

C. GARRETT

#732

ANALYSIS OF
STORMWATER RUNOFF FROM CHLOROPHENATE WOOD
PROTECTION FACILITIES

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**ANALYSIS OF
STORM WATER RUNOFF
FROM CHLOROPHENATE WOOD
PROTECTION FACILITIES**

MAY 1987

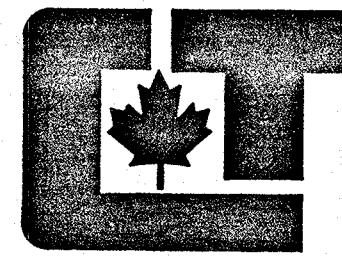
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APPENDIX III

Heavy Metal Concentration and Particle Size Distribution
of Intergravel Fine Sediments for : SALMON RIVER
(83/08/10)

Metal *	Sample No. - Replication No.					Mean	S.D.
	1	2	3	4	5		
Hg **	.07	.07	.10			.08	.02
As	<8	<8	9			8	1
Ba	116	109	94			106	11
Be	<.2	<.2	<.2			.2	.0
Cd	.7	.6	.4			.6	.2
Co	10.8	10.6	4.3			8.6	3.7
Cr	56	59	45			53	8
Cu	25	22	21			23	2
Mn	722	935	637			765	154
Ni	33	35	23			30	6
P	1140	986	859			995	141
Pb	4	5	<3			4	1
Sn	5	3	3			4	1
Sr	56.2	51.7	49.7			52.5	3.3
V	69	65	65			66	2
Zn	118.0	112.0	73.3			101.1	24.3
Al	24000	21500	20800			22100	1682
Fe	23600	23700	21600			22967	1185
Si	4530	4320	5020			4623	359
Ca	11300	10700	6860			9620	2409
Mg	7260	6600	6460			6773	427
Na	620	540	530			563	49

* ICAP, <0.15 mm fraction, as ug/g (ppm)

** Hg (Pharmacia Mercury Monitor)

Portion of total Sample (%)	1	2	3	4	5	Mean	S.D.
> .15 mm	59.0	80.0	77.0			72.0	11.4
< .15 mm	41.0	20.0	23.0			28.0	11.4

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FIGURE

1.0 EXECUTIVE SUMMARY

Three hundred and forty two water samples of storm water runoff from chlorophenate wood protection facilities were analyzed for chlorinated phenols using gas-chromatography with electron capture detection. The results of the analysis showed the presence of pentachlorophenol and 2,3,4,6-tetrachlorophenol in all the water samples, with pentachlorophenol ranging from 1.30 to 273,000 ug/L and tetrachlorophenol ranging from 0.21 to 340,000 ug/L. Details of the results are listed in Table II of this report.

2.0 INTRODUCTION

Environmental Protection Service (EPS) of Environment Canada has undertaken a study of chlorinated phenols content in stormwater runoff from various chlorophenate wood protection facilities located in the B.C. Lower Mainland. As a part of this study, Can Test Ltd. was responsible for the quantitative analysis of the water samples for pentachlorophenol (PCP) 2,3,4,6-tetrachlorophenol (2,3,4,6-TTCP), 2,4,6-trichlorophenol, (2,4,6-TCP) and 2,3,6-trichlorophenol (2,3,6-TCP).

This report describes the method, chromatographic conditions, quality control (QC) and results for three hundred and forty two water samples for chlorinated phenols.

3.0 APPARATUS AND MATERIALS

3.1 Apparatus and Materials

3.1.1 Grab sample bottle - Amber glass, one-liter volume, fitted with screw caps lined with foil. The bottles were consecutively rinsed with acetone and hexane and baked in an oven at 100°C before use.

3.1.2 Separatory funnel - 1000 mL, with Teflon stopcock.

3.1.2.1 All glassware was rinsed as soon as possible after use with dichloromethane (DCM). This was followed by washing with hot detergent solution (Decon 75 Concentrate) and rinsing until all the soap disappears. Glassware was then rinsed with 0.2N NaOH and then rinsed thoroughly with hot water. Glassware was drained dry and heated in an oven at 150°C for 15 - 30 minutes. Finally, dishes were taken out of the oven, cooled and consecutively rinsed with acetone, hexane and DCM.

3.1.3 Round bottom flasks - 250 mL.

3.1.4 Graduated cylinders -500 mL and 5 mL.

3.1.5 Graduated test tubes - 10 mL or 25 mL.

3.1.6 Flash evaporator with water bath - temperature setting at 29°C .

3.1.7 Heating block and nitrogen gas connection to blow samples.

3.1.8 Gas Chromatograph (GC) (see instrumentation).

3.1.9 GC vials with caps and septum.

3.1.10 Column for derivatized phenols - 3% OV17 on Chromosorb W, High Performance 80/100 mesh

3.1.11 Detectors - Electron Capture Detector (ECD) was used for determining the derivatized chlorinated phenols

3.2 Reagents

3.2.1 Deionized water- reagent water for blanks and solutions.

3.2.2 Sodium hydroxide solution (0.2N) (J.T. Baker) - Dissolve 32 g NaOH in reagent water and dilute to 4 L.

3.2.3 Acetone, hexane, methanol, dichloromethane, isoocetane (2,2,4-Trimethylpentane) - glass distilled, pesticide grade (BDH Chemicals).

3.2.4 1000 ppm stock solutions of PCP, 2,3,4,6-TTCP, 2,3,6-TCP, and 2,4,6-TCP are prepared from authentic standards obtained from Agriculture Canada, Laboratory Service Division, Ottawa. Weigh out 5 mg of each accurately, dissolve in benzene and dilute to 5 mL in a 5 mL volumetric flask.

3.2.5 Derivatization reagent: N-Methyl-N¹-nitro-N-nitrosoguanidine, 97% - Aldrich

3.2.6 Preparation & Generation of Diazomethane (derivatization reagent)

3.2.6.1 Wash generator apparatus first with distilled H₂O, then acetone and then ethyl ether. Let it air dry.

3.2.6.2 This operation is carried out in a fume hood. Weigh into generator 200 mg of N-methyl-N¹-nitro-N-nitrosoguanidine. Add 20 mL of ether into the outer tube, 2.0 mL ether into the inner tube of the generator. Cap the generator tight. With a syringe, inject into the inner tube 2 mL of 50% KOH. Wrap the generator surface with aluminum foil and let it sit overnight. Strength of diazomethane is directly related to its yellowish-green color intensity.

Diazomethane is freshly prepared every day and is stored at 4°C, protected from light with aluminum foil.

Caution: Diazomethane is carcinogenic and preparation could be explosive if contents in the generator contact ground glass joints.

3.3 Calibration

- 3.3.1 To calibrate the GC-ECD for the analysis of chlorinated phenols, set gas chromatographic operating parameters equivalent to those indicated in Table 1.
- 3.3.2 Prepare calibration standards at a minimum of five concentration levels for each parameter of interest. One external standard should represent a concentration near but above the method detection limit and the other concentrations should correspond to the expected range of concentrations found in real samples or should define the working range of the detector.
- 3.3.3 Derivatize, then inject 2 uL of each calibration standard, and tabulate peak response against the amount (nanograms) injected. The results can be used to prepare a calibration curve.

TABLE 1

GC-ECD Parameters

Oven: Temperature: 165°C isothermal
Injection Temperature: 230°C
Aux/Detector Temperature: 320°C
Detector: Electron Capture Detector (ECD)
Carrier gas: 5% methane/95% Argon
Flow rate: 30 mL/min.
GC: Hewlett Packard 5840A Gas Chromotograph
Autosampler: Hewlet Packard 7671A Automatic Sampler

3.4 Quality Control

Each day a batch of samples (reagent blanks, spikes and samples) was analyzed in the following order:

1. Spike #1 (High Level)
2. Method Blank
3. Sample #1
4. Sample #2
5. Sample #3
6. Sample #4
7. Spike #2 (Low Level)
8. Sample #5
9. Sample #6
10. Sample #7
11. Sample #8
12. Duplicate of any of the above samples.

3.4.1 Method Blank

A 0.5 litre aliquot of reagent blank water was analyzed to monitor that all glassware and reagent interferences were under control.

