

Fisheries
Limnology
Resource Planning
Vessel Surveys

13 March 1986

MEMO TO: Peg Peterson, IWQR
FROM: T. Kelly *Tou*
SUBJECT: 1985 Water Chemistry Data

In response to your memo of 21 Feb. 1985, I offer the following:

1. Chemistry analyses for April, May, and June were done in July. A copy of the lab report is attached to this memo.
2. I have re-arranged the the phosphorus data to a format similar to the 11 Feb. 1985 report. See attached sheet.
3. I decided to try the U. of M. lab (School of Public Health, Dr. Peter Meier) for the following reasons:
 - a. Competitive cost per sample run.
 - b. Ease of transport to Ann Arbor, at no cost.
 - c.. I have used this lab in years past and found their performance to be good

My experience with this lab this year were somewhat less satisfactory than anticipated. There were some communication problems (some my fault at the end of the year when I was gone) and processing time was not any better than the commercial lab. The commercial lab had a better Total P detection limit also-5ug/l vs. 10ug/l for the UM lab. Given this experience I suggest we go back to Prein & Newhof this year, assuming their price is still reasonable.

The 1985 total P numbers appear to be considerably higher than in years past. I have discussed this with Dr. Meier and we could not find an easy explanation. It is possible that a few plankton organisms or soil particles were entrained in the sample, which would elevate the P concentration (no filtering is done for total P analysis). I am continuing to look into this matter and will let you know if I come up with anything.

Note that the date 10/10/85 on the lab report should read 9/10/85. Also note that the P & N values are reported as mg/l on the 1985 lab reports (ug/l was used in previous years).

I will be back in the area the first week in May. I'll contact you then.

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INSTITUTE FOR WATER QUALITY RESEARCH

PHOSPHORUS RESULTS, 1985.

Sampling Number	Date	Total P, ug/l:				
		S-1 Depot Cr.	S-3 Pumphouse	S-4 Fairway	S-5 Shanty	B-3 Intern. R.
1	22 April 85	10	10	10	10	10
2	15 May 85	88	118	64	121	10
3	20 June 85	20	20	20	10	14
4	12 July 85 1 Aug 85	240	360	180	10	180
5	13 Aug 85	260	300	260	20	300
6	10 Sept 85	300	---	350	110	110
7	20 Oct 85	90	80	360	80	90
		B-5, 1m L. Bellaire	B-5 Bottom	C-6 Clam R.	T-7, 1m Torch L.	T-7 Bottom
1	22 April 85	10	10	10	10	10
2	15 May 85	20	10	20	10	20
3	20 June 85	10	10	10	10	10
4	12 July 85	60	90	60	10	20
5	13 Aug 85	110	50	190	30	150
6	10 Sept 85	190	110	70	30	70
7	20 Oct 85	190	280	160	80	80
		T-8, 1m Torch L.	T-8, Bottom Torch L.			
1	22 April 85	10	10			
2	15 May 85	10	17			
3	20 June 85	10	20			
4	12 July 85	60	10			
5	13 Aug 85	-	-			
6	10 Sept 85	70	550			
7	20 Oct 85	90	40			

Chemical Analyses

<u>Date</u>	<u>Location</u>	<u>Depth</u>	<u>TP0₄</u> <u>(mg/l)</u>	<u>NO₃</u> <u>(mg/l)</u>	<u>Cl</u> <u>(mg/l)</u>
22 April 85	S-1	S	<0.01	1.089	9.9
	S-3	S	<0.01	0.503	5.3
	S-4	S	<0.01	0.469	5.0
	S-5	S	<0.01	1.223	2.1
	B-3	S	<0.01	---	---
	B-5	1 m	<0.01	---	---
	B-5	Bot	<0.01	---	---
	C-6	S	<0.01	0.369	---
	T-7	1 m	<0.01	0.687	1.7
	T-7	Bot	<0.01	0.218	3.1
	T-8	1 m	<0.01	0.352	3.8
	T-8	Bot	<0.01	0.352	4.0
	15 May 85	S-1	S	0.088	1.541
S-3		S	0.118	0.637	4.3
S-4		S	0.064	1.608	6.4
S-5		S	0.121	0.503	2.3
B-3		S	<0.01	---	---
B-5		1 m	0.020	---	---
B-5		Bot	<0.01	---	---
C-6		S	0.020	0.436	---
T-7		1 m	<0.01	0.670	4.5
T-7		Bot	0.020	0.486	3.8
T-8		1 m	<0.01	0.704	4.5
T-8		Bot	0.017	0.419	3.8
20 June 85		S-1	S	0.020	1.575
	S-3	S	0.020	1.190	5.9
	S-4	S	0.020	0.503	6.4
	S-5	S	<0.01	1.357	2.9
	B-3	S	0.014	---	---
	B-5	1 m	<0.01	---	---
	B-5	Bot	<0.01	---	---
	C-6	S	<0.01	0.402	---
	T-7	1 m	<0.01	0.419	4.5
	T-7	Bot	<0.01	0.469	4.3
	T-8	1 m	<0.01	0.335	3.4
	T-8	Bot	0.020	0.453	4.3

