	23.6	.213	.093	.682	.381	.010	ND	11.25	6.83		
			25			21.8	11.8	22.5								1.59		
072305			Surface	52	6.4		12.1	28	.342	.185	.522	.539	.040	.025	15.00	6.55	6.17	
2306			20		6.1		18.3	25.5	.403		.578		.260	.027	.75	0.23	2.82	
092209	1130	MC	Surface	48	6.5	21.3	13.8	22.2	.324	.306	.368		.186	.054	18.75	6.31	4.1	17.4
2210		MC	Bottom		6.7	21.12	13.8	21.9	.287		.736		.198	.062		5.80	3.6	18.2
								Station 21 - Ragged Point										
69062640	0930		Surface	60	7.2	21.2	11.1	23.7	.175	.065	.761	.523	ND	.063	11.25	6.45		
			40			25.3	15.1	19.2								.09		
072303			Surface	68	7.2		14.6	28.5	.267	.134	.478	.617	.020	.020	12.75	7.33	4.72	
2304			40		6.3		19.8	25	.197		.344		.200	.021	0	.23	3.34	
092211	1110	MC	Surface	72	6.7	23.1	14.9	22.9	.280	.185	1.706		.250	.038	16.50	5.34	4.2	18.6
2212		MC	Bottom		6.8	23.1	15.0	22.3	.402		1.190		.275	.049		5.03	4.3	20.8
								Station 22 - Piney Point										
69062639	0900		Surface	96	7.3	23.1	12.6	23.4	.129	.037	.727	.596	ND	.027	6.75	6.73		
			40			25.8	14.9	21.0								1.51		
072301			Surface		8.4		15.7	28	.246	.083	.901	.439	.062	.022	28.5	8.55	5.58	
2302			40		7.5		21.0	26	.102		.778		.074	.035	.75	.49	3.15	
092213	1045	MC	Surface	82	6.5	23.5	15.6	22.4	.198	.086	.882		.257	.066	13.50	6.25	2.9	
2214		MC	Bottom		6.8	23.42	15.2	22.0	.234		.614		.273	.051		6.01	3.3	
								Station 23 - Point Lookout										
69071801	1310	LC	Surface	88	8.5	25.7	13.3	25.76	.146	.015	.715	2.267	.004	.017	8.25	9.13	3.1	
1802		LC	35		7.2	34.1	19.64	23.82	.136		.739		.043	.032	33.0	1.89	2.6	
1803		LS	Surface	72	7.5	25.6	13.72	24.76	.264	.076	.528	1.091	.003	.110	9.75	7.13	5.3	
1804		LS	40		7.0	25.83	13.94	24.42	1.325		.982		.005	.124	9.75	5.63	6.4	
1805	1330	M	Surface	92	8.5	25.66	13.31	25.98	.178	.039	1.345	.848	.003	.051	5.25	9.47	3.9	
1806		M	40		7.2	30.76	17.37	23.98	1.325		.558		.016	.069	5.25	2.74	2.8	
1807	1345	RC	Surface	94	8.4	25.92	13.42	25.98	.173	.035	.473	.885	.003	.033	12.0	8.51	3.6	
1808		RC	40		7.2	29.87	16.78	23.7	.131		.739		.010	.034	15.0	1.58	2.8	
1809		RS	Surface	90	7.6	26.25	13.9	25.37	.146	.015	.679	1.030	.009	.045	18.0	6.46	3.4	
1810		RS	15		7.35	26.94	19.74	24.3	.145		.679		.006	.054	9.75	4.09	3.3	

ND Not detectable

Sample Number	Time Sample Taken	Location	Sample Depth Feet	Secchi Disk Inches	Field pH	Salinometer Cond µmhos	Salinometer Salinity 0/00	Salinometer Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	TKN mf	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	DO mg/l	TOC mg/l	CO_2 mg/l
								Station 24 - Smith Point										
69071811			Surface	78	7.95	25.64	13.64	25.28	.213	.049	.715	.679	.003	.058	20.25	8.15	3.7	
1812			25		7.2	26.2	14.23	24.35	.790		.921		.084	.005	13.5	5.06	3.3	
								Station 25 - Point Lookout										
69071813	1405		Surface	90	8.4	25.72	13.4	25.88	.136	.018	.630	.897	.072	.002	12.75	8.38	3.7	
1814			25		7.2	28.43	15.86	23.7	.146		.824		.065	.008	7.50	.78	3.7	

III SURVEY RESULTS

1969
POTOMAC ESTUARY INTENSIVE STUDY
ANNAPOLIS FIELD OFFICE

Sample Number	Date Sample Taken	Water Temp °C Top	Water Temp °C Mid-Depth	Water Temp °C Bottom	Secchi Disk Inches	pH Top	pH Bottom	DO mg/l Top	DO mg/l Bottom	CO_2 mg/l Top	CO_2 mg/l Bottom	TOC mg/l Top	TOC mg/l Mid-Depth	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	TKN mf	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	BOD mg/l
										Station 1 - Key Bridge											
69081210	08-12	25.5		25	10	7.6	7.8	7.36	7.27	7.0	9.2	7.60	7.63	.289	.116	.632	.568	.96	.11	18.75	3.12
1260	08-12	26.5	26	26	9	7.1	7.0	7.95	7.43	16	12	6.80	6.32	.325	.143	.361		.94	.05	26.25	.26
1310	08-13	27.5		28	16	7.6	7.2	7.37	6.93	8.6	9.2	5.77	4.77	.320	.140	.632	.219	1.01	ND	25.50	1.97
1348	08-13	27	27	27	12	8.2	7.6	8.59	8.04	8	15	5.74	5.61	.313	.128	1.963		.96	ND	54.75	3.34
1415	08-14	26		26	12	7.0	7.4	7.56	7.52	5.2	7.0	5.35	5.45	.307	.146	.760	.380	1.07	ND	37.50	1.95
1425	08-14	26.2	26.3	26	15	7.5	7.4	7.92	7.75	4.4	5.0	5.80	5.41	.317	.151	.982		.88	ND	38.25	2.85
										Station 2 - 14th St. Bridge											
69081209	08-12	25.5		25	8	7.3	7.35	7.40	6.45	6.2	9.0	8.05	7.45	.342	.119	.684	.536	.85	.13	7.50	5.74
1259	08-12	26	25.5	25.2	9	7.1	6.8	7.85	7.03	15	22	9.16	7.02	.307	.087	.542		.93	.04	33.75	.46
1309	08-13	26.5		26	14	7.7	7.7	8.02	6.88	6.2	7.4	6.34	4.99	.300	.135	.710	.206	.98	ND	27.75	1.83
1347	08-13	27	27	26.5	12	8.2	7.2	9.09	7.26	8	9	5.91	5.85	.332	.131	.761		.94	.04	61.50	3.81
1414	08-14	26		26	14	7.4	7.5	7.91	7.53	6.0	6.8	4.75	5.28	.328	.155	.712	1.006	1.07	ND	57.00	2.13
1424	08-14	27	26.2	26	14	7.7	7.6	9.08	7.36	6.0	7.0	6.85	4.78	.332	.136	1.055		.93	ND	62.25	2.04
										Station 3 - Haines Point											
69081208	08-12	25		24.5	4	6.95	6.8	4.61	1.91	11.0	11.0	8.49	7.77	.966	.449	1.355	.923	.86	.63	17.25	4.68
1258	08-12	26	15.8	25.5	4	6.9	6.8	6.09	6.33	17	14	7.90	7.46	.462	.170	.877		.82	.16	12.00	2.44
1309	08-13	26.5		25	3	6.8	6.85	5.10	6.42	10.8	11.2	8.20	7.21	.525	.179	.955	.516	.85	.20	11.25	3.74
1346	08-13	27	27	26.5	6	7.55	7.2	7.85	7.30	11	13	6.21	7.08	.351	.149	.577		.97	.05	30.75	4.06
1413	08-14	26		26	8	7.4	7.1	7.60	7.24	9.6	7.6	5.62	6.64	.452	.200	.712	.270	.94	.04	50.25	3.10
1423	08-14	26.5	26.5	26.3	12	7.9	7.7	8.01	7.79	6.5	7.2	8.59	5.83	.344	.142	1.313		.94	.02	38.25	5.42
										Station 4 - Bellevue											
69081207	08-12	25		25	6	6.9	7.0	4.91	4.02	10.0	14.4	8.28	7.82	1.891	1.30	2.039	1.490	.87	1.29	7.50	9.32
1257	08-12	26	25.7	25.5	6	6.8	6.6	4.62	4.65	18	26	7.90	9.09	2.451	1.590	3.445		.97	2.11	30.00	5.56
1307	08-13	25		25	3	6.8	6.8	4.34	4.20	13	13.4	10.53	9.17	LA	1.787	2.607	1.671	.78	1.37	97.50	8.48
1345	08-13	28.8	26	26	6	7.3	7.0	6.87	5.63	17	17	7.62	7.52	.715	.593	.945		.98	.28	40.50	4.56
1412	08-14	26		25.8	8	6.9	7.0	5.86	5.08	9.8	11.0	8.51	7.90	1.438	1.044	1.866	1.031	.86	.78	23.25	5.08
1422	08-14	27.5	26.5	26.5	9	7.4	7.5	7.88	6.88	7.4	8.1	7.73	5.62	.464	.214	1.264		.88	.07	57.00	5.80
										Station 5 - WW Bridge											
69081206	08-12	25.5		26	10	7.0	6.9	3.01	2.59	11.2	15.2	8.19	7.63	.973	.612	1.561	1.155	.90	.90	9.75	8.06
1256	08-12	27.3	26	25.5	8	6.8	6.6	5.53	4.44	13	20	10.02	7.17	.792	.433	1.277		.94	.51	12.75	.86
1306	08-13	25.5		26	6	6.7	6.8	2.86	2.55	14.8	15.0	8.65	7.62	1.600	1.026	1.768	1.452	.85	1.10	15.00	3.50
1344	08-13	26.5	26	26	7	7.05	7.0	5.89	5.66	10	15	7.98	8.31	.525	.328	.761		.90	.27	20.25	5.22
1411	08-14	27.3		26.4	8	6.6	6.7	6.13	4.23	9.2	12.6	9.14	8.01	.905	.615	1.270	1.067	.90	.62	19.50	1.48
1421	08-14	27	26.2	26	12	7.6	7.3	7.77	6.14	6.4	8.4	10.04	7.10	.511	.233	1.705		.86	.11	67.50	6.02

LA Laboratory accident
ND Not detectable

Sample Number	Date Sample Taken	Water Temp °C Top	Water Temp °C Mid-Depth	Water Temp °C Bottom	Secchi Disk Inches	pH Top	pH Bottom	DO mg/l Top	DO mg/l Bottom	CO_2 mg/l Top	CO_2 mg/l Bottom	TOC mg/l Top	TOC mg/l Mid-Depth	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	TKN mg/l N mf	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	BOD mg/l
										Station 6 - Broad CK.											
69081205	8-12	25.5		25	12	7.0	7.0	3.24	2.45	10.8	18.0	7.49	6.81	.901	.583	1.665	1.142	.95	.80	18.75	1.96
1255	8-12		26.5	26	7	6.8	6.7	3.24	2.78	20	30	7.49	8.02	1.062	.629	1.768		.90	.94	18.00	2.38
1305	8-13	25.5		26.5	8	7.0	6.95	2.42	2.54	12.6	13.6	8.46	6.88	.961	.673	1.665	.723	.91	.86	21.75	5.12
1343	8-13	26.8	26.8	26.5	9	6.9	6.85	3.70	3.19	16	15	8.61	7.49	1.204	.831	1.706		.84	.91	17.25	6.34
1410	8-14	26.7		26.2	12	6.5	6.7	3.14	2.07	12.6	14.0	7.24	7.62	1.156	.931	1.730	.877	.86	1.11	10.50	2.96
1420	8-14	27	26.5	26.3	10	7.1	7.0	5.02	3.92	11.0	14.4	9.27	8.54	1.286	.824	3.411		.81	.63	37.50	6.78
										Station 7 - Piscataway CK.											
69081204	8-12	26.5		26	14	7.1	7.1	3.94	3.49	9.4	13.0	8.30	8.13	.903	.609	1.690	1.245	1.03	.83	33.00	4.56
1254	8-12	27.5	27	26.5	13	6.8	6.7	4.22	2.51	12	18	8.10	6.77	.777	.507	1.807		.96	.74	39.75	.44
1304	8-13	26		25.5	8	6.7	6.8	4.15	2.83	13.2	12.8	6.69	6.07	.883	.613	1.781	1.077	1.01	.77	30.00	2.86
1342	8-13	27	27	26.5	9	6.9	6.7	2.89	2.24	20	18	7.21	9.54	.996	.762	1.644		.87	.95	27.00	4.98
1409	8-14	26.5		26	11	6.5	6.7	2.56	2.33	12.2	12.8	6.89	7.98	.942	.684	1.680	1.123	.93	.97	21.00	4.24
1419	8-14	26.5	26.2	26.2	10	7.0	6.9	2.25	2.28	13.5	14.4	8.72	8.01	1.471	.985	3.841		.75	.98	15.75	5.50
										Station 8 - Dogue CK.											
69081203	8-12	27.5		25	14	7.3	7.5	5.97	5.07	7.0	14.8	7.10	6.49	.824	.530	1.716	1.168	.89	.68	58.50	3.42
1253	8-12	28	27.5	27.5	12	6.8	6.7	3.97	2.98	25	15	7.11	6.58	.815	.496	1.536		1.02	.71	35.25	.69
1303	8-13	26		25.5	13	6.7	6.8	4.23	4.26	15	12.2	6.36	7.43	.912	.592	1.652	1.090	1.03	.76	40.50	3.56
1341	8-13	27	26.8	27	10	7.0	6.6	4.43	2.70	14	17	7.17	8.68	.793	.560	1.485		1.00	.74	47.25	4.03
1408	8-14	26.5		26	13	6.9	6.9	5.09	3.66	8.2	10.4	8.78	7.49	.782	.566	1.485	.982	1.01	.71	43.50	1.64
1418	8-14	26.5	26.3	26	12	7.0	6.9	2.20	1.95	14.0	13.6	8.96	7.28	1.081	.796	3.068		.83	.86	28.50	3.37
										Station 9 - Hallowing PT.											
69081202	8-12	27		26	3	7.7	7.6	5.87	5.74	9.0	8.0	28.39	6.57	1.751	.246	6.439	.903	.70	.29	491.25	4.98
1252	8-12	28	27.5	27	14	7.0	6.8	7.63	4.25	17	30	7.62	8.50	.969	.434	2.439		.93	.60	141.00	1.02
1302	8-13	26		26	14	6.95	7.1	6.51	5.41	8.6	9.4	7.57	6.47	.825	.526	1.871	.600	.83	.54	54.75	2.95
1340	8-13	27.3	27.5	26.8	12	7.0	6.7	5.72	4.15	10	15	7.68	7.02	.907	.524	1.571		.98	.66	63.75	5.78
1407	8-14	26.5		26.5	13	7.1	7.3	5.98	5.43	6.6	9.6	7.77	7.73	.738	.510	1.485	.712	.93	.54	57.00	2.74
1417	8-14	27	26.8	26.5	12	7.1	7.0	4.31	3.59	10.6	11.0	9.48	7.03	.805	.543	2.736		.94	.58	67.50	4.81
										Station 10 - Indian Head											
69081201	8-12	26		25	18	6.5	7.0	7.06	6.22	6.8	10.4	7.71	8.16	.892	.477	1.871	.729	.69	.25	82.50	1.27
1251	8-12	28		27	6	7.2	7.2	6.95	5.50	5	11	21.35	9.99	1.935	.296	7.278		.71	.21	606.00	.83
1301	8-13	25.5		26.5	8	6.8	7.0	6.15	5.69	8.2	10.0	15.59	6.29	1.021	.409	3.020	.884	.78	.26	147.00	5.21
1339	8-13	27.5	27	27	12	7.7	7.15	8.33	5.46	15	10	8.32	7.02	.930	.431	2.123		.87	.47	131.25	6.12
1406	8-14	26.5		26	22	6.8	7.1	6.70	5.64	6.6	8.2	7.90	6.82	.678	.461	1.325	.614	.87	.34	58.50	.86
1416	8-14	27	26.5	26.5	13	7.4	7.2	5.89	5.61	8.4	7.4	7.73	6.64	.755	.486	3.337		.86	.44	70.50	5.30

III SURVEY RESULTS
1969
POTOMAC ESTUARY INTENSIVE STUDY
SEWAGE TREATMENT PLANTS
24-HOUR COMPOSITES
ANNAPOLIS FIELD OFFICE

mple nber	Date Sample Taken	Location		Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	TKN mg/l N mf	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l	TOC mg/l	BOD mg/l
1118	8-10	ARLINGTON	INFLUENT					.20	14.90	55.68	75.5
1119			EFFLUENT					6.55	7.50	8.84	10.0
1233	8-11		INFLUENT	25.042		23.582				68.03	108.0
1234			EFFLUENT	21.260	14.792	16.678	9.872	5.50	10.50	26.50	29.4
1317	8-12	ARLINGTON	INFLUENT	21.971		26.534				86.21	LA
1318			EFFLUENT	17.323	15.969	14.509	11.227	4.00	12.20	19.29	LA
1243	8-12	FORT BELVOIR #1	INFLUENT	16.354		30.615				81.02	>384.0
1244			EFFLUENT	8.177	5.547	6.258	2.936	8.55	4.70	10.35	28.4
1327			INFLUENT	12.675		28.988				93.01	LA
1328			EFFLUENT	8.345	8.290	6.196	16.625	6.90	3.90	20.01	LA
1245	8-12	FORT BELVOIR #2	INFLUENT	28.620		34.163				84.10	294.0
1246			EFFLUENT	14.718	10.946	17.066	14.356	4.05	13.75	12.65	32.9
1329			INFLUENT	30.316		41.411				143.55	LA
1330			EFFLUENT	16.901	16.754	52.270	ND	3.55	15.00	19.29	LA
1247	8-12	PENTAGON	INFLUENT	19.114		49.906				100.51	256.5
1248			EFFLUENT	15.434	9.615	23.840	18.485	10.35	16.00	32.56	53.0
1331			INFLUENT	20.598		49.019				134.94	LA
1332			EFFLUENT	17.957	16.579	25.859	19.141	7.15	16.00	37.93	LA
1103	8-11	BLUE PLAINS	INFLUENT	10.9		12.936				27.95	118.50
1104			EFFLUENT	.122	9.982	13.291	6.065	.725	7.59	29.77	55.10
1235			INFLUENT	14.821		16.033				44.77	20.0
1236			EFFLUENT	11.754	7.692	14.969	10.033	.65	10.25	26.67	4.70
1319	8-12	BLUE PLAINS	INFLUENT	16.690		18.528				64.20	LA
1320			EFFLUENT	16.373	13.874	14.018	14.233	.55	10.50	36.62	LA
1105	8-11	FAIRFAX-DOGUE CK	INFLUENT	.277		22.614				40.64	157.5
1107			EFFLUENT	.227		13.001	9.484	3.10	11.35	18.71	44.8
1237	8-12	FAIRFAX-DOGUE CK	INFLUENT	40.374		25.131				89.81	68.5
1238			EFFLUENT	31.073	17.603	14.162	10.194	2.75	11.85	29.39	.90
1321			INFLUENT	25.985		25.00				74.66	LA
1322			EFFLUENT	26.619	27.923	16.104	18.528	1.95	12.70	23.63	LA
1108	8-10	FAIRFAX-WESTGATE	INFLUENT	.231	16.579	23.259				34.89	194.5
1109			EFFLUENT	.177	11.024	16.840	13.323	.775	12.00	49.25	56.0
1241	8-12		INFLUENT	28.620		23.130				91.86	68.5
1242			EFFLUENT	27.904	17.677	22.227	13.420	.25	13.90	73.09	25.5
1325			INFLUENT	40.140		42.700				377.14	LA
1326			EFFLUENT	30.316	20.332	29.540	2.761	.20	15.50	75.75	LA
1239	8-12	FAIRFAX-LITTLE HUNTING	INFLUENT	30.153		24.969				89.23	58.0
1240			EFFLUENT	28.620	18.564	21.001	12.710	1.10	14.50	27.00	5.20
1323			INFLUENT	29.999		25.920				85.46	LA
1324			EFFLUENT	29.68	24.869	24.417	18.374	.80	16.25	31.69	LA

Not detectable
Laboratory accident

III SURVEY RESULTS
1969
POTOMAC ESTUARY INTENSIVE STUDY
SEWAGE TREATMENT PLANTS
24-HOUR COMPOSITES
ANNAPOLIS FIELD OFFICE

ple ber	Date Sample Taken			Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	TKN mg/l N mg	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	TOC mg/l	BOD mg/l
1110	8-10	PISCATAWAY CK.	INFLUENT	.171		22.356				55.89	115.0
1111			EFFLUENT	.082	7.725	3.678	2.355	5.65	2.80	11.14	19.4
1249	8-11		INFLUENT	18.807		32.228				43.59	107.0
1250			EFFLUENT	9.403	7.544	4.484	1.774	7.45	4.30	10.93	6.80
1112	8-10	ANDREWS AFB PLANT 1	INFLUENT	.082		11.778				24.28	61.0
1113			EFFLUENT	.128	12.499	2.258	1.355	7.13	1.34	8.92	11.0
1229	8-11		INFLUENT	25.962		18.001				41.02	86.5
1230			EFFLUENT	14.412	11.538	5.194	2.581	8.15	4.35	10.15	8.20
1313	8-12		INFLUENT	14.788		5.429				14.00	LA
1314			EFFLUENT	21.654	19.372	18.712	12.454	ND	13.05	44.64	LA
1114	8-10	ANDREWS AFB PLANT 4	INFLUENT	.098		21.227	2.678			27.54	80.5
1115			EFFLUENT	.128	11.371	3.613		7.25	2.25	16.15	1.70
1231	8-11		INFLUENT	14.105		16.291				34.74	56.5
1232			EFFLUENT	18.398	18.786	4.936	2.613	9.50	4.30	10.93	6.20
1315	8-12		INFLUENT	52.394		26.380				71.59	LA
1316			EFFLUENT	21.337	18.412	7.515	3.282	8.75	4.90	14.99	LA
1116	8-10	ALEXANDRIA	INFLUENT					.15	11.70	44.32	94.0
1117			EFFLUENT					.20	14.90	55.68	75.5
1227	8-11		INFLUENT	44.259		24.163				75.48	189.5
1228			EFFLUENT	28.722	25.813	20.292	11.162	.5	14.75	38.46	59.1
1311	8-12		INFLUENT	30.950		32.669				92.62	LA
1312			EFFLUENT	29.999	26.789	21.472	16.565	ND	14.05	45.93	LA

Laboratory accident
Not detectable

III SURVEY RESULTS
1969
POTOMAC ESTUARY COOPERATIVE STUDY
ANNAPOLIS FIELD OFFICE

Sample Number	Time Sample Taken	Water Temp °C	Sample Depth Feet	NH_3 mg/l N	NH_3 mf mg/l N	NO_2+NO_3 mg/l NO_3-N	NO_2+NO_3 mg/l NO_3-N mf	Inorganic P PO_4 mg/l	Inorganic P PO_4 mg/l mf	Total P PO_4 mg/l	TKN mg/l N
						Station 1 - Key Bridge					
69101609	1105	18.5	Surface	.07		.02		.037			
1610		18	Bottom	.07		.02		.048			
						Station 2 - 14th Street Bridge					
69101611	1145	18.5	Surface	.21		.06		.095			
1612		18.5	Bottom	.23		.07		.110			
						Station 3 - Haines Point					
69101613	1205	19	Surface	1.54		.51		1.27			
1614		19	Bottom	1.55		.51		1.42			
						Station 4 - Bellevue					
69101615	1225	19	Surface	2.83		.68		2.83			
1616		19	Bottom	2.65		.68		2.90			
						Station 5 - Woodrow Wilson Bridge					
69101617	1240	19	Surface	2.10		1.13		2.31			
1618		19	Bottom	2.20		1.12		2.34			
						Station 6 - Broad Creek					
69101619	1305	19	Surface	1.03		>1.50		1.85			
1620		19	Bottom	1.02		>1.50		1.82			
						Station 7 - Piscataway Creek					
69101401		20	Surface	1.19	LA	1.25	LA	1.62	1.68		
1402	1905	20	Bottom	.95	LA	1.36	LA	1.72	1.67		
1413	2155	19.5	Surface	.71	LA	>1.50	LA	1.40		1.927	1.460
1414	2150	19.5	Bottom	.71	LA	>1.50	LA	1.57		2.036	1.448
101501	0137	20	Surface	.97		>1.41		1.59			
1502		19.5	Bottom	1.12		>1.41		1.78			
1513	0600	18	Surface	1.50		1.23		1.84		2.365	2.332
1514		17.5	Bottom	1.48		1.26		1.95		2.507	2.134
1525	0930	19	Surface	.97		1.14		1.53			
1526		19.5	Bottom	1.03		1.34		1.69			

LA Laboratory accident

Sample Number	Time Sample Taken	Water Temp °C	Sample Depth Feet	NH_3 mg/l N	NH_3 mf mg/l N	NO_2+NO_3 mg/l NO_3-N	NO_2+NO_3 mg/l NO_3-N mf	Inorganic P PO_4 mg/l	Inorganic P PO_4 mg/l mf	Total P PO_4 mg/l	TKN mg/l N
					Station 7 -continued- Piscataway Creek						
69101537	1355	19.5	Surface	.91		>1.41		1.52		2.147	2.060
1538		19	Bottom	1.05		>1.41		1.78		2.477	1.950
1549	1854	19	Surface	1.48		1.25		1.77			
1550		19	Bottom	1.50		1.25		1.96			
101601	1220	20	Surface	.16		>1.50		1.22			
1602		19	Bottom	.13		>1.50		1.36			
					Station 8 - Dogue Creek						
69101403	1845	20	Surface	.75	LA	>1.36	LA	1.67	1.64		
1404	1840	20	Bottom	.74	LA	>1.36	LA	1.71	1.66		
1415	2133	19.5	Surface	.07	LA	>1.50	LA	1.14		1.686	1.042
1416	2125	19	Bottom	.10	LA	>1.50	LA	1.14		1.828	1.178
1503	0115	19.5	Surface	.09		>1.41		1.30			
1504		20	Bottom	.08		>1.41		1.29			
1515	0545	18	Surface	.98		>1.41		1.72		2.431	1.900
1516		17	Bottom	.91		1.37		1.81		3.547	2.282
1527	0910	18	Surface	.29		>1.41		1.43			
1528		19	Bottom	.39		>1.41		1.45			
1539	1335	19	Surface	.14		>1.41		1.34		1.728	1.380
1540		19.2	Bottom	.09		>1.41		1.26		1.894	1.730
1551	1730	19	Surface	.75		>1.41		1.64			
1552		19	Bottom	.70		>1.41		1.64			
1603	1148	19	Surface	.03		1.50		1.00			
1604	1145	19.5	Bottom	.05		1.45		.973			
					Station 9 - Hallowing Creek						
69101405	1818	20	Surface	.03	LA	1.36	LA	.98	.92		
1406	1810	20	Bottom	.03	LA	1.36	LA	.99	.91		
1417	2105	19	Surface	.08	LA	1.45	LA	.86		1.336	1.018
1418	2100	19.5	Bottom	.04	LA	1.25	LA	.70		1.106	1.178
1505	0045	20	Surface	.01		1.34		.845			
1506		19.5	Bottom	.01		1.27		.755			
1517	0510	17.5	Surface	.02		1.37		1.23		1.818	.872
1518		18.5	Bottom	.05		1.37		1.23		1.861	.700
1529	0840	18.5	Surface	.04		>1.41		1.02			
1530		19	Bottom	.03		>1.41		.995			
1541	1315	19	Surface	.03		1.16		.885		1.150	1.460
1542		18.5	Bottom	.05		.92		.848		1.574	2.220
1553	1710	19	Surface	.02		>1.41		1.05			

LA Lab accident

Sample Number	Time Sample Taken	Water Temp °C	Sample Depth Feet	NH_3 mg/l N	NH_3 mf mg/l N	NO_2+NO_3 mg/l NO_3-N	NO_2+NO_3 mg/l NO_3-N mf	Inorganic P PO_4 mg/l	Inorganic P PO_4 mg/l mf	Total P PO_4 mg/l	TKN mg/l N
						Station 9 -continued - Hallowing Creek					
69101554		18.8	Bottom	.04		>1.41		.940			
1605	1128	19	Surface	.06		1.38		.770			
1606	1125	19.5	Bottom	.05		1.38		.782			
						Station 10 - Indian Head					
69101407	1756	20	Surface	.04	LA	1.29	LA	.89	.86		
1408	1750	19.5	Bottom	.02	LA	1.25	LA	.86	.81		
1419	2044	19	Surface	.04	LA	1.33	LA	.68		1.095	.970
1420	2040	19.5	Bottom	.05	LA	1.33	LA	.71		1.336	1.214
1507	0010	20	Surface	.03		1.32		.685			
1508		20	Bottom	.03		1.32		.703			
1519	0440	19	Surface	.02		1.07		.825		1.357	.850
1520		19.5	Bottom	.02		1.07		.850		1.555	1.030
1531	0800	19	Surface	.02		1.30		.815			
1532		19	Bottom	.02		1.30		.775			
1543	1255	18.5	Surface	.03		1.06		.808		1.156	1.130
1544		18.5	Bottom	.03		1.05		.975		1.354	1.100
1555	1650	18.5	Surface	.02		1.34		.802			
1556		18.8	Bottom	.03		1.34		.790			
1607	1054	19	Surface	.04		1.28		.600			
1608		19	Bottom	.04		1.24		.579			
						Station 11 - Possum Point					
69101409	1717	19.5	Surface	.08	LA	.92	LA	.48	.44		
1410	1709	19.5	Bottom	.09	LA	.88	LA	.45	.42		
1545	1217	18.5	Surface	.09		.56		.513		.702	1.040
1546		18	Bottom	.09		.57		.447		.633	.858
1557	1618	18.5	Surface	.06		1.04		.473			
1558		18.5	Bottom	.08		.88		.447			
						Station 12 - Sandy Point					
69101411	1640	19.5	Surface	.08	LA	.57	LA	.41	.39		
1412	1630	20.0	Bottom	.07	LA	.57	LA	.42	.38		
1559	1555	19	Surface	.06		.58		.413			
1560		18.5	Bottom	.06		.50		.397			

LA Lab accident

III SURVEY RESULTS
1969
POTOMAC ESTUARY COOPERATIVE STUDY
ANNAPOLIS FIELD OFFICE

Sample Number	Time Sample Taken	Water Temp °C	pH Field	pH Lab	Sample Depth Feet	CO_2 mg/l	CO_2** G C mg/l	DO mg/l	Chloro-phyll a µg/l	ALK mg/l	TOC* mg/l	TC* mg/l	Total ** Bacti Count/ml
							Station 1 - Key Bridge						
69101609	1105	18.5	6.9	7.7	Surface	5.0	5.0	7.39	77.25	80.8	16.3	24.6	1200
1610		18	6.8	7.65	Bottom	3.4	7.1	7.41		80.8	5.8	24.7	505
							Station 2 - 14th Street Bridge						
69101611	1145	18.5	6.9	7.7	Surface	4.8	6.4	6.87	54.75	88.4	5.7	25.6	0
1612		18.5	7.1	7.7	Bottom	4.4	3.6	5.91		88.4	5.3	96.0	575
							Station 3 - Haines Point						
69101613	1205	19	7.1	7.6	Surface	8.4	8.2	4.55	30.00	100.7	6.9	30.2	550
1614		19	7.0	7.55	Bottom	8.6	7.1	4.20		99.8	6.2	30.3	890
							Station 4 - Bellevue						
69101615	1225	19	6.9	7.45	Surface	15.0	9.2	3.04	18.00	102.6	9.2	34.8	42,000
1616		19	6.8	7.35	Bottom	12.6	7.5	2.61		104.5	8.5	33.8	19,400
							Station 5 - Woodrow Wilson Bridge						
69101617	1240	19	6.9	7.4	Surface	11.0	9.1	3.34	49.50	100.7	7.8	31.3	2,156
1618		19	6.6	7.4	Bottom	11.6	13.9	2.80		99.8	8.4	31.4	21,700
							Station 6 - Broad Creek						
69101619	1305	19	6.9	7.4	Surface	11.9	6.5	3.91	72.75	92.2	8.1	31.1	215
1620		19	6.8	7.4	Bottom	12.6	7.4	3.43		93.1	7.2	29.7	290
							Station 7 - Piscataway Creek						
69101401		20	7.1	7.1	Surface	19.0	8.1	3.53	82.50	96.9			410
1402	1905	20	7.3	7.25	Bottom	16.6	6.4	3.10		95.0			270
1413	2155	19.5	7.0	7.3	Surface	18.8	9.3	2.65	78.00	90.3	6.96		490
1414	2150	19.5	7.2	7.4	Bottom	18.0	7.6	2.44		91.2	7.54		400
101501	0137	20	7.1	7.5	Surface	16.0	8.7	3.35	43.50	95.0			615
1502		19.5	7.0	7.5	Bottom	17.0	11.2	3.12		98.8			400
1513	0600	18	6.6	7.6	Surface	13.0	18.7	3.62	51.00	99.8	7.25		1030
1514		17.5	6.4	7.6	Bottom	11.0	20.5	3.79		104.5	8.35		355
1525	0930	19	8.2	7.5	Surface	12.0	.9	4.10		93.1			270
1526		19.5	8.1	7.45	Bottom	12.0	.9	4.48		95.1			220
1537	1355	19.5	6.86	7.6	Surface	18.6	10.0	3.85	90.00	96.9	7.84		
1538		19	6.95	7.5	Bottom	17.4	5.9	4.02		96.0	7.40		

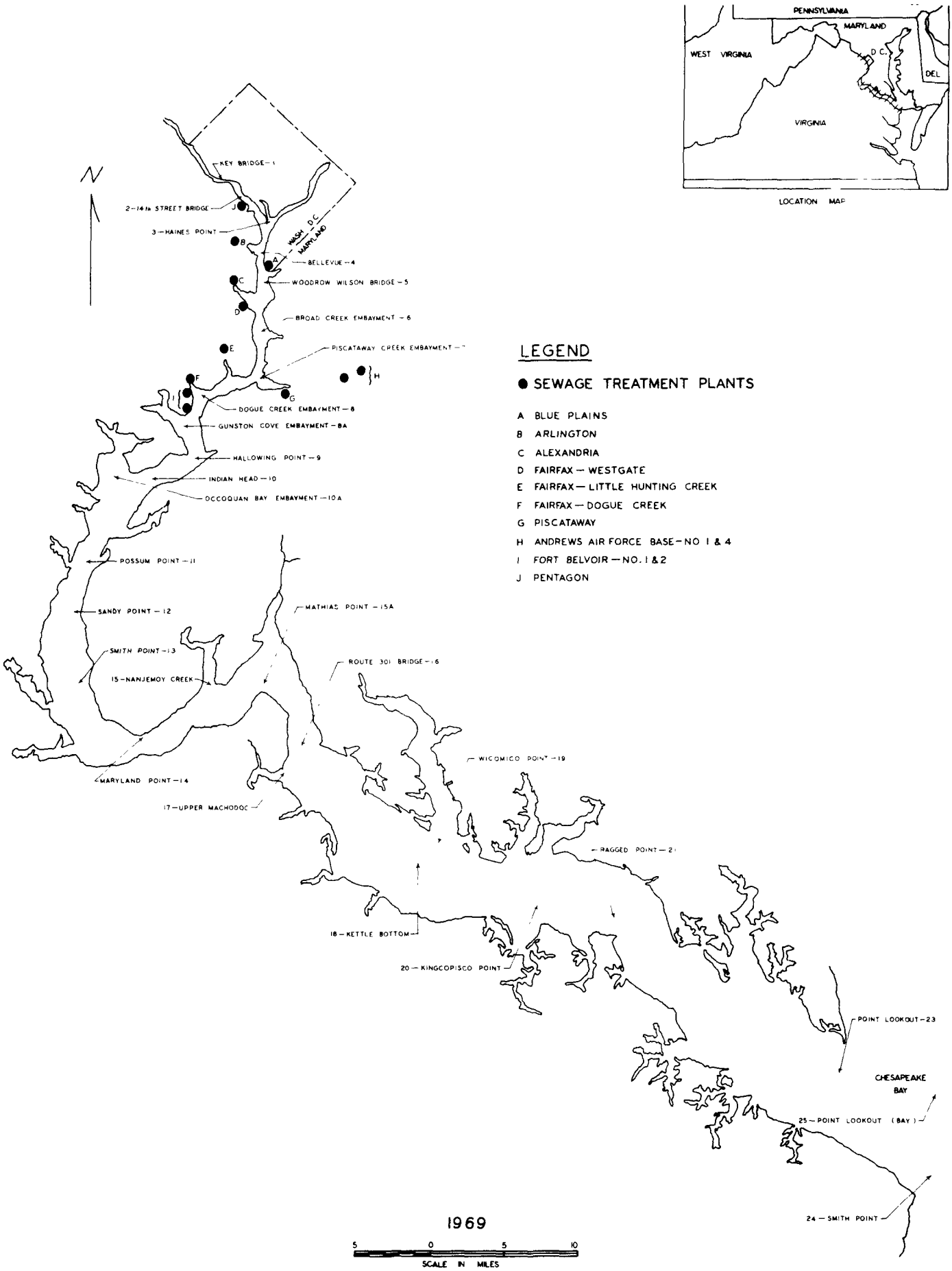
* - Analysis run by FWPCA - DC Pilot Plant
** - Analysis run by Southeast Water Laboratory, Athens, Georgia

Sample Number	Time Sample Taken	Water Temp °C	pH Field	pH Lab	Sample Depth Feet	CO_2 mg/l	CO_2** G C mg/l	DO mg/l	Chlorophyll a µg/l	ALK mg/l	TOC * mg/l	TC * mg/l	Total** Bacti Count/ml
							Station 7 -continued - Piscataway Creek						
69101549	1754	19	6.95	7.9	Surface	15.4	7.8	5.56	62.25	95.0			485
1550		19	6.82	7.4	Bottom	17.6	11.0	4.11		96.0			415
101601	1220	20	7.5	7.3	Surface	13.8	3.9	4.68	114.00	85.5	9.0	27.5	385
1602		19	7.5	7.2	Bottom	11.8	3.8	5.22		85.5	9.8	35.1	365
							Station 8 - Dogue Creek						
69101403	1845	20	7.1	7.2	Surface	18.0	8.1	2.49	75.00	91.2			830
1404	1840	20	7.3	7.35	Bottom	17.0	6.4	2.28		90.3			375
1415	2133	19.5	7.15	7.4	Surface	13.0	7.2	5.71	105.00	84.6	9.59		640
1416	2125	19	6.9	7.6	Bottom	13.6	8.7	5.47		83.6	7.84		430
101503	0115	19.5	7.1	7.7	Surface	11.0	8.3	4.72	64.50	94.1			775
1504		20	7.0	7.7	Bottom	12.0	9.0	4.64		91.2			690
1515	0545	18	7.0	7.6	Surface	16.0	9.7	2.87	53.25	99.8	8.42		475
1516		17	7.0	7.6	Bottom	12.0	8.5	3.13		98.8	9.81		350
1527	0910	18	8.0	7.45	Surface	13.0	1.2	4.10		88.4			270
1528		19	8.0	7.4	Bottom	12.0	1.4	3.77		88.4			610
1539	1335	19	8.8	7.6	Surface	14.6	.1	4.96	90.00	93.1	8.57		285
1540		19.2	6.83	7.6	Bottom	13.8	9.5	5.20		91.2	10.03		360
1551	1730	19	6.87	7.4	Surface	19.6	9.0	3.95	96.75	92.2			185
1552		19	6.82	7.2	Bottom	20.8	9.9	3.65		92.2			190
101603	1148	19	7.4	7.9	Surface	9.4	3.2	7.76	129.75	83.6	8.9	27.7	110
1604	1145	19.5	7.4	7.9	Bottom	8.4	4.5	7.39		82.7	12.5	28.3	475
							Station 9 - Hallowing Creek						
69101405	1818	20	7.0	7.2	Surface	9.8	7.0	6.66	146.25	80.8			450
1406	1810	20	7.3	7.6	Bottom	8.8	6.1	6.61		80.8			840
1417	2105	19	7.0	7.7	Surface	29.0	7.3	7.08	112.50	79.8	8.49		200
1418	2100	19.5	7.2	7.9	Bottom	6.8	7.5	7.52		77.9	9.44		875
101505	0045	20	7.1	8.1	Surface	6.4	7.6	7.26	69.00	82.7			200
1506		19.5	7.1	8.2	Bottom	5.6	5.0	7.40		83.6			850
1517	0510	17.5	7.45	7.9	Surface	10.0	4.0	5.70	95.25	89.3	8.20		940
1518		18.5	7.1	8.0	Bottom	9.0	5.1	5.58		90.3	8.49		670
1529	0840	18.5	8.0	7.85	Surface	7.4	.9	7.27		82.7			160
1530		19	8.0	7.85	Bottom	7.2	.7	6.74		81.7			390
1541	1315	19	6.75	8.0	Surface	11.2	9.0	7.99	142.50	78.9	7.62		505
1542		18.5	6.85	7.65	Bottom	11	7.1	7.79		79.8	13.53		365

* - Analysis run by FWPCA - DC Pilot Plant
** - Analysis run by Southeast Water Laboratory, Athens, Georgia

Sample Number	Time Sample Taken	Water Temp °C	pH Field	pH Lab	Sample Depth Feet	CO_2 mg/l	CO_2** G C mg/l	DO mg/l	Chloro-phyll a µg/l	ALK mg/l	TOC * mg/l	TC * mg/l	Total** Bacti Count/ml
							Station 9 -continued - Hallowing Creek						
69101553	1710	19	6.95	7.5	Surface	9.6	5.3	8.26	151.50	81.7			195
1554		18.8	6.93	7.8	Bottom	12.2	6.7	7.90		81.7			150
101605	1128	19	7.3	7.8	Surface	5.6	4.2	8.09	108.00	78.9	12.4	27.7	370
1606	1125	19.5	7.4	7.6	Bottom	5.8	5.1	7.41		77.9	12.4	27.1	540
							Station 10 - Indian Head						
69101407	1756	20	7.1	7.6	Surface	8.0	8.0	7.19	123.75	78.9			260
1408	1750	19.5	7.0	7.7	Bottom	7.8	10.5	7.28		78.9			725
1419	2044	19	7.0	7.7	Surface	8.0	5.1	7.09	105.00	77.0	8.27		325
1420	2040	19.5	7.3	7.5	Bottom	7.6	4.0	6.73		76.0	7.84		660
101507	0010	20	7.4	8.1	Surface	7.0	8.0	7.38	58.50	80.8			675
1508		20	7.1	8.0	Bottom	7.0	6.7	7.22		79.8			520
1519	0440	19	7.3	8.1	Surface	9.0	4.2	7.40	78.00	86.5	7.69		385
1520		19.5	6.9	8.2	Bottom	9.0	7.2	7.45		86.5	8.42		100
1531	0800	19	7.7	7.9	Surface	8.0	2.7	7.21		78.9			320
1532		19	7.3	7.8	Bottom	8.4	4.6	7.05		78.9			255
1543	1255	18.5	9.5	7.9	Surface	10.4	0	7.88	132.00	77.9	8.71		200
1544		18.5	6.85	8.0	Bottom	8.8	7.7	7.37		78.9	9.30		385
1555	1650	18.5	6.93	7.8	Surface		5.6	8.52	147.75	79.8			225
1556		18.8	6.87	7.2	Bottom	10.2	8.1	7.51		79.8			400
101607	1059	19	7.2	7.9	Surface	6.4	5.9	8.52	82.50	75.1	8.0	24.0	380
1608		19	7.3	7.85	Bottom	7.2	5.5	7.73		74.1	10.7	26.0	470
							Station 11- Possum Point						
69101409	1717	19.5	6.8	7.8	Surface	5.6	14.3	6.98	67.50	69.4			415
1410	1709	19.5	7.2	7.8	Bottom	6.6	5.4	6.85		71.3			640
101545	1217	18.5	6.95	7.6	Surface	8.2	6.0	7.56	72.75	70.3	10.17		200
1546		18	5.9	7.8	Bottom	8.8	25.8	7.29		70.3	7.32		1175
1557	1618	18.5	6.92	7.8	Surface	8.0	7.4	8.05	60.00	71.3			230
1558		18.5	6.85	7.7	Bottom	8.0	6.7	7.01		70.3			105
							Station 12 - Sandy Point						
69101411	1640	19.5	7.8	7.8	Surface	5.4	3.2	7.61	62.25	69.4			200
1412	1630	20.0	7.5	7.7	Bottom	6.0	5.7	7.51		70.3			190
101559	1555	19	6.85	8.1	Surface	8.0	8.1	8.44	75.00	68.4			105
1560		18.5	6.78	7.9	Bottom	8.4	8.0	7.86		68.4			140

* - Analysis run by FWPCA - DC Pilot Plant
** - Analysis run by Southeast Water Laboratory, Athens, Georgia



POTOMAC ESTUARY

Annapolis Field Office
Region III
Environmental Protection Agency

1969 Data Report

Number 19

WATER QUALITY SURVEY

OF THE

POTOMAC ESTUARY

PHOSPHATE TRACER STUDY

Staff

James W. Marks, Chief, Laboratory Section
Orterio Villa, Jr., Chemist
Anna R. Favorite, Statistician
Evelyn P. McPherson, Technician

TABLE OF CONTENTS

Page

I INTRODUCTION..... 1

II STATION LOCATIONS..... 5

III SURVEY RESULTS..... 7

IV MAP.....appendix i

I INTRODUCTION

A. Purpose and Scope

From November 3 through December 1, 1969, the Annapolis Field Office, Environmental Protection Agency, Region III conducted a water quality survey of the Potomac Estuary. The purpose of this study was to determine the usefulness of inorganic phosphate as a tracer.

B. General Remarks

The use of tracer techniques in water quality studies is time proven and well documented. Dyes and conservative parameters such as chlorides are normally used in tracer studies. The present study investigates the feasibility of using inorganic phosphate (orthophosphate) as a tracer in place of dyes or more conservative elements.

Composite samples were taken from four major sewage treatment plants: Blue Plains, Arlington, Alexandria and Fairfax Westgate.

Dye injections were made at specific times to provide additional flow information. Dye releases were monitored by fluorometers at three locations in the study area.

The use of inorganic phosphate instead of dye to determine the diffusion coefficients offers promise and is worthy of further investigation.

C. Sampling Procedures

Samples were obtained using a small submersible pump attached to a wire cable calibrated in feet. The pump was lowered to the desired depth and allowed to run for two minutes before receiving samples in plastic cubitainers. All samples were immediately stored on ice and the analysis started upon return to the laboratory, generally within two hours of sampling.

D. Measured Parameters and Analytical Methods

1. Water temperature was determined using a mercury thermometer inserted into the sample container immediately upon collection.

2. Total Phosphorus

Reference: Menzel, D.W. and Corwin, N., 1965. The Measurement of Total Phosphorus in Seawater Based on the Liberation of Organically Bound Fractions by Persulfate Oxidation. Limonology and Oceanography, 10: 280-282.

Murphy, J. and Riley, J.P., 1962. A Modified Single Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

Total Phosphorus was determined after persulfate oxidation of the sample in an autoclave at 15 psi for 30 minutes. The resultant ortho-phosphate was then determined

colorimetrically as the molybdenum-blue complex with the optical density measured at 882 mμ.

3. Inorganic Phosphorus

Reference: Murphy, J. and Riley, J.P., 1962. A Modified Single Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

Inorganic Phosphorus was determined by automation of the above procedure using the Technicon "Auto Analyzer." The molybdenum-blue complex formed was determined colorimetrically with the optical density measured at 885 mμ.

4. Total Kjeldahl Nitrogen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

Total Kjeldahl Nitrogen includes ammonia and organic nitrogen and was determined by the standard micro-kjeldahl procedure. The sample was digested in the presence of strong acid to convert the organic nitrogen to ammonia. The ammonia was then distilled, collected in boric acid solution, nesslerized and determined colorimetrically.

5. Nitrate + Nitrite

Reference: A Practical Handbook of Sea Water Analysis, J.D.H. Strickland and T.R. Parsons, Bulletin 167, Fisheries Research Board of Canada, Ottawa, Canada, 1968.

Nitrate plus nitrite nitrogen was determined by automation of the above procedure using the Technicon "Auto Analyzer." This procedure utilizes cadmium reduction of nitrate to nitrite and subsequent diazotization with sulfanilamide and N-(1-naphthyl)-ethylenediamine dihydrochloride with the optical density measured at 540 mμ. The results were reported as nitrogen.

6. Ammonia

Reference: Southeast Water Laboratory, FWQA, Methodology for the colorimetric determination of ammonia by the phenol-hypochlorite reaction.

FWPCA Methods for Chemical Analysis of Water and Wastes, November 1969.

Ammonia nitrogen was determined by automation of the phenol-hypochlorite procedure as described in the Southeast Water Laboratory Methodology and later adopted as the official FWPCA procedure. The intensity of the indophenol blue color, formed by the reaction of ammonia with alkaline phenol-hypochlorite, was increased using sodium nitroprusside as an intensifying agent. The optical density was measured at 630 mμ and calculated as NH_3-N.

II STATION LOCATIONS

Number	Location
1	Key Bridge
2	14th Street Bridge
2B	Memorial Bridge
3	Haines Point
3A	East Potomac Park
3C	Hunter Point, National Airport
4	Bellevue
4A	Above Blue Plains STP
5	Woodrow Wilson Bridge
5A	Rosier Bluff
6	Broad Creek
7	Piscataway Creek
8	Dogue Creek
8A	Gunston Cove
9	Hallowing Point
10	Indian Head
11	Possum Point
12	Sandy Point
CB3	Great Falls

Number	Station
1	Alexandria STP
2	Arlington STP
3	Blue Plains STP
4	Fairfax STP Westgate

III SURVEY RESULTS

1969
POTOMAC ESTUARY PHOSPHATE TRACER STUDY
ANNAPOLIS FIELD OFFICE

Sample Number	Date Sample Taken	Time Sample Taken	Transect Location	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
			Station 1 - Key Bridge						
69110301	11-3	0916		13.5		.070		.072	.710
0317		1457		15		.075		ND	ND
0401	11-4	1039	A1			.120			
0402		1041	A2			.125			
0403		1045	A3			.133			
0404		1039	B1			.140			
0405		1041	B2			.143			
0406		1045	B3			.133			
0407		1041	C2			.138			
0501	11-5	1118		13		.082		ND	[illegible]
0601	11-6	1221		11.5		.120		.087	.163
0701	11-7	1348		10		.097		.295	.095
0801	11-8	0725		9.5		.113		.376	.090
1001	11-10	0812		9	.471	.174		.791	.058
1018		1438		10		.145		.820	.042
1101	11-11	1227	A1			.173		.86	.049
1102		1230	A2			.221		.86	.037
1103		1235	A3			.254		.82	.028
1104		1227	B1			.273		.84	.022
1105		1230	B2			.285		.86	.029
1106		1235	B3			.283		.81	.044
1107		1227	C1			.289		.86	.015
1108		1230	C2			.288		.84	.025
1201	11-12	1000		10.5		.163		.95	.040
1218		1552		10		.278		.98	.059
1401	11-13	1302	A1						
1402		1305	A2						
1403		1308	A3						
1404		1302	B1						
1405		1305	B2						
1406		1308	B3						
1407		1302	C1						
1408		1305	C2						
1501	11-14	1258		10		.188		.91	.018
1701	11-17	0910		6.5		.210		1.03	.052
1718		1445		7		.308		.979	.075
1801	11-18	1312	A1			.182			
1802		1315	A2			.252			
1803		1318	A3			.285			
1804		1312	B1			.305			
1805		1315	B2			.312			
1806		1318	B3			.325			
1807		1312	C1			.335			
1808		1315	C2			.335			
1901	11-19	1028		7.5	.400	.310		.816	.116
1918		1713		8		.238		.800	.089
1940					.394				

D Not detectable

Sample Number	Date Sample Taken	Time Sample Taken	Transect Location	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
				Station 2 - 14th Street Bridge					
69110303	11-3	0900		13		.138		.114	.873
0319		1442		13.5		.112		.022	.018
0408	11-4	1104	A1			.143			
0409		1106	A2			.143			
0410		1108	A3			.138			
0411		1109	A4			.138			
0412		1110	A5			.140			
0413		1112	A6			.148			
0414		1104	B1			.150			
0415		1106	B2			.148			
0503	11-5	1100		11		.090		ND	.076
0603	11-6	1201		11		.128		.018	.115
0703	11-7	1332		11		.092		.154	.095
0803	11-8	0710		10.5		.122		.182	.125
1003	11-10	0801		9	.435	.228		.749	.030
1020		1420		10		.210		.758	.033
1109	11-11	1152	A1					.74	.029
1110		1155	A2					.73	.043
1111		1157	A3					.75	.044
1112		1158	A4					.77	.062
1113		1159	A5					.78	.038
1114		1200	A6					.75	.035
1115		1152	B1					.75	.029
1116		1155	B2					.76	.041
1203	11-12	0946		10		.225		.85	.059
1220		1533		10		.272		.88	.053
1409	11-13	1232	A1			.231			
1410		1236	A2			.298			
1411		1237	A3			.331			
1412		1238	A4			.338			
1413		1240	A5			.353			
1414		1242	A6			.349			
1415		1232	B1			.408			
1416		1236	B2			.393			
1503	11-14	1250		10		.294		.93	.072
1703	11-17	0902		7		.279		1.02	.047
1718		1445		7		.308		.979	.075
1809	11-18	1252	A1			.335			
1810		1254	A2			.340			
1811		1256	A3			.330			
1812		1257	A4			.329			
1813		1258	A5			.316			
1814		1259	A6			.308			
1815		1252	B1			.343			
1816		1254	B2			.348			
1903	11-19	1019		7.5	.384	.305		.805	.117
1920		1653		8		.314		.841	.127
1941					.351				
2501	11-24	1435		5.5		.394		1.05	.114
2601	11-26	1433		6	.278				

ND Not detectable

Sample Number	Date Sample Taken	Time Sample Taken	Transect Location	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
				Station 2B - Memorial Bridge					
9110302	11-3	0905		13		.083		.041	.382
0318		1445		14		.109		ND	.015
0502	11-5	1107		12		.079		.022	.104
0602	11-6	1208		11.5		.125		.020	.115
0702	11-7	1336		11		.092		.180	.090
0802	11-8	0713		10		.129		.301	.120
1002	11-10	0804		9	.304	.212		.804	.036
1019		1426		10		.180		.762	.027
1202	11-12	0950		10		.209		.90	.043
1219		1539		10.5		.290		.90	.071
1502	11-14	1300		10		.255		.90	.061
1702	11-17	0905		6.5		.277		1.04	.057
1719		1437		7		.332		.578	[illegible]
1902	11-19	1022		7	.402	.317		.190	.071
1919		1701		8		.283		.1[illegible]	[illegible]
				Station 3 - Haines Point					
9110305	11-3	0852		14		.512		[illegible]	.[illegible]5
0321		1433		15.5		.722		[illegible]	.990
0416	11-4	1125	A1			.157			
0417		1140	A2			.171			
0418		1145	A3			.192			
0419		1147	A4			.178			
0420		1151	A5			.532			
0421		1151	A6			.640			
0422		1156	A7			.628			
0423		1140	B1			.192			
0424		1145	B2			.184			
0425		1149	B3			.174			
0426		1151	B4			.539			
0427		1154	B5			.610			
0428		1156	B6			.657			
0429		1144	C1			.454			
0430		1151	C2			.517			
0431		1154	C3			.640			
0432		1156	C4			.645			
0505	11-5	1047		11.5		.091		ND	.085
0605	11-6	1153		11		.131		.021	.122
0705	11-7	1325		11		.101		.076	.105
0805	11-8	0703		12		.870		.208	1.04
1005	11-10	0755		12	1.49	.840		.354	.822
1022		1413		10		.208		.712	.041
1117	11-11	1142	A1			.271		.74	.035
1118		1139	A2			.280		.69	.07[illegible]
1119		1136	A3			.300		.67	.093
1120		1133	A4			.309		.66	.091
1121		1126	A5			.585		.48	.57
1122		1123	A6			.815		.48	.73
1123		1118	A7			1.05		.47	.92
1124		1139	B1			.337		.69	.088
1125		1136	B2			.372		.68	.096
1126		1133	B3			.352		.66	.106
1127		1126	B4			.665		.50	.594
1128		1123	B5			.855		.48	.720
1129		1118	B6			1.11		.47	.917
1130		1133	C1			.372		.67	.107
1131		1126	C2			.730		.51	.60
1132		1123	C3			.908		.48	.77
1133		1118	C4			1.12		.47	.91

) Not detectable

Sample Number	Date Sample Taken	Time Sample Taken	Transect Location	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
				Station 3 - Haines Point -continued					
69111205	11-12	0940		11		.990		.56	1.05
1222		1525		10		.250		.80	.040
1417	11-13	1216	A1			.330			
1418		1215	A2			.314			
1419		1212	A3			.322			
1420		1210	A4			.349			
1421		1205	A5			.383			
1422		1202	A6			.381			
1423		1200	A7			.434			
1424		1215	B1			.373			
1425		1212	B2			.358			
1426		1210	B3			.364			
1427		1205	B4			.381			
1428		1202	B5			.415			
1429		1200	B6			.435			
1430		1210	C1			.394			
1431		1205	C2			.373			
1432		1202	C3			.415			
1433		1200	C4			.436			
1505	11-14	1245		10.5		.451		.78	.348
1705	11-17	0855		9.5		.291		.816	.241
1722		1427		9		1.07		.817	.902
1817	11-18	1246	A1			.365			
1818		1243	A2			.320			
1819		1240	A3			.343			
1820		1238	A4			.356			
1821		1235	A5			.390			
1822		1232	A6			.530			
1823		1229	A7			.481			
1824		1243	B1			.353			
1825		1240	B2			.365			
1826		1238	B3			.376			
1827		1235	B4			.406			
1828		1232	B5			.350			
1829		1229	B6			.332			
1830		1238	C1			.251			
1831		1235	C2			.409			
1832		1232	C3			.491			
1833		1229	C4			.463			
1905	11-19	1012		10	.511	.362		.647	.386
1922		1645		10		.685		.824	.593
1940					.398				
2503	11-24	1427		6		.380		.968	.148
2603	11-26	1426		5.5	.354				
				Station 3A - East Potomac Park					
69110304	11-3	0855		13		.150		.014	.100
0320		1437		14.5		.185		.071	.174
0504	11-5	1056		11.5		.090		ND	.075
0604	11-6	1158		11		.125		.018	.117
0704	11-7	1329		11		.102		.104	.124
0804	11-8	0706		10.5		.126		.138	.165
1004	11-10	0758		9.5	.437	.310		.649	.271
1021		1416		10		.212		.758	.041

ND Not detectable

Sample Number	Date Sample Taken	Time Sample Taken	Transect Location	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
			Station 3A - East Potomac Park -continued						
111204	11-12	0943		10		.263		.75	.16
1221		1528		10		.261		.85	.053
1504	11-14	1247		10		.304		.93	.10
1704	11-17	0859		8		.262		.986	.034
1721		1430		8		.292		.92	.04
1904	11-19	1014		7	.415	.320		.694	.12
1921		1648		8		.390		.85	.109
2502	11-24	1430		5		.395		1.07	.090
2602	11-26	1429		5.5	.326				
			Station 3C - Hunter Point, National Airport						
110305	11-3	0852		15		.512		.294	.795
0322		1428		17		>3.0		.37	2.0
0433	11-4	1220	A1			2.10			
0434		1217	A2			1.30			
0435		1215	A3			.955			
0436		1209	A4			.705			
0437		1206	A5			.760			
0438		1205	A6			.585			
0439		1217	B1			.492			
0440		1209	B2			.875			
0441		1206	B3			.693			
0442		1205	B4			.571			
0443		1209	C1			.900			
0444		1206	C2			.845			
0445		1209	D1			.730			
0446		1209	D2			.770			
0506	11-5	1041		13		.374		.242	.640
0606	11-6	1147		11.5		.291		.243	.520
0706	11-7	1319		12		.160		.215	.324
0806	11-8	0700		11.5		2.47		.253	2.26
1006	11-10	0752		12.5	1.93	1.23		.316	1.15
1023		1408		11.5		.402		.437	.275
1134	11-11	1106	A1			.870		.75	.32
1135		1102	A2			.350		.69	.066
1136		1056	A3			.409		.60	.17
1137		1051	A4			1.39		.46	1.11
1138		1045	A5			1.51		.46	1.21
1139		1042	A6			1.46		.47	1.09
1140		1102	B1			.353		.67	.093
1141		1051	B2			1.36		.46	1.09
1142		1045	B3			1.47		.45	1.18
1143		1042	B4			1.47		.47	1.15
1144		1051	C1			1.19		.47	.88
1145		1045	C2			1.42		.46	1.12
1146		1051	D1			1.31		.47	1.00
1147		1045	D2			1.30		.49	1.09
1206	11-12	0937		12		2.14		.48	2.07
1223		1521		11		.425		.63	.35
1434	11-13	1152	A1			1.33			
1435		1151	A2			.312			
1436		1150	A3			.537			
1437		1142	A4			1.15			
1438		1137	A5			1.43			
1439		1135	A6			1.66			
1440		1151	B1			.935			
1441		1142	B2			1.10			
1442		1137	B3			.855			

Sample Number	Date Sample Taken	Time Sample Taken	Transect Location	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
			Station 3C - Hunter Point, National Airport -continued						
9111443	11-13	1135	B4			1.18			
1444		1142	C1			1.07			
1445		1137	C2			.677			
1446		1142	D1			.755			
1447		1137	D2			.930			
1506	11-14	1241		11		1.28		.67	1.28
1706	11-17	0850		8.5		.375		.878	.252
1723		1425		9.5		1.69		.817	1.56
1834	11-18	1218	A2			2.10			
1835		1215	A3			.324			
1836		1210	A4			.732			
1837		1206	A5			.790			
1838		1203	A6			1.06			
1839		1218	B1			1.45			
1840		1210	B2			.843			
1841		1206	B3			.610			
1842		1203	B4			1.03			
1843		1210	C1			.870			
1844		1206	C2			.678			
1845		1210	D1			.712			
1846		1206	D2			.685			
1906	11-19	1010		9	.673	.464		.677	.363
1923		1641		11		2.06		.782	1.87
2001	11-20	1300	A4			.345			
2002		1252	A5			.374			
2003		1249	A6			.427			
2004		1300	B2			.400			
2005		1251	B3			.378			
2006		1249	B4			.430			
2007		1300	C1			.391			
2008		1251	C2			.377			
2009		1300	D1			.380			
2010		1251	D2			.385			
2504	11-24	1422		8		.398		.861	.163
2604	11-26	1423		6.5	.486				
			Station 4 - Bellevue						
9110307	11-3	0844		15		1.69		.338	>2.0
0323		1425		16		>3.0		.325	>2.0
0447	11-4	1242	A1			1.71			
0448		1240	A2			1.75			
0449		1237	A3			3.98			
0450		1236	A4			2.90			
0451		1233	A5			2.87			
0452		1230	A6			3.17			
0453		1236	B1			5.42			
0454		1233	B2			1.56			
0455		1230	B3			4.92			
0456		1233	C1			5.45			
0507	11-5	1036		13.5		.730		.248	.928
0607	11-6	1144		11		.416		LA	.512
0707	11-7	1315		12		.222		.207	.390
0807		0656		11.5		1.96		.308	1.90
1007	11-10	0747		12.5	2.27	1.51		.290	1.79
1024		1403		11.5		.695		.401	.520
1148	11-11	1035	A1			1.17		.63	.60

LA Laboratory accident

Sample Number	Date Sample Taken	Time Sample Taken	Transect Location	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
			Station 4 - Belleyue -continued						
59111149	11-11	1034	A2			.845		.54	.52
1150		1032	A3			1.53		.45	1.18
1151		1030	A4			1.55		[illegible]	[illegible]
1152		1027	[illegible]			1.62		.44	[illegible]
1153		1024	A6			1.74		.46	[illegible]
1154		1030	B1			1.38		.46	1.19
1155		1027	B2			1.64		.44	[illegible]
1156		1024	B3			1.76		.43	[illegible]
1157		1027	C1			1.37		.45	.96
1207	11-12	0930		[illegible]		2.96		.48	[illegible]
1224		1517		11		.673		.59	.60
1448	11-13	1127	A1			.885			
1449		1126	A2			.880			
1450		1100	A3			.915			
1451		1121	A4			1.43			
1452		1121	A5			3.04			
1453		1121	A6			2.92			
1454		1124	B1			1.31			
1455		1121	B2			1.71			
1456		1120	B3			2.70			
1457		1121	C1			1.33			
1507	11-14	1240		11.5		1.99		.60	1.80
1707	11-17	0847		8.5		.448		.932	.495
1724		1422		10.5		2.80		.746	2.38
1847	11-18	1156	A1			.935			
1848		1155	A2			2.00			
1849		1153	A3			2.71			
1850		1151	A4			1.15			
1851		1148	A5			2.21			
1852		1147	A6			5.56			
1853		1151	B1			1.65			
1854		1148	B2			1.43			
1855		1147	B3			1.45			
1856		1148	C1			.875			
1907	11-19	1006		9	.989	.732		.661	.706
1924		1636		11	[illegible]	2.32		.781	1.93
1943					1.36				
2011	11-20	1244	A2			.381			
2012		1241	A3			.433			
2013		1239	A4			.435			
2014		1238	A5			.431			
2015		1234	A6			.503			
2016		1239	B1			.565			
2017		1237	B2			.462			
2018		1234	B3			.505			
2019		1237	C1			.462			
2505	11-24	1419		8.5		.398		.836	.181
2605	11-26			7	.651				
			Station 4A - Above Blue Plains STP						
59110308	11-3	0840		16.5		2.79		.775	>2.0
0324		1422		16.5		3.0		.407	>2.0
0457	11-4	1301	A1			3.98			
0458		1255	A2			4.70			
0459		1259	A3			5.91			
0460		1252	A4			5.20			
0461		1301	B1			4.70			
0462		1255	B2			4.25			
0463		1259	B3			3.95			
0464		1252	B4			4.92			
0465		1301	C1			4.00			