3.4.2 Spikes

Spike samples were prepared by the Quality Assurance Officer.

The high spike levels were: 1 ppm PCP, 1 ppm 2,3,4,6-TTCP and 0.1 ppm levels of both 2,3,6-TCP and 2,4,6-TCP. The low spike levels were: 2 ppb PCP and 2 ppb 2,3,4,6-TTCP.

3.4.3 Duplicates

Duplicates were analyzed on 10% of the samples.

3.5 Extraction Procedure

All samples received in the laboratory were logged and kept refrigerated at 4°C prior to extraction.

3.5.1 Shake samples (after samples achieved room temperature) for one minute and transfer 500 mL of sample into a 1 litre separatory

funnel. For concentrated samples, 5 mL of sample is transferred into a 1 litre separatory funnel containing 495 mL of reagent water.

- 3.5.2 Adjust all samples to a pH of 1-2 with concentrated HCL (approx. 1 mL).
- 3.5.3 Add 50 mL of dichloromethane to the sample, stopper and shake funnel with periodic venting to release pressure. Shake all six samples and by the time you reach the first one again, the solvent will have separated from the water phase. Collect the dichloromethane portion (bottom layer) in a 250 mL round bottom flask.
- 3.5.4 Add a second 50 mL volume of DCM to the sample and repeat the extraction procedure a second time combining the extracts in the round bottom flask. Perform a third extraction in the same manner.
- 3.5.5 Before evaporation, rinse around the neck of the round bottom flask with approximately 1 mL of iso octane.
- 3.5.6 Set the flash evaporator water bath temperature to 29°C and reduce sample volume down to approximately 1 mL.
- 3.5.7 Quantitatively transfer sample extract with 5 mL of Hexane into a graduated test tube.
- 3.5.8 The sample is now ready to be derivatized. Add 0.5 mL of iso octane. Dry down contents to 0.5 mL again with a flow of nitrogen. Add to the contents 1.0 mL of diazomethane, mix and let sit for one hour at room temperature. After an hour, add 0.5 mL of iso octane to the derivatized contents and dry down contents to 0.5 mL with nitrogen. Make up sample to 5 mL final volume with iso octane, vortex, dilute and proceed with electron capture gas chromatographic analysis.

4.0 RESULTS AND DISCUSSION

4.1 Results of Analysis

The results of chlorinated phenols found in the water samples are shown in Table II. Details of sample identification are also included in the table. Using the described methodology, the detection limit of PCP, 2,3,4,6-TTCP and the TCPS is 0.1 ug/L. A total of three hundred sixty-six samples were received at our laboratory; however, only three hundred and forty two samples were analyzed. As requested by EPS some of the extra samples were composited to reduce the total number of samples for analysis. In the table, each sample was also recorded as to degree of visual clarity. The samples were rated from 1 to 4 as the clarity of the sample decreases from clear (rated as 1), to either cloudy (as 2), or to contain fine sediment (as 3) or large sediment (as 4).

Of the 342 samples, all were found to contain some levels of PCP and 2,3,4,6-TTCP. The ranges of PCP and 2,3,4,6-TTCP found were from less than 1 ug/L to more than 100 mg/L. Levels of 2,4,6-TCP and 2,3,6-TCP were found to have a lower range (9 ug/L to less than 0.1 ug/L). Approximately one half of the samples did not contain any detectable amount of 2,4,6-TCP.

4.2 Quality Control

As stated in our proposal (Appendix D, Section 8.1) a QC program must consist of an initial demonstration of laboratory capability. This was established by the completion of the qualification samples submitted to Mr. Paul Kluckner dated September 9, 1986.

An ongoing analysis of reagent water blanks (Appendix D, Section 8.1.3) with each processing batch of samples was carried out throughout the whole period of this project. The results of the reagent blanks did not indicate any significant chromatographic peaks that might cause interference in the chlorinated phenol analysis (see Figure 1). Approximately 30 reagent blanks were analyzed throughout the four month project.

It was our intention at the beginning of the project to analyze 10% matrix spikes as stated in our proposal (Appendix D, Section 8.3). However, due to the vast range in the concentration of the chlorinated phenols found in the samples (i.e., ranging from less than 0.1 ug PCP/L to greater than 100 mg PCP/L), and the time constraints of the project, our laboratory had to resort to the use of in-house quality control (QC) fortified samples at various concentrations (Appendix D, Section 8.2) and duplicate analysis of some actual samples to monitor the accuracy and precision of our analysis. A summary of the QC fortified sample recoveries is listed in Table 3, showing dates of analysis, levels of spike (in water), and recoveries of different chlorinated phenols. A summary of the duplicate analysis is listed in Table 4. There were 20 fortified samples and 32 duplicate analysis included in this project for quality control.

Since the ratio of the electron capture detector response to the amount of chlorinated phenols injected (calibration factor) is constant over the working range (from 0.02 - 0.20 ng "on column"), the calibration factor of each chlorinated phenol was used for quantification as recommended in EPA Method 604. Instrument performance was also monitored in measuring the daily response of the detector to a fixed amount of the phenols. Thus, any sudden change in sensitivity of the system would be easily recognized.

4.3 GC/MS Confirmation

Three samples were selected for the confirmatory analysis of PCP and 2,3,4,6-TTCP using a Finnigan 4500 gas chromatograph/mass spectrometer (GC/MS). The samples were CTL#145, #288 and #364. The derivatized extracts of the samples were injected into the GC/MS followed by the injection of the derivatized analytical standards of PCP and TTCP. Both PCP and TTCP were confirmed to be present in the three samples analysed.

