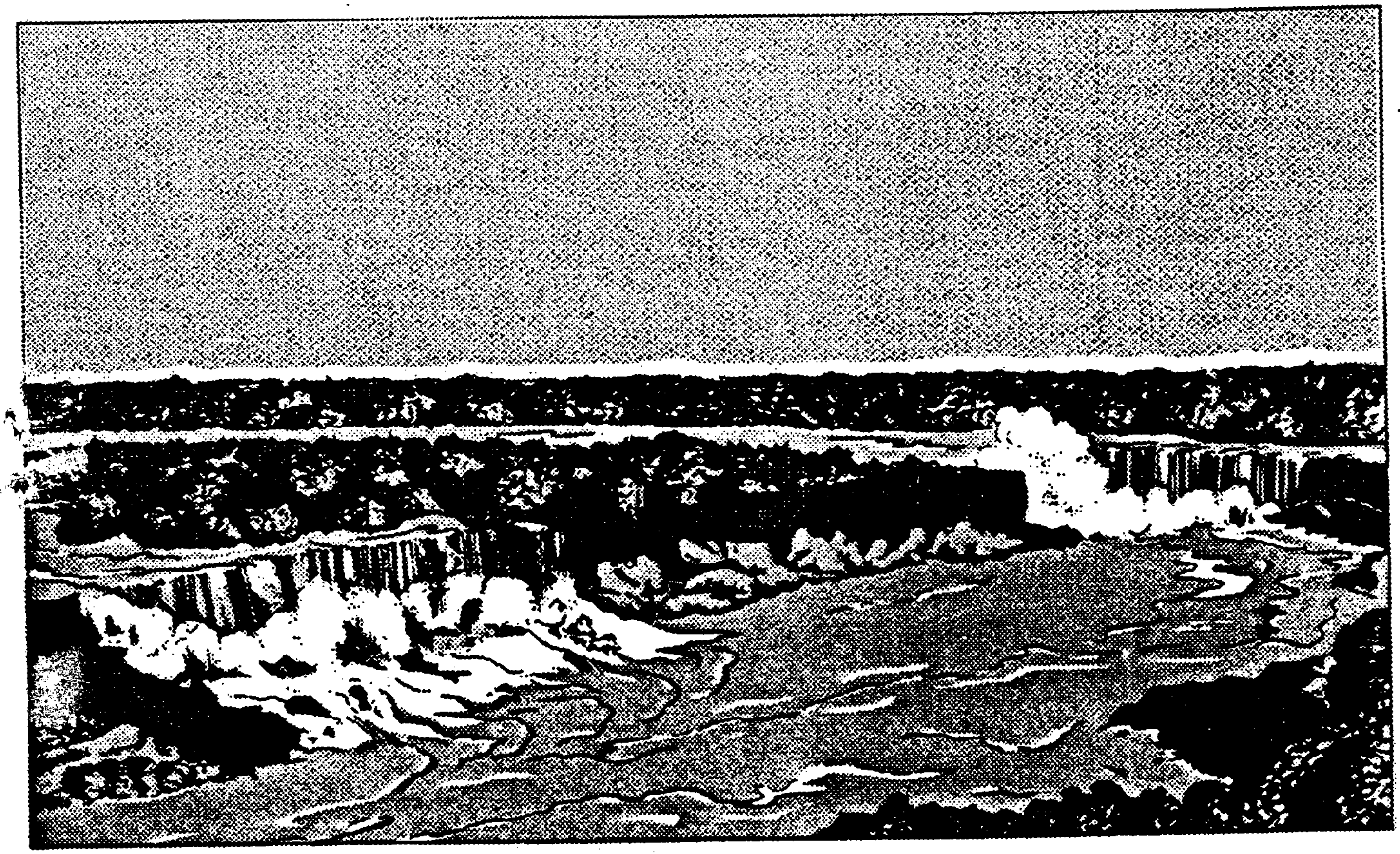
Joint Evaluation of Upstream/Downstream Niagara River Monitoring Data

1991-92



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River Monitoring Committee

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Conservation

JOINT EVALUATION OF UPSTREAM/DOWNSTREAM NIAGARA RIVER MONITORING DATA FOR THE PERIOD APRIL 1991 TO MARCH 1992

Report By
THE NIAGARA RIVER DATA INTERPRETATION GROUP
to
THE RIVER MONITORING COMMITTEE

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Environment Canada
Ecosystem Health Division - Ontario Region

FINAL REPORT

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TABLE OF CONTENTS FOR NIAGARA RIVER REPORT

APRIL 1991 - MARCH 1992 DATA

TABLE OF CONTENTS	PAGE NO.
LIST OF FIGURES AND TABLES	4
1. EXECUTIVE SUMMARY	
1.1 INTRODUCTION	5
1.2 STATION LOCATION	6
1.3 SUMMARY OF RESULTS	6
1.4 CONCLUSIONS	15
2. INTRODUCTION	
2.1 ORGANIZATIONAL FRAMEWORK AND PURPOSE OF THE REPORT	16
2.2 DATA QUALITY	17
3. SAMPLING METHODS	
3.1 STATION LOCATION	18
3.2 SAMPLE COLLECTION SYSTEM	19
3.3 SAMPLING REGIME	19
4. ANALYTICAL METHODS	
4.1 ANALYTICAL PROCEDURES	26
5. STATISTICAL METHODS	
5.1 OBJECTIVES	29
5.2 STATISTICAL PROCEDURES	29
5.2.1 ASSUMPTIONS	29
5.2.2 METHOD OF ESTIMATION	29
5.3 CALCULATION OF EQUIVALENT WATER CONCENTRATIONS (EWCs)	33
5.4 CALCULATION OF RECOMBINED WHOLE WATER CONCENTRATIONS (RWWs)	33

6. RESULTS
6.1 DISCHARGE DATA 36
6.2 SUSPENDED SOLIDS CONCENTRATIONS 39
6.3 STATISTICAL PRESENTATION AND INTERPRETATION OF RESULTS 42
6.3.1 ORGANICS IN WATER FRACTION 42
6.3.2 ORGANICS IN SUSPENDED SOLIDS FRACTION 48
6.3.3 VOLATILES IN WHOLE WATER 53
6.3.4 TRACE METALS IN WHOLE WATER 56
6.4 RECOMBINED WHOLE WATER CALCULATIONS (RWW) 61
6.5 COMPARISON WITH AMBIENT WATER QUALITY CRITERIA 65

7. REFERENCES 73

APPENDICES
1. CHEMICALS ANALYSED
2. DETECTION LIMITS
3. DATA LISTING
4. ACKNOWLEDGEMENT
5. COMMITTEE MEMBERS

LIST OF FIGURES AND TABLES:

1-1 Summary of 1991-92 Niagara River upstream/downstream organics data
1-2 Summary of 1991-92 Niagara River upstream/downstream inorganics data
3-1 Sampling locations on the Niagara River
3-2 Water delivery system at Niagara-on-the-Lake
3-3 Water delivery system at Fort Erie
3-4 Large volume counter current extractor (GLSE)
3-5 Niagara River sampling regime
4-1 Analysis of organics
4-2 Analysis of trace metals
5-2-1 Flow chart of Maximum Likelihood estimation program
5-2-2 Flow chart of distribution free Sign Test
5-2-3 Flow chart of Recombined Whole Water estimation program
6-1-1 Niagara River discharge data
6-1 Daily discharge at Fort Erie
6-2 Daily discharge at Niagara-on-the-Lake
6-3 Suspended solids concentration at Fort Erie
6-4 Suspended solids concentration at Niagara-on-the-Lake
6-3-1 Fort Erie MLE results for organics in water fraction
6-3-2 Niagara-on-the-Lake MLE results for organics in water fraction
6-3-3 Differential loading of organics in water fraction
6-3-4 Sign test results for organics in water fraction
6-3-5 Fort Erie MLE results for organics in suspended solids fraction
6-3-6 Niagara-on-the-Lake MLE results for organics in suspended solids fraction
6-3-7 Differential loading of organics in suspended solids fraction
6-3-8 Sign test results for organics in suspended solids fraction
6-3-9 Fort Erie MLE results for volatiles in whole water
6-3-10 Niagara-on-the-Lake MLE results for volatiles in whole water
6-3-11 Differential loading of volatiles in whole water
6-3-12 Sign test results for volatiles in whole water
6-3-13 Fort Erie MLE results for trace metals in whole wate
6-3-14 Niagara-on-the-Lake MLE results for trace metals
6-3-15 Differential loading of trace metals in whole water
6-4-1 Spearman's rank correlation between concentration in water and suspended solids
6-4-2 Spearman's rank correlation between concentration on suspended solids and suspended solids concentration
6-4-3 Recombined whole water concentrations at Fort Erie
6-4-4 Recombined whole water concentrations at Niagara-on-the-Lake
6-5-1 Aquatic criteria, objectives and standards
6-5-2 Comparison of concentration in whole water with strictest criteria
6-5-3 Comparison of organics in water phase with strictest criteria
6-5-4 Comparison of organics in suspended solids phase with strictest criteria.

EXECUTIVE SUMMARY

1.1 INTRODUCTION:

A water quality monitoring program involving the collection of ambient water and suspended solids samples at the head (Fort Erie) and mouth (Niagara-on-the-Lake) of the Niagara River has been undertaken by Canada, the United States, New York State and the Province of Ontario in accordance with the Niagara River Toxics Management Plan and the Declaration of Intent. The program is operated by Environment Canada and uses sampling and analytical methods which have been agreed to by all four parties.

Monitoring data have been interpreted jointly by a group of scientists representing each of the four agencies and released annually. Previous reports have been released as follows:

1. Data Interpretation Group "C". October 1986. "Joint Evaluation of Upstream/Downstream Niagara River Monitoring Data, 1984-1986." A Joint Publication of NYSDEC, EC, USEPA and MOE.

2. Data Interpretation Group "C". January 1988."Joint Evaluation of Upstream/Downstream Niagara River Monitoring Data, 1986-1987." A Joint Publication of NYSDEC, EC, USEPA and MOE.

3. Data Interpretation Group "C". May 1989. "Joint Evaluation of Upstream/Downstream Niagara River Monitoring Data, 1987-88." A Joint Publication of NYSDEC, EC, USEPA and MOE.

4. Data Interpretation Group "C". December 1990. "Joint Evaluation of Upstream/Downstream Niagara River Monitoring Data, 1988-89." A Joint Publication of NYSDEC, EC, USEPA and MOE.

5. Data Interpretation Group "C". March 1992. "Joint Evaluation of Upstream/Downstream Niagara River Monitoring Data, 1989-90. "A Joint Publication of NYSDEC, EC, USEPA and MOE.

6. Data Interpretation Group "C". June 1993. " Joint Evaluation of Upstream/Downstream Niagara River Monitoring Data, 1990-91." A Joint Publication of NYSDEC, EC, USEPA, and MOEE.

This report is the seventh in the series and presents a summary and interpretation of Niagara River ambient water quality data for the period April 1991 to March 1992. The interpretation of the data presented in this report has the consensus of the members of the Data Interpretation Group.

1.2 STATION LOCATION:

The Data Interpretation Group has continued to assume that the locations of the Fort Erie and Niagara-on-the-Lake stations are adequate to monitor, respectively, chemical inputs to the Niagara River from the eastern basin of Lake Erie and chemical outputs from the river into Lake Ontario. Results from a study funded by Environment Canada (Green/Seastar 1988[16]) support this assumption for the downstream (Niagara-on-the-Lake) site. The validity of this assumption for the upstream station at Fort Erie has yet to be confirmed. The ad hoc group on Physical Limnology and Hydraulics in its report on "Flow and Circulation Characteristics in the Eastern Lake Erie and Upper Niagara River Area" (Jan 1989)[17], concluded that the water collected at the Fort Erie station should be representative of the water in eastern Lake Erie and that to the best of their knowledge of the limnological and hydraulic processes of the system, the effluent from the Buffalo River and Smoke Creek do not mix with the water in the upper part of the Niagara River. Therefore water samples collected at the Fort Erie station are not affected by this plume. A study, expected to further resolve this question, has recently been initiated with funding from U.S.E.P.A..

1.3 SUMMARY OF RESULTS:

Estimates of mean station concentrations and loads and their 90% confidence intervals were computed using the Maximum Likelihood Estimation (MLE) method for all chemicals with three or more measured values above the practical detection limit (PDL). Differences between upstream/downstream loads were also calculated where possible. The ratios of downstream to upstream loads in both water and suspended solid phases (Load NOTL : Load FE, respectively) together with their 90% confidence intervals were used to identify those chemicals for which upstream or downstream differences were statistically significant in one or the other phase. Loadings of chemicals with ratios greater than 1.0 and 90% confidence intervals that did not include 1.0 were considered to have changed significantly between Fort Erie (FE) and Niagara-on-the-Lake (NOTL).

In addition, the sign test was run for those chemicals that could not be tested using the MLE method due to an insufficient number of data points (less than three) above the PDL at one or the other station. A chemical was added to the list of those considered to have changed significantly between Fort Erie and Niagara-on-the-Lake if the results of this test were statistically significant.

Loadings of organic contaminants in suspended solids and water, and trace metals in whole water together with their differential loads, are presented in Tables 1-1 and 1-2. The loadings of 42 of the 99 chemicals analysed were significantly higher in either the suspended solids or water phases at Niagara-on-the-Lake than at Fort Erie. These 42 chemicals included 40 organic contaminants (nine chlorobenzenes, nine pesticides, thirteen PAHs, two phthalates, three chlorophenols and four volatiles) and two trace metals.

Twenty organic contaminants were detected at concentrations above the PDL, three or more times, only at the downstream (Niagara-on-the-Lake) station. Fifteen of these (listed below) were in the water (from Tables 6-3-1 and 6-3-2), twelve (listed below) were in the suspended solids (from Tables 6-3-5 and 6-3-6) and seven (listed below) occurred in both the water and suspended solids fractions.

Substances Found (with 3 or more values above PDL) only at Niagara-on-the-Lake

In Water Phase	In Suspended Solids Phase	In Both Phase
1,3-dichlorobenzene		
1,2-dichlorobenzene		
	1,4-dichlorobenzene	
1,3,5-trichlorobenzene	1,3,5-trichlorobenzene	1,3,5-trichlorobenzene
1,2,4-trichlorobenzene	1,2,4-trichlorobenzene	1,2,4-trichlorobenzene
1,2,3-trichlorobenzene	1,2,3-trichlorobenzene	1,2,3-trichlorobenzene
1,2,3,4-tetrachlbenzene	1,2,3,4-tetrachlbenzene	1,2,3,4-tetrachlbenzene
pentachlorobenzene	pentachlorobenzene	pentachlorobenzene
hexachlorobenzene	hexachlorobenzene	hexachlorobenzene
hexachlorobutadiene	hexachlorobutadiene	hexachlorobutadiene
hexachlorocyclopentadiene		
anthracene	mirex	
	1-methyl naphthalene	
benzo(a)pyrene		
	alpha-BHC	
benzo(g,h,i)perylene		
2,4,6-trichlorophenol		
pentachlorophenol		
	octachlorostyrene	

The loadings of the following 14 substances were found to be significantly higher (at the 90% level) at Niagara-on-the-Lake in the water phase using the MLE method in the 1991-92 data set:

In Water Phase: (MLE method)

1,4-dichlorobenzene	phenanthrene
alpha-BHC	fluoranthene
dieldrin	pyrene
2-methyl naphthalene	benz(a)anthracene
1-methyl naphthalene	chrysene/triphenylene
acenaphthylene	benzo(b/k)fluoranthene
fluorene	phenol

Sixteen other compounds listed below were found to be significantly higher in the water phase (at the 90% level) at Niagara-on-the-Lake than at Fort Erie using the sign test method (Table 6-3-4). These compounds are:

In Water Phase (SIGN TEST method)

1,3-dichlorobenzene	octachlorostyrene
1,2-dichlorobenzene	beta-endosulfan
1,3,5-trichlorobenzene	hexachlorobutadiene
1,2,4-trichlorobenzene	hexachlorocyclopentadiene
1,2,3-trichlorobenzene	anthracene
1,2,3,4-tetrachlorobenzene	benzo(a)pyrene
pentachlorobenzene	2,6-dichlorophenol
hexachlorobenzene	2,4,6-trichlorophenol

In the suspended solids fraction, nine compounds were found to have had a load ratio greater than 1.0 and, therefore, a statistically significant (at the 90% level) differential load. These compounds are:

In Suspended Solids Phase (MLE method)

PCBs
phenanthrene *
fluoranthene *
pyrene *
benz(a)anthracene *
chrysene/triphenylene *
benzo(b/k)fluoranthene *
benzo(a)pyrene *
bis(2-ethylhexyl)phthalate

* chemical also shows significant increase in water phase

In the suspended solids fraction, the 18 compounds listed below were found to be significantly higher (at the 90% level) at Niagara-on-the-Lake using the sign test (Table 6-3-8). Therefore, these compounds were considered to have a statistically significant differential load:

Suspended Solids (Sign Test Results)

1,4-dichlorobenzene *
1,3,5-trichlorobenzene *
1,2,4-trichlorobenzene *
1,2,3-trichlorobenzene *
1,2,3,4-tetrachlorobenzene *
pentachlorobenzene *
hexachlorobenzene *
alpha-BHC *
octachlorostyrene *
photomirex
mirex
hexachlorobutadiene *
hexachlorocyclopentadiene *
naphthalene
1-methyl naphthalene *
fluorene *
anthracene *
diethylphthalate

* chemical also shows significant increase in water phase

In addition, two trace metals (molybdenum and arsenic) were significantly higher at Niagara-on-the-Lake than at Fort Erie using the MLE test.

In addition, two trace metals (barium and lead), were significantly higher (at the 90% level) at Fort Erie than at Niagara-on-the-Lake using the MLE tset.

Also, four volatiles (Carbon Tetrachloride, Chloroform, 1,2-Dichloroethane and Tetrachloroethylene) were found to be significantly higher (at the 90% level) at Niagara-on-the-Lake than at Fort Erie using the sign test and methylene chloride* was significantly lower at the Niagara-on-the-Lake station than at Fort Erie.

* The RMC has observed previously (in 1989-90) as well that the methylene chloride concentrations and loads were much higher at Fort Erie than at Niagara-on-the-Lake.

The following four chemicals were significantly higher (at the 90% level) at Fort Erie than at Niagara-on-the-Lake using the MLE method: diethylphthalate, bis(2-ethylhexyl)phthalate **, and dioctylphthalate in water and p,p-DDE in suspended solids. Three additional chemicals were found to be significantly lower at Niagara-on-the-Lake than at Fort Erie by the sign test method: p,p-DDE in the water phase and 3,4,5-trichlorophenol in suspended solids, and p,p-TDE in both phases.

Recombined whole water (RWW) is calculated as the sum of the mean chemical concentration in the water fraction and the mean chemical concentration in the suspended solids fraction. Therefore, RWW values are based on the results of statistical analysis rather than direct chemical analyses of whole water samples. The Data Interpretation Group assumes that RWWs represent concentrations in whole (non-centrifuged) Niagara River water.

Concentrations of substances in "recombined whole water" (RWW) and trace metals and volatiles in whole water are compared with various ambient water quality criteria in Section 6.5 of this report.

Comparison of upper 90 % confidence limit concentrations for RWW and whole water with the criteria showed that nine chemicals exceeded the strictest water quality criterion at Fort Erie and seven chemicals also exceeded the strictest water quality criterion at Niagara-on-the-Lake. Those chemicals are as follows:

Chemicals Violating Criteria in 1991-92

Fort Erie	Niagara-on-the-Lake
aluminum	aluminum
iron	iron
cobalt	copper
PCB	PCB
bis(2-ethylhexyl)phthalate	strontium
copper	benzo(a)pyrene
lead	cobalt
cadmium	
strontium	

** Previously, high concentrations of bis(2-ethylhexyl)phthalate were noted in 1990-91 which prompted review of the sampling and analytical protocols for phthalates. The RMC is currently reviewing the comments from the Analytical Protocol Group.

Table 1-1: Summary of 1991-92 Niagara River Upstream/Downstream Organics Loading

	Signif. Test		Fort Erie (mean kg/day)			NOTL (mean kg/day)			Differential Load (kg/day)		
Substance	aq	SS	Water	Solids	Sum	Water	Solids	Sum	Water	Solids	Sum
1,3-DiCB	i		----	----	----	0.341	----	0.341	0.341	----	0.341
1,4-DiCB	I	i	0.534	----	0.534	1.347	0.019	1.366	0.813	0.019	0.831
1,2-DiCB	i		----	----	----	0.640	----	0.640	0.640	----	0.640
1,3,5-TriCB	i	i	----	----	----	0.044	0.001	0.045	0.044	0.001	0.045
1,2,4-TriCB	i	i	----	----	----	0.643	0.034	0.677	0.643	0.034	0.677
1,2,3-TriCB	i	i	----	----	----	0.180	0.010	0.190	0.180	0.010	0.190
1,2,3,4-TeCB	i	i	----	----	----	0.313	0.036	0.349	0.313	0.036	0.349
PentaCB	i	i	----	----	----	0.073	0.031	0.105	0.073	0.031	0.105
HexaCB	i	i	----	----	----	0.032	0.059	0.091	0.032	0.059	0.091
sum	9*										
alpha-BHC	I	i	0.457	----	0.457	0.564	0.004	0.568	0.107	0.004	0.112
gamma-BHC	i		0.230	----	0.230	0.238	----	0.238	0.008	----	0.008
Hept. Epoxide			0.053	----	0.053	0.056	----	0.056	0.004	----	0.004
g-Chlordane			----	0.003	0.003	----	----	----	----	-0.003	-0.003
a-Endosulfan	i		0.019	----	0.019	0.024	----	0.024	0.005	----	0.005
Octachlorostyrene	i	i	----	----	----	----	0.007	0.007	----	0.007	0.007
p,p-DDE	d	D	0.027	0.064	0.091	----	0.022	0.022	-0.027	-0.041	-0.069
Dieldrin	I		0.118	0.007	0.125	0.131	----	0.131	0.013	-0.007	0.006
Endrin			0.009	----	0.009	0.009	----	0.009	0.000	----	0.000
p,p-TDE	d	d	0.037	0.069	0.106	----	----	----	-0.037	-0.069	-0.106
p,p-DDT	d	d	0.028	0.035	0.063	0.028	0.022	0.051	0.000	-0.013	-0.013
beta-Endosulfan	i		----	----	----	----	----	----	----	----	----
Mirex		i	----	----	----	----	0.015	0.015	----	0.015	0.015
Hexachlorobutadiene	i	i	----	----	----	0.047	0.015	0.062	0.047	0.015	0.062
Hexachlorocyclopentadiene	i	i	----	----	----	0.042	----	0.042	0.042	----	0.042
PCBs		I	0.633	0.166	0.799	0.573	0.475	1.048	-0.060	0.308	0.249
sum	10*										
Naphthalene		i	1.380	----	1.380	1.434	----	1.434	0.054	----	0.054
2-Methyl Naphthalene	I		0.511	----	0.511	0.666	----	0.666	0.155	----	0.155
1-Methyl Naphthalene	I	i	0.374	----	0.374	0.491	0.073	0.564	0.117	0.073	0.190
Acenaphthylene	I		0.106	----	0.106	0.169	----	0.169	0.063	----	0.063
Fluorene	I	i	0.229	----	0.229	0.401	----	0.401	0.172	----	0.172
Anthracene	i	i	----	----	----	0.225	----	0.225	0.225	----	0.225
Phenanthrene	I	I	0.920	0.703	1.623	3.043	0.943	3.986	2.123	0.240	2.364
Fluoranthene	I	I	0.431	0.750	1.181	0.934	1.031	1.965	0.504	0.281	0.785
Pyrene	I	I	0.171	0.571	0.742	0.738	0.795	1.534	0.568	0.224	0.792
Benz(a)anthracene	I	I	0.074	0.522	0.596	0.137	0.769	0.906	0.063	0.247	0.310
Chrysene/triphenylene	I	I	0.119	0.446	0.565	0.206	0.679	0.885	0.086	0.234	0.320
Benzo(b/k)fluoranthene	I	I	0.137	1.019	1.156	0.251	1.523	1.774	0.113	0.504	0.617
Benzo(a)pyrene	i	I	----	0.370	0.370	0.068	0.615	0.683	0.068	0.245	0.314
Indeno(123cd)pyrene			----	0.283	0.283	----	0.190	0.190	----	-0.093	-0.093
Benzo(ghi)perylene			----	0.242	0.242	0.060	0.194	0.254	0.060	-0.048	0.012
sum	14*										

Table 1-1: (cont'd) Summary of 1991-92 Niagara River Upstream/Downstream Organics Loading Data

	Sig. Test		Fort Erie (mean kg/day)			NOTL (mean kg/day)			Differential Load (kg/day)		
Substance	aq	SS	Water	Solids	Sum	Water	Solids	Sum	Water	Solids	Sum
Dimethylphthalate	d		0.753	------	0.753	0.6858	------	0.6858	-0.0672	------	-0.0672
Diethylphthalate	D	i	10.1	------	10.1	6.955	------	6.955	-3.145	------	-3.145
Di-n-butylphthalate			8.281	0.5538	8.8348	7.949	0.3087	8.2577	-0.332	-0.2451	-0.5771
Benzylbutylphthalate			2.412	0.9639	3.3759	2.088	1.124	3.212	-0.324	0.1601	-0.1639
Bis(2-ethylhexyl)phthalate	D	I	154.5	3.99	158.49	26.46	6.719	33.179	-128.04	2.729	-125.311
Dioctylphthalate	D		1.963	------	1.963	1.185	------	1.185	-0.778	------	-0.778
Atrazine			35.21	------	35.21	37.01	------	37.01	1.800	------	1.800
Metolachlor			12.48	------	12.48	13.4	------	13.4	0.920	------	0.920
sum	2*										
2,6-Dichlorophenol	i		2.955	0.6424	3.5974	41.58	------	41.58	38.625	-0.642	37.983
Phenol	I		------	------	------	0.3281	------	0.3281	0.3281	------	0.3281
2,4,6-Trichlorophenol	i		0.6028	0.3378	0.9406	------	------	------	-0.6028	-0.3378	-0.9406
3,4,5-Trichlorophenol		d	------	------	------	0.1992	------	0.1992	0.1992	------	0.1992
Pentachlorophenol											
sum	3*										
Methylene Chloride	D				2175.			1064.			-1111.
Carbon Tetrachloride	i										
Chloroform	i										
1,2-Dichloroethane	i										
Tetrachloroethylene	i										
sum	4*										

Some chemicals are excluded because there were three or fewer values above the PDL
Some differential load sums do not add up due to rounding of station loads
* - number of compounds showing a significant increase between Fort Erie and Niagara-on-the-Lake using Maximum Likelihood and/or sign test methods in either phase
** - analyses done on whole water samples

aq - aqueous phase
I - significant increase by ML test
i - significant increase by sign test

SS - Suspended solids phase
D - significant decrease by ML test
d - significant decrease by sign test

Table 1-2:

Summary of 1991-92 Niagara River Upstream/Downstream Inorganics Loading Data

Substance	Signif. Test	Loading in tonnes per day		
		Ft. Erie	NOTL	Difference
Lithium		1.968	1.996	0.028
Aluminum		197.1	181.7	-15.4
Vanadium		0.4357	0.3996	-0.0361
Chromium		0.3821	0.4209	0.0388
Manganese		9.697	8.358	-1.339
Iron		320.3	322.0	1.700
Cobalt		0.1778	0.1652	-0.0126
Nickel		0.7587	0.6521	-0.1066
Copper		0.8492	0.8218	-0.0274
Zinc		2.069	1.703	-0.366
Arsenic	I	0.3193	0.3864	0.0671
Selenium		0.1182	0.1211	0.0029
Antimony		0.0967	0.1035	0.0068
Strontium		82.35	81.54	-0.8100
Molybdenum	I	0.5527	0.5721	0.0194
Silver			0.0398	0.0398
Cadmium		0.0673	0.0631	-0.0042
Barium	D	14.04	11.93	-2.110
Lead	D	0.5509	0.31	-0.2409
Beryllium		0.0128	0.01654	0.0037
sum	2*			

* number of substances showing a significant increase between Fort Erie and Niagara-on-the-Lake using Maximum Likelihood and/or sign test methods

I - significant increase by ML test
D - significant decrease by ML test

1.4 CONCLUSIONS:

1. The loads of forty-two of the ninety-nine substances analysed were significantly higher in either the water or suspended solids phase at Niagara-on-the-Lake than at Fort Erie. These forty-two substances comprised forty organic contaminants and two trace metals. The forty organic contaminants included nine chlorobenzenes, nine pesticides, thirteen PAHs, two phthalates, three chlorophenols and four volatiles.

2. Twenty organic contaminants were detected only at the downstream (Niagara-on-the-Lake) station. Fifteen of these were in the water and twelve were in the suspended solids. Seven occurred in both the water and suspended solids fractions.

3. The loads of three chemicals (p,p-DDE, 3,4,5-trichlorophenol and p,p-TDE) were significantly lower at Niagara-on-the-Lake than at Fort Erie in the suspended solids phase. Five chemicals (diethylphthalate, bis(2-ethylhexyl)phthalate, dioctylphthalate, p,p-DDE and p,p-TDE were significantly lower at Niagara-on-the-Lake than at Fort Erie in the water phase.

4. The upper 90% confidence limits of seven chemicals exceeded the strictest water quality standards or criteria adopted by the Four Parties or the Great Lakes Water Quality Agreement (IJC) at Niagara-on-the-Lake. At Fort Erie the upper 90% confidence limit of nine chemicals exceeded the strictest criterion.

2. INTRODUCTION:

2.1 ORGANIZATIONAL FRAMEWORK AND PURPOSE OF THE REPORT:

The presence of toxic organic pollutants in the Niagara River has been a source of concern to environmental agencies of both the United States and Canada for more than a decade. Until recently, however, most of the monitoring and abatement activities on the Niagara River have been a result of independent efforts of each of the four environmental agencies having interests in the Niagara River (United States Environmental Protection Agency (USEPA), New York State Department of Environmental Conservation (NYSDEC), Ontario Ministry of Environment and Energy (OMOEE), and Environment Canada (EC)). Formation of the four party Niagara River Toxics Committee (NRTC) in 1981; release of the NRTC Report[16] in 1984; development of the Niagara River Toxics Management Plan and the signing of the Declaration of Intent by the four parties in 1987 have contributed to a unified and coordinated approach to the issue of toxic contaminants in the Niagara River.

In the interest of furthering the degree of cooperation among the State, Provincial, and Federal agencies on both sides of the border, a formalized committee structure was established to coordinate the various activities agreed to in the Niagara River Toxics Management Plan (NRTMP). As part of this committee structure, the River Monitoring Committee (RMC) was formed to put into effect the ambient water quality monitoring program referred to in the NRTMP. Specifically, the RMC was given the responsibility for the design and execution of a mutually agreed upon program to monitor levels of toxic substances at the head and mouth of the Niagara River and to interpret the program results in a manner which had the full concurrence of the four parties. To assist the RMC in these tasks, three work groups, each made up of representatives from the four parties, were established. Two of these work groups (the Sampling Protocol Group and the Analysis Protocol Group) were, respectively, assigned the tasks of developing the protocols for sampling and chemical analyses of water and suspended solids samples from the Niagara River. The third group, the Data Interpretation Group is responsible for the statistical interpretation of the data. The terms of reference of this Group, as revised in July 1988, are to prepare an annual report summarizing and interpreting the Niagara River ambient water quality data using the Maximum Likelihood and the Sign Test methods to determine statistical differences between the upstream and downstream ends of the river.

A report entitled "Joint Evaluation of Upstream/Downstream Niagara River Monitoring Data 1984-1986"[3] prepared by the Data Interpretation Group was released in October 1986. This report was the first joint four party

(United States Environmental Protection Agency, New York State Department of Environmental Conservation, Ontario Ministry of Environment and Energy, and Environment Canada) interpretation of the Environment Canada ambient water quality data collected at the head (Fort Erie) and mouth (Niagara-on-the-Lake) of the Niagara River from December 1984 to March 1986. Due to uncertainties related to sampling methods, analytical procedures and analytical quality assurance/quality control, only the most conservative interpretations were possible.

Efforts to minimize or eliminate these uncertainties resulted in the development of new sampling and analytical protocols and statistical methods, which were put into effect by Environment Canada in April 1986. A second report ("Joint Evaluation of Upstream/Downstream Niagara River Monitoring Data 1986-1987"[4]), discussing the results obtained from the improved program from April 1986 to March 1987, was prepared by the Data Interpretation Group and released in January 1988.

Similar reports covering the period from April 1987 to March 1991 [5,6,7,8] have been prepared and released by the Data Interpretation Group.

The current report, ("Joint Evaluation of Upstream/Downstream Niagara River Monitoring Data for the period April 1991 to March 1992") is the seventh in the series and was prepared for submission to the River Monitoring Committee by the Data Interpretation Group. The interpretation of the 1991-1992 Upstream/Downstream Niagara River water quality data in this report has the concurrence of the members of the Data Interpretation Group.

Since sampling and analytical procedures, as well as the statistical methods used in interpreting the 1991-92 data set, were virtually identical to those used for the previous four reports (the 1987-88, 1988-89, 1989-90 and 1990-91 data sets), direct comparison of these data sets is considered acceptable. Large differences between the present sampling, analytical and statistical procedures and those used prior to April 1986 make only qualitative comparisons with the 1984-1986 data set possible. A group, called the "Niagara River Ad Hoc Work Group", has incorporated these data sets in their report on progress towards the 50% reduction in loadings target. The Four Party report, "Progress Report on Reduction of Priority Toxics in the Niagara River" was released in January 1993.

2.2 DATA QUALITY:

The sampling and analytical protocols developed and agreed to by the four parties included the requirement for audits of the field and laboratory operations as conducted by Environment Canada. The purpose of these audits was to ensure that the protocols that were agreed upon were indeed being followed by Environment Canada's field and laboratory technicians. The most recent laboratory and field audits were conducted in November 1991 and November 1993. The teams for the audits included representatives of the U.S. EPA; Ontario MOE; Environment Canada and NYSDEC.

In both cases, the audit teams concluded that the procedures followed by Environment Canada's field and laboratory staff were generally in keeping with those described in the sampling and analytical protocols and should therefore result in the generation of data of acceptable quality.

3. SAMPLING METHODS:

3.1 STATION LOCATION:

Water and suspended solids samples are collected at two permanent sampling stations located at the head (Fort Erie) and mouth (Niagara-on-the-Lake) of the Niagara River (Figure 3.1). The stations were chosen to provide samples that represented, as closely as possible, inflow to the Niagara River from eastern Lake Erie and outflow from the Niagara River into Lake Ontario. Site selection was also dictated by operational considerations such as acquisition and availability of property, accessibility, availabilty of electrical power, and site security. Since there was no single best site, sites were chosen to serve as the best possible compromise between acceptable representativeness and operational constraints. Recent studies conducted by Environment Canada indicate that the distribution of contaminants in the Niagara River at the Niagara-on-the-Lake station is homogeneous (Green/Seastar 1988[16]). This suggests that the location of this station is adequate for the purpose of monitoring contaminant loading to Lake Ontario from the Niagara River. Studies expected to further resolve the question of station representativeness at the upstream site are being conducted in 1993-94. The ad hoc group on Physical Limnology and Hydraulics concluded, in its report on "Flow and Circulation Characteristics in the Eastern Lake Erie and Upper Niagara River Area" (Jan 1989)[17] that the water collected at the Fort Erie station should be representative of the water in eastern Lake Erie and that, to the best of their knowledge of the limnological and hydraulic processes of the system, the effluent from the Buffalo River and Smoke Creek does not mix with the water in the upper part of the Niagara River. Therefore, water samples collected at the Fort Erie station are not affected by this plume. However, to date, it is still not possible to determine whether loadings derived from samples collected at the upstream station reflect the actual loadings nor is it possible to determine the size of any potential error.

3.2 SAMPLE COLLECTION SYSTEM:

The sample collection system at both locations consists of an intake structure, intake line, pump, continuous-flow centrifuge, and Goulden Large Sample Extractor (GLSE). The intake structure, intake line and pump are permanently submerged in the river and the wells while the pump controllers, centrifuge and GLSE are housed on the river bank (Figures 3-2 and 3-3). Intakes were positioned in the water column such that they were sufficiently far from the bottom to avoid sampling bedload yet far enough below the surface so as not to constitute a hazard to navigation. Throughout the sampling system care was taken to ensure that, to the greatest extent practicable, all equipment coming in contact with the sample was made of chemically inert materials.

Whole water at the sampling location is separated into aqueous and particulate phases (suspended solids) by a Westfalia continuous-flow centrifuge which is operated for 24 hours. Grab, whole water samples are collected for volatiles and trace metals and grab, centrifuged water samples are collected for chlorophenols.

Outflow from the centrifuge (the aqueous phase), is extracted by a Goulden Large Sample Extractor (GLSE) developed by Goulden and Anthony[8] (1985) which has been modified for 24-hr continuous operation.

The GLSE (Figure 3-4) is essentially a mixer-settler in which the water sample is continuously passed through an agitated vessel containing the solvent dichloromethane (DCM). The solvent containing the extracted organic contaminants separates from the water and settles into the mixer. The effluent water then passes to waste. Since the effluent water contains a small quantity of the solvent and additional solvent losses can occur because of its volatility, a supply of fresh DCM is continuously added to the extractor. Detailed descriptions of both the sampling system and the operation of the GLSE are presented in the Niagara River Sampling Protocol[14,16].

3.3 SAMPLING REGIME:

Sample collection at the upstream and downstream stations is illustrated schematically in Figure 3-5. Suspended solids and water samples are collected continuously over a period of 24 hours at both locations once per week. Suspended solids samples are analysed for organochlorine pesticides (OCs), chlorobenzenes (CBs), polynuclear aromatic hydrocarbons (PAHs), phthalates, phenols, dioxin (2,3,7,8 - TCDD) and trace metals. Centrifuged water samples are continuously extracted over the 24-hr sampling period by the GLSE and the extracts are analysed for OCs, CBs, PAHs, phthalates and dioxin (2,3,7,8 - TCDD). A 20L grab sample of centrifuged water is also collected for chlorophenol analysis. In addition, grab samples of whole water (not centrifuged), which include the suspended solids (particulate) fraction are collected. These samples are analysed for volatile organics and trace metals.

Generally, sample collection at Fort Erie commenced on Tuesday afternoon of each week while sample collection at Niagara-on-the-Lake was started on Wednesdays. The delay of 15 to 18 hours between sample collection at Fort Erie and Niagara-on-the-Lake was introduced to account for the time required for water to travel the length of the river from Fort Erie to Niagara-on-the-Lake. Staggered sampling times could not account for storage and release of water from the Robert Moses and Sir Adam Beck power plant reservoirs. However, the introduction of time-delayed sampling provides a closer approximation of the river's hydrologic regime.

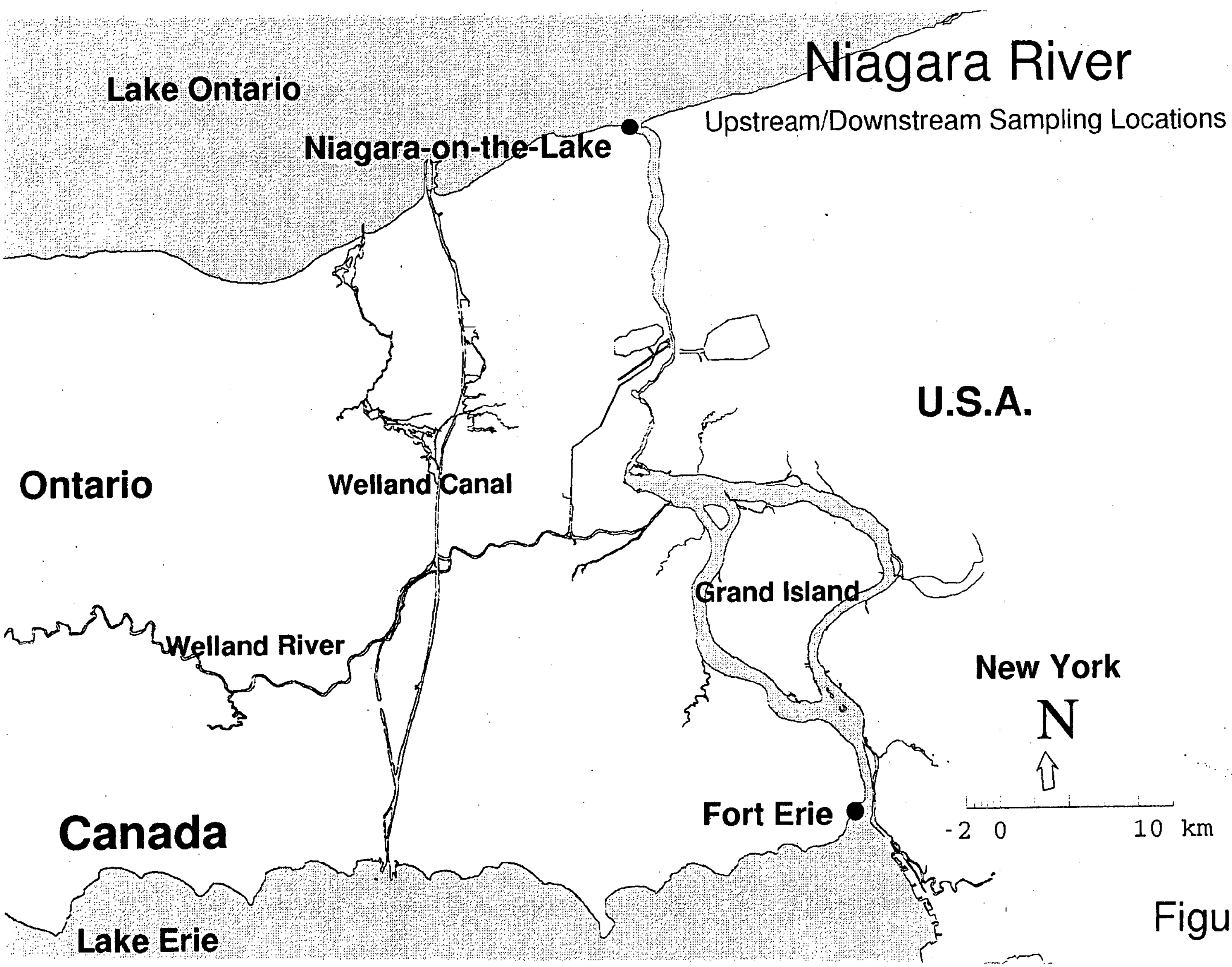

Niagara River
Upstream/Downstream Sampling Locations
Lake Ontario
Niagara-on-the-Lake
U.S.A.
Ontario
Welland Canal
Grand Island
Welland River
New York
N
Fort Erie
-2 0 10 km
Canada
Lake Erie

Figure 3.1

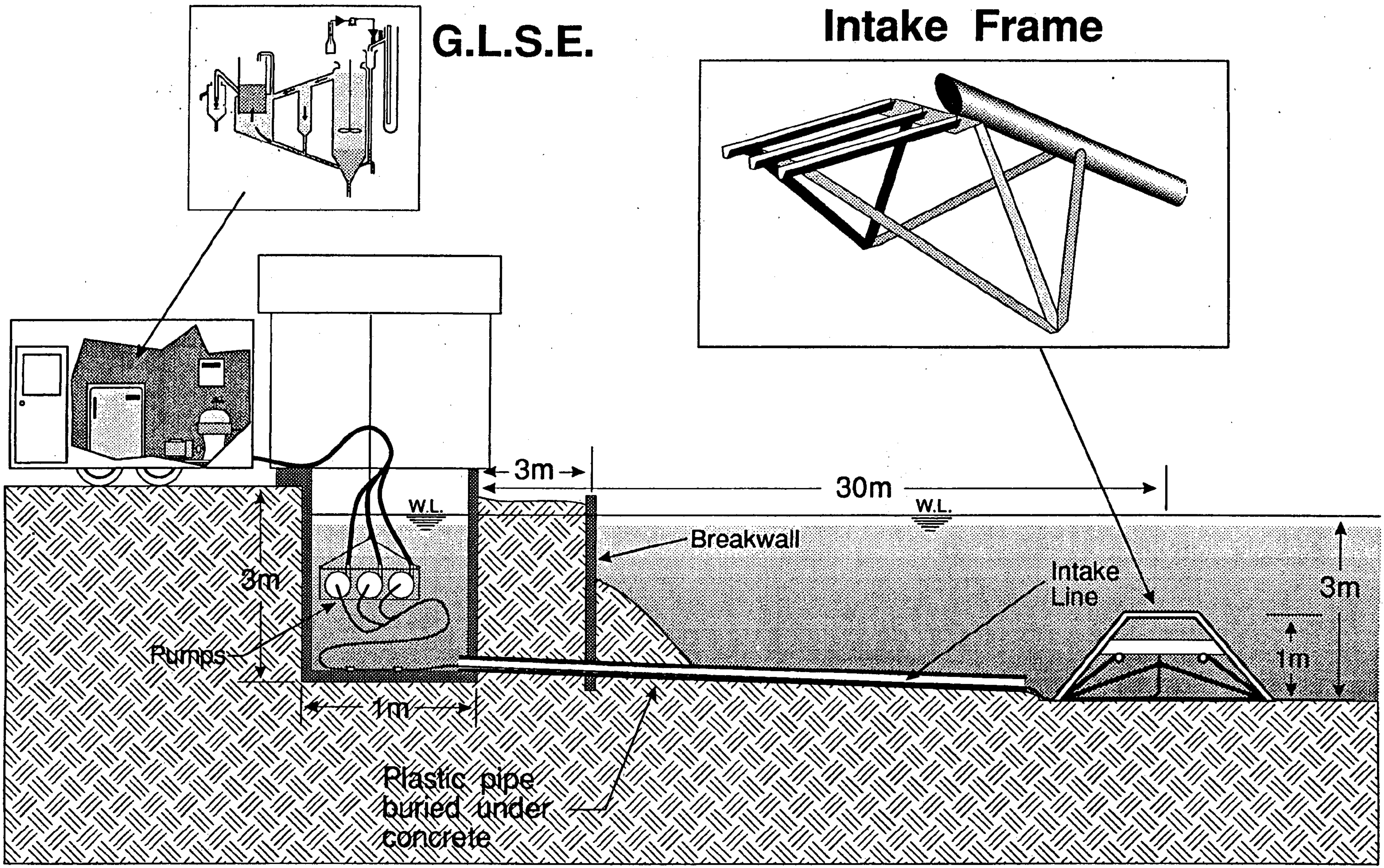


Figure 3-3: Water Delivery System at Fort Erie

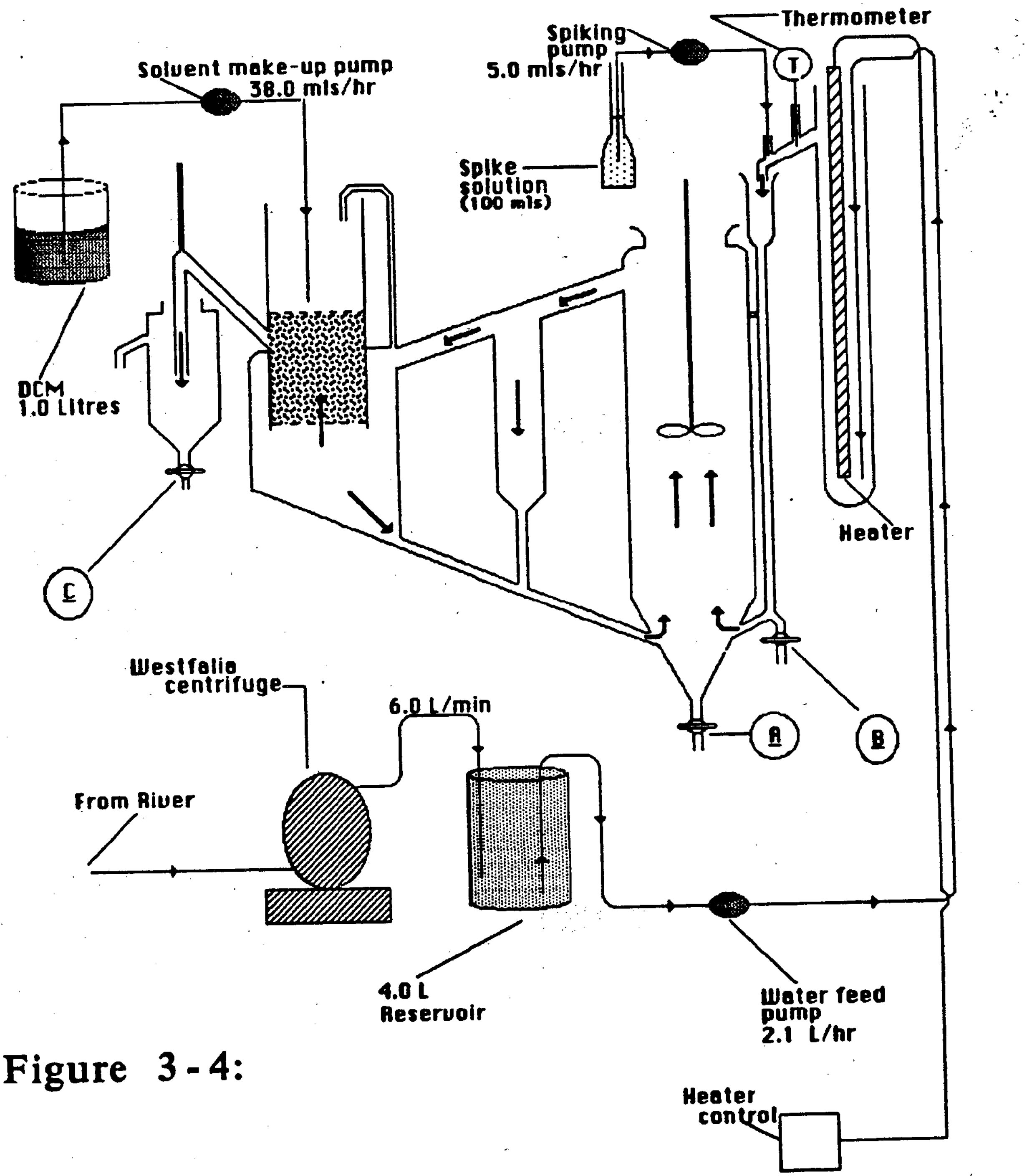


Figure 3-4:

Large Volume Counter Current Extractor (GLSE)

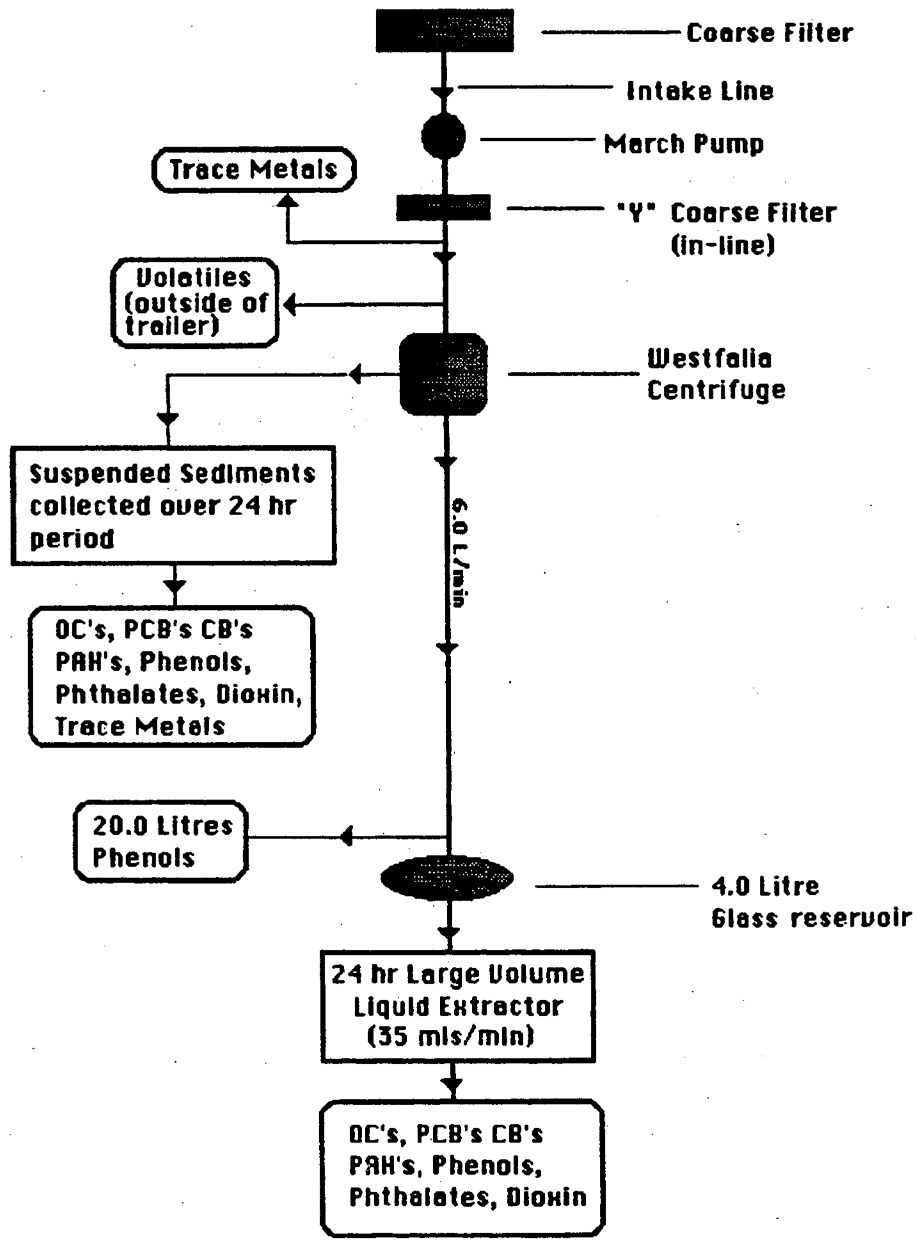


Figure 3-5: Niagara River Sampling Regime

4. ANALYTICAL METHODS:

4.1 ANALYTICAL PROCEDURES:

The procedure consists of three operational components:

1. Collection of raw river water
2. Preparation of the extracts for instrumental analyses.
3. Instrumental analyses and interpretation.

A summary of the first component has been presented in the preceding chapter (Chapter 3) and is described in considerable detail in "Niagara River Sampling Protocol"[15,16]. The steps associated with components two and three are illustrated in Figure 4-1 for organic contaminants in water and suspended solids and Figure 4-2 for trace metals. Detailed descriptions of the analytical procedures including detection limits are documented, reported and defined in "Analytical Protocols for Monitoring Ambient Water Quality at the Niagara-on-the-Lake and Fort Erie Stations"[13,14]. These three different types of detection limits include instrument detection limit (IDL), method detection limit (MDL) and practical detection limit (PDL). A list of the 99 chemicals analyzed in the Niagara River is given in Appendix 1, and their respective detection limits are given in Appendix 2. As present analytical techniques are unable to distinguish between benzo(b)fluoranthene and benzo(k)fluoranthene, and between chrysene and triphenylene, these PAHs will be reported as benzo(b/k)fluoranthene and chrysene/triphenylene.

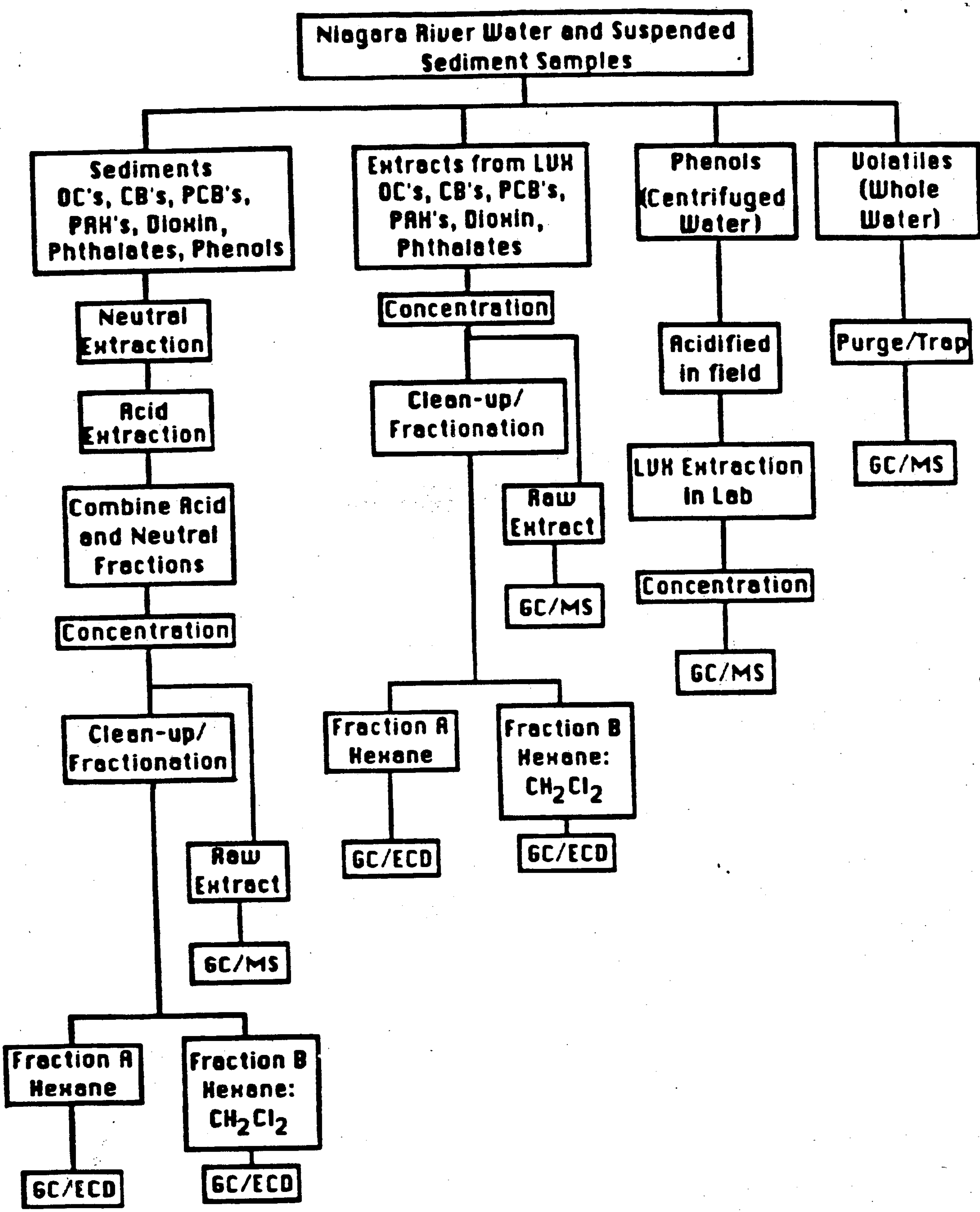
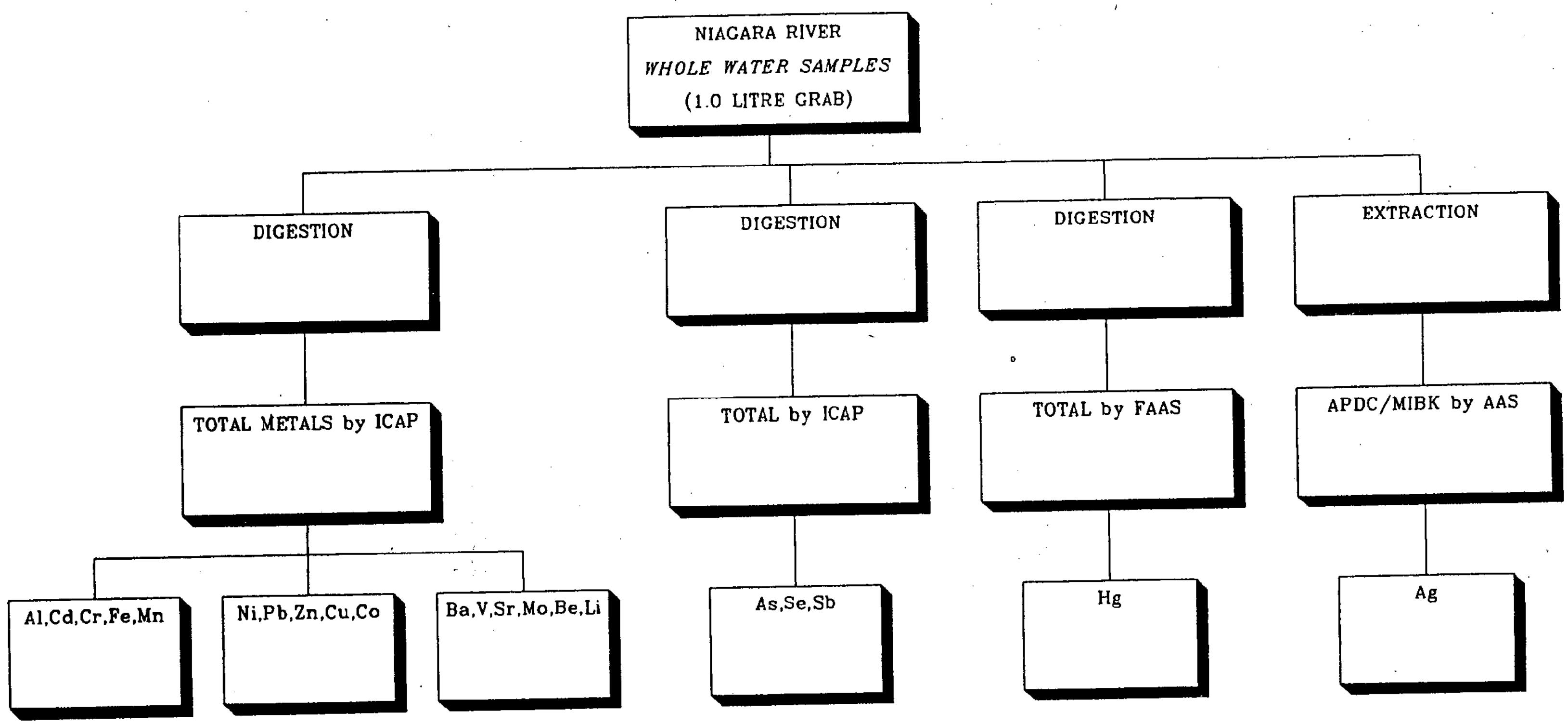


Figure 4.1:
Analysis for Organics

FIGURE 4.2: ANALYSIS FOR TRACE METALS



5. STATISTICAL METHODS:

5.1 OBJECTIVES:

The objectives of the statistical analysis of this data are to estimate:

1. The mean concentration for each parameter in water and suspended solids at the two stations.
2. The mean daily load for each parameter, station and phase.
3. The mean of the above for the combined water/suspended solids phases (total).
4. The difference in the mean concentration between the two stations.
5. The difference in the mean load between the two stations (differential load).

5.2 STATISTICAL PROCEDURES:

5.2.1 ASSUMPTIONS:

a) The data are statistically independent.

b) The lognormal distribution is the appropriate model for the concentration.

c) The flow data are more accurate than the concentrations (inference is made conditional on the observed flow).

d) The stations are adequate to monitor the inputs of contaminants into the Niagara River from Lake Erie and outputs of contaminants from the Niagara River into Lake Ontario.

5.2.2 METHOD OF ESTIMATION:

A flow chart describing the steps involved in the data interpretation procedure is presented in Figure 5-2-1. A summary of the maximum likelihood (ML) method of estimation follows.

Given a set of data consisting of the following:

1. Detection limit = x_0
2. No. of values below detection limit = n_0
3. No. of values above detection limit = n
4. Measured concentrations are $x_1, \ldots, x_n$

5. Flow values are $F_1, F_2, \ldots, F_N$

where $N \geq n_0 + n$

6. The data are available for each parameter in water and suspended solids at both Niagara-on-the-Lake and Fort Erie stations.

Under the assumption of lognormality of the data, $y_i = \ln x_i$ follows the normal distribution with mean μ and variance σ^2. In the measurement space the mean and variance of x_i are given by respectively:

$$\alpha = e^{\mu+\sigma^2/2}$$

and

$$\beta = \alpha^2\{e^{\sigma^2}-1\}$$

The point estimates of the parameters in the log and measurement spaces and various confidence limits for the values of the lognormal mean are obtained using the method of maximum likelihood (ML). Details of this approach can be found in El-Shaarawi[8] (1989). A summary of the basic results is presented below.

The likelihood function (L) for μ and σ^2 is proportional to:

$$\Phi^n\,[(y_o-\mu)/\sigma]\,\sigma^{-n}[e^{-\frac{1}{2}\sigma^{-2}\sum(y_i-\mu)^2}] \tag{1}$$

The values $\hat{\mu}$ and $\hat{\sigma}^2$ of μ and σ^2 which maximize (1) are their maximum likelihood estimates (MLE).

The MLE for α is obtained by direct substitution i.e,

$$\hat{\alpha} = e^{\hat{\mu}+\hat{\sigma}^2/2} \tag{2}$$

Note that $\hat{\alpha}$ as given in (2) is a biased estimate for α, a bias corrected estimate is obtained as:

$$\tilde{\alpha} = \hat{\alpha}e^{-\frac{1}{2}(V_{11}+2\hat{\sigma}V_{12}+\hat{\sigma}^2V_{22})}$$

where, V_{11}, V_{22}, and V_{12} represent the variance of $\hat{\mu}$ and $\hat{\sigma}$ and the covariance between $\hat{\mu}$ and $\hat{\sigma}$ respectively.

Further the ML method produces an estimate of the variance- covariance matrix of $\hat{\mu}$ and $\hat{\sigma}$ which can be found in El-Shaarawi[8] (1989). It can be shown that the 90 % confidence limits for α are;

$$\hat{\alpha}e^{-1.645\sqrt{Q}} \quad \text{and} \quad \hat{\alpha}e^{1.645\sqrt{Q}} \tag{3}$$

where

$$Q = V_{11} + 2\hat{\sigma}V_{12} + \hat{\sigma}^2 V_{22} \tag{4}$$

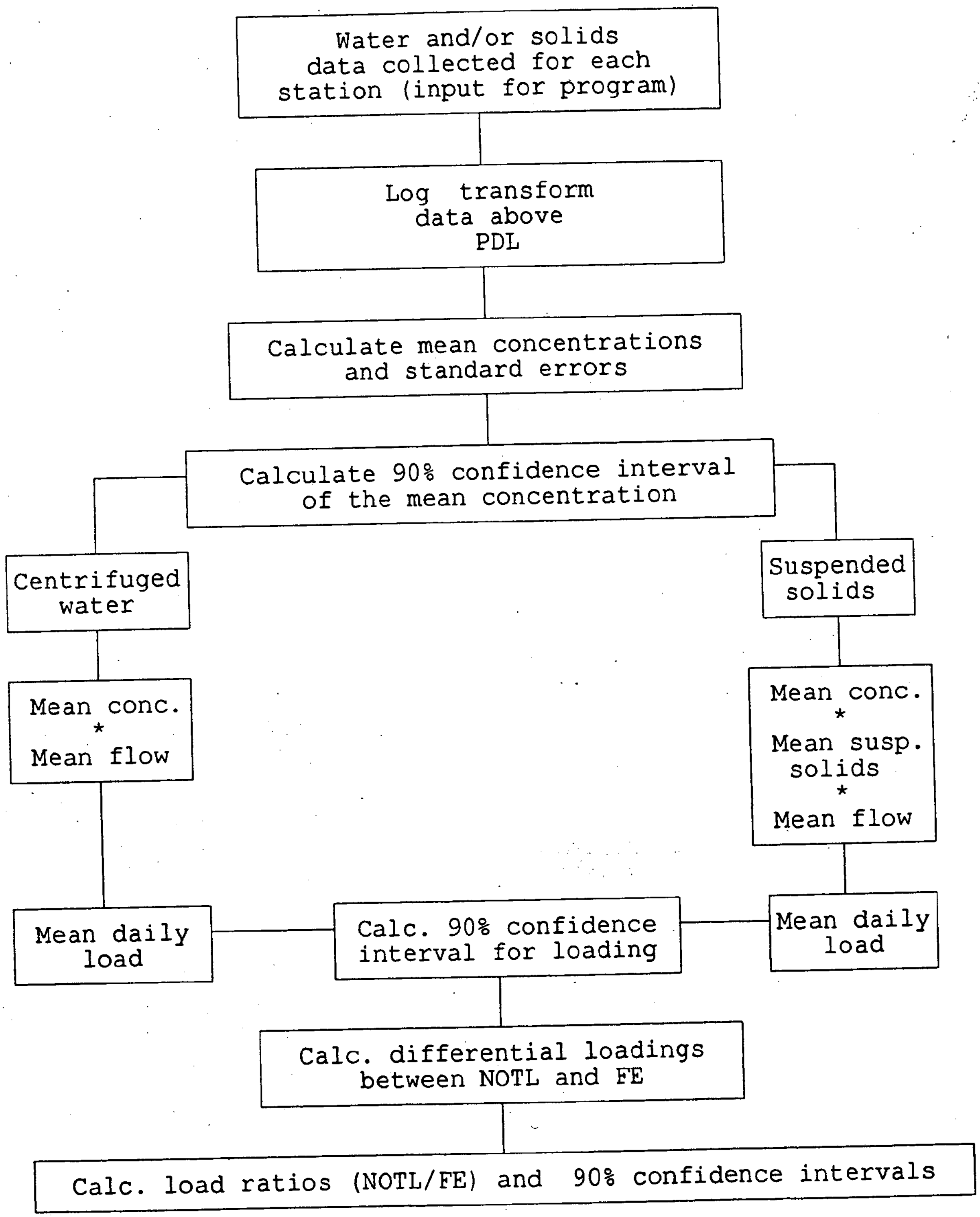
To test if the concentrations at Niagara-on-the-Lake and Fort Erie are the same, we compute the confidence interval for $\delta = \hat{\alpha}_{NOTL} / \hat{\alpha}_{FE}$, and if it includes the value 1.0, then there is no significant difference between the two stations. The 90 % confidence limits are;

$$(\hat{\alpha}_{NOTL} / \hat{\alpha}_{FE})e^{\pm 1.645(\sqrt{Q_{NOTL} + Q_{FE}})} \tag{5}$$

The computation of the loading and the confidence intervals for the mean daily station load and the ratio of daily loads at Niagara-on-the-Lake and Fort Erie are obtained by multiplying (3) and (5) by the mean flow and the ratio of the Niagara-on-the-Lake to Fort Erie mean flow respectively.

A distribution free sign test (Hollander and Wolfe 1973[11]) is applied to compare the concentrations at the two stations when three or fewer of the measurements at one station are below the detection limit (PDL), while more than three observations at the other station are above the detection limit (PDL). The ML method cannot be used for these cases. The flow chart for the application of the sign test is shown in Figure 5-2-2.

Figure 5-2-1: Flow Chart of Maximum Likelihood Estimation Program



5.3 CALCULATION OF EQUIVALENT WATER CONCENTRATION (EWC):

Contaminant concentrations for the particulate phase were reported by the laboratory as weight of contaminant per unit weight of particulate (e.g. ug/g) on a dry weight basis. These concentrations were converted to "equivalent water concentrations" (EWCs) to proceed with the loading calculations. EWCs for each contaminant were calculated as the product of the mean concentration estimates obtained from the ML method and the mean suspended solids concentration in river water.

5.4 CALCULATION OF RECOMBINED WHOLE WATER (RWW) CONCENTRATIONS:

Let $\tilde{\varepsilon}_s$ and $\tilde{\alpha}_s$ represent the mean calculated solids load and concentration found by the ML method, and $\tilde{\varepsilon}_w$ and $\tilde{\alpha}_w$ be similarly defined for water. Recalling the equations in section 5.2.2 then for the variance in the concentrations and loadings we have;

$$\hat{var}(\tilde{\alpha}_s) = s_{sc}^2 = \hat{\alpha}_s^2 Q_s \quad (6)$$
$$\hat{var}(\tilde{\varepsilon}_s) = s_{sl}^2 = \hat{\varepsilon}_s^2 Q_s \quad (7)$$

for suspended solids, and similarly for water;

$$\hat{var}(\tilde{\alpha}_w) = s_{wc}^2 = \hat{\alpha}_w^2 Q_w \quad (8)$$
$$\hat{var}(\tilde{\varepsilon}_w) = s_{wl}^2 = \hat{\varepsilon}_w^2 Q_w \quad (9)$$

where Q_s and Q_w are defined as given by (4) but taking the appropriate elements of the variance-covariance matrix V_{ij} which corresponds to suspended solids and water respectively.

The total RWW concentrations and loads are given by;

$$\text{RWW concentration} = \tilde{\alpha}_w + \tilde{\alpha}_s \quad (10)$$
$$\text{RWW load} = \tilde{\varepsilon}_w + \tilde{\varepsilon}_s \quad (11)$$

Assuming independence between the suspended solids load and the water load the equation for the variance in RWW is;

$$var(conc.) = s_{wc}^2 + s_{sc}^2 \quad (12)$$
$$var(load) = s_{wl}^2 + s_{sl}^2 \quad (13)$$

for the concentrations and loadings, respectively. The equations for the 90% confidence intervals then are;

$$(\bar{\alpha}_w + \bar{\alpha}_e) \pm 1.645\sqrt{(s_{wc}^2 + s_{ec}^2)} \qquad \text{(concentration)} \quad (14)$$

$$(\bar{\varepsilon}_w + \bar{\varepsilon}_e) \pm 1.645\sqrt{(s_{wl}^2 + s_{el}^2)} \qquad \text{(loading)} \quad (15)$$

The flow chart for the calculation of the RWW estimates is shown in Figure 5-2-3.

To determine if the values calculated from the two phases would produce accurate recombined whole water values, a correlation test was first performed on the separate phases. The concentrations of chemicals in each phase, matched by date, were tested for correlation with the concentration of suspended solids in each sample. The Spearman's rank correlation [11] test was used because of the presence of non-detect observations. In the case where a tie occurs, including below detection limit values, the average ranking for the tied values is assigned as the rank for both observations. These rankings are then used instead of the observed values in the computation of a regular correlation.

Figure 5-2-2: Flow Chart of Distribution Free Sign Test:

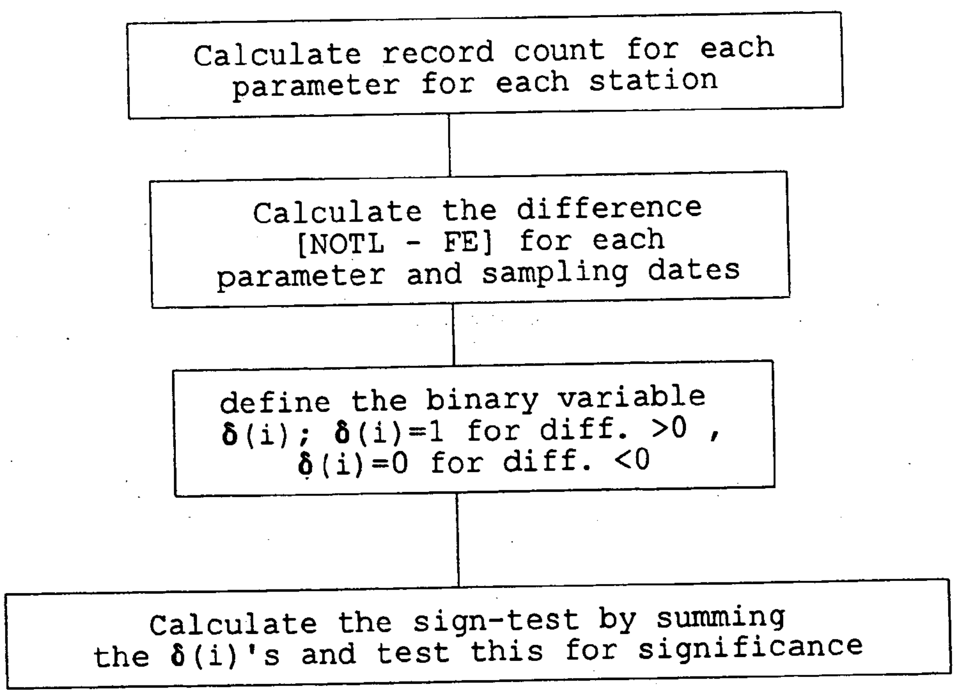
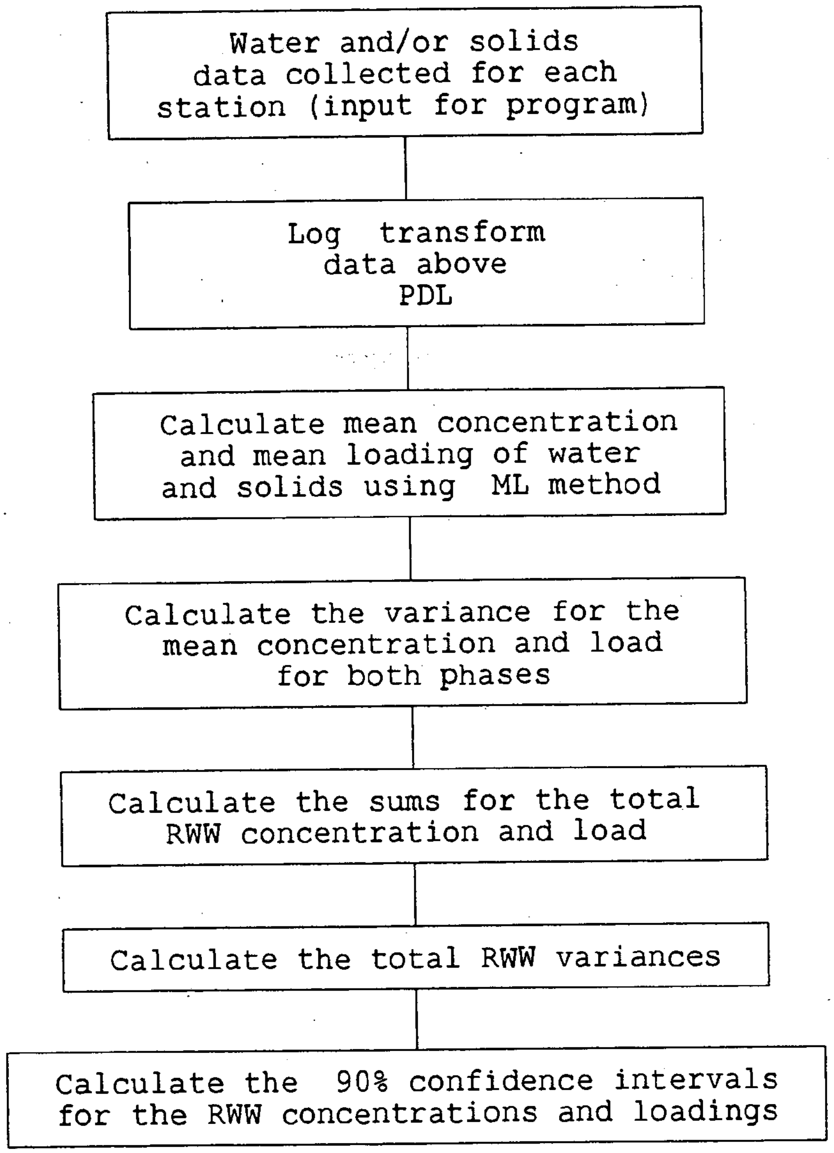


Figure 5-2-3: Flow Chart of RWW Estimation Program



6. RESULTS:

6.1 DISCHARGE DATA:

Daily mean discharge data in cubic feet per second (CFS) are shown in Figures 6-1 and 6-2 for both the Fort Erie and the Niagara-on-the-Lake stations, respectively. These data were obtained from the Coordinating Committee on Great Lakes Basic Hydraulic and Hydrologic data [2]. On the average, the mean daily discharge is less than 1% higher at Niagara-on-the-Lake than at Fort Erie. Therefore, increases in daily flow from one end of the river to the other will account for very little of the increase in differential loading whereas increases in concentration will account for much of the increase in differential loading.

The discharge statistics shown in Table 6-1-1 have been calculated from data provided by the Coordinating Committee on Great Lakes Basic Hydraulic and Hydrologic Data[2]. These calculated data have been used in the calculation of the loadings at both stations and for the differential loadings using the MLE method for the 1986-87, 1987-88, 1988-89, 1989-90, 1990-91 and 1991-92 data sets. From 1986-87 to 1991-92 the annual mean discharge has dropped a total of about 19%.

TABLE 6-1-1:
DISCHARGE DATA (CFS) FOR THE MLE ANALYSIS OF THE NIAGARA RIVER

	NIAGARA-ON-THE-LAKE		FORT ERIE	
	MEAN	**ST.DEV**	**MEAN**	**ST.DEV**
1986-87	**254908**	**12512**	**253754**	**12346**
1987-88	**230621**	**15788**	**229293**	**15066**
1988-89	**204165**	**13359**	**202749**	**12623**
1989-90	**208107**	**13090**	**206933**	**12513**
1990-91	**217354**	**12226**	**216077**	**10545**
1991-92	**206418**	**16067**	**204960**	**14473**

Figure 6-1: Fort Erie Daily Discharge

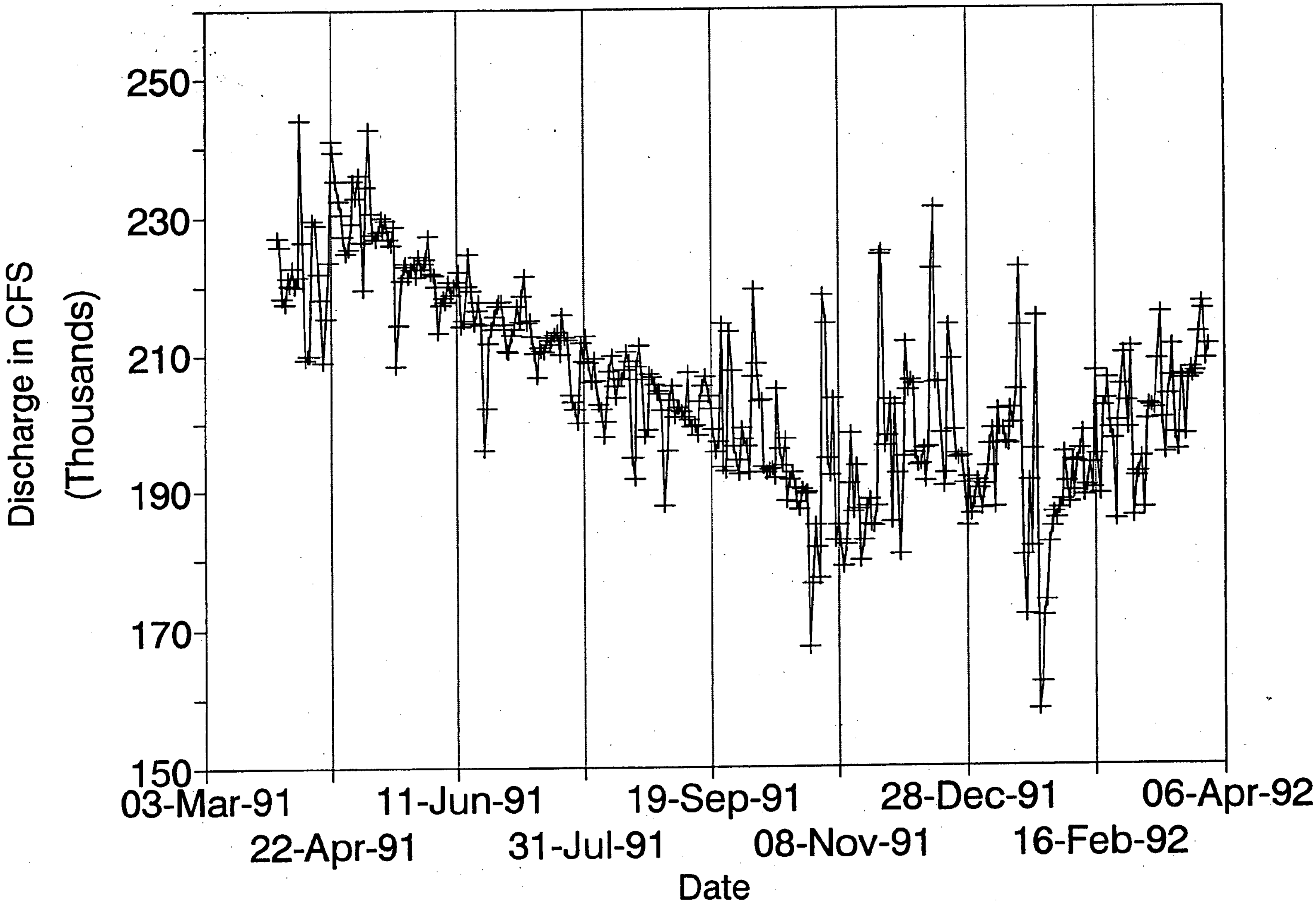
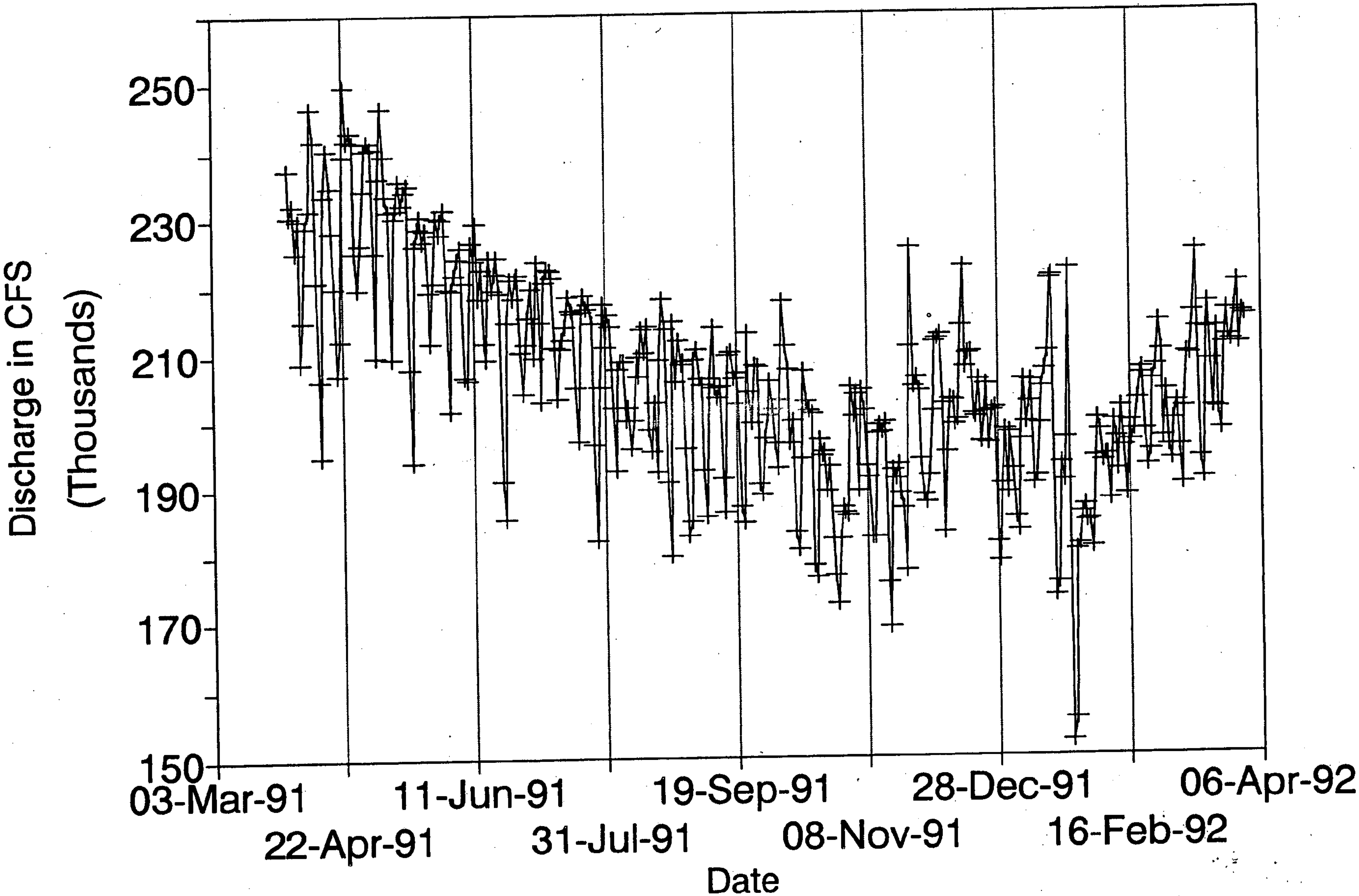


Figure 6-2: Niagara-on-the-Lake
Daily Discharge



6.2 SUSPENDED SOLIDS CONCENTRATIONS:

Suspended solids concentrations for 1991-92 are shown in Figures 6-3 and 6-4 for both Fort Erie and Niagara-on-the-Lake stations. These data are considered to be a good estimate of the suspended solids load in the river because they are collected over a 24-hour period from a volume of approximately 8000L or more of water. They are probably an underestimate of the true solids load because the Westfalia centrifuge is only 80 - 90 % efficient at removing particles (Allan 1979[11]). Generally, the suspended solids concentrations at both stations followed the same patterns with lower values during the April - September period and higher values during the October - March period. The suspended solids concentrations shown in Table 6-1-2 are calculated from the samples collected from the Upstream/Downstream stations on the Niagara River and have been used in the calculation of loadings in the MLE method. The mean suspended solids concentrations at the Niagara-on-the-Lake and Fort Erie stations for 1991-92 were 5.8 mg/l and 5.3 mg/l respectively.