Sample Number	Date Sample Taken	Time Sample Taken	Transect Location	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
			Station 4A - Above Blue Plains STP -continued						
69110466	11-4	1255	C2			4.94			
46[illegible]		1259	C3			4.33			
46[illegible]		1252	C4			3.05			
5[illegible]	11-5	103[illegible]		14		2.27		.315	1.95
6[illegible]	11-6	1140		12		1.23		LA	1.12
[illegible]	11-7	1310		12		1.57		.204	1.06
[illegible]	11-[illegible]	0653		11.5		2.22		.375	3.20
1[illegible]	11-10	0744		12	2.28	1.61		.340	1.84
19[illegible]		1339		12.5		1.46		.419	1.28
11[illegible]	11-11	1017	A1			1.51		.48	1.26
1159		1014	A2			1.52		.49	1.26
1160		1010	A3			1.57		.46	1.39
1161		1007	A4			1.69		.45	1.54
1162		1017	B1			1.77		.41	1.75
1163		1014	B2			1.84		.42	1.76
1164		1010	B3			1.81		.43	1.69
1165		1007	B4			1.86		.42	1.78
1166		1017	C1			1.72		.43	1.57
1167		1014	C2			1.93		.39	1.88
1168		1010	C3			1.97		.39	1.90
1169		1007	C4			2.17		.37	2.07
1208	11-12	0935		13.5		1.74		.57	1.57
1225		1513		13		1.56		.64	1.51
1453	11-13	1111	A1			1.59			
1459		1110	A2			1.48			
1460		1107	A3			1.59			
1461		1105	A4			1.59			
1462		1111	B1			1.59			
1463		1110	B2			1.49			
1464		1107	B3			1.47			
1465		1105	B4			1.73			
1466		1111	C1			1.56			
1467		1110	C2			1.59			
1468		1107	C3			1.68			
1469		1105	C4			1.94			
1508	11-14	1236		14.5		1.65		.70	1.47
1703	11-17	0845		9.0		1.49		.816	1.27
1725		1420		9.5		1.98		.747	1.85
1857	11-18	1141	A1			1.74			
1858		1138	A2			1.92			
1859		1136	A3			2.12			
1860		1133	A4			2.63			
1861		1141	B1			1.90			
1862		1138	B2			2.35			
1863		1136	B3			2.08			
1864		1133	B4			2.34			
1865		1141	C1			1.86			
1866		1138	C2			1.94			
1867		1136	C3			2.00			
1868		1133	C4			2.21			
1903	11-19	1002		10	4.00	2.07		.623	.866
1925		1629		11		2.27		.702	2.11
1949					.970				
20[illegible]	11-20	1238	A1			..735			

LA Laboratory accident

Sample Number	Date Sample Taken	Time Sample Taken	Transect Location	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
			Station 4 A - Above Blue Plains STP -continued						
69112021	11-20	1226	A2			.820			
2022		1223	A3			.990			
2023		1218	A4			1.25			
2024		1227	B1			1.05			
2025		1225	B2			.735			
2026		1223	B3			1.04			
2027		1218	B4			1.22			
2028		1227	C1			.865			
2029		1225	C2			.600			
2030		1222	C3			1.08			
2031		1218	C4			1.27			
2506	11-24	1415		9		1.60			
2606	11-26	1415		8	2.385			.845	1.4[illegible]
				Station 5 - WW Bridge					
69110309	11-3	0837		16		>3.0[illegible]		.655	>2.[illegible]
0325		1419		16		>3.0		.476	>[illegible].0
0469	11-4	1314	A1			4.63			
0470		1318	A2			4.80			
0471		1321	A3			4.92			
0472		1325	A4			4.90			
0473		1326	A5			4.94			
0474		1314	B1			4.93			
0475		1318	B2			4.45			
0476		1318	C1			4.84			
0477		1314	C2			4.84			
0509	11-5	1025		14		2.08		.328	1.92
0609	11-6	1134		12.5		1.47		LA	1.43
0709	11-7	1301		12		1.85		.217	.975
0809	11-8	0650		11.5		2.44		.460	4.20
1009	11-10	0740		11.5	2.94	2.19		.372	2.39
1026		1354		12		1.14		.379	.902
1170	11-11	0950	A1			2.33		.39	2.23
1171		0954	A2			2.22		.38	2.16
1172		0957	A3			2.23		.37	2.18
1173		0957	A4			2.21		.32	2.21
1174		1000	A5			2.19		.32	2.07
1175		0950	B1			2.35		.39	2.22
1176		0954	B2			2.26		.37	2.15
1177		0950	C1			2.34		.40	2.22
1178		0954	C2			2.27		.38	2.16
1209	11-12	0925		11.5		2.27		.42	2.41
1226		1504		12		1.48		.54	1.04
1470	11-13	1050	A1			1.96			
1471		1047	A2			1.94			
1472		1055	A3			1.93			
1473		1047	A4			1.95			
1474		1057	A5			2.04			
1475		1050	B1			2.00			
1476		1047	B2			1.86			
1477		1050	C1			2.12			
1478		1047	C2			2.02			
1509	11-14	1232		12		2.28		.46	2.06
1709	11-17	0841		9		1.65		.878	1.39
1726		1417		9.5		2.08		.691	1.94
1869	11-18	1119	A1			2.13			

LA Laboratory accident

Sample Number	Date Sample Taken	Time Sample Taken	Transect Location	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
				Station 5 - WW Bridge -continued					
69111870	11-18	1122	A2			2.42			
1871		1124	A3			2.11			
1872		1125	A4			2.07			
1873		1119	B1			2.19			
1874		1122	B2			2.47			
1875		1119	C1			2.21			
1876		1122	C2			2.50			
1909	11-19	0957		10	3.86	2.26		.722	1.65
1926		1625		10.5		2.34		.735	2.09
1944					2.41				
2032	11-20	1147	A1			1.04			
2033		1149	A2			1.03			
2034		1151	A3			1.43			
2035		1153	A4			1.59			
2036		1147	B1			1.37			
2037		1149	B2			1.03			
2038		1147	C1			1.05			
2039		1149	C2			1.05			
2507	11-24	1412		9		1.86		1.03	1.08
2607	11-26	1412		8.5	3.209				
				Station 5A - Rosier Bluff					
69110310	11-3	0832		16		>3.0		.608	>2.0
0326		1414		15		2.79		.605	>2.0
0478	11-4	1355	A1			4.60			
0479		1353	A2			4.69			
0480		1350	A3			4.64			
0481		1342	A4			2.54			
0482		1340	A5			3.57			
0483		1350	B1			3.65			
0484		1342	B2			3.80			
0485		1340	B3			3.93			
0486		1350	C1			3.90			
0487		1342	C2			3.90			
0488		1340	C3			3.98			
0489		1350	D1			4.00			
0490		1342	D2			4.02			
0491		1340	D3			4.17			
0510	11-5	1020		15		3.38		.387	5.65
0610	11-6	1129		13		3.07		LA	3.25
0710	11-7	1257		12		1.76		.282	1.67
0810	11-8	0646		11		3.63		.589	4.85
1010	11-10	0736		11	3.33	2.69		.413	2.98
1027		1346		12		1.73		.246	1.75
1179	11-11	0944	A1			3.98		.19	8.61
1180		0942	A2			4.22		.46	2.35
1181		0937	A3			4.06		.28	2.22
1182		0932	A4			4.10		.31	3.34
1183		0927	A5			4.00		.28	1.96
1184		0937	B1			4.00		.33	2.09
1185		0932	B2			4.10		.34	2.25
1186		0927	B3			4.00		.29	2.16
1187		0937	C1			4.18		.37	2.50
1188		0932	C2			4.14		.37	2.44
1189		0927	C3			4.06		.34	2.07
1190		0937	D1			4.18		.37	2.07
1191		0932	D2			4.20		.38	2.47
1192		0927	D3			4.06		.33	2.25

LA Laboratory accident

Sample Number	Date Sample Taken	Time Sample Taken	Transect Location	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
			Station 5A - Rosier Bluff -continued						
9111210	11-12	0921		11		2.85		.40	2.77
1227		1458		12.5		2.63		.38	1.74
1479	11-13	1042	A1			2.30			
1480		1040	A2			2.38			
1481		1037	A3			2.42			
1482		1030	A4			2.50			
1483		1027	A5			2.42			
1484		1037	B1			2.30			
1485		1030	B2			2.28			
1486		1027	B3			2.34			
1487		1037	C1			2.34			
1488		1030	C2			2.42			
1489		1027	C3			2.28			
1490		1037	D1			2.34			
1491		1030	D2			2.38			
1492		1027	D3			2.36			
1510	11-14	1230		11		2.20		.44	2.00
1710	11-17	0837		9		1.88		.847	1.64
1727		1413		9		2.32		.550	1.10
1877	11-18	1111	A1			2.33			
1878		1110	A2			2.13			
1879		1105	A3			2.77			
1880		1102	A4			2.42			
1881		1057	A5			2.44			
1882		1105	B1			2.29			
1883		1102	B2			2.32			
1884		1057	B3			2.30			
1885		1105	C1			2.26			
1886		1102	C2			2.31			
1887		1057	C3			2.32			
1888		1105	D1			2.30			
1889		1102	D2			2.30			
1890		1057	D3			2.31			
1910	11-19	0954		10	4.17	2.60		.694	2.13
1927		1621		10		2.13		.700	1.97
2040	11-20	1140	A1			.975			
2041		1138	A2			.855			
2042		1134	A3			.895			
2043		1128	A4			.920			
2044		1125	A5			1.10			
2045		1134	B1			.935			
2046		1128	B2			.930			
2047		1125	B3			1.12			
2048		1134	C1			.945			
2049		1128	C2			1.07			
2050		1125	C3			1.17			
2051		1134	D1			.950			
2052		1128	D2			1.05			
2053		1125	D3			1.17			
2508	11-24	1407		9		1.86		.894	1.40
2608	11-26	1408		8.5	3.538				
120101	12-1	1217		7		1.78		.890	1.93

LA Laboratory accident

Sample Number	Date Sample Taken	Time Sample Taken	Transect Location	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
				Station 6 - Broad Creek					
10311	11-3	0825		15.5		>3.0		.655	>2.0
0327		1409		14.5		2.41		.738	>2.0
0492	11-4	1406	A1			4.10			
0493		1409	A2			3.67			
0494		1412	A3			3.25			
0495		1416	A4			3.25			
0496		1427	A5			3.26			
0497		1425	A6			2.82			
0498		1437	A			2.35			
0499		1412	B1			2.90			
04100		1416	B2			3.23			
04101		1412	C1			3.21			
04102		1416	C2			3.24			
04103		1416	D1			3.28			
0611	11-5	1012		15		3.98		.409	5.24
0611	11-6	1123		12		3.75		LA	4.30
0711	11-7	1272		12.7		1.98		.331	2.07
0811	11-8	0646		11		2.92		.762	4.85
1011	11-10	0730		11	7.36	4.13		.599	2.71
1028		1341		11.7		1.96		.252	2.43
1193	11-11	1349	A1			4.90		.38	3.38
1194		1347	A2			4.94		.37	3.00
1195		1347	A3			4.52		.38	2.51
1196		1341	A4			4.20		.46	2.47
1197		1331	A5			4.10		.32	3.78
1198		1328	A6			4.18		.40	2.46
1199		1325	A7			4.24		.40	2.59
11100		1344	B1			4.30		.40	2.62
11101		1340	B2			4.10		.36	2.46
11102		1343	C1			4.14		.35	2.31
11103		1339	C2			4.28		.47	2.53
1211	11-12	0918		11		3.04		.51	2.88
1228		1453		12		2.58		.35	1.93
1493	11-13	0958	A1			2.86			
1494		1000	A2			2.58			
1495		1004	A3			2.50			
1496		1012	A4			2.40			
1497		1019	A5			2.36			
1498		1004	B1			2.52			
1499		1012	B2			2.48			
14100		1004	C1			2.50			
14101		1012	C2			2.50			
14102		1012	D1			2.44			
1511	11-14	1225		11		2.38		.50	2.54
1711	11-17	0835		9		1.80		.793	1.74
1728		1410		9		2.62		.534	2.19
1891	11-18	1106	A1			1.53			
1892		1105	A2			1.93			
1893		1104	A3			2.06			
1894		1100	A4			2.12			
1895		1050	A5			1.95			
1896		1103	B1			2.24			
1897		1059	B2			2.18			
1898		1102	C1			2.28			
1899		1058	C2			2.26			

LA Laboratory accident

Sample Number	Date Sample Taken	Time Sample Taken	Transect Location	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
				Station 6 - Broad Creek -continued					
9111911	11-19	0951		10	3.94	2.36		.662	2.01
1928		1613		9.5		2.14		.671	2.11
1945					2.52				
2054	11-20	1208	A1			2.38			
2055		1206	A2			2.89			
2056		1204	A3			2.34			
2057		1200	A4			2.21			
2058		1155	A5			2.26			
2059		1153	A6			2.17			
2060		1151	A7			1.96			
2061		1203	B1			2.28			
2062		1159	B2			2.30			
2063		1202	C1			2.28			
2064		1158	C2			2.25			
2065		1157	D1			2.25			
2509	11-24	1401		9		1.97		.886	1.74
2609	11-26	1405		8.5	3.055				
120102	12-1	1206		7		2.04		.856	1.96
				Station 7 - Piscataway Creek					
9110328	11-3	1400		15		1.88		1.05	1.79
04104	11-4	1455	A1			1.70			
04105		1459	A2			1.85			
04106		1502	A3			1.99			
04107		1507	A4			2.21			
04108		1510	A5			2.21			
04109		1512	A6			2.31			
04110		1515	A7			1.71			
04111		1502	B1			1.97			
04112		1507	B2			2.23			
04113		1502	C1			2.09			
04114		1507	C2			2.20			
04115		1502	D1			2.08			
04116		1507	D2			2.21			
04117		1502	E1			2.02			
04118		1507	E2			2.21			
0512	11-5	1002		14		3.49		.763	4.37
0612	11-6	1114		12		3.87		LA	4.41
0712	11-7	1242		12.5		3.17		.546	2.87
0812	11-8	0631		11		3.29		1.03	4.28
1012	11-10	0722		11	1.58	4.00		.795	3.32
1029		1331		12		2.87		.389	2.70
11104	11-11	1309	A1			4.50		.45	2.96
11105		1308	A2			4.50		.54	2.81
11106		1306	A3			4.60		.57	2.94
11107		1300	A4			4.54		.60	3.12
11108		1249	A5			4.44		.55	2.84
11109		1243	A6			2.30		.53	2.84
11110		1240	A7			2.89		.54	2.78
11111		1305	B1			3.20		.55	2.87
11112		1259	B2			3.35		.55	2.85
11113		1304	C1			3.50		.65	3.50
11114		1258	C2			3.48		.60	3.10
11115		1303	D1			3.48		.64	2.94
11116		1257	D2			3.17		.55	2.68
11117		1302	E1			3.48		.59	3.00
11118		1256	E2			3.44		.57	2.90

LA Laboratory accident

Sample Number	Date Sample Taken	Time Sample Taken	Transect Location	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
				Station 7 - Piscataway Creek -continued					
69111212	11-12	0910		11		2.89		.64	2.84
1229		1443		12		2.84		.38	2.72
14103	11-13	0947	A1			2.56			
14104		0945	A2			2.88			
14105		0940	A3			2.60			
14106		0935	A4			2.64			
14107		0930	A5			2.60			
14108		0940	B1			2.58			
14109		0935	B2			2.64			
14110		0940	C1			2.60			
14111		0935	C2			2.52			
14112		0940	D1			2.66			
14113		0935	D2			2.52			
14114		0940	E1			2.54			
14115		0935	E2			2.38			
1512	11-14	1216		11		2.44		.66	2.48
1712	11-17	0827		9		2.10		.634	2.12
1729		1402		9		2.30		.529	2.34
18101	11-18	1128	A1			2.34			
18102		1127	A2			2.34			
18103		1128	A3			2.32			
18104		1119	A4			2.28			
18105		1112	A5			2.24			
18106		1124	B1			2.30			
18107		1118	B2			2.28			
18108		1123	C1			2.34			
18109		1117	C2			2.42			
18110		1122	D1			2.48			
18111		1116	D2			2.42			
18112		1121	E1			2.50			
18113		1115	E2			2.40			
1912	11-19	0944		9	3.22	2.18		.562	2.05
1929		1602		10		2.18		.690	2.10
1946					3.13				
2066	11-20	1145	A1			2.30			
2067		1143	A2			2.22			
2068		1141	A3			2.30			
2069		1135	A4			2.28			
2070		1130	A5			2.32			
2071		1128	A6			1.98			
2072		1126	A7			2.26			
2073		1140	B1			2.41			
2074		1134	B2			2.39			
2075		1139	C1			2.30			
2076		1133	C2			2.39			
2077		1138	D1			2.37			
2078		1132	D2			2.30			
2079		1137	E1			2.31			
2080		1131	E2			2.34			
2510	11-24	1353		9		2.04		.804	1.87
2610	11-26	1358		8.5	2.604				
120103	12-1	1155		7		2.05		.874	1.89
				Station 8 - Dogue Creek					
69110329	11-3	1350		14.5		1.13		1.11	.435
0512	11-5	1002		14		3.49		.763	4.37
0713	11-7	1233		12		2.86		.847	2.63
0813	11-8	0620		10.5		1.55		1.17	1.59

Sample Number	Date Sample Taken	Time Sample Taken	Transect Location	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
			Station 8 - Dogue Creek -continued						
9111013	11-10	0714		11	2.33	1.99		1.24	2.26
1030		1321		11		3.38		.559	2.78
11119	11-11	1212	A1			3.42		.99	3.38
11120		1208	A2			3.46		.81	3.93
11121		1203	A3			3.25		.84	2.63
11122		1200	A4			2.69		.89	2.90
11123		1156	A5			3.09		.86	4.78
11124		1152	A6			3.06		.89	5.12
11125		1148	A7			3.29		.94	3.48
11126		1159	B1			2.89		.56	11.05
11127		1155	B2			3.14		.96	2.69
11128		1151	B3			3.23		.90	3.45
11129		1147	B4			2.88		.97	3.69
11130		1154	C1			3.09		1.02	2.97
1213	11-12	0905		11		2.28		.95	2.60
1230		1434		11		2.95		.57	2.67
1513	11-14	1115		10		1.89		1.06	1.98
1713	11-17	0818		9		2.32		.585	2.29
1730		1355		8.5		2.10		.746	2.21
18114	11-18	1146	A3			2.38			
18115		1144	A4			2.40			
18116		1142	A5			2.38			
18117		1138	A6			2.34			
18118		1135	A7			2.28			
18119		1143	B1			2.52			
18120		1141	B2			2.46			
18121		1137	B3			2.42			
18122		1134	B4			2.38			
18123		1140	C1			2.32			
1913	11-19	0936		9	3.44	2.26		.560	2.08
1930		1550		9.5		1.79		.832	2.06
1947					2.34				
2081	11-20	1117	A1			2.08			
2082		1116	A2			2.08			
2083		1114	A3			2.10			
2084		1113	A4			2.25			
2085		1110	A5			2.30			
2086		1106	A6			2.30			
2087		1104	A7			2.23			
2088		1112	B1			2.27			
2089		1109	B2			2.38			
2090		1105	B3			2.30			
2091		1103	B4			2.31			
2092		1108	C1			2.37			
2511	11-24	1344		9		2.11		.663	2.01
2611	11-26	1349		8	3.154				
120104	12-1	1146		7		1.78		.847	1.83
			Station 8A - Gunston Cove						
9110330	11-3	1344		14		1.06		1.10	.447
0714	11-7	1227		12		2.51		1.02	2.56
1014	11-10	0709		10.5	2.11	1.77		1.26	1.95
1031		1314		11		3.40		.703	2.73
11131	11-11	1135	A1			2.85		.96	3.09
11132		1130	A2			2.49		.90	5.13
11133		1127	A3			2.69		.95	3.94

Sample Number	Date Sample Taken	Time Sample Taken	Transect Location	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
				Station 8A - Gunston Cove -continued					
1111134	11-11	1124	A4			2.61		1.02	2.90
11135		1121	A5			2.69		1.01	3.97
11136		1114	A6			2.68		1.10	3.28
11137		1109	A7			2.65		1.22	2.09
11138		1120	B1			2.70		1.13	2.81
11139		1113	B2			2.30		1.12	1.34
11140		1119	C1			2.61		1.15	2.18
1214	11-12	0900		11		2.09		1.05	2.62
1231		1428		11		2.33		.79	2.53
1714	11-17	0812		8.5		2.15		.641	2.32
1731		1351		8.5		1.92		.746	2.16
18124	11-18	1204	A3			2.36			
18125		1202	A4			2.28			
18126		1159	A5			2.38			
18127		1155	A6			2.24			
18128		1150	A7			2.12			
18129		1158	B1			2.30			
18130		1154	B2			2.26			
18131		1157	C1			2.34			
1914	11-19	0931		9	3.00	2.11		.610	2.13
1930		1542		9.5		1.48		.914	1.83
2093	11-20	1057	A1			.834			
2094		1056	A2			1.38			
2095		1054	A3			1.78			
2096		1052	A4			1.98			
2097		1050	A5			2.20			
2098		1046	A6			2.17			
2099		1043	A7			2.00			
20100		1049	B1			2.21			
20101		1045	B2			2.03			
20102		1048	C1			2.21			
2512	11-24	1338		9		2.05		.640	1.98
2612	11-26	1344		8	2.714				
120105	12-1	1140		7		1.62		.879	1.80
				Station 9 - Hallowing Point					
110715	11-7	1218		11.5		1.73		1.17	1.77
1015	11-10	0700		10.5	1.57	1.26		1.31	1.96
1032		1305		11		1.76		.963	1.98
11141	11-11	1100	A1			.965		1.22	1.13
11142		1055	A2			1.30		1.23	1.46
11143		1051	A3			1.37		1.26	1.47
11144		1043	A4			1.26		1.22	1.31
11145		1059	B1			1.35		1.22	1.44
11146		1054	B2			1.26		1.28	1.29
11147		1050	B3			1.38		1.24	1.49
11148		1053	C1			1.37		1.27	1.38
11149		1049	C2			1.38		1.26	1.53
11150		1048	D1			1.39		1.24	1.47
1215	11-12	0855		10.5		1.08		1.20	1.27
1232		1420		11		1.84		1.08	2.06
1715	11-17	0807		8.5		2.07		.741	2.24
1732		1345		8.5		1.62		.817	1.91
18132	11-18	1222	A1			1.25			
18133		1219	A2			1.78			
18134		1215	A3			1.77			
18135		1209	A4			1.67			

Sample Number	Date Sample Taken	Time Sample Taken	Transect Location	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
			Station 9 - Hallowing Point -continued						
118136	11-18	1219	B1			1.34			
18137		1221	B2			1.59			
18138		1214	B3			1.77			
18139		1217	C1			1.65			
18140		1213	C2			1.69			
18141		1212	D1			1.68			
1915	11-19	0920		8.5	3.50	1.90		.670	2.00
1932		1534		10		1.41		.979	1.72
1948					1.56				
20103	11-20	1038	A1			1.29			
20104		1035	A2			1.72			
20105		1031	A3			1.78			
20106		1026	A4			1.57			
20107		1037	B1			1.81			
20108		1034	B2			1.84			
20109		1030	B3			1.91			
20110		1033	C1			1.86			
20111		1029	C2			1.90			
20112		1028	D1			1.88			
2513	11-24	1330		9		2.09		.623	2.04
2613	11-26	1338		8	3.978				
20106	12-1	1122		7		1.58		.890	1.80
			Station 10 - Indian Head						
.0716	11-7	1207		11		1.20		1.23	1.13
1016	11-10	0652		10.5	1.118	1.04		1.31	.956
1039		1254		11		1.35		.979	1.40
11151	11-11	1028	A1			.880		1.23	.69
11152		1026	A2			.845		1.23	.71
11153		1022	A3			.885		1.23	.76
11154		1019	A4			.880		1.23	.72
11155		1013	A5			.825		1.23	.71
11156		1024	B1			.890		1.23	.77
11157		1018	B2			.835		1.23	.70
11158		1012	B3			.795		1.25	.62
11159		1017	C1			.770		1.22	.62
11160		1011	C2			.790		1.23	.62
11161		1015	D1			.840		1.24	.73
11162		1010	D2			.805		1.29	.63
1216	11-12	0850		10.5		1.01		1.22	1.03
1233		1411		11		1.35		1.16	1.41
1716	11-17	0800		8.5		1.83		.902	2.04
1733		1337		9.5		1.49		.901	1.78
18142	11-18	1245	A1			1.13			
18143		1242	A2			1.28			
18144		1238	A3			1.47			
18145		1236	A4			1.51			
18146		1231	A5			1.47			
18147		1241	B1			1.33			
18148		1235	B2			1.51			
18149		1230	B3			1.49			
18150		1234	C1			1.53			
18151		1229	C2			1.53			
18152		1233	D1			1.52			
18153		1228	D2			1.52			
1916	11-19	0917		8.5	2.66	1.38		.860	1.75
1933		1523		10		1.20		1.07	1.52

Sample Number	Date Sample Taken	Time Sample Taken	Transect Location	Water Temp °C	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
				Station 10 - Indian Head -continued					
)1120113	11-20	1017	A1			1.11			
20114		1015	A2			1.14			
20115		1012	A3			1.52			
20116		1010	A4			1.62			
20117		1005	A5			1.72			
20118		1014	B1			1.19			
20119		1009	B2			1.53			
20120		1004	B3			1.63			
20121		1008	C1			1.59			
20122		1003	C2			1.66			
20123		1007	D1			1.60			
20124		1002	D2			1.61			
2514	11-24	1320		8.5		1.83		.641	1.91
2614	11-26	1330		8	3.374				
120107	12-1	1112		7		1.55		.888	1.84
				Station 11 - Possum Point					
)1111163	11-11	0942				.547		.87	.37
1217	11-12	0830		11		.532		.83	.37
1234		1339		11		.440		1.05	.40
1717	11-17	0740		8		1.00		1.09	1.18
1734		1320		9.5		..787		.873	.769
1917	11-19	0900		9	1.72	.670		.992	1.15
2515	11-24	1300		8		1.14		.845	1.51
2615	11-26	1309		8	2.791				
120108	12-1	1048		7		1.00		.937	1.19
				Station 12 - Sandy Point					
)112516	11-24	1250		8		.830		.886	.955
2616	11-26	1256		8	3.044				
120109	12-1	1040		7		.745		.919	.887
				Station CB3 - Great Falls					
)110333	11-3	1410		14	.746	.068	1.69	ND	.120
0339	11-4	1050		14	.252	.067	.810	.095	.119
0533	11-5	1055		11	.231	.080	1.08	.200	.251
0617	11-6	1140		11	.403	.106	3.21	.389	.110
0717	11-7	1130		9	.489	.200	7.32	.922	.194
1017	11-10	1130		11	.469	.210	.496	.799	.231
1036	11-11	1500		11	.431	.217	.052	1.50	1.30
1235	11-12	1120		10	.728	.602	.372	1.04	.126
1514	11-14	1030		10	.441	.260	1.05	.99	.104
1747	11-17	1130			.453	.256	1.88	.965	.190
1748	11-18	1200		7	.438	.224	.966	1.02	.058
1959	11-19	0955		9	.393	.287	.758	1.02	.126
2519	11-21	1130		5	.238	.301	.882	1.608	.266
2520	11-24	1030		7	.388	.386	.764	1.16	.124
120112	12-1	1055		5		.241	.352	.990	.054

) Not detectable

III SURVEY RESULTS
1969
POTOMAC ESTUARY PHOSPHATE STUDY
SEWAGE TREATMENT PLANTS DIURNAL STUDY
ANNAPOLIS FIELD OFFICE

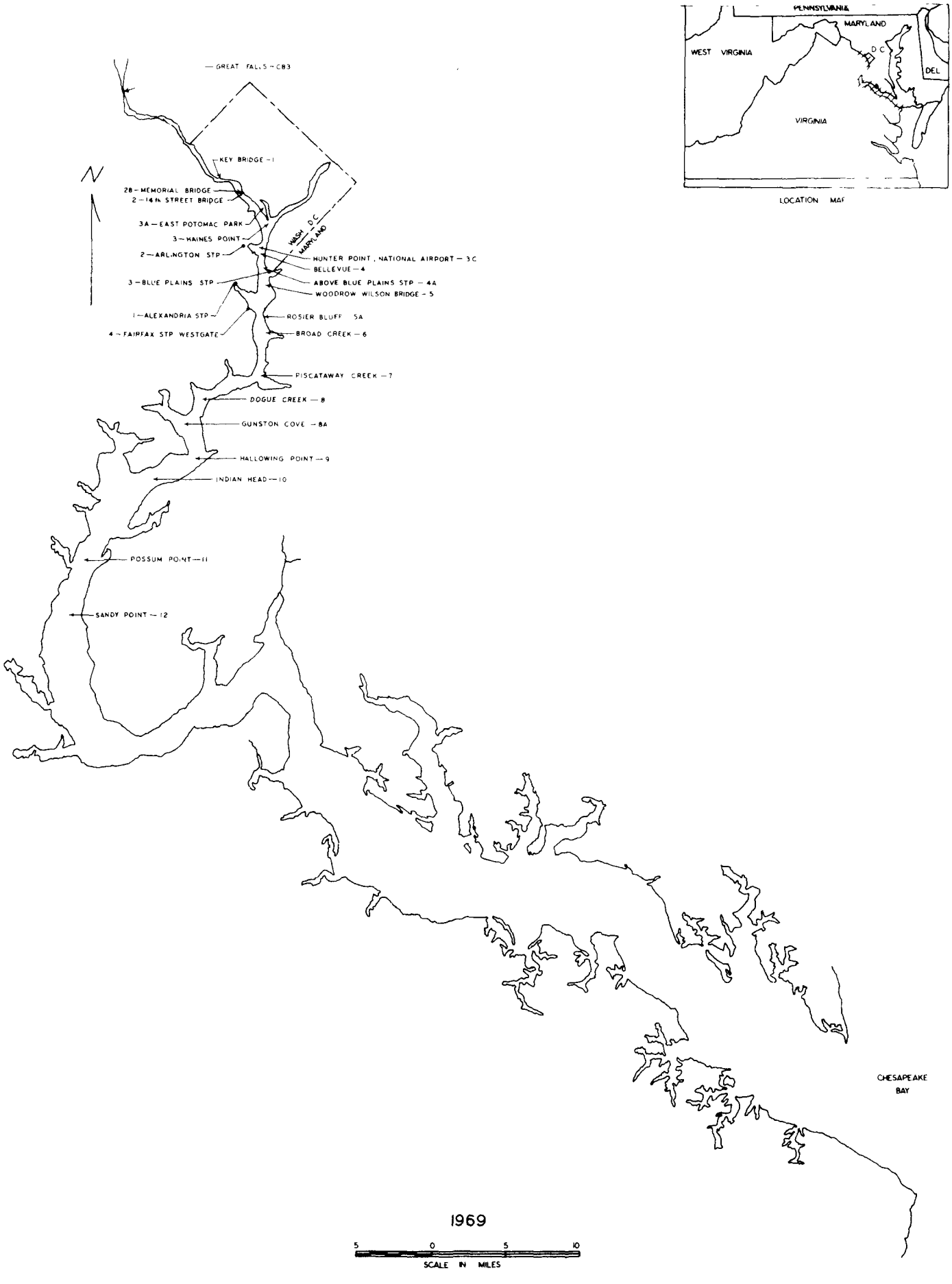
Sample Number	Date Sample Taken	Time Sample Taken	Flow mgd	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
			Station 1 - Alexandria					
110534	11-3	2400	23	70.16	32.5	1.53	.ND	18.5
35	11-4	0400	10	74.54	41.5	20.9	.010	19.5
36		0800	12	62.51	34.3	1.93	.207	20.6
37		1200	27	54.64	26.6	28.1	.403	28.2
38		1600	22	71.26	38.4	27.8	.051	20.2
39		2000	25	76.72	46.9	16.3	.126	29.5
40		2400	26	73.44	44.5	17.0	.013	23.4
			Station 2 - Arlington					
110718	11-3	2400		35.64	19.5	7.39	11.5	14.7
19	11-4	0400		32.18	28.5	4.58	14.5	1.74
20		0800		32.29	32.7	3.56	18.0	.388
21		1200		25.59	29.3	12.1	17.7	13.7
22		1600		30.95	31.0	10.0	18.3	12.8
23		2000		31.28	33.0	5.36	19.2	9.6
24		24		36.76	32.9	8.37	14.9	12.3
			Station 3 - Blue Plains					
110541	11-3	2400		53.77	31.0	17.0	.022	15.9
42	11-4	0400		53.77	28.2	20.0	.023	16.5
43		0800		52.68	25.7	17.0	.026	13.1
44		1200		46.67	21.5	21.6	.021	15.9
45		1600		46.12	20.3	30.1	.019	19.7
46		2000		51.58	21.2	33.0	.022	19.4
			Station 4 - Fairfax - Westgate					
111735	11-9	2400	1.0	44.26				
36	11-10	0400	6.5	42.27				
37		0800	2.0	26.64				
38		1200	2.0	21.27				
39		1600	1.0	55.16				
40		2000	1.5	59.89				
41		2400	5	39.85				
42	11-11	0400	4.0	39.85				
43		0800	2.0	34.35				
44		1200	3.0	50.86				
45		1600	2.0	40.07				
46		2000	2.5	37.65				

D Not detectable

III SURVEY RESULTS
1969
POTOMAC ESTUARY PHOSPHATE
SEWAGE TREATMENT PLANTS
24-HOUR COMPOSITES EFFLUENT
ANNAPOLIS FIELD OFFICE

Sample Number	Date Sample Taken	Flow mgd	Total P mg/l PO_4	Inorganic P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N
			Station 1 - Alexandria				
69110334	11-2	19	40.51	28.2	18.0	<.01	24.5
38	11-3	18	44.86	41.0	25.8	<.01	28.0
0547	11-4	18	55.96	35.7	28.8	.015	25.6
			Station 2 - Arlington				
69110725	11-3	17.4	34.52	34.7	14.4	15.9	12.0
26	11-4	17.4	32.85	34.1	6.24	16.2	10.6
27	11-5	18	27.82	34.3	5.59	81.5	12.3
			Station 3 - Blue Plains				
69110336	11-3	261.82	27.88	24.7	17.6	.025	21.2
0548	11-4	251.66	39.56	26.8	21.9	.016	18.1
0618	11-5	238.61	23.69	16.8	71.2	.047	18.9
			Station 4 - Fairfax - Westgate				
69110549	11-4		45.03	30.1	25.5	.025	20.8
0619	11-5		37.21	26.5	109.2	.017	27.8
0728	11-7		34.60	27.0	280.0	ND	30.4

ND Not detectable



POTOMAC ESTUARY

Chesapeake Technical Support Laboratory
Middle Atlantic Region
Environmental Protection Agency
Water Quality Office

1966 - 1968 Data Report

Number 11

NUTRIENT DATA ON SEDIMENT SAMPLES OF THE *POTOMAC ESTUARY*

by

James W. Marks
and
Orterio Villa Jr.

Laboratory Staff

Donald W. Lear, Jr., Chief, Laboratory Section
Anna R. Favorite, Statistician

TABLE OF CONTENTS

Page

I INTRODUCTION.....1

II STATION LOCATIONS.....7

III SURVEY RESULTS.....13

IV MAP.....appendix i

I INTRODUCTION

A. Purpose and Scope

During the years of 1966 through 1968 the Chesapeake Technical Support Laboratory, Middle Atlantic Region, Federal Water Quality Administration conducted three separate surveys of the bottom sediments of the tidal portion of the Potomac River. The purpose of these surveys was to determine the existing quality of the river bottom. The results of these investigations are presented in this report.

B. General Remarks

In 1966 the portion of the Potomac River between the 14th Street Bridge in Washington, D.C. to the U.S. Route 301 Bridge near Morgantown, Maryland, was sampled three times, March-May, June-August and September-October. In 1967 the same portion of the river was sampled twice, March-April and again during September. In 1968 that portion of the river between the U.S. Route 301 Bridge to the mouth of the river at Point Lookout was sampled once during February.

C. Sampling Procedures

Sediment samples were collected using a weighed core sampling device. This device consisted of a length of pipe containing a plastic core liner and a heavy weight (core bomb) for forcing the core pipe into the sediments. The sediment

was removed from the plastic liner by means of an extruder rod. The top five centimeters from each of four separate core samples from each sampling station were blended as the sediment sample for that station. The samples were then returned to the laboratory and frozen for later analysis.

D. Measured Parameters and Analytical Methods

1. Total Phosphorus

Reference: Menzel, D.W. and Corwin, N. 1965. The Measurement of Total Phosphorus in Seawater Based on the Liberation of Organically Bound Fractions by Persulfate Oxidation. Limnology and Oceanography, 10: 280-282.

Murphy, J. and Riley, J.P. 1962. A Modified Single Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

A measured volume of the wet sediment sample, of which the dry-solids content is known, was placed in a 16 oz. prescription bottle and diluted to 300ml with distilled water. The sample was then agitated on a mechanical shaker for 30 minutes. An aliquot of the well mixed, diluted sample was removed for analysis. Total Phosphate was determined after persulfate oxidation of the sample in an autoclave at 15 psi for 30 minutes and millipore filtration to remove unwanted solids. The resultant ortho-phosphate was then determined colorimetrically as the molybdenum-blue complex

with the optical density measured at 882 mμ. The results were calculated as milligrams PO_4-P per gram of dry sample.

2. Inorganic Phosphorus

Reference: Murphy, J. and Riley, J.P.. 1962. A Modified Single Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

A measured volume of the wet sediment sample, of which the dry-solids content is known, was placed in a 16 oz. prescription bottle and diluted to 300ml with distilled water. The sample was then agitated on a mechanical shaker for 30 minutes. An aliquot of the well mixed, diluted sample was removed for analysis. Inorganic Phosphorus was determined, after millipore filtration to remove unwanted solids, colorimetrically as the molybdenum-blue complex with the optical density measured at 882 mμ. The results were calculated as milligrams PO_4-P per gram of dry sample.

3. Total Kjeldahl Nitrogen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed.. 1965.

A measured volume of the wet sediment sample, of which the dry-solids content is known, was placed in a 16 oz. prescription bottle and diluted to 300 ml with distilled water. The sample was then agitated on a mechanical shaker for 30 minutes.

An aliquot of the well mixed, diluted sample was removed for analysis. Total Kjeldahl Nitrogen includes Ammonia and Organic Nitrogen and was determined by the standard micro-Kjeldahl procedure. The sample was digested in the presence of strong acid to convert the organic nitrogen to ammonia. The ammonia was then distilled, collected in boric acid solution, nesslerized and determined colorimetrically with the optical density measured at 425 mμ. The results were calculated as milligrams TKN-N per gram of dry sample.

4. Ammonia Nitrogen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed.. 1965.

A measured volume of the wet sediment sample, of which the dry-solids content is known, was placed in a 16 oz prescription bottle and diluted to 300 ml with distilled water. The sample was then agitated on a mechanical shaker for 30 minutes. An aliquot of the well mixed, diluted sample was removed for analysis. The aliquot was diluted to a known volume and the pH adjusted to 7.2-7.4 and distilled, collecting the distillate in 2% boric acid. An aliquot of the distillate was nesslerized and the ammonia nitrogen concentration determined colorimetrically with the optical density measured at 425 mμ. The results were calculated as milligrams of NH_3-N per gram of dry sample.

5. Chemical Oxygen Demand

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed.. 1965.

A measured volume of the wet sediment sample, of which the dry-solids content is known, was placed in a 16 oz. prescription bottle and diluted to 300 ml with distilled water. The sample was then agitated on a mechanical shaker for 30 minutes. An aliquot of the well mixed, diluted sample was removed for analysis. The Chemical Oxygen Demand was determined by the standard dichromate procedure as outlined in the above reference. The results were calculated as milligrams C per grams of dry solids.

6. Wet Weight

A measured volume of the well mixed sediment sample was placed on a tared evaporating dish and weighed on an analytical balance. The results were reported as grams of sediment per milliliter of sample.

7. Dry Weight

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed.. 1965.

The resultant sample from the Wet Weight procedure was placed in a drying oven at 103°C overnight. The sample was removed from the drying oven, placed in a dessicator to cool

for one hour, and weighed on an analytical balance. The resultant residue weight was reported as grams of sediment per milliliter of sample.

8. Volatile Weight

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed.. 1965.

The resultant sample from the Dry Weight procedure was placed in a muffle furnace at 600°C for one hour. The sample was then removed from the muffle furnace, placed in a dessicator to cool for one hour, and weighed on an analytical balance. The resultant residue was reported as grams of sediment per milliliter of sample.

9. Chlorophyll a

Reference: Gorham, Eville, Chlorophyll Derivatives in Surface Muds From the English Lakes, Department of Botany, University of Toronto, Canada.

A pre weighed sample of the sediment was shaken mechanically for three periods of 5-10 minutes with successive 20-30 ml portions of 90% acetone. The extracts were filtered and the residues leached with 90% acetone to give a final filtrate of 100 ml. The optical density was measured at 668 mμ and 750 mμ. The concentration was calculated as Chlorophyll a in μg/g.

II STATION LOCATIONS

Station Number	Description		Approximate Location	Depth Feet
2	14th Street Bridge (6.0)	A	Center of Channel opposite buoy N "10"	20
		B	In shallows midway between buoy N "10" and Tidal Basin outlet	7
3	Haines Point (7.4)	A	In shallows midway between west shore and buoy C "1"	10
		B	In Channel at mid-channel buoy R B Qk Fl	25
		C	South Capitol St.Bridge in Anacostia Channel opposite mid-channel buoy RB "N"	20
4	Bellevue (9.7)	A	In shallows midway between west shore and channel	4
		B	In Channel opposite 23' Bell	25
		C	In shallows midway between 23' Bell and east shore	5
5	Woodrow Wilson Bridge (Hunting Creek) (11.8)	A	In shallows 300' from mouth of Hunting Creek	4
		B	In Channel off Buoy FL R "2"	24
		C	In shallows of Buoy R "2"	5

Station Number	Description		Approximate Location	Depth (ft.)
6	Broad Creek (15.1)	A	In shallows midway between Buoy N"86" and west shore	4
		B	In Channel south of N"86"	30
		C	In Broad Creek opposite Indian Queen Bluff	3
		D	In Broad Creek midway between Indian Queen Bluff and east shore	4
7	Piscataway Creek (18.0)	A	In shallows midway between Sheridan Point and Buoy # FL "77"	4
		B	In Channel midway between FL "77" and N "76"	60
		C & D	In Piscataway Creek at third point between Channel and east edge of Bay	5
8	Dogue Creek - Marshall Hall (22.0)	A	In Dogue Creek opposite boathouse	4
		B	At mouth of Dogue Creek 300' north of Channel Buoy # FL G "67"	
		C	In Channel opposite FL G "67"	26
		D	In shallows midway between FL G "67" and Marshall Hall Cupola	17
9	Hallowing Point (26.0)	A	In shallows approximately 300' off Hallowing Point	10
		B	In center of Channel between Hallowing Point and Pomonkey Point	35

Station Number	Description		Approximate Location	Depth (ft.)
9	Hallowing Point (26.0)	C	In shallows between Pomonkey Point and Channel	7
10	Indian Head - (29.5) Occoquan Bay (31.8)	A	In Occoquan Bay off Sandy Point	7
		B	In Occoquan Bay off Buoy FL "2"	6
		C	In shallows north of Channel approximately midway between Channel and north shore opposite Buoy N "54"	15
		D	In Channel opposite Buoy N "54"	50
11	Possum Point (37.1)	A & B	In Channel at 1/3 points between FL 6 11 sec. and R "44"	26
		C	In shallows midway between Moss Point and R "44" south	15
12	Sandy Point (40.5)	A & B	In shallows approximately 1/3 points between N"40" and west shore	10 - 15
		C	In Channel west of N "40"	25
		D	In Mallows Bay	4
13	Smith Point (45.4)	A	In Aquia Creek between Brent Point and Thorney Pt.	5
		B	In Aqu[illegible]eek near [illegible] "6"	9
		C	Just north of Buoy N"2"	5
		D	In Channel midway between Buoy N"2" and FL "27"	16
		E	In Channel between N"27" and N"28"	

Station Number	Description		Approximate Location	Depth (ft.)
14	Maryland Point (52.0)	A	In shallow water about 800 ft. from south shore	8
		B	In Channel southwest of Buoy #21	30 - 40
		C	In shallow water about 800 ft. from north shore	8
15	Between Stuart Point and Nanjemoy Creek (58.2)	A	Midway between west (south) shore and N "11"	16
		B	In Channel just southeast of Buoy N "11"	
		C	In Channel north of N"10"	
		D	In Nanjemoy Creek opposite Blossom Point	
		E	In Nanjemoy Creek opposite Kings Creek	
16	.5 Mile North of Route 301 Bridge (67.0)	A	West of Channel midway between Buoy FL "1" and west shore	3
		B	In Channel near Buoy C"N"	60
17	Port Tobacco River to Mathias Point (63.0)	A	In Channel between Fl. Buoy 5 and Can Buoy 3	33
		B	Mid-channel	8
		C	Off Buoy S 1	8

Station Number	Description		Approximate Location	Depth (ft.)
18	Piccowaxen Creek to Stony Point (75.0)	A	Between W Or N"S" and W Or C P	10
		B	Mid-Channel NE Fl."29"	10
		C	Off Piccowaxen Creek point (south)	14
19	Mouth of Wicomico River to Stratford Cliffs (81.0)	A	Off Stratford Cliffs and Nomini Cliffs	15
		B	Near RB N in Channel	24
		C	Mouth of Wicomico River off Cobb Island near N"2W"	13
20	Breton Bay to Nomini Bay (88.0)	A	Off Buoy N 2	13
		B	Mid-Channel, off Kingcopsico Point	20
		C	Mid-Channel, off Buoy RB N	34
		D	Off Buoy Fl 2	16
		E	Between Buoy N 2 and Fl 2, mid-channel St. Clements Bay	14
21	Poplar Hill Creek to Ragged Point Beach (94.0)	A	North of Ragged Point Fl west of BWN "51B"	8
		B	Mid-Channel between Buoy BW N 55 B and Buoy BW N 51 B	44
		C	Off mouth of Poplar Hill Creek	17

Station Number	Description		Approximate Location	Depth (ft.)
22	St. Mary's River to Yeocomico River (104.0)	A	Mouth of Yeocomico River Fl 2	19
		B	Between Fl 2 and BW N 49 B	31
		C	Mid-Channel between BW N 49 B and RB Fl	56
		D	Mouth of St. Mary's River off Fl 3	28
		E	St. Mary's River south of Fl 2 Priest Point	24
23	Point Lookout (111.0)	A	Off mouth of Hull Creek	16
		B	Mid-Channel SW of B W N 47 B	35
		C	Mid-Channel, west of Fl 4	44
		D	South of Cornfield Point	35

III SURVEY RESULTS

NUTRIENT DATA ON SEDIMENT SAMPLES
POTOMAC ESTUARY
March 1966 - October 1966

CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Date Sample Taken	Station		Time Sample Taken	NH_3 mg/l Mud	NH_3 mg/g DryWgt.	T K N mg/l Mud	T K N mg/g DryWgt.	T. PO_4 mg/l Mud	T. PO_4 mg/g DryWgt.	I. PO_4 mg/l Mud	I. PO_4 mg/g DryWgt.	C/COD mg/l Mud	C/COD mg/g DryWgt.	CHLOROPHYLL a µg/l Mud	CHLOROPHYLL a µg/g DryWgt.	g/ml WetWgt.	103°C g/ml DryWgt.	Vol. 600°C g/ml	% Vol. Sol.
3-03	14th St.Bridge	2	1145			723	.6004	11.1	.0092	8.33	.0069	9166	7.6098			2.0012	1.2045	.0372	3.09
3-03	Haines Point	3	1230			473	.4048	10.5	.0090	11.11	.0095	5154	4.4040			2.0517	1.1703	.0377	3.22
3-03	Bolling AFB,B#9		1250			801	1.9538	79.9	.1950	72.77	.1774	15164	36.9583			1.1522	0.4103	.0409	9.97
3-03	Below Blue Plains		1305			1572	1.2791	68.8	.0560	71.66	.0583	17848	14.5177			2.0778	1.2294	.0454	3.69
3-03	Above W.Wilson Br. B#4	5	1330			1000	.8672	99.4	.0862	117.77	.1021	12488	10.8224			2.0428	1.1539	.0485	4.20
3-03	Rosier Bluff,B#2		1345			1023	1.7373	29.4	.0500	30.55	.0519	14008	23.7867			1.4186	.5889	.0506	8.59
3-03	Broad Cr.,B#86	6	1400			838	1.1733	13.3	.0187	11.67	.0163	14970	20.9576			1.4659	.7143	.0404	5.66
3-15		2A	1430			630		76.1		3.33		11469		27490					
3-15	14th St.Bridge	2D	1440			428		60.5		1.11		17438		17915					
3-21	Haines Point	3A	1300	225.94	.18825	1286	1.0720	1283.7	1.0696	132.21	.1102	19134	15.9423	28331	23.605	2.0336	1.2002	.0389	3.24
3-21	Haines Point - So.Capitol S.Br.	3C	1215	124.45	.09806	512	.4042	569.3	.4487	29.44	.0232	8633	6.8025	31664	24.950	2.0800	1.2691	.0452	3.56
3-21	Haines Point - Channel	3B	1240	126.68	.09306	1199	.8813	811.5	.5962	49.44	.0363	23548	17.2994	37496	27.546	2.1841	1.3612	.0419	3.08
3-21	Hunting Creek	5B	1332	132.61	.27971	1213	2.5600	1296.5	2.7347	49.44	.1043	17038	35.9376	24164	50.968	1.2934	.4741	.4349	91.73
3-21	Hunting Creek	5C	1345	92.22	.10907	821	.9714	1157.1	1.3686	77.77	.0920	8315	9.8344	14582	17.247	1.5038	.8455	.0354	4.19
3-21	Piscataway Ck.	7A	1410	46.67	.07546	683	1.1058	808.8	1.3077	20.00	.0323	11833	19.1318	10416	16.841	1.3378	.6185	.0430	6.95
3-21	" Channel	7B	1430	142.24	.08516	717	.4296	510.5	.3057	26.66	.0160	11717	7.0153	10416	6.236	2.4063	1.6702	.0287	1.72
3-21	" Ck.	7C	1452	67.06	.15110	697	1.5727	1868.7	4.2107	50.55	.1139	13752	30.9869	12499	28.164	1.2478	.4438	.0362	8.16
3-21	" Ck.	7D	1505	48.15	.12509	566	1.4711	1323.2	3.4378	11.67	.0303	9059	23.5360	17915	46.545	1.2364	.3849	.0306	7.95
3-28	Dogue Creek	8A	1100	135.56	.29533	779	1.6977	747.1	1.6278	27.22	.0593	13104	28.5490	12915	28.137	1.2573	.4590	.0373	8.13
3-28	" "	8B	1120	40.01	.10131	599	1.5190	817.7	2.0707	25.00	.0633	8477	21.4662	14582	36.926	1.2007	.3949	.0325	8.23
3-28	" "	8C	1130	25.19	.01567	613	.3820	333.3	.2074	33.33	.0207	10885	6.7739	6249	3.889	2.2954	1.6069	.0434	2.70
4-04	Marshall Hall	8D	1120			1446	1.8909	298.8	.3907	10.55	.0138	14492	18.9463	2083	2.723	1.4137	.7649	.0483	6.31
4-04	Hallowing Point	9A	1200			588	.9078	272.2	.4198	4.44	.0068	11401	17.5833	3750	5.783	1.3840	.6484	.0363	5.60
4-04	" Channel	9B	1225			1104	1.5507	252.7	.3549	5.56	.0078	15909	22.3378	1667	2.341	1.4089	.7122	.0509	7.15
4-04	Occoquan	10A	1415			353	.7998	252.7	.5724	7.22	.0163	12152	27.5181	15415	34.907	1.2610	.4416	.0312	7.07
4-04	"	10B	1430			358	1.0070	266.0	.7468	2.78	.0078	8116	22.7786	7916	22.217	1.2189	.3563	.0282	7.91
4-04	Indian Head - Channel	10C	1440			423	.9243	278.8	.6090	5.56	.0121	4453	9.7248	6249	13.647	1.2892	.4579	.0322	7.03
4-04	" " "	10D	1505			776	1.1381	305.5	.4479	5.56	.0082	8695	12.7455	4166	6.107	1.3980	.6822	.0439	6.44
4-18	Possum Point	11A	1245			LA	LA	377.7	1.1738	41.11	.1278	LA	LA	8749	27.188	1.1392	.3218	.0303	9.42
4-18	Possum Pt.B#44	11B	1315			LA	LA	262.2	.5721	48.33	.1055	LA	LA	7916	17.273	1.2747	.4583	.0383	8.36
4-18	Sandy Pt.B#40	12C	1400			LA	LA	309.9	.7295	42.22	.0994	LA	LA	5833	13.728	1.2307	.4249	.0361	8.50
4-18	500 yds. offshore	12A	1500			LA	LA	226.0	.5121	21.11	.0478	LA	LA	6666	15.099	1.2435	.4415	.0353	8.00
4-18	Smith Pt.B#28	13E	1615			LA	LA	364.4	.8806	36.66	.0886	LA	LA	6666	16.109	1.2671	.4138	.0383	9.26
4-18	Between #28 & Brent Pt.	13D	1645			LA	LA	156.6	.4029	20.55	.0529	LA	LA	6249	16.073	1.2355	.3888	.0341	8.77

Date Sample Taken	Station		Time Sample Taken	NH_3 mg/l Mud	NH_3 mg/g DryWgt.	T K N mg/l Mud	T K N mg/g DryWgt.	T. PO_4 mg/l Mud	T. PO_4 mg/g DryWgt.	I. PO_4 mg/l Mud	I. PO_4 mg/g DryWgt.	C/COD mg/l Mud	C/COD mg/g DryWgt.	CHLOROPHYLL a µg/l Mud	CHLOROPHYLL a µg/g DryWgt.	g/ml WetWgt.	103°C g/ml DryWgt.	Vol. 600°C g/ml	% Vol. Sol.
5-02	Aquia Creek	13A	1000			355	.8946	281.0	.7064	56.11	.1410	4042	10.1583	10832	27.223	1.1845	.3979	.0303	7.61
5-02	Smith Pt. Channel	13C	1015			398	.8658	169.4	.3686	10.11	.0220	4796	10.4329	6666	14.501	1.2448	.4597	.0312	6.79
5-02	Maryland Pt.	14A	1120			484	.3948	96.6	.0787	10.83	.0088	5207	4.2388	3041	2.476	1.7305	1.2284	.0147	1.20
5-09	Maryland Point Channel	14B	1320			LA	LA	446.0	1.0506	108.88	.2564	LA	LA	6333	14.915	1.2261	.4246	.0293	6.90
5-09	Maryland Pt.	14C	1355			LA	LA	452.7	1.3126	55.55	.1611	LA	LA	8499	24.642	1.1910	.3449	.0335	9.71
5-16	Nanjemoy Ck.	15E	1230	6.29	.01480	468	1.1017	361.6	.8511	8.55	.0201	7734	18.2019	8957	21.080	1.1809	.4249	.0344	8.10
5-16	" "	15D	1300	18.15	.04695	389	1.0081	206.6	.5347	112.10	.2900	5818	15.0530	7083	18.326	1.1597	.3865	.0318	8.23
5-16	" Channel	15C	1330	59.63	.15484	482	1.2519	232.2	.6030	20.66	.0536	5038	13.0823	7749	20.122	1.1973	.3851	.0343	8.99
5-16	" "	15B	1405	20.00	.04491	487	1.0953	122.7	.2757	5.89	.0132	5038	11.3137	6041	13.566	1.2123	.4453	.0353	7.93
5-16	Nanjemoy Ck.	15A	1420	17.41	.02526	569	.8258	174.4	.2532	10.89	.0158	6173	8.9594	7541	10.945	1.3646	.6890	.0325	4.72
5-16	301 Br.Channel	16B	1540	18.14	.03849	840	1.7846	148.3	.3148	5.11	.0108	4101	8.7033	9374	19.894	1.2156	.4712	.0385	8.17
6-13*	Piscataway	7A	1315	64.80	.12116	860	1.6091	635.4	1.1883	26.50	.0496	10817	20.2263	5833	10.907	1.2634	.5348	.0433	8.10
6-13	"	7C	1345	60.40	.15749	939	2.4485	1403.7	3.6604	227.20	.5924	9333	24.3364	13749	35.851	1.1929	.3835	.0350	9.13
6-13	"	7D	1415	42.20	.09643	891	2.0369	509.9	1.1653	33.11	.0757	8272	18.9031	8333	19.043	1.2164	.4376	.0347	8.12
6-13	Broad Ck.Channel	6B	1245	139.60	.27388	1454	2.8542	1642.0	3.2216	279.42	.5482	16191	31.7657	12082	23.704	1.2793	.5097	.0467	9.16
7-18	Broad Ck.	6A	1030	389.6	.86635	1429	3.1789	1007.1	2.2395	94.32	.2097	13504	30.0289	15415	34.278	1.2148	.4497	.0408	9.07
7-18	" "	6B	1100	150.0	.17427	1541	1.7912	351.1	.4080	29.27	.0340	20009	23.2474	3291	3.824	1.4769	.8607	.0541	6.28
7-18	" "	6C	1130	160.0	.24864	1454	2.2607	708.9	1.1018	86.66	.1347	18524	28.7863	6916	10.747	1.3599	.6435	.0463	7.21
7-18	Piscataway	7A	1235	176.6	.21094	1365	1.6305	204.7	.2446	29.39	.0351	14777	17.6505	2125	2.538	1.4464	.8372	.0555	6.62
7-18	"	7B	1305	259.2	.24777	1451	1.3880	259.7	.2483	38.33	.0366	26938	25.7509	2000	1.912	1.6154	1.0461	.0598	5.72
7-18	"	7C	1337	130.0	.26444	1095	2.2294	1126.3	2.2913	270.42	.5501	10448	21.2531	12835	26.109	1.2977	.4916	.0413	8.40
8-01	Broad Ck.	6A	1330	116.7	.21252	964	1.7560	339.0	.6175	211.53	.3852	10173	18.5267	4791	8.725	1.2137	.5491	.0478	8.70
8-01	" "	6B	1350	374.1	.67636	1034	1.8700	961.0	1.7375	393.52	.7115	10380	18.7669	24998	45.196	1.1761	.5531	.0048	0.87
8-01	" "	6C	1450	142.6	.22495	1160	1.8307	951.3	1.5008	576.61	.9096	10585	16.6982	13443	21.207	1.2423	.6339	.0131	2.07
8-01	Piscataway	7A	1440	114.8	.22408	1230	2.4020	246.8	.4818	5.67	.0111	14000	27.3277	4125	8.052	1.0910	.5123	.0456	8.90
8-01	" Channel	7B	1505	60.0	.07417	1384	1.7118	112.4	.1391	25.83	.0319	20146	24.9054	1292	1.597	1.4313	.8089	.0383	4.74
8-01	Piscataway	7C	1520	151.9	.25024	1370	2.2581	637.9	1.0511	626.38	1.0319	10585	17.4382	7485	12.331	1.2158	.6070	.0435	7.16
8-01	"	7D	1535	178.5	.24603	2043	2.8165	443.5	.6114	229.59	.3165	9734	13.4170	8791	12.117	1.2759	.7255	.0550	7.58
8-02	Above 14th St. Bridge	2A	1204	222.2	.31580	1224	1.7409	412.0	.5857	25.33	.0360	8314	11.8164	13290	18.889	1.2834	.7036	.0421	5.98
8-02	Off Tidal Basin Gates	2B		202.6	.38276	1289	2.4360	405.5	.7662	24.05	.0454	12505	23.6255	9832	18.575	1.1505	.5293	.0599	11.31
8-02	Airport-Haines	3A	1326	387.1	.70076	1323	2.3951	531.6	.9624	10.50	.0190	11086	20.0688	24373	44.122	1.1388	.5524	.0153	2.77
8-02	Haines Pt.	3B		540.8	.60682	1735	1.9469	1111.3	1.2470	121.04	.1358	10545	11.8324	18623	20.897	1.4799	.8912	.0484	5.43
8-02	Bellevue	4A	1410	444.5	.53438	1630	1.9608	1039.7	1.2500	163.37	.1964	15547	18.6908	14165	17.029	1.4531	.8318	.0520	6.25

* After this date, Total P and Inorganic P Samples were Millipore Filtered.