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TABLE 2

**ANALYSIS OF CHLORINATED PHENOLS IN
STORM WATER RUNOFF**

ANALYSIS OF CHLORINATED PHENOLICS IN STORMWATER RUNOFF

CTL SPL #	EPS IDENTIFICATION				TEST RESULTS (UG/L)						
	PROJECT	STATION	TIME	TYPE	DATE	CLARITY	PCP	TTCP	TCP	TCP: 2,3,6	
6016-1	STORM	SEA-HOOD/O	08:00		26-Oct-86	1	4,310	4,290	0.56	0.76	
2	STORM	SEA-HI	08:30	09:45	26-Oct-86	2	7,050	8,860	2.04	3.61	
3	STORM	SEA-HO			26-Oct-86	1	10.5	20.7	<0.10	0.94	
4	STORM	SEA-H	08:30	10:30	26-Oct-86	1	6,010	5,790	1.24	2.41	
5	STORM	SEA-	07:15		27-Oct-86	4	894	828	0.56	0.74	
6	STORM	SEA-	03:30	D	25-Oct-86	1	301	357	0.12	0.19	
7	STORM	SEA-	03:30	D	25-Oct-86	4	246	592	<0.1	0.13	
8	STORM	SEA-	04:00	D	25-Oct-86	3	1.40	2.01	<0.1	<0.1	
9	STORM	SEA-	04:15	D	25-Oct-86	3	1.30	1.89	<0.1	<0.1	
10	STORM	SEA-	04:30	D	25-Oct-86	4	153	273	<0.1	0.13	
11	STORM	SEA-	04:45	D	25-Oct-86	4	292	494	<0.1	0.10	
12	STORM	SEA-	05:00	D	25-Oct-86	4	1.45	0.70	0.12	0.20	
13	STORM	SEA-	05:15	D	25-Oct-86	4	255	356	<0.1	0.14	
14	STORM	SEA-	05:30	D	25-Oct-86	4	170	400	<0.1	0.19	
15	STORM	SEA-	05:45	D	25-Oct-86	4	230	372	<0.1	<0.1	
16	STORM	SEA-	06:00	D	25-Oct-86	4	236	219	<0.1	0.27	
17	STORM	SEA-	06:15	D	25-Oct-86	1	328	504	<0.1	0.24	
18	STORM	SEA-	06:30	D	25-Oct-86	3	160	215	<0.1	0.34	
19	STORM	SEA-	06:45	07:00	C	25-Oct-86	1	256	402	<0.1	0.21
20	STORM	SEA	07:15	07:30	C	25-Oct-86	1	264	467	<0.1	0.23
21	STORM	SEA	08:00	08:30	C	25-Oct-86	3	7.74	4.06	<0.1	0.25
22	STORM	SEA	08:30	09:30	C	25-Oct-86	1	110	91.1	<0.1	0.23
23	STORM	SEA	09:30	11:00	C	25-Oct-86	1	60.0	46.4	<0.1	0.21
24	STORM	SEA	11:00	13:00	D	25-Oct-86	1	278	534	<0.1	0.39
25	STORM	SEA	03:30	04:30	C	26-Oct-86	1	255	280	<0.1	0.50
26	STORM	SEA	03:30	05:30	C	26-Oct-86	1	164	82.8	<0.1	0.69
27	STORM	SEA	04:30	05:30	C	26-Oct-86	1	3.06	1.99	<0.1	0.65
28	STORM	SEA	05:30	06:30	C	26-Oct-86	3	263	465	0.11	0.44
29	STORM	SEA	06:30	07:30	C	26-Oct-86	1	183	356	<0.1	0.64
30	STORM	SEA	07:30	08:30	C	26-Oct-86	1	117	180	<0.1	0.49
31	STORM	SEA	08:30	09:30	C	26-Oct-86	4	206	311	<0.1	0.12
32	STORM	SEA	09:30	10:30	C	26-Oct-86	4	196	308	<0.1	2.71
33	STORM	SEA	05:00	06:00	D	27-Oct-86	255	423	<0.1	0.83	
34	STORM	SEA	06:00	07:00	C	27-Oct-86	397	163	0.22	0.99	
35	STORM	LYNN	15:30		C	27-Oct-86	376	323	0.20	0.37	
36	STORM	LYNN	15:45		C	29-Oct-86	247	330	0.23	0.35	
37	STORM	LYNN	16:00		D	29-Oct-86	155	172	<0.1	0.44	
38	STORM	LYNN	16:15		D	29-Oct-86	2.84	0.71	<0.1	0.24	
39	STORM	LYNN	16:30		D	29-Oct-86	267	6.15	<0.1	0.65	
40	STORM	LYNN			D	29-Oct-86	336	8.23	<0.1	0.62	
41	STORM	LYNN	16:45		D	29-Oct-86	1.83	0.31	<0.1	0.39	
42	STORM	LYNN	17:00		D	29-Oct-86	354	6.52	<0.1	0.40	
43	STORM	LYNN	17:15		D	29-Oct-86	260	94.7	<0.1	0.53	
44	STORM	LYNN	17:30		D	29-Oct-86	375	78.9	<0.1	0.45	
45	STORM	LYNN	17:45	18:15	C	29-Oct-86	315	216	<0.1	0.47	
46	STORM	LYNN	18:30	19:30	C	29-Oct-86	1	246	171	<0.1	0.72
47	STORM	LYNN	00:00	01:00	C	30-Oct-86	1	235	158	<0.1	0.44
48	STORM	LYNN	01:30	02:30	C	30-Oct-86	1	1.90	0.53	<0.1	0.36
49	STORM	LYNN	03:00	07:30	C	30-Oct-86	1	3.53	0.21	<0.1	0.47
50	STORM	K5	12:25		D	12-Nov-86	1	77.3	88.6	<0.1	0.46

ANALYSIS OF CHLORINATED PHENOLICS IN STORMWATER RUNOFF

CTL SPL #	PROJECT	EPS IDENTIFICATION		TIME	TYPE	DATE	CLARITY	PCP	TTCP	TEST RESULTS (UG/L)		
		STATION	TIME							TCP: 2,4,6	TCP: 2,3,6	
51	STORM	LYNN K5	12:30	0	12-Nov-86	1	75.0	85.7	<0.1	0.56		
52	STORM	LYNN K5	12:45	0	12-Nov-86	1	1.78	0.56	<0.1	0.35		
53	STORM	LYNN K5	13:00	0	12-Nov-86	1	82.5	83.0	<0.1	0.31		
54	STORM	LYNN K5	13:15	0	12-Nov-86	1	159	132	<0.1	0.38		
55	STORM	LYNN K5	04:45	0	13-Nov-86	1	200	202	<0.1	0.39		
56	STORM	LYNN K5	05:00	0	13-Nov-86	1	146	191	<0.1	0.33		
57	STORM	LYNN K5	05:15	0	13-Nov-86	1	170	186	<0.1	0.90		
58	STORM	LYNN K5	05:30	0	13-Nov-86	1	172	198	0.11	0.84		
59	STORM	LYNN K5	05:30	06:00	C	13-Nov-86	1	209	218	0.11	0.75	
60	STORM	LYNN K5	08:30	09:00	C	13-Nov-86	1	408	52.8	0.14	0.73	
61	STORM	LYNN K5-HO	08:30	0	13-Nov-86	1	417	281	6.45	11.8		
62	STORM	LYNN K5	08:15	0	13-Nov-86	1	143	12.0	<0.1	0.75		
63	STORM	LYNN K5	07:00	08:00	C	13-Nov-86	1	30.6	0.65	<0.1	0.76	
64	STORM	LYNN K5	06:00	07:00	C	13-Nov-86	1	170	230	<0.1	0.79	
65	STORM	HHONNOCK	01:30	02:00		12-Nov-86	1	8,990	25,400	0.25	0.78	
66	STORM	HHONNOCK	08:00	13-Nov-86	1	9,320	18,300	0.23	1.26			
67	STORM	HHONNOCK	08:00	08:30		13-Nov-86	1	12,100	24,600	0.25	0.71	
68	STORM	HHONNOCK	08:30	09:00		13-Nov-86	1	7,290	13,300	0.31	0.86	
69	STORM	HHONNOCK	09:00	09:30		13-Nov-86	1	8,360	15,000	0.58	0.68	
70	STORM	HHONNOCK	09:30	10:00		13-Nov-86	1	6,950	13,100	0.31	0.37	
71	STORM	HHONNOCK	10:00	10:30		13-Nov-86	1	4,820	11,200	0.65	7.29	
72	STORM	HHONNOCK	10:30	11:00		13-Nov-86	1	5,710	8,350	1.00	4.41	
73	STORM	HHONNOCK	11:00	11:30		13-Nov-86	1	3,850	6,190	1.45	6.34	
74	STORM	HHONNOCK	11:30	12:00		13-Nov-86	1	10,800	21,300	0.69	6.51	
75	STORM	HHONNOCK	12:00	12:30		13-Nov-86	1	6,390	13,900	0.92	3.94	
76	STORM	HHONNOCK	12:30	13:00		13-Nov-86	1	10,200	21,800	1.17	5.06	
??	STORM	HHONNOCK	13:00	13:30		13-Nov-86	1	9,740	21,000	1.21	5.75	
78	STORM	HHONNOCK	13:30	14:00		13-Nov-86	1	5,580	11,600	0.90	6.14	
79	STORM	HHONNOCK DRIPPING FROM WOOD	13-Nov-86	2				67,900	104,000	12.6	44.7	
80	STORM	HHONNOCK-RAIN WATER	13-Nov-86	1				6.01	36.6	<0.1	3.38	
81	(Returned to EPS)		taken by EPS		-		-		-			
82	(Returned to EPS)		-		12-Nov-86		12-Nov-86		59.7		0.20	
83	DOMAN/EPS	27-1	13:40	-		1		152		<0.1		
84	DOMAN/EPS	27-2	13:45	-		1		110		<0.1		
85	DOMAN/EPS	27-1	10:00	-		4		2.37		<0.1		
86	DOMAN/EPS	27-1	16:00	-		1		2,440		<0.1		
87	DOMAN/EPS	3a	5 hrs	-		1		5,110		119		
88	DOMAN/EPS	3	26 hrs	-		1		189		<0.1		
89	DOMAN/EPS	27-2 (outfall)	09:20	09:35	1	15-Nov-86	1	4,65	184	2.01	6.23	
90	DOMAN/EPS	27-2	09:35	2	15-Nov-86	1	232	16.6	0.68	9.94		
91	DOMAN/EPS	27-2	09:50	3	13-Nov-86	1	218	16.3	0.77	2.11		
92	DOMAN/EPS	27-2	10:05	4	13-Nov-86	1	259	27.1	0.87	6.15		
93	DOMAN/EPS	27-2	10:20	5	13-Nov-86	1	276	30.0	1.26	3.86		
94	DOMAN/EPS	27-2	10:35	6	13-Nov-86	1	193	27.0	<0.1	2.13		
95	DOMAN/EPS	27-2	10:50	7	13-Nov-86	2	147	19.0	0.94	4.56		
96	DOMAN/EPS	27-2	11:05	8	13-Nov-86	2	138	22.4	<0.1	4.43		
97	DOMAN/EPS	27-2	11:20	9	13-Nov-86	4	92.7	15.5	<0.1	2.62		
98	DOMAN/EPS	27-2	11:35	10	13-Nov-86	4	110	19.1	<0.1	2.79		
99	DOMAN/EPS	27-2	11:50	11	13-Nov-86	4	117	21.8	<0.1	1.74		