TABLE 6-1-2:
SUSPENDED SOLIDS CONCENTRATION DATA (MG/L) USED FOR THE MLE ANALYSIS OF THE NIAGARA RIVER

	Niagara-on-the-Lake		Fort Erie	
	Mean	St. Dev.	Mean	St. Dev.
1984-86	10.8	10.7	7.9	8.5
1986-87	9.5	8.1	9.2	8.0
1987-88	7.3	9.7	6.6	10.6
1988-89	10.9	9.6	8.5	9.6
1989-90	4.7	5.2	3.8	5.4
1990-91	7.4	9.2	6.9	9.3
1991-92	5.8	7.4	5.3	7.6

Figure 6-3: Suspended Solid Conc.
at Fort Erie

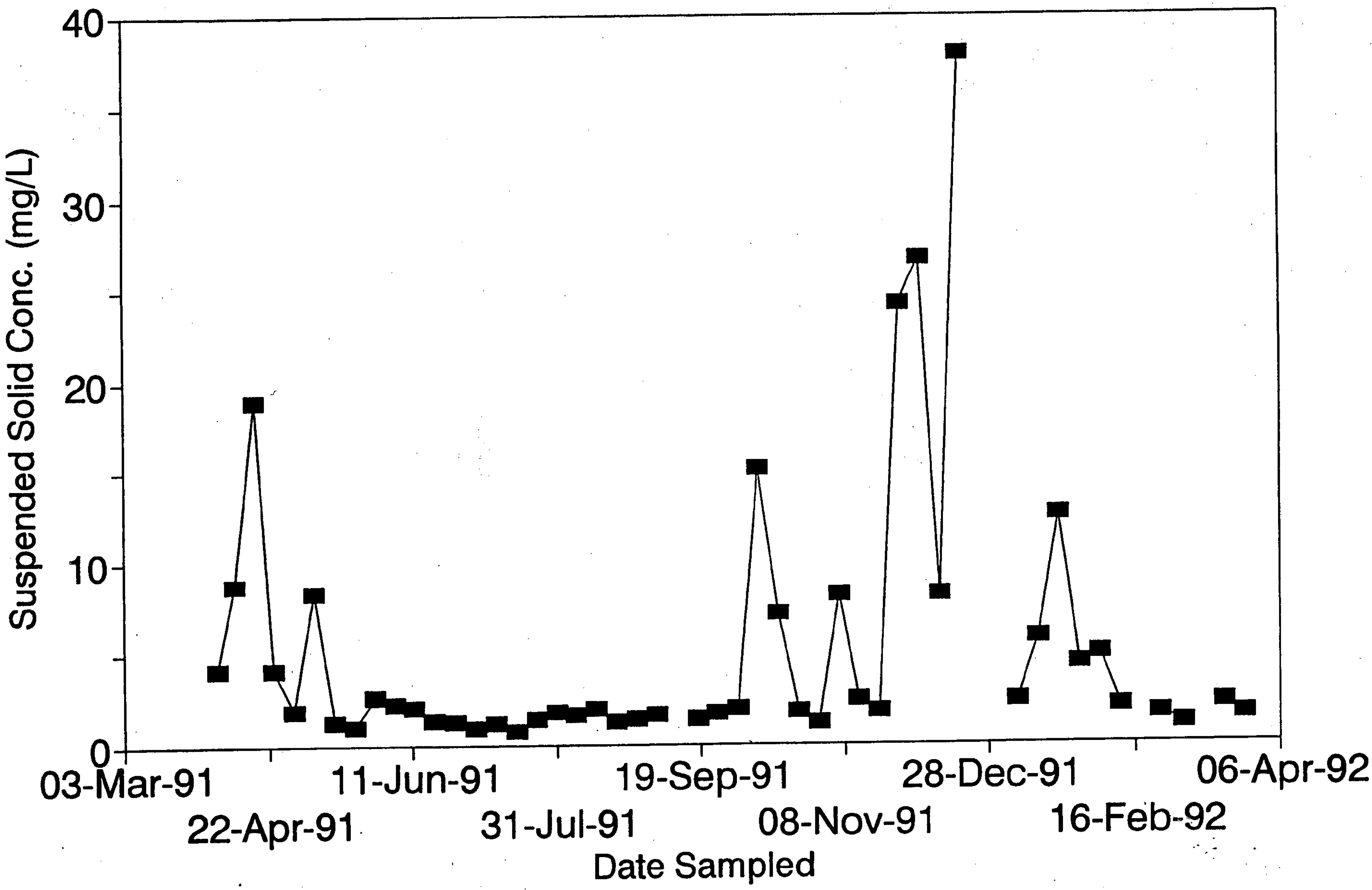
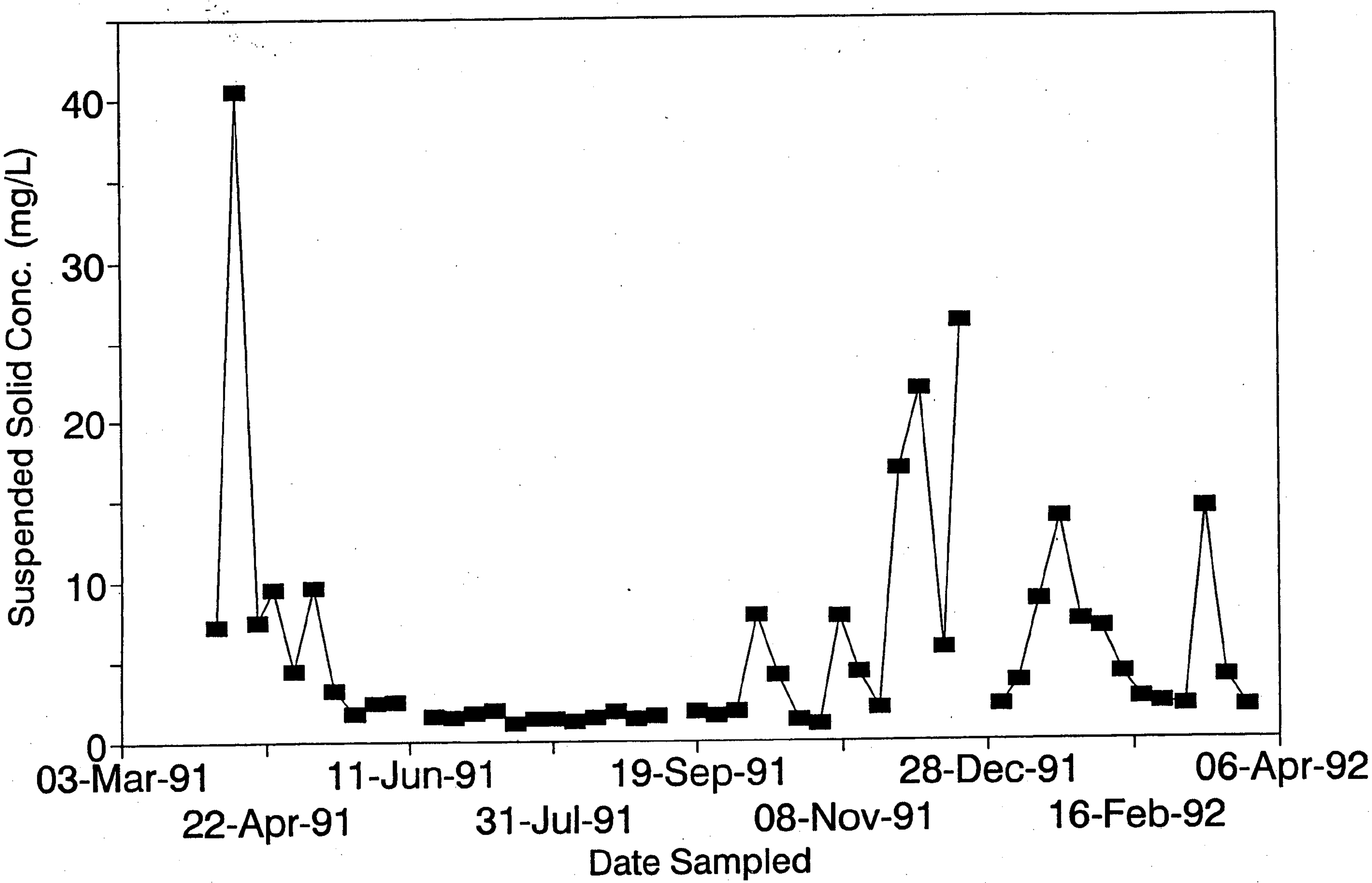


Figure 6-4: Suspended Solid Conc.
at Niagara-on-the-Lake



6.3 STATISTICAL PRESENTATION AND INTERPRETATION OF RESULTS:

Statistical results for the organics, volatiles and trace metals in the water and suspended solids fractions for both the Fort Erie and Niagara-on-the-Lake stations are found in the following sections of this report. The number of samples analysed, number of values equal to or greater than the practical detection limit (PDL), (except where no PDL is available), mean concentration and mean load and their 90 % confidence intervals are presented for each substance with three or more values above the PDL. Generally, the concentration and load results are reported with up to four significant digits so that results for some chemicals do not show up as all zeros. In some cases, trailing zeros may have been dropped by the software programs. Three or more values above the PDL was chosen as an arbitrary cut-off for the application of the ML method, for each chemical tested. Ratios of the mean concentration and the mean loads and their 90% confidence limits between the Niagara-on-the-Lake and Fort Erie stations are also presented. Those substances which have a confidence interval that does not overlap 1.0 were considered to have a statistically significant differential load. Concentration differences (ng/L) and the differential loads (kg/day) are also calculated.

Listings of the 1991-92 data used for this report are found in Appendix 3.

6.3.1 ORGANICS IN WATER FRACTION:

Statistical results for organics in the water fraction at both the Fort Erie and Niagara-on-the-Lake stations are summarized in Tables 6-3-1 and 6-3-2 for those chemicals for which the MLE method could be used. Ratios of the means (Niagara-on-the-Lake/Fort Erie) of concentrations and loads and their 90% confidence limits are presented in Table 6-3-3. The 14 compounds which have a loading ratio significantly greater than 1.0 are as follows:

1,4-dichlorobenzene
alpha BHC
dieldrin
2-methyl naphthalene
1-methyl naphthalene
acenaphthylene
fluorene
phenanthrene
fluoranthene
pyrene
benz(a)anthracene
benzo(b/k)fluoranthene
chrysene/triphenylene
phenol

Sixteen other compounds listed below were significantly higher (at the 90% level) at Niagara-on-the-Lake than at Fort Erie using the sign test method (Table 6-3-4). These compounds are:

1,3-dichlorobenzene	octachlorostyrene
1,2-dichlorobenzene	beta-endosulfan
1,3,5-trichlorobenzene	hexachlorobutadiene
1,2,4-trichlorobenzene	hexachlorocyclopentadiene
1,2,3-trichlorobenzene	anthracene
1,2,3,4-tetrachlorobenzene	benzo(a)pyrene
pentachlorobenzene	2,6-dichlorophenol
hexachlorobenzene	2,4,6-trichlorophenol

In addition, the following three compounds, diethylphthalate, bis(2-ethylhexyl)phthalate* and dioctylphthalate were significantly higher (at the 90% level) at Fort Erie than at Niagara-on-the-Lake (Table 6-3-3) using the MLE method and two chemicals (p,p-DDE and p,p-TDE) were higher at Fort Erie (at 90% level) than at Niagara-on-the-Lake using the sign test method.

* Previously, high concentrations of bis(2-ethylhexyl)phthalate were noted which prompted review of the sampling and analytical protocols for phthalates. The RMC is currently reviewing the comments from the Analytical Protocol Group.

TABLE 6-3-1:

Fort Erie (1991-92 Data Set)
Water fraction
Organic contaminants

Parameter	Detection Limits	Values >P.D.L.	No. Samples	Mean Conc. (ng/l)	90% C.I. Conc. (ng/l) Minimum	90% C.I. Conc. (ng/l) Maximum	Mean Load (kg/DAY)	90% C.I. Load (kg/DAY) Minimum	90% C.I. Load (kg/DAY) Maximum
1,4-Dichlorobenzene	.510	44	48	1.065	.9648	1.172	.5343	.4839	.5880
alpha-BHC	.300	47	48	.9106	.8471	.9771	.4567	.4248	.4900
gamma-BHC (Lindane)	.140	47	48	.4589	.4140	.5068	.2301	.2076	.2542
Heptachlor Epoxide	.200E-01	47	48	.1050	.9679E-01	.1136	.5265E-01	.4854E-01	.5698E-01
alpha-Endosulfan	.200E-01	32	48	.3722E-01	.2975E-01	.4577E-01	.1866E-01	.1492E-01	.2295E-01
p,p-DDE	.600E-01	16	48	.5408E-01	.4747E-01	.6124E-01	.2712E-01	.2381E-01	.3071E-01
Dieldrin	.500E-01	47	48	.2356	.2195	.2524	.1181	.1101	.1266
Endrin	.300E-01	7	48	.1723E-01	.1179E-01	.2401E-01	.8639E-02	.5914E-02	.1204E-01
p,p-TDE	.100	3	48	.7435E-01	.5642E-01	.9551E-01	.3729E-01	.2829E-01	.4790E-01
p,p-DDT	.100	5	48	.5607E-01	.3696E-01	.8041E-01	.2812E-01	.1853E-01	.4033E-01
PCB	.810	33	48	1.262	1.066	1.478	.6327	.5348	.7411
Naphthalene	.330	46	46	2.751	2.190	3.456	1.380	1.098	1.733
2-Methyl Naphthalene	.510	36	46	1.020	.8804	1.172	.5114	.4415	.5879
1-Methyl Naphthalene	.610	28	46	.7455	.6711	.8250	.3739	.3366	.4137
Acenaphthylene	.160	24	46	.2110	.1737	.2529	.1058	.8713E-01	.1268
Fluorene	.590	10	46	.4561	.3717	.5515	.2287	.1864	.2766
Phenanthrene	.120	46	46	1.834	1.628	2.066	.9198	.8164	1.036
Fluoranthene	.180	46	46	.8590	.7534	.9794	.4308	.3778	.4912
Pyrene	.170	31	46	.3399	.2671	.4241	.1705	.1339	.2127
Benz(a)anthracene	.240	4	46	.1474	.9826E-01	.2095	.7390E-01	.4928E-01	.1051
Chrysene/triphenylene	.290	12	46	.2381	.1917	.2910	.1194	.9616E-01	.1459
Benzo(b/k)fluoranthene	.280	16	46	.2740	.2144	.3430	.1374	.1075	.1720
Dimethylphthalate	.380	46	46	1.501	1.355	1.663	.7530	.6796	.8342
Diethylphthalate	.390	46	46	20.15	17.55	23.13	10.10	8.800	11.60
Di-n-butylphthalate	1.02	46	46	16.51	14.31	19.05	8.281	7.177	9.555
Benzylbutylphthalate	2.92	32	46	4.810	3.982	5.737	2.412	1.997	2.877
Bis(2-ethylhexyl)phthalate	76.8	16	46	308.1	74.28	769.2	154.5	37.25	385.7
Dioctylphthalate	.350	45	46	3.914	2.502	5.741	1.963	1.255	2.879
Phenol	.190	37	49	5.892	2.587	11.03	2.955	1.297	5.534
3,4,5-Trichlorophenol	3.24	4	49	1.202	.6151	2.052	.6028	.3085	1.029
Atrazine	6.04	46	46	70.22	62.56	78.81	35.21	31.38	39.52
Metolachlor	.820	46	46	24.89	22.21	27.89	12.48	11.14	13.99

TABLE 6-3-2:

Niagara-on-the-Lake (1991-92 Data Set)
Water fraction
Organic contaminants

Parameter	Detection Limits	Values >P.D.L.	No. Samples	Mean Conc. (ng/l)	90% C.I. Conc. (ng/l) Minimum	Maximum	Mean Load (kg/DAY)	90% C.I. Load (kg/DAY) Minimum	Maximum
1,3-Dichlorobenzene	.300	48	48	.6759	.6306	.7244	.3414	.3185	.3659
1,4-Dichlorobenzene	.510	48	48	2.668	2.426	2.934	1.347	1.225	1.482
1,2-Dichlorobenzene	.580	30	48	1.267	.9679	1.618	.6399	.4889	.8172
1,3,5-Trichlorobenzene	.200E-01	47	48	.8781E-01	.7891E-01	.9732E-01	.4435E-01	.3986E-01	.4915E-01
1,2,4-Trichlorobenzene	.240	48	48	1.273	1.172	1.383	.6429	.5918	.6983
1,2,3-Trichlorobenzene	.900E-01	48	48	.3565	.3207	.3964	.1801	.1620	.2002
1,2,3,4-Tetrachlorobenzene	.900E-01	44	48	.6200	.5198	.7315	.3131	.2625	.3695
Pentachlorobenzene	.400E-01	48	48	.1454	.1328	.1593	.7346E-01	.6707E-01	.8046E-01
Hexachlorobenzene	.400E-01	41	48	.6275E-01	.5658E-01	.6933E-01	.3169E-01	.2858E-01	.3501E-01
alpha-BHC	.300	48	48	1.117	1.062	1.175	.5640	.5362	.5933
gamma-BHC (Lindane)	.140	48	48	.4712	.4531	.4900	.2380	.2288	.2475
Heptachlor Epoxide	.200E-01	48	48	.1117	.1055	.1182	.5641E-01	.5331E-01	.5969E-01
alpha-Endosulfan	.200E-01	38	48	.4702E-01	.3837E-01	.5681E-01	.2375E-01	.1938E-01	.2869E-01
Dieldrin	.500E-01	48	48	.2593	.2497	.2692	.1310	.1261	.1360
Endrin	.300E-01	7	48	.1724E-01	.1151E-01	.2450E-01	.8708E-02	.5811E-02	.1237E-01
p,p-DDT	.100	4	48	.5615E-01	.3493E-01	.8403E-01	.2836E-01	.1764E-01	.4244E-01
Hexachlorobutadiene	.300E-01	48	48	.9271E-01	.8500E-01	.1011	.4683E-01	.4293E-01	.5107E-01
Hexachlorocyclopentadiene	.200E-01	3	48	.8402E-01	.1521E-08	.4643E-02	.4244E-01	.7684E-09	.2345E-02
PCB	.810	37	48	1.135	1.046	1.229	.5731	.5281	.6205
Naphthalene	.330	48	48	2.839	2.418	3.333	1.434	1.221	1.684
2-Methyl Naphthalene	.510	47	48	1.319	1.159	1.492	.6661	.5853	.7535
1-Methyl Naphthalene	.610	37	48	.9721	.8677	1.084	.4910	.4383	.5475
Acenaphthylene	.160	44	48	.3344	.2929	.3795	.1689	.1479	.1917
Fluorene	.590	30	48	.7934	.6857	.9110	.4007	.3463	.4601
Anthracene	.230	6	48	.4452	.9139E-02	1.707	.2249	.4616E-02	.8620
Phenanthrene	.120	36	48	6.026	2.387	11.95	3.043	1.205	6.037
Fluoranthene	.180	48	48	1.850	1.585	2.159	.9343	.8006	1.090
Pyrene	.170	48	48	1.461	1.263	1.691	.7381	.6377	.8542
Benz(a)anthracene	.240	20	48	.2713	.2183	.3317	.1370	.1103	.1676
Chrysene/triphenylene	.290	28	48	.4075	.3429	.4792	.2058	.1732	.2420
Benzo(b/k)fluoranthene	.280	27	48	.4963	.3854	.6254	.2507	.1946	.3159
Benz(a)pyrene	.240	6	48	.1352	.9037E-01	.1919	.6830E-01	.4564E-01	.9694E-01
Benzo(g,h,i)perylene	.220	3	48	.1187	.6634E-01	.1914	.5996E-01	.3351E-01	.9668E-01
Dimethylphthalate	.380	48	48	1.358	1.157	1.594	.6858	.5843	.8050
Diethylphthalate	.390	48	48	13.77	11.97	15.84	6.955	6.048	7.998
Di-n-butylphthalate	1.02	48	48	15.74	12.95	19.12	7.949	6.543	9.658
Benzylbutylphthalate	2.92	40	48	4.134	3.826	4.457	2.088	1.932	2.251
Bis(2-ethyl-hexyl)phthalate	76.8	9	48	52.38	37.07	71.15	26.46	18.72	35.94
Dioctylphthalate	.350	47	48	2.347	1.799	2.989	1.185	.9085	1.510
Phenol	.190	30	49	82.32	4.707	294.0	41.58	2.377	148.5
2,4,6-Trichlorophenol	.630	18	49	.6497	.5347	.7790	.3281	.2701	.3935
Pentachlorophenol	1.04	4	49	.3944	.2036	.6697	.1992	.1028	.3383
Atrazine	6.04	48	48	73.27	68.35	78.55	37.01	34.52	39.68
Metolachlor	.820	48	48	26.53	24.31	28.96	13.40	12.28	14.63

TABLE 6-3-3:

Differential loading for chemicals found at both Niagara-on-the-Lake and Fort Erie (1991-92 Data Set)
Water fraction
Organic contaminants

Parameter	Mean Conc. Ratio	90% C.I. for mean Conc. Ratio Minimum	90% C.I. for mean Conc. Ratio Maximum	Conc. Difference (ng/l)	Mean Load Ratio	90% C.I. for mean Load Ratio Minimum	90% C.I. for mean Load Ratio Maximum	Differential Load (kg/DAY)
1,4-Dichlorobenzene	2.504	2.1817	2.8734	1.6022	2.5216	2.197	2.894	.8130
alpha-BHC	1.226	1.1209	1.3415	.2061	1.2350	1.129	1.351	.1073
gamma-BHC (Lindane)	1.027	.9195	1.1463	.0122	1.0340	.926	1.154	.7817E-02
Heptachlor Epoxide	1.064	.9622	1.1760	.0067	1.0713	.969	1.184	.3754E-02
alpha-Endosulfan	1.263	.9624	1.6588	.0098	1.2724	.969	1.671	.5085E-02
Dieldrin	1.101	1.0141	1.1946	.0237	1.1085	1.021	1.203	.1281E-01
Endrin	1.001	.4931	2.0313	.0000	1.0080	.497	2.046	.6892E-04
p,p-DDT	1.002	.5472	1.8332	.0001	1.0087	.551	1.846	.2442E-03
PCB	.899	.7520	1.0759	-.1268	.9059	.757	1.084	-.5955E-01
Naphthalene	1.032	.7809	1.3642	.0884	1.0395	.786	1.374	.5446E-01
2-Methyl Naphthalene	1.293	1.0698	1.5632	.2990	1.3024	1.077	1.574	.1546
1-Methyl Naphthalene	1.304	1.1187	1.5198	.2266	1.3132	1.127	1.531	.1171
Acenaphthylene	1.585	1.2669	1.9833	.1235	1.5964	1.276	1.997	.6310E-01
Fluorene	1.739	1.3658	2.2153	.3373	1.7518	1.375	2.231	.1720
Phenanthrene	3.285	2.0191	5.3453	4.1916	3.3086	2.033	5.383	2.124
Fluoranthene	2.154	1.7586	2.6373	.9909	2.1689	1.771	2.656	.5035
Pyrene	4.299	3.3218	5.5638	1.1214	4.3296	3.345	5.603	.5676
Benz(a)anthracene	1.841	1.2188	2.7813	.1240	1.8543	1.227	2.801	.6313E-01
Chrysene/triphenylene	1.711	1.2986	2.2551	.1694	1.7235	1.308	2.271	.8640E-01
Benzo(b/k)fluoranthene	1.811	1.3044	2.5153	.2223	1.8242	1.314	2.533	.1133
Dimethylphthalate	.904	.7477	1.0939	-.1435	.9108	.753	1.102	-.6714E-01
Diethylphthalate	.683	.5615	.8319	-6.3781	.6883	.565	.838	-3.150
Di-n-butylphthalate	.953	.7486	1.2137	-.7735	.9599	.754	1.222	-.3318
Benzylbutylphthalate	.859	.7092	1.0415	-.6759	.8656	.714	1.049	-.3242
Bis(2-ethyl-hexyl)phthalate	.170	.0791	.3652	-255.7408	.1712	.080	.368	-128.1
Dioctylphthalate	.600	.4030	.8922	-1.5668	.6039	.406	.899	-.7774
Phenol	13.973	5.7873	33.7357	76.4295	14.0721	5.828	33.976	38.62
Atrazine	1.044	.9120	1.1941	3.0565	1.0510	.918	1.203	1.794
Metolachlor	1.066	.9234	1.2305	1.6405	1.0735	.930	1.239	.9174

TABLE 6-3-4:

Distribution Free Sign-test Results for all chemicals in water at Niagara-on-the-Lake and Fort Erie not assessed by the MLE method (1991-92 Data Set)

Variable	N	B-value	B* value	
1,3-Dichlorobenzene	43	43	6.55744	**
1,2-Dichlorobenzene	40	38	5.69210	**
1,3,5-Trichlorobenzene	42	42	6.48074	**
1,2,4-Trichlorobenzene	43	43	6.55744	**
1,2,3-Trichlorobenzene	43	43	6.55744	**
1,2,3,4-Tetrachlorobenzene	40	40	6.32456	**
Pentachlorobenzene	43	43	6.55744	**
Hexachlorobenzene	43	43	6.55744	**
Heptachlor	0	0	-99.9000	
Aldrin	0	0	-99.9000	
gamma-Chlordane	9	6	1.00000	
alpha-Chlordane	0	0	-99.9000	
Octachlorostyrene	8	8	2.82843	**
p,p-DDE	32	5	-3.88909	**
o,p-DDT	0	0	-99.9000	
p,p-TDE	23	7	-1.87663	*
beta-Endosulfan	4	4	2.00000	**
Endrin Aldehyde	0	0	-99.9000	
Photomirex	0	0	-99.9000	
Mirex	0	0	-99.9000	
Methoxychlor	0	0	-99.9000	
Hexachlorobutadiene	43	43	6.55744	**
Hexachlorocyclopentadiene	3	3	1.73205	*
2-Chloronaphthalene	1	0	-1.00000	
Anthracene	5	5	2.23607	**
Benzo(a)pyrene	16	16	4.00000	**
Indeno(1,2,3,cd)pyrene	11	8	1.50756	
Dibenzo(a,h)anthracene	0	0	-99.9000	
Benzo(g,h,i)perylene	11	8	1.50756	
2,4-Dichlorophenol	1	1	1.00000	
2,3-Dichlorophenol	0	0	-99.9000	
2,6-Dichlorophenol	8	8	2.82843	**
3-Methyl-4-Chlorophenol	1	1	1.00000	
2,3,5-Trichlorophenol	0	0	-99.9000	
2,4,6-Trichlorophenol	20	20	4.47214	**
2,4,5-Trichlorophenol	0	0	-99.9000	
2,3,4-Trichlorophenol	0	0	-99.9000	
3,5-Dichlorophenol	1	0	-1.00000	
2,3,6-Trichlorophenol	0	0	-99.9000	
3,4-Dichlorophenol	0	0	-99.9000	
3,4,5-Trichlorophenol	8	4	.000000	
Pentachlorophenol	5	3	.447214	
2,3,7,8-TCDD	0	0	-99.9000	

N= no. of pairs B-value= no. of positives(i.e. NOTl > FE)

No asterisk means the absolute value is less than 1.64 (90th percentile).

* - the absolute value of B* lies within the range: 1.64 - 1.96 (90th through 95th percentiles).

** - the absolute value of B* is greater than 1.96 (95th percentile).

-99.9 - a division by zero occurred and therefore no data for that parameter was available for one of the stations.

A negative value for B* means that, in general, values at Fort Erie were greater than those at Niagara-on-the-Lake .

6.3.2 ORGANICS IN SUSPENDED SOLIDS FRACTION:

Statistical results for organics in the suspended solids fraction for both the Fort Erie and Niagara-on-the-Lake stations are found in Tables 6-3-5 and 6-3-6 for those chemicals for which the MLE method could be used. Ratios of the means (Niagara-on-the-Lake/Fort Erie) of concentrations and loads and their 90% confidence limits are given for organics in suspended solids in Table 6-3-7. The equivalent water concentration (EWC) in ng/l and the differential load (kg/day) are also given. Those nine compounds with a ratio greater than 1.0 and, therefore, a statistically significant differential load are:

PCBs	phenanthrene
fluoranthene	pyrene
benz(a)anthracene	chrysene/triphenylene
benzo(b/k)fluoranthene	benzo(a)pyrene
bis(2-ethylhexyl)phthalate	

One other compound (p,p-DDE) had a smaller measured load at Niagara-on-the-Lake than at Fort Erie using the ML test (Table 6-3-7).

In addition, the eighteen compounds listed below:

1,4-dichlorobenzene	1,3,5-trichlorobenzene
1,2,4-trichlorobenzene	1,2,3-trichlorobenzene
1,2,3,4-tetrachlorobenzene	pentachlorobenzene
hexachlorobenzene	alpha-BHC
octachlorostyrene	photomirex
mirex	hexachlorobutadiene
hexachlorocyclopentadiene	naphthalene
1-methyl naphthalene	fluorene
anthracene	diethylphthalate

were found to be significantly higher (at the 90% level) at Niagara-on-the-Lake in the suspended solids using the sign test (Table 6-3-8). Therefore, these compounds were considered to have a statistically significant differential load.

In addition, p,p-TDE and 3,4,5-trichlorophenol were significantly higher (at the 90 % level) at Fort Erie than at Niagara-on-the-Lake (Table 6-3-8) in the suspended solids using the sign test method.

TABLE 6-3-5:

Fort Erie (1991-92 Data Set)
Suspended Solids Fraction
Organic contaminants

Parameter	Detection Limits	Values >P.D.L.	No. Samples	Mean Conc. *(ng/l)	90% C.I. Conc. *(ng/l) Minimum	Maximum	Mean Load (kg/DAY)	90% C.I. Load (kg/DAY) Minimum	Maximum
gamma-Chlordane	2.80	3	47	.6832E-02	.3356E-02	.1197E-01	.3426E-02	.1683E-02	.6001E-02
p,p-DDE	6.40	33	47	.1272	.8819E-01	.1756	.6381E-01	.4423E-01	.8808E-01
Dieldrin	6.80	3	47	.1414E-01	.6461E-02	.2589E-01	.7093E-02	.3240E-02	.1298E-01
p,p-TDE	16.7	22	47	.1371	.1008	.1807	.6876E-01	.5055E-01	.9061E-01
p,p-DDT	9.30	22	47	.6980E-01	.5282E-01	.8986E-01	.3501E-01	.2649E-01	.4507E-01
PCB	89.0	9	47	.3312	.2200	.4723	.1661	.1104	.2368
Phenanthrene	193.	32	47	1.401	1.232	1.585	.7027	.6178	.7947
Fluoranthene	90.0	44	47	1.496	1.260	1.757	.7500	.6320	.8811
Pyrene	169.	26	47	1.139	.9731	1.322	.5713	.4880	.6631
Benz(a)anthracene	137.	32	47	1.041	.9027	1.191	.5219	.4527	.5973
Chrysene/triphenylene	193.	14	47	.8890	.7419	1.053	.4458	.3721	.5282
Benzo(b/k)fluoranthene	191.	42	47	2.032	1.791	2.292	1.019	.8982	1.150
Benzo(a)pyrene	161.	14	47	.7372	.6406	.8425	.3697	.3213	.4225
Indeno(1,2,3,cd)pyrene	161.	3	47	.5644	.3793	.7978	.2831	.1902	.4001
Benzo(g,h,i)perylene	149.	4	47	.4825	.3199	.6888	.2420	.1605	.3455
Di-n-butylphthalate	368.	7	47	1.104	.7362	1.570	.5538	.3692	.7874
Benzylbutylphthalate	416.	14	47	1.922	1.534	2.367	.9639	.7692	1.187
Bis(2-ethyl-hexyl)phthalate	.178E+04	13	47	7.956	6.395	9.737	3.990	3.207	4.883
Phenol	461.	6	47	1.281	.7861	1.936	.6424	.3942	.9707
3,4,5-Trichlorophenol	425.	3	47	.6736	.2914	1.273	.3378	.1461	.6382

* Equivalent water concentration (EWC) for particulate phase calculated as product of mean contaminant concentration on particulate and mean suspended solid concentration

TABLE 6-3-6:
Niagara-on-the-Lake (1991-92 Data Set)
Suspended Solids Fraction
Organic contaminants

Parameter	Detection Limits	Values >P.D.L.	No. Samples	Mean Conc. *(ng/l)	90% C.I. Conc. *(ng/l) Minimum	90% C.I. Conc. *(ng/l) Maximum	Mean Load (kg/DAY)	90% C.I. Load (kg/DAY) Minimum	90% C.I. Load (kg/DAY) Maximum
1,4-Dichlorobenzene	10.4	7	49	.3682E-01	.2084E-01	.5885E-01	.1860E-01	.1053E-01	.2972E-01
1,3,5-Trichlorobenzene	1.20	3	49	.2165E-02	.6490E-03	.4929E-02	.1094E-02	.3278E-03	.2490E-02
1,2,4-Trichlorobenzene	2.50	49	49	.6705E-01	.5759E-01	.7807E-01	.3387E-01	.2909E-01	.3943E-01
1,2,3-Trichlorobenzene	1.30	28	49	.1984E-01	.1374E-01	.2741E-01	.1002E-01	.6941E-02	.1384E-01
1,2,3,4-Tetrachlorobenzene	3.00	40	49	.7100E-01	.5294E-01	.9252E-01	.3586E-01	.2674E-01	.4673E-01
Pentachlorobenzene	2.70	42	49	.6176E-01	.4861E-01	.7695E-01	.3120E-01	.2455E-01	.3887E-01
Hexachlorobenzene	3.50	39	49	.1173	.8259E-01	.1600	.5925E-01	.4171E-01	.8080E-01
alpha-BHC	2.30	9	49	.8848E-02	.6282E-02	.1199E-01	.4469E-02	.3173E-02	.6055E-02
Octachlorostyrene	2.70	16	49	.1459E-01	.1175E-01	.1782E-01	.7367E-02	.5934E-02	.9000E-02
p,p-DDE	6.40	25	49	.4441E-01	.3858E-01	.5076E-01	.2243E-01	.1949E-01	.2564E-01
p,p-DDT	9.30	9	49	.4394E-01	.2129E-01	.7763E-01	.2219E-01	.1075E-01	.3921E-01
Mirex	4.40	8	49	.3034E-01	.6472E-02	.7933E-01	.1532E-01	.3269E-02	.4007E-01
Hexachlorobutadiene	1.50	31	49	.2912E-01	.1937E-01	.4148E-01	.1471E-01	.9785E-02	.2095E-01
PCB	89.0	33	49	.9394	.7755	1.124	.4745	.3917	.5675
1-Methyl Naphthalene	80.0	3	49	.1448	.6100E-01	.2776	.7312E-01	.3081E-01	.1402
Phenanthrene	193.	43	49	1.867	1.701	2.043	.9431	.8593	1.032
Fluoranthene	90.0	48	49	2.042	1.831	2.268	1.031	.9246	1.145
Pyrene	169.	40	49	1.575	1.403	1.760	.7954	.7085	.8887
Benz(a)anthracene	137.	46	49	1.522	1.373	1.680	.7685	.6933	.8486
Chrysene/triphenylene	193.	27	49	1.345	1.172	1.534	.6794	.5920	.7746
Benzo(b/k)fluoranthene	191.	48	49	3.015	2.715	3.334	1.523	1.371	1.684
Benzo(a)pyrene	161.	34	49	1.217	1.094	1.349	.6149	.5527	.6814
Indeno(1,2,3,cd)pyrene	161.	4	49	.3769	.1965	.6360	.1904	.9926E-01	.3212
Benzo(g,h,i)perylene	149.	5	49	.3848	.2206	.6096	.1943	.1114	.3079
Di-n-butylphthalate	368.	3	49	.6112	.2581	1.170	.3087	.1304	.5911
Benzylbutylphthalate	416.	16	49	2.225	1.879	2.609	1.124	.9491	1.318
Bis(2-ethyl-hexyl)phthalate	.178E+04	15	49	13.30	7.994	20.40	6.719	4.037	10.30

* Equivalent water concentration (EWC) for particulate phase calculated as product of mean contaminant concentration on particulate and mean suspended solid concentration

TABLE 6-3-7:
Differential loading for chemicals found at both Niagara-on-the-Lake and Fort Erie
Suspended Solids Fraction
Organic contaminants 1991-92 Data Set

Parameter	Mean Conc. Ratio	90% C.I. for mean Conc. Ratio Minimum	Maximum	Conc. Difference *(ng/l)	Mean Load Ratio	90% C.I. for mean Load Ratio Minimum	Maximum	Differential Load (kg/DAY)
p,p-DDE	.349	.2551	.4775	-.0828	.3515	.257	.481	-.4138E-01
p,p-DDT	.630	.3015	1.3145	-.0259	.6340	.304	1.324	-.1281E-01
PCB	2.836	1.6829	4.7796	.6082	2.8563	1.695	4.814	.3084
Phenanthrene	1.332	1.1388	1.5591	.4659	1.3420	1.147	1.570	.2403
Fluoranthene	1.365	1.1245	1.6575	.5463	1.3750	1.133	1.669	.2812
Pyrene	1.382	1.1431	1.6717	.4356	1.3922	1.151	1.684	.2241
Benz(a)anthracene	1.462	1.2314	1.7364	.4810	1.4727	1.240	1.749	.2467
Chrysene/triphenylene	1.513	1.2094	1.8931	.4562	1.5239	1.218	1.907	.2336
Benzo(b/k)fluoranthene	1.484	1.2618	1.7444	.9827	1.4942	1.271	1.757	.5036
Benzo(a)pyrene	1.652	1.3946	1.9559	.4803	1.6633	1.404	1.970	.2452
Indeno(1,2,3,cd)pyrene	.668	.2595	1.7188	-.1875	.6726	.261	1.731	-.9269E-01
Benzo(g,h,i)perylene	.797	.3074	2.0689	-.0977	.8032	.310	2.084	-.4763E-01
Di-n-butylphthalate	.554	.0890	3.4436	-.4930	.5575	.090	3.468	-.2451
Benzylbutylphthalate	1.158	.8704	1.5404	.3035	1.1661	.877	1.551	.1601
Bis(2-ethyl-hexyl)phthalate	1.672	1.0407	2.6857	5.3456	1.6838	1.048	2.705	2.728

* Equivalent water concentration (EWC) for particulate phase calculated as product of mean contaminant concentration on particulate and mean suspended solid concentration

TABLE 6-3-8:

Distribution Free Sign-test Results for all chemicals at Niagara-on-the-Lake and Fort Erie not assessed by the MLE method (1991-92 Data Set)

Variable	N	B-value	B* value	
1,3-Dichlorobenzene	0	0	-99.9000	
1,4-Dichlorobenzene	8	8	2.82843	**
1,2-Dichlorobenzene	2	2	1.41421	
1,3,5-Trichlorobenzene	3	3	1.73205	*
1,2,4-Trichlorobenzene	45	45	6.70820	**
1,2,3-Trichlorobenzene	29	28	5.01377	**
1,2,3,4-Tetrachlorobenzene	44	43	6.33174	**
Pentachlorobenzene	45	45	6.70820	**
Hexachlorobenzene	45	45	6.70820	**
alpha-BHC	17	16	3.63803	**
gamma-BHC (Lindane)	8	3	-.707107	
Heptachlor	0	0	-99.9000	
Aldrin	0	0	-99.9000	
Heptachlor Epoxide	13	8	.832050	
gamma-Chlordane	9	3	-1.00000	
alpha-Endosulfan	2	1	.000000	
alpha-Chlordane	4	2	.000000	
Octachlorostyrene	28	28	5.29150	**
Dieldrin	38	21	.648886	
Endrin	1	0	-1.00000	
o,p-DDT	5	2	-.447214	
p,p-TDE	43	3	-5.64245	**
beta-Endosulfan	1	1	1.00000	
Endrin Aldehyde	0	0	-99.9000	
Photomirex	3	3	1.73205	*
Mirex	19	19	4.35890	**
Methoxychlor	2	0	-1.41421	
Hexachlorobutadiene	42	42	6.48074	**
Hexachlorocyclopentadiene	3	3	1.73205	*
Naphthalene	11	11	3.31662	**
2-Methyl Naphthalene	5	4	1.34164	
1-Methyl Naphthalene	8	8	2.82843	**
2-Chloronaphthalene	0	0	-99.9000	
Acenaphthylene	0	0	-99.9000	
Fluorene	23	19	3.12772	**
Anthracene	28	22	3.02372	**
Dibenzo(a,h)anthracene	0	0	-99.9000	
Dimethylphthalate	0	0	-99.9000	
Diethylphthalate	29	22	2.78543	**
Dioctylphthalate	28	16	.755929	
Phenol	20	8	-.894427	
2,4-Dichlorophenol	0	0	-99.9000	
2,3-Dichlorophenol	0	0	-99.9000	
2,6-Dichlorophenol	0	0	-99.9000	
3-Methyl-4-Chlorophenol	0	0	-99.9000	
2,3,5-Trichlorophenol	0	0	-99.9000	
2,4,6-Trichlorophenol	0	0	-99.9000	
2,4,5-Trichlorophenol	0	0	-99.9000	
2,3,4-Trichlorophenol	0	0	-99.9000	
3,5-Dichlorophenol	0	0	-99.9000	
2,3,6-Trichlorophenol	0	0	-99.9000	
3,4-Dichlorophenol	0	0	-99.9000	
3,4,5-Trichlorophenol	4	0	-2.00000	**
Pentachlorophenol	1	1	1.00000	
Atrazine	0	0	-99.9000	
Metolachlor	0	0	-99.9000	
2,3,7,8-TCDD	0	0	-99.9000	

N= no. of pairs B-value = no. of positives (i.e. NOTL > FE)

No asterisk means the absolute value is less than 1.64 (90th percentile).

* - the absolute value of B* lies within the range: 1.64 - 1.96 (90th through 95th percentiles).

** - the absolute value of B* is greater than 1.96 (95th percentile).

-99.9 - a division by zero occurred and therefore no data for that parameter was available for one of the stations.

A negative value for B* means that, in general, values at FE were greater than those at NOTL .

6.3.3 VOLATILES IN WHOLE WATER:

Statistical results for volatiles in whole water samples at Fort Erie and Niagara-on-the-Lake are found in Tables 6-3-9 and 6-3-10 for those chemicals for which the ML method could be used. Confidence intervals for both concentrations and loads tend to be quite wide due to the large variability in the data. The load for methylene chloride* was significantly lower (at 90% level) at Niagara-on-the-Lake than at Fort Erie using the ML test as shown in Table 6-3-11. Sign test results given in Table 6-3-12, demonstrate that carbon tetrachloride, chloroform, 1,2-dichloroethane and tetrachloroethylene were significantly higher at Niagara-on-the-Lake (at the 90% level) than at Fort Erie.

* The RMC has observed previously (in 1989-90) as well that the methylene chloride concentrations and loads were much higher at Fort Erie than at Niagara-on-the-Lake. Some of these differences may be due to volatolization at Niagara Falls.

Table 6-3-9:
Fort Erie
Water fraction
Volatiles 1991-92 Data Set

Parameter	Detection Limits	Values >P.D.L.	No. Samples	Mean Conc. (ng/l)	90% C.I. Conc. (ng/l) Minimum	Maximum	Mean Load (kg/DAY)	90% C.I. Load (kg/DAY) Minimum	Maximum
Methylene Chloride	150.	84	90	4337.	2933.	6101.	2175.	1471.	3060.

Table 6-3-10:
Niagara-on-the-Lake
Water fraction
Volatiles 1991-92 Data Set

Parameter	Detection Limits	Values >P.D.L.	No. Samples	Mean Conc. (ng/l)	90% C.I. Conc. (ng/l) Minimum	Maximum	Mean Load (kg/DAY)	90% C.I. Load (kg/DAY) Minimum	Maximum
Methylene Chloride	150.	80	83	2107.	1632.	2660.	1064.	824.4	1343.

Table 6-3-11:
Differential loading for chemicals found at both Niagara-on-the-Lake and Fort Erie
Water fraction
Volatiles (1991-92 Data Set)

Parameter	Mean Conc. Ratio	90% C.I. for mean Conc. Ratio Minimum	90% C.I. for mean Conc. Ratio Maximum	Conc. Difference (ng/l)	Mean Load Ratio	90% C.I. for mean Load Ratio Minimum	90% C.I. for mean Load Ratio Maximum	Differential Load (kg/DAY)
Methylene Chloride	.486	.347	.680	-.223E+04	.489	.349	.685	-1111.

Table 6-3-12:

Distribution Free Sign-test Results for all chemicals at Niagara-on-the-Lake and Fort Erie not assessed by the MLE method (1991-92 Data Set)

Variable	N	B-value	B* value	
Benzene	22	8	-1.27920	
Carbon Tetrachloride	13	13	3.60555	**
Chloroform	36	35	5.66667	**
1,2-Dichloroethane	3	3	1.73205	*
Tetrachloroethylene	14	13	3.20713	**

N= no. of positives   B-value = no. of positives (i.e. NOTL > FE)

No asterisk means the absolute value is less than 1.64 (90th percentile).
*   - the absolute value of B* lies within the range: 1.64 - 1.96 (90th through 95th percentiles).
**   - the absolute value of B* is greater than 1.96 (95th percentile).
-99.9 - a division by zero occurred and therefore no data for that parameter was available for one of the stations.
A negative value for B* means that, in general, values at Fort Erie were greater than those at Niagara-on-the-lake.

6.3.4 TRACE METALS IN WHOLE WATER:

Statistical results for trace metals in whole water samples for both Fort Erie and Niagara-on-the-Lake are given in Tables 6-3-13 and 6-3-14. Ratios of the means (Niagara-on-the-Lake/Fort Erie) of concentrations and loads and their 90% confidence limits are given in Table 6-3-15. The following two metals :

arsenic molybdenum

had significantly higher loads at Niagara-on-the-Lake than at Fort Erie using the ML differential load ratio method.

In addition, two metals, barium and lead were significantly higher (at the 90% level) at Fort Erie than at Niagara-on-the-Lake.

There were no detections of mercury at either Niagara-on-the-Lake or Fort Erie

Table 6-3-13

Fort Erie
Water fraction
Trace metals 1991-92 Data Set

Parameter	Detection Limits	Values >P.D.L.	No. Samples	Mean Conc. (mg/l)	90% C.I. Conc. (mg/l) Minimum	Maximum	Mean Load (kg/DAY)	90% C.I. Load (kg/DAY) Minimum	Maximum
Lithium	.100E-03	49	49	.3925E-02	.3582E-02	.4300E-02	1968.	1796.	2157.
Aluminum	.200E-02	49	49	.3931	.2826	.5468	.1971E+06	.1417E+06	.2742E+06
Vanadium	.100E-03	49	49	.8688E-03	.6920E-03	.1091E-02	435.7	347.0	547.0
Chromium	.200E-03	46	49	.7618E-03	.5835E-03	.9710E-03	382.1	292.6	486.9
Manganese	.100E-03	49	49	.1934E-01	.1335E-01	.2801E-01	9697.	6693.	.1405E+05
Iron	.400E-03	49	49	.6387	.4308	.9468	.3203E+06	.2161E+06	.4748E+06
Cobalt	.100E-03	45	49	.3546E-03	.2589E-03	.4700E-03	177.8	129.8	235.7
Nickel	.200E-03	49	49	.1513E-02	.1243E-02	.1841E-02	758.7	623.5	923.2
Copper	.200E-03	49	49	.1693E-02	.1491E-02	.1923E-02	849.2	747.6	964.5
Zinc	.200E-03	48	49	.4126E-02	.2679E-02	.5985E-02	2069.	1344.	3001.
Arsenic	.100E-03	49	49	.6368E-03	.6006E-03	.6751E-03	319.3	301.2	338.6
Selenium	.100E-03	48	49	.2356E-03	.2120E-03	.2608E-03	118.2	106.3	130.8
Antimony	.200E-03	24	49	.1928E-03	.1819E-03	.2041E-03	96.70	91.25	102.4
Strontium	.100E-03	49	49	.1642	.1614	.1671	.8235E+05	.8094E+05	.8378E+05
Molybdenum	.100E-03	49	49	.1102E-02	.1086E-02	.1119E-02	552.7	544.5	561.1
Cadmium	.100E-03	30	49	.1339E-03	.1090E-03	.1622E-03	67.17	54.66	81.35
Barium	.200E-03	49	49	.2800E-01	.2519E-01	.3112E-01	.1404E+05	.1263E+05	.1561E+05
Lead	.200E-03	30	49	.1099E-02	.5309E-03	.1944E-02	550.9	266.3	974.8
Beryllium	.500E-04	6	49	.2552E-04	.1458E-04	.4053E-04	12.80	7.314	20.33

TABLE 6-3-14:

Niagara-on-the-Lake
Water fraction
Trace metals 1991-92 Data Set

Parameter	Detection Limits	Values >P.D.L.	No. Samples	Mean Conc. (mg/l)	90% C.I. Conc. (mg/l) Minimum	Maximum	Mean Load (kg/DAY)	90% C.I. Load (kg/DAY) Minimum	Maximum
Lithium	.100E-03	49	49	.3952E-02	.3738E-02	.4179E-02	1996.	1888.	2111.
Aluminum	.200E-02	49	49	.3598	.2947	.4392	.1817E+06	.1488E+06	.2219E+06
Vanadium	.100E-03	49	49	.7912E-03	.6865E-03	.9119E-03	399.6	346.8	460.6
Chromium	.200E-03	49	49	.8334E-03	.7086E-03	.9803E-03	420.9	357.9	495.1
Manganese	.100E-03	49	49	.1655E-01	.1326E-01	.2065E-01	8358.	6697.	.1043E+05
Iron	.400E-03	49	49	.6375	.5017	.8100	.3220E+06	.2534E+06	.4091E+06
Cobalt	.100E-03	48	49	.3271E-03	.2625E-03	.4009E-03	165.2	132.6	202.5
Nickel	.200E-03	49	49	.1291E-02	.1152E-02	.1448E-02	652.1	581.6	731.1
Copper	.200E-03	49	49	.1627E-02	.1509E-02	.1754E-02	821.8	762.3	886.0
Zinc	.200E-03	49	49	.3371E-02	.2767E-02	.4108E-02	1703.	1398.	2075.
Arsenic	.100E-03	49	49	.7651E-03	.7109E-03	.8233E-03	386.4	359.1	415.9
Selenium	.100E-03	48	49	.2398E-03	.2144E-03	.2671E-03	121.1	108.3	134.9
Antimony	.200E-03	31	49	.2050E-03	.1940E-03	.2162E-03	103.5	98.00	109.2
Strontium	.100E-03	49	49	.1614	.1601	.1628	.8154E+05	.8087E+05	.8222E+05
Molybdenum	.100E-03	49	49	.1133E-02	.1113E-02	.1153E-02	572.1	562.2	582.1
Silver	.100E-03	9	49	.7882E-04	.6886E-04	.8964E-04	39.81	34.78	45.27
Cadmium	.100E-03	40	49	.1248E-03	.1125E-03	.1380E-03	63.06	56.84	69.68
Barium	.200E-03	49	49	.2362E-01	.2317E-01	.2408E-01	.1193E+05	.1170E+05	.1216E+05
Lead	.200E-03	34	49	.6137E-03	.4335E-03	.8349E-03	310.0	219.0	421.7
Beryllium	.500E-04	6	49	.3275E-04	.2474E-04	.4221E-04	16.54	12.50	21.32

TABLE 6-3-15:

Differential loading for chemicals found at both Niagara-on-the-Lake and Fort Erie
Water fraction
Trace metals

Parameter	Mean Conc. Ratio	90% C.I. for mean Conc. Ratio Minimum	Maximum	Conc. Difference (mg/l)	Mean Load Ratio	90% C.I. for mean Load Ratio Minimum	Maximum	Differential Load (kg/DAY)
Lithium	1.007	.9048	1.1208	.0000	1.0142	.911	1.129	27.91
Aluminum	.915	.6224	1.3460	-.0333	.9218	.627	1.356	-.1542E+05
Vanadium	.911	.6965	1.1908	-.0001	.9172	.701	1.199	-36.08
Chromium	1.094	.8281	1.4454	.0001	1.1018	.834	1.456	38.90
Manganese	.856	.5557	1.3181	-.0028	.8619	.560	1.327	-1339.
Iron	.998	.6296	1.5824	-.0012	1.0052	.634	1.594	1671.
Cobalt	.923	.6690	1.2723	.0000	.9291	.674	1.281	-12.61
Nickel	.853	.6800	1.0711	-.0002	.8595	.685	1.079	-106.6
Copper	.961	.8289	1.1141	-.0001	.9678	.835	1.122	-27.37
Zinc	.817	.5630	1.1860	-.0008	.8229	.567	1.194	-366.5
Arsenic	1.201	1.0938	1.3197	.0001	1.2100	1.102	1.329	67.06
Selenium	1.018	.8736	1.1861	.0000	1.0252	.880	1.195	2.975
Antimony	1.063	.9834	1.1488	.0000	1.0705	.990	1.157	6.815
Strontium	.983	.9646	1.0022	-.0028	.9902	.971	1.009	-805.9
Molybdenum	1.028	1.0044	1.0517	.0000	1.0351	1.012	1.059	19.40
Cadmium	.932	.7515	1.1561	.0000	.9388	.757	1.164	-4.114
Barium	.844	.7576	.9392	-.0044	.8495	.763	.946	-2113.
Lead	.559	.3390	.9206	-.0005	.5626	.341	.927	-240.9
Beryllium	1.283	.5342	3.0821	.7200E-05	1.2922	.538	3.104	3.741

Table 6-3-16:

Distribution Free Sign-test Results for all chemicals at Niagara-on-the-Lake and Fort-Erie not assessed by the MLE method

Variable	N	B-value	B* value
Silver	1	1	1.00000
Mercury	0	0	-99.9000

N= no. of pairs B-value = no. of positives (i.e. NOTL > FE)

No asterisk means the absolute value is less than 1.64 (90th percentile).