Date Sample Taken	Station		Time Sample Taken	NH_3 mg/l Mud	NH_3 mg/g DryWgt.	T K N mg/l Mud	T K N mg/g DryWgt.	T. PO_4 mg/l Mud	T. PO_4 mg/g DryWgt.	I. PO_4 mg/l Mud	I. PO_4 mg/g DryWgt.	C/COD mg/l Mud	C/COD mg/g DryWgt.	CHLOROPHYLL a µg/l Mud	CHLOROPHYLL a µg/g DryWgt.	g/ml WetWgt.	103°C g/ml DryWgt.	Vol. 600°C g/ml	% Vol. Sol.
8-02	Bellevue	4B				1440	2.3814	1150.3	1.9014	555.50	.9182	11424	18.8826	11957	19.764	1.2221	.6050	.0517	8.54
8-02	"	4C				1967	2.1910	922.8	1.0275	143.54	.1598	10004	11.1391	10249	11.412	1.3153	.8981	.0331	4.74
8-03	Hunting Ck.	5A	1010			1852		464.1		64.44		12235		4333					
8-03	" "	5B				2407		1738.9		82.33		10072		13707					
8-03	" " R"2"	5C		31.5		389		173.2		26.89		1825		2250					
8-03	Dogue Ck.	8A	1125	130.4		1065		379.1		99.66		8179		8249					
8-03	" "	8B		183.3		1017		1032.9		448.46		7165		13790					
8-03	" " to Marshall Hall	8C		349.6		997		326.8		16.83		11758		2500					
8-03	" " " "	8D		355.6		1423		300.6		11.67		14648		3166					
8-03	Hallowing Pt.	9A	1317	268.9		905		287.6		24.05		11758		3125					
8-03	" "	9B		300.0		1381		263.4		5.83		14713		2500					
8-03	" "	9C		201.5		1325		424.8		19.61		13400		4958					
8-04	No.of 301 Br.	16A	1304	33.7		344		186.5		20.72		3744							
8-04	" " " "	16B	1243	113.7		863		130.8		7.00		4335							
9-20	14th St.Bridge	2A	1200	184.1	.25849	1488	2.0899	LA		LA		19640	27.5765			1.3225	.7122	.0550	7.72
9-20	" " "	2B	1300	117.4	.19976	1202	2.0461	LA		LA		14188	24.1416			1.2348	.5877	.0429	7.30
9-22	Haines Point	3A	1100	169.3	.31069	1367	2.5103	LA		LA		16487	30.2569			1.0720	.5449	.0515	9.45
9-22	" "	3B	1135	206.7	.41158	1216	2.4224	LA		LA		12415	24.7212			1.1797	.5022	.0513	10.22
9-22	Bellevue	4B	1330	232.2	.55563	1718	4.1116	LA		LA		14648	35.0514			1.0178	.4179	.0485	11.61
9-22	"	4A	1335	134.8	.16934	1409	1.7713	LA		LA		16525	20.7601			1.2396	.7960	.0559	7.02
9-28	Broad Ck.	6A	1020	231.5		1297		1463.6		28.61		12676							
9-28	" "	6C	1135	93.3		933		923.7		121.93		12336							
9-28	Piscataway	7A	1215	92.6		1872		237.4		20.50		13017							
9-28	" Channel	7B	1245	175.9		1362		772.8		20.50		9950							
9-28	"	7C	1320	103.3		1384		715.6		366.30		12267							
10-3	Dogue Ck.	8D	1045			1552		320.6		3.89		18573							
10-3	" "	8C	1115			1311		286.9		5.11		7132							
10-3	" "	8A	1200			1978		1328.7		249.98		11864							
10-3	Hallowing Pt.	9A	1235			196		141.4		9.28		2189							
10-3	" "	9B	1255			1362		290.1		3.33		13982							
10-3	" "	9C	1320			759		295.5		19.16		8195							
10-3	Indian Head	10D	1335			1011		490.5		6.89		11336							
10-3	" "	10C	1410			319		74.7		4.06		6966							
10-5	14th St.Bridge	2A	1045			1620		405.2		4.28		19781							
10-5	Haines Pt.	3B	1135			843		720.4		107.82		12151							
10-5	Bellevue	4C	1215			1384		1137.0		18.33		20275							
10-5	"	4B	1300			2497		1791.5		40.88		22819							
10-13	Indian Head	10B	1030			852						3444							
10-13	" "	10A	1115			1132						6681							
10-13	Sandy Pt.	12C	1345			899						4477							
10-13	" "	12A	1410			737						6543							
10-13	" "	12B	1450			2287						6543							

NUTRIENT DATA ON SEDIMENT SAMPLES
POTOMAC ESTUARY
March - April 1967
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Date Sample Taken	Station		Time Sample Taken	Total P PO_4 mg/l Mud	Total P PO_4 mg/g Dry Wgt.	TKN mg/l Mud	TKN mg/g Dry Wgt.	C/COD mg/l Mud	C/COD mg/g Dry Wgt.	Dry Wgt. 103° C g/ml	Vol.Wgt. 600° C g/ml	% Vol. Sol.
67032418	3-23-67	Piscataway Creek	7A		557	.54738	308	.30237	11,657	11.43627	1.0193	.9880	96.9
19	"	" "	7B		684	.62442	236	.21575	5,239	4.77618	1.0969	1.0233	93.3
20	"	" "	7C		530	1.26328	1051	2.50347	15,783	37.58752	.4199	.3845	91.6
21	"	" "	7D		687	1.25756	946	1.73186	15,718	28.75594	.5466	.5088	93.1
22	"	Dogue Creek	8D		676	1.68379	1001	2.49360	16,962	42.22554	.4017	.3583	89.2
67032719	3-27-67	Broad Creek	6A		1623	3.08395	1386	2.63476	16,831	31.97378	.5264	.4836	91.9
20	"	" "	6B		885	1.74511	952	1.87650	19,975	39.36736	.5074	.4620	91.1
21	"	" "	6C		756	1.21379	902	1.44857	17,683	28.37907	.6231	.5803	93.1
22	"	Hunting Cr. W.W. Bridge	5A		842	1.94914	985	2.27943	21,350	49.39842	.4322	.3779	87.4
23	"	" " " " "	5B		1131	2.00397	1282	2.27128	24,428	43.26602	.5646	.5167	91.5
24	"	" " " " "	5C		1051	1.67910	1210	1.93359	20,106	32.10795	.6262	.5725	91.4
67032801	3-28-67	Dogue Creek	8A		437	.89268	1304	2.66037	16,504	33.66102	.4903	.4502	91.8
02	"	" "	8B		379	.55010	1056	1.53103	15,063	21.82410	.6902	.6425	93.1
03	"	" "	8C		867	1.40090	919	1.48508	15,521	25.07836	.6189	.5719	92.4
04	"	Hallowing Point	9A		318	.53472	1610	2.70278	21,874	36.70750	.5959	.5519	92.6
05	"	" "	9B		358	.43409	1353	1.64031	22,071	26.73976	.8254	.7699	93.3
06	"	" "	9C		528	.94139	1040	1.85187	14,146	25.18426	.5617	.5218	92.9
67032906	3-29-67	Bellevue	4A		207	.26017	1414	1.76606	28,358	35.60773	.7964	.7391	92.8
07	"	"	4B		325	.41017	1876	2.36279	22,791	28.69318	.7943	.7408	93.3
08	"	"	4C		1042	2.17110	2151	4.48044	29,995	62.45055	.4803	.4228	88.0
67033001	3-30-67	14th Street Bridge	2A		159	.18333	1045	1.20210	18,796	21.60708	.8699	.8143	93.6
02	"	" " "	2B		440	.71847	1155	1.88606	22,202	36.23041	.6128	.5552	90.6
03	"	Haines Point	3A		414	.52283	1155	1.45821	15,358	19.37673	.7926	.7361	92.9
04	"	" "	3B		501	.57170	1040	1.18541	22,463	25.59886	.8775	.8137	92.7
05	"	" "	3C		645	1.16346	1711	3.08518	25,869	46.62761	.5548	.5003	90.2
67033101	3-31-67	Indian Head	10A		196	.28127	1942	2.77426	22,398	31.98343	.7003	.6468	92.4
02	"	" "	10B		113	.15662	1106	1.52229	18,141	24.96353	.7267	.6755	93.0
03	"	" "	10C		111	.15379	1155	1.59044	18,469	25.41488	.7267	.6808	93.7
04	"	" "	10D		194	.22139	924	1.05023	20,826	23.65515	.8804	.8221	93.4
05	"	Possum Point	11A		171	.26228	1535	2.35403	18,796	28.81496	.6523	.6062	92.9
06	"	" "	11B		266	.52136	1183	2.31520	17,814	34.85423	.5111	.4672	91.4
07	"	" "	11C		143	.09829	974	.66632	7,466	5.10670	1.4620	1.4389	98.4

Sample Number	Date Sample Taken	Station		Time Sample Taken	Total P PO_4 mg/l Mud	Total P PO_4 mg/g Dry Wgt.	TKN mg/l Mud	TKN mg/g Dry Wgt.	C/COD mg/l Mud	C/COD mg/g Dry Wgt.	Dry Wgt. 103° C g/ml	Vol.Wgt. 600° C g/ml	% Vol. Sol.
67040616	4-3-67	Sandy Point	12A		177	.19646	930	1.02685	14,146	15.61541	.9059	.0341	3.8
17	4-5-67	301 Bridge	16A	1100	3848	8.48348	1237	2.72821	12,771	28.15476	.4536	.0348	7.7
18	"	" "	16B	1045	168	.35258	868	1.82170	12,640	26.50450	.4769	.0373	7.8
19	"	Nanjemoy Point	15A	1145	119	.21126	1170	2.07640	15,128	26.83697	.5637	.0373	6.6
20	"	" "	15B	1200	301	.58209	1662	3.21060	20,826	40.27793	.5177	.0430	8.3
21	"	" "	15C	1210	147	.30006	1164	2.37538	20,695	42.20024	.4904	.0404	8.2
22	"	" "	15D	1230	238	.44577	1041	1.94906	16,831	31.48335	.5346	.0377	7.1
23	"	" "	15E	1245	154	.28948	1458	2.73840	17,028	31.97746	.5325	.0382	7.2
67040701	4-7-67	Maryland Point	14A	1230	985	1.28684	1131	1.47754	16,897	22.06738	.7657	.0327	4.3
02	"	" "	14B	1215	341	.78123	1198	2.73922	13,426	30.68800	.4375	.0397	9.1
03	"	" "	14C	1145	177	.31328	907	1.59809	14,081	24.78612	.5681	.0349	6.1
67041708	4-14-67	Smith Point	13A		181	.29032	271	.43506	6,257	10.01921	.6245	.0330	5.3
09	"	" "	13B		138	.14766	297	.31555	5,521	5.86591	.9412	.0319	3.4
10	"	" "	13C		181	.33037	301	.54919	5,521	10.06013	.5488	.0312	5.7
11	"	" "	13D		187	.41035	280	.61432	5,153	11.28558	.4566	.0350	7.7
12	"	" "	13E		362	.96585	360	.96085	5,889	15.68308	.3755	.0345	9.2
13	"	Sandy Point	12C		223	.36704	337	.55424	6,625	10.87313	.6093	.0440	7.2

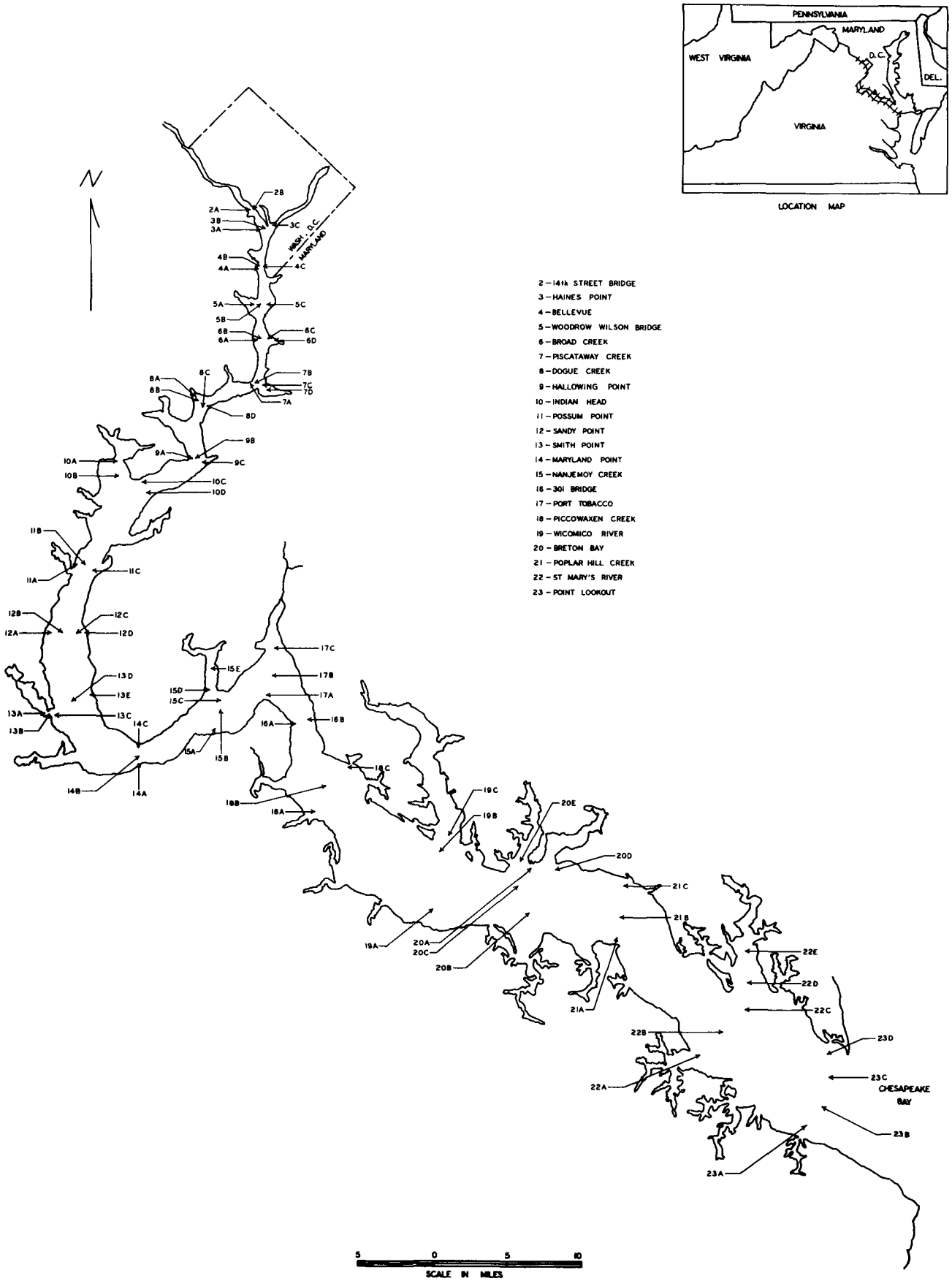
NUTRIENT DATA ON SEDIMENT SAMPLES
POTOMAC ESTUARY
September 1967
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Date Sample Taken	Date Sample Run	Station		Time Sample Taken	Total P mg/l Mud	PO_4 mg/g Dry Wgt.	TKN mg/l Mud	TKN mg/g Dry Wgt.	C/COD mg/l Mud	C/COD mg/g Dry Wgt.	Dry Wgt. Mud g/ml	Vol.Wgt. 600° C g/ml	% Vol. Sol.
67090501	9-5	9-12-67	14th Street Bridge	2A	1130	326	.30750	837	.78801	5,226	4.91645	1.06296	.03358	3.2
67090835	9-8	9-12-67	Haines Point	3C	1200	67	.17002	1399	3.51820	4,442	11.16388	.39789	.0410	10.3
36	"	"	Bellevue	4B	1330	40	.06546	1636	2.61484	6,663	10.64632	.62585	.05056	8.1
37	"	"	"	4C	1250	48	.06501	1526	2.06115	7,447	10.05522	.74061	.05634	7.6
67091101	9-11	9-12-67	14th Street Bridge	2B	1145	192	.13885	986	.71120	7,316	5.27408	1.38716	.04689	3.4
02	"	"	Haines Point	3A	1250	350	.50067	1396	1.99312	9,406	13.42429	.70067	.06125	8.7
03	"	"	" "	3B	1230	683	.98281	1719	2.47288	9,929	14.27667	.69547	.05696	8.2
04	"	"	Bellevue	4A	1315	270	.28597	1566	1.65405	10,190	10.75950	.94707	.05678	6.0
05	"	"	Woodrow Wilson Bridge	5A	1400	598	.85178	1339	1.90567	13,195	18.76715	.70309	.04781	6.8
06	"	"	" " "	5B	1415	946	1.63209	2236	3.85766	10,582	18.25300	.57974	.06398	11.0
07	"	"	" " "	5C	1430	1141	2.23724	1689	3.31293	6,793	13.31777	.51007	.05009	9.8
67091201	9-12	9-13-67	Broad Creek	6A	1230	1752	3.72488	1819	3.86839	3,854	8.19250	.47043	.04445	9.4
02	"	"	" "	6B	1250	982	1.81381	1833	3.38463	8,230	15.19543	.54161	.05196	9.6
03	"	"	" "	6C	1300	466	.63018	1283	1.73171	5,226	7.05263	.7410	.04978	6.7
04	"	"	" "	6D	1330	581	1.14466	1079	2.12405	3,005	5.91058	.50841	.03981	7.8
05	"	"	Piscataway Creek	7A	1350	194	.24215	1106	1.37858	5,356	6.67272	.80267	.04752	5.9
06	"	"	" "	7B	1415	186	.16096	5266	4.55233	1,045	0.90335	1.1568	.07003	6.1
07	"	"	" "	7C&D	1445	796	1.76959	1176	2.61308	1,306	2.90061	.45025	.03674	8.2
67091301	9-13	9-14-67	Dogue Creek	8A	1240	193	.45150	1183	2.76515	1,176	2.74830	.4279	.03687	8.6
02	"	"	" "	8B	1250	1034	1.25606	1073	1.30328	3,919	4.75912	.82347	.0543	6.6
03	"	"	" "	8C	1300	607	.64808	1089	1.16354	4,376	4.67171	.9367	.05234	5.6
04	"	"	" "	8D	1315	252	.31502	1726	2.15689	6,989	8.73133	.80045	.06456	8.1
05	"	"	Hallowing Point	9A	1335	155	.22472	1706	2.46062	7,773	11.20804	.69352	.04463	6.4
06	"	"	" "	9B	1400	276	.29654	1356	1.45392	7,642	8.19069	.93301	.05385	5.8
07	"	"	" "	9C	1420	224	.37167	1129	1.86877	3,985	6.59102	.60461	.04387	7.3
67091401	9-14	9-15-67	Indian Head	10A	1215	184	.27695	1576	2.36711	5,719	8.58708	.6660	.05756	8.6
02	"	"	" "	10B	1200	263	.41300	1296	2.02963	5,083	7.95710	.6388	.04156	6.5
03	"	"	" "	10C	1130	465	.76349	1309	2.14970	8,260	13.55609	.60932	.04861	8.0
04	"	"	" "	10D	1145	256	.35590	1406	1.95350	6,989	9.70694	.7200	.05218	7.2
05	"	"	Possum Point	11A&B	1245	304	.55234	1219	2.21139	24,145	43.77028	.55163	.0432	7.8
06	"	"	" "	11C	1300	131	.08371	379	.24113	4,448	2.82280	1.57574	.02898	1.8
67091501	9-15	9-18-67	Sandy Point	12A&B	1330	249	.56588	900	.91059	7,625	17.32403	.44014	.0369	8.4
02	"	"	" "	12C	1315	234	.42683	1008	1.83327	27,322	49.67997	.54996	.04194	7.6
03	"	"	" "	12D	1345	138	.17384	973	1.22145	19,697	24.71237	.79705	.04043	5.1

Sample Number	Date Sample Taken	Date Sample Run	Station		Time Sample Taken	Total P PO_4 mg/l Mud	mg/g Dry Wgt.	TKN mg/l Mud	mg/g Dry Wgt.	C/COD mg/l Mud	mg/g Dry Wgt.	Dry Wgt. Mud g/ml	Vol.Wgt. 600° C g/ml	% Vol. Sol.
67091861	9-18	9-19-67	Smith Point	13A	1305	109	.11081	690	.69972	LA	LA	.98632	.02530	2.6
62	"	"	" "	13B	1255	115	.13101	749	.84731	10,166	11.49466	.88441	.03563	4.0
63	"	"	" "	13C	1245	130	.16803	606	.78271	10,802	13.94076	.77485	.03081	4.0
64	"	"	" "	13D	1225	200	.42536	1143	2.42303	3,812	8.07952	.47181	.03785	8.0
65	"	"	" "	13E	1215	328	.62269	1331	2.52382	9,531	18.06619	.52756	.04529	8.6
66	"	"	Maryland Point	14A	1350	169	.28957	913	1.56441	9,531	16.32803	.58372	.04038	6.9
67	"	"	" "	14B	1335	182	.37524	1021	2.10359	5,719	11.78033	.48547	.03912	8.1
68	"	"	" "	14C	1400	308	.58466	1331	2.52583	8,896	16.87597	.52714	.04574	8.7
67091901	9-19	9-20-67	Nanjemoy Creek	15A	1300	188	.36129	996	1.91427	3,386	6.50228	.52074	.1416	27.2
02	"	"	" "	15B	1310	198	.41099	1003	2.08054	6,156	12.75881	.48249	.03274	6.8
03	"	"	" "	15C	1320	339	.75482	1097	2.44274	3,078	6.84806	.44947	.04094	9.1
04	"	"	" "	15D	1330	201	.37281	1125	2.07909	12,312	22.73684	.54150	.03820	7.1
05	"	"	" "	15E	1345	237	.51885	777	1.70072	2,462	5.38719	.45701	.03712	8.1
06	"	"	301 Bridge	16A	1215	187	.19310	721	.74283	4,925	5.07078	.97125	.02921	3.0
07	"	"	" "	16B	1155	244	.52511	1097	2.36009	3,694	7.94049	.46521	.03840	8.3

NUTRIENT DATA ON SEDIMENT SAMPLES
POTOMAC ESTUARY
February 1968
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Date Sample Taken	Date Sample Run	Station		Temp. °C	Total P PO_4 mg/l Mud	Total P PO_4 mg/g DryWgt.	TKN mg/l Mud	TKN mg/g DryWgt.	C/COD mg/l Mud	C/COD mg/g DryWgt.	DryWgt. g/ml Mud	Vol.Wgt. g/ml 600°C	% Vol. Sol.
68020701	2-7-68		Point Lookout	23B		148	.3353	659	1.4913	9789	22.1521	.4419	.0308	7.0
02	"		" "	23C		116	.3708	624	1.9822	6118	19.4346	.3148	.0243	7.7
03	"		St.Mary's R.-Yecomico R.	22A		77	.0695	455	.4083	4283	3.8437	1.1143	.0193	1.7
04	"		" " " " "	22B		131	.2861	434	.9459	6118	13.3348	.4588	.0296	6.5
05	"		" " " " "	22D		102	.2686	370	.9724	4894	12.8620	.3805	.0265	7.0
06	"		" " " " "	22E		94	.2740	375	1.0889	4283	12.4361	.3444	.0300	8.7
68020901	2-9-68		Poplar Hill Creek to Ragged Point	21A	3	159	.4482	509	1.4286	6118	17.1709	.3563	.0286	8.0
02	"		" " " "	21B	3	113	.3353	474	1.3978	4283	12.6305	.3391	.0281	8.3
03	"		Breton Bay to Nomini Bay	20A	3.5	339	.3023	330	.2935	2447	2.1761	1.1245	.0197	1.8
04	"		" " " "	20B	3.5	160	.3655	571	1.3019	4894	11.1582	.4386	.0347	7.9
05	"		" " " "	20C	3.5	118	.1954	378	.6229	4283	7.0583	.6068	.0329	5.4
06	"		" " " "	20D	3.5	140	.3548	413	1.0398	3671	9.2422	.3972	.0318	8.0
07	"		" " " "	20E	3.5	128	.3016	370	.8702	4894	11.5099	.4252	.0318	7.5
68022101	2-21-68		Wicomico River to Stratford Cliffs	19B	10	140	.2282	316	.5116	3059	4.9522	.6177	.0303	4.9
02	"		" " "	19C	10	146	.4431	453	1.3657	3059	9.2222	.3317	.0308	9.3
68022301	2-23-68		Pt.Tobacco River to Mathias Pt.	17A	3	257	.5680	466	1.0271	4283	9.4402	.4537	.0377	8.3
02	"		" " " " "	17B	3	218	.3827	447	.7812	4894	8.5530	.5722	.0402	7.0
03	"		" " " " "	17C	2.5	188	.1789	268	.2540	2447	2.3192	1.0551	.0281	2.7
04	"		Piccowaxen Creek to Stony Point	18C	.5	210	.3139	437	.6518	3671	5.4750	.6705	.0321	4.8



NUTRIENT DATA ON SEDIMENT SAMPLES

POTOMAC ESTUARY

APPENDIX I

Chesapeake Technical Support Laboratory
Middle Atlantic Region
Environmental Protection Agency
Water Quality Office

1969 Data Report

Number 12

WATER QUALITY SURVEY

OF THE

HEAD OF THE CHESAPEAKE BAY

MARYLAND TRIBUTARIES

by

James W. Marks

and

Orterio Villa, Jr.

Laboratory Staff

Jean Klaczkiewicz, Chemist
Thomas E. Kleczynski, Biologist
Evelyn P. McPherson, Technician
Anna R. Favorite, Statistician

TABLE OF CONTENTS

		Page
I	INTRODUCTION	1
II	STATION LOCATIONS	6
III	SURVEY RESULTS	7
IV	MAP	appendix i

I INTRODUCTION

A. Purpose and Scope

During the year of 1969 the Chesapeake Technical Support Laboratory, Middle Atlantic Region, Environmental Protection Agency, Water Quality Office sampled the head of the bay tributaries three times during June, July and September. Tributaries sampled were Sassafras River, Elk River, Bohemia River, C and D Canal, Northeast River and two points in the upper bay. The purpose of this survey was to determine the levels of eutrophication of the tributaries entering the Chesapeake Bay.

B. General Remarks

The monthly surveys included analysis for Dissolved Oxygen, Chlorophyll a and Phaeopigments as well as nutrients.

C. Sampling Procedures

Samples were obtained using a small submersible pump attached to a wire cable calibrated in feet. The pump was lowered to the desired depth and allowed to run for two minutes before receiving samples in plastic cubitainers. Dissolved oxygen (DO) samples were obtained directly from the pump outlet extending to the bottom of a conventional 300 ml DO bottle. The sample was allowed to overflow the bottle several times and then fixed immediately. All samples were immediately

stored on ice and analysis started upon return to the Chesapeake Technical Support Laboratory, generally within two hours of sampling.

D. Measured Parameters and Analytical Methods

1. Water temperature was read from a Beckman Salinometer.

2. Light extinction, in inches, was made with a 12" (30 cm) white secchi disk.

3. The pH measurements were made with a field pH meter.

4. Conductivity was read from a calibrated Beckman Salinometer.

5. Dissolved Oxygen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed.. 1965.

Dissolved Oxygen was determined by the azide modification of the basic Winkler method with the titration done potentiometrically with a Fisher automatic "titralyzer."

6. Total Phosphorus

Reference: Menzel, D.W. and Corwin, N. 1965. The Measurement of Total Phosphorus in Seawater Based on the Liberation of Organically Bound Fractions by Persulfate Oxidation. Limonology and Oceanography, 10: 280-282.

Murphy, J. and Riley, J.P.. 1962. A Modified Single Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

Total Phosphorus was determined after persulfate oxidation of the sample in an autoclave at 15 psi for 30 minutes. The resultant ortho-phosphate was then determined colorimetrically as the molybdenum-blue complex with the optical density measured at 882 mμ.

7. Inorganic Phosphorus

Reference: Murphy, J. and Riley, J.P.. 1962. A Modified Single Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

Inorganic Phosphorus was determined colorimetrically as the molybdenum-blue complex with the optical density measured at 882 mμ.

8. Total Kjeldahl Nitrogen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed.. 1965.

Total Kjeldahl Nitrogen includes ammonia and organic nitrogen and was determined by the standard micro-kjeldahl procedure. The sample was digested in the presence of strong acid to convert the organic nitrogen to ammonia. The ammonia was then distilled, collected in boric acid solution, nesslerized and determined colorimetrically.

9. Nitrate + Nitrite

Reference: A Practical Handbook of Seawater Analysis, J.D.H. Strickland and T.R. Parsons, Bulletin 167, Fisheries Research Board of Canada, Ottawa, Canada. 1968.

Nitrate plus nitrite nitrogen was determined by the cadmium reduction of nitrate to nitrite and subsequent diazotization with sulphanilamide and N-(1-napthl)-ethylenediamine dihydrochloride. The results were calculated as nitrite nitrogen.

10. Ammonia

Reference: Southeast Water Laboratory, FWQA, methodology for the colorimetric determination of ammonia by the phenol-hypochlorite reaction.

FWPCA Methods for Chemical Analysis of Water and Wastes, 1969 ed., pp 137-143.

Ammonia nitrogen was determined by automation of the phenol-hypochlorite procedure as described in the Southeast Water Laboratory Methodology and later adopted as the official FWPCA procedure. The intensity of the indophenol blue color, formed by the reaction of ammonia with alkaline phenol hypochlorite, was increased using sodium nitroprusside as an intensifying agent. The optical density was measured at 630 mμ and calculated as NH-N.

11. Chlorophyll a

Reference: A Practical Handbook of Seawater Analysis, J.D.H. Strickland and T.R. Parsons, Bulletin 167, Fisheries Research Board of Canada, Ottawa, Canada. 1968.

Chlorophyll a was determined by extraction of millipore-filtered samples in 90% acetone and read spectrophotometrically.

12. Phaeopigments

Reference: A Practical Handbook of Seawater Analysis, J.D.H. Strickland and T.R. Parsons, Bulletin 167, Fisheries Research Board of Canada, Ottawa, Canada. 1968.

After Chlorophyll a had been determined the sample was acidified with one normal HCl. The absorbancy of the acidified sample was obtained and the percentage of Chlorophyll a present as phaeopigments was calculated.

II STATION LOCATIONS

STATION NUMBER	STATION LOCATION
1	Sassafras River, Georgetown Bridge
2	Sassafras River, Nun 6
3	Sassafras River, Can 3
4	Sassafras River, off Betterton
5	Bay, midway between Nun 2 and Bell 1
6	Bay, Turkey Point, Nun 6
7	Elk River, Nun 10
8	Bohemia River, Nun 2
9	Behemia River, above bridge
10	Elk River, Can 15
11	C and D Canal, Nun 26
12	Elk River, Nun 6
13	Elk River, Nun 14
14	Northeast River, Nun 2
15	Northeast River, Nun 10
16	Northeast River, Nun 18
17	Northeast River, mouth of creek

III SURVEY RESULTS

1969

HEAD OF THE CHESAPEAKE BAY TRIBUTARIES

Date Sample Taken	Time Sample Taken	Sample Depth Feet	Secchi Disc Inches	Water Temp. °C	Field pH	Cond. µmhos	DO mg/l	Total P mg/l PO_4	Pi mg/l PO_4	TKN mg/l	Organic N mg/l	NO_2+NO_3 mg/l	NH_3 mg/l	Chlorophyll a µg/l	Phaeopigments µg/l
					Station 1 - Sassafras River, Georgetown Bridge										
6-24	1655	Surface	24	27			11.79	.29	ND	.15	.15	< .01	ND	99	28
		10		29.5			11.26	.21	ND	.97	.97	< .01	ND		
7-15	0900	Surface	18	24.9		.70	8.60	.35		1.32	1.30	ND	.02		
		10		24.6		.84	8.25	.33		.30	.29	ND	.02		
7-21	0845	Surface	12	28.5				.51	ND			ND	ND	97.5	117
9-09	1135	Surface	16	25.5			4.99	.45	.03	1.37	.95	.03	.42		
		10		25			4.23	.40	.006	1.26	.87	.03	.40		
					Station 2 - Sassafras River, Nun 6										
6-24	1630	Surface	46	26			9.03	.12	ND	.59	.55	< .01	.04	27	11
		10		27			8.34	.13	ND	.43	.42	< .01	.01		
7-15	0920	Surface	27	24.6		.64	9.14	.16		1.40	1.38	ND	.02		
		10		24.3		.66	8.42	.34		1.58	1.57	ND	.01		
7-21	0908	Surface	18	28				.19				.03	ND	52.50	43
9-09	1115	Surface	24	25			7.40	.26	ND	.79	.78	ND	.01	93.75	53
		10		25			6.91	.24	ND	.72	.69	ND	.03		
					Station 3 - Sassafras River, Can 3										
6-24	1620	Surface	50	26			7.94	.13	ND	.50	.47	< .01	.02	20.25	23
		15		27			7.95	.13	ND	.50	.47	< .01	.04		
7-15	0935	Surface	34	24.3			9.75	.12				ND	.01		
		15		24.1			9.25	.12		.58	.56	ND	.02		
7-21	0913	Surface	27	28				.15	ND			.04	.03	29.25	43
9-09	1100	Surface	26	24.5			8.02	.22	.003	.79	.73	.02	.06	60.00	34
		15		24			7.89	.23	ND	.74	.72	.02	.03		
					Station 4 - Sassafras River, off Betterton										
6-24	1200	Surface	33	25.5			6.73	.19	.01	.40	.32	.30	.07	45.00	20
		10		27			6.75	.15	ND	.43	.40	.22	.03		
7-15	0955	Surface	38	23.76		1.85	9.28	.14		.60	.58	.17	.03		
		10		23.33		3.54	7.20	.12		.50	.47	.19	.03		
7-21	0930	Surface	32	27.5				.11	ND			.04	.05	19.50	24
9-09	1040	Surface	26	24.5			7.74	.23	ND	.75	.69	.07	.07	75.00	25
		10		24.5			7.31	.27	.005	.69	.64	.07	.04		

ND - Not detectable

1969

HEAD OF THE CHESAPEAKE BAY TRIBUTARIES

Date Sample Taken	Time Sample Taken	Sample Depth Feet	Secchi Disc Inches	Water Temp. °C	Field pH	Cond. µmhos	DO mg/l	Total P mg/l PO_4	Pi mg/l PO_4	TKN mg/l	Organic N mg/l	NO_2+NO_3 mg/l	NH_3 mg/l	Chlorophyll a µg/l	Phaeopigments µg/l
					Station 5 - Bay, Midway between Nun 2 and Bell 1										
6-24	1210	Surface	22	25			7.26	.14	.01	.26	.22	.26	.03	16.2	21
		15		26			7.28	.15	.01	.39	.28	.27	.10		
7-15	1000	Surface	38	23.8		2.0	9.33	.12		.53	.51	.20	.02		
		15		23.3		3.4	7.50	.13		.58	.54	.20	.04		
7-21	0945	Surface	30	27.5				.18	ND			.04	.10	31.5	
9-15	1045	Surface	36	23.5			8.85	.38	.10	.62	.47	.16	.15	57.00	
		15		23.5			7.26	.61	.34	.96	.92	.16	.03		
					Station 6 - Bay, Turkey Point, Nun 6										
6-24	1220	Surface	22	25			7.21	.18	.004	.41	.35	.27	.07	24.25	
		15		25			6.72	.20	ND	.41	.37	.27	.04		
7-15	1140	Surface	30	24.8			9.55	.39		.47	.44	.20	.02		
		15		23.9			8.78	.13		.54	.52	.20	.02		
7-21	1000	Surface	20	28				.26	ND			.07	.08	46.50	
9-15	1100	Surface	24	23.5			7.17	.28	.02	.70	.67	.24	.03	60.00	
		15		23.5			7.24	.28	.02	.70	.67	.24	.03		
					Station 7 - Elk River, Nun 10										
6-24	1245	Surface	25	25			9.33	.85	.02	.48	.45	.50	.03	25.5	
		15		26.5			7.00	1.00	ND	.41	.37	.49	.04		
7-15	1150	Surface	24	24.5			9.19	.81		.70	.68	.36	.02		
		15		24			8.30	.88		.79	.74	.39	.04		
9-16	1015	Surface	18	23.5			7.72	.26	.04	.80	.74	.35	.07	82.50	
		15		23.5			7.67	.36	.03	.83	.78	.36	.05		
					Station 8 - Bohemia River, Nun 2										
6-24	1255	Surface	23	25			9.01	.24	ND	1.37	1.35	< .01	.03	59.25	
		10		25			8.83	.16	ND	1.46	1.42	< .01	.04		
7-15	1450	Surface	14	27.7			12.84	.39		2.02	2.00	ND	.02		
		8		24.7			9.95	.36		1.86	1.81	ND	.05		
7-21	1021	Surface	14	28				.46	ND			.08	ND	111.00	
9-16	1025	Surface	8	24			13.48	.63	ND	2.70	2.67	.12	.02	315.75	
		10		24			10.05	.89	ND	2.72	2.60	.12	.13		

ND - Not detectable

1969

HEAD OF THE CHESAPEAKE BAY TRIBUTARIES

Date Sample Taken	Time Sample Taken	Sample Depth Feet	Secchi Disc Inches	Water Temp. °C	Field pH	Cond. µmhos	DO mg/l	Total P mg/l PO_4	Pi mg/l PO_4	TKN mg/l	Organic N mg/l	NO_2+NO_3 mg/l	NH_3 mg/l	Chloro-phyll a µg/l	Phaeo-pigments µg/l
					Station 9 - Bohemia River, above bridge										
6-24	1305	Surface	26	26			9.01	.14	ND	1.57	1.56	< .01	.002	93.00	
		10		28			8.93	.33	ND	1.27	1.26	.67	ND		
7-15	1505	Surface	13	28.1			14.50	.45		1.87	1.85	ND	.01		
		10		26.2			12.21	.45		1.99	1.98	.02	.01		
7-21	1045	Surface	12	27				.53	ND			.47	.50	84.00	
9-16	1040	Surface	6	24			10.57	.73	ND	3.04	3.01	.12	.03	387.00	
		10		24			10.49	.79	ND	3.54	3.54	.12	.005		
					Station 10 - Elk River, Can 5										
6-24	1325	Surface	19	26			7.66	.17	.01	.19	.17	< .01	.02	27.00	
		10		28			8.05	.18	ND	1.07	1.07	.81	ND		
7-15	1205	Surface	18	24.9		1.5	10.79	.26		1.29	1.27	.41	.02	71.25	
		10		24.6		1.7	10.53	.22		1.40	1.38	.47	.02		
9-16	1100	Surface	14	24			8.44	.35	ND	.69	.61	.36	.08	99.00	
		10		24			8.48	.37	ND	.83	.75	.40	.08		
					Station 11 - C and D Canal, Nun 26										
6-24	1335	Surface	20	25.5			8.20	.20	.004	.47	.43	.77	.04	27.75	
		10		27			7.79	.32	ND	.47	.45	< .01	.03		
7-15	1350	Surface	20	26			10.27	.29		1.09	1.07	.55	.02	89.25	
		10		25.2			9.00	.24		1.86	1.83	.56	.02		
9-16	1145	Surface	14	24			8.13	.40	.01	.81	.79	.43	.02	99.00	
		10		24			8.07	.51	ND	.90	.87	.43	.03		
					Station 12 - Elk River, Nun 6										
6-24	1430	Surface		28	7.25		11.11	.20	ND	1.18	1.15	.20	.03	87.00	
7-15	1410	Surface	18	25.4	9.3		13.98	.32		2.17	2.16	LA	.009	123.75	
9-16	1115	Surface	12	24	6.9		10.77	.49	ND	1.12	1.10	.13	.02	123.00	

ND - Not detectable
LA - Laboratory accident

1969

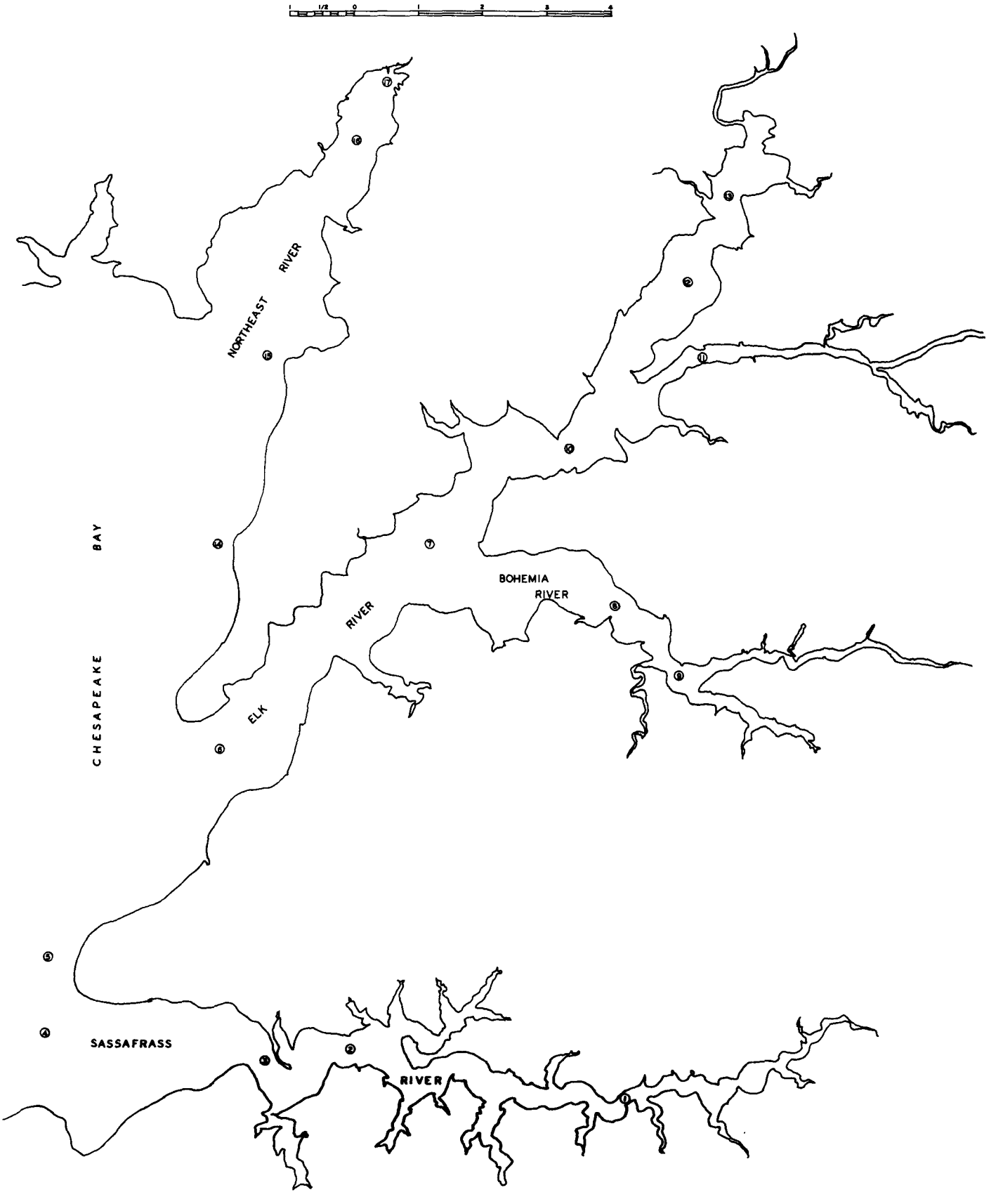
HEAD OF THE CHESAPEAKE BAY TRIBUTARIES

Date Sample Taken	Time Sample Taken	Sample Depth Feet	Secchi Disc Inches	Water Temp. °C	Field pH	Cond. µmhos	DO mg/l	Total P mg/l PO_4	Pi mg/l PO_4	TKN mg/l	Organic N mg/l	NO_2+NO_3 mg/l	NH_3 mg/l	Chloro-phyll a µg/l	Phaeo-pigments µg/l
							Station 13 - Elk River, Nun 14								
6-24	1415	Surface	14	31	7.0		9.88	.33	ND	.94	.90	.22	.05		
7-15	1420	Surface	14	26.6	9.3		14.30	.44		.72	.71	LA	.007		
9-16	1125	Surface	12	24	7.5		10.40	.50	ND	1.13	1.13	ND	ND	120.75	
							Station 14 - Northeast River, Nun 2								
6-24	1500	Surface	38	25			8.63	.22	ND	.43	.37	.17	.07	37.50	
		10		30			7.95	.20	ND	.70	.64	.01	.05		
7-15	1025	Surface	36	24.26		.08	8.78	.14		.68	.67	.36	.03	40.50	
		10		23.9			8.58	.11		1.01	.97	.39	.04		
9-15	1115	Surface	24	23.5			9.80	.16	ND	.66	.65	.15	.005	67.50	
		15		23			9.08	.19	.001	.61	.60	.13	.009		
							Station 15 - Northeast River, Nun 10								
6-24	1510	Surface	25	26	9.0		11.28	.29	ND	.91	.89	< .01	.03	70.50	
7-15	1035	Surface	22	25.3			9.82	.17		.97	.93	.09	.04	50.25	
		6		24.45			8.94	.17		1.00	.98	.11	.02		
9-15	1130	Surface	15	23.5			10.68	.24	ND	.87	.85	ND	.02	116.25	
							Station 16 - Northeast River, Nun 18								
6-24	1525	Surface	24	27.5	9.2		11.32	.20	ND	1.00	.97	< .01	.02	78.00	
7-15	1045	Surface	18	25.5	8.3		10.33	.20		1.02	1.00	ND	.01	69.00	
		8		23.6			7.99	.23		1.16	1.15	ND	.01		
9-15	1150	Surface		24	7.3		8.67	.29	ND	.72	.72	ND	.008	102.75	
		10		24	6.6		7.36	.02	ND	.86	.83	ND	.02		
							Station 17 - Northeast River, mouth of creek								
6-24		Surface		26	7.9		11.09	.15	ND	.50	.42		.08	45.00	
7-15	1100	Surface	22	25.3	7.2		9.69	.19		.62	.61	ND	.01	57.75	
9-15	1155	Surface	15	24	7.4		8.25	.30	ND	.85	.85	ND	ND	117.75	

ND - Not detectable
LA - Laboratory accident

WATER QUALITY SURVEY

HEAD OF CHESAPEAKE BAY TRIBUTARIES



Chesapeake Technical Support Laboratory
Middle Atlantic Region
Environmental Protection Agency
Water Quality Office

1968 Data Report

Number 13

WATER QUALITY SURVEY OF THE CHESAPEAKE BAY IN THE VICINITY OF SANDY POINT

Staff

James W. Marks, Chief, Laboratory Section
Donald W. Lear, Jr., Chief, Ecology Section
Orterio Villa, Jr., Chemist
Anna R. Favorite, Statistician
Evelyn P. McPherson, Technician

TABLE OF CONTENTS

Page

I INTRODUCTION..... 1

II STATION LOCATIONS..... 6

III SURVEY RESULTS..... 7

IV MAP..... appendix i

I INTRODUCTION

A. Purpose and Scope

Water quality observations were maintained on a monthly basis by the Chesapeake Technical Support Laboratory, Environmental Protection Agency, Federal Water Quality Administration, in the Chesapeake Bay in the vicinity of Sandy Point during 1968.

Objectives of these studies were:

1. Observe the extent and duration of oxygen depleted areas during the warmer months.
2. Determine horizonal and vertical stratification through thermoclines and haloclines.
3. Measure existing water quality in terms of DO, BOD, temperature, salinity, nutrients, turbidity and chlorophyll.
4. Compare data with other extant in the literature to determine water quality trends in the area.
5. Determine baseline conditions before the introduction of a sewage treatment plant directly into Bay waters in the vicinity of Sandy Point.

B. General Remarks

Cruises were made monthly as far as was practicable on five transects from a north section above Gibson Island to the southernmost section at Hacketts Point, near Annapolis, Maryland. In addition a station at the lower Craighill Channel range light, off Baltimore Harbor, was occupied in October and December.

C. Sampling Procedures

Surface samples for chemical analysis were obtained by dipping a plastic bucket or large funnel into the bay water with a minimum of agitation. Samples were retained in plastic one-gallon "cubitainers." Dissolved oxygen (DO) samples were obtained by siphoning from the bucket or by attaching a tube to the funnel outlet and extending it to the bottom of a conventional 300 ml DO bottle. The bottle was overfilled twice without excessive agitation, and the DO fixed immediately. Temperature was measured in the dipped bucket immediately after sampling.

Bottom samples were taken using a plastic Van Dorn sampler. Sampling procedures were otherwise identical to those used for surface samples. All samples were stored on ice. Analysis was started immediately on return to the Chesapeake Technical Support Laboratory, generally within two hours of sampling.

D. Measured Parameters and Analytical Methods

1. Water temperature was read from a Beckman Salinometer.

2. Light extinction, in inches, was made with a 12 inch (30 cm) white secchi disk.

3. The pH measurements were made with a field pH meter.

4. Salinity was determined with a calibrated Beckman Salinometer.

5. Dissolved Oxygen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed.. 1965.

Dissolved Oxygen was determined by the azide modification of the basic Winkler method with the titration done potentiometrically with a Fisher automatic "titralyzer."

6. Biochemical Oxygen Demand

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed.. 1965.

The Biochemical Oxygen Demand was determined by the azide modification of the basic Winkler method with the titration done potentiometrically with a Fisher automatic "titralyzer." The samples as received were diluted if necesssary and transferred to standard 300 ml BOD bottles in triplicate. One initial DO and two final DO determinations were used throughout. Incubation was started immediately at 20°C and continued for five days after which they were titrated.

7. Total Phosphorus

Reference: Menzel, D.W. and Corwin, N. 1965. The Measurement of Total Phosphorus in Seawater Based on the Liberation of Organically Bound Fractions by Persulfate Oxidation. Limonology and Oceanography, 10: 280-282.

Murphy, J. and Riley, J.P.. 1962. A Modified Single

Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

Total Phosphorus was determined after persulfate oxidation of the sample in an autoclave at 15 psi for 30 minutes. The resultant ortho-phosphate was then determined colorimetrically as the molybdenum-blue complex with the optical density measured at 882 mμ.

8. Total Kjeldahl Nitrogen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed.. 1965.

Total Kjeldahl Nitrogen includes ammonia and organic nitrogen and was determined by the standard micro-kjeldahl procedure. The sample was digested in the presence of strong acid to convert the organic nitrogen to ammonia. The ammonia was then distilled, collected in boric acid solution, nesslerized and determined colorimetrically.

9. Nitrate + Nitrite

Reference: A Manual of Sea Water Analysis, J.D.H. Strickland and T.R. Parsons, 2nd. ed., Queen's Printer and Controller of Stationery, Ottawa, Canada. 1965.

Nitrate plus Nitrite nitrogen was determined by the cadmium reduction of nitrate to nitrite and subsequent diazotization with sulphanilamide and N-(1-napthyl)-ethylenediamine dihydrochloride. The results were calculated as nitrite nitrogen.

10. Chlorophyll a

Reference: A Manual of Sea Water Analysis, J.D.H. Strickland and T.R. Parsons, 2nd. ed., Queen's Printer and Controller of Stationery, Ottawa, Canada. 1965.

Chlorophyll a was determined by extraction of millipore-filtered samples in 90% acetone and read spectrophotometrically.

11. Turbidity

Turbidity was determined with a Hach photoelectric nephelometer, calibrated in Jackson Turbidity Units.

12. Phytoplankton

Identification and counting was done on fresh unpreserved samples in a Sedgwick-Rafter counting cell under the microscope. Identification and counting was done by Mr. James LaBuy, biologist at the Chesapeake Technical Support Laboratory.

II STATION LOCATIONS

Transect	Station	Location
A	1	Off tower at Windmill Point
	2	Red Flasher "loc"
	3	Black and white buoy "13B"
B	1	Red Flasher "2" Magothy River
	2	Red Nun "4C"
	3	Black Flasher, bell "1"
C	1	Off house at Tydings-on-the-Bay
	2	Red Flasher, bell "2C"
	3	Edge of dumping grounds
D	1	Off Sandy Point
	2	Red Flasher, gong "8"
	3	South edge of dumping grounds
E	1	Off Hacketts Point
	2	Red Flasher, gong "4"
	3	Off Matapeake ferry slip
		Craighill Light

III SURVEY RESULTS

WATER QUALITY PARAMETERS IN MID-CHESAPEAKE BAY
CHESAPEAKE TECHNICAL SUPPORT LABORATORY
1968

Date Sample Taken	Time Sample Taken	Secchi Disk Inches	pH	Sample Depth Feet	Water Temp °C	Salinity °/oo	DO mg/l	BOD mg/l	Turbidity JTU	Total P mg/l PO_4	NO_2+NO_3 mg/l NO_3-N	TKN mg/l N	Chlorophyll a µg/l
						Transect A - Station 1							
4-22	1315	48		Surface	12.34	3.12	9.46	3.93		.083	.749	.94	15.00
				15	11.8	3.42	8.37	2.72		.129	.717	.87	16.50
5-22		48		Surface			8.24	3.98	3.6	.106	.557	.67	21.00
				15			7.59	3.57	3.0	.093	.453	.41	12.75
6-24	1350	44		Surface	23.5	3.7	8.07	3.93	5.2	.112	.612	.675	32.25
				15	21.5	4.8	4.78	3.97	11	.147	.516	.484	24.75
7-09	1130	47		Surface	23	4.1	6.51	3.17	4.5	.102	.462	.727	19.50
				15	22.17	4.9	3.79	2.58	3.9	.094	.370	.473	9.00
8-12	1230	40		Surface	25.6	6.6	10.74				.236	1.500	177.00
				10	24.6	6.9							
				15			4.28	1.34		.109	.110	.506	18.75
9-04	1100	65	7.6	Surface			8.39	4.69		.105	.160	1.205	29.25
			7.2	15			4.14	2.50		.103	.063	1.404	
10-23	1150	66		Surface		13.2	7.83	2.57		.128	.224		14.25
				15		13.8	6.08	1.99		.174	.150		7.50
12-04		48		Surface		7.0	10.45	1.46		.096	.999	.522	.75
				13		11.4	8.98	1.36		.094	.180	.468	ND
						Transect A - Station 2							
4-22	1300	48		Surface	12.02	3.96	10.80	4.11		.122	.628	.70	35.25
				15	10.24	5.24	8.09	2.32		.098	.653	.70	15.75
5-22		64		Surface			9.55	3.27	2.8	.081	.409	.12	13.50
				15			7.94	4.61	3.6	.115	.435	.41	21.75
6-24		43		Surface	22.6	3.7	9.32	5.96	7.1	.140	.525	.420	53.25
7-09		45		Surface	23.34	4.1	6.42	3.08	4.4	.084	.422	.442	22.50
				15	22.35	5.6	5.75	2.82	4.0	.083	.264	.309	18.00
				30	21.14	17.55	1.09	2.08	3.0	.082	.150	.502	
				40	19.33	10.62	.64	1.70	3.5	.099	.114	.564	
8-12	1240	46		Surface	25.2	7.4	9.50				.068	.457	
				10	24.6	7.7							
				15			6.67				.085	.543	
				20	24.2	10.3							
				30	23.1	16.2	.38				.003	.759	
				40	22.9	16.8	.26				.006	.660	
9-04	1120	55	7.6	Surface			7.94	3.43		.116	.085	.739	15.00
			7.4	15			4.42	4.17		.126	.041	.621	
			7.4	30			3.08	1.71		.133	.009	.472	
			7.3	40			1.85	1.84		.175	.009	.560	

ND Not detectable

Date Sample Taken	Time Sample Taken	Secchi Disk Inches	pH	Sample Depth Feet	Water Temp °C	Salinity °/oo	DO mg/l	BOD mg/l	Turbidity JTU	Total P mg/l PO_4	NO_2+NO_3 mg/l NO_3-N	TKN mg/l N	Chlorophyll a_o µg/l
						Transect A - Station 2 continued							
10-23	1210	60		Surface		13.4	8.10	2.48		.046	.209		26.25
				15		13.9	6.64	ND		.085	LA		6.00
				30		14.8	6.58	1.87		.127	.121		
				40		14.6	6.46	2.12		.112	.124		
12-04		72		Surface		6.4	10.56	1.33		.080	.563	.438	1.50
				15		13.6	8.65	1.85		.119	.424	.498	ND
				30		16.4	8.49	1.39		.117	.176	.342	ND
				40		16.5	8.33	1.36		.079	.089	.456	ND
						Transect A - Station 3							
4-22	1200	48		Surface	12.44	4.0	11.60	3.18		.074	.705	.47	30.75
				15	11.8	4.64	9.68	3.02		.071	.673	.70	22.50
5-22		64		Surface			10.37	2.49	4.3	.071	.544	.36	14.25
				15			7.83	3.59	4.6	.109	.413	.15	24.00
6-24	1330	46		Surface	21.9	4.1	8.34	5.67	4.6	.117	.333	.369	45.00
				15	19.9	5.7	5.20	1.96	5.6	.063	.510	.274	9.75
7-09	1220	58		Surface	22.77	4.84	7.18	2.97	3.0	.091	.308	.442	19.50
				15	21.7	6.55	4.33	4.12	4.9	.180	.286	.661	13.50
8-12	1300	48		Surface	25	7.3	8.50				.057	.457	
				10	24.4	7.5							
				15			4.63				.063	.519	
				20	23.7	14.3							
9-04	1135	36	8.2	Surface			9.17	2.41		.077	.041	.484	15.00
			7.7	15			5.65	2.16		.107	.022	.491	
10-23	1240	42		Surface		14.2	8.02	2.52		.131	.147		37.50
				15		14.3	7.03	2.42		.115	.162		10.50
12-04		60		Surface		7.6	10.33	1.65		.083	.514	.342	ND
				15		11.0	8.64	1.50		.282	.485	.540	ND
						Transect B - Station 1							
4-22	1350	50		Surface	12.54	2.38	10.19	3.22		.080	.711	.68	20.25
				15	12.22	2.54	9.17	2.98		.075	.711	.77	18.00
5-22		58		Surface			8.94	3.26	2.8	.076	.390	.08	12.75
				15			7.32	3.05	3.5	.097	.372	.41	6.00
6-24		42		Surface	22.9	3.6	7.92	4.21	5.5	.121	.333	.548	37.50
	1030			14	20	6.8	.71	2.70	5.0	.127	.201	.439	14.25
7-09	1420	48		Surface	24.55	3.9	8.05	3.79	3.2	.092	.760	.370	21.75
				12	21.54	7.07	3.18	2.38	2.5	.081	.745	.442	
8-12	1210	40		Surface	25	7.3	8.42				.006	.654	
				10	24.6	7.5							
				15			3.00				.104	.562	
9-04	1300	40	8.8	Surface			10.09	5.09		.104	ND	.683	24.00
			7.9	10			3.23	1.71		.100	.052	.571	

LA Laboratory accident
ND Not detectable

Date Sample Taken	Time Sample Taken	Secchi Disk Inches	pH	Sample Depth Feet	Water Temp °C	Salinity °/oo	DO mg/l	BOD mg/l	Turbidity JTU	Total P mg/l PO_4	NO_2+NO_3 mg/l NO_3-N	TKN mg/l N	Chlorophyll a_o µg/l
						Transect B - Station 1 continued							
10-23	1340	60		Surface		13.1	9.45	4.68		.119	.044		35.25
				12		14.1	6.89	1.65		.060	.091		6.75
12-04		60		Surface		10.3	10.41	1.36		.112	.213	.318	3.00
				12		15.5	8.18	1.19		.062	.242	.360	2.25
						Transect B - Station 2							
4-22	1330	48		Surface	12.02	3.98	10.86	3.59		.084	.659	.63	30.00
				15	9.6	6.64	7.38	2.10		.088	.614	.77	11.25
				30	7.04	9.3	6.98	3.38		.155	.370	1.11	15.75
5-22		64		Surface			9.87	3.15	2.4	.085	.417	.30	9.00
				15			8.68	3.57	1.8	.082	.372	.38	16.50
				30			5.95	3.38	3.2	.070	.366	.41	11.25
6-24		52		Surface	22.24	5.22	8.48	3.58	4.0	.116	.421	.439	25.50
				15	18.32	10.3	2.05	2.64	3.9	.098	.402	.382	17.25
				30	16.9	12.5	.84	2.37	3.5	.140	.071	.401	6.75
7-09	1350	48		Surface	23.84	4.12	8.09	3.51	3.0	.098	.390	.327	
				15	22.34	5.92	6.12	2.74	3.9	.118	.245	.200	27.75
				30	22.01	6.23	5.24	2.33	4.5	.090	.265	.364	
				40	19.54	10.47	.94	2.16	4.0	.101	.090	.539	
8-12	1150	60		Surface	24.6	8.4	7.98				.054	.383	
				10	24.3	8.4							
				15			5.98				.060	.407	
				20	24.4	10.2							
				30	22.9	17.1	.10				ND	.593	
				40	22.8	17.3	.10				.015	.580	
9-04	1220	48	7.96	Surface			8.70	2.94		.066	.071	.671	19.50
			7.5	15			5.61	4.26		.111	.015	.596	
			7.5	30			3.39	1.84		.148	.006	.317	
			7.6	40			3.03	1.72		.095	.019	.584	
10-23	1315	42		Surface		13.5	9.24	4.11		.118	.203		48.75
				15		14.7	6.83	2.09		.089	.144		10.50
				30		15.5	6.48	1.61		.200	.115		
				40		14.8	6.40	1.41		.113	LA		
12-04		65		Surface		8.8	10.29	1.34		.089	.530	.306	1.50
				15		16.8	8.42	1.36		.078	.160	.258	ND
				30		17.2	8.26	1.07		.078	.121	.342	.75
				40		17.2	8.32	1.45		.255	.224	.468	3.00

LA Laboratory accident
ND Not detectable

Date Sample Taken	Time Sample Taken	Secchi Disk Inches	pH	Sample Depth Feet	Water Temp °C	Salinity °/oo	DO mg/l	BOD mg/l	Turbidity JTU	Total P mg/l PO_4	NO_2+NO_3 mg/l NO_3-N	TKN mg/l N	Chlorophyll a µg/l
						Transect B - Station 3							
4-22	1225	48		Surface	12.44	4.46	11.68	4.02		.076	.666	.54	32.25
				15	8.92	7.0	7.83	3.79		.095	.526	.54	10.50
				28	7.1	11.02	6.81	2.72		.130	.385	.94	18.00
5-22		70		Surface			9.23	2.54	2.5	.066	.480	.26	6.75
				15			9.88	4.51	2.9	.268	.490	.36	15.00
				30			4.30	3.02	5.5	.093	.283	.67	36.00
6-24	1215	50		Surface	21.9	5.2	9.41	3.72	4.5	.081	.423	.395	32.25
				15	21.1	5.2	7.09	2.59	3.5	.106	.413	.350	15.00
				30	16.8	12.12	4.33	1.61	3.8	.093	.333	.395	15.75
7-09	1300	50		Surface	23.1	5.26	7.59	3.72	3.0	.122	.265	.412	32.25
				15	22.38	6.02	6.76	3.14	2.5	.087	.215	.479	35.25
				30	22.27	6.26	6.42	2.77	2.9	.115	.215	.424	
8-12	1130	60		Surface	24.8	8.2	8.25				.021	.506	
				10	24.5	8.8							
				15			4.38				.018	.444	
				20	24.3	12.3							
				30	23	16.9	.13				ND	.593	
9-04	1140	52	8.6	Surface			10.07	3.36		.097	ND	.584	15.00
			7.5	15			6.59	1.56		.104	.025	.540	
			7.6	30			1.47	1.25		.099	.006	.609	
10-23	1250	78		Surface		NSQ	8.86	2.51		.093	.132		11.25
				15		14.3	6.85	1.30		.078	.115		3.75
				30		14.6	6.12	1.95		.137	.115		
12-04		72		Surface		8.7	10.07	1.05		.077	.449	.342	3.00
				15		10.7	9.50	1.20		.089	.180	.414	ND
				30		16.6	8.24	2.00		.107	.606	.156	3.00
						Transect C - Station 1							
4-23	1050	60		Surface	12.6	3.24	9.49	3.17		.086	.649	1.58	18.75
				15	12	3.6	8.25	3.97		.084	.605	.959	15.00
5-22		64		Surface			9.12	3.22	2.4	.096	.432	.59	21.00
				15			8.43	2.84	2.9	.087	.399	.42	14.25
6-24	1000	48		Surface	22.1	4.2	7.06	2.69	4.9	.102	.492	.420	32.25
				15	16.9	13.0	.78	1.89	7.0	.125	.142	.382	6.00
7-11	1030	50		Surface	23.8	4.74	7.08	3.40		.107	.384	.568	12.75
				12	19.58	12.05	.65	1.70		.126	.126	.383	8.25
8-12	1030	42		Surface	24.5	8.1	7.80				.060	.636	
				10	24.1	8.7							
				15	24.2	9.0	4.70				.100	LA	
9-04	1255	42	8.1	Surface			9.55	4.61		.101	.037	.832	24.75
			7.7	15			6.82	2.55		.088	.085	.062	

LA Laboratory accident
ND Not detectable
NSQ Not sufficient quantity

Date Sample Taken	Time Sample Taken	Secchi Disk Inches	pH	Sample Depth Feet	Water Temp °C	Salinity °/oo	DO mg/l	BOD mg/l	Turbidity JTU	Total P mg/l PO_4	NO_2+NO_3 mg/l NO_3-N	TKN mg/l N	Chlorophyll a_o µg/l
						Transect C - Station 1 continued							
10-24	1020	48		Surface		13.5	7.64	4.13		.294			1.50
				15		13.3	7.38	2.62		.208			4.50
12-04		62		Surface		LA	10.53	2.00		.107	.606	.156	3.00
				15		13.7	8.13	1.20		.101	.125	.312	2.25
						Transect C - Station 2							
4-23	1145	53		Surface	12.2	4.4	11.55	2.70		.077	.621	.59	34.50
				15	11.9	4.3	11.09	3.42		.086	.529	.72	32.25
				30	10.33	5.5	8.06	2.36		.089	.565	.90	16.50
6-24	1050	48		Surface	22.3	4.4	8.76	4.43	4.0	.119	.453	.433	32.25
				15	17.1	12	.71	2.03	3.5	.166	.142	.529	12.75
				30	16.2	13.9	.34	1.92	4.0	.244	.193	.580	13.50
7-11	1055	56		Surface	23.59	4.61	7.24	2.91		.120	.369	.068	21.00
				15	19.52	11.62	1.58	1.77		.105	.095	.661	1.50
				30	19.1	12.5	.63	1.64		.127	.094	.475	
				45	19.09	12.78	.59	1.82		.138	.086	.852	
8-12	1045	45		Surface	24.4	9	7.40				.060	.852	
				10	24.4	8.9							
				15			4.60				.037	.463	
				20	23.6	14.4							
				30	22.8	17.5	.13				ND	.636	
				40	22.9	17.5	.12				ND	.630	
9-04	1245	76	8.2	Surface			9.28	4.18		.097	.064	.571	27.75
			7.5	15			6.00	2.33		.099	.031	.391	
			7.5	30			3.71	1.54		.100	.017	LA	
			7.6	40			3.55	1.64		.074	.027	.385	
10-24	1040	60		Surface		13.6	7.57	2.52		.159			23.25
				15		14	7.03	2.06		.163			7.50
				30		14.9	6.13	1.61		.131			
				40		14.4	6.19	1.73		.149			
						Transect C - Station 3							
4-23	1240	60		Surface	12	5.04	10.74	2.71		.065	.501	.64	27.00
				15	10.6	5.5	10.54	3.26		.078	.548	.53	24.00
				30	8.3	8.14	7.34	3.29		.089	.321	.72	12.00
				45	6.89	9.44	6.63	4.67		.162	.285	.07	19.50
6-24		48		Surface	22.22	5.3	9.16	2.82	3.9	.092	.337	LA	22.50
				15	20.5	5.78	6.00	2.21	3.6	.067	.349	.497	16.25
				30	17.5	11.44	1.12	1.98	4.6	.075	.193	.777	10.50

LA Laboratory accident
ND Not detectable

Date Sample Taken	Time Sample Taken	Secchi Disk Inches	pH	Sample Depth Feet	Water Temp °C	Salinity °/oo	DO mg/l	BOD mg/l	Turbidity JTU	Total P mg/l PO_4	NO_2+NO_3 mg/l NO_3-N	TKN mg/l N	Chlorophyll a µg/l
						Transect C - Station 3 continued							
7-11	1120	58		Surface	23.15	5.55	7.23	2.55		.114	.310	.611	22.50
				15	22.68	6.74	5.40	1.87		.092	.261	.586	LA
				30	20.31	9.99	1.65	1.65		.100	.144	.753	
8-12	1105	48		Surface	24.8	8.5	8.50				ND	LA	
				10	24	9.8							
				15			2.26				ND	.617	
				20	24.2	12.4							
				30	23.5	15.4	.42				ND	.691	
				40	23.4	15.6	.22				ND	.679	
9-4	1200	63	8.3	Surface			10.17	4.43		.112	ND	.646	40.50
			6.1	15			7.49	2.29		.132	ND	LA	
			6.8	30			3.44	1.06		.186	ND	LA	
			7.0	40			1.65	1.26		.095	LA	.609	
10-24	1110	72		Surface			7.70	1.61		.123			6.75
				15			7.10	1.07		.122			6.75
				30			7.02	.74		.110			
				40			LA	.91		.137			
12-04		84		Surface		10.2	10.00	1.12		.088	.430	.390	14.25
				15		12.0	9.35	1.08		.073	.327	.378	.75
				30		16.6	8.37	1.16		.090	.155	.354	1.50
				40		16.3	8.28	1.09		.091	.089	.408	3.00
						Transect D - Station 1							
4-23	1445	48		Surface	11.9	4.82	10.12	3.25		.087	.492	.66	22.50
6-19	1400	42		Surface	21.2	4.1	8.78	5.79	4.3	.165	.478	.753	33.75
				10	19.3	6.2	5.54	2.57	3.8	.136	.043	.394	20.25
7-11	1245	61		Surface	24.26	4.79	5.99	1.65		.096	.338	.358	12.00
				15	22.94	6.44	4.84	2.14		.135	.263	.414	12.00
8-13	1110	50		Surface	24.2	9.0					.047		
				10	23.9	9.3							
				15							.025		
				20	24.1	11.4							
9-05	1105	58	6.8	Surface		13.5	5.78	NSQ	11	.038	.061	.856	
			6.9	15		12.9	5.71	2.67	7	.024	.106	.647	
10-24	1200	60		Surface		14.6	7.66	2.29		.210			14.25
				15		15.5	6.07	.84		.235			7.50

LA Laboratory accident
ND Not detectable
NSQ Not sufficient quantity

Date Sample Taken	Time Sample Taken	Secchi Disk Inches	pH	Sample Depth Feet	Water Temp °C	Salinity °/oo	DO mg/l	BOD mg/l	Turbidity JTU	Total P mg/l PO_4	NO_2+NO_3 mg/l NO_3-N	TKN mg/l N	Chlorophyll a µg/l
						Transect D - Station 2							
4-23	1400			Surface	12	3.5	10.97	3.55		.078	.571	.58	30.75
				15	10.72	6.32	10.08	3.82		.143	.444	.73	28.50
				30	8.9	8.6	8.12	2.72		.078	.470	.77	15.75
				45	7.48	9.54	6.59	3.42		.168	.222	.61	24.75
6-19	1430	40		Surface	21.6	3.32	9.82	5.26	3.6	.157	.377	.50	44.25
				15	20	4.6	8.01	3.14	4.6	.095	.054	.341	18.75
				30	15.9	13.34	.60	2.19	2.2	.129	.041	.447	0
				45	15.7	14.25	.11	1.22	2.9	.145	.003	.488	1.50
				57	15.2	14.5	.07	1.56	5	.175	ND	.529	.75
7-11	1205	58		Surface	23.58	4.76	7.66	2.29		.099	.408	.407	11.25
				15	23.34	5.16	5.54	2.13		.096	.326	.278	57.75
				30	19	12.14	2.58	1.50		.114	.153	.414	
				45	18.75	13.03	.27	1.38		.178	.047	.401	
8-13	1125	50		Surface	24	9.2					.013	.806	40.50
				10	24	9.3							
				15								.525	7.50
				20	24.4	10.2							
				30	24	12.9					ND	.606	
				40	23.4	16					ND	.688	
9-05	1120	66	7.2	Surface		13.2	9.46	4.63	5	.049	.020	.629	
			6.9	15		13.4	7.29	3.84	4	.030	.022	.766	
			6.65	30		17.9	1.70	2.08	6	.054	.009	.683	
			6.7	40		18.9	1.19	2.95	5	.040	.014	.707	
10-24	1145	60		Surface		14.3	7.71	2.59		.122			15.00
				15		14.6	6.68	1.12		.123			18.00
				30		15.3	6.37	.71		.156			
				40		17.8	4.82	1.11		.128			
						Transect D - Station 3							
4-23	1335			Surface	11.4	3.22	10.42	2.72		.070	.565	.55	25.50
				15	9.8	3.88	9.84	3.70		.077	.402	.43	20.25
6-19	1540			Surface	21.42	3.52	10.04	3.44	3	.121	.042	.376	29.25
				15	20.4	4.5	6.91	1.70	2.5	.069	.368	.347	12.00
7-11	1145	75		Surface	23.14	6.47	5.71	1.73		.091	.266	.327	2.25
				15	21.04	19.13	2.54	1.65		.095	.163	.451	0
8-13	1145	60		Surface	24.1	9.1					.009	.650	28.50
				10	23.9	9.4							
				15							.006	.462	10.50
				20	24.3	9.4							
9-05	1135	108	7.1	Surface		15	5.94	2.35	3	.018	.014	.485	
			6.5	15		16.1	3.62	2.82	3.2	.050	.025	.611	
10-24	1125	96		Surface		15.2	6.03	1.48		.136			29.25
				20		15.3	5.61	1.04		.139			7.50

ND Not detectable

Date Sample Taken	Time Sample Taken	Secchi Disk Inches	pH	Sample Depth Feet	Water Temp °C	Salinity °/oo	DO mg/l	BOD mg/l	Turbidity JTU	Total P mg/l PO_4	NO_2+NO_3 mg/l NO_3-N	TKN mg/l N	Chlorophyll a µg/l
						Transect E - Station 1							
4-29	1040	78		Surface	11.98	5.54	10.53	3.60		.061	.506	.59	14.25
				15	11.5	6.0	9.23	3.61		.073	.570	.67	11.25
6-19	1710	40		Surface	21.8	3.79	9.75	3.64	3.4	.109	.043	.518	27.00
				15	20.18	5.16	7.55	1.92	2.5	.077	.409	.459	15.00
7-11	1320	55		Surface	23.73	5.24	6.67	2.51		.119	.333	.346	1.50
				15	23.5	5.25	6.74	2.58		.155	LA	.296	16.50
8-13	1240	54		Surface	24.4	8.4					.033	.644	
				10	24.4	8.7							
				15							.022	.500	6.00
9-05	1220	51	7.1	Surface		12.0	7.47	3.18	4	.034	.061	.629	
			6.5	15		14.6	5.03	2.28	8	.044	.056	.521	
10-24	1215	60		Surface		14.2	7.11	1.59		.181			5.25
				15		14.4	6.97	1.34		.131			5.25
						Transect E - Station 2							
4-29	1105	66		Surface	11.44	6.04	10.61	2.86		.103	.506	.44	19.50
				15	11.24	6.34	9.33	2.89		.082	.487	.50	15.75
				30	8.34	11.1	5.55	2.71		.078	.317	.70	16.50
				45	7.88	13.5	4.67	2.59		.104	.174	.70	19.50
6-19	1640			Surface	21.8	3.88	10.79	4.75	3.2	.155	.034	.429	47.25
				15	19.06	6.8	5.26	1.82	2.3	.080	.314	.341	23.25
				30	16.68	11.8	.51	1.89	2.5	.132	.010	.424	3.75
				45	15.44	13.9	.09	1.18	2.8	.135	ND	.553	8.25
7-11	1350	61		Surface	23.88	5.68	7.53	3.00		.138	.392	.272	17.25
				15	22	7.73	4.44	1.88		.101	.219	.290	35.25
				30	19.43	12.11	.68	1.74		.125	.041	.463	
				45	18.8	13.46	.31	1.79		.176	.041	.469	
8-13	1220	52		Surface	24.3	8.8					.008	.625	28.50
				10	24.4	8.7							
				15							.003	.469	21.00
				20	24.4	9.2							
				30	23.6	14.1					.006	.450	
				40	23.3	16.1					ND	.556	
9-05	1205	78	7.6	Surface		13.7	9.32	4.37	4.1	.052	.061	.593	
			6.85	15		14.2	7.58	3.00	3.3	.045	.006	.533	
			6.8	30		17.4	3.00	1.86	3.5	.041	.003	.317	
			6.6	40		20	.70	1.25	4.2	.035	.011	.473	
10-24	1225	72		Surface		15.4	7.15	3.27		.161			24.75
				15		15.1	6.77	1.87		.136			12.00
				30		15.3	6.69	1.19		.114			
				40		15.1	6.67	1.30		.123			

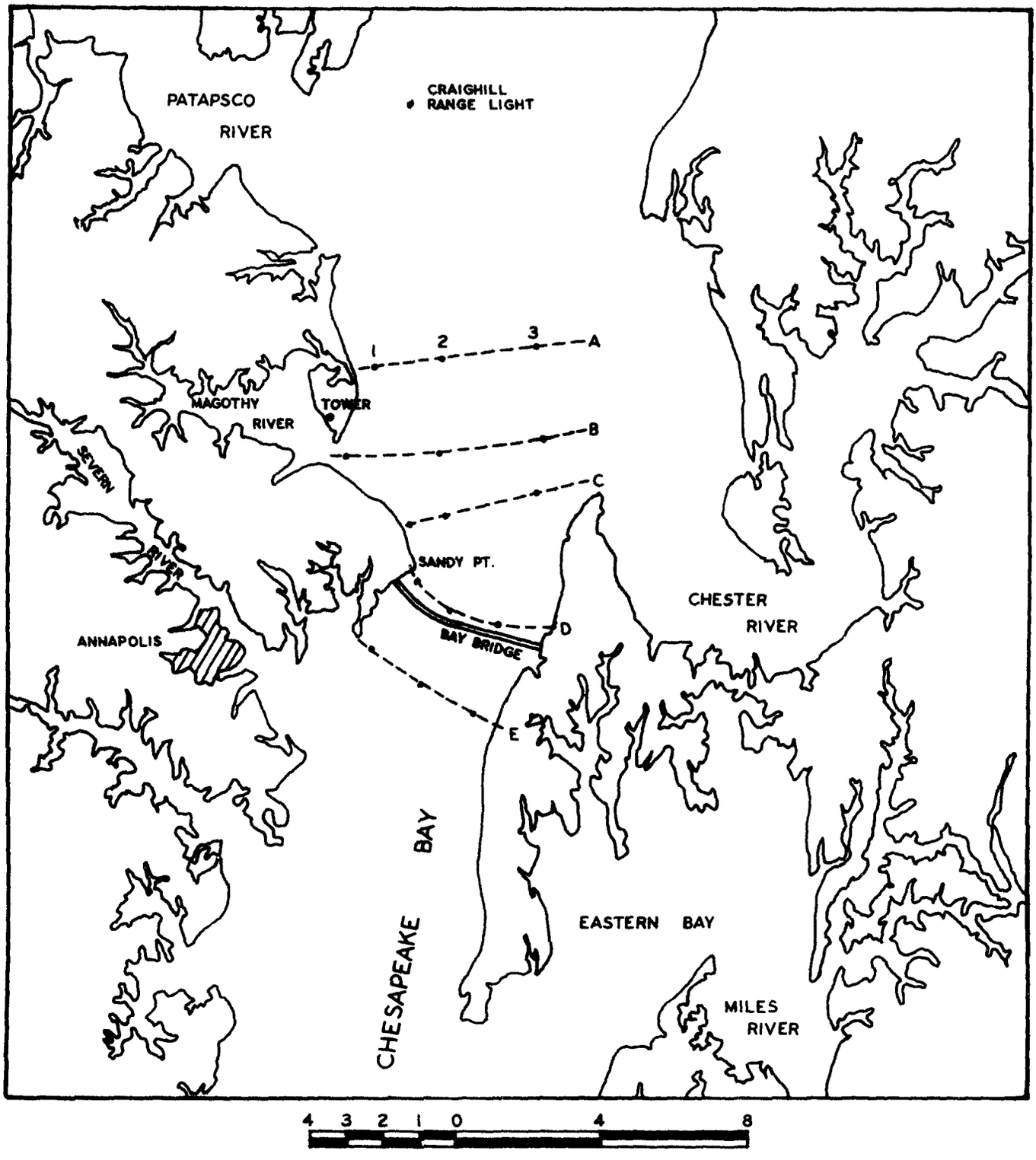
LA Laboratory accident
ND Not detectable

Date Sample Taken	Time Sample Taken	Secchi Disk Inches	pH	Sample Depth Feet	Water Temp °C	Salinity °/oo	DO mg/l	BOD mg/l	Turbidity JTU	Total P mg/l PO_4	NO_2+NO_3 mg/l NO_3-N	TKN mg/l N	Chlorophyll a_o µg/l
						Transect E - Station 3							
6-19	1600	42		Surface	21.45	4.16	10.59	4.51	2.8	.134	.043	.447	43.45
				12	20.64	5.0	10.19	2.33	3.4	.090	.407	.341	24.00
7-11	1410	60		Surface	24.02	6.59	6.01	2.40		.094	.207	.321	15.00
				15	21.8	7.77	3.36	1.15		.069	.198	.364	15.00
8-13	1205	78		Surface	24.1	9.5					.011	.431	12.00
				10	24.3	9.5							
				15							.008	.500	4.50
9-05	1150	96	7.15	Surface		14.2	7.30	2.35	2.9	.035	.009	.204	
			6.6	15		15.0	4.37	1.51	2.4	.049	.022	.425	
10-24	1230	120		Surface		15.3	6.26	1.13		.137			14.25
				15		15.4	6.08	1.12		.138			13.50
						Craighill Light							
10-23	1120	66		Surface		11.7	8.53	3.62		.104	.209		33.00
				15		12.0	7.48	2.03		.119	.168		303.00
12-04		48		Surface		5.9	10.25	1.36		.101	.341	.618	ND
				15		6.8	9.67	1.66		.142	.492	.510	ND

ND Not detectable

DOMINANT PHYTOPLANKTON
CHESAPEAKE BAY 1968

	MAY	JUNE	OCTOBER	DECEMBER
	Chlorophyll a_o µg/l	Chlorophyll a_o µg/l	Chlorophyll a_o µg/l	Chlorophyll a_o µg/l
A	Chlamydomonas Phacus Tetraedron Pediastrum Tabellaria 21.0	Chlamydomonas Tetraedron Pediastrum Dinobryon Scenedesmus 32.25	Chlorella 3557 Anacystis 1778 Chlamydomonas 562 Ulothrix 94 Pennates 94 14.25	Anacystis 3697 Chlorella Scenedesmus 0.75
B	Chlamydomonas Phacus Tabellaria Tetraedron Cosmarium 12.75	Chlamydomonas Tetraedron Fragilaria Dinobryon Oocystis 37.5	Chlorella, Scenedesmus, Ankistrodesmus 23634 Anacystis 2902 Ulothrix 1310 Chlamydomonas, Phacus 983 35.25	Chlorella 2387 Anacystis 2292 Chlamydomonas, Phacus, Euglena 1170 3.0
C	Chlamydomonas Pediastrum Tetraedron Tabellaria Fragilaria 21.0	Chlamydomonas Tetraedron Navicula Tabellaria Closterium 32.25	Chlorella, Ankistrodesmus, Coelastrum 9226 Anacystis 7818 Chlamydomonas, Phacus, Trachelomonas 562 Centrates 94 Pennates 47 1.5	Chlorella 2200 Anacystis 983 Chlamydomonas, Phacus, Trachelmonas 843 3.0
D		Chlamydomonas Euglena Tetraedron Phacus Fragilaria 33.75	Chlorella, Ankistrodesmus, Tetraedron 11373 Anacystis 6505 Chlamydomonas, Trachelomonas, Phacus 2200 Dinogryon 187 14.25	
		Chlamydomonas Lepacinclis Dinobryon Gymnodinium Euglena 27.0	Chlorella, Ankistrodesmus 10717 Anacystis 140 5.25	



WATER QUALITY SURVEY
OF THE
CHESAPEAKE BAY
IN THE VICINITY OF
SANDY POINT

Chesapeake Technical Support Laboratory
Region III
Office of Water Programs
Environmental Protection Agency

1969 Data Report

Number 14

WATER QUALITY SURVEY

OF THE

CHESAPEAKE BAY

IN THE VICINITY OF

SANDY POINT

Staff

James W. Marks, Chief, Laboratory Section
Orterio Villa, Jr., Chemist
Anna R. Favorite, Statistician
Evelyn P. McPherson, Technician

TABLE OF CONTENTS

		Page
I	INTRODUCTION.....	1
II	STATION LOCATIONS.....	7
III	SURVEY RESULTS.....	9
IV	MAP.....appendix	i

I INTRODUCTION

A. Purpose and Scope

Water quality observations were maintained on a monthly basis by the Chesapeake Technical Support Laboratory, Office of Water Programs, Environmental Protection Agency, in the Chesapeake Bay in the vicinity of Sandy Point during 1969.