ANALYSIS OF CHLORINATED PHENOLICS IN STORMWATER RUNOFF

CTL SPL #	EPS IDENTIFICATION			TEST RESULTS (ug/L)						
	PROJECT	STATION	TIME	TYPE	DATE	CLARITY	PCP	TTCP	TCP: 2,4,6	
		12:05	12:05	13-Nov-86	4	103	18.2	<0.1	2.62	
100	DOMAN/EPS	27-2	12:20	13:05	13-Nov-86	4	127	25.5	<0.1	
101	DOMAN/EPS	27-2	13:20	14:05	13-Nov-86	4	2.53	0.98	<0.1	
102	DOMAN/EPS	27-2	14:20	15:05	13-Nov-86	4	104	18.5	<0.1	
103	DOMAN/EPS	27-2	14:40	0	13-Nov-86	1	30,300	10,900	<0.1	
104	STORM	LYNN K5 - HO	14:55	0	13-Nov-86	1	112	116	0.20	
105	STORM	LYNN K5 - HI	15:05	0	13-Nov-86	1	107,000	33,300	0.43	
106	STORM	LYNN K5 - HI	20:00	0	13-Nov-86	1	278	464	0.55	
107	STORM	LYNN K5	20:00	20:30	0	13-Nov-86	1	333	514	0.74
108	STORM	LYNN K5	20:30	21:00	C	13-Nov-86	1	444	629	0.66
109	STORM	LYNN K5	21:00	21:30	C	13-Nov-86	1	4,390	2,260	1.52
110	STORM	LYNN K5							3.37	
111	STORM	LYNN K5	21:30	22:00	C	13-Nov-86	3	308	451	0.85
112	STORM	LYNN K5	22:00	22:30	C	13-Nov-86	3	307	131	0.45
113	STORM	LYNN K5	22:30	0	13-Nov-86	1	64,300	23,800	0.89	
114	STORM	LYNN K5	22:30	0	13-Nov-86	1	3,300	6,290	<0.1	
115	STORM	LYNN K5 - HO	08:45	0	14-Nov-86	1	62,500	22,600	0.56	
116	STORM	LYNN K5 - HO	14:10	0	15-Nov-86	1	11,800	11,800	1.61	
117	STORM	LYNN K5 - HI	14:10	0	15-Nov-86	3	273,000	298,000	<0.1	
118	STORM	LYNN WOOD INT	14:10	0	16-Nov-86	1	246,000	227,000	<0.1	
119	STORM	LYNN WOOD END	14:10	0	16-Nov-86	1	92,900	76,200	<0.1	
120	STORM	HHONNOCK	04:00	0	18-Nov-86	4	7,700	16,200	0.52	
121	STORM	HHONNOCK	04:00	04:30	C	18-Nov-86	4	9,830	13,000	0.47
122	STORM	HHONNOCK	04:30	05:00	C	18-Nov-86	4	12,900	17,500	0.49
123	STORM	HHONNOCK	05:00	05:30	C	18-Nov-86	3	10,000	15,200	0.91
124	STORM	HHONNOCK	05:30	06:00	C	18-Nov-86	4	11,800	17,100	0.23
125	STORM	HHONNOCK	06:00	06:30	C	18-Nov-86	4	4,500	9,100	0.1
126	STORM	HHONNOCK	06:30	07:00	C	18-Nov-86	2	25,000	26,300	<0.1
127	STORM	HHONNOCK	07:00	07:30	C	18-Nov-86	4	6,020	10,700	<0.1
128	STORM	HHONNOCK	07:30	08:00	C	18-Nov-86	3	14,000	19,800	0.18
129	STORM	HHONNOCK	08:00	08:30	C	18-Nov-86	4	12,800	19,900	<0.1
130	STORM	HHONNOCK WOOD DRIPOS	09:00	10:00	C	18-Nov-86	2	236,000	340,000	16.2
131	STORM	HHONNOCK RAINWATER	07:00	0	18-Nov-86	1	8.81	34.4	<0.1	
132	DOMAN/EPS	27-2	09:30	10:15	D	18-Nov-86	1	423	43.0	5.66
133	DOMAN/EPS	27-2	10:30	11:15	18-Nov-86	4	418	40.5	5.74	
134	DOMAN/EPS	27-2	11:30	12:15	18-Nov-86	4	179	25.7	5.78	
135	DOMAN/EPS	27-2	12:30	13:15	18-Nov-86	4	127	24.2	0.65	
136	DOMAN/EPS	27-2	13:30	14:15	18-Nov-86	4	250	30.3	0.59	
137	DOMAN/EPS	27-2	14:30	15:15	18-Nov-86	4	147	40.7	1.29	
138	DOMAN/EPS	27-3-a	09:00	17 hrs	14-Nov-86	3	3,150	250	<0.1	
139	STORM	LYNN HE	00:00	01:05	C	18-Nov-86	4	23,500	17,200	0.06
140	STORM	LYNN HI	02:05	03:59	C	18-Nov-86	1	49,900	42,200	0.92
141	STORM	LYNN	02:03	03:02	C	18-Nov-86	2	26,600	19,600	<0.1
142	STORM	LYNN HE	05:01	06:05	C	18-Nov-86	1	37,800	12,600	<0.1
143	STORM	LYNN HE	06:01	08:00	C	18-Nov-86	1	27,300	21,800	<0.1
144	STORM	LYNN HE	08:00	10:00	C	18-Nov-86	1	45,200	14,400	<0.1
145	STORM	LYNN KS HE	17:06	0	19-Nov-86	4	110,000	25,600	<0.1	
146	STORM	TERM	12:30	0	19-Nov-86	3	166	125	0.06	
147	STORM	TERM	12:30	12:45	C	19-Nov-86	4	50.7	26.6	0.06
148	STORM	TERM	12:45	13:00	C	19-Nov-86	4	59.0	34.1	0.08