Results of Various Chemical Parameters Analyzed from Water
 Samples Collected at Designated Stations

Date	Sample I.D.	Depth	Total Phosphorus (mg P/l)	Nitrate (as mg NO ₃ -N/l)	Chloride (mg/l)
07/12/85	B-3	Surface	0.18 = 180 <i>ug</i>	---*	---
	B-5	1	0.06	---	---
	B-5	Bottom	0.09	---	---
	C-6	Surface	0.06	0.17	---
	T-7	1	<0.01	0.37	3.8
	T-7	Bottom	0.02	0.29	3.5
	T-8	1	0.06	0.20	3.8
	T-8	Bottom	<0.01	0.59	3.8
08/01/85	S-1	Surface	0.24	0.14	11.5
	S-2	Surface	0.36	0.68	0.5
	S-4	Surface	0.18	0.30	6.0
	S-5	Surface	<0.01	1.19	1.6
08/13/85	S-1	Surface	0.26	0.76	9.3
	S-3	Surface	0.30	0.96	7.0
	S-4	Surface	0.26	0.29	4.6
	S-5	Surface	0.02	0.99	1.8
	B-3	Surface	0.30	---	---
	B-5	1	0.11	---	---
	B-5	Bottom	0.05	---	---
	C-6	Surface	0.19	0.21	3.5
	T-7	1	0.03	0.10	2.4
	T-7	Bottom	0.15	0.33	3.5
08 /10/85	S-1	Surface	0.30	0.86	8.1
	S-3**				
	S-4	Surface	0.35	0.33	2.9
	S-5	Surface	0.11	0.96	2.0
	B-3	Surface	0.11	---	---
	B-5	1	0.19	---	---
	B-5	Bottom	0.11	---	---
	C-6	Surface	0.07	<0.05	---
	T-7	1	0.03	0.06	4.0
	T-7	Bottom	0.07	0.29	4.0
	T-8	1	0.07	<0.05	3.8
	T-8	Bottom	0.55	0.08	4.0

*data not requested
 **no such sample received

Date	Sample I.D.	Depth	Total Phosphorus (mg P/l)	Nitrate (as mg NO3-N/l)	Chloride (mg/l)
10/20/85	S-1	Surface	0.09	1.00	10.8
	S-3	Surface	0.08	0.96	6.5
	S-4	Surface	0.36	<0.05	3.8
	S-5	Surface	0.08	1.15	2.4
	B-3	Surface	0.09	0.30	4.8
	B-5	Surface	0.19	0.20	4.8
	B-5	Bottom	0.28	0.28	4.0
	C-6	Surface	0.16	0.14	3.5
	T-7	Surface	0.08	<0.05	4.0
	T-7	Bottom	0.08	0.11	4.0
	T-8	Surface	0.09	0.21	3.2
	T-8	Bottom	0.04	0.33	3.5

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Marine Consultant

File

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MEMO TO: Dr. Peter Meier, U.M. S.P.H.

FROM: T. Kelly *Tom*

SUBJECT: 1985 chemistry from Torch Lake, Lake Bellaire, etc.

Peter, could give me in writing a quick rundown of the methods used in the total P, NO-3, and chloride analyses? A reference to Standard Methods and what equipment, standards and replicates run would be helpful. Thanks.

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