Objectives of these studies were to:

1. Continue observation of the extent and duration of oxygen depleted areas during the warmer months.
2. Continue verification of horizonal and vertical stratification through thermoclines and haloclines.
3. Determine trends in existing water quality in terms of DO, BOD, temperature, salinity, turbidity, nutrients, and chlorophyll.
4. Determine baseline conditions before the introduction of a sewage treatment plant discharging directly into Bay waters in the vicinity of Sandy Point.

B. General Remarks

Cruises were made monthly as far as was practicable on eight transects from a northern section across the mouth of the Patapsco River to the southern-most section across the mouth of the Severn River. In addition, a station at the lower Craighill Channel range-light off Baltimore Harbor was occupied in March and June.

C. Sampling Procedures

Samples were obtained using a small submersible pump attached to a wire cable calibrated in feet. The pump was lowered to the desired depth and allowed to run for two minutes before receiving samples in plastic cubitainers. Dissolved oxygen (DO) samples were obtained directly from the pump outlet extending to the bottom of a conventional 300 ml DO bottle. The sample was allowed to overflow the bottle several times without excessive agitation, and the DO fixed immediately. All samples were stored on ice. Analysis was started immediately on return to the Chesapeake Technical Support Laboratory, generally within two hours of sampling.

D. Measured Parameters and Analytical Methods

1. Water temperature was read from a Beckman Salinometer.

2. Light extinction, in inches, was made with a 12 inch (30 cm) white secchi disk.

3. Salinity was determined with a calibrated Beckman Salinometer.

4. Conductivity was read from a calibrated Beckman Salinometer.

5. Dissolved Oxygen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed.. 1965.

Dissolved Oxygen was determined by the azide modification of the basic Winkler method with the titration done potentiometrically with a Fisher automatic "titralyzer."

6. Biochemical Oxygen Demand

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed.. 1965.

The Biochemical Oxygen Demand was determined by the azide modification of the basic Winkler method with the titration done potentiometrically with a Fisher automatic "titralyzer." The samples as received were diluted if necessary and transferred to standard 300 ml BOD bottles in triplicate. One initial DO and two final DO determinations were used throughout. Incubation was started immediately at 20°C and continued for five days after which they were titrated.

7. Total Phosphorus

Reference: Menzel, D.W. and Corwin, N.. 1965. The Measurement of Total Phosphorus in Seawater Based on the Liberation of Organically Bound Fractions by Persulfate Oxidation. Limonology and Oceanography, 10: 280-282.

Murphy, J. and Riley, J.P.. 1962. A Modified Single Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

Total Phosphorus was determined after persulfate oxidation of the sample in an autoclave at 15 psi for 30 minutes. The resultant ortho-phosphate was then determined colorimetrically as the molybdenum-blue complex with the optical density measured at 882 mμ.

8. Inorganic Phosphorus

Reference: Murphy, J. and Riley, J.P.. 1962. A Modified Single Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

Inorganic Phosphorus was determined by automation of the above procedure using the Technicon "AutoAnalyzer." The molybdenum-blue complex formed was determined colorimetrically with the optical density measured at 885 mμ.

9. Total Kjeldahl Nitrogen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed.. 1965.

Total Kjeldahl Nitrogen includes ammonia and organic nitrogen and was determined by the standard micro-kjeldahl procedure. The sample was digested in the presence of strong acid to convert the organic nitrogen to ammonia. The ammonia was then distilled, collected in boric acid solution, nesslerized and determined colorimetrically.

10. Nitrate + Nitrite

Reference: A Practical Handbook of Seawater Analysis, J.D.H. Strickland and T.R. Parsons, Bulletin 167, Fisheries Research Board of Canada, Ottawa, Canada, 1968.

Nitrate plus nitrite nitrogen was determined by automation of the above procedure using the Technicon "AutoAnalyzer." This procedure utilizes cadmium reduction of nitrate to nitrite and subsequent diazotization with sulfanilamide and N-(1-naphthyl)-ethylenediamine dihydrochloride with the optical density measured at 540 mμ. The results were calculated as nitrite nitrogen.

11. Ammonia

Reference: Southeast Water Laboratory, FWQA, Methodology for the colorimetric determination of ammonia by the phenol-hypochlorite reaction.

FWPCA Methods for Chemical Analysis of Water and Wastes, November 1969.

Ammonia nitrogen was determined by automation of the phenol-hypochlorite procedure as described in the Southeast Water Laboratory Methodology and later adopted as the official FWPCA procedure. The intensity of the indophenol blue color, formed by the reaction of ammonia with alkaline phenol

hypochlorite, was increased using solium nitroprusside as an intensifying agent. The optical density was measured at 630 mμ and calculated as NH_3-N.

12. Chlorophyll a

Reference: A Practical Handbook of Seawater Analysis, J.D.H. Strickland and T.R. Parsons, Bulletin 167, Fisheries Research Board of Canada, Ottawa, Canada. 1968.

Chlorophyll a was determined by extraction of millipore-filtered samples in 90% acetone and read spectrophotometrically.

13. Total Carbon

Reference: Beckman Instruments, Bulletin 4059.

Total Carbon was determined with a Dow-Beckman Carbonaceous Analyser using the sample as received.

14. Total Organic Carbon

Reference: Beckman Instruments, Bulletin 4059.

Total Organic Carbon was determined with a Dow-Beckman Carbonaceous Analyser after the sample had been purged with nitrogen gas for five minutes.

II STATION LOCATIONS

Transect	Station	Location
AA	1	Buoy RBC
	2	Buoy R 28C
A	1	Off tower at Windmill Point
	2	Red Flasher "1oc"
	3	Black and white buoy "13B"
B	1	Red Flasher "2" Magothy River
	2	Red Nun "4C"
	3	Black Flasher, bell "1"
C	1	Off house at Tydings-on-the-Bay
	2	Red Flasher, bell "2C"
	3	Edge of dumping grounds
D	1	Off Sandy Point
	2	Red Flasher, gong "8"
	3	South edge of dumping grounds
E	1	Off Hacketts Point
	2	Red Flasher, gong "4"
	3	Off Matapeake ferry slip
F	1	Tolly's Point, Buoy "33"
	2	Mid-Bay
	3	Brickhouse Bar, Buoy "20B"

Transect	Station	Location
G	1	Off Bembe Beach
	2	Bay Buoy (bell)
		Craighill Light

III SURVEY RESULTS
CHESAPEAKE BAY IN THE VICINITY OF SANDY POINT
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Date Sample Taken	Time Sample Taken	Sample Depth Feet	Salinometer Cond µmhos	Salinometer Sal °/oo	Salinometer Temp °C	Secchi Disk Inches	Total P PO_4 mg/l	Inorganic PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	DO mg/l	BOD mg/l	TOC mg/l	TC mg/l
								Transect AA - Station 1									
69061805	6-18	1140	Surface	10.78	4.73	22.2	36	.180		.492	.198	.25	39.00	8.42			
06			10	10.67	4.7	22.22		.184		.762	.178	.27		8.50			
070920	7-09	0820	Surface	10.8	4.76	22.57	26	.241	.027	.566	LA	.255	26.25	6.27			
21			10	10.77	4.7	22.42		.257	.040	.650	.104	.220		5.40			
090301	9-03	1110	Surface	16.0	7.8	24.1	36	.238	.047	1.012	.087	.430	23.25	4.90			
02			10	17.7	8.8	23.8		.177	.020	.894	.087	.443		5.04			
								Transect AA - Station 2									
69061811	6-18	1153	Surface	10.4	4.5	22.22	38	.158		.730	.167		24.75	9.05			
12			15	11.28	5.04	21.96		.116		.470	.120			5.32			
13			30	17.67	9.68	19.93		.142		.438	.043			2.61			
14			40	23.72	14.53	17.62		.124		.611	.023			.80			
070922	7-09	0840	Surface	7.54	2.73	22.2	34	.223	.047	.594	.067	.200	18.75	7.42			
23			15	11.2	5.02	22.2		.177	.045	.572	.048	.310		5.93			
24			30	21.5	11.66	21.0		.161	.061	.572	.034	.410		1.93			
090303	9-03	1045	Surface	14.7	6.9	24.2	40	.348	.076	.941	.025	.172	38.25	6.49			
04			15	16.5	8.0	23.7		.196	.065	.623	.088	.187		4.34			
05			30	18.12	9.2	23.6		.297	.143	.688	.110	.178		3.19			
								Craighill Light									
69042201	3-22	1000	Surface	6.45	3.0	11.6	26	.207		1.000	.774		107.25	9.28			
02			18	7.75	4.0	11.6		.189		.189	.770			8.66			
061801	6-18	1215	Surface	10.4	4.52	22.1	46	.155		.368	.172	.34	29.25	7.76			
02			13	10.4	4.52	22		.272		.481	.109	.18		7.59			
								Transect A - Station 1									
69030601	3-06	1425	Surface	12.74	11.1	1.1	38	.139		.344	.373		7.50	12.08	2.16		
02			13	13.15	11.9	.6		.138		.338	.442			11.92	2.56		
042203	4-22	1030	Surface	10.3	6.0	11.4	50	.113		.586	.674		10.50	8.62			
04			15	10.9	6.6	10.8		.187		.745	.716			8.65			
052001	5-20	1055	Surface	10.56	5.36	16.62	78	.097		.303	.408		30.00	9.05			
02			12	10.9	5.67	16.6		.102		.139	.446			8.46			
061803	6-18	1110	Surface	11.3	5.06	22.2	42	.173		.665	.086	.24	38.25	9.52			
04			12	13.72	6.66	21.72		.173		1.005	.107	.46		7.02			
070925	7-09	0910	Surface	11.00	4.87	22.1	35	.166	.059	.511	.041	.350	9.00	7.02			
26			15	12.12	5.6	22.08		.162	.040	.711	.058	.295		1.63			
090306	9-03	1120	Surface	17.4	8.9	24.0	48	.239	.067	.712	.092	.181	23.25	5.29			
07			15	17.22	8.8	23.9		.199	.058	.771	.097	.209		4.61			
121701	12-17	1240	Surface	11.1	10.88	2.9		.147	.109	.110	.558	.386	12.00	11.37		2.77	8.76
02			15	12.74	12.34	3.62		.145	.106	.147	.600	.323		10.35			

LA Laboratory accident

Sample Number	Date Sample Taken	Time Sample Taken	Sample Depth Feet	Salinometer Cond µmhos	Salinometer Sal °/oo	Salinometer Temp °C	Secchi Disk Inches	Total P PO_4 mg/l	Inorganic PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chloro-phyll a µg/l	DO mg/l	BOD mg/l	TOC mg/l	TC mg/l
								Transect A - Station 2									
69030603	3-06	1405	Surface	12.2	10.5	.98	51	.109		.236	.480		12.00	12.66	2.71		
04			15	14.25	13.22	.3		.108		.096	.397			11.47	1.96		
05			30	16.12	15.3	.22		.076		.344	.343			10.77	2.27		
06			40	16.13	15.28	.2		.106		.121	.274			10.85	2.40		
042205	3-22	1055	Surface	10.45	6.2	10.94	46	.099		.809	.616		.75	8.70			
06			15	11.9	7.5	10.4		.074		.025	.554			8.62			
07			30	12.3	7.9	10.3		.071			.447			8.37			
08			40	13.6	7.3	9.0		.067		.458	.508			6.95			
052003	5-20	1110	Surface	10.4	5.26	16.68	50	.175		.726	.462		90.75	9.67			
04			15	11.04	5.76	16.12		.125		1.352	.459			8.29			
05			30	11.86	6.42	15.65		.087		.303	.416			6.88			
06			40	12.23	6.7	15.56		.119		.474	.459			6.55			
061807	6-18	1100	Surface	12.1	5.54	22.1	52	.209		.703	.116	.45	42.75	9.10			
08			15	15.98	8.18	21.6		.123		.843	.034	.50		4.97			
09			30	21.74	12.74	18.6		.120		.481	.037	.47		2.01			
10			45	24.62	15.28	17.5		.223		.395	.011	.42		.98			
070927	7-09	0920	Surface	12.28	5.71	22.3	46	.181	.038	.594	.051	.215	16.50	6.88			
28			15	15.56	7.81	21.93		.198	.089	.461	.030	.350		4.38			
29			25	23.5	13.53	20.45		.160	.071	.422	.031	.320		1.49			
090308	9-03	1130	Surface	18.0	8.9	24.1	36	.243	.034	.906	.083	.134	42.75	6.01			
09			15	18.8	9.6	23.9		.230	.149	.529	.050	.083		5.33			
10			30	20.52	10.8	23.7		.199	.128	.471	.070	.065		4.09			
121703	12-17		Surface	9.24	8.98	2.98		.153	.116	.674	.565	.289	6.00	11.00			
04			15	13.1	12.42	3.9		.153	.122	.313	.492	.309		10.46			
05			25	18.02	16.8	6.12		.154	.128	.344	.288	.237		8.76			
								Transect A - Station 3									
69052007	5-20	1130	Surface				72	.073		.032	.432		12.75	8.61			
08			15					.072		.240	.437			8.53			
061815	6-18	1045	Surface	12.66	5.96		66	.121		.730	.159	.47	12.75	8.03			
16			15	15.92	8.24			.112		.178	.077	.28		5.49			
070930	7-09	0940	Surface	12.41	5.83		51	.124	.018	.294	.039	.175	9.75	7.19			
31			15	13.82	6.74			.115	.016	.727	.044	.190		5.62			
090311	9-03	1145	Surface	19.1	9.8		48	.186	.079	.512	.030	.063	19.50	5.85			
12			15	18.4	9.4			.204	.142	.818	.032	.070		5.23			

Sample Number	Date Sample Taken	Time Sample Taken	Sample Depth Feet	Salinometer Cond µmhos	Salinometer Sal °/oo	Salinometer Temp °C	Secchi Disk Inches	Total P PO_4 mg/l	Inorganic PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	DO mg/l	BOD mg/l	TOC mg/l	TC mg/l
								Transect B - Station 1									
69030607	3-06	1315	Surface	12.5	11.0	.9	62	.086		.108	.363		6.75	12.31	2.30		
08			15	16.1	15.3	.2		.120		.083	.281			10.91	2.23		
052214	5-22	1020	Surface		4.6 *		60	.118		.644	.415		47.25	10.24			
15			15		7.35*			.164		1.036	.334			6.82			
061817	6-18	0950	Surface	12.04	5.56	22.1	48	.174		.519	.158		28.50	7.35			
18			15 12	12.58	5.9	22.23		.263		.558	.064			6.86			
070932	7-09	1145	Surface	11.6	5.2	22.47	35	.360	.080	.500	.053	.330	21.00	6.84			
33			15	12.7	6.0	22		.197	.014	3.383	.075	.265		.73			
090313	9-03	1250	Surface	26.5	14.5	24.8	48	.198	.026	.729	.002	.109	41.25	7.62			
14			15	27.4	15.1	24.2		.319	.108	.882	.070	.155		4.08			
121706	12-17		Surface	12.4	12.0	3.44		.136	.113	.448	.345	.465	5.25	11.00			
07			15	12.34	11.88	3.72		.120	.098	.282	.287	.261		10.41			
								Transect B - Station 2									
69030609	3-06	1345	Surface	12.92	11.44	.93	48	.109		.662	.425		10.50	12.24	1.99		
10			15	14.32	13.05	.4		.103		.172	.325			11.31	2.46		
11			30	16.1	15.1	.3		.089		.236	.254			10.96	1.74		
12			40	16.8	16.1	.1		.095		.115	.322			10.78	1.75		
052216	5-22	1040	Surface		6.35*		76	.109		.461	.442		26.25	9.67			
17			15		8.0 *			.092		.278	.440			8.60			
18			30		14.8 *			.080		.322	.281			4.24			
19			40		14.8 *			.064		.714	.274			4.20			
061819	6-18	1005	Surface	14.7	7.32	21.44	72	.144		LA	.089		20.25	7.05			
20			15	20.1	11.4	19.72		.139		.587	.034			1.66			
21			30	24.7	15.4	17.36		.123		.494	ND			.59			
22			45	24.8	15.52	17.24		.164		.581	ND			.60			
070934	7-09	1045	Surface	13.6	6.51	21.94	51	.941	.040	.461	.035	.190	20.25	7.49			
35			15	14.5	7.16	21.9		.167	.072	.528	.024	.365		6.05			
36			30	23.42	13.45	20.48		.180	.106	.511	.019	.460		1.36			
37			45	25.78	15.41	19.9		.171	.125	.311	.015	.490		.60			
090315	9-03	1210	Surface	19.3	9.9	24.1	48	.192	.046	.500	.071	.060	35.25	6.44			
16			15	20.9	11.0	23.9		.145	.071	.394	.071	.082		5.50			
17			30	21.3	11.3	23.7		.199	.107	.529	.100	.068		3.84			
18			45	23.6	12.9	23.5		.231	.126	.429	.150	.050		1.69			
121708	12-17		Surface	10.54	10.0	3.1		.139	.122	.325	.425	.327	3.75	11.32			
09			15	13.5	12.62	4.52		.126	.124	.220	.127	.194		8.50		2.24	7.92
10			30	19.0	17.66	6.4		.138	.137	.055	.111	.194		8.55			
11			45	19.12	17.17	6.4		.071	.161	.178	.101	.159		8.63			

LA Laboratory accident
ND Not detectable
* Analysis run on hydrometer

Sample Number	Date Sample Taken	Time Sample Taken	Sample Depth Feet	Salinometer Cond µmhos	Salinometer Sal °/oo	Salinometer Temp °C	Secchi Disk Inches	Total P PO_4 mg/l	Inorganic PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	DO mg/l	BOD mg/l	TOC mg/l	TC mg/l
								Transect B - Station 3									
69030613	3-06	1040	Surface	12.5	11.2	.45	58	.093		7.451	.017		6.75	12.32	2.59		
14			15	13.8	12.5	.23		.116		.166	.343			12.13	2.28		
15			30	11.0	15.1	.2		.204		.204	.207			10.83	1.97		
052220	5-22	1105	Surface		6.95*		72	.075		.253	.440		9.75	8.85			
21			15		9.15			.089		.298	.408			9.03			
061823	6-18	1025	Surface	14.62	7.28	21.5	78	.111		.494	.072		14.25	7.62			
24			15	16.1	5.26	21.24		.099		.337	.063			5.44			
25			30	23.94	14.66	18		.097		.453	.013			1.28			
070938	7-09	0955	Surface	15.12	7.52	22.08	60	.123	.002	.383	.032	.180	14.25	6.84			
39			15	15.35	7.68	22		.145	.083	.522	.022	.410		6.07			
40			30	24.8	14.4	20.44		.166	.116	.572	.019	.475		1.04			
								Transect C - Station 1									
69030616	3-06	1250	Surface	13.1	11.7	1.0	65	.084		.376	.380		.75	11.95	3.51		
17			13	15.7	14.7	.3		.250		.637	.254			10.88	1.91		
052222	5-22	1340	Surface		4.55*		60	.074		.613	.393		22.50	10.76			
23			15		6.8 *			.054		.757	.431			9.01			
061717	6-17	1355	Surface	10.86	4.76	22	48	.143		.330	.172	.19	15.00	6.35			
18			13	11.42	5.24	21.7		.185		.341	.142	.08					
070941	7-09	1125	Surface	11.73	5.3	22.56	36	.166	.028	.516	.084	.355	13.50	7.51			
42			15	13.36	6.44	21.97		.153	.016	.411	.088	.320		5.09			
090319	9-03	1235	Surface	18.4	9.3	24.0	48	.178	.031	.576	.069	.036	37.50	7.05			
20			15	20.4	10.7	23.9		.201	.102	.529	.091	.090		4.31			
121712	12-17		Surface	10.72	10.12	2.72		.155	1.15	1.15	.364	.515	9.25	11.43		2.73	9.35
13			15	11.68	11.32	3.9		.156	.08	.08	.366	.283		10.80			
								Transect C - Station 2									
69030618	3-06	1330	Surface	13.5	12.1	.85	73	.104		.102	.384			12.13	1.46		
19			15	14.0	13.6	.25		.133		.159	.343			11.71	2.27		
20			30	15.55	15.77	.25		.177		.063	.206			10.79	1.34		
21			40	16.15	16.0	.12		.214		.076	.260			10.95	1.94		
052224	5-22	1320	Surface		5.45*		76	.086		.461	.415		9.00	9.98			
25			15		7.15*			.088		.556	.427			8.95			
26			30		15.05*			.047		.569	.259			3.44			
27			40		15.0 *			.041		.316	.253			3.21			
061719	6-17	1324	Surface	12.74	6.1	21.8	76	.143		.313	.080	.08	17.25	8.02			
20			13	12.95	6.22	21.5		.124		.443	.086	.15		7.31			
21			30	22.8	13.82	18.24		.116		.438	.026	.10		6.62			
22			45	25.78	16.52	16.7		.192		.438	ND	.39		.52			

ND Not detectable
* Analysis run on hydrometer

Sample Number	Date Sample Taken	Time Sample Taken	Sample Depth Feet	Salinometer Cond umhos	Salinometer Sal °/oo	Salinometer Temp °C	Secchi Disk Inches	Total P PO_4 mg/l	Inorganic PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	DO mg/l	BOD mg/l	TOC mg/l	TC mg/l
								Transect C - Station 2 (continued)									
69070943	7-09	1055	Surface	14.74	7.32	22	58	.130	ND	.794	.037	.180	18.75	7.07			
44			15	15.4	7.73	22.1		.115	ND	.594	.035	.195		6.60			
45			30	21.82	12.2	20.73		.139	.079	.439	.025	.415		2.16			
46			45	24.47	14.3	20.2		.172	.116	.800	.020	.510		1.30			
090321	9-03	1220	Surface	20.0	10.3	24.1	48	.193	.057	.606	.079	.043	25.50	6.48			
22			15	21.4	11.0	24		.187	.076	.506	.100	.038		4.80			
23			30	21.2	11.1	23.8		.188	.096	.300	.118	.071		4.25			
24			45	21.9	11.6	23.5		.233	.141	.488	.137	.252		2.77			
121714	12-17		Surface	10.62	9.98	2.96		.135	.136	.196	.507	.354	13.50			2.60	11.78
15			15	12.68	11.9	4.24		.145	.130	.006	.384	.321		10.74			
16			30	19.0	17.68	6.32		.141	.124	.018	.084	.141		7.08			
17			45	19.22	17.9	6.32		.135	.108	.632	.082	.149		8.65			
								Transect C - Station 3									
69030622	3-06	1115	Surface	13.45	12.2	.5	64	.086		.223	.363		22.50	12.35	1.80		
23			15	13.5	12.2	.4		.088		.076	.322			12.03	2.11		
24			30	15.1	14.3	.22		.062		.115	.288			11.34	1.75		
052228	5-22	1120	Surface		8.3		80	.057		.493	.391		9.00	8.28			
29			15		11.2 *			.069		.569	.361			7.82			
30			30		12.4 *			.059		.689	.327			6.08			
31			40		14.4 *			.076		.569	.283			5.65			
061723	6-17	1310	Surface	13.42	6.6	21.56	90	.126		.341	.057	.18	14.25	6.66			
24			15	14.06	7.0	21.3		.130		.308	.052	.08		6.77			
25			30	21.1	12.3	18.72		.098		.303	ND	.18		5.89			
070947	7-09	1025	Surface	16.0	8.1	22.1	60	.116	.040	.966	.028	.305	9.00	6.97			
48			15	17.68	9.22	21.87		.123	.042	.994	.030	.315		4.12			
49			30	24.3	14.03	20.42		.167	.115	.522	.021	.490		1.02			
50			45	25.16	14.7	20.4		.214	.159	.300	.020	.505		.79			
121718	12-17		Surface	9.92	9.68	3.22		.133	.117	.116	.428	.242	4.50	11.32		2.46	8.68
19			15	13.9	13.26	4.52		.120	.116	.092	.249	.216		9.85			
20			30	14.9	13.78	5.62		.104	.113	.717	.090	.668		9.10			
21			45	18.2	17.8	5.9		.119	.114	.036	.063	.138		8.69			

ND Not detectable
* Analysis run on hydrometer

Sample Number	Date Sample Taken	Time Sample Taken	Sample Depth Feet	Salinometer Cond µmhos	Salinometer Sal °/oo	Salinometer Temp °C	Secchi Disk Inches	Total P PO_4 mg/l	Inorganic PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	DO mg/l	BOD mg/l	TOC mg/l	TC mg/l
								Transect D - Station 1									
69030625	3-06	1235	Surface	13.6	12.0	1.1	60	.076		.127	.329		89.25	11.69	1.46		
26			15	14.9	13.8	.45		.118		.089	.223			10.96	1.89		
052232	5-22	1255	Surface		6.2 *		55	.130		.461	.412		20.29	10.06			
33			15		7.3 *			.099		.998	.409			8.90			
061726	6-17	1215	Surface	11.25	5.2	21.7	66	.104		.238	.056	.13	9.75	6.84			
27			15	13.44	6.56	21.38		.095		.276	.078	.15		6.04			
070706	7-07	1128	Surface	13.9	6.48	23.73	42	.186	.007	.648	.024	.140	45.00	7.76			
07			15	15.8	7.74	23.2		.116	.017	.557	.038	.245		4.97			
090201	9-02	1155	Surface	21.5	11.1	24.4	48	.223	.043	.606	<.1	<.1	30.00	6.34			
02			15	21.6	11.22	24.2		.193	.071	.500	.133	<.1		4.85			
120901	12-09	1118	Surface	10.34	9.7	4.24	60	.131	.119	.990	.543		8.25	11.01		4.20	6.28
02			15	13.92	12.92	5.22		.100	.112	.253	.360			9.77		3.69	7.40
								Transect D - Station 2									
69030627	3-06	1220	Surface	13.6	12.3	.6	62	.110		.217	.305		24.75	12.31	2.00		
28			15	14.1	12.8	.52		.132		.217	.243			12.19	2.46		
29			30	15.2	14.3	.3		.191		.166	.264			11.54	2.14		
30			40	16.5	15.9	.3		.132		.127	.254			11.03	2.13		
052234	5-22	1235	Surface		6.65*		48	.086		.303	.412		24.75	9.95			
35			15		8.6 *			.072		.695	.398			8.73			
36			30		12.2 *			.068		.499	.319			3.40			
37			40		14.35*			.063		.303	.274			3.14			
061728	6-17	1230	Surface	12.56	5.94	21.62	78	.112		.265	.078	.11	9.00	7.51			
29			15	13.2	6.44	21.42		.078		.557	ND	.18		7.13			
30			30	25.1	15.9	17.04		.170		.389	ND	.40		4.16			
31			40	26.34	16.9	13.8		.186		.454	ND	.41		.26			
070708	7-07	1140	Surface	14.85	7.1	23.42	38	.212	.008	.619	.020	.145	49.50	7.41			
09			15	16.5	8.24	23.2		.118	.009	.511	.024	.225		5.36			
10			30	21.8	12.12	21.23		.138	.069	.477	.018	.300		1.90			
11			45	23.1	13.1	20.7		.138	.087	1.097	.014	.310		1.34			
090203	9-02	1120	Surface	21.12	11.0	24.2	60	.201	.065	.418	.120	<.1	27.75	5.77			
04			15	22	11.6	24		.228	.111	.529	.156	<.1		4.36			
05			30	22.6	12.0	23.9		.175	.083	.324	.170	<.1		3.16			
06			45	22.9	12.5	23.5		.188	.099	.435	.182	.178		2.78			
120903	12-09	1100	Surface	10.4	9.64	4.34	68	.122	.104	.761	.503	.395	8.25	11.12		4.47	11.32
04			15	12.02	11.34	4.64		.144	.102	.597	.405	.343		10.74		5.05	7.54
05			30	18.12	16.3	6.9		.123	.112	.736	.146	.178		8.88		4.06	8.86
06			45	18.72	17.2	7.12		.121	.104	.622	.082	.147		8.82		3.74	8.83

ND Not detectable
* Analysis run on hydrometer

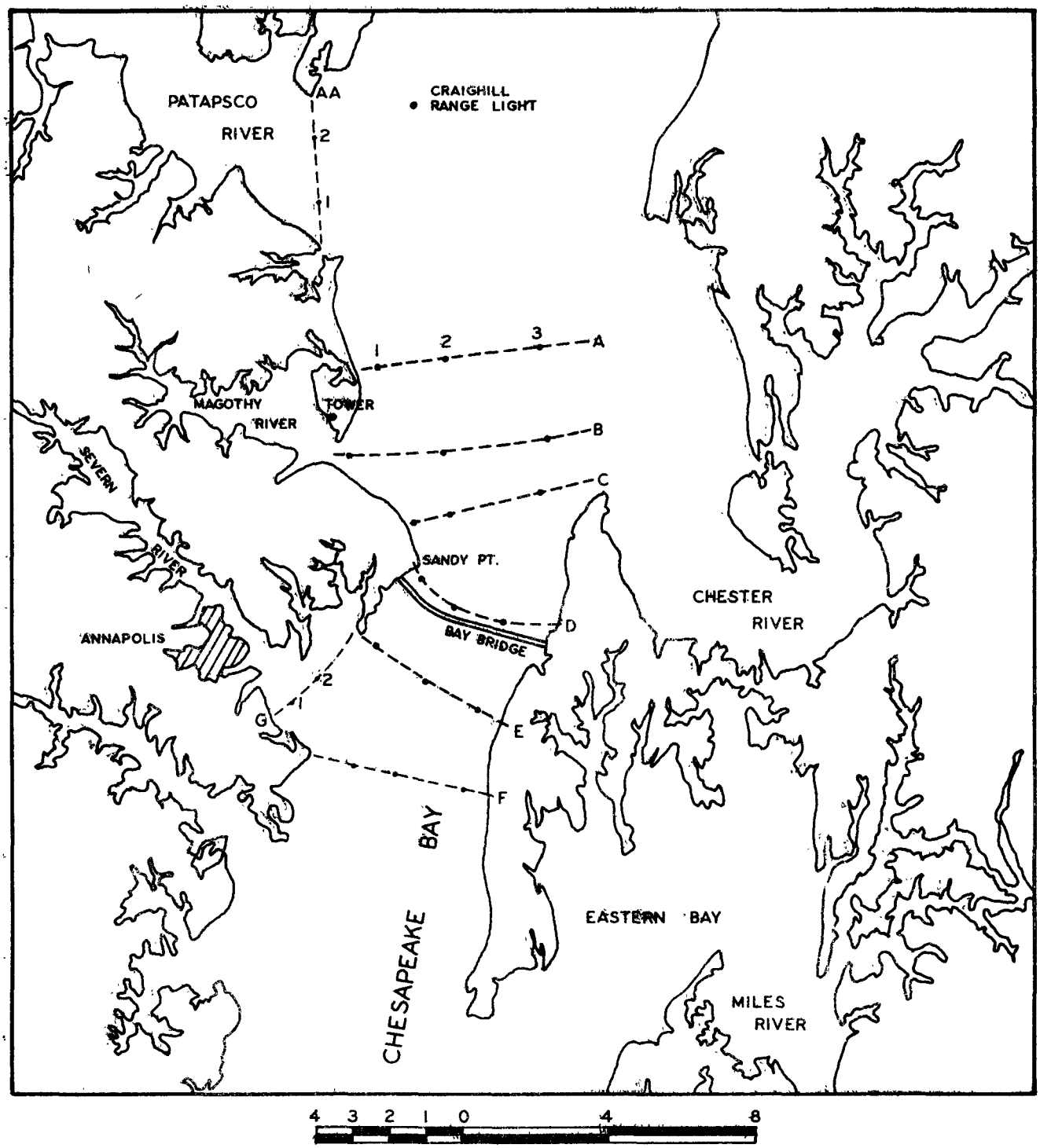
Sample Number	Date Sample Taken	Time Sample Taken	Sample Depth (Feet)	Alkalinity Total	Alkalinity Bicarb	Alkalinity Carb	Total P	Total Organic P	[illegible]	[illegible]	[illegible]	Chloride	[illegible]	[illegible]	[illegible]
[illegible]															
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Sample Number	Date Sample Taken	Time Sample Taken	Sample Depth Feet	Salinometer Cond µmho	Salinometer Sal ‰	Salinometer Temp °C	Secchi Disk Inches	Total P PO_4 mg/l	Inorganic PO_4 mg/l	TKN mg/l N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	DO mg/l	BOD mg/l	TOC mg/l	TC mg/l
Transect E - Station 2 (continued)																	
69090211	9-02	1130	Surface	[illegible]	11.[illegible]	[illegible]	[illegible]	.177	.046	.459	<.1	.464	21.75	7.05			
12			15	[illegible]	12.[illegible]	[illegible]		.166	.064	.347	<.1	<.1		5.85			
13			30	[illegible]	11.[illegible]	.9		.173	.076	.212	.11[illegible]	<.1		< 3.89			
14			45	[illegible]	1[illegible].6	[illegible]		.193	.086	.312	.124	.215		3.0[illegible]			
120911	12-09		Surface	11.[illegible]	11.0	[illegible]	[illegible]	.129	.134	.641	.451	.3[illegible]	[illegible].75	10.84		[illegible]	8.63
12			15	14.24	13.1[illegible]	[illegible].5[illegible]		.132	.136	.248	.294	.292		9.90		[illegible]	6.92
13			30	1[illegible].1[illegible]	15.5[illegible]	[illegible].84		.0[illegible]6	.112	.304	.246	.177		[illegible].94			9.63
14			45	1[illegible]	16.6	[illegible]		.0[illegible]	.112	.346	.119	.1[illegible]		[illegible].61		.	8.47
Transect E - Station 3																	
69052246	5-21	1150	Surface		9.6		[illegible]	.0[illegible]		.303	.399		15.00	[illegible]			
47			15		9.3			.0[illegible]		.419	.399			5.[illegible]			
061740	6-1	1130	Surface	14.1	7.0	21.32	96	.1[illegible]		.297	.037	.01	[illegible].50	[illegible]			
41			15	1[illegible].9	8.24	[illegible]		.15		.313	.046	.0[illegible]		[illegible]			
070720	7-07	1040	Surface	1[illegible].[illegible]	8.84	[illegible].95	[illegible]	.116	.032	.40[illegible]	.012	.150	3[illegible].50	4.97			
21			15	19.0	9.93	[illegible].63		1.087	.074	[illegible]7	.008	.340		3.13			
090215	9-02	1030	Surface	[illegible].4	12.8	[illegible].3	60	.143	.058	.59	<.1	<.1	[illegible].00	5.87			
16			15	[illegible]	11.[illegible]	[illegible].4		.167	.064	.24	<.1	<.1		5.77			
120915	12-09	1034	Surface	1[illegible].42	1[illegible].52	[illegible]5	84	.131	.117	.[illegible]	.331	.274	18.75	9.68		4.98	10.13
16			15	16.6	15.2	6.3		.116	.114	.[illegible]16	.213	.224		5.27		3.59	8.64
Transect F - Station 1																	
69061742	6-17	1035	Surface	13.46	6.64	21.34	81	.134		.578	.013	.09	6.75	6.77			
43			15	13.5	6.6	21.2		.105		.503	.021	.10		6.41			
44			30	13.6	6.82	21.1		.097		.573	.057	.12		6.09			
070722	7-07	0955	Surface	1[illegible].92	[illegible].7	23.86	50	1.047	.017	.483	.015	.170	20.25	6.36			
23			15	16.8	8.32	23.77		1.081	.072	.415	.020	.2[illegible]0		4.02			
090217	9-02	1010	Surface	2[illegible].1	11.5	24.1	48	.232	.084	.453	<.1	.652	13.50	4.58			
18			15	[illegible]	12.0	24.1		.269	.130	.735	.100	.103		2.89			
120917	12-09	0945	Surface	12.6	12.2	4.8		.130	.122	.584	.405	.356	6.75	10.69		3.49	5.96
18			15	13.40	1[illegible].5	[illegible].1		.122	.124	.520	.361	.343		10.03		3.79	8.57
Transect F - Station 2																	
69061743	6-17	1053	Surface	1[illegible].1	6.9[illegible]	1[illegible]	[illegible]	.132		1.384	.049	.09	11.[illegible]5	7.03			
46			15	14.44	6.98	21.[illegible]		.1[illegible]0		LA	.021	.13		6.61			
47			30	14.28	7.14	21.[illegible]		.133		.195	.009	.11		6.35			
48			45	23.14	14.18	17.[illegible]		.0[illegible]4		.232	.032	.1[illegible]		4.03			
070724	7-07	1007	Surface	16.4	8.16	2[illegible].[illegible]	56	.177	.017	.500	.012	.160	15.00	6.16			
25			15	17.[illegible]	9.0	23.1		.2[illegible]	.051	.449	.009	.290		4.39			
26			30	22.1	12.3	21.47		.[illegible]4	.111	.415	.004	.460		1.83			
[illegible]			45	2[illegible].[illegible]	14.8	20.1		.32[illegible]	.124	.386	ND	.645		.71			

LA Laboratory accident
ND Not detectable

Sample Number	Date Sample Taken	Time Sample Taken	Sample Depth Feet	Salinometer Cond µmhos	Salinometer Sal °/oo	Salinometer Temp °C	Secchi Disk Inches	Total P PO_4 mg/l	Inorganic PO_4 mg/l	TKN mgl/ N	NO_2+NO_3 mg/l NO_3-N	NH_3 mg/l N	Chlorophyll a µg/l	DO mg/l	BOD mg/l	TOC mg/l	TC mg/l
								Transect F - Station 2 (continued)									
69090219	9-02	1030	Surface	22.5	12.2	24.1	72	.184	.062	.347	<.1	<.1	13.50	6.08			
20			15	22.5	12.0	23.9		.163	.067	.359	<.1	.298		5.58			
21			30	22.5	11.9	23.9		.171	.081	.259	<.1	.152		3.53			
22			45	24.0	12.9	23.9		.703	.192	4.994	.123	.238		2.48			
120919	12-09	1000	Surface	12.12	11.24	4.8		.151	.134	.704	.395	.417	5.25	10.61		3.59	5.36
20			15	14.34	13.34	5.6		.123	.136	1.244	.297	.341		9.82		3.79	7.80
21			30	15.86	14.32	6.4		.120	.134	.457	.203	.302		8.61		3.41	7.12
22			45	15.3	15.44	7.0		.169	.129	.425	.148	.218		8.53		4.13	7.83
								Transect F - Station 3									
69061749	6-17	1110	Surface	15.48	7.86	21.52	78	.189		.357	.037	.03	11.25	5.72			
070728	7-07	1030	Surface	18.1	9.28	23	63	.339	.045	.358	.008	.130	12.00	5.14			
29			15	18.05	9.22	23		.339	.056	.403	.009	.290		4.77			
090223	9-02	1040	Surface	22.5	11.9	24.5	60	.150	.063	.388	<.1	.300	12.00	5.96			
24			15	25.5	11.8	24.4		.194	.082	.300	<.1	<.1		5.98			
120923	12-09	1012	Surface	15.1	14.0	5.7	132	.110	.114	.520	.283	.261	1.30	9.63		4.92	10.98
24			15	18.1	14.8	6.2		.104	.104	.533	.228	.231		9.67		3.52	6.16
								Transect G - Station 1									
69061750	6-17	1025	Surface	12.84	6.24	21.22	76	.147		.886	.021	.08	9.00	7.26			
51			13	14.0	6.8	21.8		.156		.746	ND	.07		6.11			
070730	7-07	0940	Surface	15.9	7.7	24.2	45	.463	.012	.540	.002	.145	9.00	7.18			
31			10	15.8	7.6	24.24		.480	.009	.261	.006	.140		6.76			
090225	9-02	0950	Surface	20.8	10.6	24.8	48	.239	.139	.400	<.1	.177	14.25	6.69			
26			10	21.8	11.3	24.1		.228	.130	.424	<.1	.301		3.73			
120925	12-09	1221	Surface	13.62	12.68	4.72	72	.197	.127	.990	.320	.241	4.50	10.92		3.21	8.77
26			10	13.46	12.64	4.9		.182	.138	.794	.272	.247		10.75		4.10	7.70
								Transect G - Station 2									
69061752	6-17	1015	Surface	12.84	6.12	21.3	79	.121		.389	.043	.34	22.50	7.48			
53			10	13.6	6.72	21.64		.141		.276	.046	.10		6.47			
070732	7-07	0925	Surface	15.46	7.4	23.85	28	.483	.007	.587	.012	.170	30.00	7.03			
33			15	15.9	7.64	24.24		.479	.005	.563	.006	.140		6.49			
090227	9-02	0945	Surface	20.1	10.1	25	40	.234	.013	.576	<.1	<.1	43.50	7.09			
28			15	22.6	12.0	24.3		.187	.081	.329	<.1	.368		4.00			
120927	12-09	1207	Surface	13.04	12.32	4.84	48	.169	.134	.209	.294	.306	9.15	10.19		3.89	6.49
28			15	13.88	13.0	4.92		.142	.109	.368	.208	.199		10.13		3.56	4.49

ND Not detectable



WATER QUALITY SURVEY
OF THE
CHESAPEAKE BAY
IN THE VICINITY OF
SANDY POINT

U.S. ENVIRONMENTAL PROTECTION AGENCY
Annapolis Field Office
Annapolis Science Center
Annapolis, Maryland 21401

DATA REPORTS

U.S. EPA Region III
Regional Center for Environmental
Information
1650 Arch Street (3PM52)
Philadelphia, PA 19103

Volume 10

Table of Contents

Volume 10

9 Water Quality Survey of the Potomac Estuary - 1965-1966

10 Water Quality Survey of the Annapolis Metro Area - 1967

11 Nutrient Data on Sediment Samples of the Potomac Estuary 1966-1968

12 1969 Head of the Bay Tributaries

13 Water Quality Survey of the Chesapeake Bay in the Vicinity of Sandy Point - 1968

14 Water Quality Survey of the Chesapeake Bay in the Vicinity of Sandy Point - 1969

15 Water Quality Survey of the Patuxent River - 1967

16 Water Quality Survey of the Patuxent River - 1968

17 Water Quality Survey of the Patuxent River - 1969

18 Water Quality of the Potomac Estuary Transects, Intensive and Southeast Water Laboratory Cooperative Study - 1969

19 Water Quality Survey of the Potomac Estuary Phosphate Tracer Study - 1969

PUBLICATIONS

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION III
ANNAPOLIS FIELD OFFICE*

VOLUME 1
Technical Reports

5 A Technical Assessment of Current Water Quality Conditions and Factors Affecting Water Quality in the Upper Potomac Estuary

6 Sanitary Bacteriology of the Upper Potomac Estuary

7 The Potomac Estuary Mathematical Model

9 Nutrients in the Potomac River Basin

11 Optimal Release Sequences for Water Quality Control in Multiple Reservoir Systems

VOLUME 2
Technical Reports

13 Mine Drainage in the North Branch Potomac River Basin

15 Nutrients in the Upper Potomac River Basin

17 Upper Potomac River Basin Water Quality Assessment

VOLUME 3
Technical Reports

19 Potomac-Piscataway Dye Release and Wastewater Assimilation Studies

21 LNEPLT

23 XYPLOT

25 PLOT3D

* Formerly CB-SRBP, U.S. Department of Health, Education, and Welfare; CFS-FWPCA, and CTSL-FWQA, Middle Atlantic Region, U.S. Department of the Interior

VOLUME 3 (continued)

Technical Reports

27 Water Quality and Wastewater Loadings - Upper Potomac Estuary during 1969

VOLUME 4

Technical Reports

29 Step Backward Regression

31 Relative Contributions of Nutrients to the Potomac River Basin from Various Sources

33 Mathematical Model Studies of Water Quality in the Potomac Estuary

35 Water Resource - Water Supply Study of the Potomac Estuary

VOLUME 5

Technical Reports

37 Nutrient Transport and Dissolved Oxygen Budget Studies in the Potomac Estuary

39 Preliminary Analyses of the Wastewater and Assimilation Capacities of the Anacostia Tidal River System

41 Current Water Quality Conditions and Investigations in the Upper Potomac River Tidal System

43 Physical Data of the Potomac River Tidal System Including Mathematical Model Segmentation

45 Nutrient Management in the Potomac Estuary

VOLUME 6

Technical Reports

47 Chesapeake Bay Nutrient Input Study

49 Heavy Metals Analyses of Bottom Sediment in the Potomac River Estuary

VOLUME 6 (continued)

Technical Reports

51	A System of Mathematical Models for Water Quality Management
52	Numerical Method for Groundwater Hydraulics
53	Upper Potomac Estuary Eutrophication Control Requirements
54	AUTØ-QUAL Modelling System
Supplement to 54	AUTØ-QUAL Modelling System: Modification for Non-Point Source Loadings

VOLUME 7

Technical Reports

55	Water Quality Conditions in the Chesapeake Bay System
56	Nutrient Enrichment and Control Requirements in the Upper Chesapeake Bay
57	The Potomac River Estuary in the Washington Metropolitan Area - A History of its Water Quality Problems and their Solution

VOLUME 8

Technical Reports

58	Application of AUTØ-QUAL Modelling System to the Patuxent River Basin
59	Distribution of Metals in Baltimore Harbor Sediments
60	Summary and Conclusions - Nutrient Transport and Accountability in the Lower Susquehanna River Basin

VOLUME 9

Data Reports

Water Quality Survey, James River and Selected Tributaries - October 1969

Water Quality Survey in the North Branch Potomac River between Cumberland and Luke, Maryland - August 1967

VOLUME 9 (continued)

Data Reports

Investigation of Water Quality in Chesapeake Bay and Tributaries at Aberdeen Proving Ground, Department of the Army, Aberdeen, Maryland - October-December 1967

Biological Survey of the Upper Potomac River and Selected Tributaries - 1966-1968

Water Quality Survey of the Eastern Shore Chesapeake Bay, Wicomico River, Pocomoke River, Nanticoke River, Marshall Creek, Bunting Branch, and Chincoteague Bay - Summer 1967

Head of Bay Study - Water Quality Survey of Northeast River, Elk River, C & D Canal, Bohemia River, Sassafras River and Upper Chesapeake Bay - Summer 1968 - Head ot Bay Tributaries

Water Quality Survey of the Potomac Estuary - 1967

Water Quality Survey of the Potomac Estuary - 1968

Wastewater Treatment Plant Nutrient Survey - 1966-1967

Cooperative Bacteriological Study - Upper Chesapeake Bay Dredging Spoil Disposal - Cruise Report No. 11

VOLUME 10

Data Reports

9 Water Quality Survey of the Potomac Estuary - 1965-1966

10 Water Quality Survey of the Annapolis Metro Area - 1967

11 Nutrient Data on Sediment Samples of the Potomac Estuary 1966-1968

12 1969 Head of the Bay Tributaries

13 Water Quality Survey of the Chesapeake Bay in the Vicinity of Sandy Point - 1968

14 Water Quality Survey of the Chesapeake Bay in the Vicinity of Sandy Point - 1969

VOLUME 10(continued)

Data Reports

15 Water Quality Survey of the Patuxent River - 1967

16 Water Quality Survey of the Patuxent River - 1968

17 Water Quality Survey of the Patuxent River - 1969

18 Water Quality of the Potomac Estuary Transects, Intensive and Southeast Water Laboratory Cooperative Study - 1969

19 Water Quality Survey of the Potomac Estuary Phosphate Tracer Study - 1969

VOLUME 11

Data Reports

20 Water Quality of the Potomac Estuary Transport Study 1969-1970

21 Water Quality Survey of the Piscataway Creek Watershed 1968-1970

22 Water Quality Survey of the Chesapeake Bay in the Vicinity of Sandy Point - 1970

23 Water Quality Survey of the Head of the Chesapeake Bay Maryland Tributaries - 1970-1971

24 Water Quality Survey of the Upper Chesapeake Bay 1969-1971

25 Water Quality of the Potomac Estuary Consolidated Survey - 1970

26 Water Quality of the Potomac Estuary Dissolved Oxygen Budget Studies - 1970

27 Potomac Estuary Wastewater Treatment Plants Survey 1970

28 Water Quality Survey of the Potomac Estuary Embayments and Transects - 1970

29 Water Quality of the Upper Potomac Estuary Enforcement Survey - 1970

VOLUME 11 (continued)

Data Reports

30	Water Quality of the Potomac Estuary - Gilbert Swamp and Allen's Fresh and Gunston Cove - 1970
31	Survey Results of the Chesapeake Bay Input Study - 1969-1970
32	Upper Chesapeake Bay Water Quality Studies - Bush River, Spesutie Narrows and Swan Creek, C & D Canal, Chester River, Severn River, Gunpowder, Middle and Bird Rivers - 1968-1971
33	Special Water Quality Surveys of the Potomac River Basin Anacostia Estuary, Wicomico,River, St. Clement and Breton Bays, Occoquan Bay - 1970-1971
34	Water Quality Survey of the Patuxent River - 1970

VOLUME 12

Working Documents

1	Biological Survey of the Susquehanna River and its Tributaries between Danville, Pennsylvania and Conowingo, Maryland
Appendix to 1	Tabulation of Bottom Organisms Observed at Sampling Stations during the Biological Survey between Danville, Pennsylvania and Conowingo, Maryland - November 1966
2	Biological Survey of the Susquehanna River and its Tributaries between Cooperstown, New York and Northumberland, Pennsylvnaia - January 1967
Appendix to 2	Tabulation of Bottom Organisms Observed at Sampling Stations during the Biological Survey between Cooperstown, New York and Northumberland, Pennsylvania - November 1966

VOLUME 13

Working Documents

3	Water Quality and Pollution Control Study, Mine Drainage Chesapeake Bay-Delaware River Basins - July 1967
4	Biological Survey of Rock Creek (from Rockville, Maryland to the Potomac River) October 1966

VOLUME 13 (continued)

Working Documents

5 Summary of Water Quality and Waste Outfalls, Rock Creek in Montgomery County, Maryland and the District of Columbia - December 1966

6 Water Pollution Survey - Back River 1965 - February 1967

7 Efficiency Study of the District of Columbia Water Pollution Control Plant - February 1967

VOLUME 14

Working Documents

8 Water Quality and Pollution Control Study - Susquehanna River Basin from Northumberland to West Pittson (Including the Lackawanna River Basin) March 1967

9 Water Quality and Pollution Control Study, Juniata River Basin - March 1967

10 Water Quality and Pollution Control Study, Rappahannock River Basin - March 1967

11 Water Quality and Pollution Control Study, Susquehanna River Basin from Lake Otsego, New York, to Lake Lackawanna River Confluence, Pennsylvania - April 1967

VOLUME 15

Working Documents

12 Water Quality and Pollution Control Study, York River Basin - April 1967

13 Water Quality and Pollution Control Study, West Branch, Susquehanna River Basin - April 1967

14 Water Quality and Pollution Control Study, James River Basin - June 1967

15 Water Quality and Pollution Control Study, Patuxent River Basin - May 1967

VOLUME 16

Working Documents

16 Water Quality and Pollution Control Study, Susquehanna River Basin from Northumberland, Pennsylvania, to Havre de Grace, Maryland - July 1967

17 Water Quality and Pollution Control Study, Potomac River Basin - June 1967

18 Immediate Water Pollution Control Needs, Central Western Shore of Chesapeake Bay Area (Magothy, Severn, South, and West River Drainage Areas) July 1967

19 Immediate Water Pollution Control Needs, Northwest Chesapeake Bay Area (Patapsco to Susquehanna Drainage Basins in Maryland) August 1967

20 Immediate Water Pollution Control Needs - The Eastern Shore of Delaware, Maryland and Virginia - September 1967

VOLUME 17

Working Documents

21 Biological Surveys of the Upper James River Basin Covington, Clifton Forge, Big Island, Lynchburg, and Piney River Areas - January 1968

22 Biological Survey of Antietam Creek and some of its Tributaries from Waynesboro, Pennsylvania to Antietam, Maryland - Potomac River Basin - February 1968

23 Biological Survey of the Monocacy River and Tributaries from Gettysburg, Pennsylvania, to Maryland Rt. 28 Bridge Potomac River Basin - January 1968

24 Water Quality Survey of Chesapeake Bay in the Vicinity of Annapolis, Maryland - Summer 1967

25 Mine Drainage Pollution of the North Branch of Potomac River - Interim Report - August 1968

26 Water Quality Survey in the Shenandoah River of the Potomac River Basin - June 1967

27 Water Quality Survey in the James and Maury Rivers Glasgow, Virginia - September 1967

VOLUME 17 (continued)

Working Documents

28 Selected Biological Surveys in the James River Basin, Gillie Creek in the Richmond Area, Appomattox River in the Petersburg Area, Bailey Creek from Fort Lee to Hopewell - April 1968

VOLUME 18

Working Documents

29 Biological Survey of the Upper and Middle Patuxent River and some of its Tributaries - from Maryland Route 97 Bridge near Roxbury Mills to the Maryland Route 4 Bridge near Wayson's Corner, Maryland - Chesapeake Drainage Basin - June 1968

30 Rock Creek Watershed - A Water Quality Study Report March 1969

31 The Patuxent River - Water Quality Management - Technical Evaluation - September 1969

VOLUME 19

Working Documents

Tabulation, Community and Source Facility Water Data Maryland Portion, Chesapeake Drainage Area - October 1964

Waste Disposal Practices at Federal Installations Patuxent River Basin - October 1964

Waste Disposal Practices at Federal Installations Potomac River Basin below Washington, D.C.- November 1964

Waste Disposal Practices at Federal Installations Chesapeake Bay Area of Maryland Excluding Potomac and Patuxent River Basins - January 1965

The Potomac Estuary - Statistics and Projections - February 1968

Patuxent River - Cross Sections and Mass Travel Velocities - July 1968

VOLUME 19 (continued)

Working Documents

Wastewater Inventory - Potomac River Basin - December 1968

Wastewater Inventory - Upper Potomac River Basin - October 1968

VOLUME 20

Technical Papers

1 A Digital Technique for Calculating and Plotting Dissolved Oxygen Deficits

2 A River-Mile Indexing System for Computer Application in Storing and Retrieving Data (unavailable)

3 Oxygen Relationships in Streams, Methodology to be Applied when Determining the Capacity of a Stream to Assimilate Organic Wastes - October 1964

4 Estimating Diffusion Characteristics of Tidal Waters - May 1965

5 Use of Rhodamine B Dye as a Tracer in Streams of the Susquehanna River Basin - April 1965

6 An In-Situ Benthic Respirometer - December 1965

7 A Study of Tidal Dispersion in the Potomac River February 1966

8 A Mathematical Model for the Potomac River - what it has done and what it can do - December 1966

9 A Discussion and Tabulation of Diffusion Coefficients for Tidal Waters Computed as a Function of Velocity February 1967

10 Evaluation of Coliform Contribution by Pleasure Boats July 1966

VOLUME 21

Technical Papers

11 A Steady State Segmented Estuary Model

12 Simulation of Chloride Concentrations in the Potomac Estuary - March 1968

13 Optimal Release Sequences for Water Quality Control in Multiple-Reservoir Systems - 1968

VOLUME 22

Technical Papers

Summary Report - Pollution of Back River - January 1964

Summary of Water Quality - Potomac River Basin in Maryland - October 1965

The Role of Mathematical Models in the Potomac River Basin Water Quality Management Program - December 1967

Use of Mathematical Models as Aids to Decision Making in Water Quality Control - February 1968

Piscataway Creek Watershed - A Water Quality Study Report - August 1968

VOLUME 23

Ocean Dumping Surveys

Environmental Survey of an Interim Ocean Dumpsite, Middle Atlantic Bight - September 1973

Environmental Survey of Two Interim Dumpsites, Middle Atlantic Bight - January 1974

Environmental Survey of Two Interim Dumpsites Middle Atlantic Bight - Supplemental Report - October 1974

Effects of Ocean Disposal Activities on Mid-continental Shelf Environment off Delaware and Maryland - January 1975

VOLUME 24

1976 Annual

	Current Nutrient Assessment - Upper Potomac Estuary Current Assessment Paper No. 1
	Evaluation of Western Branch Wastewater Treatment Plant Expansion - Phases I and II
	Situation Report - Potomac River
	Sediment Studies in Back River Estuary, Baltimore, Maryland
Technical Report 61	Distribution of Metals in Elizabeth River Sediments
Technical Report 62	A Water Quality Modelling Study of the Delaware Estuary

WATER QUALITY SURVEY

OF THE

POTOMAC ESTUARY

1965-1966

DATA REPORT

Number 9

Chesapeake Technical Support Laboratory
Middle Atlantic Region
Federal Water Pollution Control Administration
Department of the Interior

Chesapeake Technical Support Laboratory
Middle Atlantic Region
Federal Water Pollution Control Administration
U.S. Department of the Interior

1965-1966 Data Report

Number 9

WATER QUALITY SURVEY OF THE POTOMAC ESTUARY

by

Donald W. Lear, Jr.

and

James W. Marks

Laboratory Staff:

Orterio Villa, Jr., Chemist
Anna R. Favorite, Statistician
Alan I. Kirschbaum, Programmer

TABLE OF CONTENTS

Page

I INTRODUCTION..... i

II STATION LOCATIONS..... ix

III SURVEY RESULTS..... 1

IV MAP..... 71

A. Purpose and Scope

Sampling of the estuary portion of the Potomac River Basin was initiated by the Chesapeake Technical Support Laboratory, Middle Atlantic Region, Federal Water Pollution Control Administration during August 1965. This report covers sampling done from August 1965 to September 1966. This was done to determine existing water quality. The results of these investigations are presented in this data report.

B. General Remarks

As the Chesapeake Technical Support Laboratory was organized samples were taken on a somewhat irregular basis. However a two-week intensive nutrient survey was conducted September 6-18, 1966.

C. Sampling Procedures

Surface samples for chemical analysis were obtained by dipping a plastic bucket or large funnel into the river water with a minimum of agitation. Samples were retained in one-gallon plastic jugs. Dissolved oxygen (DO) samples were obtained by siphoning from the bucket or by attaching a tube to the funnel outlet and extending it to the bottom of a conventional 300 ml DO bottle. The bottle was overfilled twice without excessive agitation, and the DO fixed immediately. DO letter prefix denotes whether

sample was taken at top, middepth or bottom. Five day Biochemical oxygen demand (BOD) at 20°C letter prefix refers to centrifugal or methylene blue inhibitors.