ANALYSIS OF CHLORINATED PHENOLICS IN STORMWATER RUNOFF

CTL. SPL #	EPS IDENTIFICATION				CLARITY	TEST RESULTS (UG/L)			
	PROJECT	TERM	STATION	TIME		TYPE	DATE	TTCP	TCP
6016-149	STORM	TERM		13:00 13:15	C	19-Nov-86	41.5	13.0	<0.1
150	STORM	TERM		13:15 13:30	C	19-Nov-86	38.4	15.9	<0.1
151	STORM	TERM		13:30 13:45	C	19-Nov-86	109	45.2	<0.1
152	STORM	TERM		13:45 14:00	C	19-Nov-86	54.9	25.5	<0.1
153	STORM	TERM		14:00 14:15	C	19-Nov-86	62.3	21.4	<0.1
154	STORM	TERM		14:15 14:30	C	19-Nov-86	4	23.5	11.2
155	STORM	TERM		14:30 14:45	C	19-Nov-86	4	31.4	10.2
156	STORM	TERM		14:45 15:00	C	19-Nov-86	4	24.0	6.64
157	STORM	TERM		15:00 15:15	C	19-Nov-86	4	28.6	9.75
158	STORM	TERM		15:15 15:30	C	19-Nov-86	4	32.0	7.68
159	STORM	TERM		15:30 16:00	C	19-Nov-86	4	67.4	<0.1
160	STORM	TERM		16:00 16:30	C	19-Nov-86	4	60.1	<0.1
161	STORM	TERM		16:30 17:00	C	19-Nov-86	4	33.5	<0.1
162	STORM	TERM		17:00 17:30	C	19-Nov-86	4	39.2	22.0
163	STORM	TERM		17:30 18:00	C	19-Nov-86	4	71.3	66.0
164	STORM	TERM		18:00 18:30	C	19-Nov-86	4	12.8	3.80
165	STORM	TERM		18:30 19:00	C	19-Nov-86	4	64.0	47.6
166	STORM	TERM		19:00 19:30	C?	18-Nov-86	4	116	108
167	STORM	TERM		19:30 20:00	C	19-Nov-86	4	112	109
168	STORM	TERM		20:00 20:30	C	19-Nov-86	4	130	187
169	STORM	TERM		20:30 21:00	C	19-Nov-86	4	156	275
170	STORM	TERM		21:00 21:30	C	19-Nov-86	4	274	384
171	STORM	TERM		21:30 22:00	C??	17-Nov-86	4	409	682
172	STORM	TERM		22:00 22:30	C	19-Nov-86	4	152	203
173	STORM	TERM		22:30 23:00	C	19-Nov-86	4	177	375
174	STORM	TERM		23:00 23:30	C	19-Nov-86	4	200	405
175	STORM	TERM		23:30 00:00	C	19-Nov-86	4	314	644
176	STORM	TERM		00:00 00:30	C	20-Nov-86	4	304	573
177	STORM	TERM		00:30 01:00	C	20-Nov-86	4	278	625
178	STORM	TERM		01:00 01:30	C	20-Nov-86	4	203	392
179	STORM	TERM		01:30 02:00	C	20-Nov-86	4	200	402
180	STORM	TERM		02:00 03:00	C	20-Nov-86	4	210	457
181	STORM	TERM	LYNN K5 - HI	03:00 04:00	C	20-Nov-86	3	193	463
182	STORM	TERM	LYNN K5 - HO	04:00 05:00	C	20-Nov-86	3	169	398
183	STORM	TERM	27-1a Stacks	05:00 06:30	C	20-Nov-86	3	121	283
184	STORM	TERM-C	27-1b Stacks	00:25 00:50	C	20-Nov-86	3	753	1,290
185	STORM	TERM-C	DOMAN	00:50 01:20	C	20-Nov-86	3	698	960
186	STORM	TERM-C	DOMAN	01:20 01:50	C	20-Nov-86	3	683	1,010
187	STORM	TERM-C	DOMAN	02:00 03:00	C	20-Nov-86	3	658	981
188	STORM	TERM-C	DOMAN	02:15 03:00	C	20-Nov-86	3	146	176
189	STORM	TERM-C	DOMAN	03:00 04:00	C	20-Nov-86	3	483	733
190	STORM	TERM-C	DOMAN	04:00 05:00	C	20-Nov-86	3	476	801
191	STORM	TERM-C	DOMAN	05:00 06:30	C	20-Nov-86	3	512	604
192	STORM	TERM	DOMAN	20-Nov-86			3	81	27
193	STORM	TERM	DOMAN	20-Nov-86			1	1,200	400
194	STORM	TERM	DOMAN	20-Nov-86			1	81	278
195	STORM	TERM	DOMAN	20-Nov-86			1	3,540	857
196	STORM	TERM	DOMAN	20-Nov-86			1	3,320	542
197	STORM	TERM	DOMAN	20-Nov-86			3	10:15	488
				27-2			3	221	446

ANALYSIS OF CHLORINATED PHENOLICS IN STORMWATER RUNOFF

EPS IDENTIFICATION

CTL SPL #	PROJECT	STATION	TIME	TYPE	DATE	CLARITY	TEST RESULTS CUG/LD		
							PCP	RTCP	TCP: 2,4,6
601G-198	DOMAN	27-2	11:30	12:15	20-Nov-86	4	440	16.1	<0.1
199	DOMAN	27-2	12:30	13:15	20-Nov-86	3	380	9.82	<0.1
200	DOMAN	27-2	13:30	14:15	20-Nov-86	3	404	13.6	<0.1
201	DOMAN	27-2	14:30	15:15	20-Nov-86	3	383	17.4	<0.1
202	STORM	LYNN K5 HI	11:15		21-Nov-86	3	21,500	14,400	<0.1
203	STORM	LYNN K5 HI	12:00		24-Nov-86	4	13,200	11,400	<0.1
204	STORM	TERM CD	19:00		25-Nov-86	4	343	1040	0.90
205	STORM	TERM CD	19:15	19:30	25-Nov-86	4	198	646	0.59
206	STORM	TERM CD	19:30	19:45	25-Nov-86	4	246	723	0.78
207	STORM	TERM CD	19:45	20:00	25-Nov-86	4	373	1090	0.93
208	STORM	TERM CD	20:00	20:15	25-Nov-86	4	572	1100	0.98
209	STORM	TERM CD	20:15	20:30	25-Nov-86	4	215	520	0.59
210	STORM	TERM CD	20:30	20:45	25-Nov-86	4	310	908	1.94
211	STORM	TERM CD	20:45	21:00	25-Nov-86	4	77.2	2.86	1.79
212	STORM	TERM CD	21:00	21:15	25-Nov-86	4	505	357	2.14
213	STORM	TERM CD	21:15	21:30	25-Nov-86	4	405	191	2.40
214	STORM	TERM CD	21:30	21:45	25-Nov-86	4	398	379	0.84
215	STORM	TERM CD	21:45	22:00	25-Nov-86	4	383	297	0.63
216	STORM	TERM CD	22:00	23:00	25-Nov-86	4	161	164	0.39
217	STORM	TERM CD	23:15		25-Nov-86	4	234	271	0.23
218	STORM	TERM - HO	19:30	20:30	25-Nov-86	4	10,200	17,800	1.11
219	STORM	TERM HO	20:30	21:30	25-Nov-86	4	6,300	12,700	<0.1
220	STORM	TERM CS	22:45		25-Nov-86	3	5,090	8,920	<0.1
221	STORM	TERM CS	18:45		25-Nov-86	3	3.69	3.49	<0.1
222	STORM	TERM CS	19:00		25-Nov-86	4	127	66.5	<0.1
223	STORM	TERM CS	19:15		25-Nov-86	4	6.94	3.50	<0.1
224	STORM	TERM CS	20:15		25-Nov-86	4	7.37	4.57	<0.1
225	STORM	TERM CS	21:15		25-Nov-86	4	9.99	5.36	<0.1
226	STORM	TERM CS	22:15		25-Nov-86	4	4.11	6.57	<0.1
227	STORM	LYNN K5 HI	11:00		26-Nov-86	3	5,610	4,620	0.64
228	STORM	TOL 2	08:00		21-Dec-86	4	817	2,300	<0.1
229	STORM	TOL 2	18:50		21-Dec-86	4	10.9	15.4	110
230	STORM	T-SPHO	20:00		20-Dec-86	4	33.4	421	<0.1
231	STORM	T-SPHO	21:00		20-Dec-86	4	32.5	22.9	<0.1
232	STORM	T-SPHO	23:00		20-Dec-86	4	29.1	19.4	<0.1
233	STORM	T-SPHO	01:00		21-Dec-86	4	131	67.1	7.44
234	STORM	T-SPHO	03:00		21-Dec-86	4	30.1	24.3	15.2
235	STORM	T-01	17:00		20-Dec-86	4	99.6	214	<0.1
236	STORM	T-01	17:15		20-Dec-86	4	180	385	2.60
237	STORM	T-01	17:30		20-Dec-86	4	194	379	<0.1
238	STORM	T-01	17:45		20-Dec-86	4	97.9	223	44.1
239	STORM	T-01	18:00		20-Dec-86	4	96.1	209	15.0
240	STORM	T-01	18:15		20-Dec-86	4	89.0	165	66.2
241	STORM	T-01	18:15		20-Dec-86	4	68.0	117	<0.1
242	STORM	T-01	19:00		20-Dec-86	4	81.6	105	36.0
243	STORM	T-01	20:15		20-Dec-86	4	21.8	35.7	<0.1
244	STORM	T-01	23:15		20-Dec-86	3	20.8	26.6	10.3
245	STORM	T-01	03:00		21-Dec-86	3	13.8	18.9	9.09
246	STORM	T-01	18:15		20-Dec-86	4	1,840	3,810	10.9