* - the absolute value of B* lies within the range: 1.64 - 1.96 (90th through 95th percentiles).

** - the absolute value of B* is greater than 1.96 (95th percentile).

-99.9 - a division by zero occurred and therefore no data for that parameter was available for one of the stations.

A negative value for B* means that, in general, values at Fort Erie were greater than those at Niagara-on-the-Lake.

6.4 RECOMBINED WHOLE WATER CALCULATIONS (RWW):

Prior to the computation of the RWW parameters, it was decided to test if the sample correlation coefficient between the contaminant concentrations, in both the solids and water phases, and the suspended solids concentration was significantly different from zero at alpha = 0.1. Spearman's rank correlation coefficient for the various parameters are shown in Table 6-4-1 for the water phase and Table 6-4-2 for the suspended solids phase. The results indicate that many of the parameters show significant correlations between the contaminant concentration and the solids concentration.

If the correlation of the contaminants concentration and the solids concentration at both stations is negative, ignoring this correlation in computing the confidence limits and the point estimates will lead to wider limits and smaller estimates for the load. Hence the results presented in the following tables provide conservative estimates for both the concentrations and the loads and their confidence limits for those cases where the chemical concentration is negatively correlated with the solids concentration at both stations. However, if the correlations are negative at one station and positive at the other, the estimated value for recombined whole water may more closely represent the actual value. This is dependent upon the degree and sign of the correlations at each station. Similarly, if a positive correlation exists at both stations, it will lead to smaller limits and larger estimates for the loading. The correlation between organics concentration in water and the suspended solids concentration was most often positive as was the correlation between the organics concentration on the suspended solids and the suspended solids concentration.

The recombined whole water concentrations, and loadings, for those parameters for which the calculation was possible , and their corresponding confidence limits, are provided in Table 6-4-3, for Fort Erie, and in Table 6-4-4 for Niagara-on-the-Lake.

Table 6-4-1
Spearman's rank correlation between chemical contaminants in water and suspended solids concentration in the Niagara River. (1991-92 Data Set)

	Fort Erie				Niagara-on-the-Lake			
Parameter (in water)	Spearman Corr. Co-eff.	Student's t-dist. value	Corr. Alpha value		Spearman Corr. Co-eff.	Student's t-dist. value	Corr. Alpha value	
1,3-Dichlorobenzene	------	------	------		-.2121	-1.4721	.1478	
1,4-Dichlorobenzene	.1735	1.1685	.2489		.2739	1.9314	.0596	*
1,2-Dichlorobenzene	------	------	------		.6146	5.2847	.0000	*
1,3,5-Trichlorobenzene	------	------	------		-.5386	-4.3361	.0001	*
1,2,4-Trichlorobenzene	.0132	.0876	.9306		.5695	4.6987	.0000	*
1,2,3-Trichlorobenzene	------	------	------		.4941	3.8549	.0004	*
1,2,3,4-Tetrachlorobenzene	------	------	------		-.1197	-.8180	.4177	
Pentachlorobenzene	------	------	------		-.0812	-.5525	.5833	
Hexachlorobenzene	.0298	.1977	.8442		-.2074	-1.4383	.1571	
alpha-BHC	.1493	1.0016	.3220		.1925	1.3302	.1900	
gamma-BHC (Lindane)	-.0933	-.6217	.5374		.1178	.8044	.4255	
Heptachlor Epoxide	.0975	.6499	.5192		-.0983	-.6703	.5060	
alpha-Endosulfan	-.3259	-2.2869	.0271	*	-.2662	-1.8728	.0675	*
p,p-DDE	.1483	.9944	.3255		.0612	.4160	.6793	
Dieldrin	.0448	.2977	.7673		-.2892	-2.0489	.0462	*
Endrin	-.2012	-1.3627	.1799		-.2906	-2.0598	.0451	*
p,p-TDE	-.0096	-.0634	.9497		-.0248	-.1679	.8674	
p,p-DDT	.1016	.6773	.5018		.0767	.5217	.6044	
Hexachlorobutadiene	------	------	------		-.4830	-3.7408	.0005	*
Hexachlorocyclopentadiene	------	------	------		.0694	.4716	.6394	
PCB	-.2710	-1.8678	.0685	*	-.4002	-2.9622	.0048	*
Naphthalene	.2599	1.7443	.0884	*	.0533	.3620	.7190	
2-Methyl Naphthalene	.0409	.2651	.7922		-.2762	-1.9488	.0574	*
1-Methyl Naphthalene	.0981	.6388	.5264		-.1688	-1.1615	.2514	
Acenaphthylene	.2926	1.9831	.0539	*	.2976	2.1142	.0399	*
Fluorene	.3390	2.3350	.0244	*	.4513	3.4296	.0013	*
Anthracene	------	------	------		.3127	2.2332	.0304	*
Phenanthrene	.4454	3.2238	.0024	*	-.0653	-.4442	.6590	
Fluoranthene	.5805	4.6208	.0000	*	.6035	5.1327	.0000	*
Pyrene	.5841	4.6633	.0000	*	.3117	2.2246	.0311	*
Benz(a)anthracene	.2257	1.5011	.1408		.6265	5.4512	.0000	*
Chrysene/triphenylene	.4984	3.7255	.0006	*	.6299	5.5012	.0000	*
Benzo(b/k)fluoranthene	.4888	3.6311	.0008	*	.6654	6.0462	.0000	*
Benzo(a)pyrene	.0970	.6314	.5312		.2808	1.9845	.0532	*
Benzo(g,h,i)perylene	.0667	.4330	.6672		.1236	.8451	.4025	
Dimethylphthalate	.2527	1.6927	.0979	*	.4369	3.2945	.0019	*
Diethylphthalate	.1624	1.0664	.2923		.2584	1.8139	.0762	*
Di-n-butylphthalate	.1873	1.2358	.2234		.3354	2.4149	.0198	*
Benzylbutylphthalate	.1596	1.0479	.3007		.0796	.5418	.5906	
Bis(2-ethyl-hexyl)phthalate	-.0107	-.0694	.9450		-.2182	-1.5164	.1363	
Dioctylphthalate	.0823	.5353	.5953		-.0008	-.0052	.9959	
Phenol	-.2485	-1.7016	.0959	*	-.2435	-1.7031	.0953	*
2,4-Dichlorophenol	------	------	------		-.0430	-.2918	.7717	
2,4,6-Trichlorophenol	------	------	------		.1190	.8127	.4207	
3,5-Dichlorophenol	-.0326	-.2165	.8296		------	------	------	
3,4,5-Trichlorophenol	.0104	.0691	.9452		------	------	------	
Pentachlorophenol	-.0071	-.0470	.9627		.1255	.8583	.3953	
Atrazine	.3235	2.2154	.0322	*	.0983	.6703	.5060	
Metolachlor	.3677	2.5627	.0141	*	.2225	1.5481	.1284	

* alpha less than 0.1 is considered to be significant

Note: those chemicals that do not appear in the table did not have values above the PDL at either station

Table 6-4-2

Spearman's rank correlation between chemical contaminants in suspended solids and suspended solids concentration in the Niagara River. (1991-92 Data Set)

Parameter (in solids)	Fort Erie Spearman Corr. Co-eff.	Fort Erie Student's t-dist. value	Fort Erie Corr. Alpha value		Niagara-on-the-Lake Spearman Corr. Co-eff.	Niagara-on-the-Lake Student's t-dist. value	Niagara-on-the-Lake Corr. Alpha value	
1,3-Dichlorobenzene	------	------	------		-.2121	-1.4721	.1478	
1,4-Dichlorobenzene	.1735	1.1685	.2489		.2739	1.9314	.0596	*
1,2-Dichlorobenzene	------	------	------		.6146	5.2847	.0000	*
1,3,5-Trichlorobenzene	------	------	------		-.5386	-4.3361	.0001	*
1,2,4-Trichlorobenzene	.0132	.0876	.9306		.5695	4.6987	.0000	*
1,2,3-Trichlorobenzene	------	------	------		.4941	3.8549	.0004	*
1,2,3,4-Tetrachlorobenzene	------	------	------		-.1197	-.8180	.4177	
Pentachlorobenzene	------	------	------		-.0812	-.5525	.5833	
Hexachlorobenzene	.0298	.1977	.8442		-.2074	-1.4383	.1571	
alpha-BHC	.1493	1.0016	.3220		.1925	1.3302	.1900	
gamma-BHC (Lindane)	-.0933	-.6217	.5374		.1178	.8044	.4255	
Heptachlor Epoxide	.0975	.6499	.5192		-.0983	-.6703	.5060	
alpha-Endosulfan	-.3259	-2.2869	.0271	*	-.2662	-1.8728	.0675	*
p,p-DDE	.1483	.9944	.3255		.0612	.4160	.6793	
Dieldrin	.0448	.2977	.7673		-.2892	-2.0489	.0462	*
Endrin	-.2012	-1.3627	.1799		-.2906	-2.0598	.0451	*
p,p-TDE	-.0096	-.0634	.9497		-.0248	-.1679	.8674	
p,p-DDT	.1016	.6773	.5018		.0767	.5217	.6044	
Hexachlorobutadiene	------	------	------		-.4830	-3.7408	.0005	*
Hexachlorocyclopentadiene	------	------	------		.0694	.4716	.6394	
PCB	-.2710	-1.8678	.0685	*	-.4002	-2.9622	.0048	*
Naphthalene	.2599	1.7443	.0884	*	.0533	.3620	.7190	
2-Methyl Naphthalene	.0409	.2651	.7922		-.2762	-1.9488	.0574	*
1-Methyl Naphthalene	.0981	.6388	.5264		-.1688	-1.1615	.2514	
Acenaphthylene	.2926	1.9831	.0539	*	.2976	2.1142	.0399	*
Fluorene	.3390	2.3350	.0244	*	.4513	3.4296	.0013	*
Anthracene	------	------	------		.3127	2.2332	.0304	*
Phenanthrene	.4454	3.2238	.0024	*	-.0653	-.4442	.6590	
Fluoranthene	.5805	4.6208	.0000	*	.6035	5.1327	.0000	*
Pyrene	.5841	4.6633	.0000	*	.3117	2.2246	.0311	*
Benz(a)anthracene	.2257	1.5011	.1408		.6265	5.4512	.0000	*
Chrysene/triphenylene	.4984	3.7255	.0006	*	.6299	5.5012	.0000	*
Benzo(b/k)fluoranthene	-.5999	-5.0299	.0000	*	-.3270	-2.3725	.0218	*
Benzo(a)pyrene	.0970	.6314	.5312		.2808	1.9845	.0532	*
Benzo(g,h,i)perylene	.0667	.4330	.6672		.1236	.8451	.4025	
Dimethylphthalate	.2527	1.6927	.0979	*	.4369	3.2945	.0019	*
Diethylphthalate	.1624	1.0664	.2923		.2584	1.8139	.0762	*
Di-n-butylphthalate	.1873	1.2358	.2234		.3354	2.4149	.0198	*
Benzylbutylphthalate	.1596	1.0479	.3007		.0796	.5418	.5906	
Bis(2-ethyl-hexyl)phthalate	-.0107	-.0694	.9450		-.2182	-1.5164	.1363	
Dioctylphthalate	.0823	.5353	.5953		-.0008	-.0052	.9959	
Phenol	-.2485	-1.7016	.0959	*	-.2435	-1.7031	.0953	*
2,4-Dichlorophenol	------	------	------		-.0430	-.2918	.7717	
2,4,6-Trichlorophenol	------	------	------		.1190	.8127	.4207	
3,5-Dichlorophenol	-.0326	-.2165	.8296		------	------	------	
3,4,5-Trichlorophenol	.0104	.0691	.9452		------	------	------	
Pentachlorophenol	-.0071	-.0470	.9627		.1255	.8583	.3953	
Atrazine	.3235	2.2154	.0322	*	.0983	.6703	.5060	
Metolachlor	.3677	2.5627	.0141	*	.2225	1.5481	.1284	

* alpha less than 0.1 is considered to be significant

Note: Those chemicals that do not appear in the table did not have values above the PDL at either station

Table 6-4-3:
Recombined whole water
Fort Erie
Organic contaminants (1991-92 Data Set)

Parameter	Mean total RWW Conc. (ng/l)	Confidence interval Minimum	Confidence interval Maximum	Mean total RWW Load (kg/DAY)	Confidence interval Minimum	Confidence interval Maximum
p,p-DDE	.1818	.1372	.2265	.9119E-01	.6879E-01	.1136
Dieldrin	.2498	.2305	.2690	.1253	.1156	.1349
p,p-TDE	.2120	.1672	.2568	.1063	.8385E-01	.1288
p,p-DDT	.1262	.9740E-01	.1549	.6327E-01	.4885E-01	.7769E-01
PCB	1.594	1.352	1.837	.7995	.6778	.9212
Phenanthrene	3.241	2.959	3.523	1.625	1.484	1.767
Fluoranthene	2.361	2.086	2.635	1.184	1.046	1.322
Pyrene	1.484	1.291	1.677	.7442	.6475	.8408
Benz(a)anthracene	1.192	1.037	1.348	.5979	.5198	.6759
Chrysene/triphenylene	1.131	.9662	1.295	.5671	.4845	.6496
Benzo(b/k)fluoranthene	2.314	2.053	2.575	1.161	1.030	1.291
Di-n-butylphthalate	17.62	15.21	20.03	8.837	7.630	10.04
Benzylbutylphthalate	6.740	5.764	7.715	3.380	2.891	3.869
Bis(2-ethyl-hexyl)phthalate	316.1	-45.09	677.4	158.5	-22.61	339.7
Phenol	7.178	2.852	11.50	3.600	1.431	5.769
3,4,5-Trichlorophenol	1.879	.9966	2.760	.9421	.4998	1.384

Table 6-4-4:
Recombined whole water
Niagara-on-the-Lake
Organic contaminants (1991-92 Data Set)

Parameter	Mean total RWW Conc. (ng/l)	Confidence interval Minimum	Confidence interval Maximum	Mean total RWW Load (kg/DAY)	Confidence interval Minimum	Confidence interval Maximum
1,4-Dichlorobenzene	2.705	2.449	2.960	1.366	1.237	1.495
1,3,5-Trichlorobenzene	.8999E-01	.8049E-01	.9948E-01	.4545E-01	.4065E-01	.5024E-01
1,2,4-Trichlorobenzene	1.340	1.234	1.446	.6769	.6232	.7305
1,2,3-Trichlorobenzene	.3764	.3379	.4150	.1901	.1707	.2096
1,2,3,4-Tetrachlorobenzene	.6912	.5831	.7993	.3491	.2945	.4037
Pentachlorobenzene	.2074	.1879	.2269	.1048	.9492E-01	.1146
Hexachlorobenzene	.1805	.1409	.2200	.9115E-01	.7117E-01	.1111
alpha-BHC	1.126	1.069	1.182	.5685	.5398	.5972
p,p-DDT	.1003	.6244E-01	.1381	.5064E-01	.3154E-01	.6974E-01
Hexachlorobutadiene	.1219	.1082	.1357	.6159E-01	.5463E-01	.6855E-01
PCB	2.078	1.880	2.275	1.049	.9494	1.149
1-Methyl Naphthalene	1.117	.9626	1.272	.5644	.4862	.6426
Phenanthrene	7.900	3.027	12.77	3.990	1.529	6.451
Fluoranthene	3.899	3.538	4.260	1.969	1.787	2.152
Pyrene	3.042	2.762	3.321	1.536	1.395	1.677
Benz(a)anthracene	1.798	1.633	1.963	.9082	.8249	.9915
Chrysene/triphenylene	1.757	1.563	1.952	.8877	.7894	.9859
Benzo(b/k)fluoranthene	3.521	3.187	3.856	1.779	1.610	1.947
Benzo(a)pyrene	1.357	1.219	1.495	.6854	.6157	.7551
Benzo(g,h,i)perylene	.5049	.2982	.7115	.2550	.1506	.3594
Di-n-butylphthalate	16.35	13.24	19.46	8.259	6.689	9.829
Benzylbutylphthalate	6.367	5.882	6.852	3.216	2.971	3.461
Bis(2-ethyl-hexyl)phthalate	65.73	47.49	83.98	33.20	23.99	42.42

6.5 COMPARISON WITH AMBIENT WATER QUALITY CRITERIA:

Water quality criteria (standards or guidelines) for the four agencies have been tabulated along with IJC specific objectives (Table 6-5-1). New criteria are added to the list in Table 6-5-1 as they become available. Data were evaluated against the most current criteria regardless of the period of actual sample collection. The strictest criterion among those tabulated for each parameter was then compared to the upper 90 % confidence level concentrations found at Fort Erie and Niagara-on-the-Lake. Table 6-5-2 lists the strictest criterion for each chemical for which a whole water concentration could be calculated, the mean whole water concentration and the confidence intervals around the mean. If both media (water and suspended solids) did not have at least three values above the PDL, then a whole water value could not be calculated. However, Tables 6-5-3 and 6-5-4 show the values that were obtained for specific compounds in each of the two different media as well as the criterion and confidence intervals.

The information presented in Tables 6-5-2, 6-5-3 and 6-5-4 show that the upper 90% confidence levels of the following chemicals in whole water exceeded the strictest water quality criterion at Fort Erie and/or Niagara-on-the-Lake.

Chemicals Violating Criteria in 1991-92

Fort Erie	Niagara-on-the-Lake
aluminum	aluminum
iron	iron
cobalt	copper
PCB	PCB
bis(2-ethylhexyl)phthalate	strontium
copper	benzo(a)pyrene
lead	cobalt
cadmium	
strontium	

TABLE 6-5-1:

List of Potential Chemicals to be Analyzed in the Niagara River and Existing Water Quality Criteria, Objectives, Standards and/or Guidelines
Values in ug/l

Chemical	EPA Aquatic (f)	EPA DW (w)	NYSDEC Aquatic	NYSDEC Health	IJC (r)	MOEE (o)	Health and Welfare Canada
Acenaphthene	520(a)			20			
Acenaphthylene							
Acrolein	21(a)						
Aldrin	3.0(g)			0.001(c) (h)	0.001(c)	0.001(c)	.004(c)
Aluminum			100.(i)				5(m)
Alpha BHC							
Alpha Endosulfan	0.056					0.003	0.02
Anthracene				50			
Antimony	1600.0(a)			3		7(p)	
Arsenic		50	190(j)	50		100	50
Asbestos							
Atrazine				3			2
Barium		1000		1000			
Benzene	5300.0(g)			0.7		100(p)	300
Benzidene	2500.0(g)		0.1	0.02			
Benz(a,h)anthracene				0.002			
Benzo(a)pyrene				0.0012(h)			
Benzo(b)fluoranthene				0.002			
Benzo(k)fluoranthene				0.002			
Benzo(g,h,i)perylene							
Benzylbutylphthalate							
Beryllium	5.3(a)		1100(b)	3			
Beta Endosulfan							
Bis (2-chloroethyl) ether				0.03			
Bis(2-ethylhexyl) phthalate			0.6	4	0.6	0.6(q)	
Bromophenyl phenyl ether-4							
Butylbenzylphthalate				50	0.2	0.2	
Cadmium	1.1(b)	10	1.5(t)	10	0.2	0.15(x) (p)	0.2(n)
Carbontetrachloride	35200(a) (g)			0.4			
Chlordane	0.0043			0.002(h)	0.06	0.06	0.006
Chloroethylene							
Chloroform	1240(a)			7			
2-Chloronaphthalene				10			
Chlorophenyl phenyl ether-4							
Chromium	note 1 (b)	note 2	280(t)	50		100	2
Chrysene/triphenylene				0.002			
Cobalt			5			0.4(p)	
Copper	12.0(b)		16(j)	200	5	1(y) (p)	2
Dibenzo(a,h)anthracene							
Dichlorobenzene-1,2			5(k)			2.5	2.5
Dichlorobenzene-1,3			5(k)	20		2.5	2.5
Dichlorobenzene-1,4			5(k)	30		4	4
Dichlorobenzidine-3,3							
Dichloroethane-1,2	20000(a)			0.8		90(p)	100
Dichloromethane		100		5.0			
Dichlorophenol-2,3			1(l)				0.2
Dichlorophenol-2,4	365(a)		1(l)	0.3		0.2	0.2
Dichlorophenol-2,6			1(l)			0.2	0.2
Dichlorophenol-3,4			1(l)				0.2
Dichlorophenol-3,5			1(l)				0.2

TABLE 6-5-1 (cont'd):
List of Potential Chemicals to be Analyzed in the Niagara River and Existing Water Quality Criteria, Objectives, Standards and/or Guidelines
Values in ug/l

Chemical	EPA Aquatic(f)	EPA DW (w)	NYSDEC Aquatic	NYSDEC Health	IJC (r)	MOEE (o)	Health and Welfare Canada
Dieldrin	0.0019			0.0009	0.001(c)	0.001(c)	0.004(c)
Diethylphthalate				50	0.2	0.2	
Dimethylphthalate				50	0.2	0.2	
Dinitrophenol-2,4							
Diphenylamine							
Diphenylhydrazine-1,2	270(a)			0.05			
Di-n-butyl phthalate					4	4	
Di-n-octyl phthalate				50			
2,4-D					0.2	4	4
Endrin	0.0023	0.2		0.002(h)	0.002	0.002	0.0023
Endrin Aldehyde							
Fluoranthene				50			
Fluorene				50			
Gamma BHC							
Heptachlor	0.0038		0.001(d)	0.009(d)	0.001(d)	0.001(d)	0.01(d)
Heptachlor epoxide			0.001(d)	0.009(d)	0.001(d)	0.001(d)	0.01(d)
Heptachlorodibenzo-Furan				(aa)			
Heptachlorodibenzo-p-Dioxin				(aa)			
Hexachlorobenzene				0.02		0.0065	0.0065
Hexachlorobutadiene	9.3(a)		1.0	0.5		.008(p)	0.1
Hexachlorocyclopentadiene	5.2(a)		0.45	1.0			
Hexachlorodibenzo-Furan				(aa)			
Hexachlorodibenzo-p-Dioxin				(aa)			
Hexachloroethane	540(a)					0.5 (p)	
Indenopyrene				0.002			
Iron	1000		300	300	300	300	300
Lead	3.2(b)	50	5(t)	50	25(s)	1(z)(p)	2(n)
Lithium							
Manganese				300			
Mercury	0.012	2		0.2(h)	0.2	0.2	0.1
Methoxychlor	0.03	100	0.03	35	0.04	0.04	
Metolachlor							
3-Methyl, 4-chlorophenol							
Methylnaphthalene-1						2(p)	
Methylnaphthalene-2						2(p)	
Mirex	0.001		0.001	0.04		0.001	
Molybdenum						10(p)	
Monochloronaphthalene							
Naphthalene	620(a)			10			
Nickel	160(b)		126(t)		25	25	25(n)
N-nitrosodimethylamine							
N-nitrosodiphenylamine				50			
N-nitrosodipropylamine							
Octachlorodibenzo-Furan				(aa)			
Octachlorodibenzo-p-Dioxin				(aa)			
Octachlorostyrene							

TABLE 6-5-1 (cont'd):
List of Potential Chemicals to be Analyzed in the Niagara River and Existing Water Quality Criteria, Objectives, Standards and/or Guidelines
Values in ug/l

Chemical	EPA Aquatic(f)	EPA DW (w)	NYSDEC Aquatic	NYSDEC Health	IJC (r)	MOEE (o)	Health and Welfare Canada
PCBs (total)	0.014		0.001	.0000006(h)		0.001	0.001
Pentachlorobenzene						0.03	0.03
Pentachlorodibenzo-Furan				(aa)			
Pentachlorodibenzo-p-Dioxin				(aa)			
Pentachlorophenol	13(e)		0.4	1(u)		0.5	0.5
Phenanthrene				50			
Phenol (total)	2560(a)			1(u)		1	1
Pyrene				50			
Selenium	35	10	1	10		100	1
Silver	0.12	50	0.1(i)	50		0.1	0.1
Strontium				8pCi/L		7(p)	
TDDT*	0.001		0.001	0.01	0.003	0.003	0.001
Tetrachlorobenzene-1,2,3,4				10		0.1	0.1
Tetrachlorobenzene-1,2,3,5				10		0.1	0.1
Tetrachlorobenzene-1,2,4,5				10		0.15	0.15
Tetrachlorodibenzo-Furan				(aa)		0.2pg/l(p)	
Tetrachlorodibenzo-p-Dioxin	0.00001(a)			0.000001(h)		0.02pg/l(p)	
Tetrachloroethylene	840(a)		1	0.7		50(p)	260
Tetrachlorophenol-2,3,4,5						1	
Tetraethyllead						.0007(p)	
Toxaphene	0.0002	5	0.005	0.01	0.008	.008	0.008
Trichlorobenzene-1,2,3			5	10		0.9	0.9
Trichlorobenzene-1,2,4			5	10		0.5	0.5
Trichlorobenzene-1,3,5			5	10		0.65	0.65
Trichloroethylene	21900(a)			3		2(p)	20
Trichlorophenol-2,3,4						18	18
Trichlorophenol-2,3,5						18	18
Trichlorophenol-2,3,6							18
Trichlorophenol-2,4,5						18	18
Trichlorophenol-2,4,6	970(a)					18	18
Trichlorophenol-3,4,5							
Trichlorotoluene-2,4,5							
Vanadium			14				
Zinc	110(b)		117	300	30	16	30

* - includes DDT and its metabolites
a - insufficient data to develop criterion, value presented is LOEL (Lowest Observed Effect Level)
b - hardness dependent criterion (100mg/l used)
c - sum of aldrin and dieldrin
d - sum of heptachlor and heptachlor epoxide
e - pH dependent criterion (7.8 pH used)
f - fresh chronic criteria (unless otherwise noted)
g - fresh acute criteria
h - based upon human consumption of fish
i - ionic form
j - dissolved form
k - based upon sum of dichloorobenzenes
l - total chlorinated phenols
m - Guideline varies with pH, calcium and dissolved organic carbon concentrations
n - Guideline changes with hardness
o - Provincial Water Quality Objectives, unless otherwise noted
p - Proposed Provincial Water Quality Guidelines
q - reported as diethylhexylphthalate
r - Aquatic Resource Protection, unless otherwise noted
s - Protection of Fish Consuming Birds and Animals (unfiltered)
t - based on hardness of receiving water (150 mg/L used)
u - based upon limit for total Phenols
v - based on 0.0000002ug/l equivalents of 2,3,7,8-TCDD
w - drinking water criteria, maximum contaminant level, only for listed chemicals
x - hardness dependent criteria (0-100mg/l used)
y - hardness dependent criteria (0-20mg/l used)
z - hardness dependent criteria (0-30mg/l used)
aa - value based on toxicity equivalence factors and the presence of other dioxins and furans
note 1 - Hexavalent Cr, 11.0ug/l; Trivalent Cr, 210ug/l
note 2 - Hexavalent Cr, 50ug/l; Trivalent Cr, 50ug/l

pg/l = picograms/liter

Table 6-5-2: Comparison of Whole Water Concentrations with Strictest Criteria: April 1991 - March 1992

Parameter	Strictest Criterion (ng/l)	Fort Erie Mean Total RWW Conc. (ng/l)	Fort Erie 90% Confidence Interval Minimum	Fort Erie 90% Confidence Interval Maximum	Niagara-on-the-Lake Mean Total RWW Conc. (ng/l)	Niagara-on-the-Lake 90% Confidence Interval Minimum	Niagara-on-the-Lake 90% Confidence Interval Maximum
1,4-dichlorobenzene	4000.0	------	------	------	2.705	2.449	2.960
1,3,5-trichlorobenzene	650.0	------	------	------	0.08999	0.08049	0.09948
1,2,4-trichlorobenzene	500.0	------	------	------	1.340	1.234	1.446
1,2,3-trichlorobenzene	900.0	------	------	------	0.3764	0.3379	0.4150
1,2,3,4-tetrachlorobenzene	100.0	------	------	------	0.6912	0.5831	0.7993
pentachlorobenzene	30.0	------	------	------	0.2074	0.1879	0.2269
hexachlorobenzene	6.5	------	------	------	0.1805	0.1409	0.2200
alpha-BHC	10.0	------	------	------	1.126	1.069	1.182
p,p-DDE	------	0.1818	0.1372	0.2265	------	------	------
dieldrin	0.9	0.2498	0.2305	0.2690	------	------	------
p,p-TDE	------	0.2120	0.1672	0.2568	------	------	------
p,p-DDT	------	0.1262	0.0974	0.1549	0.1003	0.06244	0.1381
hexachlorobutadiene	8.0	------	------	------	0.1219	0.1082	0.1357
PCB	0.0006	1.594	1.352	1.837	2.078	1.880	2.275
1-methyl naphthalene	2000.0	------	------	------	1.117	0.9626	1.272
phenanthrene	50000.0	3.241	2.959	3.523	7.900	3.027	12.77
fluoranthene	50000.0	2.361	2.086	2.635	3.899	3.538	4.260
pyrene	50000.0	1.484	1.291	1.677	3.042	2.762	3.321
benz(a)anthracene	2.0	1.192	1.037	1.348	1.798	1.633	1.963
chrysene/triphenylene	2.0	1.131	0.9662	1.295	1.757	1.563	1.952
benzo(b/k)fluoranthene	4.0	2.314	2.053	2.575	3.521	3.187	3.856
benzo(a)pyrene	1.2	------	------	------	1.357	1.219	1.495
benzo(g,h,i)perylene	------	------	------	------	0.5049	0.2982	0.7115
di-n-butylphthalate	4000.0	17.62	15.21	20.03	16.35	13.24	19.46
benzylbutylphthalate	50000.0	6.740	5.764	7.715	6.367	5.882	6.852
bis(2-ethyl-hexyl)phthalate	600.0	316.1	-45.09	677.4	65.73	47.49	83.98
phenol	1000.0	7.178	2.852	11.50	------	------	------
3,4,5-trichlorophenol	------	1.879	0.9966	2.760	------	------	------
+ methylene chloride	50000.0	4337.	2933.	6101.	2107.	1632.	2660.

* Recombined Whole Water (RWW) concentrations calculated as sum of concentration in water fraction and concentration in suspended sediment fraction

\+ Mean of duplicate samples

__ Value exceeds strictest criterion

Table 6-5-2 (con't)

Comparison of Whole Water Concentrations with Strictest Criteria: April 1991 - March 1992

	Strictest Criterion (mg/L)	Fort Erie Mean Total RWW Conc. (mg/l)	Fort Erie 90% Confidence Interval Minimum	Fort Erie 90% Confidence Interval Maximum	Niagara-on-the-Lake Mean Total RWW Conc. (mg/l)	Niagara-on-the-Lake 90% Confidence Interval Minimum	Niagara-on-the-Lake 90% Confidence Interval Maximum
Lithium	------	3.925E-03	3.582E-03	4.300E-03	3.952E-03	3.738E-03	4.179E-03
Aluminum	0.1	0.3931	0.2826	0.5468	0.3598	0.2947	0.4392
Vanadium	0.014	8.688E-04	6.920E-04	1.091E-03	7.912E-04	6.865E-04	9.119E-04
Chromium	0.002	7.618E-04	5.835E-04	9.710E-04	8.334E-04	7.086E-04	9.803E-04
Manganese	0.3	1.934E-02	1.335E-02	2.801E-02	1.655E-02	1.326E-02	2.065E-02
Iron	0.3	0.6387	0.4308	0.9468	0.6375	0.5017	0.8100
Cobalt	0.0004	3.546E-04	2.589E-04	4.700E-04	3.271E-04	2.625E-04	4.009E-04
Nickel	0.025	1.513E-03	1.243E-03	1.841E-03	1.291E-03	1.152E-03	1.448E-03
Copper	0.001	1.693E-03	1.491E-03	1.923E-03	1.627E-03	1.509E-03	1.754E-03
Zinc	0.016	4.126E-03	2.679E-03	5.985E-03	3.371E-03	2.767E-03	4.108E-03
Arsenic	0.05	6.368E-04	6.006E-04	6.751E-04	7.651E-04	7.109E-04	8.233E-04
Selenium	0.001	2.356E-04	2.120E-04	2.608E-04	2.398E-04	2.144E-04	2.671E-04
Antimony	0.003	1.928E-04	1.819E-04	2.041E-04	2.050E-04	1.940E-04	2.162E-04
Strontium	0.007	0.1642	0.1614	0.1671	0.1614	0.1601	0.1628
Molybdenum	0.01	1.102E-03	1.086E-03	1.119E-03	1.133E-03	1.113E-03	1.153E-03
Silver	0.0001	------	------	------	7.882E-05	6.886E-05	8.964E-05
Cadmium	0.00015	1.339E-04	1.090E-04	1.622E-04	1.248E-04	1.125E-04	1.380E-04
Barium	1.0	2.800E-02	2.519E-02	3.112E-02	2.362E-02	2.317E-02	2.408E-02
Lead	0.001	1.099E-03	5.309E-04	1.944E-03	6.137E-04	4.335E-04	8.349E-04
Beryllium	0.003	2.552E-05	1.458E-05	4.053E-05	3.275E-05	2.474E-05	4.221E-05

Table 6-5-3:

Comparison of Water Fraction Concentrations With Strictest Criteria for Organic Contaminants in the Water Fraction of the Niagara River: April 1991 - March 1992

Parameter	Strictest Criterion (ng/l)	Fort Erie Mean Conc. (ng/l)	Fort Erie 90% Conf. Interval Minimum	Fort Erie 90% Conf. Interval Maximum	Niagara-on-the-Lake Mean Conc. (ng/l)	Niagara-on-the-Lake 90% Conf. Interval Minimum	Niagara-on-the-Lake 90% Conf. Interval Maximum
1,3-dichlorobenzene	2500.	------	------	------	0.6759	0.6306	0.7244
1,4-dichlorobenzene	4000.	1.065	0.9648	1.172	2.668	2.426	2.934
1,2-dichlorobenzene	2500.	------	------	------	1.267	0.9679	1.618
1,3,5-trichlorobenzene	650.	------	------	------	0.0878	0.0789	0.0973
1,2,4-trichlorobenzene	500.	------	------	------	1.273	1.172	1.383
1,2,3-trichlorobenzene	900.	------	------	------	0.3565	0.3207	0.3964
1,2,3,4-tetrachlorobenzene	100.	------	------	------	0.6200	0.5198	0.7315
pentachlorobenzene	30.	------	------	------	0.1454	0.1328	0.1593
hexachlorobenzene	6.5	------	------	------	0.0628	0.0566	0.0693
alpha-BHC	10.	0.9106	0.8471	0.9771	1.117	1.062	1.175
gamma-BHC (Lindane)	10.	0.4589	0.414	0.5068	0.4712	0.4531	0.4900
heptachlor epoxide	1.	0.1050	0.0968	0.1136	0.1117	0.1055	0.1182
alpha-endosulfan	3.	0.0372	0.0298	0.0458	0.0470	0.0385	0.0568
p,p-DDE	------	0.0540	0.0475	0.0612	------	------	------
dieldrin	0.9	0.2356	0.2195	0.2524	0.2593	0.2497	0.2692
endrin	2.	0.0172	0.0118	0.0240	0.0172	0.0115	0.0245
p,p-TDE	------	0.0744	0.0564	0.0955	------	------	------
p,p-DDT	------	0.0561	0.0370	0.0804	0.0562	0.0349	0.0840
hexachlorobutadiene	8.	------	------	------	0.0927	0.0850	0.1011
hexachlorocyclopentadiene	450.	------	------	------	0.0840	1.5E-09	0.0046
PCB	0.0006	1.262	1.066	1.478	1.135	1.046	1.229
naphthalene	10000.	2.751	2.19	3.456	2.839	2.418	3.333
2-methyl naphthalene	2000.	1.020	0.8804	1.172	1.319	1.159	1.492
1-methyl naphthalene	2000.	0.7455	0.6711	0.825	0.9721	0.8677	1.084
acenaphthylene	------	0.2110	0.1737	0.2529	0.3344	0.2929	0.3795
fluorene	50000.	0.4561	0.3717	0.5515	0.7934	0.6857	0.911
anthracene	50000.		------	------	0.4452	0.0091	1.707
phenanthrene	50000.	1.834	1.628	2.066	6.026	2.387	11.95
fluoranthene	50000.	0.8590	0.7534	0.9794	1.850	1.585	2.159
pyrene	50000.	0.3399	0.2671	0.4241	1.461	1.263	1.691
benz(a)anthracene	2.	0.1474	0.0983	0.2095	0.2713	0.2183	0.3317
chrysene/triphenylene	2.	0.2381	0.1917	0.2910	0.4075	0.3429	0.4792
benzo(b/k)fluoranthene	4.	0.2740	0.2144	0.3430	0.4963	0.3854	0.6254
benzo(a)pyrene		1.2	------	------	0.1352	0.09037	0.1919
benzo(g,h,i)perylene	------	------	------	------	0.1187	0.0663	0.1914
dimethylphthalate	200.	1.501	1.355	1.663	1.358	1.157	1.594
diethylphthalate	200.	20.15	17.55	23.13	13.77	11.97	15.84
di-n-butylphthalate	4000.	16.51	14.31	19.05	15.74	12.95	19.12
benzylbutylphthalate	50000.	4.810	3.982	5.737	4.134	3.826	4.457
bis(2-ethyl-hexyl)phthalate	600.	308.1	74.28	769.2	52.38	37.07	71.15
dioctylphthalate	50000.	3.914	2.502	5.741	2.347	1.799	2.989
phenol	1000.	5.892	2.587	11.03	82.32	4.707	294.0
2,4,6-trichlorophenol	18000.	------	------	------	0.6497	0.5347	0.779
3,4,5-trichlorophenol	------	1.202	0.6151	2.052	------	------	------
pentachlorophenol	400.	------	------	------	0.3944	0.2036	0.6697
atrazine	2000.	70.22	62.56	78.81	73.27	68.35	78.55
metolachlor	------	24.89	22.21	27.89	26.53	24.31	28.96

Table 6-5-4

Comparison of Suspended Solids Equivalent Water Concentrations with Strictest Criteria : April 1991 - March 1992

Parameter	Strictest Criterion *(ng/l)	Fort Erie Mean Conc. *(ng/l)	90% Conf. Interval Minimum	90% Conf. Interval Maximum	Niagara-on-the-Lake Mean Conc. *(ng/l)	90% Conf. Interval Minimum	90% Conf. Interval Maximum
1,4-dichlorobenzene	4000.	------	------	------	0.0368	0.0208	0.0589
1,3,5-trichlorobenzene	650.	------	------	------	0.0022	0.0007	0.0049
1,2,4-trichlorobenzene	500.	------	------	------	0.0671	0.0576	0.0781
1,2,3-trichlorobenzene	900.	------	------	------	0.0198	0.0137	0.0274
1,2,3,4-tetrachlorobenzene	100.	------	------	------	0.071	0.0529	0.0925
pentachlorobenzene	30.	------	------	------	0.0618	0.0486	0.0770
hexachlorobenzene	6.5	------	------	------	0.1173	0.0826	0.1600
alpha-BHC	10.	------	------	------	0.0089	0.0063	0.0120
octachlorostyrene	------	------	------	------	0.0146	0.0118	0.0178
gamma-chlordane	------	0.0068	0.0034	0.0120	------	------	------
p,p-DDE	------	0.1272	0.0882	0.1756	0.0444	0.0386	0.0508
dieldrin	0.9	0.0141	0.0065	0.0259	------	------	------
p,p-TDE	------	0.1371	0.1008	0.1807	------	------	------
p,p-DDT	------	0.0698	0.0528	0.0899	0.0439	0.0213	0.0776
mirex	1.	------	------	------	0.0303	0.0065	0.0793
hexachlorobutadiene	8.	------	------	------	0.0291	0.0194	0.0415
PCB	0.0006	0.3312	0.22	0.4723	0.9394	0.7755	1.124
1-methyl naphthalene	2000.	------	------	------	0.1448	0.061	0.2776
phenanthrene	50000.	1.401	1.232	1.585	1.867	1.701	2.043
fluoranthene	50000.	1.496	1.26	1.757	2.042	1.831	2.268
pyrene	50000.	1.139	0.9731	1.322	1.575	1.403	1.76
benz(a)anthracene	2.	1.041	0.9027	1.191	1.522	1.373	1.68
chrysene/triphenylene	2.	0.889	0.7419	1.053	1.345	1.172	1.534
benzo(b/k)fluoranthene	4.	2.032	1.791	2.292	3.015	2.715	3.334
benzo(a)pyrene	1.2	0.7372	0.6406	0.8425	1.217	1.094	1.349
indeno(1,2,3,cd)pyrene	2.	0.5644	0.3793	0.7978	0.3769	0.1965	0.636
benzo(g,h,i)perylene	------	0.4825	0.3199	0.6888	0.3848	0.2206	0.6096
di-n-butylphthalate	4000.	1.104	0.7362	1.57	0.6112	0.2581	1.17
benzylbutylphthalate	50000.	1.922	1.534	2.367	2.225	1.879	2.609
bis(2-ethyl-hexyl)phthalate	600.	7.956	6.395	9.737	13.3	7.994	20.4
phenol	1000.	1.281	0.7861	1.936	------	------	------
3,4,5-trichlorophenol	------	0.6736	0.2914	1.273	------	------	------

* Equivalent water concentration (EWC) for particulate phase calculated as product of mean contaminant concentration on particulate and mean suspended solid concentration

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APPENDIX 1: CHEMICALS ANALYSED IN THE NIAGARA RIVER IN 1991-92

CHEMICAL/GROUP	WATER	MATRIX SOLIDS	WHOLE WATER
1. VOLATILES			
* benzene			x
* carbon tetrachloride			x
* chloroform			x
* 1,2-dichloroethane			x
* dichloromethane			x
* tetrachloroethylene			x
2. CHLOROPHENOLS			
* 2,4-dichlorophenol	x	x	
* 2,3-dichlorophenol	x	x	
* 2,6-dichlorophenol	x	x	
* 3,methyl,4-chlorophenol	x	x	
* 2,3,5-trichlorophenol	x	x	
* 2,4,6-trichlorophenol	x	x	
* 2,4,5-trichlorophenol	x	x	
* 2,3,4-trichlorophenol	x	x	
* 3,5-dichlorophenol	x	x	
* 2,3,6-trichlorophenol	x	x	
* 3,4-dichlorophenol	x	x	
* 3,4,5-trichlorophenol	x	x	
* pentachlorophenol	x	x	
* phenol	x	x	
3. OCs and PCBs			
* alpha BHC	x	x	
* lindane (gamma-BHC)	x	x	
* heptachlor	x	x	
* aldrin	x	x	
* heptachlor epoxide	x	x	
[a] gamma chlordane	x	x	
[a] alpha chlordane	x	x	
[b] p,p'-DDE	x	x	
* dieldrin	x	x	
* endrin	x	x	
[b] o,p'-DDT	x	x	
[b] p,p'-TDE	x	x	
[b] p,p'-DDT	x	x	
* alpha endosulfan	x	x	
beta endosulfan	x	x	
* mirex	x	x	
* methoxychlor	x	x	
* PCBs	x	x	
* hexachlorobutadiene	x	x	
* hexachlorocyclopentadiene	x	x	
endrin aldehyde	x	x	
octachlorostyrene	x	x	
photomirex	x	x	