Bottom samples were taken using a plastic Van Dorn sampler. Sampling procedures were otherwise identical to those used for surface samples. All samples were stored on ice. Analysis was started immediately on return to the Chesapeake Technical Support Laboratory, generally within two hours of sampling.

D. Measured Parameters and Analytical Methods

1. Water temperature was determined using a mercury thermometer inserted into the sample container immediately upon collection.

2. Turbidity was determined with a Hach photoelectric nephelometer, calibrated in Jackson Turbidity Units.

3. Light extinction, in inches, was made with a 12" (30 cm) white secchi disk.

4. Nonfiltrable Residue (Suspended Solids)

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

The Nonfiltrable Residue was determined by filtering a known volume of sample. A predried and weighed Gelman Type A glass fiber filter was used. The filter and its contents were then dried in an oven at 105°C, cooled and reweighed. The gain in weight represents Nonfiltrable Residue.

5. Volatile Residue (Volatile Solids)

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

The Volatile Residue was determined by placing the filter with its residue retained after completion of the test for non-filtrable residue in a furnace held at 600°C for one hour. The filter papers were then cooled and reweighed. The sample was then calculated as Volatile Residue represented by the loss in weight from the final weight of the nonfiltrable residue test.

6. Dissolved Oxygen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

Dissolved Oxygen was determined by the azide modification of the basic Winkler method with the titration done potentiometrically with a Fisher automatic "titralyzer."

7. Biochemical Oxygen Demand

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

The Biochemical Oxygen Demand was determined by the azide modification of the basic Winkler method with the titration done potentiometrically with a Fisher automatic "titralyzer." The samples as received were diluted if necessary and transferred to standard 300 ml BOD bottles in triplicate. One initial DO and two final DO

determinations were used throughout. Incubation was started immediately at 20°C and continued for five days after which they were titrated.

8. Total Carbon

Reference: Beckman Instruments, Bulletin 4059.

Total Carbon was determined with a Dow-Beckman Carbonaceous Analyser using the sample as received.

9. Total Kjeldahl Nitrogen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

Total Kjeldahl Nitrogen includes ammonia and organic nitrogen and was determined by the standard micro-kjeldahl procedure. The sample was digested in the presence of strong acid to convert the organic nitrogen to ammonia. The ammonia was then distilled, collected in boric acid solution, nesslerized and determined colorimetrically.

10. Organic Nitrogen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

Organic Nitrogen was determined by the standard micro-kjeldahl procedure. The ammonia nitrogen in the sample was destroyed by boiling the sample at pH 7.0. The sample was then digested in the presence of strong acid to convert the organic

nitrogen to ammonia. The ammonia was then distilled, collected in boric acid solution, nesslerized and determined colorimetrically.

11. Ammonia

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

The water samples as received were adjusted to a pH of 7.2 - 7.4. An aliquot portion was distilled collecting the distillate in 2% boric acid. An aliquot of the distillate was nesslerized and read on a spectrometer at 425 mμ. The results were calculated as NH_3-N.

12. Nitrate Nitrogen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

Jenkins, D. and Medsker, L.L., 1964. Brucine Method for Determination of Nitrate in Ocean, Estuarine and Fresh Waters. Analytical Chemistry, 36: 610-612.

Nitrate nitrogen was determined by the Jenkins modification of the standard brucine method. The procedure includes the masking of varying chloride concentrations by the addition of excess sodium chloride. The results were calculated as NO_3-N.

13. Nitrite Nitrogen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

A Manual of Sea Water Analysis, J.D.H. Strickland and T.R.

Parsons, 2nd ed., Queen's Printer and Controller of Stationery, Ottawa, Canada, 1965.

Nitrite Nitrogen was determined by diazotization with sulfanilamide and N-(1-naphtyl)- ethylenediamine dihydrochloride. The results were calculated as NO_2-N.

14. Total Phosphorus

Reference: Menzel, D.W. and Corwin, N., 1965. The Measurement of Total Phosphorus in Seawater Based on the Liberation of Organically Bound Fractions by Persulfate Oxidation. Limonology and Oceanography, 10: 280-282.

Murphy, J. and Riley, J.P., 1962. A Modified Single Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

Total Phosphorus was determined after persulfate oxidation of the sample in an autoclave at 15 psi for 30 minutes. The resultant ortho-phosphate was then determined colorimetrically as the molybdenum-blue complex with the optical density measured at 882 mμ.

15. Inorganic Phosphorus

Reference: Murphy, J. and Riley, J.P., 1962. A Modified Single Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

Inorganic Phosphorus was determined colorimetrically as the molybdenum-blue complex with the optical density measured at 882 mμ.

16. Total Phosphorus, millipore filtered

Reference: Menzel, D.W. and Corwin, N., 1965. The Measurement of Total Phosphorus in Seawater Based on the Liberation of Organically Bound Fractions by Persulfate Oxidation. Limonology and Oceanography, 10: 280-282.

Murphy, J. and Riley, J.P., 1962. A Modified Single Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

The sample as received was filtered through a Type HA millipore filter. The Total millipore filtered Phosphorus was then determined after persulfate oxidation of the sample in an autoclave at 15 psi for 30 minutes. The resultant ortho-phosphate was then determined colorimetrically as the molybdenum-blue complex with the optical density measured at 882 mμ.

17. Inorganic Phosphorus, millipore filtered

Reference: Murphy, J. and Riley, J.P., 1962. A Modified Single Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

The sample as received was filtered through a Type HA millipore filter. Inorganic millipore filtered Phosphorus was determined colorimetrically as the molybdenum-blue complex with the optical density measured at 882 mμ.

18. Chlorides

Reference: Fisher Scientific Company, Bulletin #64-4A.

The Chloride concentration was determined by titrating the sample with standard silver nitrate to a potentiometric end point using a silver indicating electrode and a silver/silver chloride reference electrode.

19. Chlorophyll a

Reference: A Manual of Sea Water Analysis, J.D.H. Strickland and T.R. Parsons, 2nd. ed., Queen's Printer and Controller of Stationery, Ottawa, Canada, 1965.

Chlorophyll a was determined by extraction of millipore filtered samples in 90% acetone and read spectrophotometrically.

Station Name	Sampling Location	Distance from Chain Bridge
301 Potomac River Bridge	Bridge	67.5
Popes Creek	Buoy 2	65.5
Port Tobacco River	Buoy 6	53.3
Cedar Point	Buoy 8	59.8
Nanjemoy Creek	Buoys 10 and 11	58.2
Metomkin Point	Buoy 15	56.2
Buoy 17	Buoy 17	53.7
Maryland Point	Buoy 21	52.0
Thomas Point	Buoy 24	48.2
Smith Point	Buoys 27 and 30	45.4
Douglas Point	Buoy 33	44.5
Sandy Point	Buoy 40	40.5
Buoy 41	Buoy 41	39.5
Possum Point	Buoy 44	37.1
Mattawoman Creek	Buoys 45 and 47	33.7
Indian Head	Buoys 54 and 55	29.5
Hallowing Point	Buoys 59 and 61	26.0
Gunston Cove	Buoy 64	24.1
Dogue Creek	Buoys 66 and 67	22.0

Station Name	Sampling Location	Distance from Chain Bridge
Mount Vernon	Buoy 71	20.1
Piscataway Creek	Buoys 75, 77 and 79	18.0
Hatton Point	Buoy 83	17.2
Broad Creek	Buoys 84 and 86	15.1
Rosier Bluff	Buoy 88	13.2
Hunting Creek	Buoy 2	12.2
Woodrow Wilson Bridge	Buoy 4 and Bridge	11.8
Blue Plains STP	Buoy 8	10.0
Bellevue	NRL Dock and 23" Bell	9.7
Washington National Airport	Buoy 9	8.5
Haines Point	Buoy 1 and 4	7.4
Roaches Run	Buoy 6	6.8
14th Street Bridge	Buoy 10	6.0
Key Bridge	Bridge	3.3

WATER QUALITY DATA

UPPER AND MIDDLE POTOMAC RIVER ESTUARY TRANSECTS

(AUGUST, 1965 - SEPTEMBER, 1966)

UNITED STATES DEPARTMENT OF THE INTERIOR
FEDERAL WATER POLLUTION CONTROL ADMINISTRATION
MIDDLE ATLANTIC REGION
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

ANNAPOLIS, MARYLAND
AUGUST, 1969

STA. C6 CHAIN BRIDGE

0.0 MILES (ALL DISTANCES MEASURED DOWNSTREAM FROM CHAIN BRIDGE)

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
8/10/65										2.3												
9/ 1/65	1505								9.2													
9/ 3/65									8.6		6.4			0.34	0.05	0.00						
9/ 3/65									—	1.2	7.7			0.56	0.05	0.00						
9/ 7/65										1.1				0.41	0.07	0.00						
9/ 7/65									8.3	5.2	9.2			0.37	0.05	0.00						
9/13/65									8.7	3.9	5.0			0.58	0.13	0.00						
9/15/65	1130								8.2	3.9	5.7			0.52	0.12	0.00						
9/21/65	0723								8.9	2.1	7.2			0.57	0.06	0.00						
9/27/65	1010								8.6	3.5	7.5			0.53	0.04	0.00						
9/29/65	[illegible]								7.4		5.7			0.43	0.06	0.00						
9/ 3/65	[illegible]																0.12	0.08			29.4	
10/ 4/65	[illegible]																0.13	0.02	0.05		29.8	
10/ 6/65	[illegible]																0.12	0.01	0.05		29.1	
10/11/65	[illegible]																0.26	10.15	0.11		[illegible]	
10/12/65	[illegible]																0.23	0.06	0.14		29.1	
10/13/65	[illegible]																0.59	0.25	0.11		[illegible]	
10/13/65	[illegible]																				[illegible]	

STA. 1 KEY BRIDGE
3.3 MILES

DOWNSTREAM SIDE OF KEY BRIDGE

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
3/16/66	1310	25	5	8.5		2.5			T11.9													
	1310								B11.9													
3/17/66	1130	22	5	9.0		3.0	17.8	2.0	12.4		9.3		0.11	1.25	0.01	0.19	0.08			7.8	4.50
3/17/66	1130								B12.5		56.0		0.16	1.21	0.01	0.21	0.11			8.2	5.00
3/25/66	0945	24	19	13.3		4.5			9.5		8.1		0.06	0.93	0.01	0.19	0.06			10.9	13.50
3/25/66	0945	24	5	13.3		4.5			10.5		8.1		0.03	0.97	0.01	0.20	0.06			10.6	15.00
3/31/66	[illegible]			8.2		3.3			12.2	S 2.7	6.3		0.23	0.53	0.01		0.02	0.05	0.03	12.1	30.00
	[illegible]									BMB 1.6												
3/31/66	[illegible]			8.2		3.3			12.2	S 1.6	7.2		0.20	0.55	0.01		0.02	0.05	0.02	13.8	24.75
	[illegible]									BMB 1.4												
4/7/66	[illegible]		15	[illegible]		3.3	7.[illegible]	0.8	11.5	S 3.5			0.19	0.48	0.01	0.16	0.01	0.01	0.00	12.7	45.75
	[illegible]									BMB 2.4												
4/7/66	[illegible]		5	8.9			8.0	3.0	12.0	S 1.4			0.19	0.42	0.01	0.16	0.01	0.01	0.01	12.7	48.75
	[illegible]									C 0.3												
	[illegible]									BMB 1.2												
	[illegible]									CMB [illegible]												
4/21/66	[illegible]	17	5			1.5	17.4	[illegible].2	11.2	S 1.3		0.45	0.11	0.61	0.01	0.24	0.07	0.09	0.07	7.1	10.50
4/21/66	[illegible]	17	12			1.5	25.4	3.6	10.9	S [illegible]		0.43	0.13	0.63	0.01	0.24	0.07	0.09	0.07	7.6	14.25
	[illegible]									BMB [illegible]												
4/[illegible]/66	[illegible]						65.5	11.5	11.5	S 3.6	8.9		0.39	0.13	0.58	0.01	0.39	0.14	0.14	0.11	5.4	16.50
	[illegible]									C [illegible].1												
	[illegible]									BMB [illegible]												
	[illegible]									CMB 1.9												
4/29/66	[illegible]						57.0	9.5	11.3	S 2.9	7.9		0.59	0.11	0.52	0.01				6.0	9.00
	[illegible]									C 2.0												
	[illegible]									BMB 2.0												
	[illegible]									CMB 1.5												
5/12/66	[illegible]						38.0	LA		S 2.6			0.56	0.10	0.80	0.01	0.25	0.06	0.09	0.06	6.3	16.50
	[illegible]									C 1.4												
	[illegible]									BMB 1.7												
	[illegible]									CMB 1.1												
5/12/66	0950						16.5	11.0	9.6	S 1.4			0.42	0.08	0.80	0.01				5.9	7.50
	[illegible]									C [illegible]												
	[illegible]									BMB 1.0												
	0950									CMB 1.1												
5/19/66	1555						19.5	8.0	T 7.1	S 4.9			0.36	0.40	0.30	0.01	0.29	0.01	0.03		8.8	53.25
	1555								B 6.7	C 1.9												
	1555									BMB [illegible]												
	1555									CMB 1.1												
5/26/66	0955						9.0	6.0	T 7.3	S 3.7	7.8		0.42	0.19	0.06	0.00	0.18	0.00	0.04	0.00	9.1	30.75

STA. 1 KEY BRIDGE 3.3 MILES DOWNSTREAM SIDE OF KEY BRIDGE

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
5/20/66	0935								B 6.9	C 2.8												
	0935									RMB 2.1												
	[illegible]									CMB 2.4												
6/ 2/66	[illegible]						47.5	5.5	T 7.9	B 3.6	7.4		0.73	0.31	0.62	0.02	0.34	0.05	0.12	0.07	8.7	
	[illegible]								B 8.0	C 2.7												
	[illegible]									RMB 2.9												
	[illegible]									CMB 1.9												
6/ 7/66	[illegible]						28.0	12.5	5.2	B 4.7			0.64	0.13	0.02	0.03	0.28		0.04	0.00	10.7	54.75
	[illegible]									C 2.4												
	[illegible]									RMB 2.7												
	[illegible]									CMB 1.7												
9/ 7/66	[illegible]			24.0	4.0								0.59	0.15		0.01	0.14	0.02	0.03	0.00	31.4	10.50
9/ 7/66	[illegible]			23.5	3.0	4.0							0.81	0.17		0.01	0.16	0.01	0.05	0.03	31.8	
9/ 7/66	[illegible]			24.0	5.0								0.33	0.87	0.03	0.03	0.13	0.06	0.03	0.01	30.8	4.50
9/ 7/66	[illegible]			24.0									0.56	0.14	0.03	0.03	0.21	0.03	0.05	0.02	31.4	
9/ 7/66	[illegible]			[illegible]	8.0	4.0							0.65	0.21	0.04	0.01	0.17	0.02			30.7	12.[illegible]
9/ 7/66	[illegible]			[illegible]	8.0	4.0							.64	0.13	0.05	0.01	0.20	0.02			31.1	
9/ 7/66	[illegible]			[illegible]	7.0										0.05	0.01	0.17				30.7	12.[illegible]
9/ 7/66	[illegible]			[illegible]	7.0									0.08	0.01			0.03			30.9	
9/ 7/66	[illegible]			[illegible]	8.0								1.27	0.37		0.01	0.20	0.02	0.06	0.03	31.0	32.75
9/ 7/66	[illegible]			[illegible]	8.0									0.53	0.01		0.20	0.04	0.06	0.01	31.2	
9/ 7/66	[illegible]			[illegible]	5.0	3.7							0.51	0.18		0.01	0.19	0.06			30.9	
9/ 7/66	[illegible]			[illegible]	7.0									0.17	0.06	0.01	0.16	0.02			31.0	
9/ 7/66	[illegible]			21.7	8.0								0.49	0.32		0.01	0.21	0.02	0.08	0.02	31.1	13.50
9/ 7/66	[illegible]			21.4	8.0									0.42		0.01					31.0	
9/13/66	[illegible]			[illegible]	6.0									0.18	0.09	0.02	0.20	0.06			32.2	29.25
9/13/66	[illegible]			[illegible]	7.0																34.4	
9/13/66	[illegible]			[illegible]	7.								0.76	0.34	0.14	0.02	0.28	0.08	0.09	0.04	32.5	39.75
9/13/66				[illegible]	6.																32.4	
9/13/66	[illegible]			[illegible]	7.0								0.80	0.47	0.11	0.03	0.23	0.07			33.8	35.25
9/13/66	[illegible]			[illegible]	4.																32.5	
9/14/66	[illegible]			24.0	8.0								0.80	0.17	0.14	0.02	0.28	0.14	0.11	0.12	32.2	46.00
9/14/66	1750			24.0	7.0																31.8	
9/14/66	[illegible]			[illegible]	7.0	3.2								0.12	0.11	0.01	0.18	0.06			30.7	24.00
9/14/66	1150			23.3	23.0																28.6	
9/16/66	1345			20.6	105.0	3.0								0.15	0.54	0.04	0.60	0.16	0.10	0.05	18.4	36.00
9/16/66	1345			20.6	125.0	3.0															17.4	
9/17/66	1345			18.5	125.0	3.0								0.23	2.27	0.03	0.91	0.43			6.0	14.25
9/17/66	1345			18.5	78.0																6.3	
9/19/66	1552			19.0	24.0	1.1								0.18	1.55	0.03	0.57	0.28	0.29	0.22	16.4	15.75

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD_5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH_3 - N, mg/l	NO_3 - N, mg/l	NO_2 - N, mg/l	TOTAL P - PO_4, mg/l	INORGANIC P - PO_4 mg/l	TOTAL P mf - PO_4, mg/l	INORGANIC P mf - PO_4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
9/13/66	214[illegible]			24.[illegible]	7.[illegible]								0.76	0.34	0.14	0.02	0.28	0.08	0.09	0.04	32.5	39.75
9/13/66				23.5	6.[illegible]																32.4	
9/13/66	0315			24.0	7.0								0.80	0.49	0.11	0.03	0.23	0.07			33.8	35.25
9/13/66	0315			23.0	4.[illegible]																32.5	
9/14/66	175[illegible]			24.0	8.0								0.80	0.17	0.14	0.02	0.28	0.14	0.11	0.12	32.2	48.00
9/14/66	1750			24.0	7.0																31.5	
9/14/66	1150			23.7	7.[illegible]	3.2								0.12	0.11	0.01	0.18	0.06			30.7	24.00
9/14/66	1150			23.3	23.0																28.6	
9/16/66	1345			20.6	105.0	3.0								0.15	0.54	0.04	0.60	0.16	0.10	0.05	18.4	36.00
9/16/66	1345			20.6	125.0	3.0															17.4	
9/17/66	1345			18.5	125.0	3.0								0.23	2.27	0.03	0.91	0.43			6.0	14.25
[illegible]	[illegible]			[illegible]	[illegible]																[illegible]	

3.3 MILES DOWNSTREAM SIDE OF KEY BRIDGE

PAGE NO. [illegible]

9/19/66	1352				23.0									0.17	1.60	0.03	0.58	0.30	0.27	0.20	14.9	

STA. 2 14TH STREET BRIDGE
5.7 MILES UPSTREAM AT BUOY N '10'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
6/16/65	0700									1.6	28.2				0.03	0.05	0.00					
5/31/65	755	20	20						T 5.5	2.1	40.1		1.10		0.10	0.14	0.01					
	755		10						M 5.5													
	0755		3						B 5.2													
	1755		10																			
7/31/65	1442	15	1						6.9	2.3	19.4				0.10	0.11	0.00					
7/31/65	[illegible]								6.8													
8/ 1/65	[illegible]		10						6.3													
8/ 2/65	[illegible]	20	10						6.4	2.7					0.11	0.18	0.01					
8/ [illegible]	[illegible]		10						[illegible]	2.9					0.18	0.16	[illegible]					
8/ [illegible]	[illegible]								6.6													
8/ [illegible]	[illegible]	10	10						6.9													
8/ [illegible]	[illegible]		10						7.0	2.6	7.5				0.04	0.07	0.01					
8/ [illegible]	[illegible]		10						7.3	2.6	7.0				0.08	0.07	0.00					
8/ [illegible]	[illegible]			24.0					3.5													
8/ [illegible]	[illegible]			23.0																		
[illegible]	[illegible]	20	10	23.[illegible]					4.4	4.1	6.0				0.14	0.05	0.00					
[illegible]	0845	25	10	22.5					5.9	3.8	6.4				0.14	0.06	0.00					
[illegible]	[illegible]								5.3													
[illegible]	[illegible]								1.5													
[illegible]									3.4	2.9	6.9				0.03	0.06	0.00					
[illegible]									3.4	5.1	27.4				0.39	0.07	0.01					
[illegible]	[illegible]								10.2	2.7	5.7				0.05	0.06	0.00					
[illegible]	1910								1.9													
[illegible]	[illegible]									3.5	28.1				0.07	0.04	0.00					
[illegible]	[illegible]									4.6					0.04	0.04	0.00					
[illegible]	1915								4.2													
[illegible]									3.2													
[illegible]	1150	10		26.5					2.7	2.9					0.03	0.07	0.00					
[illegible]	1550	18	10	26.0					5.6													
[illegible]	[illegible]	15	10	25.9					6.3													
7/28/65	1102			22.0					4.3									0.24				25.6
10/ 5/65	1400			19.0																		28.2
10/ 5/65	1411			19.5					7.6									0.27	0.10	0.02	0.16	35.3
	1410								B 7.7													
10/ 6/65	1500			7.0																		26.4
10/ 8/65	[illegible]			15.5					7.3									0.43	0.18	0.11	0.00	24.2
	0805								B 7.3													
10/13/65	[illegible]			6.5																		30.7
10/13/65	1100			16.5			14.2	4.0	6.8									0.44	0.23	0.17	0.16	31.3

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP. °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
10/13/65	1100								8 7.1													
10/14/65	1108			15.8																	28.7	
10/14/65	1113			15.3			19.8	6.2	9.0								0.21	0.06	0.05	0.02	28.0	
	1113								8 9.0													
10/17/65	1150			16.6																	26.1	
10/19/65	1.00			16.8			17.6	3.6	10.4								0.29	0.05	0.05	0.01	26.4	
	[illegible]								8 10.7													
10/21/65	1300			17.0																	27.0	
10/21/65	[illegible]			17.1			14.6	4.0	9.2								0.22	0.03	0.44	0.02	26.5	
	[illegible]								8 9.2													
3/ 7/66	[illegible]		1		0.5	240.0	31.0	T 5.1					0.32				0.71	0.23			11.0	10.50
	[illegible]		5					M 7.2														
	[illegible]		10					B 7.3														
3/17/66	[illegible]	17	5	3.5	1.0	22.4	3.0	12.1			12.9		0.15	1.15	0.01	0.18	0.03				8.9	5.25
3/17/66	[illegible]	17	12			23.2	4.4	12.0			11.2		0.07	1.28	0.01	0.18	0.06				6.6	4.50
3/25/66	[illegible]							10.5			11.4		.05	.46	.01	.20	.06				12.0	12.75
3/25/66	[illegible]							1 .1			10.6			.47	.01	.17	.05				10.8	15.75
3/31/66	[illegible]				3.5			12.5	B	2.5	9.8		0.20	0.60	0.01		0.02	0.08	0.03		10.5	37.75
	[illegible]								BMB	1.6												
3/31/66	[illegible]			3.5	3.5			12.4	F	3.0	9.2		0.31	0.50	0.01		0.01	0.05	0.02		11.4	32.25
	[illegible]								BMB	1.7												
4/ 7/66	[illegible]	23	13	9.4			11.2	3.6	12.3	B	3.4		0.09	0.39	0.02	0.18	0.01	0.02	0.01		12.8	53.25
	[illegible]									BMB	2.3											
4/ 7/66	[illegible]		5	9.4			13.4	4.0	12.5	B	4.3		0.10	0.39	0.01	0.18	0.01	0.02	0.01		12.5	56.50
	[illegible]									C	1.6											
	[illegible]									BMB	3.4											
	[illegible]									CMB	1.3											
4/21/66	[illegible]	20	5		1.7	13.8	2.8	10.8	B	3.1			0.47	0.13	0.62	0.01	0.20	0.08	0.09	0.07	7.3	10.50
	[illegible]								C	1.8												
	[illegible]								BMB	2.1												
	[illegible]								CMB	1.0												
4/21/66	1355	20	15		1.7	15.2	3.6	11.6	F	1.1			0.27	0.16	0.62	0.01	0.20	0.08	0.09	0.07	7.1	12.75
	1355								BMB	1.2												
4/29/66	1450				1.8	46.0	12.5	10.7	F	2.2	6.2		0.40	0.12	0.54	0.01	0.27	0.11	0.12	0.09	5.1	8.25
	[illegible]								C	2.1												
	1450								BMB	1.8												
	1450								CMB	1.6												
4/29/66	1457				1.8	36.0	10.0	11.0	F	2.4	7.3		0.39	0.11	0.54	0.01					5.8	6.75
	1450								C	3.6												
	1450								BMB	1.9												

COLLECTING DATE	SAMPLE NO.	DEPTH, ft	SECCHI, ft	O_2, mg/l	TEMP. °C	DISS. O_2	SUSPENDED SOLIDS, mg/l	pH	SPEC. COND. µmhos/cm	BOD, mg/l	TC	TOTAL COLIFORM	NH_3-N, mg/l	NO_3-N, mg/l	NO_2-N, mg/l	TOTAL P PO_4, mg/l	INORGANIC P PO_4, mg/l	TOTAL P PO_4, mg/l	ORGANIC P PO_4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a µg/l
4/23/66	1450									CMB	1.6										
5/12/66	1015		13.8		3.2	18.0	10.2		9.5	P	1.7			0.54	0.09	0.76	0.01	0.21	0.06	0.07	0.06	5.5	10.50
	[illegible]									C	3.8												
	1015									CMB	1.3												
	1015									CMB	1.1												
5/12/66	[illegible]		14.0		3.2	LA	LA		9.5	[illegible]	[illegible]			0.41	0.05	0.75	0.01					6.1	8.25
	[illegible]									[illegible]	[illegible]												
	[illegible]									CMB	[illegible]												
	[illegible]									CMB	1.1												
5/17/66	[illegible]		[illegible]		[illegible]	24.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	0.32	0.01	0.33	0.01	0.03	0.01	8.0	66.75
	[illegible]		[illegible]								[illegible]												
	[illegible]									CMB	3.7												
	[illegible]									CMB	[illegible]												
5/23/66	[illegible]		[illegible]		[illegible]	17.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7.4		[illegible]	[illegible]	0.07	0.01	0.21		0.03		9.6	33.00
	[illegible]		[illegible]								[illegible]												
										[illegible]	[illegible]												
										[illegible]	[illegible]												
6/[illegible]	[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	3.7		[illegible]	0.41	0.58	0.02	0.37	0.05	0.15	0.05	9.7	
	[illegible]		[illegible]								[illegible]												
	[illegible]									[illegible]	[illegible]												
	[illegible]									[illegible]	[illegible]												
6/[illegible]			[illegible]		1.5	45.5	[illegible]	[illegible]	[illegible]		[illegible]			1.17	0.13	0.31	0.01	0.31		0.04	0.01	10.4	43.[illegible]
	[illegible]		[illegible]							[illegible]	[illegible]												
	[illegible]									[illegible]	[illegible]												
	[illegible]									[illegible]	[illegible]												
[illegible]	[illegible]		[illegible]	3.3	1.4								[illegible]		0.12		0.02	0.42	0.16	0.17	0.14	32.1	27.[illegible]
[illegible]			[illegible]	5.[illegible]	1.4							[illegible]			.15		0.03	0.40	0.15	0.17	0.14	[illegible]	
[illegible]	[illegible]		[illegible]	[illegible]								[illegible]			[illegible]	0.62	0.03	[illegible]	0.57	[illegible]	[illegible]	[illegible]	[illegible].75
[illegible]	[illegible]		[illegible]	[illegible]								[illegible]			[illegible]	0.54	[illegible]	0.67	0.57	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]		[illegible]	[illegible]	1.5							[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	47.50
[illegible]	[illegible]		[illegible]	[illegible]								[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			30.[illegible]	
[illegible]	[illegible]		[illegible]	[illegible]												0.29	[illegible]	[illegible]	[illegible]			31.1	4[illegible].50
[illegible]	[illegible]		[illegible]	[illegible]												[illegible]	[illegible]	[illegible]				31.4	
[illegible]	[illegible]		[illegible]	[illegible]								[illegible]			[illegible]		[illegible]	[illegible]	0.46	0.42	0.37	32.[illegible]	6[illegible].00
[illegible]	[illegible]		[illegible]	[illegible]												0.19	[illegible]	[illegible]	0.38	0.34	[illegible]	31.6	
[illegible]	[illegible]		[illegible]	[illegible]	1.6							[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	66.67
[illegible]	[illegible]		[illegible]	[illegible]											[illegible]	0.57	[illegible]	[illegible]	[illegible]			31.[illegible]	
[illegible]	[illegible]		[illegible]	[illegible]								[illegible]			[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	79.50
[illegible]	[illegible]		[illegible]	[illegible]											[illegible]			[illegible]				33.7	
4/1[illegible]/68	[illegible]		[illegible]	[illegible]								[illegible]			0.2[illegible]	0.53	[illegible]	[illegible]	0.54			38.[illegible]	115.50

STA. 2 14TH STREET BRIDGE
5.7 MILES UPSTREAM AT BUOY N '10'

SAMPLING DATE	LOCAL TIME	STRM DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a µg/l
9/12/66	1230			25.0	12.0																33.5	
9/13/66	[illegible]			24.0	14.0							1.2		0.49	0.73	0.04	1.34	0.88	0.82	0.73	35.9	116.25
9/13/66	[illegible]			[illegible]	11.[illegible]																36.0	
9/13/66	0355			24.0	13.0							1.2		0.30	0.62	0.05	1.08	0.60			37.1	108.[illegible]
9/13/66	335			[illegible]	13.[illegible]																34.9	
9/14/66	[illegible]		5	24.[illegible]	[illegible]							[illegible]			1.02	0.10	1.65	1.41	1.25	1.17	35.7	170.[illegible]
[illegible]	[illegible]			24.1	11.0																36.5	
[illegible]	[illegible]			[illegible]	13.[illegible]	1.5								0.18	0.43	0.04	0.63	0.35			34.5	86.25
[illegible]	[illegible]			[illegible]	19.[illegible]	1.5															34.4	
[illegible]				[illegible]	[illegible]	0.3								0.18	0.46		0.47	0.10	0.[illegible]	0.08	16.5	15.5
[illegible]				[illegible]	[illegible]	[illegible]															17.6	
[illegible]	[illegible]			17.0	[illegible]	0.6								0.22	0.05	0.04	0.[illegible]	0.35			7.5	[illegible]
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]															[illegible]	
[illegible]	[illegible]			17.5	[illegible]	0.7								[illegible]	0.2[illegible]	0.04	0.03	0.34	0.32	0.28	9.1	9.[illegible]
[illegible]	[illegible]			[illegible]	[illegible]	0.7								0.17	0.21	0.03	0.[illegible]	0.[illegible]	[illegible]	0.25	[illegible]	

STA. 32 EAST POTOMAC PARK
6.8 MILES

POACHES RUN, WATERFOWL SANCTUARY OUTLET, BUOY N°6'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH_3 - N, mg/l	NO_3 - N, mg/l	NO_2 - N, mg/l	TOTAL P-PO_4, mg/l	INORGANIC P-PO_4 mg/l	TOTAL P mf-PO_4, mg/l	INORGANIC P mf-PO_4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
9/23/65	1100			23.0																	28.6	
10/ 3/65	0800			17.[illegible]																	26.4	
11/13/65	1055			15.5																	30.7	
12/[illegible]/65	1108			10.3																	28.7	
1/11/66	1130			[illegible]																	26.1	
10/ 1/66	[illegible]			17.[illegible]																	27	

STA. 3 HAINS POINT 7.2 MILES SOUTH OF POINT, BUOY C '1'

SAMPLING DATE	LOCAL TIME	STA. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
8/31/65	0745	19	19						T 6.3	4.0	43.8		1.10	0.10	0.17	0.01						
	0745		19						M 6.4													
	0745		3						B 5.7													
	0745		19																			
8/31/65	1412	19	19						5.1	6.6	35.6			0.45	0.29	0.04						
9/1/65	0913								5.6													
9/1/65	0935		19						5.0													
9/2/65	0935	19	19						6.6	3.0	29.0			0.18	0.20	0.02						
9/2/65	1[illegible]		19						6.6	3.5				0.22	0.23	0.04						
9/2/65	1114	19	19						6.6													
9/3/65	[illegible]	19	19						[illegible]													
9/3/65	[illegible]		19						4.3	5.3	7.9			0.51	0.33	0.07						
9/[illegible]/65	[illegible]		19						5.9	1.8	6.9			0.53	0.10	0.01						
9/[illegible]/65	[illegible]			24.0					4.9													
9/[illegible]/65	[illegible]			23.0					7.4													
9/[illegible]/65	[illegible]		19	23.5					[illegible]	4.3	6.6			0.19	0.06	0.01						
9/[illegible]	[illegible]	25	19	24.0					[illegible]	[illegible]	[illegible]			1.51	0.41	0.08						
9/[illegible]	[illegible]								[illegible]													
9/[illegible]	[illegible]								2.4													
9/[illegible]	[illegible]								2.9	5.6	6.4			0.59	0.10	0.01						
9/[illegible]									1.6	14.6	19.5			1.99	0.16	0.03						
9/17/65	[illegible]	19	19						10.5	4.5	24.1			0.15	0.08	0.01						
9/17/65	[illegible]								[illegible]													
9/17/65	[illegible]									5.7	25.9			0.45	0.16	0.02						
9/17/65	[illegible]									5.0				0.17	0.07	0.01						
9/17/65	[illegible]								2.8													
9/[illegible]/65	[illegible]								2.4													
9/[illegible]/65	[illegible]	19		26.5					[illegible]	6.0				0.25	0.13	0.01						
9/[illegible]/65	[illegible]	19	19	26.7					5.4													
9/[illegible]/65	[illegible]	19	19	26.3					3.[illegible]													
9/[illegible]/65	[illegible]			22.0					1.5								3.37	0.65			30.7	
10/5/65	1[illegible]			19.0					7.7								1.11	0.71	0.79	0.77	32.7	
10/[illegible]/65	[illegible]			18.5					6.4								0.66	0.64	0.51	0.40	28.8	
10/13/65	1[illegible]			16.0				6.2	7.0								0.13	0.94	0.90	0.62	34.8	36.75
10/14/65	1100			15.5			17.4	6.4	7.3								1.02	0.65	0.64	0.72	28.8	
10/14/65	1145			16.5			8.6	1.4	8.7								0.66	0.34	0.36	0.27	26.1	
10/14/65	1[illegible]			17.0			21.2	5.6	9.5								0.63	0.26	0.30	0.23	26.0	
10/[illegible]/65	[illegible]			1[illegible]										0.92	0.72	0.01	1.05	0.76			30.[illegible]	
10/25/65	[illegible]											1.9		1.32	0.03	0.01	1.82	1.13			36.5	23.25
3/[illegible]/66	1230		1	6.0			167.0	20.0	T 7.4					0.23			0.71	0.37			11.0	9.00

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a µg/l
3/ 4/66	1230		5	5.9					M 7.4													
	1230		13	5.8					B 7.2													
3/17/66	1232	15	5			2.2	20.4	3.6	12.1		67.1			1.95	1.14	0.01	0.23	0.13			9.2	5.25
3/17/66	1232	15	10	9.2		2.2	20.4	2.8	11.8		5.8			0.19	1.17	0.01	0.22	0.15			9.4	4.50
3/25/66	[illegible]		15	12.8		3.[illegible]			9.5		15.0			0.36	0.39	0.01	0.31	0.54			15.5	16.50
3/25/66	[illegible]			13.0					9.1		11.[illegible]			0.63	1.01	0.01	1.04	0.72			12.3	14.[illegible]
3/31/66	[illegible]			[illegible]		2.9	[illegible]		12.3		[illegible]			[illegible]	0.51	0.01		0.04	0.05	0.03	11.0	57.[illegible]
3/31/66	[illegible]			[illegible]		2.9			12.[illegible]	B	4.8			0.31	[illegible]	0.01		0.34	0.07	0.04	12.6	51.[illegible]
	[illegible]									BMB	3.7											
4/ 7/66	[illegible]	13	5	9.1		2.0	11.4	5.6	12.6	B	3.9			0.13	0.39	0.01	0.20	0.01	0.02	0.01	14.[illegible]	[illegible]
	[illegible]									BMB	3.1											
4/ 7/66	[illegible]	13	5	9.0		2.0	23.2	7.4	13.0	B	4.0			0.12	0.37	0.01	0.20	0.01	0.03	0.01	12.9	[illegible]
	[illegible]									C	0.8											
	[illegible]									BMB	2.0											
	[illegible]									CMB	1.[illegible]											
4/21/66	[illegible]	23	5			1.8	15.4	12.[illegible]	13.6		1.[illegible]		0.56	0.15	0.62	0.01	0.24	0.10	0.10	0.05	6.9	11.[illegible]
	[illegible]									C	1.2											
	[illegible]									CMB	1.4											
	[illegible]									CMB	1.[illegible]											
4/21/66	[illegible]	23	13			1.8	17.8	3.0	13.7	B	1.8		0.52	0.15	0.61	0.01	0.24	0.10	0.10	0.08	6.4	13.[illegible]
	[illegible]									BMB	1.2											
4/29/66	[illegible]					2.5	42.5	13.5	10.5	B	2.4	5.2		0.31	0.16	0.54	0.01	0.27	0.12	0.13	0.10	6.3	9.[illegible]
	[illegible]									C	1.3											
	[illegible]									BMB	1.8											
	[illegible]									CMB	1.1											
4/29/66	[illegible]					2.5	46.0	13.5	10.7	B	2.5	5.6		0.48	0.12	0.53	0.01				6.0	9.[illegible]
	[illegible]									C	2.7											
	[illegible]									BMB	1.9											
	[illegible]									CMB	2.2											
5/12/66	[illegible]			15.0		2.5	18.5	LA	9.2	B	1.6		0.35	0.13	0.77	0.01	0.22	0.09	0.09	0.08	5.5	12.[illegible]
	[illegible]									C	2.1											
	[illegible]									BMB	1.2											
	[illegible]									CMB	1.3											
5/12/66	[illegible]			15.2		2.5	13.5	LA	9.0	B	1.5		0.41	0.10	0.75	0.01					6.0	9.00
	1030									C	3.0											
	[illegible]									BMB	1.2											
	[illegible]									CMB	2.5											
5/19/66	1455			20.0		2.5	23.0	13.0	T 8.8	B	4.9		0.54	0.19	0.34	0.01	0.34	0.01	0.03	.N0	7.9	64.50
	1455			25.[illegible]					B 7.2	C	3.5											
	1455									BMB	3.2											

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC, N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC Pmf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
5/19/66	1455									CMB	0.9											
5/26/66	1515			21.0		2.0	22.0	8.0	T 6.6	P	3.6	7.2	0.65	0.13	0.10	0.01	0.26	ND	0.05	0.01	10.3	30.75
	1015			21.0					B 6.5	C	1.6											
	1515									PMB	3.2											
	1015									CMB	1.1											
6/2/66	[illegible]			21.0		1.5	25.0	5.5	T 6.2	P	3.9	7.5	0.73	0.22	0.17	0.01	0.32	0.11	0.12	0.08	9.5	
	[illegible]			21.0					B 5.9	C	1.9											
	[illegible]									PMB	3.8											
	[illegible]									CMB	1.4											
6/7/66	[illegible]			23.[illegible]		1.4	37.5	11.0	T 5.4	P	4.9		0.48	0.15	0.05	0.01	0.39	0.03	0.06	0.02	11.4	36.75
	[illegible]			23.0					B 4.1	C	2.2											
	[illegible]									PMB	7.7											
	[illegible]									CMB	1.5											
6/[illegible]/66	[illegible]			26.0	8.0	1.2						2.2		0.07		0.03	2.75		2.04	2.27	39.2	136.50
6/[illegible]/66	[illegible]			26.5	13.[illegible]	1.2						2.4		0.11		0.08	2.91		2.08	2.13	40.7	
6/[illegible]/66	[illegible]			26.5	[illegible]							2.2		.13	2.40	0.22	5.13	4.25	4.21	4.13	47.3	196.[illegible]
6/[illegible]/66	[illegible]			26.5	10.0							2.5		[illegible]	2.13	0.28	5.33	4.49	4.39	4.47	46.3	
6/[illegible]/66	[illegible]			26.5	13.	1.0						1.8		0.14	2.36	0.19	3.63	3.07			41.4	118.50
6/[illegible]/66	[illegible]			26.[illegible]	15.0	1.0						1.[illegible]		0.25	2.17	[illegible]	3.53	3.21			41.3	
6/[illegible]/66	[illegible]			26.5	15.0										.19	0.27	2.55	2.33			37.6	79.75
6/[illegible]/66	[illegible]			26.	14.										1.37	0.09		2.50			38.5	
6/[illegible]/66	[illegible]			23.4	9.0							2.7		0.57		0.50	5.97	4.23	4.35	4.39	45.2	144.75
6/[illegible]/66	[illegible]			24.1	12.[illegible]									0.38		0.37	4.49	3.72	3.55	3.47	43.9	
6/[illegible]/66	1751			22.7	12.5	1.5						2.1		0.14	2.48	0.13	4.46	3.70			43.7	186.00
6/[illegible]/66	[illegible]			22.5	6.0	1.5								0.26	2.16	0.31	4.53	3.87			44.7	
6/[illegible]/66	[illegible]			21.5	[illegible]							1.9		0.17		0.01	4.43	3.73		3.54	44.1	191.25
6/[illegible]/66	[illegible]			21.6	9.9									0.25		0.02					43.0	
6/13/66	[illegible]			[illegible]	17.0									.14	1.98	0.23	3.51	3.12			43.1	194.25
6/13/66	[illegible]			25.5	11.																45.5	
6/13/66	[illegible]			24.0	8.0							2.7		0.34	2.74	0.46	5.81	4.91	5.04	4.55	59.1	187.50
6/13/66	[illegible]			24.[illegible]	57.0																67.0	
9/13/66	[illegible]			25.[illegible]	16.							2.1		0.32	2.16	0.40	5.23	4.22			49.7	194.25
9/13/66	0230			24.8	7.0																51.4	
9/14/66	[illegible]			25.[illegible]	8.[illegible]							2.6		0.67	2.38	0.40	5.91	4.95	4.55	4.94	53.8	235.50
9/14/66	1730			25.0	8.0																54.1	
9/14/66	1130			24.1	12.0	2.0								0.18	2.52	0.28	3.49	3.26			44.7	191.25
9/14/66	1130			24.[illegible]	12.[illegible]	2.0															44.7	
9/14/66	1320			20.5	125.0	2.0								0.18	0.70	0.03	0.23	0.06	0.08	0.23	19.9	12.75
9/14/66	1320			20.5	135.0	2.0															18.0	
9/14/66	1327			19.[illegible]	135.0	3.0								0.24	1.59	0.03	0.82	0.30			6.6	13.50

STA. 2 HAINS POINT
7.3 MILES SOUTH OF POINT, BUOY C '1'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
9/17/66	1327			19.0	125.0	3.0															6.3	
9/18/66	1630			19.0	82.0	4.0								0.25	2.33	0.06	0.69	0.29			6.4	12.75
9/18/66	1630			19.0	98.0	4.0															6.6	
9/19/66	1938			17.0	71.0	3.0								0.31	0.46	0.04	0.86	0.47	0.32	0.37	7.0	12.75
9/19/66	1938			17.0	68.0	0.5								0.28	0.46	0.04	0.91	0.54	0.36	0.30	7.2	

STA. 36 NATIONAL AIRPORT
8.5 MILES BUOY C '9'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
9/28/65	1050			21.8																	28.3	
10/ 8/65	0750			18.5																	29.6	
10/13/65	1040			16.0																	28.0	
10/14/65	1050			15.5																	27.3	
10/19/65	1147			16.5																	27.4	
10/21/65	1255			17.0																	28.0	
1/13/66	0752			1.0									0.69	0.75	0.01		0.66	0.53			30.6	
1/25/66	0915										3.2		2.16	0.35	0.02		3.25	2.22			38.6	21.00
2/ 4/66	1200		1				118.0	19.0	T	7.4			0.21				0.46	0.17			16.7	6.00
	1[illegible]		5						M	7.3												
	1255		10						B	7.2												
1/25/66	0915										3.2		2.16	0.35	0.02		3.25	2.22			38.0	21.00
2/ 4/66	1200						118.0	19.0					0.21				0.46	0.17			16.7	6.00

STA. 4 BELLEVUE 9.9 MILES GIESBORO, NRL DOCK, FL R 23' BELL

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
8/16/65	1045									10.0	22.0			0.34	0.54	0.50						
8/31/65	0732	26	26						T 4.8	6.1	38.7		0.90	0.64	0.26	0.04						
	0732		15						M 4.7													
	0732		3						B 4.6													
	0732		10																			
8/31/65	1[illegible]	25	1[illegible]						4.5	7.6	32.1			0.67	0.64	0.09						
8/31/65	2[illegible]2								3.4													
9/ 1/65	0214		10						3.4													
9/ 2/65	[illegible]857	26	1[illegible]						4.6	6.9	36.6			0.78	0.33	0.09						
9/ 2/65	1[illegible]1		1[illegible]						3.1	11.8				2.00	0.35	0.10						
9/ 2/65	[illegible]104	1[illegible]	1[illegible]						5.5													
9/ 2/65	[illegible]51								4.0													
9/ 7/65	0836		1[illegible]						1.3	12.2	10.1			2.15	0.52	0.12						
9/ 7/65	1421		1[illegible]						2.2	10.6	11.2			3.02	0.30	0.09						
9/ 7/65	[illegible]			24.0					2.1													
9/ 7/65	0417			20.6					6.6													
9/13/65	[illegible]923	25	1[illegible]	24.5					1.2	14.0	14.6			3.46	0.33	0.07						
9/13/65	923	25	1[illegible]	24.7					1.0	10.2	10.1			2.46	0.61	0.09						
9/13/65	1[illegible]18								4.8													
9/13/65	[illegible]1 2								2.[illegible]													
9/13/65	[illegible]15								0.1	12.8	9.4			3.10	0.06	0.04						
9/15/65									1.1	6.1	48.1			3.10	0.23	0.04						
9/17/65	0835	22	1[illegible]						6.2	15.2	7.7			0.65	0.10	0.03						
9/17/65	1250								0.9													
9/21/65	0750									11.8	24.3			2.45	0.16	0.05						
9/21/65	1740									11.2				2.35	0.13	0.04						
9/21/65	1[illegible]56								3.0													
9/23/65	0415								0.9													
9/23/65	1125			26.5					2.8	8.6				1.52	0.18	0.03						
9/23/65	1535	24	1[illegible]	28.0					4.0													
9/23/65	1[illegible]	24	1[illegible]	26.8					3.4													
9/28/65	1340			27.0					1.8					2.88	0.40	0.09	3.00	.58			31.2	
3/17/66	1242	23	[illegible]	7.8		2.3	14.6	4.2	T11.2		67.3			0.38	1.13	0.01	0.72	0.47			10.0	5.24
3/17/66	1242	23				2.3	18.8	4.6	11.2		71.0			0.33	1.13	0.01	0.52	0.35			9.2	4.50
3/25/66	1320		21	13.6		2.5			6.2		14.7			0.25	0.96	0.02	1.55	1.28			14.0	16.50
3/25/66	1320		5	13.4					7.1		13.7			0.50	0.95	0.02	1.74	1.42			12.9	15.75
3/31/66	1[illegible]32			9.5		2.9			8.3		11.6			1.06	1.01	0.01	1.04	0.72			12.3	44.25
3/31/66	1034								7.5					1.03	0.72	0.01			0.68	0.72	13.4	60.75
4/ 7/66	1450	13	13	10.1		2.0	12.8	5.2	10.7	R 5.2				0.10	0.45	0.01	1.01	0.51	0.52	0.45	15.8	72.00
	1450									RMB 3.9												

STA. 4 BELLEVUE 9.9 MILES GIESBORO, NRL DOCK, FL R 23° BELL

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 -N, mg/l	NO2 -N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC Pmf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
4/ 7/66	1455	18	5	13.1		2.0	8.2	4.6	11.4	R 5.7				0.79	0.45	0.01	1.10	0.60	0.60	0.56	14.1	8.25
	1455									C 2.4												
	1455									RMB 3.9												
	1455									CMB 1.6												
4/21/66	1835	30				1.3	15.2	3.8	9.4	R 3.0			0.59	0.68	0.55	0.01	0.81	0.50	0.51	0.44	10.0	8.25
	1835									C 1.7												
	1835									RMB 2.0												
	1835									CMB 0.9												
4/21/66	1835	30	25			1.3	28.8	4.6	10.2	R 2.8			0.54	0.31	0.58	0.01	0.81	0.50	0.51	0.44	8.9	18.00
	1835									RMB 3.8												
4/29/66	1325					1.5	42.0	20.0	9.6	R 3.9	8.1		0.58	0.56	0.50	0.07	1.02	0.63	0.75	0.59	7.7	7.50
	1325									C 2.1												
	1325									RMB 2.8												
	1325									CMB 1.5												
4/29/66	1325					1.5	32.5	17.0	9.3	R 3.5	5.6		0.59	0.67	0.45	0.01					7.9	6.75
	1325									C 2.5												
	1325									RMB 2.5												
	1325									CMB 2.6												
5/12/66	1045			15.0		3.0	16.5	LA	8.4	R 1.7			0.25	0.25	0.68	0.01	0.97	0.71	0.55	0.50	5.9	14.25
	1045									C 1.7												
	1045									RMB 1.1												
	1045									CMB 1.3												
5/12/66	1045			15.2		3.0	11.5	LA	8.1	R 2.7			0.45	0.81	0.67	0.01					7.5	11.25
	1045									C 2.9												
	1045									RMB 2.2												
	1045									CMB 2.2												
5/19/66	1440			20.0		2.5	31.5	10.5	T 10.4	R 4.5			0.50	0.17	0.40	0.01	0.24		0.02		7.8	60.00
	1440			20.0					B 8.3	C 1.4												
	1440									RMB 2.8												
	1440									CMB 1.6												
5/26/66	1030			23.0		1.5	20.5	6.5	T 5.7	R 5.9	8.1		1.03	0.67	0.10	0.01	0.98	0.52	0.49	0.46	11.9	41.25
	1030			23.0					B 5.7	C 2.1												
	1030									RMB 4.3												
	1030									CMB 1.5												
6/ 2/66	0940			20.0		1.5	178.0	26.0	T 6.3	R 4.2	34.4		1.34	0.40	0.19		1.92	0.95	0.13	0.10	9.5	
	0940			20.0					B 6.4	C 1.3												
	0940									RMB 3.3												
	0940									CMB 1.4												
6/ 9/66	0955			23.0		1.5	34.5	7.5	T 3.9	R 2.4			0.79	0.85	0.07	0.02	0.85	0.63	0.59	0.55	11.7	24.75
	0955			23.0					B 3.7	C 5.7												

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 -N, mg/l	NO2 -N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
6/ 9/66	0955									RMB 2.6												
	0955									CMB 4.0												
9/ 7/66	1545			26.0	8.0	1.3						2.4		0.15		0.47	5.28		4.35	4.57	48.4	197.25
9/ 7/66	1545			25.5	8.0	1.3						2.8		0.48		0.52	5.83		5.05	6.50	51.0	
9/ 7/66	[illegible]			24.0	8.0							2.7		0.37	1.88	0.75	5.69	5.08	5.16	5.03	54.0	248.25
9/ 7/66	[illegible]			24.0	[illegible]							2.2		0.23	2.45	0.69	5.80	4.95	4.83	4.85	53.0	
9/ 8/66	[illegible]			20.5	12.0	1.2						2.2		0.26	2.47	0.31	4.48	4.04			45.4	125.2[illegible]
9/ 8/66	[illegible]			24.5	12.0							2.1		0.25	2.06	0.29	4.40	3.90			44.6	
9/ 8/66	1935			23.4	12.0										2.52	0.16	4.32	3.67			43.6	118.50
9/ 8/66	1935			23.4	15.0										2.26	0.17		3.56			42.8	
9/ 9/66	[illegible]			22.8	1.3							2.4		0.24		0.59	5.46	4.78	4.72	4.56	60.8	147.00
9/ 9/66	[illegible]			22.6	8.0									0.78		0.57	5.17	4.47	4.42	4.39	61.2	
9/ 9/66	1745			22.6	[illegible]	2.7						2.4		0.37	3.01	0.40	5.68	5.08			50.0	199.50
9/ 9/66	1745			23.2	[illegible]									0.36	2.63	0.40	5.76	5.03			49.6	
9/ [illegible]	[illegible]			22.3	8.0							2.7		0.24		0.01	5.21	4.78	4.60	4.71	54.6	219.00
9/ [illegible]	[illegible]			[illegible]	[illegible]									0.28		0.01					55.[illegible]	
9/1[illegible]/66	[illegible]			[illegible]	7.0							2.4		0.35	2.17	0.54	5.42	4.89			52.8	211.50
9/1[illegible]/66	[illegible]			[illegible]	[illegible]																50.0	
9/1[illegible]/66	[illegible]			[illegible]	[illegible]							2.4		0.64	2.67	0.39	5.03	4.26	4.16	3.96	70.8	189.00
9/1[illegible]/66	[illegible]			[illegible]	9.0																72.8	
9/1[illegible]/66	[illegible]			25.1	17.0							5.9		3.25	1.98	0.41	10.56	9.30			66.7	17[illegible].50
9/1[illegible]/66	[illegible]			[illegible]	9.0																65.0	
9/19/	[illegible]			24.9	14.0							4.0		1.90	1.99	0.33	5.98	5.72	4.74	5.20	75.2	197.25
9/19/66	1120			24.8	[illegible]																75.0	
9/19/66	1120			24.5	8.0	2.0								1.16	2.24	0.45	6.35	5.35			64.6	191.25
9/19/66	1120			24.5	10.0	2.0															65.2	
9/19/66	[illegible]			22.0	130.0	0.4								0.32	0.59	0.04	1.61	1.23	0.26	0.33	20.0	39.75
9/19/66	131[illegible]			22.0	115.0	0.4															20.5	
9/19/	1325			19.0	130.0	0.2								0.33	1.02	0.04	1.70	1.31			9.9	9.75
9/19/66	1325			19.0	125.0	0.2															8.9	
9/19/66	1945			19.5	86.0	0.3								0.36	1.67	0.06	1.12	0.54			8.6	16.75
9/19/66	1945			19.0	96.0	0.3															8.3	
9/19/66	1530			2[illegible].0	71.0	0.7								0.63	2.08	0.06	1.22	0.77	0.68	0.57	9.1	14.25
9/19/66	1530			20.0	78.0	0.7								0.61	2.22	0.05	1.39	0.78	0.64	0.99	9.6	

STA. 46 BLUE PLAINS
10.5 MILES BELOW D.C.W.P.C.P., BUOY N '8'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD_5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH_3 - N, mg/l	NO_3 -N, mg/l	NO_2 -N, mg/l	TOTAL P-PO_4, mg/l	INORGANIC P-PO_4 mg/l	TOTAL P mf-PO_4, mg/l	INORGANIC P mf-PO_4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
[illegible]	1350								3.5	7.6	39.0			2.52	0.56	0.08						
[illegible]	1340			22.0					1.8								3.00	0.58			31.2	
[illegible]	1350			[illegible]					4.4								4.30	3.46	3.73	3.51	32.1	
[illegible]	[illegible]			18.[illegible]					3.7								2.79	3.16	2.00	2.61	30.3	
[illegible]	1335			[illegible]			19.2	5.4	5.4								2.75	2.01	2.13	2.00	30.1	41.25
[illegible]	[illegible]			[illegible]			[illegible]	7.2	4.7								2.54	2.28	2.05	1.87	27.5	
[illegible]	[illegible]			[illegible]			13.2	5.4	6.6								2.81	2.17	2.02	2.12	29.3	
[illegible]	[illegible]			17.[illegible]			29.0	6.4	5.2								1.85	1.46	1.34	1.17	29.4	

STA. [illegible] WOODROW WILSON BRIDGE
11.9 MILES DOWNSTREAM FROM BRIDGE

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a. µg/l
9/ [illegible]	[illegible]								1.6	11.0	12.7			0.92	0.75	0.15						
9/ [illegible]	1414								0.5	7.8	9.1			2.42	0.36	0.11						
	[illegible]			24.0					2.7													
9/1 [illegible]	[illegible]			24.5					1.8	12.0	10.1			0.90	1.02	0.14						
	[illegible]			[illegible]					2.2	13.2	9.4											
9/1 [illegible]	[illegible]								0.6													
	[illegible]			25.0					3.3													

ST. 4C BLUE PLAINS
10.5 MILES BELOW D.C.W.P.C.P., BUOY N '8'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC Pmf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a. µg/l
1/1 / 5	0303			1.0										2.18	0.81	0.01	2.59	2.02			33.6	12.75
1/ /75	0335											4.3		2.48	0.41	0.02	4.75	3.30			40.4	27.75
1/ /	1300					0.5	106.0	19.0	T 7.2					0.25			0.59	0.28			11.3	4.50
	1305								M 7.4													
	1305								B 7.2													

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
8/31/65	0723	24	24						T 3.0	8.2	29.9		1.10	1.33	0.38	0.06						
	0723		10						M 2.7													
	0723		3						B 1.7													
	0723		10																			
8/31/65	1345	26	10						3.8	6.4	84.1			0.38	0.99	0.09						
8/31/65	[illegible]								4.5													
9/1/65	[illegible]		10						4.6													
9/[illegible]/65	[illegible]	24	10						3.1	6.4	39.6			2.02	0.51	0.11						
9/[illegible]/65	[illegible]		10						4.2	9.4				1.18	0.54	0.12						
9/[illegible]/65	[illegible]	10	10						4.3													
9/[illegible]/65	[illegible]	10	10						4.3													
9/[illegible]/65	[illegible]			20.0					1.7													
[illegible]	[illegible]								0.7	15.6	9.8			2.77	0.25	0.04						
[illegible]									0.6	7.1	36.1			1.62	0.51	0.05						
[illegible]	[illegible]	20	10						2.4	11.6	9.3			2.03	0.08	0.34						
[illegible]	[illegible]								1.3													
[illegible]	[illegible]									5.4	25.5			1.55	0.39	0.06						
[illegible]	[illegible]									5.5				2.25	0.17	0.04						
[illegible]	[illegible]								2.4													
[illegible]	[illegible]								1.1													
[illegible]	[illegible]								1.4	11.0				1.48	0.25	0.03						
[illegible]	[illegible]	25	10	22.0					3.7													
[illegible]	[illegible]	25	10	22.3					3.9													
[illegible]	[illegible]			21.5					2.2								2.83	0.54			33.1	
10/[illegible]	[illegible]			18.6					3.1								3.03	3.27	2.27	2.76	30.5	
10/[illegible]	[illegible]			15.5			24.4	8.2	4.6								2.20	2.15	2.18	2.14	29.5	
10/[illegible]	[illegible]			15.5			29.8	11.6	4.5								2.63	2.49	2.17	3.83	30.9	
10/[illegible]	[illegible]			16.2			6.2	1.8									3.34	2.87	2.65	2.62	30.0	
10/31/[illegible]	[illegible]						14.8	5.4									3.41	2.95	2.67	2.79	30.4	
1/1/[illegible]	[illegible]											3.3		1.83	0.77	0.01	2.35	1.84			33.2	
1/2/[illegible]	[illegible]											4.1		2.98	0.46	0.02	4.01	3.01			43.8	
3/[illegible]/66	1532		1	7.2		0.5	83.0	13.0	T 7.0					0.93			1.24	0.66			15.2	2.25
	1330		5	5.5					M 7.1													
	[illegible]		10	5.2					B 7.0													
3/11/66	1255	20	5			2.7	15.2	4.4	T10.5		67.2			0.66	1.06	0.02	0.91	0.62			9.6	5.25
	1255		15	8.0					B10.5													
3/17/66	1255	20				2.7	14.4	4.8			59.0			0.63	1.05	0.02	0.89	0.63			9.5	3.75
3/[illegible]/66	1330		20	13.2		2.5			6.9		12.5			1.28	0.99	0.02	1.46	1.12			12.0	27.00
3/[illegible]/66	1330			13.2					6.7		18.4			1.27	0.97	0.02	1.40	1.20			12.3	24.75
3/[illegible]/66	1330			12.9		3.5			6.9	4.6	9.9			1.35	0.73	0.02		1.10	0.96	0.90	13.8	33.75

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
3/21/[illegible]	1330									RMB 3.2												
3/21/[illegible]	1335			12.0		3.5			8.2	S 4.2	11.1			1.34	0.73	0.02		1.07			13.7	36.75
	[illegible]									RMB 3.2												
4/[illegible]/[illegible]	[illegible]	25	20	11.6		2.1	9.8	4.0	10.0	S 7.8				0.59	0.44	0.01	1.68	0.97	0.97	0.92	14.8	57.75
	[illegible]									RMB 5.1												
4/[illegible]/[illegible]	[illegible]		5	10.6			12.4	5.6	10.2	S 6.7				1.03	0.44	0.01	1.58	1.91	0.97	0.92	15.1	66.00
	[illegible]									C 6.3												
	[illegible]									RMB 4.5												
	[illegible]									CMB 4.7												
4/[illegible]/[illegible]	[illegible]		5			1.3	13.2	7.4	9.8	S [illegible]			0.52	0.63	0.51	0.01	0.79	0.51	0.55	0.46	10.3	15.00
	[illegible]									C 2.0												
	[illegible]									RMB 2.6												
	[illegible]									CMB 1.4												
4/[illegible]/[illegible]	[illegible]	25	20			1.3	15.4	4.4	9.3	S 3.7			0.52	0.61	0.51	0.01	0.79	0.51	0.55	0.46	9.6	15.75
	[illegible]									RMB [illegible]												
4/[illegible]/[illegible]	[illegible]					2.0	30.0	18.0	9.5	S 2.4	6.4		0.40	0.26	0.52	0.01	0.36	0.14	0.21	0.17	6.6	8.25
	[illegible]									C [illegible]												
	[illegible]									RMB [illegible]												
	[illegible]									CMB [illegible]												
4/[illegible]/[illegible]	[illegible]					2.0	37.0	17.5	9.8	S 2.7	6.6		0.44	0.24	0.51	0.02					6.6	8.25
	[illegible]									C 1.7												
	[illegible]									RMB 1.7												
	[illegible]									CMB 1.4												
5/[illegible]/[illegible]	[illegible]			15.2		2.5	26.0		7.5	S 2.8			0.25	0.86	0.65	0.01	1.29	0.90	1.01	0.83	6.8	15.75
	[illegible]									C 1.2												
	[illegible]									RMB 2.0												
	[illegible]									CMB 1.1												
5/[illegible]/[illegible]	[illegible]			15.2		2.5	12.5		7.0	S 2.7			0.33	0.95	0.65	0.01					8.0	12.75
	[illegible]									C 1.5												
	[illegible]									RMB 1.3												
	[illegible]									CMB 1.2												
5/1/[illegible]	[illegible]			20.0		2.5	36.0	13.0	T 10.4	S 4.3			0.60	0.19	0.45	0.01	0.42	0.03	0.07	0.03	8.5	54.75
	[illegible]								B 9.3	C 7.1												
	[illegible]									RMB 3.7												
	[illegible]									CMB 5.2												
5/[illegible]/[illegible]	[illegible]			23.0		1.5	31.5	9.5	T 3.7	S 5.1	9.5		1.36	0.85	0.13	0.02	1.59	1.20	0.98	0.99	12.2	52.50
	[illegible]			23.0					B 3.6	C 3.1												
	[illegible]									RMB 4.6												
	[illegible]									CMB 2.2												
6/[illegible]/[illegible]	[illegible]			21.0		1.7	17.5	4.5	T 3.7	S 4.0	7.8		0.76	1.27	0.09	0.02	1.52	0.97	0.84	0.79	11.7	

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
6/ [illegible]	[illegible]			20.0					B 3.2	C 2.0												
	[illegible]									RMB 4.0												
	[illegible]									CMB 1.2												
6/ [illegible]	1013			23.0		1.5	18.5	8.0	T 1.2	B 5.7			2.06	1.18	0.09	0.03	2.67	2.42	2.27	2.20	15.0	27.00
	1013			23.0					B 1.0	C 4.7												
	[illegible]									RMB [illegible]												
	[illegible]									CMB 3.8												
9/ [illegible]	[illegible]			[illegible]	11.0	1.5						2.6		0.63		0.44	5.32	4.71	4.30	4.49	64.2	160.50
9/ [illegible]	[illegible]			25.0	12.0	1.5								0.64		0.44	5.19	4.75	4.37	4.45	65.6	
9/ [illegible]	[illegible]			[illegible]	13.5							2.0		0.03	1.78	0.32	3.96	3.42	3.25	3.31	72.8	159.00
9/ [illegible]	[illegible]			[illegible]	17.0							2.0		0.03	1.90	0.32	4.10	3.17	3.14	3.16	76.8	
9/ [illegible]	[illegible]			[illegible]	11.0	1.2						2.1		0.18	2.96	0.47	5.02	4.69			53.8	117.00
9/ [illegible]	[illegible]			[illegible]	[illegible]	[illegible]						2.2		0.17	2.37	0.46	5.11	4.70			52.0	
9/ [illegible]	[illegible]			23.0	13.0	1.4									2.43	0.60	6.11	5.22			50.8	129.75
9/ [illegible]	[illegible]			[illegible]	[illegible]	1.4									2.53	0.61		5.10			51.2	
9/ [illegible]	[illegible]			[illegible]	[illegible]							1.9		0.08		0.29	3.61	2.73	2.54	2.59	85.6	139.50
9/ [illegible]	[illegible]			[illegible]	[illegible]									0.09		0.29	3.61	2.85	2.77	2.69	84.8	
9/ [illegible]	[illegible]			[illegible]	[illegible]	1.4						2.1		0.15	2.41	0.14	4.85	4.22			65.4	188.25
9/ [illegible]	[illegible]			[illegible]	[illegible]	1.4								0.14	2.35	0.11	4.42	3.74			69.8	
9/ [illegible]	[illegible]			[illegible]	[illegible]							2.1		0.19		0.01	4.05	3.51	3.41	3.29	72.0	209.25
9/ [illegible]	[illegible]			[illegible]	[illegible]									0.25		0.21					77.0	
9/21 [illegible]	[illegible]		5	[illegible]	[illegible]							2.6		0.68	2.60	[illegible]	5.41	5.12			58.6	234.75
9/ [illegible]	[illegible]			[illegible]	[illegible]																57.8	
9/21 [illegible]	[illegible]			23.0	17.0							1.9		0.16	1.95	0.16	3.63	2.96	2.84	2.60	90.4	195.00
9/21 [illegible]	[illegible]			24.0	17.0																97.0	
9/21 [illegible]	[illegible]		5	24.5	17.5							2.0		0.81	1.91	0.23	4.10	3.20			90.8	210.00
9/21 [illegible]	[illegible]			[illegible]	19.0																90.2	
9/21 [illegible]	[illegible]		5	[illegible]	18.0							2.3		0.39	1.82	0.25	4.09	4.04	3.80	3.50	89.4	186.75
9/21 [illegible]	[illegible]			[illegible]	17.5																90.4	
9/21 [illegible]	[illegible]			[illegible]	[illegible]	2.0								0.89	2.05	0.44	5.59	4.70			72.8	171.00
9/ [illegible]				[illegible]	[illegible]	2.0															78.8	
9/10 [illegible]	[illegible]			22.5	125.0	0.5								0.31	0.52	0.01	1.39	0.86	0.34	0.36	20.0	30.75
9/1 [illegible]	[illegible]			22.0	115.0	0.5															19.6	
9/11 [illegible]	[illegible]			19.0	97.0	0.5								0.39	0.82	0.04	1.53	0.79			13.0	19.50
9/11 [illegible]	[illegible]			19.0	115.0	0.5															10.4	
9/1 [illegible]	[illegible]			19.5	72.0	0.5								0.59	1.76	0.05	1.27	0.62			9.4	17.25
9/1 [illegible]	[illegible]			19.5	105.0	0.5															12.1	
9/1 [illegible]	[illegible]			20.0	74.0	0.5								0.82	1.65	0.06	1.71	1.00	0.85	0.81	10.8	23.25
9/1 [illegible]	[illegible]			20.0	75.0	0.5								0.82	1.78	0.05	1.76	0.95	0.80	0.76	10.4	