ANALYSIS OF CHLORINATED PHENOLICS IN STORMWATER RUNOFF

EPS IDENTIFICATION

CTL SPL #	PROJECT	STATION	TIME	TYPE	DATE	CLARITY	PCP	TTCP	TCP: 2,4,6	TEST RESULTS (UG/L)
247	STORM	T-DL1	19:45		20-Dec-86	3	2,200	1,570	<0.1	300
248	STORM	T-DL1	21:00		20-Dec-86	2	1,880	1,290	<0.1	165
249	STORM	T-DL1	00:00		21-Dec-86	2	1,890	1,240	<0.1	79.3
250	STORM	T-DL1	01:30		21-Dec-86	1	1,540	3,350	<0.1	170
251	STORM	T-DL1	03:30		21-Dec-86	1	2,500	5,230	<0.1	92.9
252	STORM	T-DL1	08:05		21-Dec-86	3	7,41	3,25	<0.1	5.66
253	STORM	T-CO	16:00		20-Dec-86	4	1,930	2,850	<0.1	97.3
254	STORM	T-CO	16:15		20-Dec-86	4	654	568	<0.1	18.6
255	STORM	T-CO	16:30		20-Dec-86	4	1,210	3,050	<0.1	55.3
256	STORM	T-CO	16:45		20-Dec-86	2	1,010	2,060	<0.1	50.9
257	STORM	T-CO	17:00		20-Dec-86	3	1,320	2,450	<0.1	11.1
258	STORM	T-CO	17:30		20-Dec-86	3	964	1,300	<0.1	62.5
259	STORM	T-CO	18:00		20-Dec-86	3	690	934	<0.1	37.5
260	STORM	T-CO	18:30		20-Dec-86	4	638	805	<0.1	66.8
261	STORM	T-CO	19:00		20-Dec-86	4	552	848	<0.1	68.1
262	STORM	T-CO	19:30		20-Dec-86	4	460	806	<0.1	35.5
263	STORM	T-CO	20:30		20-Dec-86	3	410	565	<0.1	21.9
264	STORM	T-CO	22:00		20-Dec-86	3	320	442	<0.1	17.1
265	STORM	T-CO	00:00		21-Dec-86	4	320	540	<0.1	23.0
266	STORM	T-CO	02:00		21-Dec-86	3	290	503	<0.1	17.7
267	STORM	T-CO	03:00		21-Dec-86	4	352	626	<0.1	16.7
268	STORM	T-CO	04:00		21-Dec-86	4	720	1,310	<0.1	17.7
269	STORM	T-CO	04:00		20-Dec-86	3	440	810	<0.1	29.0
270	STORM	SPHO	08:00		21-Dec-86	1	9,80	21.8	<0.1	12.6
271	STORM	-	08:00		22-Dec-86	2	3,10	6,72	<0.1	3.48
272	STORM	-	08:15		22-Dec-86	3	8,43	14.6	<0.1	6.47
273	STORM	-	08:30		22-Dec-86	3	7,23	17.1	<0.1	5.33
274	STORM	-	08:45		22-Dec-86	3	19.3	31.7	<0.1	3.34
275	STORM	-	09:00		22-Dec-86	3	56.0	140	<0.1	18.1
276	STORM	-	09:00		22-Dec-86	3	73.8	201	<0.1	14.5
277	STORM	-	09:30		22-Dec-86	3	51.0	126	<0.1	19.6
278	STORM	-	10:00		22-Dec-86	3	70.2	180	<0.1	20.4
279	STORM	-	10:30		22-Dec-86	3	52.4	131	<0.1	17.6
280	STORM	-	11:00		22-Dec-86	3	227	153	<0.1	12.7
281	STORM	-	13:00		22-Dec-86	3	88.4	306	<0.1	13.6
282	STORM	-	08:00		22-Dec-86	1	111,000	203,000	<0.1	460
283	STORM	WESTCOAST-PM	06:15		23-Jan-87	3	336	647	<0.1	13.3
284	STORM	WESTCOAST-CELLUF.	06:30		23-Jan-87	3	580	1,410	<0.1	10.8
285	STORM	WESTCOAST-PM	06:45	07:00	23-Jan-87	3	840	700	<0.1	13.2
286	STORM	WESTCOAST-PM	07:30		23-Jan-87	3	343	1,060	<0.1	63.0
287	STORM	WESTCOAST-PM	07:35		23-Jan-87	3	398	1,320	<0.1	76.6
288	STORM	WESTCOAST-PM	07:45		23-Jan-87	3	770	2,080	<0.1	72.0
289	STORM	WESTCOAST-PM	08:45		23-Jan-87	3	740	2,160	<0.1	47.1
290	STORM	WESTCOAST-PM	09:00		23-Jan-87	3	220	450	<0.1	55.0
291	STORM	WESTCOAST CELLUF.	09:00	09:30	23-Jan-87	3	363	1,100	<0.1	62.7
292	STORM	WESTCOAST CELLUF.	10:00		23-Jan-87	3	460	1,280	<0.1	59.4
293	STORM	WESTCOAST-PM	10:00	10:30	23-Jan-87	3	530	1,510	<0.1	57.4
294	STORM	WESTCOAST-PM	10:30	11:00	23-Jan-87	3	185	410	<0.1	15.2
295	STORM	WESTCOAST-PM	11:00	11:30	23-Jan-87	3	220	450	<0.1	43.1