APPENDIX 1: (cont..) CHEMICALS ANALYSED IN THE NIAGARA RIVER IN 1991-92

CHEMICAL/GROUP	MATRIX	
	WATER	SOLIDS
4. PAHs		
* naphthalene	x	x
* 2-methyl naphthalene	x	x
* 1-methyl naphthalene	x	x
* 2-chloronaphthalene	x	x
acenaphthalene	x	x
* fluorene	x	x
* anthracene	x	x
* phenanthrene	x	x
* fluoranthene	x	x
* pyrene	x	x
benz(a)anthracene	x	x
* chrysene/triphenylene	x	x
* benzo(b/k)fluoranthene	x	x
* benzo(a)pyrene	x	x
* indenopyrene	x	x
dibenz(a,h)anthracene	x	x
benzo(g,h,i)perylene	x	x
5. DIOXIN		
* 2,3,7,8 TCDD	x	x
6. PHTHALATES		
* dimethylphthalate	x	x
* diethylphthalate	x	x
* di-n-butylphthalate	x	x
* benzylbutylphthalate	x	x
* bis(2-ethylhexyl)phthalate	x	x
* dioctylphthalate	x	x
7. CHLOROBENZENES		
* 1,2-dichlorobenzene	x	x
* 1,3-dichlorobenzene	x	x
* 1,4-dichlorobenzene	x	x
* 1,3,5-trichlorobenzene	x	x
* 1,2,4-trichlorobenzene	x	x
* 1,2,3-trichlorobenzene	x	x
* 1,2,3,4-tetrachlorobenzene	x	x
* pentachlorobenzene	x	x
* hexachlorobenzene	x	x

APPENDIX 1: (cont..) CHEMICALS ANALYSED IN THE NIAGARA RIVER IN 1991-92

CHEMICAL/GROUP	MATRIX WATER	MATRIX SOLIDS
8. OTHERS		
metolachlor	**x**	**x**
*** atrazine**	**x**	**x**

B. TRACE METALS IN WHOLE WATER

*** lithium**	*** aluminum**
*** vanadium**	*** chromium**
*** manganese**	*** iron**
*** cobalt**	*** nickel**
*** copper**	*** zinc**
*** arsenic**	*** selenium**
*** strontium**	*** molybdenum**
*** silver**	*** cadmium**
*** antimony**	*** barium**
*** lead**	*** mercury**
*** beryllium**	

*** - chemicals for which criteria presently exist**
a - one criterion for both alpha and gamma chlordane
b - one criterion for total DDT only

APPENDIX 2: DETECTION LIMITS OF CHEMICALS ANALYSED IN THE NIAGARA RIVER IN 1991-92

PARAMETER CLASS	PARAMETER	MDL & PDL (ug/l)
VOLATILES *	**Benzene**	**0.10**
	Carbon tetrachloride	**0.25**
	Chloroform	**0.16**
	Dichloromethane (DCM)	**0.15**
	Tetrachloroethylene	**0.21**
	1,2-Dichloroethane	**0.11**

*** For Volatiles, MDL and PDL are operationally the same**

	PARAMETER		PDL (mg/l)
ICP-METALS (Whole water)	**Aluminum**	**(total)**	**0.002**
	Barium	**(total)**	**0.0002**
	Cadmium	**(total)**	**0.0001**
	Chromium	**(total)**	**0.0002**
	Cobalt	**(total)**	**0.0001**
	Copper	**(total)**	**0.0002**
	Iron	**(total)**	**0.0004**
	Lead	**(total)**	**0.0002**
	Manganese	**(total)**	**0.0001**
	Molybdenum	**(total)**	**0.0001**
	Nickel	**(total)**	**0.0002**
	Strontium	**(total)**	**0.0001**
	Vanadium	**(total)**	**0.0001**
	Zinc	**(total)**	**0.0002**
	Beryllium	**(total)**	**0.00005**
	Lithium	**(total)**	**0.0001**
NON-ICP METALS (Whole water)	**Antimony**	**(total)**	**0.0002**
	Arsenic	**(total)**	**0.0001**
	Mercury	**(total)**	**0.00002**
	Selenium	**(total)**	**0.0001**
	Silver	**(total)**	**0.0001**

DETECTION LIMITS FOR CHLOROBENZENES, ORGANOCHLORINE PESTICIDES, PCBs AND SURROGATES ANALYSED IN WATER IN 1991-92

Parameter	IDL (pg)	MDL (ng/L)	PDL (ng/L)
1,3-Dichlorobenzene	2.10	0.26	0.30
1,4-Dichlorobenzene	2.10	0.27	0.51
1,2-Dichlorobenzene	2.10	0.25	0.58
1,3,5-Trichlorobenzene	0.25	0.03	0.02
1,2,4-Trichlorobenzene	0.25	0.03	0.24
1,2,3-Trichlorobenzene	0.28	0.03	0.09
1,2,3,4-Tetrachlorobenzene	0.34	0.03	0.09
Pentachlorobenzene	0.34	0.03	0.04
Hexachlorobenzene	0.54	0.04	0.04
alpha-BHC	0.67	0.04	0.30
gamma-BHC (Lindane)	0.74	0.05	0.14
Heptachlor	0.52	0.03	0.03
Aldrin	0.76	0.05	0.01
Heptachlor Epoxide	0.96	0.03	0.02
gamma-Chlordane	1.1	0.07	0.03
alpha-Endosulfan	1.2	0.04	0.02
alpha-Chlordane	1.3	0.09	0.06
Octachlorostyrene	2.3	0.07	0.05
p,p-DDE	3.3	0.08	0.06
Dieldrin	2.6	0.08	0.05
Endrin	3.0	0.18	0.03
p,p-TDE	5.9	0.38	0.10
o,p-DDT	5.2	0.15	0.09
p,p-DDT	6.2	0.17	0.10
beta-Endosulfan	3.0	0.10	0.06
Endrin Aldehyde	3.4	0.13	0.05
Photomirex	2.9	0.06	0.04
Mirex	3.4	0.05	0.04
Methoxychlor	24.0	0.84	0.22
Hexachlorobutadiene	0.35	0.04	0.03
Hexachlorocyclopentadiene	0.35	0.04	0.02
PCB	38.0	0.78	0.81
1,3-Dibromobenzene	3.20	0.23	
1,3,5-Tribromobenzene	3.60	0.09	
1,2,4,5-Tetrabromobenzene	3.70	0.10	
2,3,5,6-Tetrachlorobiphenyl	3.10	0.08	
delta-BHC	0.68	0.05	
Endrin Ketone	6.70	0.06	

* IDL, MDL and PDL are defined in Section 8.0-(a), (b) and (c)

DETECTION LIMITS FOR POLYNUCLEAR AROMATIC HYDROCARBONS, PHENOLS, ATRAZINE, METOLACHLOR AND 2,3,7,8-TCDD ANALYSED IN WATER IN 1991-92

Parameter	IDL (pg)	MDL (ng/L)	PDL (ng/L)
Naphthalene	25	0.23	0.33
2-Methyl Naphthalene	83	0.61	0.51
1-Methyl Naphthalene	44	0.31	0.61
2-Chloronaphthalene	192	0.70	1.20
Acenaphthylene	23	0.19	0.16
Fluorene	86	0.55	0.59
Anthracene	11	0.18	0.23
Phenanthrene	17	0.19	0.12
Fluoranthene	76	0.26	0.18
Pyrene	55	0.30	0.17
Benz(a)anthracene	25	0.25	0.24
Chrysene/triphenylene	33	0.23	0.29
Benzo(b/k)fluoranthene	46	0.48	0.28
Benzo(a)pyrene	35	0.17	0.24
Indeno(1,2,3,cd)pyrene	84	0.83	0.36
Dibenz(a,h)anthracene	168	0.95	0.51
Benzo(g,h,i)perylene	83	0.54	0.22
Dimethylphthalate	70	0.44	0.38
Diethylphthalate	30	0.38	0.39
Di-n-butylphthalate	27	2.20	1.02
Benzylbutylphthalate	31	2.03	2.92
Bis(2-ethyl-hexyl)phthalate	24	7.65	76.76
Dioctylphthalate	29	0.44	0.35
Phenol	141		
2,4-Dichlorophenol	115	0.84	0.43
2,3-Dichlorophenol	161	0.78	1.19
2,6-Dichlorophenol	54	0.90	0.80
3-Methyl-4-Chlorophenol	127	0.97	2.11
2,3,5-Trichlorophenol	128	0.70	0.72
2,4,6-Trichlorophenol	154	0.74	0.63
2,4,5-Trichlorophenol	145	0.86	0.90
2,3,4-Trichlorophenol	138	1.09	0.53
3,5-Dichlorophenol	80	1.06	0.82
2,3,6-Trichlorophenol	96	0.61	0.46
3,4-Dichlorophenol	132	0.82	1.25
3,4,5-Trichlorophenol	154	1.16	3.24
Pentachlorophenol	256	1.94	1.04
Atrazine	417	3.24	6.04
Metolachlor	33	0.49	0.82
2,3,7,8-TCDD	44		
2,4,6-Tribromophenol	383	1.10	1.15

DETECTION LIMITS FOR CHLOROBENZENES, ORGANOCHLORINE PESTICIDES, PCB's AND SURROGATES ANALYSED IN SUSPENDED SEDIMENTS IN 1991-92

Parameter	IDL (pg)	WET WEIGHT MDL & PDL* (ng/g)	DRY WEIGHT MDL & PDL* (ng/g)
1,3-Dichlorobenzene	2.10	4.2	11.3
1,4-Dichlorobenzene	2.10	3.8	10.4
1,2-Dichlorobenzene	2.10	4.2	11.4
1,3,5-Trichlorobenzene	0.25	0.4	1.2
1,2,4-Trichlorobenzene	0.25	0.9	2.5
1,2,3-Trichlorobenzene	0.28	0.5	1.3
1,2,3,4-Tetrachlorobenzene	0.34	1.1	3.0
Pentachlorobenzene	0.34	1.0	2.7
Hexachlorobenzene	0.54	1.3	3.5
alpha-BHC	0.67	0.8	2.3
gamma-BHC	0.74	1.3	3.5
Heptachlor	0.52	1.6	4.3
Aldrin	0.76	0.8	2.1
Heptachlor Epoxide	0.96	1.2	3.2
gamma-Chlordane	1.1	1.0	2.8
alpha-Endosulfan	1.2	1.1	3.1
alpha-Chlordane	1.3	1.1	2.9
Octachlorostyrene	2.3	1.0	2.7
p,p-DDE	3.3	2.4	6.4
Dieldrin	2.6	2.5	6.8
Endrin	3.0	2.7	7.3
o,p-DDT	5.2	3.5	9.4
p,p-TDE (p,p-DDD)	5.9	6.1	16.7
p,p-DDT	6.2	3.4	9.3
beta-Endosulfan	3.0	2.2	5.9
Endrin Aldehyde	3.4	1.5	4.2
Photomirex	2.9	1.5	4.1
Mirex	3.4	1.6	4.4
Methoxychlor	24	17.6	48.0
Hexachlorobutadiene	0.35	0.6	1.5
Hexachlorocyclopentadiene	0.35	0.7	1.8
PCB (Arochlor 1242;1254;1260)	38	32.7	89.0
1,3-Dibromobenzene		5.0	13.6
1,3,5-Tribromobenzene		1.5	4.0
1,2,4,5-Tetrabromobenzene		3.2	8.8
2,3,5,6-Tetrachlorobiphenyl		4.6	12.6
Delta-BHC		3.3	9.0
Endrin Ketone		1.9	5.1

* MDL and PDL are operationally the same

DETECTION LIMITS FOR POLYNUCLEAR AROMATIC HYDROCARBONS, PHENOLS, ATRAZINE, METOLACHLOR AND 2,3,7,8-TCDD ANALYSED IN SUSPENDED SEDIMENTS IN 1991-92

Parameter	IDL (pg)	WET WEIGHT MDL & PDL* (ng/g)	DRY WEIGHT MDL & PDL* (ng/g)
Naphthalene	44	30	82
2-Methyl Naphthalene	104	103	281
1-Methyl Naphthalene	94	29	80
2-Chloronaphthalene	262	139	378
Acenaphthylene	56	33	89
Fluorene	161	59	160
Anthracene	57	62	169
Phenanthrene	53	71	193
Fluoranthene	72	33	90
Pyrene	81	62	169
Benz(a)anthracene	137	50	137
Chrysene/triphenylene	59	71	193
Benzo(b/k)fluoranthene	101	70	191
Benzo(a)pyrene	98	59	161
Indenopyrene	104	59	161
Dibenz(a,h)anthracene	131	54	148
Benzo(g,h,i)perylene	112	55	149
Dimethylphthalate	115	75	204
Diethylphthalate	88	508	1382
Di-n-butylphthalate	74	135	368
Benzylbutylphthalate	173	153	416
Bis(2-ethyl-hexyl)phthalate	138	654	1780
Dioctylphthalate	219	128	348
Phenol	445	169	461
2,4-Dichlorophenol	235	136	369
2,3-Dichlorophenol	404	154	420
2,6-Dichlorophenol	185	106	287
3-met,4-chlorophenol	177	170	463
2,3,5-Trichlorophenol	243	140	380
2,4,6-Trichlorophenol	439	194	529
2,4,5-Trichlorophenol	468	196	533
2,3,4-Trichloropehnol	229	182	495
3,5-Dichlorophenol	252	108	295
2,3,6-Trichlorophenol	239	156	423
3,4-Dichlorophenol	293	106	288
3,4,5-Trichlorophenol	447	156	425
Pentachlorophenol	636	170	463
Atrazine	670	315	856
Metolachlor	124	162	441
2,3,7,8-TCDD	21		-
Phenol-D5			
2,4,6-Tribromophenol			

* 2,3,7,8-TCDD was not spiked

APPENDIX 3:

1991-92 NIAGARA RIVER DATA LISTING

-99.999 - for sample variables not analysed
L or blank or -1.000 for values below detection limits

Fort Erie Suspended Solids Data (1991-92)

Date		mg/L
04/03/91	04/04/91	4.09
04/09/91	04/10/91	8.71
04/16/91	04/17/91	18.93
04/23/91	04/24/91	4.14
04/30/91	05/01/91	1.88
05/07/91	05/08/91	8.31
05/14/91	05/15/91	1.23
05/21/91	05/22/91	1.00
05/28/91	05/29/91	2.57
06/04/91	06/05/91	2.23
06/11/91	06/12/91	2.05
06/18/91	06/19/91	1.33
06/25/91	06/26/91	1.24
07/02/91	07/03/91	0.95
07/09/91	07/10/91	1.18
07/16/91	07/17/91	0.76
07/23/91	07/24/91	1.42
07/30/91	07/31/91	1.77
08/06/91	08/07/91	1.62
08/13/91	08/14/91	1.99
08/20/91	08/21/91	1.24
08/27/91	08/28/91	1.42
09/03/91	09/04/91	1.60
09/10/91	09/11/91	
09/17/91	09/18/91	1.42
09/24/91	09/25/91	1.72
10/01/91	10/02/91	1.96
10/08/91	10/09/91	15.17
10/15/91	10/16/91	7.15
10/22/91	10/23/91	1.79
10/29/91	10/30/91	1.14
11/05/91	11/06/91	8.15
11/12/91	11/13/91	2.40
11/19/91	11/20/91	1.83
11/26/91	11/27/91	24.23
12/03/91	12/04/91	26.69
12/10/91	12/11/91	8.18
12/17/91	12/18/91	37.90
12/24/91	12/25/91	
12/31/91	01/01/92	
01/06/92	01/07/92	2.32
01/13/92	01/14/92	5.80
01/20/92	01/21/92	12.62
01/27/92	01/28/92	4.31
02/03/92	02/04/92	4.90
02/10/92	02/11/92	2.00
02/17/92	02/18/92	
02/24/92	02/25/92	1.67
03/03/92	03/04/92	1.04
03/10/92	03/11/92	
03/17/92	03/18/92	2.16
03/24/92	03/25/92	1.56

Niagara-on-the-Lake Suspended Solids Data (1991-92)

Date		mg/L
04/04/91	04/05/91	7.21
04/11/91	04/12/91	40.53
04/18/91	04/19/91	7.49
04/24/91	04/25/91	9.54
05/01/91	05/02/91	4.45
05/08/91	05/09/91	9.63
05/15/91	05/16/91	3.14
05/22/91	05/23/91	1.71
05/29/91	05/30/91	2.41
06/05/91	06/06/91	2.49
06/12/91	06/13/91	
06/19/91	06/20/91	1.59
06/26/91	06/27/91	1.47
07/03/91	07/04/91	1.72
07/10/91	07/11/91	1.94
07/17/91	07/18/91	1.09
07/24/91	07/25/91	1.36
07/31/91	08/01/91	1.35
08/07/91	08/08/91	1.17
08/14/91	08/15/91	1.48
08/21/91	08/22/91	1.86
08/28/91	08/29/91	1.39
09/04/91	09/05/91	1.59
09/11/91	09/12/91	
09/18/91	09/19/91	1.87
09/25/91	09/26/91	1.58
10/02/91	10/03/91	1.86
10/09/91	10/10/91	7.85
10/16/91	10/17/91	4.12
10/23/91	10/24/91	1.32
10/30/91	10/31/91	1.05
11/06/91	11/07/91	7.75
11/13/91	11/14/91	4.25
11/20/91	11/21/91	2.03
11/27/91	11/28/91	16.92
12/04/91	12/05/91	21.92
12/12/91	12/13/91	5.78
12/18/91	12/19/91	26.25
12/25/91	12/26/91	
01/01/92	01/02/92	2.23
01/07/92	01/08/92	3.59
01/14/92	01/15/92	8.77
01/21/92	01/22/92	13.89
01/28/92	01/29/92	7.46
02/04/92	02/05/92	6.99
02/11/92	02/12/92	4.14
02/18/92	02/19/92	2.56
02/25/92	02/26/92	2.24
03/04/92	03/05/92	2.15
03/11/92	03/12/92	14.43
03/18/92	03/19/92	3.92
03/25/92	03/26/92	1.98

Fort Erie Water 1991-92

		1,3-DiCB	1,4-DiCB	1,2-DiCB	1,3,5-Tr	1,2,4-Tr	1,2,3-Tr	1,2,3,4-
FE	910404	-1	1.8233	-1	-1	0.1283	0.0321	-1
FE	910410	-1	1.3715	-1	-1	0.108	0.0297	-1
FE	910417	-1	1.69	0.1967	-1	0.1176	0.0317	-1
FE	910424	-1	1.5699	-1	-1	0.1298	0.0357	-1
FE	910501	-1	1.2835	-1	-1	0.1189	0.0325	-1
FE	910508	-1	1.0195	-1	-1	0.1023	0.0211	-1
FE	910515	-1	1.6434	-1	-1	0.0995	0.019	-1
FE	910522	-1	-1	-1	-1	0.0939	0.0292	-1
FE	910529	-1	1.0756	0.1862	-1	0.0804	0.0184	-1
FE	910605	-1	0.8801	0.1545	-1	0.0743	-1	-1
FE	910612	-1	0.8972	-1	-1	0.0688	-1	-1
FE	910619	-1	1.3899	-1	-1	0.1194	-1	-1
FE	910626	-1	1.8232	0.1815	-1	0.0907	-1	-1
FE	910703	-1	1.3439	-1	-1	0.1058	-1	-1
FE	910710	-1	0.6183	-1	-1	0.0594	-1	-1
FE	910717	-1	-1	-1	-1	0.0739	-1	-1
FE	910724	-1	1.6803	-1	-1	0.0632	-1	-1
FE	910731	-1	0.8571	-1	-1	0.0744	-1	-1
FE	910807	-1	1.1125	-1	-1	0.1018	-1	-1
FE	910814	-1	0.7604	-1	-1	0.0711	-1	-1
FE	910821	-1	0.663	-1	-1	0.0629	-1	-1
FE	910828	-1	0.7794	-1	-1	0.0538	-1	-1
FE	910904	-1	0.7004	-1	-1	0.064	-1	-1
FE	910911	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
FE	910918	-1	1.1104	-1	-1	0.0797	-1	-1
FE	910925	-1	0.8585	-1	-1	0.3909	-1	-1
FE	911002	-1	0.5608	-1	-1	0.0663	-1	-1
FE	911009	-1	0.6268	-1	-1	0.0873	-1	-1
FE	911016	-1	0.489	-1	-1	0.0552	-1	-1
FE	911023	-1	0.9582	-1	-1	0.0835	-1	-1
FE	911030	-1	1.1505	0.0919	-1	0.0956	-1	-1
FE	911106	-1	1.1168	-1	-1	0.1596	-1	-1
FE	911113	-1	1.1183	0.3036	-1	0.0703	-1	-1
FE	911120	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
FE	911127	-1	0.8544	-1	-1	0.0616	-1	-1
FE	911204	-1	1.1035	-1	-1	0.0731	-1	-1
FE	911211	-1	1.054	-1	-1	0.0798	-1	-1
FE	911218	-1	1.0213	-1	-1	0.1586	-1	0.0126
FE	911225	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
FE	920101	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
FE	920107	-1	1.1644	-1	-1	0.1376	-1	-1
FE	920114	-1	1.2411	-1	-1	0.1383	-1	-1
FE	920121	-1	0.9567	-1	-1	0.2063	-1	-1
FE	920128	-1	0.8149	0.1558	-1	0.1751	-1	-1
FE	920204	-1	1.9395	0.4024	-1	0.2519	-1	-1
FE	920211	-1	1.4523	0.1917	-1	0.1134	0.0258	-1
FE	920218	-1	1.7149	-1	-1	-1	-1	-1
FE	920225	-1	0.9867	0.1834	-1	0.1088	-1	-1
FE	920304	-1	-1	-1	-1	-1	-1	-1
FE	920311	-1	0.8852	0.3236	-1	0.1197	0.0299	-1
FE	920318	-1	0.7669	-1	-1	0.1107	-1	-1
FE	920325	-1	0.7211	-1	-1	0.1	-1	-1

Fort Erie Water 1991-92

PentaCB	HexaCB	a-BHC	g-BHC	Heptachl	Aldrin	Hep-Epox	g-Chlord	a-Endosu
0.0149	0.0306	1.3758	0.7718	-1	-1	0.1335	-1	0.047
0.0158	0.0297	1.3194	0.4798	-1	-1	0.1269	-1	0.0445
0.0164	0.0342	1.2402	0.4954	-1	-1	0.1219	-1	0.0453
0.0156	0.0318	1.2593	0.4864	-1	-1	0.1125	-1	0.0467
0.0161	0.0269	1.3519	0.5123	-1	-1	0.1137	-1	0.0445
-1	0.0289	1.1406	0.4492	-1	-1	0.1195	-1	0.1523
-1	0.0249	1.218	0.5139	-1	-1	0.1222	-1	0.0753
-1	0.0217	1.1915	0.4863	-1	-1	0.1193	-1	0.0516
-1	0.0191	1.1576	0.538	-1	-1	0.1233	-1	0.0504
-1	0.0268	1.3598	0.6311	-1	-1	0.1437	-1	0.0401
-1	0.0241	1.0867	0.5324	-1	-1	0.1207	-1	0.0607
-1	0.0272	1.1012	0.544	-1	-1	0.1311	-1	0.0642
-1	0.0265	0.8236	0.3816	-1	-1	0.1254	-1	0.0892
-1	0.0187	1.2705	0.5732	-1	-1	0.1548	-1	0.2094
-1	0.0193	0.9957	0.4683	-1	-1	0.1389	-1	0.0665
0.0183	0.0198	0.9802	0.4535	-1	-1	0.1145	-1	0.0315
-1	0.0165	0.8763	0.4363	-1	-1	0.0707	-1	0.0384
-1	0.0207	0.7444	0.3797	-1	-1	0.1113	-1	0.0541
-1	0.0187	0.7641	0.374	-1	-1	0.0618	-1	0.0324
-1	0.0163	0.8333	0.4296	-1	-1	0.1004	-1	0.0281
-1	0.0161	0.6331	0.3441	-1	-1	0.07	-1	0.0653
-1	0.0143	0.807	0.3999	-1	-1	0.0954	-1	0.0301
-1	0.0136	0.6257	0.3386	-1	-1	0.0615	-1	0.0221
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
0.0243	0.0311	0.7097	1.3074	-1	-1	0.0964	-1	0.0266
0.0175	0.0269	0.7145	1.2218	-1	-1	0.0975	-1	0.0225
-1	0.0122	0.5785	0.2948	-1	-1	0.0936	-1	-1
-1	0.0141	0.7324	0.338	-1	-1	0.107	-1	-1
-1	0.0134	0.6308	0.3024	-1	-1	0.1	-1	-1
-1	0.0134	0.6488	0.3188	-1	-1	0.0611	-1	-1
-1	0.0142	0.7811	0.3458	-1	-1	0.1009	-1	-1
0.0225	0.0349	1.1085	1.4195	-1	-1	0.0751	-1	-1
-1	0.0178	0.7064	0.3051	-1	-1	0.0925	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	0.0177	0.882	0.3861	-1	-1	0.1109	-1	-1
-1	0.0238	0.8249	0.339	-1	-1	0.1091	-1	0.0227
-1	0.0219	0.8089	0.3391	-1	-1	0.1024	-1	-1
-1	0.0231	0.827	0.3568	-1	-1	0.1067	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	0.0152	0.6951	0.2795	-1	-1	0.0871	-1	0.0167
-1	0.0145	0.871	0.3306	-1	-1	0.1036	-1	0.021
-1	0.0213	0.815	0.3445	-1	-1	0.1134	0.0087	0.0224
-1	0.0208	0.8364	0.3457	-1	-1	0.09	-1	0.0193
-1	0.0491	1.3224	0.6297	-1	-1	0.1713	-1	0.0327
-1	0.0201	0.804	0.341	-1	-1	0.0901	-1	0.0179
-1	-1	0.1252	0.0814	-1	-1	-1	-1	-1
-1	0.0218	0.733	0.3034	-1	-1	0.0924	0.0123	0.0164
-1	0.0287	0.7014	0.3029	-1	-1	0.085	-1	-1
0.0157	0.0299	0.7894	0.3225	-1	-1	0.0976	0.0139	0.021
-1	0.0216	0.8808	0.3467	-1	-1	0.0962	0.0134	0.0205
-1	0.0216	0.7431	0.3239	-1	-1	0.0892	-1	0.0216

Fort Erie Water 1991-92

a-Chlord	Octachlo	p,p'-DDE	Dieldrin	Endrin	o,p'-DDT	p,p'-TDE	p,p'-DDT	b-Endosu
-1	-1	0.0716	0.2923	0.066	-1	0.0772	-1	-1
-1	-1	0.1064	0.2841	-1	-1	0.077	0.1026	-1
-1	-1	0.1091	0.2887	-1	-1	0.0702	0.1019	-1
-1	-1	0.0679	0.283	-1	-1	-1	-1	-1
-1	-1	0.052	0.2438	-1	-1	0.0602	-1	-1
-1	-1	0.0625	0.2703	-1	-1	0.0648	-1	-1
-1	-1	0.0454	0.2787	0.0304	-1	-1	0.0373	-1
-1	-1	0.0494	0.2664	0.0284	-1	-1	-1	-1
-1	-1	0.062	0.252	-1	-1	0.1222	-1	-1
-1	-1	0.0607	0.3382	-1	-1	0.1008	-1	-1
-1	-1	0.0629	0.2708	-1	-1	0.0651	-1	0.0117
-1	-1	0.0759	0.2985	-1	-1	0.1039	-1	-1
-1	-1	0.0868	0.2656	-1	-1	0.0861	-1	-1
-1	-1	0.0546	0.3248	0.0287	-1	0.0741	0.0623	-1
-1	-1	0.0582	0.2912	0.0335	-1	0.0889	0.0712	-1
-1	-1	0.0563	0.2414	0.0421	-1	0.0607	0.0512	-1
-1	-1	0.0511	0.3009	0.0429	-1	-1	0.0515	-1
-1	-1	0.0624	0.2455	0.1011	-1	-1	0.0571	-1
-1	-1	0.0654	0.2021	-1	-1	0.0388	0.0608	-1
-1	-1	0.0467	0.2048	-1	-1	0.0511	-1	-1
-1	-1	0.0436	0.2112	-1	-1	0.0409	0.0511	-1
-1	-1	0.0384	0.193	-1	-1	0.0574	-1	-1
-1	-1	0.0427	0.201	0.0416	-1	0.0401	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	0.1169	0.2361	-1	-1	-1	-1	-1
-1	-1	0.0909	0.1898	-1	-1	-1	-1	-1
-1	-1	0.0346	0.189	-1	-1	0.0354	0.1496	-1
-1	-1	0.0387	0.213	-1	-1	-1	0.0796	-1
-1	-1	0.0258	0.2214	-1	-1	-1	0.0844	-1
-1	-1	0.0321	0.2066	-1	-1	-1	0.0891	-1
-1	-1	0.0317	0.1981	-1	-1	-1	0.1404	-1
-1	-1	0.1149	0.2704	-1	-1	-1	0.0702	-1
-1	-1	0.0303	0.1853	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	0.0372	0.238	-1	-1	-1	0.186	-1
-1	-1	0.0601	0.2254	-1	-1	-1	0.0706	-1
-1	-1	0.0413	0.2218	-1	-1	-1	0.0742	-1
-1	-1	0.0541	0.2342	-1	-1	-1	0.0714	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	0.1837	-1	-1	-1	-1	-1
-1	-1	-1	0.2028	-1	-1	-1	-1	-1
-1	-1	-1	0.2307	-1	-1	-1	-1	-1
-1	-1	-1	0.1918	-1	-1	-1	-1	-1
-1	-1	-1	0.3375	-1	-1	-1	-1	-1
-1	-1	-1	0.1866	-1	-1	-1	-1	-1
-1	-1	-1	0.046	-1	-1	-1	-1	-1
-1	-1	-1	0.1889	-1	-1	-1	-1	-1
-1	-1	-1	0.1897	-1	-1	-1	-1	-1
-1	-1	-1	0.1957	-1	-1	0.0574	0.0513	-1
-1	-1	-1	0.1924	-1	-1	-1	-1	-1
-1	-1	-1	0.1814	-1	-1	-1	-1	-1

Endrin-A	Photomir	Mirex	Methoxyc	Hexchlor	Hxchlrcy	PCB	Naphthal	2-Methyl
-1	-1	-1	-1	-1	-1	1.9638	2.6505	1.6242
-1	-1	-1	-1	-1	-1	1.1641	0.7888	0.4647
-1	-1	-1	-1	-1	-1	1.0342	0.9277	0.3656
-1	-1	-1	-1	-1	-1	1.7669	1.9096	0.8755
-1	-1	-1	-1	-1	-1	0.9551	0.6402	0.4829
-1	-1	-1	-1	-1	-1	1.1422	0.6526	0.4185
-1	-1	-1	-1	-1	-1	1.586	0.6398	0.4551
-1	-1	-1	-1	-1	-1	1.4463	0.4917	0.3976
-1	-1	-1	-1	-1	-1	1.5635	1.2348	0.8986
-1	-1	-1	-1	-1	-1	0.902	0.7409	0.7986
-1	-1	-1	-1	-1	-1	0.8017	1.4563	1.2855
-1	-1	-1	-1	-1	-1	1.1243	1.2492	1.1691
-1	-1	-1	-1	-1	-1	1.3275	1.6344	1.2675
-1	-1	-1	-1	-1	-1	1.3523	1.3926	0.8796
-1	-1	-1	-1	-1	-1	1.7422	1.1163	0.8051
-1	-1	-1	-1	-1	-1	2.0223	1.7411	1.281
-1	-1	-1	-1	-1	-1	1.3704	1.1915	0.9045
-1	-1	-1	-1	-1	-1	1.5252	3.1503	1.9092
-1	-1	-1	-1	-1	-1	1.7958	1.9797	1.3887
-1	-1	-1	-1	-1	-1	1.0467	1.5953	1.0228
-1	-1	-1	-1	-1	-1	0.963	0.7894	0.3977
-1	-1	-1	-1	-1	-1	0.8354	0.8982	0.6372
-1	-1	-1	-1	-1	-1	1.1435	0.7249	0.3833
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	-1	-1	-1	7.6	-99.9	-99.9
-1	-1	-1	-1	-1	-1	3.7571	-99.9	-99.9
-1	-1	-1	-1	-1	-1	0.9208	1.3546	0.7837
-1	-1	-1	-1	-1	-1	0.9313	0.3308	0.2151
-1	-1	-1	-1	-1	-1	0.6592	2.2929	1.1533
-1	-1	-1	-1	-1	-1	-1	2.0309	0.9428
-1	-1	-1	-1	-1	-1	1.2734	2.5214	0.8241
-1	0.0143	-1	-1	-1	-1	4.3643	6.1289	1.5041
-1	-1	-1	-1	-1	-1	1.3465	7.5364	1.3813
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	-1	-1	-1	0.9086	4.6488	0.9438
-1	-1	-1	-1	-1	-1	0.8522	4.5623	1.5858
-1	-1	-1	-1	-1	-1	1.0646	6.172	1.5467
-1	-1	-1	-1	-1	-1	1.2443	5.7412	1.4711
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	-1	-1	-1	-1	6.901	1.6935
-1	-1	-1	-1	-1	-1	-1	7.1912	2.1709
-1	-1	-1	-1	-1	-1	-1	1.6908	0.2862
-1	-1	-1	-1	-1	-1	0.5911	3.5077	0.5792
-1	-1	-1	-1	-1	-1	-1	5.069	0.8402
-1	-1	-1	-1	-1	-1	-1	2.3732	0.8095
-1	-1	-1	-1	-1	-1	-1	1.9003	0.5682
-1	-1	-1	-1	-1	-1	-1	4.6364	1.424
-1	-1	-1	-1	-1	-1	-1	5.3545	2.1332
-1	-1	-1	-1	-1	-1	-1	2.8522	1.1371
-1	-1	-1	-1	-1	-1	0.6127	2.9581	0.6618
-1	-1	-1	-1	-1	-1	-1	6.7183	1.3872

Fort Erie Water 1991-92

1-Methyl	2-Chloro	Acenapht	Fluorene	Anthrace	Phenanth	Fluorant	Pyrene	Benzo(a)
0.7273	-1	-1	0.6303	-1	3.7535	0.9131	-1	-1
0.3301	-1	0.0859	0.4253	-1	1.1261	0.9747	0.3253	0.0602
0.3046	-1	0.119	0.4423	-1	1.0092	1.0715	0.3355	0.1525
0.6425	-1	0.1703	0.5525	-1	1.1094	1.214	0.4068	0.1816
0.2872	-1	0.1139	0.461	-1	1.0219	0.4429	0.1307	-1
0.4596	0.1145	0.1211	0.4295	-1	0.925	0.8722	0.2462	-1
0.401	-1	0.0988	0.3134	-1	0.8622	0.7815	0.1889	0.1314
0.3681	-1	-1	0.2878	-1	0.7617	0.5797	0.1621	0.0928
0.8466	-1	0.0997	0.4515	-1	1.377	0.8319	0.299	0.0906
0.4303	-1	0.5013	0.4703	-1	1.3798	0.8784	0.2351	0.2307
0.672	-1	-1	0.3795	-1	1.2211	1.047	0.3919	0.1469
0.801	-1	0.1433	0.3605	-1	1.2766	0.5944	0.2024	-1
0.9165	-1	0.1338	0.4139	-1	1.3486	0.5432	0.1784	-1
0.6627	-1	0.1802	0.4371	-1	1.2252	0.4924	0.1691	-1
0.5757	-1	0.1284	0.2528	-1	0.9879	0.4512	0.1673	0.0739
0.8084	-1	0.1621	0.3433	-1	1.1218	0.4364	0.1288	-1
0.5453	-1	-1	0.3583	-1	1.1495	0.4152	0.1491	-1
1.042	-1	0.1621	0.2619	-1	1.1438	0.4281	0.1589	-1
0.8402	-1	0.1399	0.3285	-1	1.0844	0.3696	0.1568	-1
0.6368	-1	0.1159	0.2821	-1	1.4874	0.4395	0.1478	-1
0.3621	-1	0.1319	0.3046	-1	1.765	0.4476	0.1958	-1
0.5041	-1	-1	0.3058	-1	1.3749	0.4524	0.1392	-1
0.3448	-1	-1	0.2273	-1	1.0523	0.4214	0.154	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
0.5393	-1	0.1923	0.4099	-1	2.3622	0.8814	0.3165	0.2051
0.2105	-1	0.1276	0.4048	-1	2.2615	0.7985	0.3044	0.1849
0.8335	-1	0.1707	0.5505	-1	2.0948	0.7428	0.2428	0.1476
0.7302	-1	0.1353	0.4194	-1	1.6266	0.6533	0.1697	0.0754
0.684	-1	0.2398	0.3947	-1	2.0621	0.7834	0.2214	0.0787
1.2688	-1	-1	0.9188	-1	7.2237	1.1255	0.9209	-1
1.1294	-1	0.3085	0.7651	-1	2.8598	1.2366	0.4541	0.0993
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
0.6864	-1	0.3453	0.6872	-1	2.7295	1.3145	0.4704	0.2874
1.0929	-1	0.5879	0.9492	-1	3.1468	1.8845	0.9379	0.3022
1.2008	-1	0.421	0.9605	-1	3.153	1.5945	0.5885	0.1519
1.1423	-1	0.5697	0.8943	-1	3.9297	2.8797	1.5277	0.3479
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
1.1426	-1	0.4642	0.7468	-1	2.3354	0.9094	0.2872	-1
1.5526	-1	0.5936	1.0022	-1	3.1325	1.4481	0.6176	0.2473
0.2732	-1	0.2337	0.4237	-1	1.8513	0.3773	0.1518	-1
0.483	-1	0.2589	0.2406	-1	1.52	0.4727	0.3024	0.1465
0.6452	-1	0.2739	0.5849	-1	2.1233	2.0265	1.2951	-1
0.7063	-1	0.2651	0.3183	-1	1.1626	0.4719	0.1725	-1
0.2926	-1	-1	0.1609	-1	1.0677	0.3763	0.207	-1
1.1126	-1	0.3505	0.3572	-1	1.5632	0.6454	0.4807	-1
1.2471	-1	0.2335	0.5233	-1	2.2109	1.2219	0.4819	-1
1.0124	-1	0.2001	0.41	-1	2.2245	1.5891	0.8038	0.2057
0.5056	-1	0.2168	0.5119	-1	1.4766	0.8051	0.376	-1
0.9599	-1	0.3226	0.6157	-1	1.9535	0.5405	0.1563	-1

Chrysene	Benzo(b/	Benz(a)p	Indenopy	Dibenzo(	Benzo(gh	Dimethyl	Diethylp	Di-n-but
-1	-1	-1	-1	-1	-1	3.3131	54.873	23.576
0.2691	0.2807	-1	-1	-1	-1	1.4321	15.317	17.552
0.4536	0.8898	-1	0.1002	-1	0.1046	1.2301	9.6266	14.227
0.3217	0.3364	-1	0.0432	-1	0.0476	1.4224	9.585	12.884
-1	0.1333	-1	-1	-1	-1	1.2505	13.851	16.893
0.2997	0.3275	-1	-1	-1	-1	1.0727	7.7831	9.6366
0.1288	-1	-1	-1	-1	-1	1.1387	11.573	10.455
0.0823	0.1163	-1	-1	-1	-1	1.3125	14.614	16.943
0.2136	0.1945	-1	-1	-1	-1	1.1352	13.521	12.956
0.2085	0.1775	-1	-1	-1	-1	1.5883	18.256	12.365
0.2847	0.217	-1	-1	-1	-1	2.0099	17.491	16.632
0.1324	0.1421	-1	-1	-1	-1	1.4996	19.077	37.246
0.0892	0.1204	-1	-1	-1	-1	1.8841	20.71	47.074
0.1258	0.1093	-1	-1	-1	-1	0.9414	14.748	6.9538
0.105	0.1089	-1	-1	-1	-1	0.8596	15.309	6.7211
0.1047	0.1147	-1	-1	-1	-1	1.2527	18.99	10.953
0.1237	0.108	-1	-1	-1	-1	1.0431	22.497	11.995
0.0986	0.0827	-1	-1	-1	-1	0.7963	14.436	10.369
0.117	0.0793	-1	-1	-1	-1	0.9606	11.793	42.64
0.0955	0.1043	-1	-1	-1	-1	0.9952	12.458	17.828
0.1487	0.1559	-1	-1	-1	-1	0.9888	13.808	15.715
0.1305	0.0931	-1	-1	-1	-1	1.2814	21.131	9.8486
0.1402	0.1053	-1	-1	-1	-1	0.6544	10.16	9.6467
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
0.2772	0.2564	-1	-1	-1	-1	1.2668	20.186	14.561
0.3992	0.3975	-1	-1	-1	-1	1.2959	18.345	17.099
0.2109	0.3187	-1	-1	-1	-1	1.8539	24.713	15.443
0.2188	0.1222	-1	-1	-1	-1	0.966	14.193	6.6807
0.248	0.2938	-1	-1	-1	-1	1.1068	14.775	9.9497
-1	-1	-1	-1	-1	-1	4.7988	160.73	47.742
0.3892	0.292	-1	-1	-1	-1	1.9173	29.103	17.492
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
0.3491	-1	-1	-1	-1	-1	1.4417	26.915	14.461
0.5445	0.845	-1	0.0799	-1	0.1633	1.7651	25.369	16.706
0.3952	0.4043	-1	-1	-1	-1	1.6564	27.071	21.376
0.7457	1.1939	0.3479	0.3088	-1	0.3633	1.6558	23.573	17.973
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
0.2264	0.1954	-1	-1	-1	-1	0.8751	17.063	16.228
0.4024	0.3167	-1	-1	-1	-1	1.0831	14.916	7.5991
0.1631	0.1999	-1	-1	-1	-1	0.5616	5.9722	3.7229
0.2747	0.3471	-1	-1	-1	-1	1.2368	13.667	14.214
0.555	0.813	0.2553	0.1631	-1	0.1718	2.248	30.784	18.594
0.1065	0.154	-1	-1	-1	-1	2.5928	20.285	8.5375
-1	-1	-1	-1	-1	-1	2.2427	33.613	29.663
0.2015	0.2799	-1	-1	-1	-1	2.6563	24.041	8.5148
0.2516	0.3124	0.0414	0.0912	-1	0.0944	2.1184	22.982	44.736
0.5943	0.9811	0.2237	0.1607	-1	0.1782	1.2181	10.883	9.7326
0.2454	0.2765	0.0616	-1	-1	-1	1.788	12.517	8.7435
0.1368	0.171	-1	-1	-1	-1	1.1639	7.4675	6.7221

Benzylbu	Bis(2-et	Dioctylp	Phenol	2,4-Dich	2,3-Dich	2,6-Dich	3-met,4-	2,3,5-Tr
8.8646	-1	12.743	2.1135	-1	-1	-1	-1	-1
4.5221	180.17	1.3759	1.15	-1	-1	-1	-1	-1
6.8096	44.543	1.8636	1.59	-1	-1	-1	-1	-1
2.856	287.45	3.3294	2.103	-1	-1	-1	-1	-1
1.9823	90.853	1.8617	1.92	-1	-1	-1	-1	-1
1.8656	97.7	0.5561	-1	-1	-1	-1	-1	-1
23.313	366.95	43.578	-1	-1	-1	-1	-1	-1
4.9035	611.71	7.2023	6.5155	-1	-1	-1	-1	-1
16.272	363.65	20.706	30.449	-1	-1	-1	-1	-1
3.2209	150.34	9.5342	-1	-1	-1	-1	-1	-1
2.9666	174.6	0.8115	0.92	-1	-1	-1	-1	-1
2.5354	101.81	0.6724	4.518	-1	-1	-1	-1	-1
2.9907	-1	2.124	-1	-1	-1	-1	-1	-1
6.0573	7.5505	1.7452	2.9505	-1	-1	-1	-1	-1
4.3563	61.307	2.0459	5.577	-1	-1	-1	-1	-1
2.9609	32.381	0.5	1.609	-1	-1	-1	-1	-1
2.7275	33.318	0.5715	1.7195	-1	-1	-1	-1	-1
2.4521	56.178	2.5796	-1	-1	-1	-1	-1	-1
2.8716	47.091	1.2433	2.165	-1	-1	-1	-1	-1
2.3915	27.661	0.5481	4.9445	-1	-1	-1	-1	-1
2.6747	752.68	0.4988	-1	-1	-1	-1	-1	-1
1.8847	48.592	0.5724	9.6045	-1	-1	-1	-1	-1
1.3302	28.774	0.4234	2.539	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-99.9	-99.9	-99.9	-1	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	18.312	-1	-1	-1	-1	-1
9.6442	933	2.385	3.7935	-1	-1	-1	-1	-1
7.7883	54.928	2.2236	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
6.4385	30.371	19.651	3.162	-1	-1	-1	-1	-1
2.5242	11.559	0.8786	1.6245	-1	-1	-1	-1	-1
3.514	18.409	0.6615	1.48	-1	-1	-1	-1	-1
11.961	15600	-1	0.76	-1	-1	-1	-1	-1
5.4913	100.74	1.0149	3.5655	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	2.075	-1	-1	-1	-1	-1
3.183	50.102	2.273	1.515	-1	-1	-1	-1	-1
4.3239	39.667	0.8172	1.75	-1	-1	-1	-1	-1
4.0885	73.018	1.9985	3.1665	-1	-1	-1	-1	-1
4.3159	67.564	0.9688	1.33	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-99.9	-99.9	-99.9	-1	-1	-1	-1	-1	-1
3.4499	31.396	7.4176	-1	-1	-1	-1	-1	-1
3.8453	68.426	7.1506	-1	-1	-1	-1	-1	-1
1.8873	34.818	0.6023	-1	-1	-1	-1	-1	-1
3.1563	14.856	0.4344	2.324	-1	-1	-1	-1	-1
3.2699	192.38	0.9589	-1	-1	-1	-1	-1	-1
2.3494	138.77	21.093	3.3435	-1	-1	-1	-1	-1
9.6388	-1	14.01	3.04	-1	-1	-1	-1	-1
4.0604	24.677	0.6792	1.996	-1	-1	-1	-1	-1
8.1455	62.203	2.4909	13.883	-1	-1	-1	-1	-1
2.9362	16.622	1.0604	4.919	-1	-1	-1	-1	-1
7.1106	17.795	0.4792	1.006	-1	-1	-1	-1	-1
3.7584	12.254	0.4637	15.276	-1	-1	-1	-1	-1