STA. [illegible]A HUNTING CREEK
12.8 MILES BUOY FL R '2'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD_5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH_3 - N, mg/l	NO_3 - N, mg/l	NO_2 - N, mg/l	TOTAL P - PO_4, mg/l	INORGANIC P - PO_4 mg/l	TOTAL P mf - PO_4, mg/l	INORGANIC P mf - PO_4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
9/[illegible]/65	1330			22.0																	37.6	
10/[illegible]/65	1335			18.0																	44.7	
10/[illegible]/65	1730			17.0																	36.4	
10/1[illegible]/65	1020			15.5																	31.2	
10/1[illegible]/65	[illegible]			[illegible]																	30.9	
10/1[illegible]/65	[illegible]			[illegible]																	30.0	
10/[illegible]/65	[illegible]			17.0																	30.7	
10/[illegible]	[illegible]																				31.2	
11/[illegible]	[illegible]																				43.4	
11/[illegible]	[illegible]																				34.2	
[illegible]	[illegible]																					
12/[illegible]	[illegible]																				45.5	

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
8/16/65	0625									10.8	35.1			0.10	0.80	0.41						
8/16/65	[illegible]								5.0	6.9	54.5			0.11	1.12	0.06						
9/1/65	[illegible]								4.3													
9/1/65	[illegible]							T	3.0	9.6	33.0		2.60	0.96	0.64	0.08						
	[illegible]							M	3.1													
	[illegible]							B	3.0													
9/1/65	[illegible]								5.4													
9/[illegible]	[illegible]								3.0	7.0	37.1			0.99	0.71	0.12						
9/[illegible]	[illegible]								3.8	10.4				0.62	0.89	0.11						
9/[illegible]	[illegible]								7.3													
9/[illegible]	[illegible]								2.8	9.6				0.40	0.21	0.11						
9/[illegible]	[illegible]								2.0	10.4	9.9			1.38	0.68	0.15						
9/[illegible]	[illegible]		24.0						4.7													
9/[illegible]	[illegible]		25.0						0.7													
9/[illegible]	[illegible]		4.5						1.7	12.5	11.3			1.86	0.54	0.14						
9/[illegible]	[illegible]								3.7	12.2	11.[illegible]			0.32	1.37	0.10						
9/1/[illegible]	[illegible]		23.5						5.0													
9/1/[illegible]	[illegible]								3.5													
9/[illegible]	[illegible]								0.3	15.2	9.2			2.08	0.46	0.05						
9/[illegible]	[illegible]								1.3	14.4	39.5			1.02	0.79	0.09						
9/[illegible]	[illegible]								1.5	14.0	9.8			2.13	0.13	0.05						
9/[illegible]	[illegible]								1.3													
9/[illegible]	[illegible]									6.5	25.[illegible]			1.15	0.77	0.05						
9/[illegible]	[illegible]									12.2				1.90	0.52	0.04						
9/[illegible]	[illegible]								2.4													
9/[illegible]	[illegible]								1.4													
9/[illegible]	[illegible]		25.6						1.5	13.8				1.14	0.60	0.05						
9/[illegible]	[illegible]		27.7						4.3													
9/[illegible]	[illegible]		[illegible]						3.0													
1/1/[illegible]	[illegible]		1.0											2.66	0.75	0.01	2.73	2.25			40.5	
1/[illegible]	[illegible]											3.9		3.01	0.37	0.01	4.08	4.12			51.5	36.00
3/[illegible]	[illegible]					0.5	90.0	12.0	T 7.3					0.25			0.53	0.21			11.6	3.75
	[illegible]								M 7.8													
	[illegible]								B 7.4													

STA. [illegible] BROAD CREEK
15.1 MILES BUOYS N '86' AND FL R '84'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
8/15/65	3618									8.4	27.0			0.09		0.25						
8/31/65	0700	32	32						T 3.2	10.0	42.7		3.00	0.44	0.87	0.09						
	0700		15						M 3.4													
	0700		3						B 3.0													
	0700		10																			
8/11/65	1530								5.6													
9/1/65	0140		10						4.9													
9/2/65	0547	32	10						3.7	6.5				0.45	0.98	0.11						
9/[illegible]	[illegible]		10						4.2	7.9				0.25		0.08						
9/[illegible]	[illegible]	10	10						5.9													
9/[illegible]	[illegible]	10	10						5.2													
9/[illegible]	0737								4.4	6.9	10.5			0.18	0.90	0.06						
9/[illegible]	[illegible]		10						1.7	8.6	9.5			0.71	0.80	0.15						
9/[illegible]	[illegible]			24.0					4.9													
9/[illegible]	[illegible]			20.5					2.0													
9/[illegible]	[illegible]		10	24.4					2.2	14.6	11.6			0.74	0.74	0.18						
9/[illegible]	[illegible]			23.5					4.2	12.0	11.4			0.03	0.98	0.07						
9/[illegible]	[illegible]								2.7													
9/[illegible]	[illegible]								5.4													
9/[illegible]	0740								0.9	15.2				1.60	0.62	0.06						
9/[illegible]	[illegible]								1.5	14.2	39.0			0.72	0.34	0.08						
9/[illegible]	[illegible]	30	10						6.5	7.2	10.2			1.28	0.24	0.08						
9/[illegible]	[illegible]								2.0													
9/21/65	[illegible]								0.9	4.6	24.5			0.08	1.47	0.04						
9/[illegible]	[illegible]									6.2				1.00	0.69	0.04						
9/[illegible]	[illegible]			23.0					3.1													
9/[illegible]	[illegible]								2.3													
9/[illegible]	[illegible]	10		26.5					1.7	13.0				0.06	0.92	0.06						
9/[illegible]	[illegible]	27	10	27.0					4.9													
9/23/65	1030	22	10	26.0					2.4													
9/[illegible]	[illegible]			22.0					2.0								2.38	0.41			40.7	
9/[illegible]	[illegible]			19.0					4.4								3.00	2.22	2.51	2.24	33.8	
10/[illegible]/65	0730			17.0					3.0								2.65	2.52	1.84	2.17	36.8	
10/13/65	1015			15.5			25.6	12.4	5.1								2.46	1.64	1.73	1.89	43.0	132.75
10/14/65	1023			15.0			35.8	14.2	4.9								2.16	1.89	1.72	1.48	33.1	
10/19/65	1115			16.0			9.3	0.8	5.4								2.18	1.87	1.83	1.82	30.7	
10/21/65	1235			17.0			17.6	5.8	3.2								2.59	2.17	2.02	1.93	30.8	
10/28/65	1610																				32.7	
11/[illegible]/65	1025																				37.2	
11/[illegible]/65	1551																				39.5	

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
11/10/65	1551																					
12/ /65	0909																				51.5	
1/1 /	0 28											4.0		3.02	0.57	0.02	2.86	2.46			49.8	23.25
1/25/66	1246											3.7		3.02	0.43	0.01	3.64	3.87			103.0	42.75
3/ /66	1400			6.2	0.5	74.0	12.0	T 7.1						0.52			0.73	0.39			14.8	3.75
	1400			6.0				M 7.1														
	1400			6.0				B 6.7														
3/17/	1 55	25	5	8.5	2.8	25.8	6.8	T 9.3			59.9			0.97	1.00	0.01	1.13	0.86			10.1	7.50
	1 55		20					B 9.2														
3/ /66	1	25			2.8	45.4	9.8				51.5			0.94	1.06	0.02	1.32	0.92			9.8	6.00
3/2 /66	1		25	13.0	3.5			7.4			16.1			1.20	1.01	0.02	1.27	0.99			11.5	32.25
3/2 /66	1022		5	13.0				7.9			15.2			1.03	1.01	0.02	1.39	0.88			11.5	30.00
3/31/66	1344		25	13.0	2.5			8.7	R	4.9	10.0			1.20	0.32	0.02		0.96	0.73		17.8	48.00
	1340								RMB	2.7												
3/31/66	1 44			10.0	2.5			8.7	R	3.1	9.0			1.10	0.30	0.02		0.85	0.73	0.77	13.6	54.00
	1 45								RMB	2.7												
4/ /66	1 25	24	19	9.4	2.2				RMB	6.6	10.3			1.32	0.47	0.01	1.04	1.55	1.56	1.40	15.2	73.50
	1 25					15.9	5.0	8.4	R	8.4												
4/ /66	1452		5	10.0		20.8	7.2	8.6	R	8.9				2.50	0.48	0.02	1.24	1.45	1.47	1.36	15.8	69.75
	1450								C	3.0												
	1450								RMB	7.9												
	1450								CMB	1.6												
4/21/66	1 35	30	5		1.5	12.6	3.4	9.4	R	4.0			0.58	0.67	0.50	0.01	0.79	0.56	0.52	0.46	10.8	16.50
	1 35								C	1.9												
	1 35								RMB	3.4												
	1 35								CMB	1.1												
4/21/66	1 35	30	25		1.5	22.6	4.0	9.6	R	3.8			0.72	0.66	0.50	0.01	0.79	0.56	0.52	0.46	11.0	21.75
	1 35								C	1.7												
	1 35								RMB	2.9												
	1 35								CMB	1.2												
4/28/66	1 50				2.1	46.0	20.0	8.0	R	3.4	6.3		0.45	0.50	0.49	0.03	0.64	0.37	0.40	0.34	8.0	14.25
	1250								C	1.6												
	1250								RMB	2.1												
	1250								CMB	1.2												
4/29/66	1250				2.1	40.0	18.0	7.9	R	3.3	6.8		0.49	0.51	0.50	0.03					8.3	13.50
	1250								C	1.9												
	1250								RMB	2.2												
	1250								CMB	1.5												
5/1 /	1130			15.0	2.2	31.0		6.1	R	2.7			0.31	0.82	0.63	0.02	0.69	0.53	0.45	0.43	6.6	14.25
	1130								C	1.5												

STA. [illegible] BROAD CREEK
15.1 MILES BUOYS N '86' AND EL 2 '84'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BODs, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH_3 - N, mg/l	NO_3 - N, mg/l	NO_2 - N, mg/l	TOTAL P - PO_4, mg/l	INORGANIC P - PO_4 mg/l	TOTAL P mf - PO_4, mg/l	INORGANIC P mf - PO_4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
5/1[illegible]/[illegible]	1130									RMB 1.8												
	1130									CMB 0.9												
5/1[illegible]/[illegible]	1130			16.0	2.2	15.0			6.2	R 2.5			0.53	0.67	0.64	0.02					6.6	12.75
	1130									C 1.1												
	1130									RMB 1.5												
	1130									CMB 0.7												
5/1[illegible]/[illegible]	[illegible]			17.5	2.2	39.0	14.5	T 8.3		R 5.2			1.01	1.07	0.50	0.01	1.78	1.05	1.06	1.03	9.5	51.75
	[illegible]							B 6.8		C 2.1												
	[illegible]									RMB 4.3												
	[illegible]									CMB 1.4												
5/[illegible]/[illegible]	[illegible]			23.0	1.5	23.5	4.5	T 3.5		R 5.2	8.7		0.77	1.12	0.22	0.02	1.24	0.85	0.82	0.80	10.4	43.50
	[illegible]			23.0				B 3.5		C 1.7												
	[illegible]									RMB 3.5												
	[illegible]									CMB 1.0												
6/[illegible]/[illegible]	[illegible]			21.[illegible]	2.[illegible]	25.5	4.5	T 2.6		R 4.[illegible]	7.5			1.55	0.07	0.01	1.70	1.06	0.92	0.93	11.5	
	[illegible]			21.0				B 2.[illegible]		C 1.7												
	[illegible]									RMB [illegible]												
	[illegible]									CMB [illegible]												
6/[illegible]/[illegible]	[illegible]			2[illegible]	2.0	27.5	9.0	T 1.8		R 6.[illegible]			1.08	2.04	0.17	0.06	1.70	1.49	1.19	1.13	12.9	24.75
	[illegible]			[illegible]				B 1.5		C 3.[illegible]												
	[illegible]									RMB [illegible]												
	[illegible]									CMB 2.[illegible]												
9/[illegible]/[illegible]	[illegible]			[illegible]	15.0	1.5						1.9		0.03		0.31	3.48	3.02	2.79	2.78	87.0	125.25
9/[illegible]/[illegible]	[illegible]			2[illegible]	17.0	1.5						2.0		0.01		0.29	3.64	3.11	2.63	2.80	89.0	
9/[illegible]/[illegible]	[illegible]			24.[illegible]	17.[illegible]							1.5		0.02	1.23	0.24	2.59	2.09	1.97	2.02	114.0	117.00
9/[illegible]/[illegible]	[illegible]			24.[illegible]	22.0							2.0		0.02	1.75	0.36	3.20	2.51	2.46	2.25	95.0	
9/[illegible]/[illegible]	[illegible]			[illegible]	[illegible]	1.3						1.7		0.10	1.[illegible]	0.31	3.49	3.10			82.0	93.00
9/[illegible]/[illegible]	[illegible]			[illegible]	17.0	1.3						1.8		0.10	1.77	0.33	3.69	3.24			77.0	
9/[illegible]/[illegible]	[illegible]			[illegible]	[illegible]	1.0									1.[illegible]	0.34	4.73	4.01			71.0	128.25
9/[illegible]/[illegible]	[illegible]			[illegible]	[illegible]	1.0									2.08	0.35		3.97			72.0	
9/[illegible]/[illegible]	[illegible]			[illegible]	17.[illegible]							1.7				0.15	2.42	1.84	0.91	1.73	123.0	128.25
9/[illegible]/[illegible]	[illegible]			22.[illegible]	16.0											0.15	2.48	1.87	0.93	1.75	120.0	
9/[illegible]/[illegible]	[illegible]			[illegible]	[illegible]	1.5						1.9		0.14	1.[illegible]	0.13	2.[illegible]	2.34			99.0	135.00
9/[illegible]/[illegible]	[illegible]			[illegible]	27.0	1.5								0.15	1.[illegible]	0.12	2.90	2.27			107.0	
9/[illegible]/[illegible]	[illegible]			22.[illegible]	15.0							1.8		0.20		0.06	2.52	2.07	1.99	1.92	112.0	126.75
9/[illegible]/[illegible]	[illegible]			22.0	27.0									0.18		0.0[illegible]					109.0	
9/1[illegible]/[illegible]	[illegible]			22.8	13.0	1.0						1.7		0.10	1.65	0.13	2.83	2.32			99.0	
9/1[illegible]/[illegible]	[illegible]			22.9	15.0	1.0								0.10	1.72	0.10					97.0	
9/1[illegible]/[illegible]	[illegible]		5	23.2	14.[illegible]							1.8		0.14	1.85	0.20	3.34	2.93			96.0	
9/1[illegible]/[illegible]	[illegible]			24.[illegible]	13.0																88.0	

STA. [illegible] BROAD CREEK
15.1 MILES BUOYS N '86' AND FL R '84'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD_5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH_3 - N, mg/l	NO_3 - N, mg/l	NO_2 - N, mg/l	TOTAL P - PO_4, mg/l	INORGANIC P - PO_4 mg/l	TOTAL P mf - PO_4, mg/l	INORGANIC P mf - PO_4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a. µg/l
9/1[illegible]	2230			23.0	17.0							2.0		0.14	1.66	0.13	3.09	2.52	2.41	2.25	111.0	167.25
9/1[illegible]	[illegible]			24.0	55.0																126.0	
9/1[illegible]	[illegible]			24.[illegible]	1[illegible]							1.8		0.18	1.28	0.10	3.31	2.13			130.0	177.75
9/1[illegible]	[illegible]			24.1	22.0																127.0	
9/1[illegible]	1735		5	24.0	21.0							1.9		0.26	1.27	0.11	2.65	2.67	2.65	2.52	137.0	156.75
9/1[illegible]	1[illegible]			24.[illegible]	[illegible]																138.0	
9/1[illegible]	[illegible]			23.1	1[illegible].0	1.5								0.27	1.58	0.21	3.62	2.80			117.0	175.50
9/1[illegible]	[illegible]			23.0	[illegible]7.0	1.5															136.0	
9/1[illegible]	1[illegible]				47.0									0.53	1.19	0.17	2.15	1.82	1.56	1.59	38.8	74.25
9/1[illegible]	[illegible]				[illegible]																34.4	
9/1[illegible]	[illegible]			[illegible]	[illegible]7.0	0.5								0.51	0.75	0.08	1.40	1.16			20.6	28.50
9/1[illegible]	[illegible]			26.0	75.0	0.5															21.8	
9/[illegible]	[illegible]			1[illegible].5	[illegible]	0.[illegible]								0.72	1.25	0.06	1.28	0.73			13.6	27.00
9/1[illegible]	[illegible]			[illegible].0	110.0	0.[illegible]															12.8	
9/1[illegible]	[illegible]			[illegible].0	[illegible]4.0	0.[illegible]								0.79	1.26	0.11	1.39	0.89	0.82	0.75	14.8	30.75
9/[illegible]	[illegible]			[illegible]	[illegible]	[illegible]								0.81	1.14	0.12	1.53	0.92	0.79	2.52	14.3	

STA. [illegible] HATTON POINT
17.0 MILES BUOYS C '83' AND C '81'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
9/2[illegible]/6[illegible]	1020			22.0																		51.6
10/[illegible]/[illegible]	1325			19.0																		37.0
10/[illegible]	[illegible]20			17.0																		50.4
10/1[illegible]/[illegible]	1[illegible]			15.[illegible]																		50.8
10/14/[illegible]	1[illegible]15			[illegible].0																		40.0
10/1[illegible]/	1[illegible]			17.[illegible]																		32.6
10/21/[illegible]	[illegible]			17.[illegible]																		32.4
10/2[illegible]	[illegible]																					35.0
11/[illegible]	[illegible]																					45.2
11/1[illegible]	[illegible]																					41.2
	[illegible]																					
12/[illegible]	[illegible]21																					53.4
1/1[illegible]	[illegible]											3.5		3.20	0.54	0.01	2.91	2.68				72.4

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
8/16/[illegible]	0606									5.2	32.1			0.08	1.26	0.19						
8/31/[illegible]	[illegible]	62	60					T 4.4		9.6	55.9		2.10	0.21	1.08	0.07						
	[illegible]		30					M 4.7														
	0645		3					B 4.3														
	[illegible]		10																			
8/31/[illegible]	[illegible]	60	10					5.6		5.6	38.6			0.03	1.22	0.04						
8/31/[illegible]	[illegible]							6.1														
9/[illegible]	[illegible]		10					5.4														
9/[illegible]	[illegible]		10					4.8		7.2	39.6			0.10	1.07	0.70						
9/[illegible]	[illegible]	18	[illegible]					5.7		4.2				0.08	0.91	0.04						
9/[illegible]	[illegible]	16	10					8.1														
9/[illegible]	[illegible]	16	10					6.2														
9/[illegible]	[illegible]		10					4.3		8.2	9.8			0.14	0.93	0.05						
9/[illegible]	[illegible]		10					3.7		6.4	11.1			0.32	0.94	0.09						
9/[illegible]	[illegible]			24.0				5.8														
9/[illegible]	[illegible]			20.5				2.6														
9/1[illegible]	[illegible]	23	10	23.4				4.5		15.0	12.8			0.13	0.80	0.11						
9/1[illegible]	[illegible]	[illegible]	10					4.7		11.4	11.2			0.04	0.92	0.05						
9/1[illegible]	[illegible]							4.3														
9/1[illegible]	[illegible]							5.4														
9/1[illegible]	[illegible]							1.2		15.0	10.1			0.95	0.77	0.07						
9/1[illegible]								1.5		12.2	52.0			0.51	0.80	0.08						
9/1[illegible]	[illegible]	[illegible]	10					6.2		15.5	12.3			0.80	0.35	0.10						
9/1[illegible]	[illegible]							2.0														
9/[illegible]	[illegible]							0.7		12.0	26.5			0.15	1.43	0.03						
9/21/[illegible]	[illegible]									11.3				0.33	1.14	0.04						
9/21/[illegible]	[illegible]							2.4														
9/[illegible]	[illegible]							2.1														
9/[illegible]	[illegible]			26.5				1.5		10.2				0.08	1.23	0.06						
9/[illegible]	[illegible]			27.5				2.9														
9/[illegible]	[illegible]	53	10	26.0				3.5														
9/2[illegible]	[illegible]			22.[illegible]				4.6									1.51	1.20			86.2	
10/[illegible]				19.0				6.2									2.14	1.68	1.67	1.59	42.4	
10/[illegible]	[illegible]			17.0				4.8									1.84	1.92	1.14	1.53	50.4	
10/1[illegible]	[illegible]			15.5			9.0	11.0	4.6								2.25	1.20	1.62	2.05	4.3	129.0
10/1[illegible]	[illegible]			15.0			19.2	9.0	5.1								1.92	1.69	1.41	1.33	41.2	101.85
10/1[illegible]	[illegible]			15.0			1.5	5.2	4.8								1.77	1.48	1.31	1.34	36.6	
10/21/[illegible]	[illegible]			17.0			1.5	7.4	3.8								1.68	1.42	1.35	1.25	36.6	
10/2[illegible]	[illegible]																				44.2	
11/[illegible]	[illegible]																				48.6	

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
11/13/[illegible]	1531																				71.4	
	1531																					
12/ 6/[illegible]	[illegible]																				88.2	
1/18/[illegible]	[illegible]			0.0										3.26	0.58	0.01	2.88	2.59			72.2	
1/25/[illegible]	[illegible]											3.8		2.87	0.46	0.01	2.88	2.50			461.0	
3/ 3/[illegible]	[illegible]					0.5	67.0	11.0	T 6.8					0.41			0.72	0.31			14.2	3.75
	[illegible]								M 7.1													
									B 7.1													
3/[illegible]	[illegible]	[illegible]	[illegible]				19.2	6.8	T 9.3					0.95	1.02	0.01	1.00	0.87			12.2	7.50
	[illegible]		25	3.8					B 9.1													
3/1[illegible]	[illegible]	30				[illegible]	26.[illegible]	7.6			68.3			0.98	1.02	0.01	1.13	0.82			11.0	8.25
3/[illegible]	[illegible]		1[illegible]	12.5		3.0			7.7		13.3			1.11	1.02	0.01	1.34	0.91			12.0	40.50
3/[illegible]	[illegible]		[illegible]	12.[illegible]					7.0		15.9			1.03	0.49	0.02	1.25	0.93			17.2	33.75
3/1[illegible]	[illegible]	[illegible]		12.[illegible]		2.0			6.7	R 4.2	10.1			1.15	0.65	0.02		0.99	0.69	0.75	14.2	62.25
	[illegible]									RMB 4.3												
3/[illegible]	[illegible]		[illegible]	12.[illegible]					6.8	R [illegible]	[illegible]			0.98	0.74	0.02		0.86	0.74	0.72	12.8	45.75
	[illegible]									RMB 2.6												
4/ 7/[illegible]	[illegible]	[illegible]	30	[illegible].4		1.5	34.[illegible]	6.6	9.5	R 9.7	14.9			1.23	0.61	0.02	1.22	1.22	1.12	1.09	15.0	118.50
	[illegible]									RMB [illegible]												
4/ [illegible]	[illegible]	35	5	[illegible].1		1.5	30.6	5.2	9.[illegible]	R [illegible].7	9.[illegible]			1.55	0.60	0.02	1.07	1.25	1.13	1.07	14.7	105.00
	[illegible]									[illegible] 2.4												
	[illegible]									RMB [illegible]												
	[illegible]									CMB 1.[illegible]												
4/21/[illegible]	[illegible]	20	5			1.7	27.8	5.2	9.7	R 4.3			0.82	0.56	0.50	0.01	1.15	0.77	0.46	0.42	13.2	25.50
	[illegible]									C 3.0												
	[illegible]									RMB [illegible]												
	[illegible]									CMB 1.[illegible]												
4/21/[illegible]	[illegible]	20	15			1.7	144.2	18.0	10.1	R 7.2			1.10	0.61	0.50	0.01	1.15	0.77	0.46	0.42	13.2	55.50
	[illegible]									C [illegible]												
	[illegible]									RMB 4.[illegible]												
	[illegible]									CMB 1.4												
4/2[illegible]/[illegible]	[illegible]			15.0		2.0	54.0	20.5	7.3	R 3.5	7.3		0.59	0.63	0.51	0.02	0.78	0.49	0.47	0.40	8.3	15.75
	[illegible]									C 1.2												
	[illegible]									RMB 2.6												
	[illegible]									CMB 0.3												
4/29/[illegible]	[illegible]			15.0		2.0	43.5	20.0	7.5	R 3.5	7.1		0.51	0.56	0.52	0.02					8.8	18.00
	[illegible]									C 1.[illegible]												
	[illegible]									RMB 2.5												
	[illegible]									CMB 1.4												
5/12/[illegible]	[illegible]			15.0		2.2	37.5		6.1	R 3.[illegible]			0.50	0.65	0.66	0.02	0.72	0.55	0.42	0.40	6.2	14.25

5/1[illegible]	11[illegible]								C	1.3												
	[illegible]								BMB	2.2												
	[illegible]								CMB	0.9												
5/1[illegible]	1150	17.0	2.2	18.0		6.2			B	3.1		0.37	0.67	0.65	0.02					6.9	15.00
	1156								C	1.3											
	[illegible]								BMB	2.0											
	[illegible]								CMB	0.4											
5/1[illegible]	[illegible]	[illegible]	2.[illegible]	34.5	1[illegible].5	I 8.3			B	5.5		0.70	0.86	0.56	0.02	1.29	0.82	0.75	0.79	8.9	63.75
	[illegible]					B 9.6			C	[illegible]											
	[illegible]								BMB	4.[illegible]											
	[illegible]								CMB	[illegible]											
5/[illegible]	[illegible]	[illegible]	[illegible]	24.0	[illegible]	I 3.[illegible]		8.1				1.62	1.00	0.79	0.03	1.02	0.74	0.68	0.65	10.1	39.00
	[illegible]	[illegible]				B 1.[illegible]			C	[illegible]											
	[illegible]								BMB	1.[illegible]											
5/[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	I [illegible]		[illegible]		[illegible]		[illegible]	1.79	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	11.[illegible]	
	[illegible]	[illegible]				B [illegible]				[illegible]											
	[illegible]								BMB	[illegible]											
	[illegible]								CMB	[illegible]											
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12.0	[illegible]
	[illegible]	[illegible]				[illegible]				[illegible]											
	[illegible]								BMB	[illegible]											
	[illegible]								CMB	[illegible]											
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

SAMPLING DATE	LOCAL TIME	SFRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	D.O., mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
9/13/[illegible]	1530			24.5	32.0							1.3		.25	1.17	.07	2.61	1.91	.LA	1.59	154.0	162.00
9/13/[illegible]	1[illegible]			24.5	23.0																156.0	
9/1[illegible]	[illegible]			24.1	23.0							2.1		0.28	0.78	0.07	2.07	1.52			226.0	153.75
9/13/[illegible]	[illegible]			24.0	23.0																224.0	
9/1[illegible]	[illegible]			24.1	24.0							2.1		0.23	0.78	0.06	2.12	2.07	1.93	1.97	223.0	145.50
9/1[illegible]	[illegible]			24.1	[illegible]																227.0	
9/1[illegible]	[illegible]			[illegible]	[illegible]	1.3								0.18	0.52	0.05	2.90	1.75			236.0	153.75
9/1[illegible]	[illegible]			[illegible]	[illegible]	1.3															276.0	
9/1[illegible]	[illegible]			[illegible]	[illegible]	[illegible]								0.47	1.35	0.31	3.33	3.06	2.67	2.69	54.0	82.50
9/1[illegible]	[illegible]			[illegible]	[illegible]	[illegible]															53.0	
9/1[illegible]	[illegible]			[illegible]	[illegible]	[illegible]								0.46	0.53	0.13	1.49	1.53			28.0	34.50
9/1[illegible]	[illegible]			21.0	1[illegible]	[illegible]															26.4	
9/1[illegible]	[illegible]			[illegible]	[illegible]	[illegible]								0.52	0.95	0.09	1.03	0.61			18.2	33.75
9/1[illegible]	[illegible]			[illegible]	[illegible]	[illegible]															13.8	
9/1[illegible]	[illegible]			[illegible]	[illegible]	[illegible]								0.51	1.19	0.14	1.11	[illegible]	0.64	0.55	[illegible]	34.50
9/1[illegible]				[illegible]	[illegible]	[illegible]								0.56	1.[illegible]	0.15	1.1[illegible]	[illegible]	0.66	0.53	[illegible]	

STA. 7A MOUNT VERNON 20.4 MILES DUNY FL '71' PAGE NO. 25

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY JTU	SECCHI DISK, m	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 N, mg/l	TOTAL P, mg/l	PO4, mg/l	INORGANIC P, mg/l	PO4, mg/l	TOTAL F, mg/l	PO4, mg/l	INORGANIC F, mg/l	PO4, mg/l	CHLORIDES, mg/l	CHLORINE, mg/l
8/21/65	1903			22.0					6.2																129.7	
9/22/65	0114			19.0					7.5																57.0	
8/15/66	0605			17.0																						
8/23/66	1100			15.0																						
[illegible]	[illegible]			15.0																					72.0	
[illegible]	[illegible]			17.0																						
[illegible]	[illegible]																								20.4	
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									
[illegible]	[illegible]																									

SAMPLING DATE	LOCAL TIME	STRM DEPTH, ft.	SAMP DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4, mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
8/16/65	0545									2.7	58.1			0.07	0.58	0.12						
8/31/65	0630	37	37					T 4.7		6.7	33.0		4.80	0.05	1.20	0.04						
	0630		3					M 4.7														
	0630		10					B 4.6														
	0630		15																			
8/31/65	1240	35	10					5.1		4.5	43.4			0.11	0.68	0.01						
9/ 2/65	0920	37	10					5.2		6.9	37.1			0.04	0.99	0.03						
9/ 2/65	1415		10					6.2		6.1				0.19	0.77	0.02						
9/ 2/65	1910	10						6.8														
9/ 2/65	0115	10	10					7.3														
9/ 2/65	1703		10					7.3		5.2	14.8			0.04	0.50	0.02						
9/ 2/65	1237		10					5.4		5.5	12.0				0.92	0.03						
9/ 2/65	1355			24.0				8.7														
9/ 2/65				20.5				5.5														
9/ 2/65	2123			20.5				2.4														
9/13/65	0900	30	10	23.5				5.5		11.8	10.4			0.04	0.81	0.05						
9/13/65	0900		10	23.5				5.8		7.7	10.0			0.04	0.75	0.02						
9/13/65	1500							5.0														
9/13/65	2100							8.7														
9/15/65								4.7		11.5	53.4			0.11	0.56	0.04						
9/21/65	0900	35	10					7.5		10.8	10.0			0.16	0.40	0.11						
9/21/65	1200							3.4														
9/21/65	1500							2.1		8.5	24.0			0.06	0.73	0.02						
9/21/65	1900									10.2				0.04	1.00	0.01						
9/21/65	1700			29.5				3.2														
9/23/65	0745							2.5														
9/23/65	1115			25.0				2.3		5.0				0.04	0.88	0.01						
9/23/65	1400	35	10	25.0				5.5														
9/23/65	1[illegible]	27	10	26.3				7.1														
9/23/65	[illegible]			21.5				5.1									0.04	0.72			150.1	
10/ 5/65	1315			18.0				6.4									2.04	1.57	1.48	1.40	62.0	
10/ 5/65	0700			17.5				6.1									1.39	1.04	0.91	0.92	92.2	
10/13/65	[illegible]			15.5			19.4	7.3									1.55	1.66	1.00	0.94	102.7	174.0
10/13/65	1[illegible]			15.0			22.6										1.65	0.97	1.03	0.88	98.6	
10/13/65	1[illegible]			16.0		8.6	2.0	5.2									1.96	1.34	1.34	1.16	44.4	
10/21/65	1[illegible]			17.0		15.0	7.[illegible]	4.8									1.52	1.25	1.25	1.14		
10/21/65	1[illegible]																				79.8	
11/ 1/65	1[illegible]																				72.4	
11/1/65	1514																				93.2	
	1514																					

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH_3 - N, mg/l	NO_2 -N, mg/l	NO_3 -N, mg/l	TOTAL P - PO_4, mg/l	INORGANIC P - PO_4 mg/l	TOTAL P mf - PO_4, mg/l	INORGANIC P mf - PO_4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
12/ 6/66	0948																				175.0	
1/18/67	0905											2.6		3.43		0.01	2.83	2.94			126.0	
1/25/67	0925											4.0		2.68	0.56	0.01	2.46	2.26			750.0	28.50
3/17/66	1340	26	21			1.5	51.6	6.4	T 9.5		25.1			0.77	1.11	0.01	0.99	0.71			11.6	12.75
	1340								B 9.6													
3/17/66	1342	62				1.5	42.8	5.5			50.0			0.83	1.11	0.02	0.80	0.58			11.0	10.50
4/25/66	1130	25	20	12.5		2.0			8.0		20.6			0.10	0.97	0.01	1.58	1.14			15.6	66.75
4/25/66	1131	25	5	12.5					8.6		18.0			0.92	1.02	0.01	0.91	0.67			13.4	40.75
5/31/66	1432	25		10.5		1.5			7.2	S 4.0	8.3			0.88	0.88	0.01		0.76	0.56	0.61	17.4	71.25
	1432									BMB 2.6												
5/31/66	1432	25		10.5					8.3	S 4.4	8.7			0.83	0.89	0.01		0.67	0.56	0.57	15.5	60.00
	1432									BMB 2.8												
6/ 7/66	1365	20	15	9.2		1.0	52.0	9.0	10.1	S 9.2	10.6			1.21	0.72	0.01	1.53	0.96	0.89	0.87	14.7	124.50
	1365									BMB 6.4												
6/ 7/66	1365	20	5			1.0	32.0	6.4	10.5	S 3.3	11.0			0.84	0.74	0.01	0.97	0.84	0.82	0.84	14.0	126.75
	1365									C 2.3												
	1365									BMB 6.1												
	1365																					
4/21/66	1740	23	5			1.5	35.0	7.4	10.4	S 3.1			0.81	0.53	0.57	0.01	0.79	0.57	0.44	0.41	15.4	49.50
	1740									C 2.0												
	1740									BMB 3.7												
	1740									CMB 1.0												
4/21/66	1740	23	15			1.5	44.8	8.0	10.1	6.4			0.83	0.52	0.57	0.01	0.79	0.57	0.44	0.41	15.8	51.75
	1740									C 2.6												
	1740									BMB 3.4												
	1740									CMB 2.8												
4/22/66	1155			15.0		2.0	44.5	21.0	T 6.3	S 3.7	6.8		0.51	0.60	0.56	0.02	0.71	0.48	0.44	0.41	8.5	20.25
	1155									C 1.8												
	1155									BMB 2.7												
	1155									CMB 1.1												
4/22/66	1155			15.0		2.0	37.0	18.0	T 7.5	S 4.0	6.5		0.64	0.50	0.56	0.03					8.6	16.50
	1155									C 1.8												
	1155									BMB 2.0												
	1155									CMB 1.5												
5/12/66	1210			15.0		3.2	34.0		6.0	S 3.2			0.50	0.59	0.62	0.02	0.67	0.50	0.43	0.41	5.9	16.90
	1210									C 1.2												
	1210									BMB 2.4												
	1210									CMB 0.8												
5/12/66	1210			17.0		3.2	11.0		6.2	S 2.0			0.21	0.64	0.65	0.02					5.1	10.50
	1210									C 2.0												

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	D.O., mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
5/12/66	1210									RMB 2.4												
	1210									CMB 0.8												
5/19/66	1255			18.5		2.0	50.0	14.0	T 7.4	P 4.7			0.51	0.82	0.59	0.03	0.93	0.62	0.53	0.49	8.2	56.25
	1255								B 7.1	C 1.7												
	1255									RMB 3.4												
	1255									CMB 1.2												
5/26/66	1220			22.0		1.5	25.5	6.5	T 5.3		6.8		0.87	0.67	0.40	0.04	0.91	0.57	0.52	0.49	9.6	43.50
	1220			22.0					B 5.1	C 1.2												
	1220									CMB 1.2												
6/2/66	[illegible]			23.0		2.0	24.0	4.0	T 2.5	P 4.5	7.4		0.56	1.87	0.08	0.02	1.57	1.22	1.13	1.10	12.2	
	[illegible]			19.0					B 2.4	C 1.5												
	[illegible]									RMB 3.2												
	[illegible]									CMB 0.9												
6/9/66	[illegible]			24.0		2.0	19.5	8.0	T 4.9	P 5.3				1.30	0.20	0.06	0.83	0.56	0.55	0.50	13.2	29.25
	[illegible]			24.0					B 4.5	C 2.5												
	[illegible]									RMB 1.6												
	[illegible]									CMB 1.9												
6/[illegible]/66	[illegible]			25.0	21.0	1.5						1.4		0.18		0.05	1.46	1.05	1.00	1.05	296.0	85.25
6/[illegible]/66	[illegible]			24.0	43.0	1.5						1.6		0.12		0.02	1.42	0.97	0.87	0.92	380.0	
6/[illegible]/66	[illegible]			24.5	17.0							1.1		0.03	0.38	0.02	1.23	0.83	0.94	0.75	401.0	45.75
6/[illegible]/66	[illegible]			24.0	22.0							1.4		0.03	0.37	0.09	1.22	0.80	0.92	0.81	418.0	
6/[illegible]/66	[illegible]			23.7	22.0	1.3						1.7		0.19	1.26	0.08	1.73	1.43			200.0	58.25
6/[illegible]/66	[illegible]			24.0	24.0	1.3						1.5		0.24	0.64	0.06	1.62	1.18			218.0	
6/[illegible]/66	[illegible]			23.8	18.0	1.5									1.07	0.10	2.11	1.67			162.0	42.00
6/[illegible]/66	[illegible]			23.4	28.0	1.5									1.22	0.10		1.72			160.0	
6/[illegible]/66	[illegible]			22.4	16.0							1.6		0.10		0.03	1.34	0.88	1.40	0.83	360.0	76.50
6/[illegible]/66				22.5	23.0									0.10		0.02	1.39	0.89	1.53	0.80	332.0	
6/[illegible]/66	[illegible]			23.4	19.0	1.7						1.7		0.22	0.69	0.06	1.96	1.26			216.0	64.50
6/[illegible]/66	1[illegible]42			2[illegible].6	23.0	1.7								0.15	0.51	0.04	1.43	0.99			336.0	
6/[illegible]/66	[illegible]			22.3	17.0							1.8		0.21		0.02	1.43	0.91	0.96	0.88	344.0	74.25
6/[illegible]/66	[illegible]			22.3	21.0									0.20							430.0	
9/12/66	1325			24.0	16.0	1.0						1.9		0.12	1.50	0.04	1.43	1.00			314.0	
9/12/66	1325			24.0	28.0	1.0								0.13	0.50	0.04					300.0	
9/12/66	1325			24.0	18.0							1.6		0.12	0.65	0.05	1.65	1.28			254.0	150.00
9/12/66	1325			24.1	17.0																242.0	
9/13/66	[illegible]			23.5	33.0							2.3		0.13	0.24	0.01	1.58	0.82	0.89	0.70	498.0	123.00
9/13/66	[illegible]			25.0	45.0																482.0	
9/13/66	[illegible]			24.4	25.0							2.0		0.28	0.13	0.01	1.48	0.87			532.0	158.25
9/13/66	[illegible]			24.2	32.0																526.0	
9/14/66	1325			24.1	33.0							2.1		0.20	0.26	0.01	1.47	1.29	0.83	1.08	462.0	135.00

STA. 8 DOGUE CREEK

21.6 MILES BUOYS EL G '67' AND N '66' OFF MARSHALL HALL

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
9/14/66	1635			24.1	43.0																462.0	
9/14/66	1635			23.9	24.0	1.5								0.14	0.45	0.03	1.61	1.20			354.0	147.00
9/14/66	1635			24.0	30.0	1.5															502.0	
9/16/66	1320			23.5	32.0	1.3								0.53	2.00	0.09	3.30	3.16	2.97	2.98	86.0	117.75
9/16/66	1320			23.5	52.0	1.3															32.0	
9/17/66					68.0									0.33	0.34	0.21	1.74	1.69			24.0	57.75
9/17/66					69.0																35.0	
9/17/66	1455			21.5	38.0	1.0								0.29	0.94	0.19	1.08	0.66			30.8	58.50
9/17/66	1455			21.0	61.0	1.0															30.4	
9/17/66	[illegible]			21.0	33.0	1.0								0.29	0.94	0.22	0.93	0.63	0.60	0.55	24.0	50.25
9/17/66	[illegible]			21.0	43.0	1.0								0.32	0.90	0.21	1.20	1.05	0.57	0.52	24.0	

STA. 8A GUNSTON COVE
23.5 MILES BUOY FL R '64'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a. µg/l
9/23/65	0940			21.7																	174.0	
10/ 5/65	1255			18.0																	124.0	
10/ 8/65	0650			17.0																	139.0	
[illegible]	[illegible]			15.0																	122.8	
[illegible]	[illegible]			15.0																	135.7	
[illegible]	[illegible]			16.0																	[illegible]	
[illegible]	[illegible]			17.0																	[illegible]	
[illegible]	[illegible]																				[illegible]	
[illegible]	[illegible]																				[illegible]	
[illegible]	[illegible]																				[illegible]	
[illegible]	[illegible]																				[illegible]	
[illegible]	[illegible]																				271.0	
[illegible]	[illegible]											2.2		3.44	0.47	0.01	2.67	2.50			[illegible]	32.25
[illegible]	[illegible]																2.22	1.92			[illegible]	[illegible]

STA. 9 HALLOWING POINT
26.0 MILES BUOYS C '61' AND EL '59'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a. µg/l
8/16/65	0530									4.5	28.1		1.80	0.05	0.36	0.08						
8/31/65	0615	27	27						T 6.8	6.3	43.5		3.10	0.04	0.55	0.01						
	0615		15						M 7.9													
	0615		3						B 8.7													
	0615		1																			
9/21/65	1223	30	10						M 6.7	4.0	37.5			0.03	0.53	0.01						
9/31/65	[illegible]								M 8.4													
9/ 1/65	[illegible]		10						M 7.0													
9/ 2/65	[illegible]	27	10						6.9	6.8	35.8			0.03	0.54	0.01						
9/ 2/65	[illegible]		10						7.1	7.2				0.04	0.52	0.01						
9/ 2/65	[illegible]	13	10						7.7													
9/ 2/65	[illegible]	10	10						8.2													
9/ 7/65	[illegible]		10						7.0	4.6	3.7			0.03	0.33	0.01						
9/ 7/65	1424		10						7.9	5.7	12.8			0.00	0.48	0.01						
9/ 7/65	[illegible]			24.0					10.3													
9/ [illegible]	12[illegible]								6.8													
9/1 [illegible]	[illegible]		10	23.5					7.4	8.8	11.3			0.04	0.50	0.02						
9/1 [illegible]	[illegible]		10	23.5					8.7	7.4	11.8			0.06	0.16	0.00						
9/13/65	[illegible]			24.5					9.4													
9/1[illegible]	[illegible]								11.1													
9/1[illegible]									4.5	6.6	33.7			0.24	0.32	0.03						
9/1[illegible]	[illegible]								11.8	11.0	11.7			0.06	0.31	0.06						
9/17/65	1153								5.0													
9/21/65	0535								2.2	5.6	22.3			0.17	0.51	0.03						
9/21/65	1223									5.0				0.06	0.53	0.02						
9/21/65	1227								3.7													
9/23/65	[illegible]								2.6													
9/23/65	[illegible]			25.5					2.9	6.2				0.06	0.60	0.01						
9/23/65	1425		10						9.0													
9/23/65	1425		10	26.5					8.1													
9/23/65	[illegible]			21.8					7.9								0.76	0.48			213.0	
10/ 5/65	1245			18.0					8.7								1.23	0.70	0.64	0.67	136.0	
10/ 5/65	[illegible]			17.0					7.0								1.00	0.62	0.59	0.62	165.0	
10/12/65	0925			15.0			40.8	13.2	9.4								2.02	0.77	0.58	0.43	283.0	
10/12/65	0948			15.0			40.6	19.4	8.8								1.36	0.53	0.61	0.49	252.0	
10/12/65	[illegible]						4.0	4.0									1.31	0.80	0.32	0.59	117.0	
10/21/65	1205			17.0			19.8	7.4	8.0								1.29	0.80	0.05	0.73	107.0	
10/22/65	1313																				165.0	
11/ 5/65	[illegible]																				142.0	
	1454																				162.0	

SAMPLING DATE	LOCAL TIME	STRM DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
11/ 5/65	1454																					
12/ 6/65	1410																				361.0	
1/13/66	0927			0.0								1.7		3.41	0.50	0.01	2.46	2.45			489.0	30.75
1/25/66	1060											3.1		2.26	0.56	0.01	1.90	1.79			1280.0	28.50
2/ 7/66	1 58	23				1.0	47.8	6.6	T10.8		40.8			0.60	1.08	0.01	0.66	0.59			15.6	28.50
	1[illegible]3								B10.7													
3/17/66	1 8	23				1.0	48.6	7.6	T10.7		58.5			0.55	1.15	0.01	0.71	0.52			14.8	27.00
	1353								B10.8													
3/2[illegible]/66	11[illegible]	35	25	12.3		1.8			8.5		24.0			0.76	0.25	0.00	1.71	1.15			10.6	85.[illegible]
3/[illegible]/66	11[illegible]		5						9.3		13.7			0.46	0.02	0.01	0.49	0.50			15.6	65.[illegible]
3/[illegible]/66	1[illegible]3	3[illegible]		10.0		1.5			10.0	B 3.6	9.4			0.42	0.39	0.01		0.60	0.36	0.41	16.4	70.50
	1[illegible]									BMB 2.8												
3/31/66		30		10.0		1.5			11.0	B 3.0	7.6			0.47	0.37	0.01		0.51	0.31	0.33	18.2	87.00
										BMB 3.0												
4/ 7/66	1 [illegible]	35	[illegible]	10.2			98.8	14.4	11.1	[illegible] 10.0	17.7			0.35	0.82	0.01	1.48	0.93	0.63	0.54	15.8	164.25
	1[illegible]									BMB 10.0												
4/ 7/66	1[illegible]		5	10.1			55.8	9.6	11.0	B 7.7	10.2			0.97	0.79	0.01	1.24	0.71	0.62	0.55	17.4	137.25
	1[illegible]									C 3.7												
	1[illegible]									BMB 6.2												
	1[illegible]									CMB 1.6												
4/21/66	1[illegible]	35	5				47.0	14.2	12.0	B 3.6			0.88	0.52	0.53	0.01	1.42	0.83	0.40	0.35	17.2	111.75
	1[illegible]									C 1.7												
	1[illegible]									BMB 6.3												
	1[illegible]									CMB 1.0												
4/21/66	[illegible]	[illegible]	25			1.5	615.5	75.5	10.5	B 11.7			1.32	0.43	0.54	0.03	1.42	0.83	0.40	0.36	16.5	162.75
	[illegible]									C [illegible]												
	1[illegible]									BMB 12.4												
	1[illegible]									CMB [illegible]												
4/28/66	1[illegible]			15.0		2.5			6.9	B 3.1	7.4		0.76	0.72	0.53	0.02	0.74	0.45	0.47	0.41	9.8	20.25
	1[illegible]									C 2.6												
	1[illegible]									BMB 2.5												
	1[illegible]									CMB 1.8												
4/28/66	1[illegible]			15.0		2.5	35.0	20.5	6.8	B 4.3	6.9		0.90	0.75	0.54	0.02					9.2	19.50
	1[illegible]									C 2.2												
	1[illegible]									BMB 2.2												
	1[illegible]									CMB 1.0												
5/12/66	1[illegible]			15.0		1.8	36.0		8.3	B 4.5			0.68	0.25	0.62	0.02	0.55	0.18	0.21	0.15	6.8	58.50
	1[illegible]									C 2.0												
	1[illegible]									BMB 3.8												
	1[illegible]									CMB 2.7												

STA. 9 HALLOWING POINT 26.0 MILES BUOYS C '61' AND FL '59'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a. µg/l
5/12/66	1230			17.5		1.3	22.0		9.8	S 4.7			0.72	0.18	0.52	0.02					7.1	49.50
	1230									C 1.0												
	1230									RMB 4.5												
	1230									CMB 0.8												
5/19/66	1240									CMB 1.2												
5/26/66	1240			22.0		1.2	33.0	5.5	T 7.7		8.1		0.96	0.20	0.55	0.06	0.66	0.29	0.40	0.26	8.9	87.00
	1240								B 6.1	C 1.5												
	1240									CMB 0.0												
6/ 2/66	1 40		T	20.0		1.5	60.0	14.0	T 4.5	S 8.1	7.6		0.58	1.21	0.29	0.04	1.50	0.85	0.65	0.43	11.0	
	1 40		B	20.0					B 4.2	C 1.3												
	1 40									RMB 2.6												
	1 40									CMB 0.9												
6/ 9/66	1		T	24.0		2.0	27.5	10.0	T 9.0	S 7.4			1.03	0.58	0.33	0.09	0.55	0.22	0.25	0.21	12.6	55.50
	1		B	24.0					B 5.9	C 2.3												
	1									RMB 3.8												
	1									CMB 1.6												
6/13/66	1240			19.0		1.8	56.5	17.0	T 8.5	S 7.6			0.68	0.45	0.62	0.03	0.74	0.37	0.33	0.31	7.7	58.50
	1240								B 6.2	C 1.7												
	1240									CMB 3.1												
9/ 7/66	1335			25.5	18.0	1.0									0.17	0.01	1.05	0.55	0.65	0.59	558.0	58.50
9/ 7/66	1335			25.5	54.0	1.0								0.15	0.14		1.26	0.72	0.61	0.54	688.0	
9/ 7/66	[illegible]			24.0	21.0							1.4		0.03	0.08		0.70	0.30	0.63	0.49	562.0	69.00
9/ 7/66	1313			24.6	22.0							1.7		0.02	0.36	0.03	0.78	0.43	0.56	0.42	684.0	
9/ 7/66	[illegible]			24.3	21.0	1.5						1.5		0.14	0.36	0.02	1.17	0.74			442.0	40.50
9/ 7/66	[illegible]			24.6	23.0	1.5						1.4		0.16	0.04	0.02	1.23	0.38			440.0	
9/ 7/66	1335			24.0	19.0	1.3									0.36	0.02	1.35	0.87			414.0	49.50
9/ 7/66	1335			24.3	22.0	1.3									0.34	0.02		0.88			432.0	
9/ 7/66	[illegible]			22.0	22.0							2.2		0.10		0.01	1.11	0.69	0.86	0.66	664.0	72.00
9/ 7/66	[illegible]			22.0	23.0									0.10		0.01	1.05	0.58	0.84	0.58	604.0	
9/ 9/66	1632			23.4	26.0	1.2						1.9		0.17		0.01	1.23	0.65			472.0	72.00
9/ 9/66	1632			23.4	28.0	1.2								0.18			1.23	0.60			574.0	
9/ 9/66	2510			22.0	15.0							1.3		0.21			0.85	0.53	0.58	0.50	678.0	69.00
9/ 9/66	2510			21.5	25.0									0.21							680.0	
9/13/66	1210			24.0	26.0	1.5						2.2		0.13	0.13		1.15	0.63			560.0	
9/13/66	1210			24.0	29.0	1.5								0.15	0.12						674.0	
9/12/66	1350			23.6	23.0							2.0		0.13	0.18	0.01	1.19	0.74			518.0	174.75
9/12/66	1350			23.9	52.0										0.65						566.0	
9/13/66	1710			24.5	28.0							2.4		0.14	0.05		1.05	0.54	0.55	0.39	838.0	120.75
9/13/66	1710			24.0	25.0																836.0	
9/13/66	1450			23.9	26.0							2.7		2.14	0.04		1.31	0.49			898.0	161.25

STA. 9 HALLOWING POINT 26.0 MILES BUOYS C '61' AND EL '59'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD_5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH_3 - N, mg/l	NO_3 - N, mg/l	NO_2 - N, mg/l	TOTAL P - PO_4, mg/l	INORGANIC P - PO_4 mg/l	TOTAL P mf - PO_4, mg/l	INORGANIC P mf - PO_4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
9/13/66	0450			23.9	28.0																952.0	
9/14/66	1620			24.0	32.0							2.8		0.19	0.10		1.19	1.01	0.62	1.04	802.0	143.25
9/14/66	1620			24.0	30.0																848.0	
9/14/66	1025			24.0	15.0	1.7								0.12	0.11	0.01	0.93	0.62			862.0	115.50
9/14/66	1025			23.8	45.0	1.7															1000.0	
9/15/66	1210			23.3	34.0	1.1								0.30	0.89	0.09	2.02	1.70	1.50	1.52	240.0	97.50
9/15/66	1210			23.2	54.0	1.1															242.0	
9/17/66					34.0									0.19	1.59	0.30	2.89	3.04			94.0	96.75
9/17/66					38.0																97.0	
9/13/66	1440			22.5	31.0	1.0								0.12	1.22	0.21	1.65	1.26			41.0	93.75
9/13/66	1440			21.5	72.0	1.0															60.0	
9/13/66	1440			21.3	22.0	1.2								0.12	1.25	0.18	1.51	1.67	1.06	0.95	78.0	99.75
9/13/66	144			21.0	38.0	1.2															92.0	

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
8/16/65	0513									3.9	31.3		3.90	0.08	0.21	0.06						
8/31/65	0000								T 6.0	4.9	29.6		2.60	L0.03	0.55	0.02						
	0600								M 6.9													
	0600								B 6.0													
8/31/65	1200	40	10						M 5.3	2.9	54.7			0.04	0.47	0.03						
8/31/65	1855								M 7.3													
9/ 1/65	0545		10						M 6.1													
9/ 2/65	0800		10						6.8	4.7	42.6			L0.03	0.50	0.01						
9/ 2/65	1255		10						6.8	8.5				0.13	0.50	0.01						
9/ 2/65	2000		10						6.3													
9/ 2/65	2353			9.0					5.9													
9/ 7/65	0745		10						6.8	2.8	8.3			0.11	0.19	0.01						
9/ 7/65	1510		10						5.5	4.1	11.9			0.08	0.40	0.02						
9/ 7/65	1555			25.0					7.8													
9/ 7/65	0130			22.0					8.0													
9/13/65	0745		10	23.0					6.8	7.6	9.5			0.06	0.36	0.01						
9/1 /65	0910		10	23.3					7.2	5.4	9.3			0.08	0.20	0.01						
9/1 /65	[illegible]								6.9													
9/15/65	[illegible]			25.0					8.5													
9/15/65									5.0	5.7	93.1			0.25	0.21	0.02						
9/17/65	0710		10						14.1	5.8	11.2			0.08	0.23	0.09						
	0710								13.5													
9/17/65	1145								4.2													
	1145								4.4													
9/21/65	0[illegible]29		10						2.3	5.3	19.3			0.17	0.31	0.03						
	[illegible]								2.4													
9/21/65	[illegible]		11							3.7				0.04	0.51	0.03						
9/21/65	1710			27.5					4.1													
9/23/65	[illegible]								2.9													
9/23/65	0945			25.0					2.6	5.0				0.06	0.52	0.02						
9/23/65	1410		10						2.7													
9/23/65	1515			26.3					6.5													
9/23/65	0920			21.5																	408.0	
10/ 5/65	1220			18.0																	220.0	
10/ 5/65	0835			17.0																	320.0	
10/13/65	0925			15.0																	258.0	
10/14/65	0[illegible]			14.8																	256.0	
10/19/65	1[illegible]			15.0																	224.0	
10/21/65	1[illegible]			17.0																	217.0	
10/26/65	1445																				260.0	

STA. 10 INDIAN HEAD
29.5 MILES BUOY N '54'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
11/ 5/65	0930																				279.0	
11/10/65	1435																				358.0	
	1435																					
12/ 6/65	1030																				617.0	
1/13/66	0945											1.2		2.98	0.59	0.01	2.22	1.33			792.0	27.00
1/25/66	1010											3.3		1.09	0.70	0.01	1.56	1.30			1770.0	30.75
3/17/66	1422	38	5			1.3	36.8	6.6	T 9.9		35.6			0.58	1.22	0.01	0.74	0.44			14.8	11.25
	1422								B10.1													
3/17/66	1422	38				1.3	125.5	16.0			69.5			0.62	1.07	0.13	1.09	0.71			13.8	22.50
3/25/66	1155	40	35	12.0					8.8		12.1			0.76	1.00	0.00	0.76	0.48			15.4	28.50
3/25/66	1155		5	12.5					9.3		11.3			0.80	0.91	0.00	0.80	0.49			15.0	24.75
3/31/66	1456	23				2.0			10.5	R 3.8	6.9			0.62	0.90	0.01		0.48	0.35	0.37	16.2	69.00
	1456									RMB 2.2												
3/31/66	1502	23				2.0			11.2	R 2.6	5.9			0.60	0.91	0.01		0.41	0.36	0.38	17.2	57.00
	1502									RMB 2.2												
4/ 7/66	1305	45	40	9.4		1.2	121.8	16.0	10.9	R 6.2	11.9			0.45	0.85	0.13	1.22	0.72	0.45	0.40	18.0	9.75
	1305									C 3.6												
	1305									RMB 5.0												
	1305									CMB 0.1												
4/ 7/66	1310		5	10.0			36.4	7.0	11.6	R 6.2	10.3			0.38	0.85	0.01	0.93	0.42	0.42	0.41	21.2	118.50
	1310									C 3.6												
	1310									RMB 5.0												
	1310									CMB 0.1												
4/21/66	1705	25				2.0	29.4	10.8	9.7	R 7.5			0.91	0.83	0.46	0.01	0.99	0.65	0.60	0.53	16.6	53.25
	1705									C 2.6												
	1705									RMB 4.9												
	1705									CMB 1.0												
4/21/66	1705	25	20			2.0	32.0	10.6	8.9	R 5.8			0.92	0.77	0.50	0.01	0.99	0.65	0.60	0.53	16.0	60.75
	1705									C 1.4												
	1705									RMB 3.8												
	1705									CMB 0.6												
5/12/66	1250			14.8		2.3	0.5		8.6	R 3.4			0.55	0.25	0.56	0.02	0.46	0.23	0.22	0.19	7.2	17.25
	1250									C 1.0												
	1250									RMB 2.6												
	1250									CMB 0.7												
5/12/66	1250			16.0		2.3	33.0	9.0	9.1	R 3.5			0.64	0.30	0.59	0.02					7.4	36.00
	1250									RMB 3.0												
5/19/66	1220			18.5		1.8	50.0	16.5	T 9.9	R 3.8			0.81	0.33	0.63	0.03	0.60	0.19	0.18	0.15	8.2	73.50
	1220								B 8.4	C 1.3												
	1220									RMB 2.4												

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
5/11/66	1220									CMB 0.8												
5/16/66	1255		T	21.0	1.5	21.5	4.0	T	6.3	R	8.6		0.93	0.41	0.60	0.05	0.66	0.37	0.38	0.34	8.5	56.25
	1255		B	20.0				B	7.2	C 1.2												
	1255									RMB												
	1255									CMB 0.8												
6/2/66	[illegible]		T	[illegible]	2.0	73.0	53.0	T	4.0	R 6.1	7.0		0.50	1.32	0.30	0.05	0.92	0.78	0.62	0.67	10.7	
	[illegible]		B	17.0				B	3.7	C 1.2												
	[illegible]									RMB 1.7												
	[illegible]									CMB 0.7												
[illegible]	[illegible]		T	[illegible]	2.0	16.5	4.5	T	7.6	R 6.2			0.74	0.99	0.30	0.08	0.58	0.41	0.46	0.36	12.0	27.75
	[illegible]		B	24.0				B	5.7	C 2.5												
	[illegible]									RMB 2.1												
	[illegible]									CMB 1.7												
[illegible]	[illegible]			[illegible]	15.0	1.7						1.2		0.05	0.11	0.01	0.79	0.42	0.45	0.42	870.0	36.00
[illegible]	[illegible]			[illegible]	23.0	1.7						1.4		0.19	0.10	0.01	0.77	0.46	0.47	0.49	1010.0	
[illegible]	[illegible]			24.0	13.0							1.0		0.07	0.09	0.01	0.60	0.42	0.40	0.43	990.0	39.00
[illegible]	[illegible]			[illegible]	16.0							1.2		0.11	0.05	0.01	0.60	0.34	0.32	0.28	1200.0	
[illegible]	[illegible]			[illegible]	13.0	1.3						1.4		0.16	0.19	0.02	0.96	0.57			680.0	39.00
[illegible]	[illegible]			[illegible]	22.0	1.3						1.5		0.26	0.14	0.01	0.83	0.51			700.0	
[illegible]	[illegible]			[illegible]	17.0	1.5									0.12	0.01	1.30	0.63			580.0	50.25
[illegible]	[illegible]			[illegible]	[illegible]	1.5									0.17	0.01		0.54			560.0	
[illegible]	[illegible]			[illegible]	15.0							2.6		0.13		0.01	0.93	0.45	0.07	0.42	850.0	48.75
[illegible]	[illegible]			[illegible]	[illegible]									0.08		0.01	0.85	0.39	0.05	0.35	1010.0	
[illegible]	[illegible]			[illegible]	27.0	1.2						2.1		0.16	0.04		1.11	0.56			650.0	76.50
[illegible]	[illegible]			[illegible]	15.0	1.2								0.18	0.08	0.01	0.80	0.43			980.0	
[illegible]	[illegible]			[illegible]	16.0							1.3		0.21			0.82	0.43	0.38	0.38	960.0	71.25
[illegible]	[illegible]			[illegible]	[illegible]									0.22							1180.0	
[illegible]	[illegible]			[illegible]	13.0	1.5						1.7		0.16	0.07	0.01	0.82	0.41			890.0	
[illegible]	[illegible]			[illegible]	17.0	1.5								0.23	0.07	0.01					870.0	
[illegible]	[illegible]			[illegible]	17.0							1.2		0.16	0.08		0.77	0.49			780.0	120.75
[illegible]	[illegible]			[illegible]	42.0																990.0	
9/13/66	1750			24.0	12.0							1.5		0.14	0.06	0.02	0.57	0.20	0.41	0.24	1570.0	63.00
[illegible]	1750			24.5	11.0																1550.0	
9/14/66	[illegible]			24.1	13.0							1.6		0.72	0.04	0.02	0.97	0.28			1340.0	109.50
9/15/66	[illegible]			24.1	16.0																1550.0	
9/16/66	[illegible]				13.0							1.5		0.24	0.07	0.02	1.10	0.63	0.39	0.71	1320.0	57.00
9/17/66	[illegible]				52.0																1630.0	
9/18/66	[illegible]			24.0	14.0	2.5								0.20	0.08	0.02	0.69	0.83			1510.0	100.50
9/19/66	[illegible]			24.0	11.0	2.5															1700.0	
9/20/66	1200			23.5	23.0	1.8								0.26	0.37	0.02	1.33	1.01	0.89	0.85	500.0	75.00

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft	SAMP DEPTH, ft	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLORO. A/ILL a µg/l
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]								0.22	1.34	0.24	2.41	2.40				
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]								0.14	1.67	0.22	2.17	1.82				
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]								[illegible]	1.26	[illegible]	1.05	1.34	1.24	1.17		
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]								[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]								0.34	0.56	0.01	2.33	2.21				
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]						1.9										

STATION NUMBER 2203 MILES

BUOY N °54'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P inf - PO4, mg/l	INORGANIC P inf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
[illegible] 3/65 [illegible]				21.5																	990.0	
10/ [illegible]	[illegible]			[illegible]																	318.0	
[illegible] 8/65	0820			17.0																	1040.0	
[illegible]	[illegible]			[illegible]																	[illegible]	
[illegible]	[illegible]			[illegible]																	[illegible]	
[illegible]	[illegible]			[illegible]																	[illegible]	
10/21/65	1150			17.0																	[illegible]	
[illegible]	[illegible]																				[illegible]	
[illegible]	[illegible]																				[illegible]	
11/15/65	[illegible]																				[illegible]	
	[illegible]																					
[illegible]	[illegible]																				[illegible]	
1/15/66	[illegible]			21.8																	[illegible]	
[illegible]	[illegible]			[illegible]																	[illegible]	
[illegible]	[illegible]			[illegible]																	[illegible]	
3/15/66				[illegible]																	[illegible]	
[illegible]	[illegible]			[illegible]																	[illegible]	
[illegible]	[illegible]			[illegible]																	[illegible]	
[illegible]	[illegible]			[illegible]																	[illegible]	
[illegible]	[illegible]																				[illegible]	
[illegible]	[illegible]																				[illegible]	
11/13/66	[illegible]																				[illegible]	
	[illegible]																					
[illegible]	[illegible]																				[illegible]	
1/11/66	[illegible]										1.5		2.25	0.11	0.01	1.28	1.53				1370.0	

STA. 11 POSSUM POINT 37.2 MILES BUOY FL R '44'

SAMPLING DATE	LOCAL TIME	STAT. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, ft.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4, mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHL [illegible]	[illegible]
9/23/65	0846			21.8					8.3								0.58	0.37			1320.0	
	0846			21.8					8.3								0.58	0.37			[illegible]	
	0846								8.4													
10/ 5/65	1200			18.0					8.0								0.54	0.24	0.25	0.20	970.0	
	1200								8.0													
10/ 8/65	0815			17.0					7.7								0.61	0.23	0.30	0.20	[illegible]	
	0815								7.5													
10/13/65	[illegible]			15.0			18.2	10.8	9.0								0.64	0.29	0.31	0.25	[illegible]	
	[illegible]								9.0													
10/14/65	[illegible]			15.0			71.0	13.6	9.0								0.70	0.70	0.33	[illegible]	[illegible]	
	[illegible]								9.0													
10/[illegible]/65	[illegible]			15.0			11.4	2.8	9.5								0.57	0.27	[illegible]	[illegible]	[illegible]	
	[illegible]								9.6													
10/21/65	[illegible]			16.5			17.0	6.4	9.8								[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
	[illegible]								9.9													
10/[illegible]/65	[illegible]																				[illegible]	
11/ [illegible]	[illegible]																				[illegible]	
11/[illegible]/65	[illegible]																				[illegible]	
	[illegible]																					
12/ [illegible]/65	[illegible]																				[illegible]	
1/ [illegible]/66	[illegible]											0.8		1.82	0.70	0.01	1.27	0.93			[illegible]	[illegible]
3/23/66	[illegible]	24	14	11.6		1.5			8.8		14.9			0.63	1.13	0.01	0.79	0.63			[illegible]	[illegible]
3/25/66	[illegible]	24	5			1.5			8.7													
3/31/66	[illegible]	21	17	9.6		1.5			9.4	R	1.8	5.9		0.61	1.01	0.01		0.92	0.36	0.36	[illegible]	[illegible]
	[illegible]									RMB	0.9											
3/31/66	[illegible]	22	5	9.6		1.5			9.2	R	2.9	5.7		0.35	0.94	0.01		0.53	0.39	0.37	[illegible]	9.7[illegible]
	[illegible]									RMB	0.6											
4/ 7/66	[illegible]	20	15	9.5		1.0	129.4	12.2	9.2	R	[illegible]	[illegible]		[illegible]	[illegible]	0.01	0.94	0.45	0.55	[illegible]	[illegible]	[illegible]
	[illegible]									RMB	3.3											
4/ 7/66	[illegible]	20	5	9.5		1.0	57.2	4.6	9.0	R	2.5	3.6		0.75	0.94	0.01	0.73	0.40	0.35	[illegible]	[illegible]	[illegible]
	[illegible]									C	2.2											
	[illegible]									RMB	2.9											
	[illegible]									CMB	1.5											
4/21/66	[illegible]	25	5			1.8	37.2	10.4	9.3	R	[illegible]		0.65	0.96	0.68	0.02	1.03	0.68	0.58	0.55	[illegible]	[illegible]
	[illegible]									C	1.9											
	[illegible]									RMB	[illegible]											
	[illegible]									CMB	1.4											
4/21/66	[illegible]	25	25			1.8	37.8	9.8	8.9	[illegible]	[illegible]		0.71	0.97	0.68	0.02	1.08	0.68	0.58	0.55	[illegible]	[illegible]
	[illegible]									RMB	[illegible]											
5/10/66	[illegible]		T	13.4		1.5			T 7.6													