ANALYSIS OF CHLORINATED PHENOLICS IN STORMWATER RUNOFF

EPS IDENTIFICATION

CTL SPL #	PROJECT	STATION	TIME	TYPE	DATE	CLARITY	PCP	TTCP	TCP: 2,4,6	TCP: 2,3,6	TEST RESULTS (G/L)
296	STORM	WESTCOAST CELLUF.	12:00	12:30	23-Jan-87	3	660	2,170	<0.1	62.7	
297	STORM	WESTCOAST CELLUF.	12:30	13:00	23-Jan-87	3	265	550	<0.1	52.5	
298	STORM	WESTCOAST -PM	13:00	13:30	23-Jan-87	3	230	590	<0.1	42.1	
299	STORM	WESTCOAST -PM	13:30	14:00	23-Jan-87	3	composite to sample	359	<0.1		
300	STORM	WESTCOAST CELLUF.	14:00	14:30	23-Jan-87	3	composite to sample	359	<0.1		
301	STORM	WESTCOAST -PM	11:30	12:00	23-Jan-87	3	160	430	<0.1	74.5	
302	STORM	WESTCOAST -PM	14:30	15:00	23-Jan-87	3	composite to sample	360			
303	STORM	WESTCOAST CELLUF.	15:00	15:30	23-Jan-87	3	composite to sample	360			
304	STORM	WESTCOAST CELLUF.	15:30	16:00	23-Jan-87	3	122	334	<0.1	62.7	
305	STORM	WESTCOAST CELLUF.	06:00	14:00	23-Jan-87	1	21,700	32,700	<0.1	365	
306	STORM	WESTCOAST CELLUF.	06:00	16:00	23-Jan-87	3	1,450	1,490	<0.1	39.2	
307	STORM	B.C.F.P.	08:35		23-Jan-87	1	composite to sample	363			
308	STORM	B.C.F.P.	10:45		23-Jan-87	3	composite to sample	363			
309	STORM	B.C.F.P.	11:30		23-Jan-87	4	composite to sample	363			
310	STORM	LYNN	11:45		30-Oct-86	3	1,660	3,34	<0.1	53.0	
311	STORM	B.C.F.P.	12:00		23-Jan-87	3	composite sample	364			
312	STORM	B.C.F.P.	12:30		23-Jan-87	3	composite sample	364			
313	STORM	B.C.F.P.	12:30	13:30	23-Jan-87	3	composite sample	364			
314	STORM	B.C.F.P.	13:30	14:30	23-Jan-87	3	composite sample	365			
315	STORM	B.C.F.P.	14:30	15:30	23-Jan-87	3	composite sample	365			
316	STORM	B.C.F.P.	15:30	16:30	23-Jan-87	3	composite sample	365			
317	STORM	B.C.F.P.	10:45	12:30	23-Jan-87	3	composite sample	366			
318	STORM	B.C.F.P.	12:30	13:30	23-Jan-87	3	composite sample	366			
319	STORM	B.C.F.P.	13:00	14:00	23-Jan-87	1	composite sample	366			
320	STORM	B.C.F.P.	15:00	17:00	23-Jan-87	3	5,200	6,250	<0.1	27.5	
321	STORM	B.C.F.P.	14:15	17:00	23-Jan-87	3	95.3	1,73	<0.1	14.1	
322	STORM	Doman - LB	14:30		27-Jan-87	2	94,800	3,150	<0.1	22.2	
323	STORM	Doman - HE	16:00		27-Jan-87	2	6,610	168	<0.1	23.0	
324	STORM	Doman - PH	05:30	10:30	29-Jan-87	2	107,000	4,380	<0.1	25.3	
325	STORM	Doman - PH	06:00		29-Jan-87	3	7,390	306	<0.1	17.7	
326	STORM	Doman - PH	06:30		29-Jan-87	4	10,700	390	<0.1	21.0	
327	STORM	Doman - PH	07:30		29-Jan-87	4	9,860	420	<0.1	95.0	
328	STORM	Doman - PH	08:00	08:30	29-Jan-87	3	9,880	322	<0.1	13.0	
329	STORM	Doman - PH	08:30	09:00	29-Jan-87	3	7,540	227	<0.1	60.0	
330	STORM	Doman - PH	09:00	09:30	29-Jan-87	2	8,310	243	<0.1	57.5	
331	STORM	Doman - PH	09:30	10:00	29-Jan-87	4	7,550	340	<0.1	60.0	
332	STORM	Doman - PH	10:00	10:30	29-Jan-87	3	11,400	485	<0.1	72.5	
333	STORM	Doman - PH	10:30	11:00	29-Jan-87	3	8,930	258	<0.1	48.5	
334	STORM	Doman - PH	11:00	11:30	29-Jan-87	3	11,300	344	<0.1	66.3	
335	STORM	Doman - PH	11:30	12:00	29-Jan-87	3	12,200	310	<0.1	61.2	
336	STORM	Doman - PH	13:00		29-Jan-87	3	9,650	275	<0.1	80.0	
337	STORM	Doman - PH	14:30		27-Jan-87	3	4,420	155	<0.1	14.3	
338	STORM	Doman - PH	14:30	15:00	27-Jan-87	3	composite sample	361			
339	STORM	Doman - PH	15:00	15:30	27-Jan-87	4	composite sample	361			
340	STORM	Doman - PH	15:30		27-Jan-87	4	composite sample	361			
341	STORM	Doman - PH	15:30	16:00	27-Jan-87	3	8,500	320	<0.1	3.64	
342	STORM	Doman - PH	16:00	16:30	27-Jan-87	4	composite sample	362			
343	STORM	Doman - PH	16:30	17:00	27-Jan-87	4	composite sample	362			
344	STORM	Doman - PH	17:30	19:00	27-Jan-87	4	composite sample	362			

ANALYSIS OF CHLORINATED PHENOLICS IN STORMWATER RUNOFF

EPS IDENTIFICATION

CTL SPL #	PROJECT	STATION	TIME	TYPE	DATE	CLARITY	PCP	TTCP	TEST RESULTS (UG/L)
601G-345	STORM	B.C.F.P. - THE	15:00	18:00	27-Jan-87	3	1,880	4,060	TCP: 2,4,6
346	STORM	B.C.F.P. - THE	18:00	20:45	27-Jan-87	1	1,910	3,860	<0.1 21.6
347	STORM	B.C.F.P. - THE	21:00	10:50	28-Jan-87	3	2,090	5,270	<0.1 21.6
348	STORM	B.C.F.P. - THE	10:50	06:20	29-Jan-87	3	1,240	2,120	<0.1 23.5
349	STORM	B.C.F.P. - THE	06:30	09:25	29-Jan-87	3	845	1,680	<0.1 57.1
350	STORM	B.C.F.P. - THE	09:30	13:00	29-Jan-87	3	2,400	5,330	<0.1 61.0
351	STORM	B.C.F.P. - HE	14:00	16:30	27-Jan-87	3	5,060	5,310	<0.1 64.2
352	STORM	B.C.F.P. - HE	16:30	20:45	27-Jan-87	3	3,990	1,480	<0.1 60.6
353	STORM	B.C.F.P. - HE	21:00	10:50	28-Jan-87	3	3,080	3,010	<0.1 51.4
354	STORM	B.C.F.P. - HE	10:50	06:30	29-Jan-87	3	4,230	3,980	<0.1 55.0
355	STORM	B.C.F.P. - HE	06:30	09:30	29-Jan-87	3	4,600	4,110	<0.1 51.4
356	STORM	B.C.F.P. - HE	09:30	13:00	29-Jan-87	3	5,030	4,560	<0.1 49.5
357	STORM	B.C.F.P. - HE	14:00	14:00	27-Jan-87	3	5,700	13,300	<0.1 66.1
358	STORM	B.C.F.P. - HE	16:00	02:45	27-Jan-87	3	6,160	12,400	<0.1 62.7
359	STORM	Composite of	299	6	300	3	240	730	<0.1 13.7
360	STORM	Composite of	302	6	303	3	320	784	<0.1 19.6
361	STORM	Composite of	338	6	339	6	340	4	5,780 178 <0.1 13.3
362	STORM	Composite of	342	6	343	6	344	4,750 146 <0.1 11.8	
363	STORM	Composite of	307	6	308	6	309	1,270 25.1 <0.1 16.7	
364	STORM	Composite of	311	6	312	6	313	1,020 22.0 <0.1 17.0	
365	STORM	Composite of	314	6	315	6	316	880 5,24 <0.1 23.0	
366	STORM	Composite of	317	6	318	6	319	1,800 2,160 <0.1 54.0	

TABLE 3 - In-house Quality Control Fortified Sample Results

Percent Recoveries

Date of Analysis	Level of Spiking (ug/L)	PCP	TTCP	TCP (2,3,6-)
861128	2.0	72	130	110
861218	4.0	110	94	80
870129	0.2	75	135	NA
870204	5000	108	103	NA
870205	5000	97	85	NA
870206	1000	90	85	NA
870209	1000	116	77	NA
870211	1000	118	104	NA
870215	2.0	120	100	NA
870215	1000	120	113	108
870216	1000	98	125	NA
870218	1000	120	94	98
870219	2.0	120	100	110
870220	2.0	94	86	NA
870225	1000	122	108	NA
870225	2.0	97	80	NA
870226	1000	88	75	NA
870227	2.0	83	70	NA
870227	2.0	104	86	NA
870228	2.0	95	70	NA

NA = not available

TABLE 4 - Duplicate Analysis Results

Concentration (ug/L)