2,4,6-Tr	2,4,5-Tr	2,3,4-Tr	3,5-Dich	2,3,6-Tr	3,4-Dich	3,4,5-Tr	Pentachl	Atrazine
-1	-1	-1	-1	-1	-1	-1	-1	61.628
-1	-1	-1	-1	-1	-1	-1	-1	60.122
-1	-1	-1	-1	-1	-1	-1	-1	78.553
-1	-1	-1	-1	-1	-1	-1	-1	92.313
-1	-1	-1	-1	-1	-1	-1	-1	66.179
-1	-1	-1	-1	-1	-1	-1	-1	107.79
-1	-1	-1	-1	-1	-1	-1	-1	114.47
-1	-1	-1	-1	-1	-1	-1	-1	91.174
-1	-1	-1	-1	-1	-1	-1	-1	106.18
-1	-1	-1	-1	-1	-1	-1	-1	83.239
-1	-1	-1	-1	-1	-1	-1	-1	88.271
-1	-1	-1	-1	-1	-1	-1	-1	77.148
-1	-1	-1	-1	-1	-1	-1	-1	79.209
-1	-1	-1	-1	-1	-1	4.8715	-1	49.202
-1	-1	-1	-1	-1	-1	-1	-1	41.373
-1	-1	-1	-1	-1	-1	-1	-1	55.55
-1	-1	-1	-1	-1	-1	-1	-1	52.013
-1	-1	-1	-1	-1	-1	-1	-1	45.834
-1	-1	-1	-1	-1	-1	-1	-1	47.091
-1	-1	-1	-1	-1	-1	-1	-1	48.809
-1	-1	-1	-1	-1	-1	-1	-1	50.829
-1	-1	-1	1.2355	-1	-1	-1	-1	48.073
-1	-1	-1	-1	-1	-1	-1	-1	50.266
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	-1	-1	-1	-1	-1	-99.9
-1	-1	-1	-1	-1	-1	-1	-1	-99.9
-1	-1	-1	-1	-1	-1	-1	-1	39.097
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	115.01
-1	-1	-1	-1	-1	-1	-1	-1	109.72
-1	-1	-1	-1	-1	-1	-1	-1	70.073
-1	-1	-1	-1	-1	-1	-1	-1	85.297
-1	-1	-1	-1	-1	-1	-1	-1	98.452
-1	-1	-1	-1	-1	-1	-1	-1	97.419
-1	-1	-1	-1	-1	-1	2.5185	2.657	-99.9
-1	-1	-1	-1	-1	-1	-1	-1	87.417
-1	-1	-1	-1	-1	-1	-1	-1	93.571
-1	-1	-1	-1	-1	-1	-1	-1	88.261
-1	-1	-1	-1	-1	-1	-1	-1	107.31
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	-1	-1	-1	9.154	13.308	-99.9
-1	-1	-1	-1	-1	-1	6.785	-1	57.566
-1	-1	-1	-1	-1	-1	-1	-1	65.035
-1	-1	-1	-1	-1	-1	5.2355	-1	20.733
-1	-1	-1	-1	-1	-1	-1	-1	34.263
-1	-1	-1	-1	-1	-1	-1	-1	83.477
-1	-1	-1	-1	-1	-1	-1	-1	34.526
-1	-1	-1	-1	-1	-1	-1	-1	12.767
-1	-1	-1	-1	-1	-1	-1	-1	54.56
-1	-1	-1	-1	-1	-1	-1	-1	92.686
-1	-1	-1	-1	-1	-1	-1	-1	54.707
-1	-1	-1	-1	-1	-1	-1	-1	49.245
-1	-1	-1	-1	-1	-1	-1	-1	35.591

Metolach	2,3,7,8-TCDD	
28.885	-1	
24.758	-1	
27.272	-1	
33.396	-1	
20.466	-1	
27.411	-1	
33.733	-1	
26.466	-1	
26.218	-1	
22.258	-1	
22.22	-1	
28.047	-1	
23.265	-1	
15.333	-1	
19.047	-1	
17.954	-1	
17.726	-1	
15.127	-1	
17.364	-1	
13.152	-1	
13.081	-1	
12.503	-1	
12.139	-1	
-99.9	-99.9	
-99.9	-99.9	
-99.9	-99.9	
39.354	-1	
43.346	-1	
32.05	-1	
26.397	-1	
27.29	-1	
17.701	-1	
32.047	-1	
-99.9	-99.9	
33.018	-1	
37.832	-1	
44.249	-1	
47.31	-1	
-99.9	-99.9	
-99.9	-99.9	
20.132	-1	
22.685	-1	
14.788	-1	
21.598	-1	
24.781	-1	
12.734	-1	
3.5108	-1	
25.64	-1	
36.783	-1	
26.39	-1	
18.638	-1	
21.201	-1	

Fort Erie Suspended Solids 1991-92

		1,3-DiCB	1,4-DiCB	1,2-DiCB	1,3,5-Tr	1,2,4-Tr	1,2,3-Tr	1,2,3,4-
FE	910404	-1	-1	-1	-1	-1	-1	-1
FE	910410	-1	-1	-1	-1	-1	-1	-1
FE	910417	-1	-1	-1	-1	-1	-1	-1
FE	910424	-1	-1	-1	-1	-1	-1	-1
FE	910501	-1	-1	-1	-1	-1	-1	-1
FE	910508	-1	-1	-1	-1	-1	-1	-1
FE	910515	-1	-1	-1	-1	-1	-1	-1
FE	910522	-1	-1	-1	-1	-1	-1	-1
FE	910529	-1	-1	-1	-1	-1	-1	-1
FE	910605	-1	-1	-1	-1	-1	-1	-1
FE	910612	-1	-1	-1	-1	-1	-1	-1
FE	910619	-1	-1	-1	-1	-1	-1	-1
FE	910626	-1	-1	-1	-1	-1	-1	-1
FE	910703	-1	-1	-1	-1	-1	-1	-1
FE	910710	-1	-1	-1	-1	-1	-1	-1
FE	910717	-1	-1	-1	-1	-1	-1	-1
FE	910724	-1	-1	-1	-1	-1	-1	-1
FE	910731	-1	-1	-1	-1	-1	-1	-1
FE	910807	-1	-1	-1	-1	-1	-1	-1
FE	910814	-1	-1	-1	-1	-1	-1	-1
FE	910821	-1	-1	-1	-1	-1	-1	-1
FE	910828	-1	-1	-1	-1	-1	-1	-1
FE	910904	-1	-1	-1	-1	-1	-1	-1
FE	910911	-1	-1	-1	-1	-1	-1	-1
FE	910918	-1	-1	-1	-1	-1	-1	-1
FE	910925	-1	-1	-1	-1	-1	-1	-1
FE	911002	-1	-1	-1	-1	-1	-1	-1
FE	911009	-1	-1	-1	-1	-1	-1	-1
FE	911016	-1	-1	-1	-1	-1	-1	-1
FE	911023	-1	-1	-1	-1	-1	-1	-1
FE	911030	-1	-1	-1	-1	6.2374	2.5411	9.847
FE	911106	-1	-1	-1	-1	-1	-1	-1
FE	911113	-1	-1	-1	-1	-1	-1	-1
FE	911120	-1	-1	-1	-1	-1	-1	-1
FE	911127	-1	-1	-1	-1	-1	-1	-1
FE	911204	-1	-1	-1	-1	-1	-1	-1
FE	911211	-1	-1	-1	-1	-1	-1	-1
FE	911218	-1	-1	-1	-1	-1	-1	-1
FE	911225	-1	-1	-1	-1	-1	-1	-1
FE	920101	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
FE	920107	-1	-1	-1	-1	-1	-1	-1
FE	920114	-1	-1	-1	-1	-1	-1	-1
FE	920121	-1	-1	-1	-1	-1	-1	-1
FE	920128	-1	-1	-1	-1	-1	-1	-1
FE	920204	-1	-1	-1	-1	-1	-1	-1
FE	920211	-1	-1	-1	-1	-1	-1	-1
FE	920218	-1	-1	-1	-1	-1	-1	-1
FE	920225	-1	-1	-1	-1	-1	-1	-1
FE	920304	-1	-1	-1	-1	-1	-1	-1
FE	920311	-1	-1	-1	-1	-1	-1	-1
FE	920318	-1	-1	-1	-1	-1	-1	-1
FE	920325	-1	-1	-1	-1	-1	-1	-1

Fort Erie Suspended Solids 1991-92

PentaCB	HexaCB	a-BHC	g-BHC	Heptachl	Aldrin	Hep-Epox	g-Chlord	a-Endosu
-1	1.3215	-1	-1	-1	-1	-1	-1	-1
-1	1.301	-1	-1	-1	-1	-1	-1	-1
-1	0.8998	-1	-1	-1	-1	-1	-1	-1
-1	0.8515	-1	-1	-1	-1	-1	-1	-1
-1	0.9081	-1	-1	-1	-1	1.8429	1.8697	-1
-1	1.1179	-1	-1	-1	-1	-1	-1	-1
-1	1.1089	-1	1.2068	-1	-1	1.7613	2.4462	-1
-1	1.4959	1.5333	1.5333	-1	-1	4.7494	4.4877	-1
-1	-1	-1	0.863	-1	-1	-1	3.1284	-1
-1	-1	-1	-1	-1	-1	-1	1.8785	-1
-1	-1	-1	-1	-1	-1	-1	3.7466	-1
-1	-1	-1	0.7242	-1	-1	-1	-1	-1
-1	-1	-1	1.1644	-1	-1	-1	-1	-1
-1	1.1477	-1	-1	-1	-1	-1	-1	-1
-1	1.4307	-1	-1	-1	-1	-1	-1	-1
-1	1.4553	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	0.701	-1	-1	-1	-1	-1	-1	-1
-1	1.6999	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	8.1862
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	4.171	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
4.7358	4.9668	8.0855	3.4652	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	0.6966	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	0.8965	1.3661	-1
-1	-1	-1	-1	-1	-1	0.9611	-1	-1
-1	1.4256	-1	-1	-1	-1	-1	-1	-1
-1	0.7937	-1	-1	-1	-1	0.8818	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	1.4589	-1	-1	-1	-1	1.8966	-1	-1
0.5905	1.0783	-1	-1	-1	-1	-1	-1	-1
-1	0.8867	-1	-1	-1	-1	-1	-1	-1
-1	1.0175	-1	-1	-1	-1	0.9732	-1	-1
-1	1.094	-1	-1	-1	-1	1.1639	-1	-1

Fort Erie Suspended Solids 1991-92

a-Chlord	Octachlo	p,p'-DDE	Dieldrin	Endrin	o,p'-DDT	p,p'-TDE	p,p'-DDT	b-Endosu
0.8202	-1	26.749	2.2329	-1	-1	24.972	18.546	-1
-1	-1	50.875	1.6599	-1	6.55	42.665	42.127	-1
-1	-1	15.806	1.0563	-1	-1	9.4679	12.578	-1
-1	-1	15.221	1.6498	-1	-1	16.924	10.059	-1
-1	-1	25.962	6.1966	-1	-1	35.657	13.488	-1
-1	-1	17.032	2.1482	-1	-1	16.155	10.631	-1
-1	-1	39.791	7.4038	-1	-1	38.878	25.212	-1
-1	-1	74.944	15.183	-1	5.5722	72.625	47.008	-1
-1	-1	73.085	6.7422	1.9417	6.8231	106.31	63.538	-1
-1	-1	39.063	3.2424	-1	-1	57.669	15.26	-1
-1	-1	42.259	3.7466	-1	-1	46.226	40.165	-1
-1	-1	66.593	3.2116	-1	-1	79.975	17.191	-1
-1	-1	55.893	7.6217	-1	-1	58.045	18.243	-1
-1	-1	57.536	4.2846	-1	5.0115	74.101	35.731	-1
-1	-1	44.089	2.4849	-1	-1	48.908	14.157	-1
-1	-1	53.888	3.9085	-1	-1	51.809	30.27	-1
-1	-1	20.612	1.8642	-1	-1	19.838	11.185	-1
-1	-1	25.087	-1	-1	-1	24.081	8.8133	-1
-1	-1	20.154	-1	-1	-1	34.56	7.0803	-1
-1	-1	20.399	2.5499	-1	-1	22.556	11.54	-1
-1	-1	18.379	-1	-1	-1	22.994	9.1091	-1
-1	-1	32.549	-1	-1	-1	29.412	12.314	-1
-1	-1	16.162	2.952	-1	-1	17.269	5.6089	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	9.8918	-1	-1	-1	7.0325	12.906	-1
-1	-1	19.323	-1	-1	-1	9.1339	11.718	-1
-1	-1	11.145	1.5106	-1	-1	8.7278	-1	-1
-1	-1	2.9631	-1	-1	-1	-1	3.7564	-1
-1	-1	3.6496	-1	-1	-1	-1	4.2492	-1
-1	-1	11.973	2.3375	-1	-1	12.543	-1	-1
2.1369	-1	10.54	2.9165	-1	-1	6.5839	-1	-1
-1	-1	6.6114	-1	-1	-1	4.8265	-1	-1
-1	-1	8.3377	-1	-1	-1	7.8892	-1	-1
-1	-1	9.8224	1.5413	-1	-1	9.4566	6.0084	-1
-1	-1	2.4254	-1	-1	-1	-1	-1	-1
-1	-1	5.8243	-1	-1	-1	3.8893	4.2376	-1
-1	-1	3.8654	-1	-1	-1	2.4102	2.8195	-1
-1	-1	-1	-1	-1	-1	5.7061	3.9835	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	-1	-1	-1	4.6605	4.4194	-1
-1	-1	-1	-1	-1	-1	5.2935	7.3853	-1
-1	-1	-1	-1	-1	-1	7.7936	4.743	-1
-1	-1	-1	1.3321	-1	-1	3.1316	5.6555	-1
-1	-1	-1	1.0582	-1	-1	5.4674	-1	-1
-1	-1	5.3749	1.3098	-1	-1	4.878	3.2294	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	17.216	2.105	-1	-1	14.589	14.402	-1
-1	-1	6.3158	1.5019	-1	-1	9.3325	7.9974	-1
-1	-1	-1	0.7488	-1	-1	3.4286	-1	-1
-1	-1	6.127	1.106	-1	-1	7.5868	-1	-1
-1	-1	10.056	1.7924	-1	-1	22.812	-1	-1

Fort Erie Suspended Solids 1991-92

Endrin-A	Photomir	Mirex	Methoxyc	Hexchlor	Hxchlrcy	PCB	Naphthal	2-Methyl
-1	-1	-1	-1	-1	-1	135.16	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	41.491	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	435.76	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	372.6	-1	-1
-1	-1	-1	-1	-1	-1	152.24	-1	-1
-1	-1	-1	12.001	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	10.496	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	0.6777	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	91.569	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	134.47	-1	-1
-1	-1	-1	-1	-1	-1	25.408	-1	-1
-1	-1	-1	-1	-1	-1	46.637	-1	-1
-1	-1	-1	-1	-1	-1	205.39	-1	-1
-1	-1	-1	-1	0.8663	-1	93.098	54.057	27.751
-1	-1	-1	-1	-1	-1	54.399	-1	-1
-1	-1	-1	-1	-1	-1	128.87	-1	-1
-1	-1	-1	-1	-1	-1	85.946	41.014	-1
-1	-1	-1	-1	-1	-1	20.716	-1	-1
-1	-1	-1	-1	-1	-1	25.581	-1	-1
-1	-1	-1	-1	-1	-1	41.428	-1	-1
-1	-1	-1	-1	-1	-1	43.567	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	-1	-1	-1	15.789	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	51.651	-1	-1
-1	-1	-1	-1	-1	-1	62.631	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	61.713	-1	-1
-1	-1	-1	-1	0.2824	-1	45.456	-1	-1
-1	-1	-1	-1	-1	-1	35.015	-1	-1
-1	-1	-1	-1	-1	-1	41.628	-1	-1
-1	-1	-1	-1	-1	-1	40.247	-1	-1

Fort Erie Suspended Solids 1991-92

1-Methyl	2-Chloro	Acenapht	Fluorene	Anthrace	Phenanth	Fluorant	Pyrene	Benzo(a)
-1	-1	-1	-1	48.622	134.65	206.04	190.84	157.37
104.6	-1	-1	19.919	82.548	252.58	566.35	294.3	283.98
-1	-1	-1	-1	-1	124.88	217.47	104.66	136.39
-1	-1	-1	-1	-1	131.72	260.88	129.46	168.73
-1	-1	-1	19.231	-1	248.37	389.96	203.95	273.32
-1	-1	-1	-1	55.458	216.55	247.96	185.88	168.3
-1	-1	-1	-1	-1	432.75	303.33	248.86	291.36
-1	-1	-1	-1	-1	716.6	487.29	409.87	514.58
-1	-1	-1	34.331	-1	869.82	923.57	788.97	616.88
-1	-1	-1	-1	144.11	464.15	447.09	376.25	343.95
-1	-1	-1	30.028	-1	663.66	782.87	651.24	458.54
-1	-1	-1	21.883	73.268	221.6	433.66	304.28	368.42
-1	-1	-1	19.301	89.979	249.36	419.76	302.08	412.67
-1	-1	-1	-1	114.38	223.41	454.09	303.37	208.49
-1	-1	-1	-1	140.06	239.83	357.38	286.52	234.56
-1	-1	-1	-1	138.88	291.6	495.51	375.88	310.6
-1	-1	-1	-1	-1	272.18	197.57	182.2	217.76
-1	-1	-1	33.276	-1	457.15	402.32	274.71	191.22
-1	-1	-1	-1	-1	229.34	274.69	222.22	163.55
-1	-1	-1	-1	-1	188.89	210.2	146.78	163.35
-1	-1	-1	-1	-1	306.66	269.66	201.04	173.31
-1	-1	-1	-1	-1	322.78	181.18	152.94	131.22
-1	-1	-1	-1	-1	203.54	127.31	95.203	90.185
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	279.79	133.31	115.53	109.08
-1	-1	-1	-1	-1	249.38	248.18	170.67	198.84
-1	-1	-1	16.146	-1	190	395.43	271.9	228.26
-1	-1	-1	-1	-1	142.65	114.47	78.325	75.198
-1	-1	-1	-1	-1	125.52	122.05	84.958	147.91
-1	-1	-1	-1	-1	149.49	204.1	181.58	138.14
19.55	-1	-1	12.706	91.25	213.98	307.19	218.31	176.26
-1	-1	-1	-1	-1	118.4	148.64	112.24	121.27
-1	-1	-1	-1	-1	178.39	252.19	184.38	149.97
12.591	-1	-1	13.062	-1	304.05	512.93	363.58	212.72
-1	-1	-1	-1	-1	73.559	87.992	61.233	50.199
-1	-1	-1	-1	-1	86.32	148.76	105.07	69.853
-1	-1	-1	-1	-1	211.07	87.085	73.101	122.08
-1	-1	-1	-1	-1	177.97	99.785	60.632	84.156
-1	-1	-1	-1	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	-1	-1	177.18	50.623	50.944	-1
-1	-1	-1	-1	-1	264.48	266.08	217.63	123.65
-1	-1	-1	-1	-1	182.66	124.53	123.44	79.085
-1	-1	-1	-1	-1	233.75	148.47	133.79	150.69
-1	-1	-1	-1	-1	252.87	110.67	86.861	160.05
-1	-1	-1	-1	-1	227.12	94.625	84.011	116.26
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	182.01	406.07	343.96	298.17	172.93
-1	-1	-1	-1	-1	209.33	155.02	138.99	118.4
-1	-1	-1	-1	-1	277.64	153.83	120.73	151.33
-1	-1	-1	-1	-1	297.77	147.07	102.63	158.44
-1	-1	-1	-1	-1	322.53	201.09	-1	149.44

Fort Erie Suspended Solids 1991-92

Chrysene	Benzo(b/	Benz(a)p	Indenopy	Dibenzo(	Benzo(gh	Dimethyl	Diethylp	Di-n-but
168.76	248.89	103.21	-1	-1	-1	-1	166.71	342.58
235.02	386.63	132.41	-1	-1	138.58	-1	200.52	154.6
134.23	210.09	33.744	49.628	-1	51.956	-1	90.376	96.127
158.78	286.46	65.993	76.237	-1	82.81	-1	110.43	126.4
153.71	346.9	95.192	-1	-1	-1	-1	107.91	451.44
158.29	267.8	76.523	59.185	-1	66.857	-1	100.39	89.982
133.37	356.65	81.703	-1	-1	-1	-1	175.86	1216.6
182.8	512.98	121.91	-1	-1	-1	-1	322.74	1492.7
559.41	1144.9	248.22	-1	-1	202.29	-1	-1	129.83
306	478.49	133.97	-1	-1	-1	-1	210.5	111.5
455.18	879.06	384.68	-1	-1	177.14	-1	171.9	113.28
243.51	394.49	174.15	204.6	-1	152.36	-1	109.63	97.135
233.1	354.69	165.77	184.19	-1	139.84	-1	147.64	367.47
222.26	586.84	177.51	-1	-1	-1	-1	155.2	141.16
170.11	609.26	207.94	-1	-1	-1	-1	207.08	257.98
237.09	828.07	290.48	-1	-1	-1	-1	-1	433.51
135.88	450.79	147.2	-1	-1	-1	-1	-1	376.05
171.1	529.46	157.46	-1	-1	-1	-1	-1	166.41
161.48	424.82	163.23	-1	-1	-1	-1	-1	137.75
106.24	353.35	116.25	-1	-1	-1	-1	-1	163.29
192.05	527.33	175.88	-1	-1	-1	-1	-1	272.95
201.06	351.57	136.47	-1	-1	-1	-1	214.31	246.71
94.059	215.98	55.904	-1	-1	-1	-1	-1	467.2
-1	-1	-1	-1	-1	-1	-1	-1	-1
146.64	204.25	59.892	-1	-1	-1	-1	-1	313.06
144.54	383.19	162.85	-1	-1	-1	-1	-1	406.66
279.62	508.9	168.85	-1	-1	-1	-1	43.639	226.25
100.82	197.67	54.806	-1	-1	-1	-1	54.316	145.1
97.289	227.14	84.411	-1	-1	-1	-1	67.127	142.7
139.14	364.45	124.77	-1	-1	-1	-1	54.732	155.3
208.87	330.44	150.85	63.298	-1	72.827	-1	48.137	209.85
111.04	239.84	91.73	50.804	-1	81.976	-1	49.673	247.44
179.71	337.15	131.87	86.992	-1	125.88	-1	43.008	194.51
340.1	613.43	218.65	164.97	-1	204.39	-1	45.533	281.58
80.278	136.98	43.141	-1	-1	-1	-1	40.179	216.68
112.69	160.53	55.128	29.102	-1	46.014	-1	42.067	71.478
72.397	171.33	65.689	-1	-1	-1	-1	66.394	193.66
70.86	164.18	71.147	-1	-1	-1	-1	105.87	205.98
-1	-1	-1	-1	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
73.905	108.1	-1	-1	-1	-1	-1	-1	105.18
241.05	399.53	175.15	-1	-1	-1	-1	-1	175.54
96.135	222.15	97.179	-1	-1	-1	-1	-1	90.389
134.8	325.52	139.68	-1	-1	-1	-1	-1	133.37
93.474	232.36	111.99	-1	-1	-1	-1	-1	120.59
66.283	231.41	80.646	-1	-1	-1	-1	-1	129.49
-1	-1	-1	-1	-1	-1	-1	-1	-1
279.64	649.77	235.76	-1	-1	-1	-1	-1	146.06
135.29	377.45	114.15	-1	-1	-1	-1	-1	110.67
99.074	249.12	82.542	-1	-1	-1	-1	-1	95.094
141.72	277.02	-1	-1	-1	-1	-1	-1	122.27
143.41	368.41	146.88	-1	-1	-1	-1	-1	266.11

Fort Erie Suspended Solids 1991-92

Benzylbu	Bis(2-et	Dioctylp	Phenol	2,4-Dich	2,3-Dich	2,6-Dich	3-met,4-	2,3,5-Tr
560.56	1639.1	67.783	-1	-1	-1	-1	-1	-1
541.43	2750	75.819	-1	-1	-1	-1	-1	-1
132.55	471.48	-1	-1	-1	-1	-1	-1	-1
171.77	885.74	35.098	-1	-1	-1	-1	-1	-1
1492.3	782.91	-1	147.09	-1	-1	-1	-1	-1
161.73	1284.3	-1	-1	-1	-1	-1	-1	-1
1639.5	1729.1	-1	864.35	-1	-1	-1	-1	-1
-1	2402.7	180.18	-1	-1	-1	-1	-1	-1
500.27	4511.3	196.44	-1	-1	-1	-1	-1	-1
361.22	2735.2	156.59	-1	-1	-1	-1	-1	-1
510.99	1919.8	250.28	-1	-1	-1	-1	-1	-1
257.3	963.7	44.018	363.67	-1	-1	-1	-1	-1
327.91	1825.4	-1	521.95	-1	-1	-1	-1	-1
666.68	1051.8	1306	1295.3	-1	-1	-1	-1	-1
614.5	889.65	-1	433.73	-1	-1	-1	-1	-1
934.05	1207.3	-1	829.11	-1	-1	-1	-1	-1
530.64	1333.3	-1	-1	-1	-1	-1	-1	-1
372.45	1973.2	-1	-1	-1	-1	-1	-1	-1
292.39	990.71	-1	-1	-1	-1	-1	-1	-1
263.13	885.49	-1	-1	-1	-1	-1	-1	-1
471.71	1789.9	209.71	-1	-1	-1	-1	-1	-1
423.61	1568	-1	753.33	-1	-1	-1	-1	-1
376.97	1745.4	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
353.59	794.75	-1	-1	-1	-1	-1	-1	-1
407.93	1471.3	70.233	-1	-1	-1	-1	-1	-1
297.42	1289.7	120.85	251.76	-1	-1	-1	-1	-1
270.67	1387.2	-1	223.05	-1	-1	-1	-1	-1
284.18	1661.3	-1	-1	-1	-1	-1	-1	-1
368.42	1114.1	65.564	368.02	-1	-1	-1	-1	-1
420.7	3408.2	50.621	1269.4	-1	-1	-1	-1	-1
218.98	580.29	-1	152.59	-1	-1	-1	-1	-1
200.55	3988.6	57.282	-1	-1	-1	-1	-1	-1
409.56	4275.5	336.91	211.34	-1	-1	-1	-1	-1
360.7	3614.3	12.127	-1	-1	-1	-1	-1	-1
136.88	232.64	-1	104.49	-1	-1	-1	-1	-1
578.06	973.51	57.071	-1	-1	-1	-1	-1	-1
389.79	990.45	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
316.83	621.76	-1	-1	-1	-1	-1	-1	-1
376.44	1488.9	152.49	-1	-1	-1	-1	-1	-1
225.03	452.32	-1	-1	-1	-1	-1	-1	-1
256.84	588.83	-1	-1	-1	-1	-1	-1	-1
329.14	1031.3	-1	-1	-1	-1	-1	-1	-1
293.59	569.17	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
354.11	753.9	-1	-1	-1	-1	-1	-1	-1
253.49	444.03	46.47	-1	-1	-1	-1	-1	-1
259.7	367.94	-1	-1	-1	-1	-1	-1	-1
-1	2135.7	-1	-1	-1	-1	-1	-1	-1
314.71	840.69	-1	-1	-1	-1	-1	-1	-1

Fort Erie Suspended Solids 1991-92

2,4,6-Tr	2,4,5-Tr	2,3,4-Tr	3,5-Dich	2,3,6-Tr	3,4-Dich	3,4,5-Tr	Pentachl	Atrazine
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	450.44	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	1505.5	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
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-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	683.08	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	348.32	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
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-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1

Metolach	2,3,7,8-TCDD	
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-1	-1	

NOTL Water 1991-92

		1,3-DiCB	1,4-DiCB	1,2-DiCB	1,3,5-Tr	1,2,4-Tr	1,2,3-Tr	1,2,3,4-
NOTL	910405	0.6905	2.9428	1.772	0.055	1.9836	0.6808	-1
NOTL	910412	0.886	4.9644	2.9281	0.1004	2.7279	0.6428	-1
NOTL	910418	0.531	2.3505	1.1087	0.0504	1.3539	0.361	-1
NOTL	910425	0.8601	6.0104	2.5473	0.0992	1.6433	0.5358	0.6832
NOTL	910502	0.5056	2.0992	0.9778	0.0473	0.8851	0.2465	0.5998
NOTL	910509	0.5171	1.9141	-1	0.0754	0.9563	0.2356	0.5918
NOTL	910516	0.5866	2.5447	-1	0.1002	0.8998	0.2442	0.5622
NOTL	910523	1.1847	4.6013	1.1835	0.0984	1.2133	0.3625	0.6982
NOTL	910530	1.2744	4.368	1.0087	0.1051	1.1557	0.3527	0.7751
NOTL	910606	1.065	2.719	-1	0.1277	1.1044	0.3644	0.9354
NOTL	910613	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
NOTL	910620	0.5893	2.7903	-1	0.1317	0.8423	0.2981	0.6794
NOTL	910627	0.8335	2.5752	-1	0.157	1.0015	0.3595	0.7557
NOTL	910704	0.8186	1.64	0.385	0.1063	0.8478	0.2606	0.6254
NOTL	910711	0.9006	2.8674	0.4694	0.1333	0.9978	0.2846	0.915
NOTL	910718	0.8113	1.9925	0.4895	0.0891	1.1466	0.2342	0.8609
NOTL	910725	0.8663	2.2586	0.5091	0.1366	0.8145	0.2323	0.6611
NOTL	910801	0.6631	1.7423	0.2993	0.1277	0.6569	0.1763	0.4117
NOTL	910808	0.7441	2.4558	0.3656	0.1144	0.9907	0.2017	0.6646
NOTL	910815	0.6932	2.2226	0.3584	0.1187	0.8248	0.1957	0.6124
NOTL	910822	0.7249	2.0626	0.4869	0.1532	0.9924	0.2431	0.6904
NOTL	910829	0.6997	2.1261	0.4566	0.114	0.8822	0.2613	0.6058
NOTL	910905	0.4953	1.2391	0.3783	0.0797	0.6123	0.1478	0.462
NOTL	910912	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
NOTL	910919	0.5016	1.3028	0.332	0.0974	0.7326	0.1718	0.4655
NOTL	910926	0.6927	2.3216	0.7656	0.1202	1.4914	0.3231	0.6273
NOTL	911003	0.5611	1.6412	0.5025	0.1044	1.0293	0.2538	0.554
NOTL	911010	0.7059	2.2721	1.3202	0.0961	1.4591	0.4164	0.5564
NOTL	911017	0.518	1.5908	0.8312	0.083	1.2818	0.2761	0.5537
NOTL	911024	0.7304	2.1361	1.2284	0.1224	1.4214	0.358	0.5818
NOTL	911031	0.5015	1.5217	0.461	0.0787	1.1103	0.2338	0.4779
NOTL	911108	0.3887	1.4054	0.7862	0.069	1.1034	0.2374	0.392
NOTL	911114	0.5691	2.1605	0.8245	0.0815	1.1431	0.2789	0.4378
NOTL	911121	0.4659	1.8512	0.7968	0.0775	1.4135	0.3857	0.6735
NOTL	911128	0.3855	1.8586	1.3515	0.0585	1.8712	0.3994	0.8039
NOTL	911205	0.514	2.3147	1.5127	0.0813	1.8529	0.3985	1.0312
NOTL	911213	0.635	3.355	1.5243	0.082	1.532	0.383	0.5649
NOTL	911219	0.5897	2.7381	2.0522	0.0704	1.9247	0.4239	0.6927
NOTL	911226	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
NOTL	920102	0.4464	2.1154	1.1168	0.0473	0.8939	0.1949	0.3207
NOTL	920108	0.4744	2.1687	1.1313	0.0419	1.07	0.2312	0.3554
NOTL	920115	0.8135	3.3792	2.0852	0.0917	2.6223	0.8028	1.3761
NOTL	920122	0.3966	1.7246	1.0634	0.0412	1.1026	0.2076	0.2367
NOTL	920129	0.5642	2.5134	1.5071	0.0441	1.0886	0.2677	-1
NOTL	920205	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
NOTL	920212	0.5995	2.5958	1.4054	-1	1.1572	0.3342	0.4023
NOTL	920219	1.0564	6.373	4.9695	0.058	1.8745	0.7323	0.6369
NOTL	920226	0.8355	4.4934	2.5382	0.0609	1.7107	0.6094	0.6461
NOTL	920305	0.754	4.9027	4.1418	0.0549	1.7721	0.747	0.6028
NOTL	920312	0.8065	4.8488	4.0703	0.0624	1.9463	0.8428	0.805
NOTL	920319	0.5884	2.7645	2.1655	0.0606	1.2694	0.5098	0.5365
NOTL	920326	0.4304	2.019	1.5498	0.0479	0.8313	0.2867	0.3885

PentaCB	HexaCB	a-BHC	g-BHC	Heptach1	Aldrin	Hep-Epox	g-Chlord	a-Endosu
0.0915	0.0472	1.2741	0.4593	-1	-1	0.1086	-1	0.0479
0.1667	0.0577	1.3711	0.5253	-1	-1	0.1175	-1	0.0431
0.1023	0.0444	1.9143	0.7522	-1	-1	0.1188	-1	0.0534
0.1215	0.059	1.406	0.5358	-1	-1	0.1233	-1	0.0529
0.1091	0.0491	1.4613	0.5325	-1	-1	0.1112	-1	0.0625
0.0962	0.0458	1.335	0.5495	-1	-1	0.1198	-1	0.1131
0.1106	0.0534	1.41	0.5807	-1	-1	0.1184	-1	0.0853
0.1293	0.0668	1.156	0.5113	-1	-1	0.1053	-1	0.0504
0.147	0.0635	1.3233	0.5587	-1	-1	0.1306	-1	0.0583
0.2141	0.1003	1.559	0.6461	-1	-1	0.1473	-1	0.0864
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
0.164	0.0752	1.2461	0.5581	-1	-1	0.1463	-1	0.1081
0.1864	0.084	1.2326	0.5356	-1	-1	0.1339	-1	0.0994
0.1543	0.0834	1.2005	0.4621	-1	-1	0.1362	-1	0.3475
0.2277	0.1066	1.1509	0.4899	-1	-1	0.1246	-1	0.0901
0.2113	0.1158	1.1748	0.5038	-1	-1	0.1173	-1	0.0669
0.1581	0.0727	1.0007	0.4529	-1	-1	0.1519	-1	0.0614
0.1245	0.0569	1.0037	0.4398	-1	-1	0.1365	-1	0.0507
0.1582	0.0645	0.948	0.4134	-1	-1	0.0927	-1	0.0527
0.1524	0.0618	1.0353	0.4513	-1	-1	0.0876	-1	0.066
0.1611	0.0633	0.7947	0.3632	-1	-1	0.0676	-1	0.0489
0.1409	0.0515	0.7194	0.337	-1	-1	0.067	-1	0.0394
0.1007	0.0384	0.6938	0.3261	-1	-1	0.0634	-1	0.0341
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
0.1032	0.039	0.9419	0.4457	-1	-1	0.0834	-1	0.03
0.151	0.0594	0.879	0.432	-1	-1	0.1458	-1	0.027
0.1437	0.0508	0.8506	0.4039	-1	-1	0.0754	-1	-1
0.1234	0.0401	0.8213	0.369	-1	-1	0.1094	-1	-1
0.1077	0.0394	1.0618	0.474	-1	-1	0.0796	-1	-1
0.1271	0.043	1.0329	0.4493	-1	-1	0.1196	-1	-1
0.1022	0.0397	1.1066	0.489	-1	-1	0.0824	-1	-1
0.0799	0.0334	0.8258	0.3775	-1	-1	0.0704	-1	-1
0.1135	0.0454	0.9749	0.4094	-1	-1	0.118	-1	-1
0.1582	0.0548	0.973	0.415	-1	-1	0.1284	-1	0.0278
0.1903	0.0466	1.035	0.4198	-1	-1	0.0945	-1	0.0258
0.3221	0.0567	0.834	0.4869	-1	-1	0.0945	-1	0.0312
0.1352	0.0444	1.0935	0.4404	-1	-1	0.1111	-1	-1
0.1741	0.0507	1.0295	0.4012	-1	-1	0.0723	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
0.0745	0.0383	1.1089	0.4479	-1	-1	0.1222	-1	0.0236
0.0744	0.0404	1.6704	0.4564	-1	-1	0.1029	0.0165	0.0288
0.3823	0.1957	1.3073	0.5428	-1	-1	0.1292	0.0206	0.0313
0.0553	0.0291	0.8158	0.3554	-1	-1	0.0775	-1	-1
0.0831	0.0472	1.3071	0.5748	-1	-1	0.1299	0.0209	0.0307
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
0.0928	0.0639	1.1179	0.5283	-1	-1	0.1431	-1	0.027
0.14	0.074	1.1365	0.513	-1	-1	0.1384	0.0229	0.0347
0.1413	0.0705	1.094	0.4919	-1	-1	0.127	0.0198	0.0341
0.1435	0.0785	1.091	0.4413	-1	-1	0.1272	0.0188	0.0243
0.2831	0.1591	1.0733	0.4497	-1	-1	0.1224	0.0106	0.0257
0.1655	0.0944	0.9048	0.3837	-1	-1	0.1065	-1	0.0309
0.1106	0.0683	1.1184	0.4368	-1	-1	0.1148	-1	0.0278

NOTL Water 1991-92

a-Chlord	Octachlo	p,p'-DDE	Dieldrin	Endrin	o,p'-DDT	p,p'-TDE	p,p'-DDT	b-Endosu
-1	-1	0.0518	0.238	-1	-1	0.0218	-1	-1
-1	-1	0.0798	0.2707	-1	-1	0.0349	0.1179	-1
-1	-1	0.053	0.2828	-1	-1	0.0406	-1	0.0169
-1	-1	0.0583	0.2747	-1	-1	0.028	-1	0.0137
-1	0.0124	-1	0.2537	-1	-1	-1	-1	-1
-1	0.0088	-1	0.2888	-1	-1	-1	-1	-1
-1	-1	-1	0.2616	-1	-1	-1	-1	-1
-1	-1	-1	0.2392	-1	-1	-1	-1	-1
-1	-1	-1	0.3317	-1	-1	-1	-1	-1
-1	-1	-1	0.3719	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	0.338	-1	-1	-1	-1	-1
-1	-1	-1	0.2825	-1	-1	-1	-1	-1
-1	0.0111	0.0334	0.2988	0.0316	-1	-1	0.0546	0.0528
-1	0.0122	0.0353	0.3098	-1	-1	-1	0.0602	-1
-1	0.012	0.0417	0.297	-1	-1	-1	-1	-1
-1	0.0088	0.038	0.2995	0.0606	-1	-1	0.0909	-1
-1	0.0091	0.0263	0.2628	0.0376	-1	-1	-1	-1
-1	-1	-1	0.2922	0.0641	-1	-1	-1	-1
-1	0.0091	-1	0.3148	0.0755	-1	-1	-1	-1
-1	-1	0.0424	0.238	-1	-1	0.1507	0.0705	-1
-1	-1	-1	0.2374	0.0697	-1	-1	-1	-1
-1	-1	-1	0.2029	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	0.3049	0.044	-1	-1	-1	-1
-1	-1	0.0278	0.2787	-1	-1	-1	-1	-1
-1	-1	0.0397	0.2345	-1	-1	-1	-1	-1
-1	-1	0.031	0.2021	-1	-1	-1	-1	-1
-1	-1	0.0326	0.2442	-1	-1	-1	0.1418	-1
-1	-1	0.0358	0.2331	0.0297	-1	-1	0.0673	-1
-1	-1	-1	0.2426	0.029	-1	-1	0.1125	-1
-1	-1	0.0294	0.2134	-1	-1	-1	0.0987	-1
-1	-1	0.0357	0.2327	-1	-1	-1	0.0259	-1
-1	-1	0.0321	0.2522	-1	-1	-1	0.0411	-1
-1	-1	0.0374	0.2005	-1	-1	0.0262	0.0415	-1
-1	-1	0.0436	0.2859	-1	-1	-1	0.145	-1
-1	-1	0.0333	0.2359	-1	-1	-1	0.0705	-1
-1	-1	0.0416	0.2226	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	0.2454	-1	-1	-1	-1	-1
-1	-1	-1	0.2675	-1	-1	-1	-1	-1
-1	-1	-1	0.2714	-1	-1	0.0375	-1	-1
-1	-1	-1	0.1527	-1	-1	-1	-1	-1
-1	-1	-1	0.2677	-1	-1	0.0567	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	0.2789	-1	-1	-1	-1	-1
-1	-1	-1	0.2555	-1	-1	0.0721	-1	0.016
-1	-1	-1	0.2276	-1	-1	-1	-1	-1
-1	-1	-1	0.2345	-1	-1	-1	-1	-1
-1	-1	-1	0.2207	-1	-1	0.0582	-1	-1
-1	-1	-1	0.205	-1	-1	-1	-1	-1
-1	-1	-1	0.2448	-1	-1	-1	-1	-1

Endrin-A	Photomir	Mirex	Methoxyc	Hexchlor	Hxchlrcy	PCB	Naphthal	2-Methyl
-1	-1	-1	-1	0.0894	-1	0.98	1.4808	0.6376
-1	-1	-1	-1	0.0755	-1	0.7956	2.1733	0.919
-1	-1	-1	-1	0.0782	0.0421	1.3783	1.4182	0.5662
-1	-1	-1	-1	0.0985	-1	0.9241	2.2845	0.9785
-1	-1	-1	-1	0.0829	-1	0.4097	0.8243	0.3667
-1	-1	-1	-1	0.0849	-1	1.6738	0.9484	0.5417
-1	-1	-1	-1	0.092	-1	0.9095	1.6377	1.4266
-1	-1	-1	-1	0.0893	-1	2.045	1.8849	1.0139
-1	-1	-1	-1	0.1009	-1	1.3115	3.1382	2.9858
-1	-1	-1	-1	0.1142	-1	1.074	2.3321	1.8042
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	-1	0.1036	-1	1.1626	3.8606	3.1597
-1	-1	-1	-1	0.1211	-1	1.0437	3.4936	2.4683
-1	-1	-1	-1	0.1091	-1	1.3033	1.9661	1.6676
-1	-1	-1	-1	0.1823	-1	1.161	1.1332	0.788
-1	-1	-1	-1	0.1752	-1	1.8316	1.321	1.0972
-1	-1	-1	-1	0.1205	-1	1.4529	0.4251	0.5596
-1	-1	-1	-1	0.0828	-1	1.2281	2.5321	1.3708
-1	-1	-1	-1	0.1504	-1	1.0909	5.2785	1.9053
-1	-1	-1	-1	0.1176	-1	1.248	2.5837	1.3584
-1	-1	-1	-1	0.1287	-1	1.5243	0.9284	0.5549
-1	-1	-1	-1	0.106	-1	1.1931	4.0239	1.9308
-1	-1	-1	-1	0.0757	-1	0.8989	1.8025	0.7857
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	-1	0.078	-1	1.4648	1.699	1.0586
-1	-1	-1	-1	0.1089	-1	1.5383	1.0989	0.9783
-1	-1	-1	-1	0.0915	-1	1.2959	1.2988	0.9741
-1	-1	-1	-1	0.1041	-1	-1	2.5781	1.0156
-1	-1	-1	-1	0.0925	-1	1.0239	1.4203	0.5737
-1	-1	-1	-1	0.1081	-1	1.724	2.5872	1.4749
-1	-1	-1	-1	0.0846	-1	0.8426	3.594	1.4692
-1	-1	-1	-1	0.0646	-1	1.176	3.5807	1.1723
-1	-1	-1	-1	0.0827	-1	1.2079	4.6319	2.5267
-1	-1	-1	-1	0.0948	-1	1.0368	4.4613	1.4803
-1	-1	-1	-1	0.0646	-1	1.3664	7.6093	2.4709
-1	-1	-1	-1	0.083	-1	1.1031	1.6399	0.697
-1	-1	-1	-1	0.0774	-1	-1	3.9589	2.0265
-1	-1	-1	-1	0.0681	-1	0.7229	6.8255	1.7366
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	-1	0.0502	-1	-1	7.0839	1.7539
-1	-1	-1	-1	0.0501	-1	-1	5.4532	1.1115
-1	-1	-1	-1	0.2546	0.6995	-1	2.307	0.7755
-1	-1	-1	-1	0.042	-1	-1	5.9118	0.9567
-1	-1	-1	-1	0.063	-1	1.3748	3.1075	0.5564
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	-1	0.0614	-1	1.785	1.7646	0.7111
-1	-1	-1	-1	0.0702	-1	-1	1.6125	1.0371
-1	-1	-1	-1	0.0822	0.0463	1.0114	4.5	2.4036
-1	-1	-1	-1	0.0556	-1	1.6188	3.458	1.9903
-1	-1	-1	-1	0.0548	-1	-1	1.7844	1.0878
-1	-1	-1	-1	0.0538	-1	0.9413	1.1735	0.9403
-1	-1	-1	-1	0.0479	-1	0.9141	2.4822	1.2925

1-Methyl	2-Chloro	Acenapht	Fluorene	Anthrace	Phenanth	Fluorant	Pyrene	Benzo(a)
0.453	-1	0.1909	0.6202	-1	1.7453	1.0283	0.5846	0.12
0.8607	-1	0.2264	1.798	1.0157	4.0348	4.394	2.892	0.6387
0.4805	-1	0.2048	0.5759	0.3435	1.6832	1.4296	0.8562	0.2366
0.7847	-1	0.3208	0.6095	-1	1.5158	1.3921	0.8079	0.2541
0.2832	-1	-1	0.4061	-1	1.2493	0.5278	0.3269	-1
0.3828	-1	0.1549	0.4793	-1	1.4408	0.7585	0.5203	-1
0.6261	-1	0.193	0.4869	-1	1.9381	0.8203	0.4142	-1
0.8952	-1	0.1838	0.5121	-1	1.8484	0.9885	0.4803	0.1
1.5113	-1	0.2177	0.6224	-1	2.3314	1.1906	0.9391	0.1964
1.0163	-1	0.2255	0.6536	-1	2.4644	1.2414	0.9503	0.1547
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
1.6119	-1	0.2343	0.6886	-1	2.5017	1.361	1.1619	0.1818
1.6471	-1	0.2594	0.6388	-1	2.4675	1.0952	0.8779	0.1233
1.1199	-1	0.2545	0.4323	-1	2.3458	0.9287	0.8748	-1
0.5727	-1	0.1665	0.4102	-1	2.1446	0.9261	0.8489	0.1422
0.7664	-1	0.1471	0.5315	-1	2.2246	0.6597	0.808	-1
0.484	-1	0.1494	0.3902	-1	2.4425	0.7455	0.9406	0.1
1.0238	-1	0.2158	0.4417	-1	2.8242	0.8567	1.1538	-1
1.144	-1	0.2164	0.4927	-1	2.2524	0.7412	1.0737	-1
0.9768	-1	0.2361	0.4618	-1	2.1482	0.6996	1.0867	-1
0.44	-1	0.1636	0.3989	-1	2.3251	0.6783	0.9665	0.0666
1.2219	-1	0.2351	0.515	-1	2.3219	1.2915	2.0478	-1
0.5546	-1	0.1681	0.4874	-1	2.1807	1.1303	1.7395	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
0.8745	-1	0.2963	0.672	-1	2.8081	1.1126	1.6517	0.0958
0.66	-1	0.2544	0.5663	-1	2.6186	1.4168	1.4908	0.1467
0.6494	-1	0.3124	0.8837	-1	4.5869	1.5331	1.7057	0.2425
0.9648	-1	0.2818	0.9071	-1	4.2262	2.3219	2.1857	0.468
0.6025	-1	0.3028	0.5993	-1	3.3368	1.682	1.5222	0.2605
1.2187	-1	0.3647	0.8753	-1	3.8826	1.6298	1.4191	0.2353
1.1628	-1	0.5683	1.1399	-1	4.4313	1.6075	1.4035	0.2338
0.8231	-1	0.4029	0.9929	-1	4.6604	2.6205	1.979	0.4642
1.5952	-1	0.6592	1.3898	-1	4.8743	1.9454	1.3805	0.2806
1.1609	-1	0.6257	1.2842	-1	4.7146	2.3357	1.5584	0.2572
1.9153	-1	0.7778	3.3	2.3313	10.597	6.3533	4.361	0.8478
0.6513	-1	0.5474	1.2576	1.2013	6.3247	4.2278	2.8979	0.8164
1.5338	-1	0.8035	1.4239	-1	5.8849	2.6232	1.8948	0.4931
1.5284	-1	0.7746	1.8667	2.0649	8.1697	6.5937	4.4059	1.1269
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
1.3329	-1	0.908	1.0732	-1	-1	1.2771	0.6816	0.2214
0.9141	-1	0.5497	0.8516	-1	-1	1.9595	1.0786	0.2367
0.7131	-1	0.3879	0.7711	-1	-1	3.5888	2.4601	0.4759
0.7428	-1	0.3619	1.0701	0.7613	-1	3.58	2.2675	0.4365
0.521	-1	0.2496	0.6167	-1	-1	3.2273	2.4554	0.5179
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
0.591	-1	0.2396	0.6344	-1	-1	1.2087	0.8793	0.1665
1.067	-1	0.2774	0.5762	-1	-1	3.5894	2.3389	0.3671
1.9036	-1	0.4168	0.8783	-1	-1	2.1122	1.6113	0.2856
1.4969	-1	0.4173	0.5177	-1	-1	1.6247	0.9615	0.1945
0.9222	-1	0.2909	0.8681	-1	-1	2.4915	1.5897	0.3462
0.8249	-1	0.353	1.0836	-1	-1	1.4262	1.0195	0.3223
1.2513	-1	0.3099	0.8299	-1	-1	1.322	0.5191	0.2778