STA. 11 POSSUM POINT

37.2 MILES BUOY FL R '44'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
5/10/66	1515		B	13.0					B 7.3													
5/12/66	1320			16.0		2.3	30.0	3.0	8.4	R	1.9		0.35	0.44	0.60	0.02	0.49	0.37	0.32	0.30	11.6	4.50
	1320									RMB	1.0											
5/12/66	1320			15.0		2.3	14.0	9.0	8.3	R	1.4		0.31	0.34	0.58	0.02					16.6	[illegible]
	20									RMB	0.9											
5/12/66	1145		T	18.0		1.5	42.0	12.0	T 8.0	R	2.0		0.46	0.41	0.57	0.02	0.48	0.28	0.26	0.23	9.1	14.[illegible]
	1145		B	18.0					B 7.6	C	1.4											
	1145									RMB	1.1											
	1145									CMB	0.8											
5/25/66	1325		T	20.0		2.0	15.0	3.0	T 5.8			6.4	1.10	0.44	0.60	0.03	0.51	0.35	0.33	0.31	12.5	13.[illegible]
	1325		B	19.0					B 5.5	C	0.8											
	1325									CMB	0.6											
6/ 2/66	1115		T	19.0		1.7	32.0	3.5	T 4.9	R	4.8	6.4	0.54	0.83	0.58	0.06	0.70	0.53	0.44	0.42	10.9	
	1115		B	19.0					B 5.1	C	1.0											
	1115									RMB	1.6											
	1115									CMB	0.6											
6/ 9/66	1[illegible]		T	24.0		2.5	14.0	2.0	T 5.5	R	3.4		0.37	0.50	0.77	0.08	0.55	0.38	0.37	0.33	13.0	7.[illegible]
	1[illegible]		B	24.0					B 5.6	C	1.6											
	[illegible]									RMB	1.1											
	1[illegible]									CMB	1.1											
9/ 7/66	1[illegible]			24.0	14.0	2.0								0.41	0.10	0.03	0.50	0.20	0.21	0.14	1690.0	49.[illegible]
9/ 7/66	1410			25.5	22.0	2.0						1.1		0.22	0.15	0.04	0.43	0.58	0.19	0.13	2190.0	
9/ 7/66	0225			25.0	11.0							0.9		0.10	0.09	0.03	0.35	0.11	0.15	0.11	2240.0	24.75
9/ 7/66	0225			24.	13.0							0.7		0.14	0.11	0.06	0.31	0.15	0.11	0.03	2[illegible]	
9/ 8/66	1[illegible]			26.0	13.0	2.3						1.1		0.19	0.06	0.03	0.47	0.19			1640.0	42.7[illegible]
9/ 8/66	1[illegible]			26.0	16.0	2.3						0.9		0.23	0.09	0.04	0.40	0.16			2130.0	
9/ 8/66	1755			24.5	12.0	2.0									0.05	0.01	0.63	0.22			1[illegible]	1[illegible]
9/ 8/66	1755			24.2	22.0	2.0									0.05	0.02		0.24			[illegible]	
9/ 9/66	0515			21.4	11.0							0.8		0.19		0.03	0.42	0.15	0.45	0.14	1[illegible]	38.2[illegible]
9/ 9/66	[illegible]			21.4	24.0									0.23		0.05	0.46	0.20	0.36	0.13	[illegible]	
9/ 9/66	1605			23.9	12.0	2.3						0.8		0.20	0.05	0.04	0.42	0.14			2090.0	45.75
9/ 9/66	1605			24.3	40.0	2.3								0.23	0.11	0.04	0.56	0.25			2[illegible]	
9/ 9/66	0400			21.5	13.0							1.6		0.23		0.04	0.47	0.10	0.13	0.09	2[illegible]	15.75
9/ 9/66	0400			21.4	15.0									0.25		0.05					[illegible]	
9/13/66	1135			24.	11.0	2.0						1.2		0.18	0.09	[illegible]	0.40	0.16			2[illegible]	
9/13/66	1135			24.[illegible]	27.0	2.0								0.23	0.11	0.05					[illegible]	
9/13/66	1755			24.0	11.0									0.19	0.14	0.07	0.37	0.16	0.17	0.11	2[illegible]	23.25
9/13/66	1750			24.0	8.0																2[illegible]	
9/13/66	0527			24.0	13.0							0.9		0.57	0.11	0.08	0.40	0.17			2650.0	37.50
9/13/66	0527			24.3	15.0																2[illegible]	

STA. 11 POSSUM POINT
37.2 MILES BUOY FL R '44'

SAMPLING DATE	LOCAL TIME	STPN. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a. µg/l
9/14/66	1550			24.5	24.0									0.39	0.13	0.06	0.56	0.46	0.15	0.17	2470.0	47.75
9/14/66	1550			24.5	50.0																2440.0	
9/14/66	0953			24.0	10.0	2.8								0.27	0.11	0.06	0.36	0.18			2410.0	43.50
9/14/66	0953			24.0	22.0	2.8															2740.0	
9/16/66	1140			23.1	19.0	1.9								0.43	0.11	0.03	0.69	0.38	0.34	0.30	1710.0	42.75
9/16/66	1140			23.3	22.0	1.9															1750.0	
9/17/66					22.0									0.33	0.10	0.02	0.74	0.50			1.90.0	44.7[illegible]
9/17/66					34.0																1.37.0	
9/17/66	1410			21.5	20.0	1.7								0.33	0.21	0.02	0.93	0.47	0.52	0.47	9[illegible]	55.50
9/17/66	1410			21.5	18.0	1.7								0.31	0.2[illegible]	0.02	0.90	0.34	0.45	0.42	[illegible]	

STA. 11A CHUPAWAMSIC CREEK 39.5 MILES BUOY C '41'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a. µg/l
9/23/65	0840			21.0																	1602.0	
9/30/65	1405			24.0																	1510.0	
10/ 5/65	1150			18.0																	770.0	
10/ 3/65	0600			17.0																	1630.0	
10/13/65	[illegible]			14.0																	[illegible]	
10/14/65	0924			15.0																	1367.0	
10/19/65	1010			15.0																	1410.0	
10/21/65	1137			16.5																	1560.0	
10/28/65	[illegible]																				1450.0	
11/ [illegible]	[illegible]																				1420.0	
11/10/65	1345																				2140.0	
	1345																					
12/ 6/65	1120																				2480.0	
1/1/66	[illegible]											0.9		1.54	0.04	0.02	1.01	0.77			[illegible]	27.50
[illegible]	[illegible]											2.3		0.82	0.52	0.01	0.89	0.60			[illegible]	28.50

STA. 12 SANDY POINT

41.4 MILES BUOY N "40" OFF MALLOWS BAY

PAGE NO.

| DATE | TIME | DEPTH, ft. | | |

STA. 12 SANDY POINT 41.4 MILES BUOY N "40" OFF MALLOWS BAY

PAGE NO. [illegible]

SAMPLING DATE	LOCAL TIME	SURFACE DEPTH, ft	BOTTOM DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	DISSOLVED CO_2, mg/l	DISSOLVED OXYGEN, mg/l	pH	BOD$_5$, mg/l	TOTAL C, mg/l	N-N, mg/l	ORGANIC N, mg/l	NH_3-N, mg/l	NO_3-N, mg/l	NO_2-N, mg/l	TOTAL P-PO_4, mg/l	ORGANIC P-PO_4, mg/l	TOTAL P mf-PO_4, mg/l	ORTHO P mf-PO_4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, [illegible]
6/ 2/65	1130									R 3 2.6												
	113									CM3 0.8												
6/ 9/65	1315	T	23.0		2.0	15.0	0.5	T 6.9		R 2.1			0.28	0.11	1.00	0.08	0.52	0.37	0.37	0.34	69.0	[illegible]
	1315	B	23.0					B 6.0		C 1.6												
	[illegible]									RM3 1.4												
	[illegible]									CM3 1.4												
9/ 7/65	[illegible]		24.5	11.0	2.0							0.8		0.11	0.14	0.05	0.31	0.10	0.10	0.37	200.0	41.0
9/ 7/65	[illegible]		24.0	11.0	2.0							0.7		0.12	0.16	0.10	0.35	0.17	0.07	0.33	352.0	
9/ 7/65	[illegible]		24.0	7.0								[illegible]		[illegible]	[illegible]	[illegible]	0.23	[illegible]	[illegible]	[illegible]	[illegible]	1.0
[illegible]	[illegible]		[illegible]	[illegible]								[illegible]		[illegible]	0.11	0.10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
9/ 7/65	[illegible]		26.1	11.0	2.5							[illegible]		.15	0.11	0.07	0.32	[illegible]			200.0	[illegible]
[illegible]	[illegible]		[illegible]	11.0	2.5							[illegible]		.1	0.13	[illegible]	0.1	[illegible]			[illegible]	
[illegible]	[illegible]		[illegible]	12.0								0.9		[illegible]		0.07	0.36	0.10	0.16	0.03	[illegible]	[illegible]
[illegible]	[illegible]		[illegible]	[illegible]										[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]		[illegible]	[illegible]	2.0							1.0		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]
[illegible]	[illegible]		24.2	13.0	2.2									.15	.16	[illegible]	[illegible]	.11				
9/13/65	[illegible]		[illegible]	12.0	2.0							1.0		[illegible]	0.09	0.08	0.33	[illegible]			[illegible]	
[illegible]	[illegible]		[illegible]	[illegible]	2.0									[illegible]	0.12	0.09					[illegible]	
[illegible]	[illegible]		[illegible]	9.0										[illegible]	0.17	0.11	0.30	[illegible]	0.10	0.10	[illegible]	[illegible]
[illegible]	[illegible]		[illegible]	10.0																	[illegible]	
[illegible]	[illegible]		[illegible]	[illegible]								0.8		[illegible]	0.12	0.12	[illegible]	0.11			[illegible]	[illegible]
9/ [illegible]	[illegible]		24.2	[illegible]																	710.0	
[illegible]	[illegible]		[illegible]	7.0	3.0									0.20	0.15	0.11	0.24	0.12			[illegible]	[illegible]
[illegible]	[illegible]			[illegible]	[illegible]																[illegible]	
[illegible]	[illegible]		[illegible]	[illegible]	[illegible]									0.32	0.12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]		[illegible]	10.0	[illegible]									[illegible]	0.11	0.02	0.48	0.26	0.25	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	11.0		[illegible]			9.5			10.0			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]			[illegible]			[illegible]			[illegible]	0.12	[illegible]	1.22	1.47			[illegible]	[illegible]
[illegible]	[illegible]		[illegible]		[illegible]			10.1			7.0			[illegible]	0.07	[illegible]	0.37				1.42	
[illegible]	[illegible]							10.4			[illegible]			[illegible]	1.04	[illegible]	0.32				[illegible]	
9/ 7/65	[illegible]	[illegible]	9.5		1.0	66.4	5.4	7.6		R 2.8	8.9			0.84	1.01	0.02	0.65	0.38	0.32	0.33	1110.0	10.50
	[illegible]									RM3 1.8												
9/ 7/65	[illegible]	[illegible]	9.0		1.0	56.4	4.0	7.0		R 2.9	[illegible]			[illegible]	0.01	[illegible]	0.97	0.38	0.33	0.31	1000.0	[illegible]
	[illegible]									C [illegible]												
	[illegible]									[illegible]												
	[illegible]									[illegible]												
9/ [illegible]	[illegible]	[illegible]			1.0	28.4	12.0	7.7		[illegible] 3.3			0.81	0.48	.85	0.02	0.71	0.41	0.40	0.37	620.0	[illegible]
	[illegible]									C 1.1												
	[illegible]									[illegible] 1.7												

STA. 12A DOUGLAS POINT 44.5 MILES BUOY QU FL '33'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TU DIDITY, JTU	SECCHI DISK, in	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC Pmf - PO4, mg/l	CHLORIDES, mg/l	CHLORINE RESIDUAL mg/l
9/29/65	0820			20.0										0.17	0.93	0.02	0.01	0.40			2000.0	
10/ 5/65	1100			23.0																	1775	
10/ 6/65	1100			17.0																	1551.5	
10/ 7/65	0900			17.0																	2220.0	
10/ 8/65	0900			14.0																		
10/11/65	1100			15.0																		
10/12/65	1100			15.0																		

STA. 13A THOMAS POINT
28.2 MILES BUOY N '24'

SAMPLING DATE	LOCAL TIME	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	D.O., mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN-N, mg/l	ORGANIC N, mg/l	NH3-N, mg/l	NO3-N, mg/l	NO2-N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4, mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
9/ 8/65	0217		20.0					7.5												3220.0	
9/28/65	0810		21.0																	3590.0	
9/30/65	1345		22.0																	3080.0	
10/ 5/65	1125		17.0																	2660.0	
10/ 8/65			17.0																	3430.0	
10/13/65	0815		14.5																	3520.0	
10/14/65	0 40		15.0																	3280.0	
10/19/65	0750		15.0																	2700.0	
10/21/65	1130		16.5																	2400.0	
10/2[illegible]/65	1300																			3330.0	
11/ 9/65	0725																			3120.0	
11/1[illegible]/65	1301																			3320.0	
	1301																				
12/ 6/65	1215																			4[illegible]0.0	
1/13/66	1[illegible]		1.0								2.7		0.63	0.51	0.02	0.40	0.30			[illegible]	[illegible]
1/[illegible]/66	11[illegible]										1.2		0.15	0.35	0.01	0.33	0.19			[illegible]	[illegible]

SAMPLING DATE	LOCAL TIME	SAMP DEPTH, ft.	SAMP DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	D.O., mg/l		BOD5, mg/l	TOTAL C, mg/l	NO_3 - N, mg/l	ORGANIC N, mg/l	NH_3 - N, mg/l	NO_2 N, mg/l	PO_4-N, mg/l	TOTAL P-PO_4, mg/l	INORGANIC P-PO_4, mg/l	TOTAL P mf-PO_4, mg/l	INORGANIC P mf-PO_4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
9/28/65	0804			22.0																		3920.0	
9/30/65	1340			22.5																		3450.0	
10/ 5/65	1120			17.0																		2930.0	
10/ 8/65	0515			17.																		4030.0	
10/13/65	08[illegible]5			14.5																		3790.0	
10/14/65	0340			15.0																		3450.0	
10/17/65	0945			15.0																		2860.0	
10/21/65	1115			16.5																		2830.0	
10/23/65	1250																					3610.0	
11/ 3/65	0315																					4430.0	
11/10/65	1[illegible]																					4120.0	
11/ 6/65	12[illegible]																					4200.0	
11/18/65	1445												.7	0.63	0.51	0.02	0.40	0.30				5220.0	11.25
11/18/65	11[illegible]												0.5	0.48	0.50	0.02	0.39	0.28				5050.0	
11/18/65	1151													0.39	0.55	0.02	0.35	0.26				53[illegible].0	
11/29/65	11[illegible]												1.2	0.16	0.35	0.01	0.39	0.19				573.0	21.75
11/29/65	12[illegible]												1.2	0.17	0.37	0.02	0.35	0.18				5980.0	
4/ 7/66	1[illegible]		10	8.8		1.5	56.2	8.0	9.5	R	3.5	9.2		0.26	0.83	0.02	0.44	0.30	0.28	0.27	3450.0	6.75
	1[illegible]									C	2.2												
	1[illegible]									RMB	2.9												
	1[illegible]									CMB	2.1												
4/ 7/66	1[illegible]	15	5	9.8			40.2	5.2	9.6	R	3.0	8.5		0.43	0.85	0.02	0.42	0.23	0.28	0.26	3390.0	6.00
	1[illegible]									C	1.9												
	1[illegible]									RMB	3.3												
	1[illegible]									CMB	1.7												
4/21/66	15[illegible]	35	5			1.5	47.0	11.8	10.1	R	3.1			0.61	0.52	0.02	0.02	0.71	0.39	0.30	0.23	1590.0	3.00
	1[illegible]									C	1.8												
	1[illegible]									RMB	2.1												
	1[illegible]									CMB	1.4												
4/21/66	1[illegible]	35	30			1.5	96.2	16.4	11.0	R	2.3			0.63	0.52	0.01	0.02	0.71	0.39	0.30	0.23	1610.0	8.25
	1[illegible]									RMB	1.3												
5/12/66	1445			14.5		1.8	41.5		7.4	R	1.5			0.25	0.48	0.61	0.03	0.35	0.34	0.31	0.29	3010.0	7.50
	1445									RMB	0.8												
5/12/66	1445			16.0			31.0	12.0	8.0	R	0.9			0.32	0.60	0.55	0.02					680.0	5.25
	1445									RMB	0.6												
5/13/66	1040		T	18.0		1.5	62.0	13.5	T 7.9	R	1.[illegible]			0.45	0.41	0.56	0.03	0.46	0.43	0.28	0.27	940.0	5.25
	1040		B	18.0					B 7.9	C	1.4												
	1[illegible]									RMB	0.8												
	1040									CMB	1.0												
5/26/66	1425		T	20.0		1.5	25.5	2.5	T 7.2	R	2.0	6.4		0.68	0.24	0.81	0.03	0.54	0.31	0.33	0.31	1820.0	16.50

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a. µg/l
5/26/66	1425		B	19.0					B 7.1	C 1.1												
	1425									RMB 2.2												
	1425									CMB 0.7												
6/ 2/66	1200		T	19.0		0.8	51.5	4.5	T 6.9	R 1.7	6.5		0.35	0.11	0.98	0.07	0.60	0.43	0.35	0.35	400.0	
	1200		B	19.0					B 6.9	C 0.8												
	1200									RMB 1.6												
	1200									CMB 0.3												
6/ 9/66	1345		T	23.0		2.0	16.5	2.5	T 6.8	R 0.5			0.38	0.14	0.78	0.02	0.36	0.25	0.25	0.24	1420.0	4.50
	1345		B	23.0					B 6.9	C 1.4												
	1345									RMB 0.6												
	1345									CMB 1.3												
9/ 7/66	1320			24.5	7.0	4.0						0.6		0.05	0.10	0.08	0.28	0.14	0.16	0.12	4720.0	29.25
9/ 7/66	1320			24.5	12.0	4.0						0.5		0.03	0.15		0.28	0.18	0.13	0.15	4830.0	
9/ 7/66	0120			24.5	4.0							0.3		0.03	0.09	0.10	0.19	0.12	0.14	0.11	5060.0	16.50
9/ 7/66	0120			24.5	6.0							0.2		0.04	0.08	0.09	0.23	0.14	0.18	0.14	5130.0	
9/ 8/66	0920			26.0	6.0	3.5						0.5		0.09	0.12	0.11	0.23	0.11			4040.0	23.25
9/ 8/66	0920			26.0	13.0							0.4		0.09	0.11	0.11	0.28	0.15			4470.0	
9/ 8/66	0935			21.9	4.0							0.5		0.08		0.12	0.23	0.10	0.13	0.09	4640.0	30.75
9/ 8/66	0935			21.9	12.0									0.09		0.11	0.28	0.21	0.13	0.14	4480.0	
9/ 9/66	1520			23.0	6.0	3.8						0.3		0.13	0.06	0.10	0.24	0.10			4360.0	26.25
9/ 9/66	1520			22.7	12.0									0.13	0.09	0.10	0.27	0.14			4630.0	
9/ 9/66	0235			22.5	5.0							0.3		L0.10		0.11	0.23	0.12	0.17	0.12	4950.0	16.50
9/ 9/66	0235			22.3	8.0									0.18		0.11					5580.0	
9/10/66	1035			22.3	3.0							0.5		0.15	0.12	0.12	0.22	0.11			4300.0	
9/10/66	1035			22.3	12.0									0.20	0.12	0.12					4720.0	
9/13/66	1350			24.0	10.0							0.4		0.15	0.09	0.08	0.51	0.17	0.23	0.15	5750.0	12.00
9/13/66				25.0	5.0																6060.0	
9/13/66	0630			24.3	8.0							0.4		0.30	0.06	0.09	0.32	0.20			5970.0	21.00
9/13/66	0630			24.3	5.0																6160.0	
9/19/66	1335			23.0	9.0	2.6								0.23	0.21	0.05	0.28	0.10	0.20	0.14	3090.0	21.00
9/19/66	1335			23.0	22.0	2.6								0.21	0.21	0.05	0.43	0.10	0.18	0.13	3220.0	

COLLECTION DATE	LOCAL TIME	SECCHI DEPTH, ft.	SAMPLE DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BODs, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH_3 - N, mg/l	NO_3 - N, mg/l	NO_2 - N, mg/l	TOTAL P - PO_4, mg/l	INORGANIC P - PO_4, mg/l	TOTAL P mf - PO_4, mg/l	INORGANIC P mf - PO_4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
9/28/65	0816			21.5																	2930.0	
9/30/65	1350			22.0																	2400.0	
10/ 5/65	1134			17.0																	1690.0	
10/ 8/65	0535			17.0																	2540.0	
10/13/65	0825			14.5																	2550.0	
10/13/65	0[illegible]			15.0																	2170.0	
10/19/65	0955			15.0																	2250.0	
10/21/65	1125			16.5																	2030.0	
10/28/65	1215																				2310.0	
11/ 5/65	0[illegible]																				2530.0	
11/1[illegible]/65	1312																				2560.0	
	1[illegible]																					
12/ 5/65	12[illegible]																				3060.0	
1/18/66	11[illegible]											0.7		1.07	0.93	0.02	0.61	0.46			4520.0	27.00
1/1[illegible]/66	11[illegible]											0.6		0.96	0.69	0.02	0.43	0.34			3800.0	19.50
1/2[illegible]/66	11[illegible]											1.5		0.51	0.53	0.01	0.58	0.31				27.75
4/ 7/66	1[illegible]			7.0		2.0			7.9		8.7			0.32	0.89	0.02	0.34				2930.0	
4/ 7/66	11[illegible]								10.0		8.2			0.37	0.98	0.02	0.24				2010.0	
4/ 7/66	1[illegible]	25	20	9.0		1.3	106.8	11.8	9.9	R 3.2	8.7			0.56	0.95	0.02	0.75	0.45	0.31	0.29	2130.0	11.25
	1[illegible]									RMB 2.2												
4/ 7/66	1[illegible]	25	5	9.5			46.0	3.2	10.2	R 2.2	8.5			0.59	0.98	0.02	0.57	0.35	0.33	0.31	1710.0	6.75
	1[illegible]									C 1.6												
	1[illegible]									RMB 1.8												
	1[illegible]									CMB 0.5												
4/21/66	1[illegible]	25	5			1.5	32.6	10.0	10.0	R 2.6			0.57	0.61	0.91	0.02	0.53	0.36	0.33	0.31	1010.0	6.00
	1[illegible]									C 2.0												
	1[illegible]									RMB 2.3												
	1[illegible]									CMB 1.2												
4/21/66	1[illegible]	25	20			1.5	38.6	8.8	9.9	R 2.8			0.50	0.51	0.88	0.02	0.53	0.36	0.33	0.31	1060.0	6.75
	1[illegible]									RMB 1.7												
5/12/66	1[illegible]		T	15.0		1.3			T 8.2													
	1435		B	14.0					B 8.1													
5/12/66	1[illegible]			15.0		1.5	66.0		8.5	R 2.6			0.35	0.54	0.69	0.02	0.65	0.47	0.37	0.35	106.0	7.50
	1[illegible]									RMB 1.9												
5/12/66	14[illegible]			16.5		1.5	24.0	6.0	8.3	R 1.6			0.50	0.32	0.65	0.02					60.0	4.50
	1[illegible]									RMB 0.6												
5/1[illegible]/66	11[illegible]		T	17.0		1.5	52.5	5.0	T 7.5	R 2.5			0.30	0.50	0.66	0.03	0.56	0.48	0.32	0.33	220.0	6.75
	11[illegible]		B	17.0					B 7.6	C 1.1												
	11[illegible]									RMB 1.5												
	11[illegible]									CMB 0.7												

5/26/66	1410	T	19.0		1.3	29.0	0.5	T	6.4	R	1.7	6.8		0.50	0.31	0.79	0.03	0.52	0.41	0.35	0.35	164.0	5.25
	1410	B	19.0					B	6.6	C	0.7												
	1410									RMB	1.3												
	1410									CMB	1.4												
6/ 2/66	1145	T	19.0		1.0	56.0	6.5	T	6.6	R	2.1	6.9		0.30	0.24	0.68	0.09	0.78	0.52	0.41	0.39	52.0	
	1145	B	18.0					B	6.6	C	1.3												
	11[illegible]									RMB	2.1												
	11[illegible]									CMB	0.5												
6/ [illegible]/66	133	T	23.0		2.0	14.5	2.5	T	6.8	R	0.6			0.21	0.14	0.96	0.04	0.39	0.34	0.33	0.31	750.0	[illegible]
	133[illegible]	B	23.0					B	6.2	C	1.1												
	[illegible]									RMB	0.4												
	[illegible]									CMB	1.2												
[illegible]	[illegible]		26.0	7.0	3.0								0.8			0.11	0.07	0.40	0.05	0.09	0.04	3330.0	72.75
[illegible]	13[illegible]		25.6	9.0	3.0								0.5		0.02	0.20	0.06	0.37	0.10	0.12	0.10	3800.0	
[illegible]	01		25.[illegible]	7.0									0.4		0.04	0.12	0.10	0.23	0.09	0.11	0.03	3700.0	19.50
[illegible]	[illegible]		25.0	[illegible]									0.8		0.02	0.14	0.11	0.20	0.12	0.15	0.11	4190.0	
[illegible]	[illegible]		25.1	1[illegible]									0.7		0.13	0.11	0.12	0.31	0.10			2920.0	16.[illegible]
[illegible]	02		26.1	8.[illegible]									0.6		0.09	0.13	0.11	0.24	0.11			3440.0	
[illegible]	[illegible]		21.[illegible]	7.[illegible]									0.7		0.13		0.09	0.29	0.11	0.12	0.10	3160.0	27.74
[illegible]	[illegible]		21.2	8.[illegible]											0.11		0.11	0.25	0.12	0.12	0.10	3[illegible]	
[illegible]	1[illegible]		[illegible]	7.0	2.5								0.5		0.15	0.08	0.10	0.27	0.[illegible]7			3540.0	46.00
	15		[illegible]	[illegible]	2.5										0.14	0.17	0.14	0.22	0.12			3730.0	
[illegible]	[illegible]		[illegible]	7.[illegible]									0.4		0.21		0.11	0.25	0.11	0.15	0.11	2[illegible]0.0	15.00
[illegible]	[illegible]		[illegible]	8.[illegible]											0.20		0.13					4[illegible]	
[illegible]	1[illegible]		[illegible]	6.0	3.0								0.4		0.21	0.12	0.12	0.25	0.11			3250.0	
[illegible]	1[illegible]		[illegible]	11.0	3.0										0.23	0.15	0.12					3700.0	
[illegible]	[illegible]		[illegible]	1[illegible]									0.5		0.12	0.12	0.11	0.32	0.16	0.19	0.13	4[illegible]	10.50
[illegible]	[illegible]		[illegible]	[illegible]																		4[illegible]	
[illegible]			[illegible]	[illegible]									0.[illegible]		0.33	0.09	0.11	0.26	0.15			3[illegible]	1[illegible].75
[illegible]	[illegible]		[illegible]	[illegible]																		3[illegible]	
[illegible]	[illegible]		[illegible]	[illegible]	3.0										0.12	0.15	0.04	0.33	0.11	0.20	0.15	2410.0	24.25

[illegible]	[illegible]	[illegible], ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l

STA. 14A EAST END, SOMERSET BEACH
53.7 MILES BUOY C '17'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
9/28/65	0755			22.0					6.6								0.38	0.32			4090.0	
9/30/65	1225			22.0																	3640.0	
10/ 5/65	1115			13.0					8.2								0.57	0.26	0.33	0.38	3020.0	
10/ 8/65	0510			17.0					6.9								0.36	0.26	0.24	0.23	4420.0	
10/13/65	0800			15.0			11.0	5.2	8.2								0.42	0.27	0.27	0.23	4080.0	
10/14/65	0855			16.0			14.2	5.2	8.4								0.38	0.22	0.26	0.20	4040.0	
10/19/65	0940			15.0			24.0	6.6	8.0								0.45	0.23	0.25	0.20	3050.0	
10/21/65	1110			16.5			12.8	2.4	8.3								0.34	0.21	0.24	0.18	3370.0	
10/28/65	1240																				3840.0	
11/ 5/65	0 1[illegible]																				4490.0	
11/10/65	1245																				4610.0	
	1245																					
12/ 6/65	1243																				4250.0	
1/18/66	1151													0.99	0.55	0.02	0.35	0.26			5320.0	
1/25/66	1203											1.2		0.17	0.37	0.01	0.35	0.18			5980.0	18.75

STA. 148 METOMKIN POINT
56.2 MILES 16' BUOY FL G '15'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
9/23/65	0740			22.0																	4870.0	
9/30/65	1320			22.5																	4280.0	
10/ 5/65	1105			17.0																	3180.0	
10/ 8/65	0455			17.0																	4730.0	
10/13/65	0745			15.0																	5120.0	
10/14/65	0330			15.0																	4310.0	
10/18/65	0935			15.0																	4180.0	
10/21/65	1105			16.5																	3900.0	
10/26/65	1335																				4480.0	
11/ 3/65	0745																				4730.0	
11/10/65	1230																				4810.0	
	1223																					
12/ 8/65	1255																				5150.0	
1/13/66	1200													1.14	0.61	0.02	0.36	0.23			5010.0	9.00

STA. 15 NANJEMOY CREEK 58.2 MILES FOOY N '10'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
9/28/65	0745			22.0																	5360.0	
9/30/65	1315			23.5																	4730.0	
10/ 5/65	1100			17.0																	3560.0	
10/ 8/65	0450			17.0																	5520.0	
10/13/65	0735			16.0																	5080.0	
10/14/65	0825			16.0																	5000.0	
10/19/65	0950			15.0																	4500.0	
10/21/65	1103			16.5																	4230.0	
10/27/65	1210																				5170.0	
11/ 5/65	0710																				4620.0	
11/10/65	1224																				5080.0	
	1224																					
12/ 6/65	1405																				5780.0	
1/18/66	1218												0.80	0.45	0.01	0.27	0.18				5630.0	7.50
1/25/66	1[illegible]										1.0		0.19	0.31	0.01	0.29	0.14				7010.0	
4/ 7/66	0[illegible]		15	7.5		2.0	92.4	10.6	9.3	R 2.2	8.5		0.31	0.56	0.02	0.57	0.47	0.20	0.19	5430.0	4.50
	0[illegible]									C 0.7												
	0[illegible]									RMB 1.7												
	0[illegible]									CMB 0.6												
4/ 7/66	0940		5	8.0			70.5	9.5	9.7	R 2.5	8.9			0.59	0.01	0.32	0.22	0.21	0.20	5300.0	12.75
	0940									C 0.9												
	0940									RMB 1.4												
	0940									CMB 1.1												
4/21/66	1[illegible]	40	5			2.0	39.6	11.8	9.7	R 3.1		0.64	0.54	0.86	0.03	0.40	0.27	0.24	0.22	2700.0	2.00
	1430									C 1.4												
	1[illegible]									RMB 2.2												
	1[illegible]									CMB 2.6												
4/21/66	1[illegible]	40	35			2.0	44.8	12.0	9.7	R 2.1		0.46	0.43	0.79	0.03	0.40	0.27	0.24	0.22	3310.0	3.75
	1[illegible]									CMB 1.5												
5/12/66	1[illegible]			15.0		3.0	53.0	8.5	7.5	R 1.7		0.14	0.48	0.56	0.03	0.40	0.29	0.29	0.27	3830.0	6.00
	1[illegible]									RMB 1.0												
5/12/66	1520			15.0			17.0	12.5	8.7	R 1.0		0.17	0.61	0.62	0.03					1470.0	4.50
	1520									RMB 1.1												
5/19/66	1010			19.0		2.5	50.5	13.5	T 8.6	R 2.3		0.65	0.36	0.62	0.03	0.47	0.13	0.14	0.13	2110.0	18.00
	1010								B 8.2	C 1.4												
	1010									RMB 1.7												
	1010									CMB 0.7												
5/23/66	1[illegible]		T	19.0		2.0	20.5	2.5	T 7.9	R 2.0	6.5		0.76	0.14	0.68	0.02	0.42	0.20	0.24	0.21	1810.0	21.75
	1[illegible]		B	19.0					B 7.5	C 1.0												
	1[illegible]									RMB 1.7												

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P-PO4, mg/l	INORGANIC P-PO4 mg/l	TOTAL P mf-PO4, mg/l	INORGANIC P mf-PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
5/26/68	1445									CMB 1.2												
5/ 2/66	1220		T	19.0		1.0	46.0	15.0	T 7.1	B 1.5	7.0		0.35	0.09	0.85	0.02	0.52	0.34	0.29	0.28	1140.0	
	1220		B	19.0					B 7.1	C 0.5												
	1220									RMB 1.1												
	1220									CMB 0.5												
6/ 9/66	1400		T	22.0		2.5	11.5	2.5	T 6.6	B 0.3			0.27	0.15	0.56	0.01	0.25	0.15	0.17	0.15	2690.0	5.25
	1400		B	22.0					B 5.6	C 1.2												
	1400									RMB 0.7												
	1400									CMB 0.9												
9/ 7/66	[illegible]			25.0	5.0	4.5								0.03	0.08	0.07	0.31	0.17	0.21	0.16	5950.0	26.25
9/ 7/66	[illegible]			24.0	42.0	3.5								0.03	0.13	0.08	0.54	0.30	0.23	0.19	6520.0	
9/ 7/66	[illegible]			24.5	3.0							0.4		0.02	0.04	0.07	0.32	0.19	0.23	0.19	6320.0	8.25
9/ 7/66	[illegible]			24.5	7.0							0.3		0.03	0.05	0.08	0.33	0.23	0.26	0.22	6680.0	
9/ 8/66	[illegible]			26.1	7.0	3.0						0.4		0.10	0.08	0.10	0.27	0.15			5360.0	21.00
9/ 8/66	[illegible]			25.2	8.0							0.4		0.09	0.07	0.10	0.30	0.19			5910.0	
9/ 7/66	[illegible]			22.1	6.0							0.5		0.07		0.11	0.25	0.13	0.16	0.13	5160.0	26.25
9/ 7/66	[illegible]			21.1	16.0									0.09		0.13	0.39	0.22	0.22	0.19	6350.0	
9/ 9/66	[illegible]			22.7	3.0	4.3						0.3		LO.10	0.06	0.09	0.27	0.16			5750.0	30.00
9/ 9/66	[illegible]				4.0									LO.10	0.04	0.10	0.29	0.19			6120.0	
9/ 9/66	[illegible]			22.0	3.0							0.4		0.17		0.11	0.29	0.18	0.22	0.19	6280.0	30.75
9/ 9/66	[illegible]			21.6	5.0									0.19		0.07					7080.0	
9/10/66	[illegible]			21.0	3.0	3.0						0.4		0.11	0.07	0.11	0.28	0.15			5280.0	
9/10/66	[illegible]			21.0	5.0	3.0								0.09	0.07	0.10					6330.0	
9/1 [illegible]	[illegible]			24.4	4.0							0.4		0.39	0.05	0.06	0.35	0.23			6750.0	21.75
9/1[illegible]	[illegible]			24.4	4.0																7000.0	
9/1[illegible]	[illegible]			22.0	3.0	4.2								0.12	0.19	0.07	0.26	0.08	0.20	0.15	4480.0	22.50
9/1[illegible]	[illegible]			22.0	17.0	3.2								0.12	0.20	0.07	0.42	0.18	0.21	0.17	5130.0	

STA. 158 UPPER CEDAR POINT
59.3 MILES 34' BUOY FL '8'

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
9/28/65	0740			21.5																	5040.0	
9/30/65	1310			23.0																	5170.0	
10/ 5/65	1310			23.0																	5170.0	
	1055			18.0																	4200.0	
10/ 8/65	0440			17.0																	5480.0	
10/13/65	0725			16.0																	5240.0	
10/14/65	0320			16.0																	5370.0	
10/15/65	0025			15.0																	4860.0	
10/21/65	1100			16.5																	4600.0	
10/28/65	1200																				5750.0	
11/ 3/65	0700																				4660.0	
11/10/65	1210																				5850.0	
	1210																					
12/ 6/65	1315																				6610.0	
1/13/66	[illegible]													0.46	0.48	0.01	0.28	0.18			5810.0	

STA. 15A PORT TOBACCO RIVER
03.3 MILES BUOY FL R '6' AND C '3' OFF MATHIAS POINT

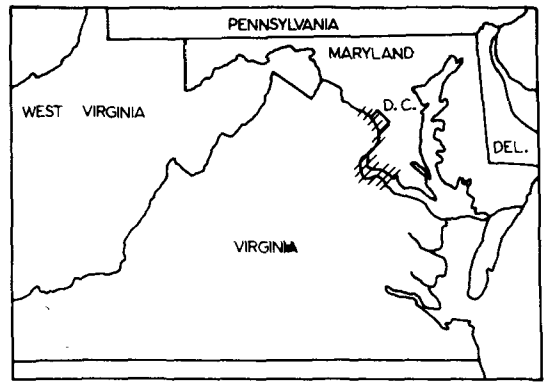
SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD_5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH_3 - N, mg/l	NO_3 - N, mg/l	NO_2 - N, mg/l	TOTAL P - PO_4, mg/l	INORGANIC P - PO_4 mg/l	TOTAL P mf - PO_4, mg/l	INORGANIC P mf - PO_4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a. µg/l
9/28/65	0735			22.0																	5550.0	
9/30/65	0915			20.7																	5450.0	
10/ 5/65	1047			18.0																	4130.0	
10/ 8/65	0430																				5930.0	
10/13/65	0715			16.0																	5220.0	
10/14/65	0315			16.0																	5360.0	
10/17/65	0[illegible]			15.0																	4840.0	
10/21/65	10[illegible]			16.5																	5020.0	
10/28/65	1151																				5[illegible]60.0	
11/ 5/65	0745																				4670.0	
11/17/65	11[illegible]																				6430.0	
	11[illegible]																					
12/ 6/65	1[illegible]37																				7540.0	
1/13/66	[illegible]												0.36	0.48	0.01	0.24	0.14				6200.0	
1/25/66	1[illegible]45											1.1	0.14	0.39	0.01	0.28	0.13				6770.0	

STA. 150 POPES CREEK
55.5 MILES BUOY FL R '2'

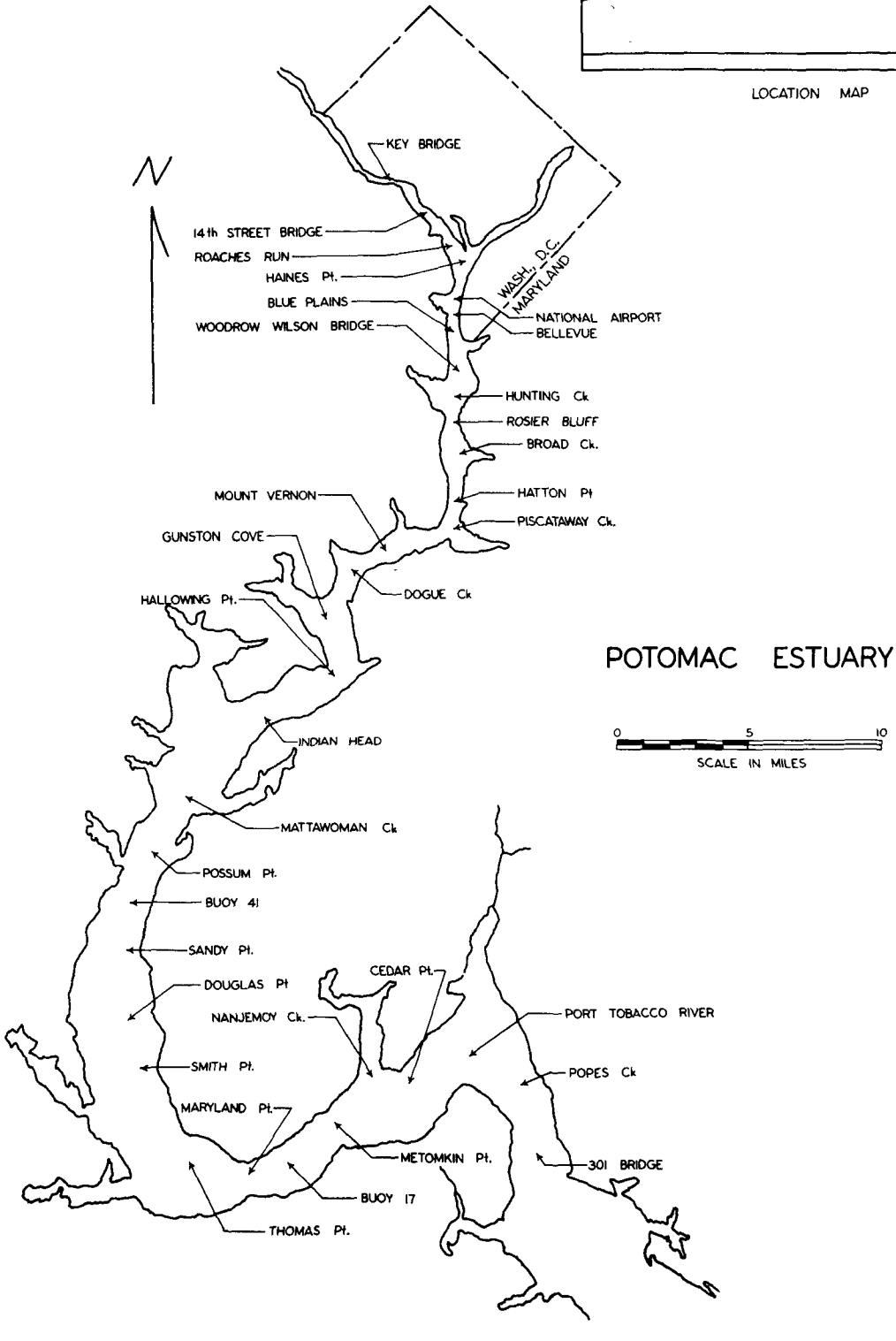
SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP. °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD_5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH_3 - N, mg/l	NO_3 -N, mg/l	NO_2 -N, mg/l	TOTAL P-PO_4, mg/l	INORGANIC P-PO_4 mg/l	TOTAL P mf-PO_4, mg/l	INORGANIC Pmf-PO_4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
9/28/65	0730																				5680.0	
9/31/65	0910			20.5																	5520.0	
10/ 6/65	1040			18.0																	4560.0	
10/ 8/65	0425			17.0																	5820.0	
10/13/65	0705			16.0																	5230.0	
10/14/65	0810			16.0																	5320.0	
10/17/65	0725			15.0																	4890.0	
10/21/65	1050			15.5																	5020.0	
10/28/65	1140																				5750.0	
11/ 5/65	0730																				4660.0	
11/10/65	1130																				6770.0	
	1150																					
12/ 4/65	1537																				7410.0	
1/19/66	1250													0.31	0.32	0.01	0.21	0.09			7100.0	7.50

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BOD5, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH3 - N, mg/l	NO3 - N, mg/l	NO2 - N, mg/l	TOTAL P - PO4, mg/l	INORGANIC P - PO4 mg/l	TOTAL P mf - PO4, mg/l	INORGANIC P mf - PO4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
9/28/65									5.7								0.24	0.23			6200.0	
									5.8													
9/30/65	0900			20.0																	5890.0	
10/ 5/65	1015								7.4													
	1015			18.0					7.5								0.36	0.23	0.28	0.34	5120.0	
10/ 8/65	0415			17.0					6.6								0.29	0.22	0.21	0.19	6010.0	
	0415								6.7													
10/13/65	0700			16.0			13.6	3.2	8.0								0.36	0.24	0.26	0.22	5200.0	
	0700								8.0													35.25
10/14/65	0900			16.0			14.4	4.8	9.0								0.32	0.22	0.27	0.20	5200.0	11.25
	0900								9.0													
10/19/65	0910								8.7													
	0910			15.0			11.0	3.4	8.8								0.33	0.21	0.24	0.19	4860.0	
10/21/65	1045								8.4													
	1045			17.0			7.4	1.8	8.5								0.28	0.17	0.21	0.17	5530.0	
10/29/65	1120																				6070.0	
11/ 5/65	0750																				4640.0	
11/10/65	11[illegible]5																				7200.0	
	11[illegible]5																					
12/ 6/65	1[illegible]3																				7710.0	
1/18/66	1[illegible]													0.32	0.25	0.01	0.21	0.07			7600.0	9.00
4/ 7/66	0905		40	10.0		2.5	6.5	15.0	9.6	R 2.4	9.5			0.46	0.45	0.01	0.30	0.18	0.18	0.15	6610.0	6.75
	0905									C 2.2												
	0905									RMB 2.2												
	0905									CMB 1.9												
4/ 7/66	0923		5				47.5	11.0	9.9	R 1.8	6.1			0.83	0.47	0.01	0.23	0.15	0.18	0.15	6300.0	6.00
	0923									C 0.8												
	0923									RMB 1.6												
	0923									CMB 0.9												
4/21/66	1400	40	5			2.3	18.4	7.8	10.1	R 1.9			0.54	0.28	0.69	0.02	0.29	0.19	0.20	0.18	4300.0	4.50
	1400									C 1.8												
	1400									RMB 2.0												
	1400									CMB 1.7												
4/21/66	1400	40	35			2.3	26.6	10.6	9.7	R 4.1			0.64	0.25	0.57	0.02	0.29	0.19	0.20	0.18	5860.0	3.75
	1400									RMB 3.7												
5/12/66	1545			14.8		4.3	47.5		7.5	R 1.8			0.31	0.31	0.51	0.02	0.40	0.23	0.25	0.22	4540.0	9.75
	1545									RMB 1.5												
5/12/66	1545			15.0			5.5		10.5	R 1.9			0.40	0.43	0.63	0.03					2050.0	6.75
	1545									RMB 1.6												
5/19/66	0921			17.0		3.2	33.5	12.5	T10.3	R 2.0			0.68	0.19	0.54	0.03	0.32	0.06	0.08	0.06	3000.0	37.50

SAMPLING DATE	LOCAL TIME	STRM. DEPTH, ft.	SAMP. DEPTH, ft.	WATER TEMP, °C	TURBIDITY, JTU	SECCHI DISK, in.	SUSPENDED SOLIDS, mg/l	VOLATILE SOLIDS, mg/l	DO, mg/l	BODs, mg/l	TOTAL C, mg/l	TKN - N, mg/l	ORGANIC N, mg/l	NH_3 - N, mg/l	NO_3 -N, mg/l	NO_2 -N, mg/l	TOTAL P-PO_4, mg/l	INORGANIC P-PO_4 mg/l	TOTAL P mf-PO_4, mg/l	INORGANIC P mf-PO_4, mg/l	CHLORIDES, mg/l	CHLOROPHYLL a, µg/l
5/19/66	0931								B 7.3	C 2.1												
	0931									RMB 1.3												
	0931									CMB 1.3												
5/26/66	1510		T 19.0		2.5	16.0	5.0	T 9.5		R 2.8	6.9		0.66	0.11	0.45	0.02	0.33	0.07	0.12	0.08	2510.0	47.25
	1510		B 18.0					B 6.7		C 1.0												
	1510									RMB 1.4												
	1510									CMB 0.9												
6/ 2/66	1245		T 19.0		2.0	23.5	6.0	T 7.9		R 1.5	7.5		0.33	0.12	0.61	0.02	0.32	0.18	0.20	0.18	2290.0	
	1245		B 18.0					B 7.0		C 0.9												
	1245									RMB 1.4												
	1245									CMB 0.5												
6/ 9/66	1430		T 22.0		2.5	13.0	4.5	T 7.8		R 0.8			0.26	0.13	0.44	0.01	0.24	0.07	0.11	0.08	2860.0	13.50
	1430		B 22.0					B 5.3		C 1.1												
	1430									RMB 0.5												
	1430									CMB 1.1												
9/ 7/66	1200			25.0	7.0	4.0						1.3		0.03	0.07	0.02	0.51	0.22	0.31	0.21	6770.0	60.75
9/ 7/66	1200			24.5	8.0	4.0						0.9		0.04	0.08	0.06	0.44	0.29	0.31	0.26	7230.0	
9/ 7/66	2340			24.0	7.0							0.4		0.03	0.02	0.04	0.35	0.26	0.28	0.24	6920.0	16.50
9/ 7/66	2340			24.5	57.0							0.4		0.02	0.05	0.04	0.35	0.09	0.30	0.35	7180.0	
9/ 8/66	1002			26.4	3.0	5.5						0.9		0.09	0.05	0.08	0.32	0.20			6550.0	33.75
9/ 8/66	1002			26.7	6.0							0.6		0.09	0.04	0.08	0.32	0.22			6710.0	
9/ 8/66	0745			21.5	5.0							0.4		0.11		0.07	0.32	0.19	0.25	0.20	6450.0	18.00
9/ 8/66	0745			21.0	4.0									0.09		0.08	0.32	0.19	0.24	0.19	6590.0	
9/ 9/66	1447		S	22.9	3.0	5.5						0.2		<0.10	0.03	0.07	0.31	0.20			6600.0	27.00
9/ 9/66	1447			22.4	5.0									0.13	0.02	0.06	0.33	0.20			6860.0	
9/ 9/66	0115			21.7	6.0							0.5		0.17		0.06	0.36	0.16	0.22	0.18	7040.0	15.75
9/ 9/66	0115			21.5	7.0									0.18		0.03					7490.0	
9/13/66	0710			24.5	7.0							0.5		0.47	0.05	0.05	0.41	0.27			7110.0	27.00
9/13/66	0710			24.5	4.0																7560.0	
9/19/66	1250			23.0	4.0									0.14	0.16	0.08	0.30	0.15	0.24	0.17	5460.0	27.75
9/19/66	1250				17.0									0.13	0.11	0.07	0.49	0.26	0.28	0.35	6680.0	



LOCATION MAP



Chesapeake Technical Support Laboratory
Middle Atlantic Region
Enviromental Protection Agency
Federal Water Quality Administration

1967 Data Report

Number 10

WATER QUALITY SURVEY

OF THE

ANNAPOLIS METROPOLITAN AREA

by

James W. Marks
and
Orterio Villa, Jr.

Laboratory Staff

Donald W. Lear, Jr., Chief, Laboratory Section
Anna R. Favorite, Statistician

TABLE OF CONTENTS

		Page
I	INTRODUCTION	1
II	STATION LOCATIONS	9
III	SURVEY RESULTS	14
IV	MAP appendix.	i

I INTRODUCTION

A. Purpose and Scope

During the spring and summer of 1967, the Chesapeake Technical Support Laboratory, Middle Atlantic Region, Enviromental Protection Agency, Federal Water Quality Administration conducted a survey of the water quality in the tidal waters of the greater Annapolis metropolitan area. The purposes of this survey were as follows:

1. To determine the present quality of the water and to establish a baseline of water quality with which future changes can be compared.

2. To make a comparative analysis of water quality in populated areas served by public sewers with areas where septic systems are common.

3. To determine the relative importance of the various sources of pollution in the area so that a rational abatement program can be developed.

4. To develop background information on nutrient and chlorophyll concentrations in estuaries of the Chesapeake Bay system.

B. General Remarks

This survey was divided into five separate studies as follows:

1. Seven baseline stations in the greater Annapolis area were sampled each week throughout the summer, May through August.

The purpose of these stations was to show changes in water quality during the critical recreation season and to provide reference stations to tie in the samples collected in studies 2, 3, 4 and 5.

2. Intensive water quality study was conducted on the West, Rhodes and South Rivers during the week of May 22 through 26. South River was sampled daily June 5 through 9 during "June Week", the Naval Academy graduation when tourist influx was at its peak.

3. Intensive water quality studies were conducted on the Severn River during the weeks of May 16 through 19, June 5 through 9 ("June Week", daily sampling) and August 1 through 3.

4. Intensive water quality studies were conducted on the Magothy River during the weeks of May 8 through 12 and July 17 through 20.

5. Select creeks of the Severn River (Back Creek and Spa Creek) and South River (Broad Creek) were sampled weeks of June 26-27 and July 10 through 21.

C. <u>Sampling Procedures</u>

All samples for chemical analysis were obtained by dipping a plastic container full of the river water. A quart cubitainer was then filled from the dipped sample and iced. A portion of the dipped sample was siphoned into a DO bottle until overflowing and fixed. A portion of the dipped sample was also used to measure the temperature at the time of sampling.

The iced samples were returned to the laboratory within two hours where the analysis were started immediately.

All bacteriological samples were obtained by dipping a sterile sample bottle directly into the river. The full bacteriological sample bottle was then capped and iced and returned to the laboratory within two hours where the analysis were started immediately.

D. Measured Parameters and Analytical Methods

1. Water temperature was determined using a mercury thermometer inserted into the sample container immediately upon collection.

2. Light extinction, in inches, was made with a 12" (30 cm) white Secchi disk.

3. Dissolved Oxygen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

Dissolved Oxygen was determined by the azide modification of the basic Winkler method with the titration done potentiometrically with an automatic "titralyzer."

4. Total phosphorus

Reference: Menzel, D.W. and Corwin, N., 1965. The Measurement of Total Phosphorus in Seawater Based on the Liberation of Organically Bound Fractions by Persulfate

Oxidation. Limnology and Oceanography, 10: 280-282,

Murphy, J. and Riley, J.P., 1962. A Modified Single Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

Total Phosphate was determined after persulfate oxidation of the sample in an autoclave at 15 psi for 30 minutes. The resultant ortho-phosphate was then determined colorimetrically as the molybdenum-blue complex with the optical density measured at 882 mμ.

5. Total Dissolved Phosphorus

Reference: Menzel, D.W. and Corwin, N., 1965. The Measurement of Total Phosphorus in Seawater Based on the Liberation of Organically Bound Fractions by Persulfate Oxidation. Limonology and Oceanography, 10: 280-282.

Murphy, J. and Riley, J.P., 1962. A Modified Single Solution Method for the Determination of Phosphate in Natural Waters. Analytica Chimica Acta, 27: 31-36.

The sample as received was filtered through a Type HA millipore filter. The Total millipore filtered Phosphorus was then determined after persulfate oxidation of the sample in an autoclave at 15 psi for 30 minutes. The resultant ortho-phosphate was then determined colorimetrically as the molybdenum-blue complex with the optical density measured at 882 mμ.

6. Total Kjeldahl Nitrogen

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

Total Kjeldahl Nitrogen includes ammonia and organic nitrogen and was determined by the standard micro-kjeldahl procedure. The sample was digested in the presence of strong acid to convert the organic nitrogen to ammonia. The ammonia was then distilled, collected in boric acid solution, nesslerized and determined colorimetrically.

7. Total Kjeldahl Nitrogen, millipore filtered

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

The sample as received was filtered through a Type HA millipore filter. Total millipore filtered Kjeldahl Nitrogen includes ammonia and organic nitrogen and was determined by the standard micro-kjeldahl procedure. The sample was digested in the presence of strong acid to convert the organic nitrogen to ammonia. The ammonia was then distilled, collected in boric acid solution, nesslerized and determined colorimetrically.

8. Nitrate + Nitrite

Reference: A Manual of Sea Water Analysis, J.D.H. Strickland and T.R. Parsons, 2nd. ed., Queen's Printer and Controller of Stationery, Ottawa, Canada, 1965.

Nitrate plus Nitrite nitrogen was determined by the cadmium reduction of nitrate to nitrite and subsequent diazotization with sulphanilamide and N-(1-napthyl)-ethylenediamine dihydrochloride. The results were calculated as nitrite nitrogen.

9. Chlorophyll

Reference: A Manual of Sea Water Analysis, J.D.H. Strickland and T.R. Parsons, 2nd. ed., Queen's Printer and Controller of Stationery, Ottawa, Canada, 1965.

Chlorophyll a was determined by extraction of millipore-filtered samples in 90% acetone and read spectrophotometrically.

10. Nonfiltrable Residue (Suspended Solids)

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965. FWPCA Methods, November 1969.

The Nonfiltrable Residue was determined by filtering a known volume of sample. A predried and weighed Gelman Type A glass fiber filter was used. The filter and its contents were then dried in an oven at 105°C, cooled and reweighed. The gain in weight represents Nonfiltrable Residue.

11. Turbidity

Turbidity was determined with a Hach photoelectric nephelometer, calibrated in Jackson Turbidity Units.

12. Surfactants (LAS/ABS)

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

This method depends on the formation of a blue-colored salt when methylene blue reacts with anionic surfactants, which include not only ABS but also alkyl sulfates. The salt is soluble in chloroform and the intensity of color is proportional to the concentration. The intensity is measured by making spectrophotometric readings in this solvent at a wave length of 652 mμ. The method is applicable in the 0.025-100 mg/l (as ABS) range.

13. Chlorides

Reference: Fisher Scientific Company, Bulletin #64-4A.

The Chloride concentration was determined by titrating the sample with standard silver nitrate to a potentiometric end point using a silver indicating electrode and a silver/silver chloride reference electrode.

14. Coliform

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

Coliform population was determined using the 5 tube-3 dilution Multiple-Tube Fermentation Technique. Lauryl sulfate tryptose broth was used for the presumptive test with

incubation at 35° ± 0.5°C. Brilliant green lactose bile broth was used for the confirmatory test with incubation at 35° ± 0.5°C. The results were reported as the Most Probable Number (MPN).

15. Fecal Coliform

Reference: Standard Methods for the Examination of Water and Wastewater, 12 ed., 1965.

Water Pollution Control Research Series, WP-20-3.

Fecal Coliform population was determined using the 5 tube-3 dilution Multiple-Tube Fermentation Technique. Lauryl sulfate tryptose broth was used for the presumptive test with incubation at 35° ± 0.5°C. EC medium was used for the confirmatory test with air incubation at 45.5° ± 0.5°C. The results were reported as the Most Probable Number (MPN).