CTL#	EPS Description	PCP	TTCP	TCP (2,4,6)	TCP (2,3,6)
3	SEA-WO 861026	10.5	20.7	L 0.1	0.94
	SEA-WO 861026	10.6	34.4	L 0.1	0.98
	Average	10.6	27.6	L 0.1	0.96
11	STORM SEA 861025 4:45	329	461	L 0.1	0.10
		255	527	L 0.1	0.12
	Average	292	494	L 0.1	0.11
31	STORM SEA 861026 8:30	208	308	L 0.1	6.12
	9:30	204	313	L 0.1	9.17
	Average	206	311	L 0.1	7.65
32	STORM SEA 861026 9:30	182	305	L 0.1	2.71
	10:30	210	311	L 0.1	2.25
	Average	196	308	L 0.1	2.72
40	STORM LYNN 861029 16:30	374	8.23	L 0.1	0.64
		297	8.23	L 0.1	0.59
	Average	336	8.23	L 0.1	0.62
46	STORM LYNN 861029 18:30	233	167	L 0.1	0.55
	19:30	258	175	L 0.1	0.88
	Average	246	171	L 0.1	0.72
56	STORM LYNN K5 861113 5:00	133	181	L 0.1	0.27
		158	200	L 0.1	0.38
	Average	146	191	L 0.1	0.33
95	DOMAN/EPS 27-2 861113 10:50	149	19.0	0.82	3.86
		144	19.0	1.06	5.26
	Average	147	19.0	0.94	4.56
107	STORM LYNN K5 861113 20:00	278	476	0.49	1.12
		278	452	0.60	1.01
	Average	278	464	0.55	1.07
111	STORM LYNN K5 861113 21:30	316	458	0.82	1.26
	22:00	300	444	0.88	0.87
	Average	308	451	0.85	1.07
137	DOMAN/EPS 27-2 861118 14:30	147	41.7	L 0.1	2.91
	15:15	147	39.6	L 0.1	2.70
	Average	147	40.7	L 0.1	2.80
147	STORM TERM 861119 12:30	49.1	26.4	L 0.1	9.08
	12:45	52.2	26.7	L 0.1	9.08
	Average	50.7	26.6	L 0.1	9.08

TABLE 4 (con't) - Duplicate Analysis Results

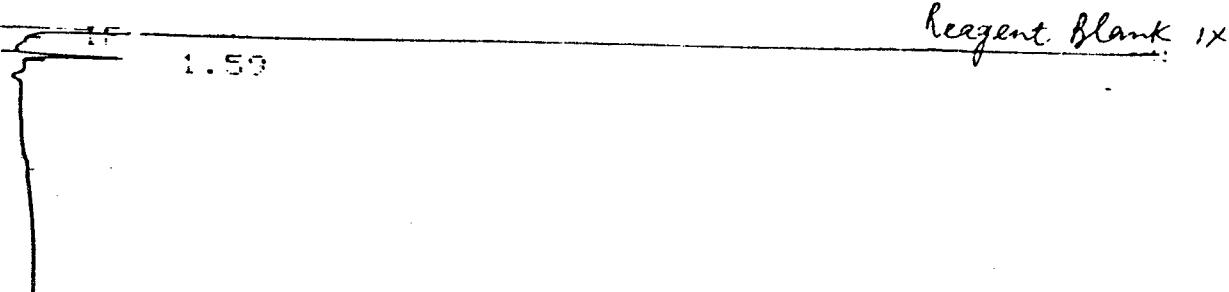
CTL#	EPS Description	PCP	TTCP	Concentration (ug/L)	
				TCP (2,4,6)	TCP (2,3,6)
174	STORM TERM 861119 23:00	319	662	L 0.1	666
		308	625	L 0.1	7.14
	Average	314	644	L 0.1	6.90
178	STORM TERM 861120 01:00	207	428	L 0.1	44.5
		193	375	L 0.1	45.0
	Average	200	402	L 0.1	44.8
183	STORM TERM 861120 5:00	123	292	L 0.1	14.0
		118	274	L 0.1	16.4
	Average	121	283	L 0.1	15.2
192	STORM LYNN K5-WI 861120	42708	27857	L 0.1	9810
		39792	26905	L 0.1	9494
	Average	41250	27381	L 0.1	9652
202	STORM LYNN K5-WI 861121 11:45	20981	14006	L 0.1	3282
		21978	14759	L 0.1	3282
	Average	21500	14383	L 0.1	3282
210	STORM TERM CD 861125 20:30	313	911	1.96	0.28
		307	904	1.91	0.28
	Average	310	908	1.94	0.28
203	STORM LYNN K5 WI 861124 12:00	13588	11807	L 0.1	1330
		12788	10923	L 0.1	1350
	Average	13188	11365	L 0.1	1340
230	STORM T-SPWO 861220 20:00	34.4	434	L 0.1	87.9
		32.3	407	L 0.1	96.7
	Average	33.4	421	L 0.1	92.3
242	STORM T-D1 861220 19:00	81.6	106	L 0.1	34.8
		81.6	103	L 0.1	37.1
	Average	81.6	105	L 0.1	36.0
249	STORM T-DL1 861221 0:00	1825	4154	L 0.1	78.3
		1955	4330	L 0.1	80.2
	Average	1890	4242	L 0.1	79.3
261	STORM T-CD 861220 19:00	572	890	L 0.1	71.8
		532	805	L 0.1	64.4
	Average	552	848	L 0.1	68.1
262	STORM T-CD 861220 19:30	420	758	L 0.1	36.0
		490	853	L 0.1	35.0
	Average	460	806	L 0.1	35.5

Table 4 (con't) - Duplicate Analysis Results

CTL#	EPS Description	PCP	Concentration (ug/L)		
			TTCP	TCP (2,4,6)	TCP (2,3,6)
282	STORM W-GREENCHAIN 861222	111000	200000	L 0.1	439
			206000	L 0.1	480
			203000	L 0.1	460
286	STORM WESTCOAST-PM 870123	290	740	L 0.1	60.0
			660	L 0.1	66.0
			700	L 0.1	63.0
287	STORM WESTCOAST-PM 870123	345	1020	L 0.1	72.2
			1100	L 0.1	81.0
			1060	L 0.1	76.6
297	STORM WESTCOAST CELLUF 870123	250	550	L 0.1	50.0
			550	L 0.1	55.0
			550	L 0.1	52.5
298	STORM WESTCOAST-PM 870123	240	600	L 0.1	43.1
			580	L 0.1	41.2
			590	L 0.1	42.1
305	STORM WESTCOAST CELLUF 870123	21300	32300	L 0.1	390
			33200	L 0.1	340
			32700	L 0.1	365
328	STORM DOMAN-PM 870129	9660	306	L 0.1	12.5
			338	L 0.1	13.5
			322	L 0.1	13.0
336	STORM DOMAN-PM 870129	10000	290	L 0.1	77.0
			260	L 0.1	82.0
			275	L 0.1	80.0

can test ltd.

FIGURE 1

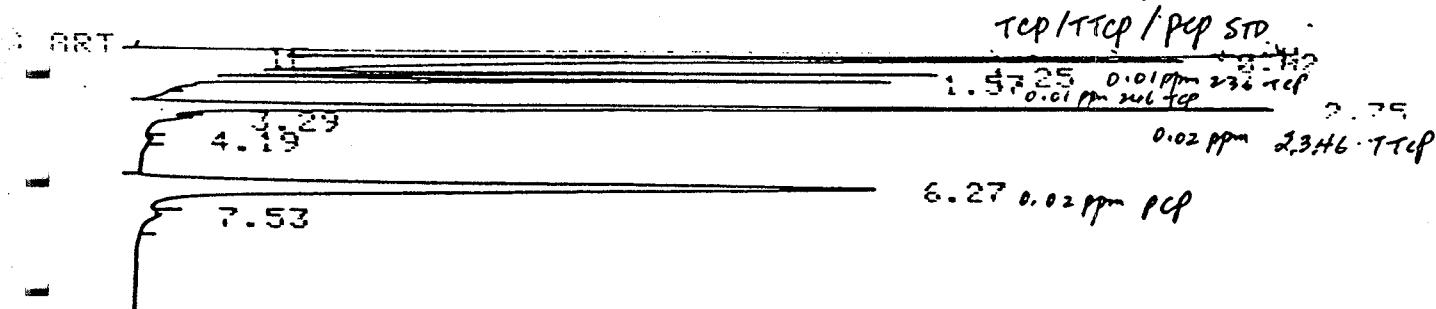


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RUN # 16 MAR/03/87 TIME 13:15:25
L:11 BOTTLE 31
AREA %

RT	AREA	AREA %
1.50	18458	128,888

REL FACTOR: 1.0000 ± 0



RUN # 12 MAR/03/87 TIME 12:14:50
10:11 BOTTLE 23

RT	AREA	AREA %
8.62	291600	21.389
1.25	98920	7.256
1.57	126300	9.411
3.75	355100	26.046
4.19	797	0.058
6.27	486800	35.787
7.53	1621	0.134

FACTORES: 1.0000 E+ 0