Chrysene	Benzo(b/	Benz(a)p	Indenopy	Dibenzo(	Benzo(gh	Dimethyl	Diethylp	Di-n-but
0.3767	0.4421	0.0658	-1	-1	-1	1.0178	11.444	7.0081
1.2847	1.1667	0.3087	0.2168	-1	0.2442	1.3091	9.5272	35.538
0.3821	0.5394	0.1018	0.0679	-1	0.0861	0.961	6.6098	5.3694
0.4166	0.6163	-1	-1	-1	-1	0.7294	6.363	23.869
-1	-1	-1	-1	-1	-1	0.5498	3.694	13.195
-1	-1	-1	-1	-1	-1	0.6974	6.8717	10.581
-1	-1	-1	-1	-1	-1	0.7583	9.2698	11.125
0.243	0.2172	-1	-1	-1	-1	0.8992	9.5645	26.319
0.3447	0.2506	-1	-1	-1	-1	1.2959	10.411	11.518
0.2377	0.2218	-1	-1	-1	-1	1.4257	11.158	18.342
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
0.2411	0.2339	-1	-1	-1	-1	1.953	15.433	7.1805
0.2416	0.1854	-1	-1	-1	-1	0.9425	9.4853	6.7592
0.2112	0.2139	-1	-1	-1	-1	0.676	7.4831	18.026
0.2559	0.1828	-1	-1	-1	-1	0.6214	7.2583	3.6068
0.2217	0.1541	-1	-1	-1	-1	0.5917	8.2526	4.3008
0.2246	0.1793	-1	-1	-1	-1	0.555	7.9058	3.8394
0.1646	0.1238	-1	-1	-1	-1	0.7238	9.8929	6.0342
0.1581	0.1075	-1	-1	-1	-1	0.4563	5.8783	13.605
0.2109	0.0515	-1	-1	-1	-1	0.517	6.0951	3.6664
0.2378	0.1323	-1	-1	-1	-1	0.4502	5.964	12.569
0.2009	0.1486	-1	-1	-1	-1	0.4854	9.7122	5.3804
0.1891	0.1176	-1	-1	-1	-1	0.4622	8.9748	16.479
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
0.2353	0.1892	-1	-1	-1	-1	0.6673	8.1044	6.4808
0.3087	0.209	-1	-1	-1	-1	0.502	6.9301	4.908
0.411	0.4147	-1	-1	-1	-1	1.0029	16.642	9.7
0.5284	0.5657	-1	-1	-1	-1	1.0196	10.052	21.568
0.3572	0.4866	-1	-1	-1	-1	0.7519	8.1498	4.7052
0.3681	0.3638	-1	-1	-1	-1	1.014	11.243	61.052
0.3851	0.4231	-1	-1	-1	-1	1.3941	13.87	6.3521
0.631	0.5224	-1	-1	-1	-1	1.4662	17.473	12.174
0.4923	0.5986	-1	-1	-1	-1	1.6801	24.652	15.72
0.4737	0.4977	-1	-1	-1	-1	1.5994	18.995	178.5
0.9544	1.0916	0.3276	0.1074	-1	0.1518	1.2853	14.786	7.6447
0.983	1.2363	0.3738	0.1412	-1	0.1828	1.1541	12.425	12.905
0.6212	0.8885	0.1645	0.0953	-1	0.0981	2.7588	32.72	14.299
1.1573	1.4307	0.4584	0.2058	-1	0.3175	3.2478	29.327	15.739
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
0.3444	0.3176	-1	-1	-1	-1	5.9323	55.756	12.942
0.2043	0.2736	0.0689	-1	-1	-1	1.5034	12.955	18.685
0.5331	0.7609	0.1867	0.0706	-1	0.0923	1.1669	12.496	15.043
0.3087	0.4613	0.1204	-1	-1	-1	1.9089	12.333	13.561
0.5035	0.9624	0.2268	0.1538	-1	0.1809	2.514	22.57	17.663
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
0.4281	0.4762	0.1231	-1	-1	-1	4.915	42.353	10.072
0.9518	1.6278	0.414	0.2561	-1	0.2604	1.7542	15.297	25.775
0.5799	0.8324	0.1763	0.1631	-1	0.1747	3.6291	38.763	11.03
0.4103	0.5385	0.1061	0.1004	-1	0.0955	1.4505	13.723	15.783
0.7807	1.3791	0.3179	0.176	-1	0.2122	1.1511	12.566	24.237
0.3442	0.5495	0.1357	-1	-1	-1	1.8285	11.215	11.004
0.2747	0.3602	0.0621	-1	-1	-1	1.3424	13.747	17.422

Benzylbu	Bis(2-et	Dioctylp	Phenol	2,4-Dich	2,3-Dich	2,6-Dich	3-met,4-	2,3,5-Tr
5.6504	28.928	1.1351	-1	-1	-1	-1	1.935	-1
4.825	51.79	2.2377	-1	-1	-1	-1	-1	-1
3.2981	103.48	3.997	7.7755	-1	-1	-1	-1	-1
3.7387	55.133	1.2309	3.198	-1	-1	-1	-1	-1
2.937	9.946	-1	-1	-1	-1	-1	-1	-1
-1	71.769	8.9734	-1	-1	-1	-1	-1	-1
3.5151	10.368	1.8963	4.236	-1	-1	-1	-1	-1
3.8293	145.69	2.2918	20.37	-1	-1	-1	-1	-1
3.6935	136.27	1.7423	31.488	-1	-1	-1	-1	-1
5.5788	125.09	9.2658	38.192	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	-1	-1	-1	-1	-1	-1
3.4233	141.75	14.295	6.444	-1	-1	-1	-1	-1
3.6587	144.52	11.038	93.106	1.527	-1	-1	-1	-1
4.3685	120.4	11.824	24.393	-1	-1	-1	-1	-1
3.9033	26.292	0.8733	16.824	-1	-1	-1	-1	-1
5.6551	34.63	1.2715	-1	-1	-1	-1	-1	-1
5.9369	21.646	0.3827	44.733	-1	-1	-1	-1	-1
2.7175	88.578	3.3208	-1	-1	-1	-1	-1	-1
2.862	43.311	1.1847	4.792	-1	-1	-1	-1	-1
2.6508	23.314	1.3903	-1	-1	-1	-1	-1	-1
2.407	15.985	0.4803	-1	-1	-1	-1	-1	-1
3.5352	28.06	2.6888	1.0565	-1	-1	-1	-1	-1
2.3697	16.164	0.8866	13.192	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
3.2995	52.249	0.5348	11.395	-1	-1	-1	-1	-1
3.2279	51.521	0.6519	19.451	-1	-1	-1	-1	-1
6.4118	19.568	1.2824	-1	-1	-1	-1	-1	-1
8.1197	18.047	1.4039	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
4.6716	10.036	0.8849	5.0905	-1	-1	-1	-1	-1
4.9204	305.77	3.306	4.2785	-1	-1	-1	-1	-1
4.9816	19.193	1.0698	-1	-1	-1	-1	-1	-1
4.8646	24.444	0.9564	2.123	-1	-1	-1	-1	-1
4.9383	18.476	0.9173	-1	-1	-1	-1	-1	-1
4.1748	14.247	2.0777	-1	-1	-1	-1	-1	-1
3.3386	12.424	1.3333	-1	-1	-1	-1	-1	-1
4.1876	16.211	1.0829	-1	-1	-1	-1	-1	-1
4.7762	25.325	1.6856	-1	-1	-1	-1	-1	-1
5.2526	10.322	1.4764	-1	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
3.0358	11.581	2.3687	-1	-1	-1	-1	-1	-1
1.9311	8.3928	0.756	-1	-1	-1	-1	-1	-1
3.1547	19.324	1.1452	4.503	-1	-1	-1	-1	-1
1.9753	45.758	5.4992	2.5875	-1	-1	-1	-1	-1
2.9747	30.925	1.2474	2.481	-1	-1	0.46	-1	-1
-99.9	-99.9	-99.9	4.431	-1	-1	0.673	-1	-1
5.3746	53.485	4.1243	2.714	-1	-1	0.394	-1	-1
7.1276	22.595	1.2335	4.076	-1	-1	0.3675	-1	-1
3.8071	29.555	0.7508	3.9665	-1	-1	0.2785	-1	-1
4.145	18.929	0.7016	6.02	-1	-1	0.229	-1	-1
4.1806	8.5435	0.6259	14.581	-1	-1	0.48	-1	-1
5.9399	31.331	0.9614	9.533	-1	-1	0.337	-1	-1
3.9809	15.806	0.6997	3.432	-1	-1	-1	-1	-1

2,4,6-Tr	2,4,5-Tr	2,3,4-Tr	3,5-Dich	2,3,6-Tr	3,4-Dich	3,4,5-Tr	Pentachl	Atrazine
0.655	-1	-1	-1	-1	-1	-1	2.222	64.682
-1	-1	-1	-1	-1	-1	-1	2.03	96.906
-1	-1	-1	-1	-1	-1	-1	-1	49.495
1.665	-1	-1	-1	-1	-1	-1	-1	60.945
-1	-1	-1	-1	-1	-1	-1	-1	58.933
-1	-1	-1	-1	-1	-1	-1	-1	68.05
-1	-1	-1	-1	-1	-1	-1	-1	83.808
-1	-1	-1	-1	-1	-1	-1	-1	90.362
-1	-1	-1	-1	-1	-1	-1	-1	90.822
-1	-1	-1	-1	-1	-1	-1	-1	88.772
-1	-1	-1	-1	-1	-1	-1	-1	-99.9
0.785	-1	-1	-1	-1	-1	-1	-1	89.708
-1	-1	-1	-1	-1	-1	-1	-1	82.718
1.21	-1	-1	-1	-1	-1	-1	-1	58.884
1.3485	-1	-1	-1	-1	-1	-1	-1	51.535
-1	-1	-1	-1	-1	-1	-1	-1	51.211
-1	-1	-1	-1	-1	-1	-1	-1	57.802
-1	-1	-1	-1	-1	-1	-1	-1	56.73
-1	-1	-1	-1	-1	-1	-1	-1	45.764
-1	-1	-1	-1	-1	-1	-1	-1	46.535
-1	-1	-1	-1	-1	-1	-1	-1	38.856
-1	-1	-1	-1	-1	-1	-1	-1	89.192
1.1685	-1	-1	-1	-1	-1	-1	-1	89.122
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	-1	-1	-1	-1	-1	57.113
1.354	-1	-1	-1	-1	-1	-1	-1	52.821
-1	-1	-1	-1	-1	-1	-1	1.41	122.07
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	100.01
-1	-1	-1	-1	-1	-1	-1	-1	99.744
-1	-1	-1	-1	-1	-1	-1	-1	106.76
0.585	-1	-1	-1	-1	-1	1.9815	-1	103.55
0.26	-1	-1	-1	-1	-1	1.436	-1	93.201
-1	-1	-1	-1	-1	-1	-1	-1	93.622
0.325	-1	-1	-1	-1	-1	2.7169	-1	89.146
-1	-1	-1	-1	-1	-1	2.898	2.085	89.857
-1	-1	-1	-1	-1	-1	2.0105	-1	82.872
0.665	-1	-1	-1	-1	-1	-1	-1	100.4
0.56	-1	-1	-1	-1	-1	-1	-1	88.443
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	-1	-1	-1	-1	-1	55.148
-1	-1	-1	-1	-1	-1	-1	-1	64.521
-1	-1	-1	-1	-1	-1	-1	-1	61.655
1.2215	-1	-1	-1	-1	-1	-1	-1	34.831
1.3455	-1	-1	-1	-1	-1	-1	-1	60.471
1.596	-1	-1	-1	-1	-1	-1	-1	-99.9
0.914	-1	-1	-1	-1	-1	-1	-1	64.097
1.382	-1	-1	-1	-1	-1	-1	-1	72.591
0.867	-1	-1	-1	-1	-1	-1	-1	70.335
1.0995	-1	-1	-1	-1	-1	-1	-1	65.74
0.9665	-1	-1	-1	-1	-1	-1	-1	52.757
0.857	-1	-1	-1	-1	-1	-1	-1	52.972
0.893	-1	-1	-1	-1	-1	-1	-1	67.357

Metolach	2,3,7,8-TCDD	
30.232	-1	
37.287	-1	
19.307	-1	
21.658	-1	
18.18	-1	
22.233	-1	
22.852	-1	
25.855	-1	
21.267	-1	
23.975	-1	
-99.9	-99.9	
24.57	-1	
22.891	-1	
18.716	-1	
15.122	-1	
17.258	-1	
18.227	-1	
20.642	-1	
20.006	-1	
15.227	-1	
12.583	-1	
29.301	-1	
26.24	-1	
-99.9	-99.9	
13.174	-1	
12.758	-1	
44.344	-1	
42.821	-1	
44.135	-1	
38.431	-1	
42.441	-1	
38.471	-1	
39.909	-1	
37.671	-1	
30.894	-1	
31.279	-1	
41.769	-1	
37.902	-1	
-99.9	-99.9	
22.978	-1	
18.946	-1	
17.56	-1	
14.444	-1	
19.203	-1	
-99.9	-99.9	
26.713	-1	
34.319	-1	
32.846	-1	
33.653	-1	
29.989	-1	
21.954	-1	
19.901	-1	

NOTL Suspended Solids 1991-92

		1,3-DiCB	1,4-DiCB	1,2-DiCB	1,3,5-Tr	1,2,4-Tr	1,2,3-Tr	1,2,3,4-
NOTL	910405	-1	-1	-1	-1	8.2235	2.4395	7.2792
NOTL	910412	-1	-1	-1	-1	5.1526	-1	2.0467
NOTL	910418	-1	-1	-1	-1	14.798	3.4435	11.447
NOTL	910425	-1	-1	-1	-1	8.3471	2.3967	4.5455
NOTL	910502	-1	-1	-1	-1	11.016	3.7777	9.554
NOTL	910509	-1	-1	-1	-1	4.0967	-1	7.456
NOTL	910516	-1	-1	-1	-1	10.229	2.6659	15.86
NOTL	910523	-1	39.925	13.381	2.1834	20.274	8.0474	137.24
NOTL	910530	-1	17.032	-1	-1	12.76	3.4874	43.796
NOTL	910606	-1	-1	-1	-1	31.267	10.106	12.563
NOTL	910613	-1	-1	-1	-1	-1	-1	-1
NOTL	910620	-1	-1	-1	-1	15.27	5.3683	37.131
NOTL	910627	-1	-1	-1	-1	14.763	5.2248	12.029
NOTL	910704	-1	-1	-1	-1	8.0958	1.6534	11.859
NOTL	910711	-1	26.07	-1	-1	20.084	5.0531	28.066
NOTL	910718	-1	18.958	-1	-1	13.976	4.7881	14.429
NOTL	910725	-1	-1	-1	-1	16.272	4.6673	15.768
NOTL	910801	-1	-1	-1	-1	11.769	2.5555	8.4062
NOTL	910808	-1	-1	-1	-1	11.332	-1	9.3451
NOTL	910815	-1	-1	-1	-1	9.3991	-1	7.7543
NOTL	910822	-1	-1	-1	-1	13.455	4.4536	14.34
NOTL	910829	-1	-1	-1	-1	8.1726	1.8978	5.4178
NOTL	910905	-1	-1	-1	-1	7.387	-1	4.8326
NOTL	910912	-1	-1	-1	-1	-1	-1	-1
NOTL	910919	-1	-1	-1	-1	7.437	-1	6.4706
NOTL	910926	-1	18.987	-1	-1	15.91	3.5272	12.12
NOTL	911003	-1	-1	-1	-1	8.3045	-1	7.4394
NOTL	911010	-1	-1	-1	-1	2.691	-1	2.691
NOTL	911017	-1	-1	-1	-1	6.5489	-1	7.6143
NOTL	911024	-1	-1	-1	-1	8.5837	-1	6.123
NOTL	911031	-1	-1	-1	-1	9.0806	-1	5.874
NOTL	911108	-1	-1	-1	-1	5.071	-1	1.8798
NOTL	911114	-1	-1	-1	-1	7.3592	-1	3.7297
NOTL	911121	-1	-1	-1	3.9298	43.935	9.5363	23.186
NOTL	911128	-1	18.863	-1	-1	6.8594	-1	3.1505
NOTL	911205	-1	10.313	-1	-1	4.2206	-1	2.0904
NOTL	911213	-1	-1	-1	-1	8.3314	-1	-1
NOTL	911219	-1	-1	-1	-1	4.3487	-1	-1
NOTL	911226	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
NOTL	920102	-1	-1	-1	-1	3.8978	-1	2.6851
NOTL	920108	-1	-1	-1	-1	4.6375	-1	3.5148
NOTL	920115	-1	34.467	25.748	3.3154	42.885	15.414	23.337
NOTL	920122	-1	-1	-1	-1	5.5833	-1	1.625
NOTL	920129	-1	-1	-1	-1	3.0468	-1	1.9587
NOTL	920205	-1	-1	-1	-1	7.5312	2.295	4.4786
NOTL	920212	-1	-1	-1	-1	8.6009	2.892	16.15
NOTL	920219	-1	-1	-1	-1	13.506	5.3176	8.4235
NOTL	920226	-1	-1	-1	-1	17.387	7.0217	14.306
NOTL	920305	-1	-1	-1	-1	13.066	5.0958	13.85
NOTL	920312	-1	-1	-1	-1	8.7784	3.8919	7.6108
NOTL	920319	-1	-1	-1	-1	12.05	4.3905	11.116
NOTL	920326	-1	-1	-1	-1	14.592	4.5107	8.9721

NOTL Suspended Solids 1991-92

PentaCB	HexaCB	a-BHC	g-BHC	Heptachl	Aldrin	Hep-Epox	g-Chlord	a-Endosu
20.067	10.506	-1	-1	-1	-1	-1	-1	-1
1.4004	1.4722	-1	-1	-1	-1	-1	-1	-1
9.3997	68.404	-1	-1	-1	-1	-1	-1	-1
3.3264	4.2562	1.9421	-1	-1	-1	-1	-1	-1
9.7733	9.9927	3.1684	0.9505	-1	-1	-1	-1	-1
9.2995	2.9291	-1	-1	-1	-1	-1	-1	-1
9.4668	11.643	3.5092	1.2242	-1	-1	-1	4.8966	-1
48.191	20.898	3.7118	0.9981	-1	-1	-1	3.6806	-1
22.439	21.627	2.8386	-1	-1	-1	-1	2.1898	-1
10.999	68.398	1.2563	-1	-1	-1	-1	-1	3.5176
-1	-1	-1	-1	-1	-1	-1	-1	-1
27.378	25.052	1.2824	0.6263	-1	-1	-1	-1	-1
12.272	20.292	1.7315	1.1239	-1	-1	-1	-1	-1
11.973	21.893	-1	-1	-1	-1	-1	-1	-1
26.971	31.22	5.6646	-1	-1	-1	-1	-1	-1
24.264	55.969	2.9764	-1	-1	-1	-1	-1	-1
10.47	16.809	-1	-1	-1	-1	-1	-1	-1
8.6079	18.494	-1	-1	-1	-1	-1	-1	-1
12.73	59.455	-1	-1	-1	-1	-1	-1	-1
7.855	23.263	10.977	-1	-1	-1	-1	-1	-1
13.613	27.669	1.6425	-1	-1	-1	-1	-1	-1
6.2137	18.427	-1	-1	-1	-1	-1	-1	-1
5.4539	12.289	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
4.7059	11.765	3.9076	-1	-1	-1	-1	-1	-1
9.9812	17.711	2.3265	-1	-1	-1	-1	-1	-1
5.9516	25.398	-1	-1	-1	-1	-1	-1	-1
4.5171	3.2436	-1	-1	-1	-1	-1	-1	-1
3.3784	5.7952	-1	-1	-1	-1	-1	-1	-1
7.1817	17.024	-1	-1	-1	-1	-1	-1	-1
5.9591	41.544	-1	-1	-1	-1	-1	-1	-1
1.9672	3.1913	-1	-1	-1	-1	-1	-1	-1
3.9299	7.4593	-1	-1	-1	-1	-1	-1	-1
17.291	28.609	-1	-1	-1	-1	-1	-1	-1
2.6919	3.0508	-1	-1	-1	-1	-1	-1	-1
2.0307	2.6876	-1	-1	-1	-1	-1	-1	-1
6.5444	5.9875	-1	-1	-1	-1	1.7173	-1	-1
1.1069	1.7988	-1	0.5139	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
2.9017	3.3348	-1	-1	-1	-1	-1	-1	-1
3.7588	4.1006	-1	-1	-1	-1	-1	-1	-1
22.992	38.192	-1	-1	-1	-1	0.9688	-1	-1
1.625	2.5417	0.9375	-1	-1	-1	0.9167	-1	-1
1.6975	3.0686	-1	-1	-1	-1	1.0011	-1	-1
4.1444	6.9742	-1	-1	-1	-1	-1	-1	-1
13.164	7.9812	-1	-1	-1	-1	-1	-1	-1
9.5059	11.859	-1	-1	-1	-1	2.0471	2.2118	-1
11.989	21.782	1.0986	-1	-1	-1	3.1048	-1	-1
14.09	17.291	-1	-1	-1	-1	0.8275	-1	-1
9.3189	14.314	-1	-1	-1	-1	0.7351	-1	-1
9.6684	13.101	-1	-1	-1	-1	1.0042	-1	-1
8.6271	12.99	-1	-1	-1	-1	1.4543	1.3803	-1

NOTL Suspended Solids 1991-92

a-Chlord	Octachlo	p,p'-DDE	Dieldrin	Endrin	o,p'-DDT	p,p'-TDE	p,p'-DDT	b-Endosu
-1	-1	5.7446	1.3575	-1	-1	2.5379	5.961	-1
-1	-1	6.3555	1.149	-1	-1	2.5494	7.3788	-1
1.2099	14.146	23.639	3.3039	-1	5.6771	5.4909	36.296	-1
-1	-1	6.3223	1.405	-1	-1	2.4587	5.8471	-1
-1	5.2157	8.5303	2.5835	-1	-1	3.729	7.0924	-1
-1	1.7821	5.4076	1.4748	-1	-1	2.5604	4.9365	-1
-1	2.6659	9.358	11.126	-1	-1	11.888	7.3449	-1
-1	3.8366	12.913	7.8603	-1	-1	4.6787	9.7629	-1
-1	3.0549	8.7591	2.8386	-1	-1	3.974	5.7853	-1
-1	2.9592	6.3093	4.048	-1	-1	4.2714	4.2993	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
2.4456	3.5192	10.17	2.4754	-1	-1	4.921	13.451	-1
-1	2.339	6.3791	4.5261	-1	-1	4.0705	3.706	-1
-1	3.6488	14.538	2.9076	-1	-1	4.3615	-1	-1
-1	5.4071	17.251	3.2185	-1	-1	5.0853	-1	-1
-1	6.2763	11.808	-1	-1	-1	9.3174	9.285	-1
-1	3.3428	11.479	-1	-1	-1	5.4557	5.2349	-1
-1	2.5555	8.6752	-1	-1	-1	-1	4.573	-1
-1	7.2848	11.001	-1	-1	-1	-1	3.3481	-1
-1	2.6855	8.7613	3.2226	-1	-1	3.4911	7.0829	-1
-1	3.9798	11.529	-1	-1	3.9798	32.28	215.86	-1
-1	2.7854	8.5399	-1	-1	-1	4.1628	-1	-1
-1	2.0021	6.8692	-1	-1	-1	3.5554	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	1.9328	8.6134	2.8151	-1	-1	-1	-1	-1
-1	3.0019	12.645	-1	-1	-1	-1	-1	-1
-1	4.083	10.692	-1	-1	-1	5.5709	12.803	-1
-1	-1	4.1086	-1	-1	-1	-1	6.1989	-1
-1	0.8836	6.289	-1	-1	-1	-1	9.0696	-1
-1	-1	7.2675	2.0601	-1	-1	3.319	7.6109	-1
1.9296	-1	6.5551	-1	-1	-1	2.8944	11.039	-1
-1	-1	5.4645	1.0492	-1	-1	2.2732	9.1148	-1
-1	-1	7.4093	1.2015	-1	-1	3.4293	13.967	-1
-1	3.1962	9.4839	1.9911	-1	-1	4.4014	-1	-1
-1	-1	4.4467	-1	-1	-1	-1	-1	-1
-1	-1	4.5391	1.1547	-1	-1	3.2451	6.311	-1
-1	-1	-1	2.019	-1	-1	5.3377	11.604	-1
-1	-1	4.5859	1.186	-1	-1	2.372	5.4556	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	1.5808	-1	-1	2.2954	-1	-1
-1	-1	-1	2.6849	-1	-1	2.8802	-1	-1
-1	1.8084	8.1378	1.5501	-1	-1	4.2626	5.5328	-1
-1	-1	4.4167	1.5625	-1	-1	3.4583	-1	-1
-1	-1	3.1338	1.5669	-1	-1	4.5049	-1	-1
-1	-1	3.1194	1.5152	-1	-1	5.0134	-1	-1
-1	1.108	3.7371	1.4272	-1	-1	3.5493	-1	-1
-1	1.0824	11.435	2.6588	-1	-1	5.9294	22.376	5.6941
-1	-1	-1	2.7227	-1	-1	5.1827	-1	-1
-1	0.8493	-1	1.176	-1	-1	2.5044	-1	-1
-1	-1	-1	1.0595	-1	-1	2.6595	-1	-1
-1	-1	-1	1.4946	-1	-1	3.5497	-1	-1
-1	-1	-1	2.0212	-1	-1	4.6833	-1	-1

Endrin-A	Photomir	Mirex	Methoxyc	Hexchlor	Hxchlrcy	PCB	Naphthal	2-Methyl
-1	-1	-1	-1	3.738	0.905	211.27	-1	-1
-1	-1	-1	-1	-1	-1	28.42	34.758	-1
-1	-1	2.4197	-1	2.8851	-1	178.92	-1	-1
-1	-1	-1	-1	4.2562	-1	77.025	29.05	-1
-1	-1	-1	-1	3.8508	-1	207.9	39.215	-1
-1	-1	-1	-1	0.8808	-1	91.848	29.844	-1
-1	-1	-1	-1	4.2982	-1	180.79	-1	-1
-1	-1	-1	-1	21.117	-1	180.82	117.56	49.345
-1	-1	2.7575	-1	8.1103	-1	316.17	27.791	-1
-1	-1	2.6242	-1	6.086	-1	512	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	3.3403	-1	9.3647	-1	283.63	-1	-1
-1	-1	3.2807	-1	5.7716	-1	343.56	-1	-1
-1	-1	4.8176	-1	5.1881	-1	215.14	-1	-1
-1	-1	34.02	-1	24.718	-1	260.19	-1	-1
-1	3.9146	48.075	-1	14.591	102.07	747.91	-1	-1
-1	-1	6.6225	-1	4.2258	-1	170.92	-1	-1
-1	-1	3.7996	-1	3.8332	-1	110.29	-1	-1
-1	-1	24.65	-1	7.2848	0.8094	338.41	-1	-1
-1	-1	4.4982	-1	4.4982	-1	140.08	-1	-1
-1	-1	8.4018	-1	7.7701	-1	208.65	-1	-1
-1	-1	2.7548	-1	3.3976	-1	129.32	-1	-1
-1	-1	29.168	-1	2.8305	-1	150.98	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	1.6807	-1	3.4454	-1	136.43	-1	-1
-1	-1	2.1013	-1	28.143	-1	215.38	-1	-1
-1	-1	-1	-1	3.2526	-1	121.18	-1	-1
-1	-1	-1	-1	0.865	-1	40.173	63.191	14.897
-1	-1	-1	-1	1.7152	-1	75.52	-1	-1
-1	1.1731	-1	-1	2.3462	-1	198.86	-1	-1
-1	-1	-1	-1	3.6039	-1	141.74	60.187	-1
-1	-1	-1	-1	-1	-1	42.645	36.503	12.699
-1	-1	-1	-1	1.8273	-1	154.17	39.249	-1
-1	1.8077	3.9298	-1	7.126	-1	179.2	56.379	29.971
-1	-1	-1	-1	-1	-1	28.933	40.738	12.463
-1	-1	-1	-1	-1	-1	35.039	36.273	-1
-1	-1	-1	-1	0.9747	-1	73.59	-1	-1
-1	-1	-1	-1	-1	-1	50.899	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	-1	0.8445	-1	80.446	-1	-1
-1	-1	-1	-1	0.6834	-1	102.81	-1	-1
-1	-1	2.239	-1	4.1335	-1	175.29	-1	-1
-1	-1	-1	-1	0.75	-1	76.5	-1	-1
-1	-1	-1	-1	1.0229	-1	49.075	-1	-1
-1	-1	-1	-1	1.1141	-1	128.83	-1	-1
-1	-1	-1	-1	1.6901	-1	85.934	-1	-1
-1	-1	-1	-1	0.8471	-1	108.21	-1	-1
-1	-1	-1	-1	9.4101	-1	188.44	-1	-1
-1	-1	-1	-1	1.3502	-1	94.164	-1	-1
-1	-1	-1	-1	0.6486	-1	64.843	-1	-1
-1	-1	-1	-1	0.8407	-1	70.037	-1	-1
-1	-1	-1	-1	1.331	-1	76.362	-1	-1

NOTL Suspended Solids 1991-92

1-Methyl	2-Chloro	Acenapht	Fluorene	Anthrace	Phenanth	Fluorant	Pyrene	Benzo(a)
-1	-1	-1	-1	-1	186.6	258.19	158.35	228.47
64.255	-1	-1	18.187	71.652	177.61	260.31	226.75	173.75
217.54	-1	-1	37.227	-1	593.58	815.03	577.9	684.92
93.864	-1	-1	15.083	82.438	191.36	285.12	200.83	283.84
-1	-1	-1	14.38	94.078	278.36	353.59	-1	306.92
-1	-1	-1	11.389	69.029	170.46	247.3	194.39	225.6
-1	-1	-1	27.285	-1	417.87	427.75	372.69	430.2
121.02	-1	-1	122.36	263.57	1064.1	884.25	813.76	711.35
-1	-1	-1	32.847	100.68	335.44	444.44	371.78	393.35
-1	-1	-1	26.522	133.17	293.44	281.97	190.12	301.84
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	40.262	139.61	416.19	341.78	262.45	363.82
-1	-1	-1	20.2	103.89	282.26	273.09	209.6	288.55
-1	-1	-1	-1	111.74	283.1	392.36	264.82	195.75
-1	-1	-1	23.013	119.73	325.84	588.64	380.37	272.35
-1	-1	-1	21.999	110.81	241.31	506.96	376.12	282.14
-1	-1	-1	-1	102.49	197.98	410.38	315.61	229.83
-1	-1	-1	-1	182.92	272.02	332.08	244.45	205.68
-1	-1	-1	-1	-1	200.18	284.33	218.18	184.51
-1	-1	-1	-1	-1	229.04	331.35	276.94	216.62
-1	-1	-1	-1	166.46	342.14	292.26	240.15	268.38
-1	-1	-1	-1	126.72	184.73	195.41	158.25	157.88
-1	-1	-1	-1	-1	258.65	191.92	143.25	118.99
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	305.38	235.8	153.78	121.09
-1	-1	-1	-1	-1	332.35	292.08	231.14	189.16
-1	-1	-1	24.913	101.73	339.2	577.16	477.09	538.37
15.137	-1	-1	36.04	100.91	324.84	384.19	282.56	290
25.702	-1	-1	18.893	65.229	196.67	351.69	255.2	252.57
-1	-1	-1	19.342	104.41	288.58	443	317.31	370.04
40.153	-1	-1	20.658	93.36	283.8	383.85	352.72	223.64
22.383	-1	-1	17.268	64.721	203.93	258.6	180.77	169.31
10.488	-1	-1	18.748	83.254	288.46	420.25	291.36	241.78
42.416	-1	-1	27.901	102.83	400.45	699.87	554.62	417.58
-1	-1	-1	19.781	69.771	176.65	246.18	167.42	148.69
-1	-1	-1	23.153	98.945	254.63	307.11	218.04	181.05
-1	-1	-1	-1	-1	318.75	269.37	187.14	223
-1	-1	-1	-1	-1	303.2	69.184	92.963	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	-1	-1	370.51	179.86	169.97	174.47
-1	-1	-1	-1	-1	370.69	188.72	147.94	242.4
-1	-1	-1	-1	-1	383.27	230.27	225.34	254.85
-1	-1	-1	-1	-1	369.1	153.65	162.67	213.44
-1	-1	-1	-1	149.08	276.69	238.48	212.45	209.36
-1	-1	-1	-1	-1	315.42	298.13	268.34	190.8
-1	-1	-1	-1	155.31	273.24	278.23	236.75	229.03
-1	-1	-1	-1	-1	599.65	802.09	678.85	475.88
-1	-1	-1	-1	-1	465.13	366.8	370.55	236.97
-1	-1	-1	-1	-1	359.76	280.68	235.04	160.71
-1	-1	-1	-1	-1	324.78	250.64	177.02	169.3
-1	-1	-1	-1	-1	381.34	247.71	189.16	149.44
-1	-1	-1	-1	-1	447.74	335.17	277.79	184.55

NOTL Suspended Solids 1991-92

Chrysene	Benzo(b/	Benz(a)p	Indenopy	Dibenzo(	Benzo(gh	Dimethyl	Diethylp	Di-n-but
137.01	240.25	67.106	-1	-1	-1	-1	132.56	177.75
137.72	230.52	61.813	-1	-1	-1	-1	88.689	68.241
442.35	919.78	272.03	-1	-1	-1	-1	323.87	258.54
211.1	335.48	146.16	-1	-1	-1	-1	138.97	91.55
246.84	388.89	171.61	-1	-1	-1	-1	202.73	223.42
168.05	271.73	97.87	-1	-1	-1	-1	157.52	80.029
336.13	588.41	248.2	-1	-1	-1	-1	226.74	1123.9
790.8	974.11	634.4	-1	-1	-1	-1	241.08	962.79
393.48	-1	339.28	-1	-1	-1	-1	189.73	294.49
272.14	444.89	182.52	-1	-1	-1	-1	208.04	219.21
-1	-1	-1	-1	-1	-1	-1	-1	-1
228.12	354.97	175.45	-1	-1	-1	-1	178.62	145.75
196.93	344.23	159.9	-1	-1	-1	-1	148.15	247.42
247.01	598.92	216.45	-1	-1	-1	-1	149.94	113.2
275.89	769.52	237.79	-1	-1	-1	-1	216.29	113.13
248.37	762.41	257	-1	-1	-1	-1	189.49	169.49
233.84	596.25	202.27	-1	-1	-1	-1	192.37	346.77
265.37	499.63	202.32	-1	-1	-1	-1	108.61	318.53
187.71	427.37	171.67	-1	-1	-1	-1	103.02	282.97
190.37	448.14	184.76	-1	-1	-1	-1	-1	169.89
253.35	685.63	210.45	-1	-1	-1	-1	-1	315.95
115.09	328.59	130.12	-1	-1	-1	-1	105.91	107.22
162.82	347.67	128.06	-1	-1	-1	-1	-1	144.7
-1	-1	-1	-1	-1	-1	-1	-1	-1
171.85	315.38	123.82	-1	-1	-1	-1	-1	174.03
178.54	533.51	173.96	-1	-1	-1	-1	-1	137.07
357.92	827.54	318.06	283.39	-1	292.73	-1	376.37	373.91
181.64	394.76	135.03	-1	-1	-1	-1	134.07	242.67
215.44	532.51	175.6	-1	-1	-1	-1	253.4	252.55
274.25	765.61	306.95	215.45	-1	241.49	-1	212.5	293.65
454.99	427.24	221.2	88.252	-1	137.03	-1	172.82	206.75
175.61	354.99	150.49	73.268	-1	105.44	-1	104.07	179.3
293.59	557.57	209.61	114.02	-1	189.06	-1	96.345	267.83
527.95	1037.1	456.04	242.34	-1	342.44	-1	119.47	300.84
180.24	290.39	125.58	63.33	-1	78.584	-1	49.91	97.448
189.13	432.53	133.84	43.54	-1	108.56	-1	135.3	200.06
158.16	453.05	186.49	-1	-1	-1	-1	79.137	189.44
97.727	295.55	131.21	-1	-1	-1	-1	-1	97.233
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
162.36	466.98	206.95	-1	-1	-1	-1	-1	91.641
170	426.48	219.97	-1	-1	-1	-1	-1	112.96
199.2	660.8	282.78	-1	-1	-1	-1	-1	136.43
164.96	469.38	236.79	-1	-1	-1	-1	-1	123.98
199.83	520.72	181.02	-1	-1	-1	-1	-1	121.26
180.06	467.18	194.03	-1	-1	-1	-1	-1	112.81
152.54	389.86	130.57	-1	-1	-1	-1	-1	90.272
582.56	1617.2	560.35	345.25	-1	395.58	-1	-1	129.95
208.96	737.86	259.45	-1	-1	-1	-1	-1	223.1
164.42	470.49	180.29	-1	-1	-1	-1	-1	210.39
171.16	369.43	128.61	-1	-1	-1	-1	-1	88
203.25	436.71	182.06	-1	-1	-1	-1	-1	124.57
253.39	493.2	190.04	-1	-1	-1	-1	-1	92.679

Benzylbu	Bis(2-et	Dioctylp	Phenol	2,4-Dich	2,3-Dich	2,6-Dich	3-met,4-	2,3,5-Tr
306.04	741.41	-1	-1	-1	-1	-1	-1	-1
223.25	8400.8	34.524	-1	-1	-1	-1	-1	-1
617.31	18996	73.988	-1	-1	-1	-1	-1	-1
234.26	495.33	58.678	-1	-1	-1	-1	-1	-1
298.68	1561.4	65.001	-1	-1	-1	-1	-1	-1
147.93	1074.9	-1	-1	-1	-1	-1	-1	-1
690.45	1543.5	127.61	-1	-1	-1	-1	-1	-1
462.98	1543.4	131.07	-1	-1	-1	-1	-1	-1
857.56	3708.3	91.89	300.54	-1	-1	-1	-1	-1
207.23	1545.8	72.027	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
424.9	791.41	109.45	-1	-1	-1	-1	-1	-1
314.61	849.03	-1	336.09	-1	-1	-1	-1	-1
783.61	596.04	-1	-1	-1	-1	-1	-1	-1
872.71	467.59	-1	-1	-1	-1	-1	-1	-1
728.57	431.28	-1	-1	-1	-1	-1	-1	-1
620.69	509.37	-1	-1	-1	-1	-1	-1	-1
412.98	3814.7	-1	689.31	-1	-1	-1	-1	-1
356.95	3367	40.103	416.85	-1	-1	-1	-1	-1
178.92	1295.7	-1	327.96	-1	-1	-1	-1	-1
336.13	1865.7	-1	-1	-1	-1	-1	-1	-1
230.98	643.1	55.096	-1	-1	-1	-1	-1	-1
301.62	809.53	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
279.41	3642.9	-1	-1	-1	-1	-1	-1	-1
285.82	976.74	83.49	-1	-1	-1	-1	-1	-1
783.7	8598.5	62.076	238.41	-1	-1	-1	-1	-1
392.6	1058.1	45.651	180.68	-1	-1	-1	-1	-1
420.58	3992.9	40.437	223.23	-1	-1	-1	-1	-1
774.54	3978.3	63.519	467.24	-1	-1	-1	-1	-1
664.84	9623.8	52.1	221.91	-1	-1	-1	-1	-1
279.5	847.43	37.77	141.86	-1	-1	-1	-1	-1
398.5	1908.1	67.109	154.69	-1	-1	-1	-1	-1
589.6	2688.1	197.9	273.25	-1	-1	-1	-1	-1
140.54	3611	39.282	-1	-1	-1	-1	-1	-1
316.42	656.84	77.046	-1	-1	-1	-1	-1	-1
454.56	1529	-1	-1	-1	-1	-1	-1	-1
423.17	499.88	-1	-1	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
315.07	697.4	74.275	-1	-1	-1	-1	-1	-1
-1	4569.5	41.982	-1	-1	-1	-1	-1	-1
342.73	623.57	70.829	-1	-1	-1	-1	-1	-1
262.5	320.38	-1	-1	-1	-1	-1	-1	-1
278.13	486.94	-1	-1	-1	-1	-1	-1	-1
245.59	456.55	-1	-1	-1	-1	-1	-1	-1
205.26	513.65	-1	-1	-1	-1	-1	-1	-1
367.55	1176.4	173.25	-1	-1	-1	-1	-1	-1
316.46	758.51	-1	-1	-1	-1	-1	-1	-1
-1	561.85	31.794	-1	-1	-1	-1	-1	-1
214.05	323.14	-1	-1	-1	-1	-1	-1	-1
-1	690.14	-1	-1	-1	-1	-1	-1	-1
-1	651.86	-1	-1	-1	-1	-1	-1	-1

NOTL Suspended Solids 1991-92

2,4,6-Tr	2,4,5-Tr	2,3,4-Tr	3,5-Dich	2,3,6-Tr	3,4-Dich	3,4,5-Tr	Pentachl	Atrazine
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	919.88	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	-1	-1	-1	-1	-1	-1	-1	-1

Metolach	2,3,7,8-TCDD	
-1	-1	
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-99.9	-99.9	
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-1	-1	
-1	-1	

Fort Erie Volatiles 1991-92

		BENZENE	CARBON-T	CHLOROFO	1,2-DICH	METHYLEN	TETRACHL
FE	910404	-1	-1	-1	-1	11.95	-1
FE	910410	-1	-1	-1	-1	13.48	-1
FE	910417	0.01	-1	-1	-1	3.76	-1
FE	910424	0.01	-1	-1	-1	8.49	0.02
FE	910501	0.02	-1	-1	-1	14.3	-1
FE	910508	-1	-1	-1	-1	4.56	-1
FE	910515	-1	-1	-1	-1	2.09	-1
FE	910522	0.01	-1	0.01	-1	1.99	-1
FE	910529	0.01	-1	-1	-1	5.46	-1
FE	910605	0.01	-1	-1	-1	1.52	-1
FE	910612	0.02	-1	-1	-1	1.35	-1
FE	910619	0.02	-1	-1	-1	1.29	-1
FE	910626	0.03	-1	-1	-1	1.51	-1
FE	910703	0.02	-1	-1	-1	1.2	-1
FE	910710	0.01	-1	-1	-1	0.98	-1
FE	910717	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
FE	910724	0.02	-1	0.13	-1	3.77	-1
FE	910731	0.01	-1	-1	-1	1.3	-1
FE	910807	0.05	-1	-1	-1	3.05	-1
FE	910814	0.03	-1	-1	-1	0.85	-1
FE	910821	0.03	-1	-1	-1	1.51	-1
FE	910828	0.01	-1	-1	-1	0.29	-1
FE	910904	0.01	-1	-1	-1	0.3	-1
FE	910918	-1	-1	-1	-1	-1	-1
FE	910925	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
FE	911002	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
FE	911009	0.01	-1	-1	-1	7.48	-1
FE	911016	-1	-1	-1	-1	2.37	-1
FE	911023	0.02	-1	-1	-1	4.82	-1
FE	911030	0.01	-1	-1	-1	2.44	-1
FE	911106	-1	-1	-1	-1	1.67	-1
FE	911113	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
FE	911120	-1	-1	-1	-1	0.61	-1
FE	911127	0.01	-1	-1	-1	2.21	-1
FE	911204	0.01	-1	-1	-1	0.53	-1
FE	911211	-1	-1	-1	-1	0.75	-1
FE	911218	0.01	-1	-1	-1	0.7	-1
FE	920107	0.02	-1	-1	-1	33.6	-1
FE	920114	0.02	-1	-1	-1	0.5	-1
FE	920121	-1	-1	-1	-1	0.36	-1
FE	920128	0.01	-1	0.01	-1	0.8	-1
FE	920204	0.01	-1	0.01	-1	0.25	-1
FE	920211	0.01	-1	-1	-1	0.47	-1
FE	920218	0.02	-1	0.01	-1	10.1	-1
FE	920225	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
FE	920304	0.02	-1	-1	-1	0.79	-1
FE	920311	0.02	-1	0.01	-1	0.63	-1
FE	920318	-1	-1	-1	-1	0.26	-1
FE	920325	0.02	-1	-1	-1	0.14	-1