II STATION LOCATIONS

CONTROL STATIONS

Rhodes River	Carr's Wharf
West River	Chalk Point
Severn River	Old Severn River Bridge Spa Creek , Eastport Bridge
South River	Route 2 Bridge
Chesapeake Bay	Sandy Point State Park
Magothy River	Arundel Beach

WEST, RHODES and SOUTH RIVERS

West River	1 A	South Creek, Avalon Shore
	1 B	Red Buoy R 6
	1 C	Curtis Point
Rhodes River	2 A	Mouth, Buoy 2
	2 B	Cadle Creek
Chesapeake Bay	3 A	Saunders Point
South River	3 B	Turkey Point
	3 C	Selby Bay
	3 D	Brewer Creek
	3 E	Can Buoy 13
	3 F	Glebe Creek, Woodland Beach
	3 G	Almshouse Creek, Woodland Beach
	3 H	Sylvan Shores
	3 I	Beards Point

SEVERN RIVER

Chesapeake Bay	6 A	Bay Ridge Beach
Severn River	5 A	Greenbury Point
	5 B	Back Creek, Chinks Point
	5 C	Dorsey's Creek, Naval Academy Bridge
	5 D	Weem's Creek, Old Route 2 Bridge
	5 E	New Severn River Bridge
	5 F	Arnold Point and Brewer Point, Buoy 5
	5 G	Round Bay
	5 H	Little Round Bay
	5 I	Cedar Point
	5 J	Valentine Creek
	5 K	Rock Cove
	5 L	Indian Village, Mathews Point

MAGOTHY RIVER

Magothy River	7 A	Mouth, in Channel, Gibson Island
	7 B	Deep Creek
	7 C	Tar Cove
	7 D	Dobbins Island, Sillery Bay
	7 E	Ulmstead Point
	7 F	Forked Creek
	7 G	South Ferry Point, Buoy C 7
	7 H	Stony Point, Mill Creek and Dividing Creek
	7 I	Indian Village, Spar 12
	7 J	Riverdale
	7 K	Henderson's Point

CREEKS of SEVERN and SOUTH RIVERS

SEVERN RIVER

Back Creek	B 1	Head of Creek
	B 2	Shipwreck Point
	B 3	STP Cove
	B 4	Cove by Watergate Apts, high rise
	B 5	Beacon 5
	B 6	Control Station
Spa Creek	S 1	Head of Creek
	S 2	Off Truxton Cove
	S 3	Acton Cove
	S 4	Eastport Bridge
	S 5	Market Slip
	S 6	Buoy 1
	S A	Head of Market Slip
	S B	Mouth of Market Slip
	S C	Midchannel off Annapolis Yacht Club piers, upstream of slip
	S D	Midchannel downstream from slip

SOUTH RIVER

Broad Creek	1	Upstream from Riva Bridge
	2	Riva Bridge
	3	Mouth of Creek, 1st cove
	4	In Creek, 2nd cove
	5	In Creek, 3rd cove
	6	In Creek, most upstream

III SURVEY RESULTS

1967
ANNAPOLIS METRO AREA STUDY
CHESAPEAKE TECHNICAL SUPPORT LABORATORY
CONTROL STATION

Sample Number	Time Sample Taken	Secchi Disk Inches	Water Temp °C	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l	TKN mg/l	NO_2+NO_3 mg/l NO_3- N	Chloro-phyll a µg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Coliform MPN/100 ml
					RHODES RIVER - CARR'S WHARF								
67050201	0815	--	15.0	.157		.698	.569	.175	24.75	.105	4870	20	20
0301	0800	--	16.0	.172		.642	.428	.050	16.50		4760	70	<20
0401	0815	--	14.5	.155		.580	.495	.149	12.00		4560	20	<20
0501	0800	--	15.0	.184	.029	.709	.546	.110	16.50	.117	4580	20	<20
0801	0810	--	13.0	.159	.055	.769	.560	.159	29.25	.064	4550	230	130
1501	0930	--	15.0	.149	.025	1.196	.860	.122	18.00	.223	4510	20	20
2201	0930	--	16.0	.302	.039	1.064	.499	.028	84.00	.042	4370	20	<20
3101	0945	--	18.0	.371	.061	1.155	.513	.044	86.25	.125	3880	50	20
67060535	0950	--	22.5	.554	.068	1.740	Not Run	.138	165.75	Not Run	4080	80	<20
1201	1425	--	23.0	.820	.312	1.320	.520	LA			4400	<20	<20
1901	0930	--	24.5	.607	.422	1.126	.771	LA	18.75	Not Run	4790	9180	1300
2651	0950	--	23.0	.399	.107	1.067	.935	LA	47.25	Not Run	Not Run	1720	490
67070501	0945	--	24.5	.379	.087	1.111	.841	LA	29.25	Not Run	Not Run	490	<20
1001	0935	--	26.0	.332	.131	1.465	1.288	LA	13.50	Not Run	Not Run	1,300	LA
1712	0945	--	25.5	.301	.143	.769	.965	.073	21.00	Not Run	5490	490	330
2401	1115	--	28.0	.308	.125	.173	.297	.040	20.25	Not Run	5420	230	130
3114	1010	--	28.0	.320	.162	.606	.670	.200	13.50	Not Run	5400	1,410	20
67080701	0900	--	26.5	.387	.145	.564	.415		16.67		5640	270	40
1401	0930	--	24.0	.370	.153	.532	.328	ND	35.25		5440	790	<20
2801	0925	--	23.0	.455	.154	1.440	.554	ND	60.75		4670	2210	940

LA - Laboratory accident
ND - Not detectable

1967
ANNAPOLIS METRO AREA STUDY
CHESAPEAKE TECHNICAL SUPPORT LABORATORY
CONTROL STATION

Sample Number	Time Sample Taken	Secchi Disk Inches	Water Temp °C	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l	TKN mf mg/l N	NO_2+NO_3 mg/l NO_3-N	Chloro-phyll a µg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
WEST RIVER - CHALK POINT (Chalk Pt. Rd.)													
67050202	0920	--	16.0	.151		.388	.270	.055	37.50	.198	4830	<20	<20
0302	0835	--	15.0	.132		.524	.518	.115	15.75	.173	4710		20
0402	0855	--	14.5	.198		.490	.372	.050	22.50		4880		40
0502	0825	--	14.5	.368	.056	.833	.631	.068	29.25		4720	20	<20
0802	0830	--	13.0	.191	.031	.732	.547	.108	27.75	ND	3920	17,200	3,100
1502	0900	--	15.0	.210	.041	.959	.791	.084/.074	24.75	.202	4400	220	220
2202	0915	--	15.5	.360	.046	1.244	.475	.024	31.75	.046	4270	20	20
3102	0915	--	18.0	.296	.067	1.118	.690	.060	48.00	.116	3940	50	20
67060536	0930	--	22.0	.511	.070	1.457	Not Run	.124	76.50	Not Run	4300	50	<20
1202	1400	--	25.0	.714	.373	.946	.679	LA			5000	170	50
1902	0905	--	24.0	.252	.081	.442	.790	LA	19.50	Not Run	5620	170	40
67062652	0930	--	23.5	.279	.039	1.300	.977	LA	23.25		Not Run	170	50
67070502	0915	--	23.0	.310	.060	1.160	.933	LA	39.00	Not Run	Not Run	270	<20
1002	0910	--	26.0	.279	.081	1.223	1.301	LA	21.00	Not Run	Not Run	20	LA
1713	0920	--	25.0	.238	.115	.976	1.006	.041	18.00	Not Run	5260	230	110
2402	1045	--	28.5	.236	.070	.359	.217	.024	12.00	Not Run	5610	50	<20
3115	0945	--	27.5	.291	.110	1.005	.799	.172	18.00	Not Run	5520	230	20
67080702	0925	--	26.5	.322	.122	.545	.403		15.83		4920	790	50
1402	0907	--	24.5	.379	.178	.476	.285	ND	18.00	Not Run	5230	700	140
2802	0900	--	21.0	.683	.233	1.195	1.032	.140	7.50		1540	16,090	9,180

LA - Laboratory accident
ND - Not detectable

1967
ANNAPOLIS METRO AREA STUDY
CHESAPEAKE TECHNICAL SUPPORT LABORATORY
CONTROL STATION

Sample Number	Time Sample Taken	Secchi Disk Inches	Water Temp °C	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l N	TKN mf mg/l N	NO_2+NO_3 mg/l NO_3- N	Chloro-phyll a µg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
SEVERN RIVER - OLD SEVERN RIVER BRIDGE - RT.2													
67050203	1025	--	14.0	.117		.546	.552	.487	15.00	N.D.	5040	< 20	< 20
0303	0950	--	15.0	.098		.467	.191	.450	12.00		4690	< 20	< 20
0403	1020	--	14.5	.143		.788	.794	.330	18.00		4890	20	< 20
0503	0940	--	14.0	.198	.051	.467	.377	.461	24.75	.162	4610	110	< 20
0803	0940	--	13.0	.161	.059	.849	.658	.397	22.50	.044	4520	130	80
1503	1015	--	13.0	.147	.020	1.115	.804	.490	23.25	.166	3520	80	20
2203	1035	--	14.0	.197	.039	.883	.505	.496	36.75	.036	2910	20	20
3103	1040	--	16.5	.169	.053	.794	.458	.324	40.50	.120	3990	230	20
67060530	1125	36	20.0	.238	.066	.662	Not Run	.215	25.50	Not Run	3960	< 20	< 20
0537	1050	--	20.5	.210	.054	.819	Not Run	.178	43.50	Not Run	4080	< 20	< 20
0630	1030	38	19.0	.163	Not Run	.747	Not Run	.130	Not Run	Not Run	4150	< 20	< 20
0730	1045	42	21.5	.154	Not Run	.651	Not Run	.094	Not Run	Not Run	4490	< 20	< 20
0810	1040	34	22.0	.244	Not Run	.588	Not Run	LA	Not Run	Not Run	Not Run	50	< 20
0910	1045	34	21.0	.263	Not Run	.798	Not Run	LA	Not Run	Not Run	Not Run	50	< 20
1203	1515	--	23.5	.229	.030	.934	.355	LA			4420	40	< 20
1903	1020	--	23.5	.265	.029	.317	.547	LA	24.75	Not Run	4480	1720	70
2653	1310	--	--	.202	.022	.695	.815	LA	4.50	Not Run	Not Run	70	40
67070503	1045	--	24.5	.214	.086	1.068	1.111	LA	24.75	Not Run	Not Run	1,720	< 20
1003	1030	--	26.0	.218	.097	.857	1.040	LA	13.50	Not Run	Not Run	490	LA
1716	1045	--	25.0	.241	.061	1.089	.669	.034	40.50	" "	5,010	490	80
2403	1220	--	27.5	.398	.050	.818	.273	.028	69.00	" "	5,010	230	50
3116	1110	--	--	.426	.128	1.785	1.070	.220	78.00	" "	4,760	330	80
67080703	1015	--	26.5	.238	.109	.483	.279		20.83		4960	230	80
1403	1040	--	26.0	.449	.186	.780	.204	ND	59.25		4890	1,300	80
2803	1015	--	23.0	.692	.129	1.924	.630	ND	164.25		4830	1,300	220

LA - Laboratory accident
ND - Not detectable

1967
ANNAPOLIS METRO AREA STUDY
CHESAPEAKE TECHNICAL SUPPORT LABORATORY
CONTROL STATION

Sample Number	Time Sample Taken	Secchi Disk Inches	Water Temp °C	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l N	TKN mf mg/l N	NO_2+NO_3 mg/l NO_3- N	Chloro-phyll a mg/l	LAS/ ABS mg/l	CL mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
				SEVERN RIVER - EASTPORT BRIDGE - SPA CREEK									
67050204	1255	--	18.0	.117		.304	.332	.358	15.00	.198	5070	260	<39
0304	1150	--	16.0	.103		.388	.051	.330	13.50	.161	4830	490	170
0404	1000	--	14.5	.109		.625	.608	.320	12.75	<.2	4780	130	50
0504	0930	--	14.5	.096	.025	.552	.388	.328	14.25	.070	4640	210	70
0804	0930	--	13.5	.115	.024	.756	.584	.281	20.25	.016	4260	1720	230
1504	1000	--	13.5	.195	.025	1.115	.604	.534	33.75	.195	3680	230	110
2204	1020	--	13.5	.183	.031	.847	.529	.580	24.00	.042	2410	330	<20
3104	1025	--	16.5	.232	.055	1.143	.550	.233	47.25	.130	3410	3,480	20
67060534	1200	--	20.5	.199	.055	.590	Not Run	.184	LA	Not Run	4020	20	<20
0538	1035	--	22.5	.184	.054	1.060	" "	.154	33.00	" "	3940	230	<20
0634	1015	--	22.0	.297	Not Run	.783	" "	.093	Not Run	" "	3700	< 20	<20
0734	1125	--	23.0	.231	" "	.841	" "	.120	" "	" "	4170	130	<20
0814	1130	--	23.5	.159	" "	.266	" "	LA	" "	" "	Not Run	20	<20
0914	1140	--	23.0	.204	" "	.588	" "	LA	" "	" "	" "	20	<20
1204	1505	--	25.5	.374	.033	1.255	.459	LA			4900	<20	<20
1904	1005	--	24.0	.298	.053	.691	.460	LA	33.75	Not Run	5,120	9180	2400
2654	1255	--	--	.274	.031	.683	.701	LA	20.25	" "	Not Run	490	230
67070504	1030	--	24.0	.360	.057	.908	.780	LA	62.25	" "	" "	10,900	<20
1004	1020	--	27.0	.220	.056	.804	1.059	LA	27.00	" "	" "	700	LA
1715	1030	--	25.5	.278	.051	.828	.592	.038	34.50	" "	5000	330	70
2404	1200	--	29.0	.220	.062	.458	.142		23.25	" "	5110	330	170
3117	1100	--	28.0	.288	.133	1.385	1.154	.200	21.00	" "	4930	1,300	170
67080704	1005	--	27.0	.350	.098	.644	.384		23.33		46.70	3,480	2,400
1404	1025	--	25.0	1.002	.168	2.567	.359	N.D.	294.00		4710	2,400	220
2804	1005	--	22.0	.285	.077	.834	.601	N.D.	36.75		4180	16,090	5,420

LA - Laboratory accident
ND - Not dectectable

1967
ANNAPOLIS METRO AREA STUDY
CHESAPEAKE TECHNICAL SUPPORT LABORATORY
CONTROL STATION

Sample Number	Time Sample Taken	Secchi Disk Inches	Water Temp °C	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l	TKN mf mg/l N	NO_2+NO_3 mg/l NO_2- N	Chloro-phyll a µg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
					SOUTH RIVER - ROUTE 2 BRIDGE								
67050205	1315	--	19.0	.137		.445	.355	.138	23.25	.090	4610	20	20
0305	1110	--	15.0	.116		.574	.118	.060	25.50	.173	4390	700	50
0405	0935	--	15.0	.173		1.109	.867	.015	31.50	<.2	4280	50	<20
0505	0845	--	15.0	.181	.024	.625	.512	.084	34.50		4240	80	<20
0805	0855	--	14.0	.135	.033	.929	.664	.096	38.25	ND	4240	790	20
1505	0945	--	14.5	.128	.020	1.171	.810	.065/.073	43.50	.216	4170	230	130
2205	1000	--	16.0	.130	.027	.661	.463	.028	18.75	.036	4390	40	20
3105	1005	--	17.5	.243	.061	.727	.489	.000	54.00	.125	4170	20	<20
67060522	1030	--	23.0	.522	.079	1.072	Not Run	.117	53.25	Not Run	3820	20	<20
0539	1020	--	22.5	.534	.085	1.132	Not Run	.141	51.00	" "	4110	20	<20
0622	0900	--	23.5	.831	Not Run	1.560	" "	.038	Not Run	" "	4320	110	<20
0722	0910	--	23.5	.568	" "	1.148	" "	.086	" "	" "	3840	20	<20
0802	0915	--	24.0	.566	" "	.724	" "	LA	" "	" "	Not Run	70	20
0902	0935	--	22.5	.426	" "	.650	" "	LA	" "	" "	" "	170	<20
1205	1445	--	22.0	.433	.211	.791	.477	LA			4080	40	<20
1905	0945	--	25.0	.444	.045	.796	.485	LA	21.00	Not Run	4040	5420	310
2655	1015	--	24.0	.424	.209	1.013	.803	LA	35.25	" "	Not Run	5420	630
67070505	1005	--	24.0	.382	.211	.749	.755	LA	32.25	" "	" "	200	<20
1005	0955	--	27.0	.291	.176	1.164	1.138	LA	8.25	" "	" "	1,300	LA
1714	1010	--	25.5	.338	.195	.923	.852	.082	26.25	" "	5010	210	130
2405	1140	--	28.5	.340	.185	.415	.093	.022	17.25	" "	5240	330	340
3118	1040	--	27.5	.448	.295	.810	.702	.170	20.25	" "	4770	2,400	220
67080705	0945	--	25.0	.480	.229	.526	.440		25.83		4270	490	220
1405	0950	--	25.0	.619	.361	.736	.390	ND	33.00		4950	790	50
2805	0945	--	22.5	.428	.254	.950	.536	N.D.	33.75		4100	490	130

LA- Laboratory accident
ND- Not detectable

1967
ANNAPOLIS METRO AREA STUDY
CHESAPEAKE TECHNICAL SUPPORT LABORATORY
CONTROL STATION

Sample Number	Time Sample Taken	Secchi Disk Inches	Water Temp °C	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l N	TKN mf mg/l N	NO_2+NO_3 mg/l NO_3- N	Chloro-phyll a µg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
CHESAPEAKE BAY - SANDY POINT STATE PARK													
67050206	1120	--	15.0	.127		.236	.304	.630	.75		3480	<20	<20
0306	1010	--	14.0	.106		.400	.191	.520	7.50	.271	5110	<20	<20
0406	1035	--	14.0	.148		.743	.653	.435	6.00	<.2	4210	20	<20
0506	0915	--	14.5	.168	.042	.462	.484	.494	17.25	ND	4220	140	<20
0806	0955	--	12.0	.213	.094	1.064	.886	.420	11.25	.102	4090	3480	210
1506	1030	--	13.0	.269	.041	1.196	.654	.564	47.25	.075	2450	20	<20
2206	1055	--	13.0	.144	.025	.613	.403	.526	10.50	.042	2290	<20	<20
3106	1100	--	16.0	.182	.061	.849	.525	.376	23.25	.111	3970	50	20
67060540	1105	--	22.5	.182	.047	.680	Not Run	.116	33.75	Not Run	4050	80	<20
1206	1530	--	28.0	.168	.031	.625	.226	LA			5130	<20	<20
1906	1040	--	24.0	.187	.040	.865	.579	LA	37.50	Not Run	5160	5420	330
2656	1325	--	--	.178	.022	.593	.833	LA	18.75	" "	Not Run	50	0
67070506	1100	--	23.0	.138	.035	.804	.859	LA	19.50	" "	" "	70	<20
1006	1045	--	27.0	.133	.034	.968	.961	LA	13.50	" "	" "	2400	LA
1717	1100	--	25.5	.181	.051	1.124	.604	.046	45.75	" "	4970	330	110
2406	1235	--	28.5	.154	.025	.465	.378	.020	11.25	" "	5320	2,400	20
3119	1120	--	--	.180	.033	1.355	1.192	.192	31.50	" "	4800	230	20
67080706	1030	--	26.0	.222	.018	.613	.204		41.67		4060	1,720	340
1406	1055		23.5	.230	.044	.507	.037	ND	42.75		3990	9,180	20
2806	1040	--	23.5	.177	.042	.910	.641	ND	21.75		4830	790	130

LA - Laboratory accident
ND - Not dectectable

1967
ANNAPOLIS METRO AREA STUDY
CHESAPEAKE TECHNICAL SUPPORT LABORATORY
CONTROL STATION

Sample Number	Time Sample Taken	Secchi Disk Inches	Water Temp °C	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l N	TKN mf mg/l N	NO_2+NO_3 mg/l NO_3- N	Chloro-phyll a µg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
					MAGOTHY RIVER - ARUNDEL BEACH								
67050207	1325	--	19.0	.143		LA	LA	.446	24.00		3560	<20	<20
0307	1040	--	15.0	.176		.647	.366	.480	21.00	.161	3180	220	20
0407	1100	--	17.0	.129		.743	.631	.400	17.25	<2	3190	80	<20
0507	1015	--	16.0	.141	.027	.524	.467	.463	30.00		3370	50	<20
0807	1010	--	14.0	.110	.014	.867	.523	.404	34.50	ND	3180	340	170
1507	1045	--	14.5	.117	.017	.829	.530	.404	43.50	.175	3300	<20	<20
2207	1120	--	15.0	.123	.017	.889	.421	.334	27.50	.042	3230	230	<20
3107	1115	--	18.0	.206	.053	.813	.373	.217	38.25	.138	2880	170	<20
67060541	1120	--	25.0	.182	.047	.680	Not Run	.116	33.75	Not Run	2600	50	<20
1207	1550	--	24.0	.146	.028	.833	.318	LA		" "	2990	110	<20
1907	1100	--	25.5	.125	.013	.672	.535	LA	12.75	" "	3350	790	490
2657	1345	--	--	.361	.054	1.181	.653	LA	71.25	" "	Not Run	1,300	330
67070507	1120	--	27.0	.137	.024	.669	.589	LA	24.00	" "	" "	700	<20
1007	1110	--	29.0	.170	.029	.654	.968	LA	34.50	" "	" "		
1718	1125	--	25.0	.161	.056	.580	.509	.073	27.75	" "	4140	490	80
2407	1300	--	30.0	.144	.024	.657	LA	.044	16.50	" "	3980	2,400	490
3120	1140	--	--	.223	.031	.708	.470	.132	53.25	" "	3960	<20	130
67080707	1100	--	27.5	.265	.022	.650	.279		65.00	" "	3520	3,480	490
1407	1115	--	26.0	.306	.073	.594	.050	ND	47.25	" "	3980	2,400	790
2807	1055	--	24.0	.392	.081	1.190	.408	ND	45.00		3050	5,420	3,480

LA - Laboratory accident
ND - Not dectectable

1967
ANNAPOLIS METRO AREA STUDY
WEST RIVER
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Time Sample Taken	Water Temp °C	Secchi Disk Inches	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l N	TKN mf mg/l N	NO_2+NO_3 mg/l NO_3- N	Chloro-phyll a µg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
					Station 1-A SOUTH CREEK - AVALON SHORES								
67052208	0940	15.5	34	.169	.034	.637	.499	.057	15.75	.040	4900	80	20
2301	1415	17.0	3'	.332	.030	.711	.527	.288	18.75	.006	Not Run	130	<20
2401	0930	15.5	32	.139	.050	.724	.356	.194	25.50	.006	4630	20	<20
2601	0910	15.0	38	.147	.025	.758	.409	.280	36.00	.044	Not Run	20	<20
					Station 1- B RED BUOY R-6								
67052209	0950	15.5	30	.157	.034	.667	.385	.145	34.50	.042	5100	20	<20
2302	1400	16.2	30	.190	.028	.768	.654	.348	21.00	.039	Not Run	130	20
2402	0925	14.5	24	.206	.041	.787	.406	.390	30.75	.014	3460	80	20
2602	0905	15.0	3'	.219	.048	1.088	.428	.348	59.25	ND	Not Run	20	<20
					Station 1-C CURTIS POINT								
67052210	0920	14.5	4'	.183	.051	.793	.603	.240	21.00	.150	4470	170	50
2303	1345	17.0	2'	.194	.029	.921	.699	.442	20.25	.104	Not Run	<20	<20
2403	0905	14.5	31	.139	.034	.673	.508	.440	18.00	.031	3420	700	110
2603	0855	15.0	32	.169	.047	.794	.415	.436	19.50	ND	Not Run	20	<20

1967

ANNAPOLIS METRO AREA STUDY

RHODES RIVER

CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Time Sample Taken	Water Temp °C	Secchi Disk Inches	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l N	TKN mf mg/l N	NO_2+NO_3 mg/l NO_3- N	Chloro-phyll a µg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
					Station 2-A MOUTH - BUOY 2								
67052211	1000	14.5	76	.113	.029	.559	.400	.458	14.25	.145	3940	<20	<20
2304	1500	16.5	3'	.124	.014	.508	.413	.502	21.00	.036	Not Run	20	<20
2404	0950	14.5	26	.192	.035	.851	LA	.380	44.25	ND	3160	20	20
2604	0925	15.0	44	.136	.036	.733	.360	.502	21.00	ND	Not Run	<20	<20
					Station 2-B CADLE CREEK								
67052211A	1010	14.5	24	.264	.061	.835	.457	.100	76.50	.145	4720	80	50
2305	1515	16.5	34	.198	.032	.648	.362	.060	42.75	.059	Not Run	20	20
2405	1000	15.0	33	.226	.033	.724	.318	.074	63.75	.036	3860	170	130
2605	0930	15.5	30	.237	.041	1.265	.428	.320	90.00	ND	Not Run	40	<20

1967
ANNAPOLIS METRO AREA STUDY
CHESAPEAKE BAY
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Time Sample Taken	Water Temp °C	Secchi Disk Inches	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l N	TKN mf mg/l N	NO_2+NO_3 mg/l NO_2- N	Chlorophyll a µg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
					Station 3-A SAUNDERS POINT								
67052212	0850	14.5	56	.116	.045	.655	.603	.520	16.50	.150	2890	<20	<20
2306	1530	15.0	5'	.107	.015	.718	.298	.610	12.75	ND	Not Run	20	<20
2406	0845	14.5	42	.129	.062	.394	.375	.566	12.00	.044	2830	<20	<20
2606	0840	14.5	56	.091	.036	.697	.379	.522	10.50	ND	Not Run	<20	<20

ND - Not detectable

1967
ANNAPOLIS METRO AREA STUDY
SOUTH RIVER
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Time Sample Taken	Water Temp °C	Secchi Disk Inches	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l N	TKN mf mg/l N	NO_2+NO_3 mg/l NO_3- N	Chloro-phyll a µg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
					Station 3-B TURKEY POINT								
67052213	1030	14.5	46	.122	.047	.607	.400	.439	18.00	.187	4020	<20	<20
2307	0745	14.5	66	.074	.009	.476	.406	.499	21.00	.138	Not Run	<20	<20
2407	1025	15.0	60	.092	.021	.508	.260	.460	18.00	.064	3150	<20	<20
2507	0900	14.5	54	.116	.029	.457	.325	.514	13.50	ND	Not Run	<20	<20
2607	0950	15.0	5'	.110	.033	.703	.306	.488	13.50	ND	" "	20	<20
67060526	1050	20.0	32	.209	.056	.620	Not Run	.132	28.50	Not Run	3870	<20	<20
0626	0930	21.0	38	.218	Not Run	.759	" "	.084	Not Run	" "	4110	<20	<20
0726	0945	21.5	32	.212	" "	.761	" "	.110	" "	" "	4120	<20	<20
0806	0950	22.0	32	.227	" "	.247	" "	LA	" "	" "	Not Run	20	<20
0906	1010	21.5	30	.235	" "	.476	" "	LA	" "	" "	Not Run	<20	<20
					Station 3-C SELBY BAY								
67052214	1015	15.0	54	.118	.031	.583	.445	.392	9.75	.164	4040	<20	<20
2308	0930	15.0	74	.064	.012	.724	.203	.412	11.25	.145	Not Run	<20	<20
2408	0825	15.0	4'	.109	.027	.381	.445	.470	13.50	.022	3300	20	20
2508	0835	14.5	42	.117	.026	.439	.241	.474	17.25	ND	Not Run	20	<20
2608	0830	15.0	44	.136	.026	.684	.367	.336	13.50	ND	" "	<20	<20
					Station 3-D BREWER CREEK								
67052215	1050	15.5	58	.102	.017	.589	.470	.220	9.75	.264	4400	70	70
2309	1000	15.0	6'	.216	.061	1.226	.356	.456	20.25	.195	Not Run	20	20
2409	1035	15.5	54	.102	.021	.457	.197	.450	15.75	.066	3450	70	50
2509	0955	15.0	4'	.145	.034	.638	LA	.382	12.00	ND	Not Run	230	230
2609	1000	16.0	55	.134	.025	.733	.251	.252	24.00	ND	" "	50	<20
67060525	1045	22.0	26	.258	.055	.699	Not Run	.086	30.00	Not Run	3800	20	<20
0625	0925	22.5	38	.283	Not Run	.705	" "	.000	Not Run	" "	3780	<20	<20
0725	0940	23.0	30	.315	" "	.602	" "	.092	" "	" "	3920	50	<20
0805	0945	22.5	34	.268	" "	.278	" "	LA	" "	" "	Not Run	20	<20
0905	1000	22.5	32	.166	" "	.631	" "	LA	" "	" "	" "	790	50

ND- Not detectable.
LA- Laboratory accident

1967
ANNAPOLIS METRO AREA STUDY
SOUTH RIVER
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Time Sample Taken	Water Temp °C	Secchi Disk Inches	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l N	TKN mf mg/l N	NO_2+NO_3 mg/l NO_3- N	Chlorophyll a µg/l	LAS/ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
					Station 3-E CAN BUOY # 13								
67052216	1100	16.0	50	.141	.060	.541	.465	.298	6.75	.117	4530	<20	<20
2310	1015	15.5	66	.139	.026	.635	.445	.306	21.00	.220	Not Run	<20	<20
2410	1040	15.0	60	.114	.021	.597	.311	.352	21.00	ND	3650	20	<20
2510	1010	15.0	54	.141	.024	.572	.229	.294	22.50	.010	Not Run	20	<20
2610	1005	16.0	66	.134	.032	.715	.379	.314	21.75	.078	" "	20	20
67060524	1040	23.0	32	.254	.059	.879	Not Run	.166	36.75	Not Run	3880	<20	<20
0624	0920	22.5	30	.289	Not Run	.795	" "	.009	Not Run	" "	4120	<20	<20
0724	0930	23.0	28	.315	" "	.835	" "	.066	" "	" "	4020	50	<20
0804	0935	23.0	28	.332	" "	.483	" "	LA	" "	" "	Not Run	80	<20
0904	0150	23.0	32	.280	" "	.507	" "	LA	" "	" "	" "	<20	<20
					Station 3-F GLEBE CREEK - WOODLAND BEACH								
67052217	1110	16.0	36	.281	.038	.733	.375	.045	40.50	.180	4490	60	40
2311	1040	16.5	42	.138	.011	.648	.584	.048	23.25	.298	Not Run	80	<20
2411	1050	16.5	42	.218	.028	.387	.203	.070	36.75	ND	4020	110	70
2511	1015	15.5	42	.207	.034	.734	.295	.074	35.25	.023	Not Run	130	70
2611	1010	17.0	42	.246	.028	.935	.477	.012	69.75	ND	" "	40	<20
					Station 3-G ALMS HOUSE CREEK - WOODLAND BEACH								
67052218	1115	16.0	66	.180	.039	.607	.368	.130	10.50	.187	4750	<20	<20
2312	1055	16.0	66	.080	.005	.533	.400	.190	20.25	.045	Not Run	70	20
2412	1100	16.5	60	.089	.013	.292	.197	.220	21.00	ND	3930	50	<20
2512	1020	15.5	56	.129	.023	.403	.289	.210	27.75	.010	Not Run	80	50
2612	1020	17.0	42	.362	.061	.971	.312	.054	69.75	.440	" "	20	20
67060523	1030	23.0	19	.451	.058	.789	Not Run	.167	64.50	Not Run	3850	20	<20
0623	0910	22.0	28	.645	Not Run	1.325	" "	.069	Not Run	" "	4360	70	<20
0723	0920	23.5	26	.453	" "	.970	" "	.050	" "	" "	3880	20	<20
0803	0930	23.5	34	.294	" "	.260	" "	LA	" "	" "	Not Run	70	<20
0903	0945	22.5	3'	.244	" "	.458	" "	LA	" "	" "	" "	110	20

LA - Laboratory accident
ND - Not detectable

1967
ANNAPOLIS METRO AREA STUDY
SOUTH RIVER
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Time Sample Taken	Water Temp °C	Secchi Disk Inches	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l N	TKN mf mg/l N	NO_2+NO_3 mg/l NO_3- N	Chloro-phyll a µg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
					Station 3-H SYLVAN SHORES								
67052219	1130	16.0	50	.209	.059	.829	.279	.118	28.50	.164	4320	80	80
2313	1115	16.5	5'	.086	.005	.540	.425	.038	20.25	.130	Not Run	170	110
2413	1115	17.0	60	.134	.028	1.073	.210	.050	26.25	ND	3930	80	<20
2513	1035	15.5	32	.226	.024	.530	.078	.080	49.50	ND	Not Run	80	<20
2613	1045	17.5	4'	.475	.230	1.033	.525	.031	43.50	.170	" "	50	<20
67060521	0905	23.0	18	.710	.174	.837	Not Run	.090	57.75	Not Run	3470	<20	<20
0621	0850	23.5	2'	1.111	Not Run	1.873	" "	.029	Not Run	" "	4110	20	20
0721	0900	24.5	18	1.106	" "	1.657	" "	.056	" "	" "	3760	20	<20
0801	0910	24.0	20	.714	" "	.903	" "	LA	" "	" "	Not Run	20	<20
0901	0925	22.5	2'	.770	" "	.841	" "	LA	" "	" "	" "	80	20
					Station 3-I BEARDS POINT								
67052220	1140	16.0	2'	.396	.051	.871	.273	.134	62.25	.150	3020	50	20
2314	1120	17.0	3'	.308	.028	1.111	.603	.044	54.00	.118	Not Run	20	20
2414	1120	17.0	30	.488	.132	--	.171	.028	69.00	ND	3510	50	20
2514	1050	16.5	30	.382	.079	.831	.084	.060	65.25	ND	Not Run	20	<20
2614		17.5		.371	.119	.855	.281	.012	57.00	.035	" "	<20	<20

1967
ANNAPOLIS METRO AREA STUDY
SEVERN RIVER
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Time Sample Taken	Secchi Disk Inches	Water Temp °C	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l N	TKN mf mg/l N	NO_2+NO_3 mg/l NO_2- N	Chloro-phyll a µg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
				Station 6-A CHESAPEAKE BAY - BAY RIDGE BEACH									
67051601	0915	90	13.5	1.050	.978	.616	.351	.480	9.75		4050	<20	<20
1701	1205	--	14.0	.487	.112	.634	.444	.566	7.50	.092	Not Run	20	20
1801	0930	78	14.5	.109	.044	1.310	.811	.600	9.00	.116	3090	50	50
1901	0910	57	14.5	.129	.055	.721	.745	.490	12.00	.083	Not Run	50	20
67060527	1105	54	20.0	.146	.052	.512	Not Run	.354	21.75	Not Run	4630	<20	<20
0627	0945	48	19.5	.159	Not Run	.837	" "	.222	Not Run	" "	4760	<20	<20
0727	1000	54	20.0	.116	" "	.528	" "	.144	" "	" "	5570	20	<20
0807	1010	50	20.0	.124	" "	.189	" "	LA	" "	" "	Not Run	20	<20
0907	1020	48	20.0	.182	" "	.538	" "	LA	" "	" "	Not Run	<20	<20
67073101	1020	--	--	.191	.058	.508	.423	.148	15.75	" "	" "	140	80
67080101	1005	--	24.5	.176	.058	.392	.209	.264	6.00	" "	" "	80	<20
0201	1025	36	25.0	.212	.027	.723	.635	ND	LA	" "	" "	40	20
				Station 5-A BUOY R-8 GREENBURY POINT									
67051602	0930	74	13.0	.105	.037	.499	.462	.562	10.50	.170	3740	40	<20
1702	0930	50	14.0	.106	.042	.832	.825	.540	9.75	.084	Not Run	<20	<20
1802	0945	56	14.5	.076	.025	.769	.511	.584	7.50	.121	2670	<20	<20
1902	0925	60	14.5	.104	.045	.505	.294	.512	13.50	.122	Not Run	50	<20
67060528	1110	38	20.0	.162	.054	.614	Not Run	.350	27.75	Not Run	4300	20	<20
0628	0955	45	19.5	.236	Not Run	.530	" "	.212	Not Run	" "	4400	70	<20
0728	1015	48	21.0	.179	" "	.552	" "	.209	" "	" "	4890	<20	<20
0808	1020	36	20.5	.172	" "	.427	" "	LA	" "	" "	Not Run	80	<20
0908	1030	44	20.0	.212	" "	.470	" "	LA	" "	" "	" "	80	20
67073102	1035	--	--	.240	.063	.575	.417	.192	23.25	" "	" "	130	50
67080102	1015	--	24.5	.215	.066	.349	.215	.226	6.00	" "	" "	330	50
0202	1035	37	25.0	.269	.017	.736	.296	ND	34.50	" "	" "	790	130

LA- Laboratory accident
ND- Not detectable

1967
ANNAPOLIS METRO AREA STUDY
SEVERN RIVER
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Time Sample Taken	Secchi Disk Inches	Water Temp °C	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l N	TKN mf mg/l N	NO_2+NO_3 mg/l NO_3- N	Chloro-phyll a µg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
				Station 5-B BACK CREEK - CHINKS POINT									
67051603	0855	54	14.0	.409	.172	.807	.400	.463	24.00	.170	3970	330	170
1703	0945	52	14.5	.123	.031	.899	.579	.412	21.75	.129	Not Run	330	70
1803	0955	68	15.0	.117	.036	.709	.499	.487	11.25	.103	3230	130	50
1903	0855	54	16.0	.130	.038	.577	.282	.422	21.00	..107	Not Run	130	80
67060529	1115	26	20.0	.226	.050	1.036	Not Run	.178	42.00	Not Run	3900	40	<20
0629	1005	38	22.0	.168	Not Run	.765	" "	.032	Not Run	" "	3950	<20	<20
0729	1030	30	21.0	.240	" "	.773	" "	.150	" "	" "	4560	1,300	20
0809	1030	24	20.5	.236	" "	.835	" "	LA	" "	" "	Not Run	<20	<20
0909	1035	33	22.0	.243	" "	.730	" "	LA	" "	" "	" "	1090	210
67073103	1040	--	--	.335	.114	.514	.387	.128	20.25	" "	" "	24,000	9,180
67080103	--	--	26.0	.301	.105	.417	.220	.990	7.50	" "	" "	9,180	1,410
0203	1040	32	26.5	.358	.085	.799	.302	ND	30.00	" "	" "	3,480	490
				Station 5-C DORSEY'S CK.- NAVAL ACADEMY BR.									
67051604	0940	44	14.5	.135	.022	.561	.197	.539	32.25	.100	4170	2400	790
1704	1000	56	14.5	.135	.028	.875	.487	.400	22.50	.115	Not Run	80	20
1804	1010	64	14.5	.183	.045	.763	.535	.445	18.00	.103	3470	1720	460
1904	0935	60	15.0	.140	.038	.721	.276	.461	20.25	.058	Not Run	110	40
67073104	1051	--	--	.235	.078	.671	.333	.116	21.00	Not Run	" "	790	330
67080104	1035	--	27.0	.225	.055	.454	.147	.220	8.25	" "	" "	3,480	1,720
0204	1050	32	26.5	.328	.062	.855	.409	ND	29.25	" "	" "	5,420	2,210
				Station 5-D WEEMS CK.-OLD RT. 2 BRIDGE									
67051605	0950	48	14.5	.126	.017	.635	.216	.360	21.00	.060	4140	140	40
1705	1015	54	15.0	.123	.025	.696	.413	.320	18.75	.135	Not Run	50	20
1805	1020	44	15.0	.140	.024	.871	.379	.314	24.75	.116	4100	50	<20
1905	0945	48	15.5	.101	.029	.397	.072	.392	18.00	.059	Not Run	40	<20
67060531	1135	28	21.0	.233	.054	.602	Not Run	.131	41.25	Not Run	3610	20	<20
0631	1040	36	22.0	.214	Not Run	.885	" "	.044	Not Run	" "	3660	50	<20
0731	1045	26	23.0	.272	" "	.890	" "	ND	" "	" "	3930	80	<20
0811	1045	26	22.0	.244	" "	.588	" "	LA	" "	" "	Not Run	50	<20

LA- Laboratory accident
ND- Not detectable

1967
ANNAPOLIS METRO AREA STUDY
SEVERN RIVER
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Time Sample Taken	Secchi Disk Inches	Water Temp °C	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l N	TKN mf mg/l N	NO_2+NO_3 mg/l NO_3 - N	Chloro-phyll a µg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
					Station 5-D WEEMS CK. - OLD RT. 2 BRIDGE								
0911	1100	32	22.5	.255	Not Run	.557	Not Run	LA	Not Run	Not Run	Not Run	80	80
67073105	1100	--	--	.282	.081	.659	.339	.140	27.00	" "	" "	3,480	1,720
67080105	1045	--	26.5	.202	.065	.306	.166	.212	5.25	" "	" "	790	80
0205	1105	42	26.5	.191	.058	.522	.208	ND	8.25	" "	" "	230	80
					Station 5-E NEW SEVERN RIVER BRIDGE								
67051606	1000	48	14.5	.127	.020	.665	.172	.529	28.50	.075	4150	80	20
1706	1020	48	15.0	.111	.021	.862	.511	.321	29.25	.049	Not Run	50	50
1806	1030	42	15.0	.099	.023	.639	.409	.320	17.25	.090	4310	70	20
1906	0955	31	15.0	.125	.034	.703	.204	.400	24.75	.066	Not Run	70	< 20
67060532	1140	36	20.5	.159	.047	.494	Not Run	.208	26.25	Not Run	3820	< 20	< 20
0632	1045	36	21.0	.150	Not Run	.687	" "	.084	Not Run	" "	3810	< 20	< 20
0732	1050	36	22.5	.134	" "	.356	" "	.090	" "	" "	4210	< 20	< 20
0812	1100	37	22.5	.129	" "	.254	" "	LA	" "	" "	Not Run	< 20	< 20
0912	1110	36	22.0	.196	" "	.569	" "	LA	" "	" "	" "	20	< 20
67073106	1107	--	--	.267	.031	.708	.248	.140	52.50	" "	" "	20	< 20
67080106	1050	--	26.0	.264	.075	.447	.080	.282	11.25	" "	" "	230	< 20
0206	1105	30	25.5	.359	.079	.887	.384	ND	51.75	" "	" "	< 20	< 20
					Station 5-F BUOY 5 - ARNOLD PT. AND BREWER PT.								
67051607	1020	46	14.5	.142	.016	.906	.228	.553	32.25	.030	4230	< 20	< 20
1707	1030	38	15.0	.093	.020	.788	.684	.254	35.25	.165	Not Run	< 20	< 20
1807	1040	42	16.0	.090	.018	.733	.589	.228	27.75	.097	4260	< 20	< 20
1907	1005	42	15.0	.107	.029	LA	.264	.369	24.00	.030	Not Run	< 20	< 20
67060533	1145	32	20.5	.190	.054	ND	Not Run	.152	32.25	Not Run	4020	< 20	< 20
0633	1050	40	22.0	.137	Not Run	.849	" "	.011	Not Run	" "	3870	20	< 20
0733	1110	30	22.0	.137	" "	.681	" "	.040	" "	" "	4390	< 20	< 20
0813	1110	32	22.5	.257	" "	.414	" "	LA	" "	" "	Not Run	20	< 20
0913	1115	36	22.0	.252	" "	.990	" "	LA	" "	" "	" "	< 20	< 20
67073107	1115	--	--	.183	.039	.641	.375	.132	13.50	" "	" "	< 20	< 20
67080107	1055	--	25.5	.178	.058	.343	.086	.200	4.50	" "	" "	< 20	< 20
0207	1115	48	26.0	.181	.052	.541	.302	ND	13.50	" "	" "	< 20	< 20

LA- Laboratory accident
ND- Not detectable

1967

ANNAPOLIS METRO AREA STUDY

SEVERN RIVER

CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Time Sample Taken	Secchi Disk Inches	Water Temp °C	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l N	TKN mf mg/l N	NO_2+NO_3 mg/l NO_3- N	Chloro-phyll a µg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
					Station 5-G ROUND BAY								
67051608	1025	38	15.0	.073	.013	1.096	.253	.298	33.00	.085	4310	< 20	< 20
1708	1035	42	15.0	.082	.017	.850	.480	.248	33.00	.101	Not Run	< 20	< 20
1808	1045	40	16.0	.074	.016	.829	.415	.220	29.25	.075	4120	< 20	< 20
1908	1010	38	16.0	.090	.026	.775	.126	.224	36.75	.074	Not Run	< 20	< 20
67073108	1120	--	--	.144	.037	.575	.272	.176	12.75	Not Run	" "	< 20	< 20
67080108	1100	--	25.5	.137	.031	.380	.147	.182	3.75	" "	" "	< 20	< 20
0208	1120	48	26.0	.191	.044	.585	.434	ND	15.75	" "	" "	< 20	< 20
					Station 5-H LITTLE ROUND BAY								
67051609	1030	36	14.5	.111	.013	.727	.283	.274	34.50	.065	4250	70	< 20
1709	1045	44	15.0	.107	.020	.819	.542	.240	30.00	.035	Not Run	< 20	< 20
1809	1050	46	15.5	.097	.016	.709	.391	.270	33.00	.065	4260	< 20	< 20
1909	1020	38	15.0	.126	.028	.781	.144	.248	42.00	.074	Not Run	< 20	< 20
67073109	1130	--	--	.148	.030	.363	.375	.112	9.00	Not Run	" "	230	< 20
67080109	1105	--	26.0	.161	.028	.423	.141	.200	11.25	" "	" "	50	< 20
0209	1125	28	26.0	.446	.037	1.233	.277	ND	78.75	" "	" "	< 20	< 20
					Station 5-I CEDAR POINT								
67051610	1055	32	14.5	.145	.016	.702	.351	.324	46.50	.060	4090	< 20	< 20
1710	1055	38	15.0	.090	.017	.856	.437	.170	62.25	.095	Not Run	< 20	< 20
1810	1100	38	15.5	.118	.017	.889	.427	.176	67.50	.ND	3880	< 20	< 20
1910	1030	37	17.0	.106	.027	.715	.331	.154	36.00	.046	Not Run	< 20	< 20
67073110	1140	--	--	.133	.036	.369	.423	.104	7.50	Not Run	" "	230	20
67080110	1115	--	26.0	.131	.025	.325	.190	.176	6.00	" "	" "	20	20
0210	1130	43	26.0	.206	.045	.686	.453	ND	17.25	" "	" "	< 20	< 20
					Station 5-J VALENTINE CREEK								
67051611	1100	36	15.0	.116	.013	.819	.419	.222	42.00	.110	4020	< 20	< 20
1711	1105	38	15.0	.117	.019	.912	.702	.216	60.75	.090	Not Run	20	20
1811	1110	36	16.0	.082	.016	.926	.517	.190	33.00	ND	3900	50	20
1911	1035	37	17.0	.112	.025	.655	.114	.156	36.00	.036	Not Run	80	< 20
67073111	1150	--	--	.141	.025	.617	.363	.140	8.25	Not Run	" "	490	50
67080111	1210	--	27.0	.114	.018	.375	.202	.190	9.00	" "	" "	130	20
0211	1135	53	27.0	.112	.019	.579	.270	ND	8.25	" "	" "	20	< 20

ND - Not detectable

1967
ANNAPOLIS METRO AREA STUDY
SEVERN RIVER
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Time Sample Taken	Secchi Disk Inches	Water Temp °C	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l N	TKN mf mg/l N	NO_2+NO_3 mg/l NO_3- N	Chloro-phyll a µg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
					Station 5-K ROCK COVE								
67051612	1105	30	14.5	.116	.016	.906	.370	.215	48.75	.024	3400	20	20
1712	1110	34	15.0	.094	.020	.949	.487	.208	45.00	.078	Not Run	<20	<20
1812	1115	38	16.5	.118	.017	.691		.234	45.75	.116	3300	20	<20
1912	1043	32	18.0	.103	.026	.733	.156	.134	47.25	QNS	Not Run	<20	<20
67073112	1155	--	--	.212	.056	.665	.417	.124	12.75	Not Run	" "	230	<20
67080112	1120	--	26.5	.195	.057	.509	.399	.220	5.25	" "	" "	330	80
0212	1140	42	26.0	.205	.046	.774	.333	.ND	13.50	" "	" "	130	<20
					Station 5-L MATHEWS POINT - INDIAN LANDING								
67051613	--	33	15.0	.137	.012	1.029	.326	.311	52.50	.032	3070	80	<20
1713	1120	32	15.0	.128	.019	.986	.702	.219	51.00	.110	Not Run	130	20
1813	1120	30	17.0	.152	.018	.926	--	.282	39.75	.105	2640	20	<20
1913	1050	30	18.0	.129	.028	.757	.325	.154	57.00	QNS	Not Run	<20	<20
67073113	1200	--	--	.190	.022	.768	.441	.112	9.75	Not Run	" "	230	<20
67080113	1125	--	27.0	.136	.024	.669	.472°	.176	6.00	" "	" "	330	<20
0213	1145	30	26.0	LA	.038	LA	.440	ND	21.75	" "	" "	40	<20

LA - Laboratory accident
ND - Not detectable
QNS - Quanity not sufficient

1967
ANNAPOLIS METRO AREA STUDY
MAGOTHY RIVER
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Time Sample Taken	Secchi Disk Inches	Water Temp °C	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l N	TKN mf mg/l N	DO mg/l	NO_2+NO_3 mg/l NO_3- N	Chloro-phyll a mg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
Station 7-A BUOY R-2 MOUTH OF RIVER IN CHANNEL GIBSON ISL.														
67050808	0930	3	12.0	.115	.027	.633	.584		.610	12.75	.016	4300	<20	<20
0901	--	38	12.5	.111	.031	.892	.615		.563	9.00	.104	4480	<20	<20
1001	0932	42	12.0	.115	.041	1.021	1.113		.555	7.50	.140	Not Run	<20	<20
1101	0930	3	13.0	.115	.036	.665	.549		.633	8.25	.112	" "	<20	<20
1201	0945	3	13.5	.113	.129	.476	.537		.609	Not Run	Not Run	" "	20	<20
67071701	1150	33	25.0	.329	.038	1.420	.988		.100	83.25	" "	4180	140	<20
1801	1115		25.5	.233	.035	.861	.473	8.75	.118	47.25	" "	4110	50	<20
1901	0945		22.0	.223	ND	1.141	.777	5.11	.065	60.00	" "	Not Run	50	20
2001	1120			.239	.036	.879	1.022	6.91	ND	29.25	" "	3939	110	<20
Station 7-B DEEP CREEK														
67050809	0900	2.5	12.0	.473	.277	.547	.904		.468	12.75	ND	3980	1090	110
0902	0915	32	13.0	.117	.038	.867	.818		.350	8.25	.072	4040	630	630
1002	0915	34	13.0	.154	.041	.713	.984		.434	10.50	.129	Not Run	490	330
1102	0920	32	13.0	.098	.027	.647	.555		.450	10.50	.093	" "	170	130
1202	0930	38	14.5	.107	.039	.512	.537		.579	Not Run	Not Run	" "	1300	330
67071702	1200	30	26.0	.284	.040	.892	.757		.030	40.50	" "	3600	24,000	170
1802	1320		23.0	.224	.037	.504	.189	8.80	.076	33.00	" "	4340	330	50
1902	1130		22.8	.281	ND	.910	.576	6.94	.048	51.75	" "	Not Run	1720	330
2002	1100			.285	.031	1.530	.923	7.89	ND	40.50	" "	3910	1090	230
Station 7-C TAR COVE														
67050810	1000	3'	12.5	.136	.032	.627			.466	15.75	ND	4010	330	230
0903	--	34	13.0	.100	.018	.756	.369		.430	17.25	.073	4070	330	20
1003	0940	34	13.0	.107	.020	.640	.732		.474	14.25	.116	Not Run	490	330
1103	1045	3	13.0	.341	.110	.714	.549		.512	13.50	.105	" "	50	<20
1203	0955	34	14.0	.106	.021	.531	.409		.458	Not Run	Not Run	" "	230	80
67071703	1211	30	26.5	.231	.031	.855	.556		.046	56.25	" "	4460	230	50
1803	1140		23.0	.174	.032	.637	.367	10.11	.044	64.50	" "	4460	170	20
1903	1000		23.0	.202	ND	.710	.497	7.66	.106	51.75	" "	Not Run	90	<20
2003	1135			.242	.037	.879	.638	9.80	ND	62.25	" "	4050	330	130

ND- Not detectable

1967
ANNAPOLIS METRO AREA STUDY
MAGOTHY RIVER
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Time Sample Taken	Secchi Disk Inches	Water Temp °C	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l N	TKN mf mg/l N	DO mg/l	NO_2+NO_3 mg/l NO_3- N	Chloro-phyll a µg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
						Station 7-D DOBBINS ISLAND - SILLERY BAY								
67050811	1015	3'4"	12.5	.113	.022	.726	.387		.578	14.25	ND	4270	< 20	< 20
0904	--	38	13.0	.099	.017	.726	.357		.340	14.25	.072	4000	< 20	20
1004	0945	3'	12.0	.123	.027	.775	.572		.570	14.25	.098	Not Run	< 20	< 20
1104	0955	3'	13.0	.114	.022	.677	.604		.562	10.50	.136	" "	< 20	< 20
1204	1000	34	13.5	.120	.027	.488	.464		.454	Not Run	Not Run	" "	< 20	< 20
67071704	1220	31	26.0	.244	.033	.692	.385		.032	39.75	" "	4380	50	< 20
1804	1145		23.0	.113	.029	.358	.320	9.23	.084	19.50	" "	4370	< 20	< 20
1904	1010		22.5	.191	.039	.801	.588	9.06	ND	36.00	" "	Not Run	340	20
2004	1140			.183	.026	.929	.650	9.90	ND	27.00	" "	4070	< 20	< 20
						Station 7-E ULMSTEAD POINT								
67050812	1035	4'6"	13.5	.080	.019	1.199	.326		.540	18.00	ND	3690	20	< 20
0905	1010	4'	13.0	.084	.022	.787	.431		.260	18.00	.062	3580	20	70
1005	0955	3'	12.5	.107	.018	.683	.443		.504	18.00	.137	Not Run	< 20	< 20
1105	1005	38	13.0	.131	.022	.506	.415		.508	21.00	.194	" "	< 20	< 20
1205	1005	3'	13.0	.284	.020	.592	.403		.510	Not Run	Not Run	" "	< 20	< 20
67071705	1230	42"	26.0	.738	.118	1.268	.651		ND	42.75	" "	4550	20	< 20
1805	1200		22.5	.606	.054	.874	.444	9.72	.097	61.50	" "	4440	20	< 20
1905	1017		23.5	.235	ND	.607	.613	9.83	.062	57.00	" "	Not Run	230	< 20
2005	1150			.225	.026	.972	.626	9.02	ND	31.50	" "	4100	--	--
						Station 7-F FORKED CREEK								
67050813	1045	3'10"	12.5	.080	.016	.504	.314		.506	18.75	ND	3760	230	< 20
0906	1015	54	13.5	.110	.019	.572	.381		.260	16.50	.069	3560	230	130
1006	1000	40	13.5	.117	.022	.400	.535		.434	20.25	.150	Not Run	20	< 20
1106	1010	42	13.5	.094	.017	.476	.342		.486	19.50		" "	20	< 20
1206	1015	38	13.5	.230	.024	.598	.342		.450	Not Run	.115	" "	230	< 20
67071706	1235	43	26.0	.165	.029	.556	.485		.052	22.50	Not Run	4360	80	< 20
1806	1205		22.0	.170	.034	.467	.331	10.21	.053	36.00	" "	4250	170	50
1906	1021		23.0	.183	ND	.497	.528	8.79	.028	26.25	" "	Not Run	110	< 20
2006	1200			.218	.030	.836	.712	9.51	ND	38.25	" "	3940	230	20

ND - Not detectable

1967
ANNAPOLIS METRO AREA STUDY
MAGOTHY RIVER
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Time Sample Taken	Secchi Disk Inches	Water Temp °C	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l N	TKN mf mg/l N	DO mg/l	NO_2+NO_3 mg/l NO_3- N	Chloro-phyll a µg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
Station 7-G BUOY C-7 - SOUTH FERRY POINT														
67050814	1050	3'6"	13.0	.170	.022	.861	.394		.532	24.00	ND	3770	270	60
0907	--	42	13.5	.081	.015	.517	.338		.302	23.25	LA	3730	80	20
1007	--	3'	12.5	.176	.018	.818	.437		.473	19.50	.072	Not Run	50	20
1107	1015	40	13.5	.112	.019	.592	--		.492	24.00		" "	20	<20
1207	1020	3'	13.0	.103	.012	.677	.409		.500	Not Run	.144	" "	<20	<20
67071707	1245	3'	26.5	.171	.033	.576	.414		.040	28.50	Not Run	4080	230	80
1807	1210		22.0	.231	.032	.704	.337	8.94	.170	70.50	" "	4330	80	50
1907	1030		23.0	.173	ND	.716	.516	9.64	.098	37.50	" "	Not Run	330	60
Station 7-H STONY POINT - MILL CREEK AND DIVIDING CREEK														
67050815	1100	2'	13.0	.109	.015	.633	.467		.448	19.50	.180	3140	1090	460
0908	1030	4'	--	.104	.022	.664	.486		.214	20.25	.129	3620	220	60
1008	--	38	12.5	.115	.017	.892	.535		.434	21.00	.138	Not Run	<20	<20
1108	1020	38	14.0	.163	.019	.763	.525		.446	23.25		" "	<20	<20
1208	1030	38	13.5	.152	.017	.519	.275		.460	Not Run	.137	" "	20	20
67071708	1240	38	26.0	.205	.029	.655	.562		.028	32.25	Not Run	4340	<20	<20
1808	1220		21.8	.170	.031	.497	.408	3.06	.113	37.50	" "	4050	20	20
1908	1034		23.0	.160	ND	.728	.758	8.77	.074	19.50	" "	Not Run	20	<20
2007	1205			.286	.025	.929	.687	9.36	ND	42.75	" "	4070	170	70
Station 7-I INDIAN VILLAGE SP. #12														
67050816	1115	3'	13.5	.126	.015	.695	.455		.420	35.25	.114	3210	700	80
0909	1043	3'	14.5	.130	.017	.695	.326			32.25	.130	3130	460	130
1009	--	3'	12.5	.140	.019	.775	.541		.432	29.25	.069	Not Run	170	170
1109	1035	36	14.0	.095	.014	--	.275		.484	24.00		" "	130	80
1209	1045	42	14.5	.187	.013	.610	.281		.388	Not Run	.216	" "	70	20
67071709	1255	28	26.5	.338	.037	.946	.491		.060	21.75	Not Run	3960	230	230
1809	1235		21.9	.157	.038	.558	.272	2.82	.070	66.75	" "	3960	460	20
1909	1043		22.5	.229	ND	.576	.570	8.77	.060	53.25	" "	Not Run	790	50

ND - Not detectable

1967
ANNAPOLIS METRO AREA STUDY
MAGOTHY RIVER
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

D Sample Number	Time Sample Taken	Secchi Disk Inches	Water Temp °C	Total P PO_4 mg/l	Total P Dissolved PO_4 mg/l	TKN mg/l N	TKN mf mg/l N	DO mg/l	NO_2+NO_3 mg/l NO_3- N	Chloro-phyll a µg/l	LAS/ ABS mg/l	Cl mg/l	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
						Station 7-J RIVERDALE								
67050817	1120	2'6"	13.5	.144	.018	.935	.394		.524	38.25	.180	2810	1090	490
0910	1046	32	14.5	.116	.015	.726	.510		.320	29.25	.115	2360	790	330
1010	--	38	12.5	.129	.018	.959	.732		.465	28.50	.158	Not Run	130	130
1110	1045	36	14.0	.107	.014	.714	.378		.386	28.50		" "	70	70
1210	1100	3'	14.5	.113	.013	.628	.403		.460	Not Run	.201	" "	1410	1410
67071710	1315	2'	26.5	.260	.035	.886	.432		.061	128.25	Not Run	3570	330	80
1810	1240		21.8	.338	.054	1.050	.337	0.78	.059	179.25	" "	3570	330	80
1910	1054		22.8	.306	ND	1.213	.479	9.78	.098	141.00	" "	Not Run	490	70
						Station 7-K HENDERSON'S POINT - FLASHER #9								
67050818	1135	2'10"	13.5	.203	.023	1.568	.609		.476	31.50	QNS*	3490	330	130
0911	1040	32	14.0	.108	.014	.756	.394		.250	26.25	.105	3480	80	50
1011	--	38	13.0	.150	.018	.701	.566		.434	26.25	.069	Not Run	20	20
1111	1030	3'	14.0	.LA	.014	.561	.488		.478	27.75		" "	<20	<20
1211	1040	4'	14.0	.108	.010	.616	.415		.484	Not Run	.239	" "	<20	<20
67071711	1250	30		.228	.030	.667	.432		.038	68.25	Not Run	4080	330	80
1811	1225		22.0	.159	.038	.667	.373	7.10	.090	54.75	" "	4100	80	<20
1911	1038		22.8	.267	LA	1.098	.576	9.30	.054	45.00	" "	Not Run	170	<20

LA - Laboratory
ND - Not detectable
QNS* - Quantity not sufficient

1967
ANNAPOLIS METRO AREA STUDY
SOUTH RIVER - BROAD CREEK STATION
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Time Sample Taken	Water Temp °C	DO mg/l	Total P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3- N	Chloro-phyll a µg/l	Susp. Sol mg/l	Tur-bidity JTU	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
				Station 1 UP STREAM FROM RIVA BRIDGE							
67062645	1052	26.5	5.46	.574	.809	LA	51.75	13.0	8	1090	70
2713	1000	26	6.96	.471	.586	LA	31.50	12.0	5	490	110
67071008	1130	29	12.9	.389	.647	.078	18.00	3.4	7	950	LA
1719	1220	26	7.60	.429	.645	.022	36.00	10.2	4.5	130	80
2101	0935	26.5	7.26	LA	LA	ND	32.25	13.8	LA	130	<20
				Station 2 RIVA BRIDGE							
67062646	1040	25	5.50	.484	.677	LA	37.50	14.4	7	230	70
2714	0852	26	6.46	.433	.671	LA	31.50	10.8	6	130	0
67071009	1135	29	10.8	.360	.523	.078	18.00	5.2	4	130	LA
1720	1317	27	7.44	.362	.320	.042	17.25	13.3	4.5	330	110
2102	0927	26.5	7.55	LA	LA	ND	24.75	13.4	LA	20	20
				Station 3 MOUTH OF CREEK 1st COVE							
67062647	1032	26.5	5.82	.516	.863	LA	48.75	13.0	8	330	210
2715	1010	26	7.36	.269	.683	LA	36.00	13.0	6.5	130	50
67071010	1140	29	14.9	.359	.386	.16	22.50	4.4	4.5	80	LA
1721	1230	-	7.25	.534	.692	.044	36.75	11.6	5	90	<20
2103	0940	26.5	8.03	LA	LA	ND	23.25	10.4	LA	< 20	<20
				Station 4 IN CREEK -2nd COVE							
67062648	1028	26	3.65	.606	.839	LA	49.50	11.4	9	1300	80
2716	1018	27	9.88	.544	.562	LA	34.50	11.2	7	230	50
67071011	1146	29.5	13.4	.363	.504	.15	21.00	4.4	5	220	LA
1722	1240	27	7.67	.561	.615	.022	51.00	15.6	6	230	<20
2104	0948	28	7.55	LA	LA	ND	27.00	13.0	LA	80	20

LA-Laboratory accident
ND- Not detectable

Sample Number	Time Sample Taken	Water Temp °C	DO mg/l	Total P mg/l PO_4	TKN mg/l N	NO_2+NO_3 mg/l NO_3- N	Chlorophyll a µg/l	Susp. Sol mg/l	Turbidity JTU	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
				Station 5 IN CREEK - 3rd COVE							
67062649	1018	26	[illegible]	.903	1.067	LA	86.25	15.0	10	110	40
2717	1030	27	10.91	.646	.773	LA	52.50	12.8	7	490	20
67071012	1155	30	14.6	.432	.595	.19	37.50	7.0	6.5	330	LA
1723	1248	26	7.76	.606	.722	.050	66.00	19.0	7	630	20
2105	0950	28	7.50	LA	LA	ND	37.50	18.8	LA	80	20
				Station 6- IN CREEK - MOST UPSTREAM							
67062650	1005	25	5.09	.854	1.109	LA	90.00	17.[illegible]	12.5	1720	130
2718	1040	26	11.04	.998	1.341	LA	148.50	20.2	11	5,420	80
67071013	1200	30	13.9	.620	1.131	.364	67.50	14.0	8	4500	LA
1724	1253	27	9.42	.633	.651	.081	60.00	21.8	8	700	130
2106	0955	28	7.16	LA	LA	ND	76.50	22.8	LA	460	20

LA - Labortory accident
ND - Not detectable

1967
ANNAPOLIS METRO AREA STUDY
SEVERN RIVER SPA CREEK
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Time Sample Taken	Tide	Secchi Disk Inches	Water Temp °C	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
		Station S-1 HEAD OF CREEK				
67062664	1135	Ebb	15"	25.0	1090	310
2707	1120			27.0	17,200	3,480
2807	1150	Ebb		27.0	3,100	490
2907	0809	Flood		25.0	330	< 20
67071021	1450			28.0	1300	LA
1731	1410			27.0	1720	220
		Station S-2 OFF TRUXTON COVE				
67062665	1140	Ebb	30"	25.5	490	130
2708	1125			27.0	130	50
2808	1153	Ebb		27.0	700	80
2908	0812	Flood		26.0	330	< 20
67071022	1453			28.0	70	LA
1732	1414			27.5	210	< 20
		Station S-3 ACTON COVE				
67062666	1145		33"	26.0	400	200
2709	1130			26.0	230	50
2809	1156	Ebb		27.0	130	50
2909	0816	Flood		26.0	91,800	< 20
67071023	1456			29.0	110	LA
1733	1417			27.5	70	40
		Station S-4 EASTPORT BRIDGE				
67062667	1150		29"	26.0	5,420	140
2710	1135			26.0	330	80
2810	1203	Ebb		26.5	790	80
2910	0822	Flood		26.0	1,720	< 20
67071024	1500			29.0	230	LA
1734	1420			27.0	80	50
		Station S-5 MARKET SLIP				
67062668	1200		36"	26.0	91,800	3,480
2711	1140			25.5	2,780	130
2811	1208	Ebb		26.5	3,480	330
2911	0826	Flood		25.5	54,200	< 20
67071025	1504			27.0	1720	LA
1735	1426			27.0	16,090	9,180

LA- Laboratory accident

Sample Number	Time Sample Taken	Tide	Secchi Disk Inches	Water Temp °C	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
			Station S-6 BUOY "1"			
67062669	1210		29"	25.5	230	20
2712	1105			25.5	110	40
2812	1213	Ebb		26.0	490	20
2912	0830	Flood		25.0	230	< 20
67071026	1510			27.0	80	LA
1736	1432			27.5	130	20
			Station S-A HEAD OF MARKET SLIP			
67071737	1425			27.5	24,000	3,480
			Station S-B MOUTH OF MARKET SLIP			
67071738	1427			27.0	3,480	490
			Station S-C MID CHANNEL OFF "AYC" PIERS UPSTREAM TO SLIP			
67071739	1421			27.0	2,400	270
			Station S-D MIDCHANNEL DOWN STREAM FROM SLIP			
67071740	1429			27.0	1,300	70

LA- Laboratory accident

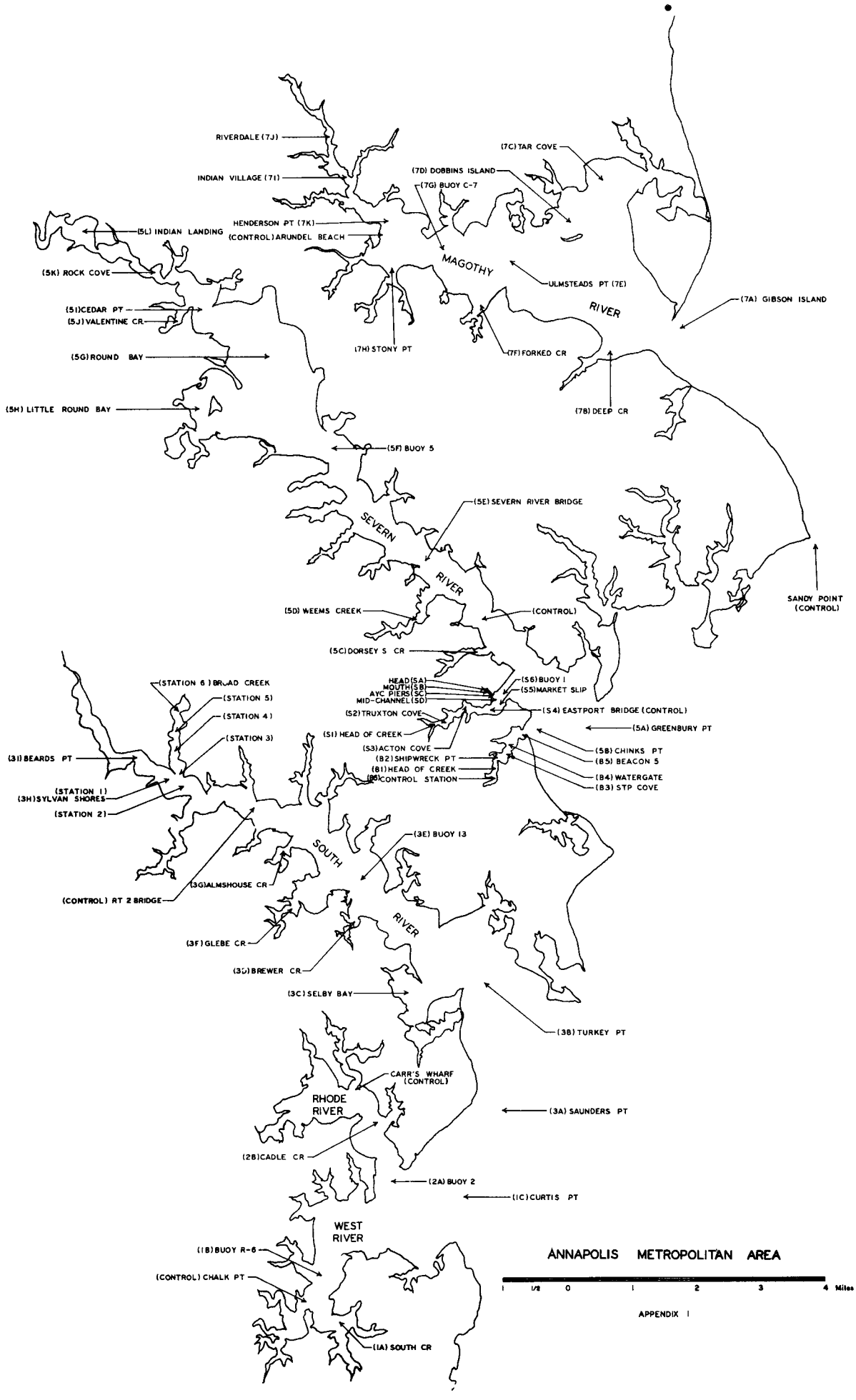
1967
ANNAPOLIS METRO AREA STUDY
SEVERN RIVER - BACK CREEK STATIONS
CHESAPEAKE TECHNICAL SUPPORT LABORATORY

Sample Number	Time Sample Taken	Tide	Secchi Disk	Water Temp °C	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
		Station B-1 HEAD OF CREEK				
67062658	1045	Ebb	18''	25.5	>160,900	>160,900
2701	1205			27.0	91,800	17,200
2801	1110	Ebb		27.0	LA	LA
2901	0737	Flood		24.5	17,200	< 20
67071014	1527			30.5	330	LA
1725	1458			27.5	460	330
		Station B-2 SHIP WRECK POINT				
67062659	1055	Ebb	24''	25.5	54,200	240,000
2702	1200			27.0	24,000	2,780
2802	1115	Ebb		27.0	5,420	460
2902	0742	Flood		25.5	4,300	<20
67071015	1525			28.5	110	LA
1726	1445			27.5	230	50
		Station B-3 STP COVE				
6702660	1225	Ebb	27''	25.5	17,200	5,420
2703	1158			26.0	17,200	2,600
2803	1118	Ebb		27.5	3,480	490
2903	0744	Flood		26.0	490	<20
67071016	1522			28.5	700	LA
1727	1443			27.5	130	130
		Station B-4 COVE BY WATERGATE HIGH RISE APARTMENTS				
67062661	1220	Ebb	26''	25.5	9180	5420
2704	1155			26.0	5,420	1,300
2804	1120	Ebb		26.5	490	50
2904	0747	Flood		25.0	1;300	<20
67071017	1518			28.5	330	LA
1728	1440			27.5	170	80
		Station B-5 BEACON "5"				
67062662	1215	Ebb	24"	25.0	3480	1300
2705	1150			26.0	3,480	340
2805	1126	Ebb		26.0	790	490
2905	0751	Flood		25.0	110	< 20
67071018	1515			28.0	130	LA
67071729	1438			27.0	330	80

LA- Laboratory accident

Sample Number	Time Sample Taken	Tide	Secchi Disk Inches	Water Temp °C	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml
		Station B-6 CONTROL STATION				
67062663	1110	Ebb	30"	24.5	210	80
2706	1100			25.5	940	130
2806	1132	Ebb		26.0	790	170
2906	0755	Flood		24.5	2,400	< 20
67071019	1435			26.5	20	LA
1730	1400			27.0	50	< 20
		Station B- AS FAR UP CREEK AS WATER PERMITS				
67071020	1535			32.5	1300	LA

LA- Laboratory accident


RIVERDALE (7J)
INDIAN VILLAGE (7I)
(7C) TAR COVE
(7D) DOBBINS ISLAND
(7G) BUOY C-7
HENDERSON PT (7K)
(CONTROL) ARUNDEL BEACH
(5L) INDIAN LANDING
(5K) ROCK COVE
MAGOTHY
ULMSTEADS PT (7E)
RIVER
(7A) GIBSON ISLAND
(5I) CEDAR PT
(5J) VALENTINE CR
(7H) STONY PT
(7F) FORKED CR
(5G) ROUND BAY
(7B) DEEP CR
(5H) LITTLE ROUND BAY
(5F) BUOY 5
(5E) SEVERN RIVER BRIDGE
SEVERN
RIVER
SANDY POINT (CONTROL)
(5D) WEEMS CREEK
(CONTROL)
(5C) DORSEY S CR
(STATION 6) BROAD CREEK
(STATION 5)
(STATION 4)
(STATION 3)
HEAD (5A)
MOUTH (5B)
AYC PIERS (5C)
MID-CHANNEL (5D)
(5G) BUOY 1
(5S) MARKET SLIP
(5S2) TRUXTON COVE
(5S4) EASTPORT BRIDGE (CONTROL)
(5A) GREENBURY PT
(5S1) HEAD OF CREEK
(5S3) ACTON COVE
(3I) BEARDS PT
(B2) SHIPWRECK PT
(B1) HEAD OF CREEK
(B6) CONTROL STATION
(5B) CHINKS PT
(B5) BEACON 5
(B4) WATERGATE
(B3) STP COVE
(STATION 1)
(3H) SYLVAN SHORES
(STATION 2)
(3E) BUOY 13
SOUTH
RIVER
(3G) ALMSHOUSE CR
(CONTROL) RT 2 BRIDGE
(3F) GLEBE CR
(3D) BREWER CR
(3C) SELBY BAY
(3B) TURKEY PT
CARR'S WHARF (CONTROL)
RHODE RIVER
(3A) SAUNDERS PT
(2B) CADLE CR
(2A) BUOY 2
(1C) CURTIS PT
WEST RIVER
(1B) BUOY R-6
(CONTROL) CHALK PT
(1A) SOUTH CR
ANNAPOLIS METROPOLITAN AREA
1 1/2 0 1 2 3 4 Miles

APPENDIX I