BENZENE	CARBON-T	CHLOROFO	1,2-DICH	METHYLEN	TETRACHLOROETHEN	
-1	-1	-1	-1	13.39	-1	
-1	-1	-1	-1	10.86	-1	
-1	-1	-1	-1	4.13	-1	
0.01	-1	-1	-1	8.33	-1	
0.01	-1	-1	-1	9.65	-1	
-1	-1	-1	-1	20.96	-1	
0.01	0.01	-1	-1	1.08	-1	
0.01	-1	0.01	-1	1.87	-1	
0.01	-1	-1	-1	5.87	-1	
-1	0.01	-1	-1	1.59	-1	
0.04	-1	-1	-1	2.52	-1	
0.02	-1	-1	-1	1.1	-1	
0.02	-1	-1	-1	1.24	-1	
0.01	-1	0.01	-1	1.17	-1	
0.01	-1	-1	-1	0.08	-1	
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	
-1	-1	0.12	-1	-1	0.01	
-1	-1	-1	-1	0.5	-1	
0.04	-1	-1	-1	0.65	-1	
0.05	-1	0.01	-1	0.59	-1	
0.03	-1	-1	-1	1.53	-1	
0.01	-1	-1	-1	0.27	-1	
0.01	-1	-1	-1	0.55	-1	
0.05	-1	-1	-1	2.4	-1	
0.04	-1	-1	-1	2.33	0.01	
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	
0.01	-1	-1	-1	4.27	-1	
-1	-1	-1	-1	1.86	-1	
0.02	-1	-1	-1	13.6	-1	
-1	-1	-1	-1	4.79	-1	
-1	-1	-1	-1	1.31	-1	
0.02	-1	0.01	-1	6.01	-1	
0.02	-1	-1	-1	8.99	-1	
0.01	-1	-1	0.01	0.8	-1	
0.02	-1	0.01	-1	4.38	-1	
-1	-1	-1	-1	0.57	-1	
0.01	-1	-1	-1	0.79	-1	
0.01	-1	0.03	-1	55.9	-1	
0.02	-1	-1	-1	0.5	-1	
-1	-1	-1	-1	1.33	-1	
0.01	-1	0.01	-1	1.18	-1	
0.02	-1	-1	-1	0.26	-1	
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	
0.01	-1	0.01	-1	10.7	-1	
0.01	-1	0.01	-1	0.28	-1	
0.01	-1	-1	-1	0.43	-1	
0.01	-1	0.01	-1	0.35	-1	
-1	-1	-1	-1	0.12	-1	
0.01	-1	-1	-1	0.04	-1	

NOTL Volatiles 1991-92

		BENZENE	CARBON-T	CHLOROFO	1,2-DICH	METHYLEN	TETRACHL
NOTL	910404	-1	-1	0.01	-1	0.92	0.02
NOTL	910410	0.01	-1	0.01	-1	0.9	-1
NOTL	910417	0.01	-1	-1	-1	0.79	-1
NOTL	910424	0.01	-1	0.02	0.01	1.65	0.02
NOTL	910501	0.01	0.01	-1	-1	0.77	-1
NOTL	910508	-1	-1	0.01	-1	1.03	-1
NOTL	910515	0.02	0.01	0.01	0.01	0.57	-1
NOTL	910522	0.01	-1	0.01	-1	1.07	-1
NOTL	910529	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
NOTL	910605	-1	-1	-1	-1	1.2	-1
NOTL	910612	-1	-1	0.02	-1	0.82	0.01
NOTL	910619	0.01	0.01	0.02	-1	1.76	-1
NOTL	910626	-1	0.01	0.01	-1	1.28	-1
NOTL	910703	0.01	-1	0.02	-1	0.6	-1
NOTL	910710	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
NOTL	910717	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
NOTL	910724	-1	-1	0.01	-1	2.23	-1
NOTL	910731	-1	-1	0.04	-1	0.74	-1
NOTL	910807	-1	-1	0.01	-1	0.61	-1
NOTL	910814	0.04	-1	0.02	-1	1.24	-1
NOTL	910821	0.02	-1	-1	-1	0.85	-1
NOTL	910828	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
NOTL	910904	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
NOTL	910918	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
NOTL	910925	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
NOTL	911002	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9
NOTL	911009	0.01	-1	0.02	-1	6.39	-1
NOTL	911016	0.01	-1	0.01	-1	0.97	0.01
NOTL	911023	-1	-1	-1	-1	3.34	-1
NOTL	911030	-1	-1	0.01	-1	7.13	-1
NOTL	911106	-1	-1	0.03	-1	21.8	-1
NOTL	911113	-1	-1	0.01	-1	2.13	-1
NOTL	911120	-1	-1	0.01	-1	0.58	0.01
NOTL	911127	-1	-1	0.01	-1	0.68	0.01
NOTL	911204	0.01	-1	0.02	-1	0.42	0.01
NOTL	911211	-1	0.01	-1	-1	1.77	-1
NOTL	911218	-1	-1	0.01	-1	1.56	-1
NOTL	920107	0.02	-1	0.01	-1	1.62	0.01
NOTL	920114	0.02	-1	0.02	-1	0.94	0.01
NOTL	920121	0.01	0.01	0.05	-1	3.8	0.01
NOTL	920128	0.02	0.01	0.03	-1	1.29	0.01
NOTL	920204	0.02	0.01	0.03	-1	1.2	0.01
NOTL	920211	-1	-1	0.01	-1	0.41	-1
NOTL	920218	0.01	-1	0.04	-1	1.96	0.01
NOTL	920225	-1	0.01	0.04	-1	14.9	0.01
NOTL	920304	0.02	0.01	0.04	-1	1.01	0.01
NOTL	920311	0.02	0.01	0.04	0.01	0.28	0.02
NOTL	920318	0.01	-1	0.01	-1	1.22	-1
NOTL	920325	0.05	0.01	0.02	-1	0.12	-1

BENZENE	CARBON-T	CHLOROFO	1,2-DICH	METHYLEN	TETRACHLOROETHEN	
-1	-1	-1	-1	1.25	0.02	
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	
0.01	-1	0.01	-1	0.86	-1	
-1	-1	0.01	0.01	1.07	-1	
0.01	0.01	0.02	-1	2.39	0.03	
-1	-1	0.01	-1	0.72	-1	
0.01	0.01	0.02	-1	0.5	-1	
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	
-1	-1	0.01	-1	1.56	-1	
0.01	-1	-1	-1	1.82	-1	
-1	-1	0.02	-1	2.21	0.01	
0.02	0.01	0.02	-1	1.37	-1	
-1	0.01	0.02	-1	1.97	-1	
-1	-1	0.02	-1	0.46	-1	
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	
-1	-1	0.02	-1	1.46	-1	
-1	-1	0.03	-1	0.46	-1	
-1	-1	0.01	-1	0.5	-1	
0.04	-1	0.01	-1	-1	-1	
0.03	-1	0.01	-1	0.74	-1	
0.01	-1	0.01	-1	1.34	-1	
0.01	-1	0.01	-1	0.34	-1	
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	
-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	
0.01	-1	0.01	-1	5.96	0.01	
0.01	-1	0.01	-1	1.42	-1	
-1	-1	-1	-1	2.53	-1	
-1	0.01	0.02	-1	5.63	-1	
-1	0.01	0.03	-1	17.7	-1	
-1	-1	0.02	-1	13.2	-1	
-1	0.01	0.01	-1	0.95	0.01	
0.01	-1	0.01	-1	0.43	-1	
0.01	-1	0.02	-1	0.51	0.01	
-1	-1	-1	-1	1.04	-1	
-1	-1	0.01	-1	1.75	-1	
0.02	0.01	0.01	0.01	0.29	-1	
0.01	-1	0.01	-1	0.19	0.01	
0.01	0.01	0.03	-1	0.89	0.01	
0.02	0.01	0.03	-1	1.54	0.02	
0.02	0.01	0.03	-1	2.16	0.01	
0.01	-1	0.01	-1	0.35	-1	
0.01	-1	0.04	-1	1.99	0.01	
0.01	0.01	0.04	-1	17.5	0.01	
0.02	0.01	0.04	-1	1.98	0.01	
0.03	-1	0.04	0.01	0.33	0.02	
-1	-1	0.02	-1	1.09	-1	
0.04	0.01	0.02	-1	0.1	-1	

Trace Metals in Whole Water at NOTL (1991-92)

NAQUADAT

STATION NUMBER - ON02HA0019
REGION - ONTARIO
LOCATION - LAT. 43/15/20 LONG. 079/03/21

AVERAGE DEPTH(M) - 0.0
WATER TYPE - RIVER OR STREAM WATER

NARRATIVE: LOWER NIAGARA RIVER(2.4KM-1.5MI) UPSTREAM OF MOUTH FROM LIGHTHOUSE AT WATER TREATMENT PLANT TO NEW YORK STATE AUTOMATIC DAILY SAMPLING STATION (30M-100FT FROM CDN SHORE)1.5AUTO

DATE	TIME	DEPTH	LITHIUM TOTAL	ALUMINUM TOTAL	VANADIUM TOTAL	CHROMIUM TOTAL	MANGANESE TOTAL	IRON TOTAL	COBALT TOTAL	NICKEL TOTAL
			LI LAB 01 P03009	AL LAB 01 P13009	V LAB 01 P23009	CR LAB 01 P24009	MN LAB 01 P25010	FE LAB 01 P26009	CO LAB 01 P27009	NI LAB 01 P28009
YEAR-MO-DY		METRES	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L
1991-04-05	1200	1.0	.0042	.4410	.0009	.0009	.0185	.8120	.0004	.0010
1991-04-12	1200	1.0	.0071	1.1700	.0020	.0022	.0489	2.3300	.0010	.0026
1991-04-18	1200	1.0	.0045	.5020	.0010	.0010	.0204	.9080	.0004	.0011
1991-04-25	1200	1.0	.0039	.4470	.0009	.0008	.0148	.6770	.0003	.0009
1991-05-02	1200	1.0	.0051	.7110	.0013	.0018	.0364	1.5200	.0006	.0016
1991-05-09	1200	1.0	.0055	.7660	.0015	.0016	.0388	1.6300	.0007	.0018
1991-05-16	1200	1.0	.0037	.2450	.0006	.0006	.0125	.4700	.0002	.0006
1991-05-23	1200	1.0	.0088	1.9100	.0034	.0037	.1070	4.1400	.0015	.0049
1991-05-30	1200	1.0	.0030	.1380	.0003	.0003	.0071	.2460	.0001	.0009
1991-06-06	1200	1.0	.0029	.0590	.0003	.0003	.0027	.1010	.0001 L	.0007
1991-06-13	1200	1.0	.0029	.0890	.0003	.0002	.0039	.1270	.0001	.0006
1991-06-20	1200	1.0	.0032	.2110	.0004	.0004	.0102	.3350	.0001	.0011
1991-06-27	1200	1.0	.0030	.1010	.0004	.0003	.0055	.1620	.0001	.0007
1991-07-04	1200	1.0	.0032	.1500	.0006	.0004	.0079	.2370	.0002	.0008
1991-07-11	1200	1.0	.0034	.2500	.0012	.0006	.0152	.3990	.0002	.0009
1991-07-18	1200	1.0	.0030	.1290	.0004	.0008	.0063	.1720	.0002	.0007
1991-07-25	1200	1.0	.0031	.1300	.0005	.0004	.0078	.2110	.0002	.0007
1991-08-01	1200	1.0	.0035	.2480	.0007	.0006	.0168	.4370	.0003	.0011
1991-08-08	1200	1.0	.0035	.2820	.0007	.0006	.0177	.5090	.0003	.0010
1991-08-15	1200	1.0	.0036	.2530	.0006	.0008	.0171	.4330	.0002	.0012
1991-08-22	1200	1.0	.0035	.3390	.0006	.0008	.0100	.3090	.0001	.0009
1991-08-29	1200	1.0	.0035	.2090	.0005	.0007	.0127	.3340	.0001	.0010
1991-09-05	1200	1.0	.0035	.1990	.0006	.0007	.0132	.3420	.0002	.0010
1991-09-19	1200	1.0	.0032	.1730	.0004	.0006	.0064	.1930	.0001	.0008
1991-09-26	1200	1.0	.0032	.1510	.0004	.0005	.0059	.1750	.0001	.0009
1991-10-03	1200	1.0	.0031	.1480	.0004	.0006	.0049	.1590	.0001	.0007
1991-10-10	1200	1.0	.0045	.5470	.0011	.0011	.0259	.9690	.0005	.0017
1991-10-17	1200	1.0	.0039	.3620	.0008	.0008	.0183	.6700	.0003	.0012
1991-10-24	1200	1.0	.0033	.1190	.0004	.0003	.0050	.1700	.0002	.0009
1991-10-31	1200	1.0	.0031	.0850	.0003	.0003	.0034	.1210	.0001	.0007
1991-11-08	1200	1.0	.0037	.2150	.0006	.0005	.0095	.3740	.0002	.0011
1991-11-14	1200	1.0	.0044	.4990	.0010	.0011	.0206	.8250	.0004	.0016
1991-11-21	1200	1.0	.0035	.1730	.0005	.0004	.0075	.2730	.0001	.0009
1991-11-28	1200	1.0	.0060	.9560	.0018	.0020	.0432	1.7600	.0007	.0025
1991-12-05	1200	1.0	.0049	.6280	.0013	.0014	.0284	1.2200	.0006	.0018
1991-12-13	1200	1.0	.0037	.2140	.0006	.0006	.0083	.3710	.0002	.0010
1991-12-19	1200	1.0	.0056	.8050	.0016	.0016	.0354	1.5800	.0006	.0022
1992-01-02	1200	1.0	.0034	.3100	.0009	.0004	.0064	.3120	.0003	.0010
1992-01-08	1200	1.0	.0037	.3060	.0006	.0021	.0129	.5590	.0006	.0025
1992-01-15	1200	1.0	.0048	.6150	.0012	.0011	.0281	1.1400	.0007	.0026
1992-01-22	1200	1.0	.0050	.7600	.0013	.0012	.0316	1.3400	.0009	.0026
1992-01-29	1200	1.0	.0038	.3570	.0007	.0006	.0139	.6010	.0006	.0022
1992-02-05	1200	1.0	.0035	.2040	.0005	.0005	.0070	.3290	.0002	.0011
1992-02-12	1200	1.0	.0039	.2570	.0006	.0006	.0135	.5060	.0002	.0011
1992-02-19	1200	1.0	.0036	.1650	.0005	.0004	.0041	.1980	.0001	.0009
1992-02-26	1200	1.0	.0033	.1290	.0003	.0003	.0033	.1610	.0001	.0010
1992-03-05	1200	1.0	.0033	.1190	.0004	.0003	.0040	.1770	.0001	.0008
1992-03-12	1200	1.0	.0047	.5650	.0011	.0011	.0233	1.0100	.0005	.0018
1992-03-19	1200	1.0	.0036	.1400	.0004	.0006	.0040	.1900	.0001	.0009

FOOTNOTE: L - LESS THAN DETECTION LIMIT G - GREATER THAN MEASUREMENT LIMIT

STATION NUMBER - 0N02HA0019
REGION - ONTARIO
LOCATION - LAT. 43/15/20 LONG. 079/03/21

AVERAGE DEPTH(M) - 0.0
WATER TYPE - RIVER OR STREAM WATER

NARRATIVE: LOWER NIAGARA RIVER(2.4KM-1.5MI) UPSTREAM OF MOUTH FROM LIGHTHOUSE AT WATER TREATMENT PLANT TO NEW YORK STATE AUTOMATIC DAILY SAMPLING STATION (30M-100FT FROM CDN SHORE)1.5AUTO

DATE	TIME	DEPTH	COPPER TOTAL	ZINC TOTAL	ARSENIC TOTAL	SELENIUM TOTAL	ANTIMONY DISSOLVED	STRONTIUM TOTAL	MOLYBDENUM TOTAL	SILVER EXTRBLE.
			CU LAB 01 P29009 MG/L	ZN LAB 01 P30009 MG/L	AS LAB 01 33008 MG/L	SE LAB 01 34008 MG/L	SB LAB 01 51008 MG/L	SR LAB 01 P38009 MG/L	MO LAB 01 P42009 MG/L	AG LAB 01 P47302 MG/L
YEAR-MO-DY		METRES								
1991-04-05	1200	1.0	.0017	.0038	.0008	.0003	.0002	.1580	.0009	.0001 L
1991-04-12	1200	1.0	.0030	.0097	.0018	.0002	.0002 L	.1650	.0011	.0001 L
1991-04-18	1200	1.0	.0019	.0042	.0014	.0002	.0002	.1680	.0010	.0001 L
1991-04-25	1200	1.0	.0017	.0034	.0011	.0002	.0002 L	.1660	.0010	.0001 L
1991-05-02	1200	1.0	.0024	.0071	.0015	.0002	.0002 L	.1620	.0009	.0001 L
1991-05-09	1200	1.0	.0024	.0071	.0010	.0001 L	.0002 L	.1680	.0013	.0001 L
1991-05-16	1200	1.0	.0017	.0022	.0006	.0001	.0002 L	.1730	.0011	.0001 L
1991-05-23	1200	1.0	.0053	.0219	.0008	.0002	.0002	.1730	.0011	.0001 L
1991-05-30	1200	1.0	.0013	.0014	.0006	.0002	.0002	.1660	.0011	.0001 L
1991-06-06	1200	1.0	.0012	.0008	.0005	.0002	.0002	.1640	.0012	.0001 L
1991-06-13	1200	1.0	.0012	.0007	.0006	.0002	.0002	.1650	.0011	.0001 L
1991-06-20	1200	1.0	.0013	.0020	.0006	.0002	.0002	.1620	.0011	.0001 L
1991-06-27	1200	1.0	.0012	.0013	.0006	.0002	.0002	.1650	.0012	.0001 L
1991-07-04	1200	1.0	.0013	.0015	.0005	.0002	.0002 L	.1620	.0011	.0001 L
1991-07-11	1200	1.0	.0015	.0021	.0006	.0003	.0002	.1580	.0011	.0001 L
1991-07-18	1200	1.0	.0012	.0008	.0006	.0005	.0002 L	.1590	.0011	.0001 L
1991-07-25	1200	1.0	.0014	.0017	.0006	.0005	.0002 L	.1600	.0012	.0001 L
1991-08-01	1200	1.0	.0015	.0021	.0008	.0007	.0002 L	.1640	.0011	.0001 L
1991-08-08	1200	1.0	.0016	.0025	.0007	.0006	.0003 L	.1600	.0012	.0001 L
1991-08-15	1200	1.0	.0015	.0026	.0007	.0003	.0002	.1620	.0011	.0001 L
1991-08-22	1200	1.0	.0010	.0016	.0007	.0002	.0002	.1620	.0011	.0001
1991-08-29	1200	1.0	.0013	.0017	.0006	.0003	.0002	.1630	.0011	.0001 L
1991-09-05	1200	1.0	.0013	.0018	.0006	.0003	.0002	.1630	.0011	.0001 L
1991-09-19	1200	1.0	.0009	.0011	.0006	.0002	.0004	.1580	.0012	.0001
1991-09-26	1200	1.0	.0011	.0012	.0006	.0002	.0002	.1610	.0011	.0001 L
1991-10-03	1200	1.0	.0011	.0010	.0006	.0002	.0002	.1590	.0012	.0001 L
1991-10-10	1200	1.0	.0018	.0049	.0008	.0001	.0002	.1600	.0012	.0001 L
1991-10-17	1200	1.0	.0016	.0036	.0007	.0001	.0002 L	.1640	.0011	.0001 L
1991-10-24	1200	1.0	.0012	.0011	.0006	.0001	.0002	.1660	.0011	.0002
1991-10-31	1200	1.0	.0012	.0009	.0005	.0002	.0002 L	.1660	.0013	.0001 L
1991-11-08	1200	1.0	.0021	.0028	.0005	.0002	.0002	.1620	.0012	.0001 L
1991-11-14	1200	1.0	.0018	.0049	.0006	.0001	.0002 L	.1640	.0012	.0001 L
1991-11-21	1200	1.0	.0014	.0023	.0006	.0003	.0002	.1660	.0012	.0001 L
1991-11-28	1200	1.0	.0025	.0087	.0011	.0002	.0003	.1670	.0012	.0001 L
1991-12-05	1200	1.0	.0021	.0063	.0013	.0003	.0003	.1620	.0012	.0001 L
1991-12-13	1200	1.0	.0015	.0021	.0006	.0002	.0002 L	.1670	.0012	.0001 L
1991-12-19	1200	1.0	.0022	.0075	.0012	.0003	.0003	.1620	.0011	.0001
1992-01-02	1200	1.0	.0012	.0016	.0008	.0003	.0002	.1610	.0011	.0001 L
1992-01-08	1200	1.0	.0014	.0025	.0009	.0001	.0002 L	.1520	.0011	.0001 L
1992-01-15	1200	1.0	.0021	.0063	.0008	.0002	.0002 L	.1510	.0011	.0001 L
1992-01-22	1200	1.0	.0021	.0058	.0012	.0002	.0002 L	.1530	.0011	.0001
1992-01-29	1200	1.0	.0016	.0033	.0009	.0003	.0003	.1460	.0012	.0001 L
1992-02-05	1200	1.0	.0014	.0032	.0006	.0002	.0002 L	.1530	.0011	.0001 L
1992-02-12	1200	1.0	.0014	.0030	.0006	.0002	.0002	.1620	.0012	.0001 L
1992-02-19	1200	1.0	.0014	.0022	.0006	.0003	.0002	.1580	.0012	.0001 L
1992-02-26	1200	1.0	.0012	.0015	.0006	.0002	.0003	.1490	.0011	.0001
1992-03-05	1200	1.0	.0011	.0014	.0006	.0002	.0002	.1540	.0011	.0001
1992-03-12	1200	1.0	.0018	.0058	.0008	.0003	.0003	.1530	.0011	.0001
1992-03-19	1200	1.0	.0013	.0016	.0007	.0002	.0002	.1670	.0013	.0001

FOOTNOTE: L - LESS THAN DETECTION LIMIT G - GREATER THAN MEASUREMENT LIMIT

STATION NUMBER - 0N02HA0019
REGION - ONTARIO
LOCATION - LAT. 43/15/20 LONG. 079/03/21

AVERAGE DEPTH(M) - 0.0
WATER TYPE - RIVER OR STREAM WATER

NARRATIVE: LOWER NIAGARA RIVER(2.4KM-1.5MI) UPSTREAM OF MOUTH FROM LIGHTHOUSE AT WATER TREATMENT PLANT TO NEW YORK STATE AUTOMATIC DAILY SAMPLING STATION (30M-100FT FROM CON SHORE)1.5AUTO

DATE	TIME	DEPTH	CADMIUM TOTAL	BARIUM TOTAL	LEAD TOTAL	BERYLLIUM TOTAL	MERCURY TOTAL
			CD LAB 01 P48009	BA LAB 01 P56009	PB LAB 01 P82009	BE LAB 01 P04010	HG LAB 01 P80011
YEAR-MO-DY		METRES	MG/L	MG/L	MG/L	UG/L	UG/L
1991-04-05	1200	1.0	.0001	.0235	.0007	.0500 L	.0100
1991-04-12	1200	1.0	.0002	.0282	.0018	.0600	.0200
1991-04-18	1200	1.0	.0001	.0238	.0006	.0500 L	.0100 L
1991-04-25	1200	1.0	.0001	.0235	.0011	.0500 L	.0100 L
1991-05-02	1200	1.0	.0002	.0254	.0013	.0500 L	.0100 L
1991-05-09	1200	1.0	.0002	.0262	.0013	.0500	.0100 L
1991-05-16	1200	1.0	.0001 L	.0227	.0002 L	.0500 L	.0100 L
1991-05-23	1200	1.0	.0004	.0327	.0047	.1000	.0100 L
1991-05-30	1200	1.0	.0001	.0210	.0002 L	.0500 L	.0100 L
1991-06-06	1200	1.0	.0001	.0210	.0002 L	.0500 L	.0100 L
1991-06-13	1200	1.0	.0001	.0214	.0002 L	.0500 L	.0100 L
1991-06-20	1200	1.0	.0002	.0219	.0003	.0500 L	.0100 L
1991-06-27	1200	1.0	.0001	.0213	.0002 L	.0500 L	.0100 L
1991-07-04	1200	1.0	.0001	.0221	.0002 L	.0500 L	.0100 L
1991-07-11	1200	1.0	.0001	.0228	.0003	.0500 L	.0100
1991-07-18	1200	1.0	.0001	.0221	.0002 L	.0500 L	.0100 L
1991-07-25	1200	1.0	.0001	.0224	.0002 L	.0500 L	.0100
1991-08-01	1200	1.0	.0001	.0232	.0004	.0500 L	.0100
1991-08-08	1200	1.0	.0001	.0231	.0002	.0500 L	.0100
1991-08-15	1200	1.0	.0001	.0235	.0014	.0500 L	.0100 L
1991-08-22	1200	1.0	.0001 L	.0230	.0006	.0500 L	.0100 L
1991-08-29	1200	1.0	.0001 L	.0230	.0005	.0500 L	.0100 L
1991-09-05	1200	1.0	.0001	.0227	.0004	.0500 L	.0100 L
1991-09-19	1200	1.0	.0001	.0227	.0004	.0500 L	.0100 L
1991-09-26	1200	1.0	.0001	.0242	.0003	.0500 L	.0100 L
1991-10-03	1200	1.0	.0001 L	.0223	.0004	.0500 L	.0100 L
1991-10-10	1200	1.0	.0001	.0253	.0007	.0500 L	.0100 L
1991-10-17	1200	1.0	.0001	.0240	.0007	.0500 L	.0100 L
1991-10-24	1200	1.0	.0001	.0228	.0002	.0500 L	.0100 L
1991-10-31	1200	1.0	.0001 L	.0230	.0002	.0500 L	.0100 L
1991-11-08	1200	1.0	.0001	.0235	.0003	.0500 L	.0100 L
1991-11-14	1200	1.0	.0001	.0244	.0009	.0500 L	.0100 L
1991-11-21	1200	1.0	.0001	.0239	.0003	.0500 L	.0100 L
1991-11-28	1200	1.0	.0002	.0279	.0020	.0500	.0100 L
1991-12-05	1200	1.0	.0001	.0246	.0013	.0500	.0100 L
1991-12-13	1200	1.0	.0001 L	.0232	.0002 L	.0500 L	.0100 L
1991-12-19	1200	1.0	.0001	.0262	.0014	.0600	.0100 L
1992-01-02	1200	1.0	.0001	.0227	.0002	.0500 L	.0100 L
1992-01-08	1200	1.0	.0002	.0233	.0002 L	.0500 L	.0100 L
1992-01-15	1200	1.0	.0003	.0262	.0008	.0500 L	.0100 L
1992-01-22	1200	1.0	.0003	.0258	.0004	.0500 L	.0100 L
1992-01-29	1200	1.0	.0002	.0232	.0002 L	.0500 L	.0100 L
1992-02-05	1200	1.0	.0001 L	.0220	.0002 L	.0500 L	.0100
1992-02-12	1200	1.0	.0001	.0238	.0005	.0500 L	.0100
1992-02-19	1200	1.0	.0001 L	.0219	.0002	.0500 L	.0100
1992-02-26	1200	1.0	.0001	.0212	.0002 L	.0500 L	.0100 L
1992-03-05	1200	1.0	.0001	.0220	.0002 L	.0500 L	.0100 L
1992-03-12	1200	1.0	.0002	.0243	.0009	.0500 L	.0100 L
1992-03-19	1200	1.0	.0001 L	.0225	.0002 L	.0500 L	.0100 L

FOOTNOTE: L - LESS THAN DETECTION LIMIT G - GREATER THAN MEASUREMENT LIMIT

NAQUADAT

Trace Metals in Whole Water at FE (1991-92)

DATE 1994-01-27 PAGE

STATION NUMBER - ON02HA0045
REGION - ONTARIO
LOCATION - LAT. 42/55/00 LONG. 078/54/00

AVERAGE DEPTH(M) - 0.0
WATER TYPE - RIVER OR STREAM WATER

NARRATIVE: NIAGARA RIVER AUTOMATIC DAILY STATION LOCATED AT FORT ERIE CUSTOMS DOCK AT FOOT OF JARVIS ST JUST DOWNSTREAM OF INTERNATIONAL RAILROAD BRIDGE (30 M - 100 FT OFF CANADIAN SHORE)

DATE	TIME	DEPTH	LITHIUM TOTAL	ALUMINUM TOTAL	VANADIUM TOTAL	CHROMIUM TOTAL	MANGANESE TOTAL	IRON TOTAL	COBALT TOTAL	NICKEL TOTAL
			LI LAB 01 P03009	AL LAB 01 P13009	V LAB 01 P23009	CR LAB 01 P24009	MN LAB 01 P25010	FE LAB 01 P26009	CO LAB 01 P27009	NI LAB 01 P28009
YEAR-MO-DY		METRES	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L
1991-04-04	1200	1.0	.0032	.1610	.0005	.0004	.0058	.2110	.0001	.0005
1991-04-10	1200	1.0	.0189	5.2300	.0090	.0035	.3530	10.5000	.0044	.0136
1991-04-17	1200	1.0	.0126	3.4300	.0060	.0055	.1500	5.9900	.0025	.0086
1991-04-24	1200	1.0	.0045	.6630	.0014	.0011	.0369	1.0400	.0006	.0025
1991-05-01	1200	1.0	.0035	.3190	.0008	.0006	.0175	.5290	.0003	.0011
1991-05-08	1200	1.0	.0032	.1840	.0005	.0003	.0055	.2420	.0002	.0005
1991-05-15	1200	1.0	.0031	.1280	.0004	.0003	.0065	.2060	.0001	.0004
1991-05-22	1200	1.0	.0045	.7320	.0015	.0013	.0382	1.2400	.0006	.0022
1991-05-29	1200	1.0	.0029	.1200	.0004	.0003	.0072	.1910	.0001	.0009
1991-06-05	1200	1.0	.0029	.1160	.0004	.0003	.0055	.1720	.0001	.0008
1991-06-12	1200	1.0	.0079	1.8400	.0037	.0034	.1350	3.8400	.0016	.0058
1991-06-19	1200	1.0	.0027	.0660	.0002	.0002 L	.0026	.0757	.0001 L	.0007
1991-06-26	1200	1.0	.0028	.0750	.0003	.0002	.0053	.1290	.0001	.0007
1991-07-03	1200	1.0	.0028	.0380	.0002	.0002 L	.0014	.0350	.0001	.0005
1991-07-10	1200	1.0	.0027	.0490	.0003	.0008	.0022	.0557	.0001	.0004
1991-07-17	1200	1.0	.0029	.1070	.0004	.0003	.0043	.1020	.0001	.0007
1991-07-24	1200	1.0	.0028	.0480	.0003	.0002	.0023	.0462	.0001	.0004
1991-07-31	1200	1.0	.0028	.0700	.0004	.0002	.0035	.0839	.0001	.0006
1991-08-07	1200	1.0	.0032	.2160	.0006	.0005	.0120	.3410	.0002	.0009
1991-08-14	1200	1.0	.0029	.0950	.0004	.0004	.0046	.1060	.0001	.0010
1991-08-21	1200	1.0	.0028	.0490	.0002	.0004	.0030	.0609	.0001 L	.0006
1991-08-28	1200	1.0	.0033	.2480	.0006	.0007	.0120	.3450	.0002	.0011
1991-09-04	1200	1.0	.0030	.0840	.0003	.0004	.0030	.0844	.0001 L	.0007
1991-09-18	1200	1.0	.0029	.0710	.0003	.0004	.0039	.0977	.0001	.0007
1991-09-25	1200	1.0	.0030	.0880	.0003	.0007	.0051	.1350	.0001	.0008
1991-10-02	1200	1.0	.0031	.1570	.0005	.0005	.0082	.2400	.0001	.0010
1991-10-09	1200	1.0	.0035	.3310	.0007	.0006	.0130	.4540	.0003	.0012
1991-10-16	1200	1.0	.0032	.2250	.0005	.0004	.0074	.2470	.0002	.0012
1991-10-23	1200	1.0	.0031	.1690	.0004	.0003	.0070	.2220	.0002	.0009
1991-10-30	1200	1.0	.0029	.0770	.0003	.0002	.0030	.0872	.0001	.0007
1991-11-06	1200	1.0	.0043	.5670	.0011	.0010	.0250	.8280	.0005	.0020
1991-11-13	1200	1.0	.0036	.2770	.0006	.0005	.0102	.3730	.0002	.0012
1991-11-20	1200	1.0	.0033	.1240	.0004	.0003	.0030	.1080	.0001	.0007
1991-11-27	1200	1.0	.0054	.9980	.0018	.0016	.0409	1.4300	.0007	.0028
1991-12-04	1200	1.0	.0052	.8200	.0017	.0016	.0375	1.4400	.0006	.0020
1991-12-11	1200	1.0	.0041	.4810	.0011	.0009	.0203	.7420	.0004	.0014
1991-12-18	1200	1.0	.0067	1.3100	.0028	.0022	.0619	2.2500	.0010	.0034
1992-01-01	1200	1.0	.0029	.0740	.0003	.0002 L	.0017	.0764	.0003	.0014
1992-01-07	1200	1.0	.0044	.6110	.0014	.0009	.0339	.9380	.0007	.0025
1992-01-14	1200	1.0	.0046	.7520	.0015	.0010	.0409	1.0700	.0007	.0025
1992-01-21	1200	1.0	.0033	.2070	.0005	.0002	.0082	.2720	.0004	.0016
1992-01-28	1200	1.0	.0033	.2230	.0005	.0003	.0097	.3280	.0005	.0018
1992-02-04	1200	1.0	.0034	.2010	.0005	.0004	.0060	.2760	.0001	.0010
1992-02-11	1200	1.0	.0034	.1450	.0005	.0003	.0093	.2150	.0001	.0010
1992-02-18	1200	1.0	.0032	.1070	.0004	.0003	.0036	.1430	.0001 L	.0007
1992-02-25	1200	1.0	.0031	.1660	.0004	.0003	.0041	.1500	.0001	.0009
1992-03-04	1200	1.0	.0037	.2890	.0007	.0005	.0160	.4970	.0003	.0012
1992-03-11	1200	1.0	.0036	.2920	.0006	.0007	.0089	.4180	.0002	.0012
1992-03-18	1200	1.0	.0031	.1090	.0004	.0002	.0036	.1510	.0001	.0009

FOOTNOTE: L - LESS THAN DETECTION LIMIT G - GREATER THAN MEASUREMENT LIMIT

STATION NUMBER - ON02HA0045
REGION - ONTARIO
LOCATION - LAT. 42/55/00 LONG. 078/54/00

AVERAGE DEPTH(M) - 0.0
WATER TYPE - RIVER OR STREAM WATER

NARRATIVE: NIAGARA RIVER AUTOMATIC DAILY STATION LOCATED AT FORT ERIE CUSTOMS DOCK AT FOOT OF JARVIS ST JUST DOWNSTREAM OF INTERNATIONAL RAILROAD BRIDGE (30 M - 100 FT OFF CANADIAN SHORE)

DATE	TIME	DEPTH	COPPER TOTAL	ZINC TOTAL	ARSENIC TOTAL	SELENIUM TOTAL	ANTIMONY DISSOLVED	STRONTIUM TOTAL	MOLYBDENUM TOTAL	SILVER EXTRBLE.
			CU LAB 01 P29009 MG/L	ZN LAB 01 P30009 MG/L	AS LAB 01 33008 MG/L	SE LAB 01 34008 MG/L	SB LAB 01 51008 MG/L	SR LAB 01 P38009 MG/L	MO LAB 01 P42009 MG/L	AG LAB 01 P47302 MG/L
YEAR-MO-DY		METRES								
1991-04-04	1200	1.0	.0012	.0010	.0006	.0002	.0002 L	.1590	.0010	.0001 L
1991-04-10	1200	1.0	.0111	.0586	.0011	.0003	.0002 L	.2440	.0010	.0001 L
1991-04-17	1200	1.0	.0063	.0296	.0009	.0003	.0002 L	.1820	.0009	.0001 L
1991-04-24	1200	1.0	.0024	.0108	.0007	.0002	.0002 L	.1770	.0009	.0001 L
1991-05-01	1200	1.0	.0017	.0060	.0005	.0001 L	.0002	.1620	.0010	.0001 L
1991-05-08	1200	1.0	.0012	.0015	.0005	.0001	.0002 L	.1670	.0011	.0001 L
1991-05-15	1200	1.0	.0013	.0026	.0005	.0002	.0002 L	.1740	.0010	.0001 L
1991-05-22	1200	1.0	.0025	.0129	.0006	.0002	.0002	.1690	.0011	.0001 L
1991-05-29	1200	1.0	.0013	.0020	.0006	.0002	.0002	.1710	.0012	.0001 L
1991-06-05	1200	1.0	.0013	.0012	.0005	.0002	.0002	.1670	.0011	.0001 L
1991-06-12	1200	1.0	.0072	.0317	.0005	.0002	.0002 L	.1900	.0011	.0001 L
1991-06-19	1200	1.0	.0010	.0006	.0005	.0002	.0002	.1610	.0011	.0001 L
1991-06-26	1200	1.0	.0012	.0006	.0004	.0002	.0002	.1660	.0011	.0001 L
1991-07-03	1200	1.0	.0010	.0007	.0005	.0002	.0002	.1610	.0011	.0001 L
1991-07-10	1200	1.0	.0010	.0003	.0005	.0002	.0002	.1570	.0011	.0001 L
1991-07-17	1200	1.0	.0011	.0006	.0005	.0005	.0002 L	.1570	.0011	.0001 L
1991-07-24	1200	1.0	.0010	.0002 L	.0005	.0006	.0002 L	.1610	.0011	.0001 L
1991-07-31	1200	1.0	.0010	.0005	.0005	.0006	.0002 L	.1600	.0011	.0001 L
1991-08-07	1200	1.0	.0014	.0016	.0005	.0005	.0002 L	.1620	.0011	.0001 L
1991-08-14	1200	1.0	.0011	.0006	.0005	.0002	.0002	.1590	.0011	.0001 L
1991-08-21	1200	1.0	.0010	.0003	.0006	.0003	.0002	.1590	.0011	.0001 L
1991-08-28	1200	1.0	.0015	.0021	.0006	.0004	.0002	.1630	.0011	.0001 L
1991-09-04	1200	1.0	.0010	.0006	.0005	.0003	.0002	.1620	.0011	.0001 L
1991-09-18	1200	1.0	.0010	.0007	.0006	.0002	.0002	.1600	.0011	.0001 L
1991-09-25	1200	1.0	.0011	.0007	.0005	.0001	.0002 L	.1600	.0011	.0001 L
1991-10-02	1200	1.0	.0013	.0013	.0006	.0003	.0003	.1610	.0011	.0001 L
1991-10-09	1200	1.0	.0015	.0023	.0006	.0002	.0002	.1630	.0011	.0001 L
1991-10-16	1200	1.0	.0012	.0017	.0007	.0001	.0002 L	.1650	.0011	.0001 L
1991-10-23	1200	1.0	.0012	.0013	.0006	.0002	.0002 L	.1630	.0011	.0001 L
1991-10-30	1200	1.0	.0010	.0005	.0005	.0001	.0002 L	.1600	.0011	.0001 L
1991-11-06	1200	1.0	.0019	.0043	.0007	.0002	.0002	.1640	.0012	.0001 L
1991-11-13	1200	1.0	.0013	.0020	.0006	.0002	.0002 L	.1660	.0012	.0001 L
1991-11-20	1200	1.0	.0011	.0010	.0006	.0002	.0003	.1680	.0012	.0001 L
1991-11-27	1200	1.0	.0025	.0071	.0010	.0003	.0004	.1720	.0012	.0001 L
1991-12-04	1200	1.0	.0022	.0072	.0010	.0002	.0002	.1650	.0012	.0001 L
1991-12-11	1200	1.0	.0016	.0036	.0008	.0002	.0002 L	.1650	.0012	.0001 L
1991-12-18	1200	1.0	.0029	.0110	.0013	.0003	.0002 L	.1670	.0011	.0001
1992-01-01	1200	1.0	.0009	.0003	.0007	.0002	.0002 L	.1510	.0011	.0001
1992-01-07	1200	1.0	.0016	.0045	.0006	.0001	.0002	.1560	.0011	.0001 L
1992-01-14	1200	1.0	.0020	.0063	.0011	.0002	.0002 L	.1540	.0010	.0001 L
1992-01-21	1200	1.0	.0012	.0011	.0007	.0002	.0002 L	.1580	.0011	.0001 L
1992-01-28	1200	1.0	.0012	.0015	.0008	.0003	.0003	.1480	.0011	.0001 L
1992-02-04	1200	1.0	.0014	.0017	.0006	.0002	.0002 L	.1550	.0012	.0001 L
1992-02-11	1200	1.0	.0014	.0025	.0006	.0002	.0002 L	.1620	.0012	.0001 L
1992-02-18	1200	1.0	.0012	.0010	.0006	.0002	.0002 L	.1570	.0012	.0001 L
1992-02-25	1200	1.0	.0012	.0019	.0006	.0002	.0002	.1520	.0011	.0001
1992-03-04	1200	1.0	.0014	.0027	.0006	.0002	.0002 L	.1550	.0011	.0001 L
1992-03-11	1200	1.0	.0013	.0023	.0006	.0002	.0002	.1520	.0011	.0001
1992-03-18	1200	1.0	.0012	.0011	.0006	.0002	.0002	.1590	.0011	.0001

FOOTNOTE: L - LESS THAN DETECTION LIMIT G - GREATER THAN MEASUREMENT LIMIT

STATION NUMBER - 0N02HA0045
REGION - ONTARIO
LOCATION - LAT. 42/55/00 LONG. 078/54/00
AVERAGE DEPTH(M) - 0.0
WATER TYPE - RIVER OR STREAM WATER

NARRATIVE: NIAGARA RIVER AUTOMATIC DAILY STATION LOCATED AT FORT ERIE CUSTOMS DOCK AT FOOT OF JARVIS ST JUST DOWNSTREAM OF INTERNATIONAL RAILROAD BRIDGE (30 M - 100 FT OFF CANADIAN SHORE)

DATE YEAR-MO-DY	TIME	DEPTH METRES	CADMIUM TOTAL CD LAB 01 P48009 MG/L		BARIUM TOTAL BA LAB 01 P56009 MG/L	LEAD TOTAL PB LAB 01 P82009 MG/L		BERYLLIUM TOTAL BE LAB 01 P04010 UG/L		MERCURY TOTAL HG LAB 01 P80011 UG/L	
1991-04-04	1200	1.0	.0001	L	.0224	.0002	L	.0500	L	.0100	L
1991-04-10	1200	1.0	.0012		.2710	.0200		.2300		.0100	L
1991-04-17	1200	1.0	.0007		.0435	.0067		.1500		.0100	L
1991-04-24	1200	1.0	.0002		.0330	.0022		.0500	L	.0100	L
1991-05-01	1200	1.0	.0001		.0229	.0005		.0500	L	.0100	L
1991-05-08	1200	1.0	.0001		.0222	.0002	L	.0500	L	.0100	L
1991-05-15	1200	1.0	.0001	L	.0217	.0002		.0500	L	.0100	L
1991-05-22	1200	1.0	.0002		.0259	.0024		.0500	L	.0100	L
1991-05-29	1200	1.0	.0001		.0214	.0006		.0500	L	.0100	L
1991-06-05	1200	1.0	.0001	L	.0215	.0003		.0500	L	.0100	
1991-06-12	1200	1.0	.0006		.1200	.0149		.1000		.0100	L
1991-06-19	1200	1.0	.0002		.0207	.0002	L	.0500	L	.0100	
1991-06-26	1200	1.0	.0001	L	.0216	.0002	L	.0500	L	.0100	L
1991-07-03	1200	1.0	.0001		.0213	.0002	L	.0500	L	.0100	
1991-07-10	1200	1.0	.0001	L	.0210	.0002	L	.0500	L	.0100	L
1991-07-17	1200	1.0	.0001		.0236	.0002	L	.0500	L	.0100	L
1991-07-24	1200	1.0	.0001	L	.0215	.0002	L	.0500	L	.0100	L
1991-07-31	1200	1.0	.0001	L	.0211	.0002	L	.0500	L	.0100	L
1991-08-07	1200	1.0	.0001		.0227	.0003		.0500	L	.0100	
1991-08-14	1200	1.0	.0001	L	.0218	.0003		.0500	L	.0100	
1991-08-21	1200	1.0	.0001	L	.0221	.0002	L	.0500	L	.0100	
1991-08-28	1200	1.0	.0001		.0237	.0008		.0500	L	.0100	L
1991-09-04	1200	1.0	.0001	L	.0228	.0005		.0500	L	.0100	L
1991-09-18	1200	1.0	.0001	L	.0222	.0002	L	.0500	L	.0100	
1991-09-25	1200	1.0	.0001	L	.0227	.0005		.0500	L	.0100	L
1991-10-02	1200	1.0	.0001		.0227	.0004		.0500	L	.0100	L
1991-10-09	1200	1.0	.0001		.0242	.0004		.0500	L	.0100	L
1991-10-16	1200	1.0	.0001	L	.0231	.0002		.0500	L	.0100	L
1991-10-23	1200	1.0	.0001	L	.0227	.0002		.0500	L	.0100	L
1991-10-30	1200	1.0	.0001	L	.0220	.0002	L	.0500	L	.0100	L
1991-11-06	1200	1.0	.0001		.0257	.0009		.0500	L	.0100	L
1991-11-13	1200	1.0	.0001		.0238	.0004		.0500	L	.0100	L
1991-11-20	1200	1.0	.0001	L	.0228	.0002	L	.0500	L	.0100	L
1991-11-27	1200	1.0	.0002		.0291	.0015		.0500		.0100	L
1991-12-04	1200	1.0	.0002		.0260	.0015		.0600		.0100	L
1991-12-11	1200	1.0	.0001		.0242	.0009		.0500	L	.0100	L
1991-12-18	1200	1.0	.0002		.0302	.0028		.1000		.0100	L
1992-01-01	1200	1.0	.0001		.0222	.0002	L	.0500	L	.0100	L
1992-01-07	1200	1.0	.0002		.0259	.0002		.0500	L	.0100	L
1992-01-14	1200	1.0	.0002		.0263	.0011		.0500	L	.0100	L
1992-01-21	1200	1.0	.0001		.0228	.0002	L	.0500	L	.0100	L
1992-01-28	1200	1.0	.0001		.0226	.0002	L	.0500	L	.0100	L
1992-02-04	1200	1.0	.0001	L	.0222	.0004		.0500	L	.0100	L
1992-02-11	1200	1.0	.0001	L	.0223	.0002		.0500	L	.0100	L
1992-02-18	1200	1.0	.0001	L	.0217	.0002	L	.0500	L	.0100	L
1992-02-25	1200	1.0	.0001		.0217	.0002	L	.0500	L	.0100	
1992-03-04	1200	1.0	.0001		.0226	.0005		.0500	L	.0100	
1992-03-11	1200	1.0	.0001		.0224	.0002		.0500	L	.0100	L
1992-03-18	1200	1.0	.0001		.0216	.0002	L	.0500	L	.0100	L

FOOTNOTE: L - LESS THAN DETECTION LIMIT G - GREATER THAN MEASUREMENT LIMIT

APPENDIX 4:

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APPENDIX 5:

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