

Thompson, Matthew A - DNR

From: Iverson, Bruce <Blverson@trcsolutions.com>
Sent: Wednesday, February 20, 2019 8:17 AM
To: Thompson, Matthew A - DNR
Subject: [WARNING: ATTACHMENT(S) MAY CONTAIN MALWARE]FW: 1996 Sanitary Sewer Inspections and Sealing Communications / Email 2 of 2
Attachments: 19960823_WWSU to MWH_Logs from Camera Inspection of Sewer.pdf; 19960906_City Letter to WDNR.pdf; 19961122_MPC to WWSU_Sealing Joints in RCP Wastewater Pipe.pdf; 19970123_Wausau Sewer Sealing Costs.pdf; 19970404_MWH to City Sampling Prog Post Weco Seals.pdf

From: Iverson, Bruce
Sent: Wednesday, February 20, 2019 7:59 AM
To: 'Eric Lindman' <Eric.Lindman@ci.wausau.wi.us>
Cc: Thompson, Matthew A - DNR <MatthewA.Thompson@wisconsin.gov>
Subject: 1996 Sanitary Sewer Inspections and Sealing Communications

Eric, per your request, I reviewed our file, enclosed are the communications with the City regarding the 1996 sewer inspection and sealing. Because the City contracted for the work, we assume the City would have more specific information regarding what sections of the sewer were sealed. Regards, Bruce

Bruce Iverson, P.E. (WI)
Senior Project Manager



708 Heartland Trail, Suite 3000, Madison, WI 53717
T: 608.826.3644 | F: 608.826.3941 | C: 608.235.4963

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Thompson, Matthew A - DNR

From: Iverson, Bruce <Blverson@trcsolutions.com>
Sent: Wednesday, February 20, 2019 8:16 AM
To: Thompson, Matthew A - DNR
Subject: FW: 1996 Sanitary Sewer Inspections and Sealing Communications / Email 1 of 2
Attachments: 19960423_WWSU to MWH_Pentachlorophenol Concerns.pdf; 19960529_MWH to WWSU_Elevated Pentrachlorophenol Concentrations.pdf

From: Iverson, Bruce
Sent: Wednesday, February 20, 2019 7:59 AM
To: 'Eric Lindman' <Eric.Lindman@ci.wausau.wi.us>
Cc: Thompson, Matthew A - DNR <MatthewA.Thompson@wisconsin.gov>
Subject: 1996 Sanitary Sewer Inspections and Sealing Communications

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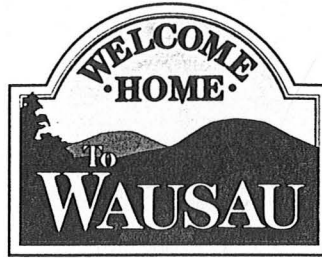
Bruce Iverson, P.E. (WI)
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Wausau Water and
Sewerage Utilities



Managed by
Commission

April 23, 1996

Douglas Bach
Montgomery Watson
One Science Court
PO Box 5385
Madison, WI 53705-0385

Dear Doug:

Thank you for your presentation and the tour of your facility. We appreciate your efforts to work with us and keep us informed on this project.

As you know, we remain concerned about the elevated levels of pentachlorophenol we have occasionally experienced in the effluent from our wastewater treatment plant. Considering the volume treated by our plant and the amount of effluent discharged by the WAULECO operation it would not seem that our problems could be related to your normal discharges. We would appreciate your thoroughly reviewing your operations to be sure there are no unrecognized discharges of the pentachlorophenol to our system.

We have also considered whether untreated groundwater leaking into the sanitary sewer system could be a significant source of the pentachlorophenol. Please let us know if you have any other thoughts on possible sources of contamination.

Finally, we understand from your telephone conversation with Joe Gehin that your chemists will be discussing procedures and methodologies with Enviroscan to determine that the values reported by yourselves are comparable with the results we have obtained from Enviroscan. We would appreciate your passing on any information or ideas originating from those conversations or on the general validity of the laboratory tests. There may also be a benefit to testing split samples of our wastewater treatment plant effluent.

We are looking forward to hearing from you and thank you again for your time and efforts.

Sincerely,

A handwritten signature in cursive script that reads "David Erickson".

David A. Erickson
Environmental Engineer



MONTGOMERY WATSON

Bach

May 29, 1996

Mr. Joe Gehin
Wausau Water and Sewerage Utilities
407 Grant Street
Wausau, Wisconsin 54403-4783

Re: Wauleco Operations and Possible Relationship to Occasional Elevated
Pentachlorophenol Concentrations in Wausau Wastewater Treatment Plant Effluent

Dear Joe:

This letter is in response to discussions we have had since your visit to the Wauleco facility on April 11, 1996. As noted in Dave Erickson's letter dated April 23, 1996, the Wausau Wastewater Treatment Plant has occasionally experienced elevated concentrations of pentachlorophenol (PCP) in its effluent. The City is aware that the discharge of low volumes of pretreated wastewater from the Wauleco site is unlikely to be the source of elevated PCP concentrations in its effluent. Nevertheless, the Wauleco facility is the only facility identified by the City that is known to handle PCP. Therefore, the City seeks to identify if Wauleco operations may be contributing to the City's occasional elevated PCP concentrations.

During your April 11 site visit, we discussed several actions to further evaluate if a relationship exists between Wauleco's operations and the City's occasional elevated PCP concentrations. These actions included:

- Evaluation of the analytical methods and data from Enviroscan, the City's contract laboratory for PCP analysis.
- Review of Wauleco operations for potential unknown discharge points.
- Possible split sampling of the City wastewater treatment plant effluent.

Attached are three memoranda that address these issues. The key points of the memoranda are discussed below.

Evaluation of Analytical Methods

John Dadisman, a Senior Environmental Chemist with Montgomery Watson, reviewed Enviroscan's raw data and quality control information relating to the March 5, 1996 Wausau wastewater treatment plant effluent sample. In the attached May 21, 1996 memorandum, he concludes that the presence and quantity of PCP in the sample appear to be accurate.

Review of Wauleco Operations for Unknown Discharge Points

Mike Heyroth, Montgomery Watson's Treatment Plant Operator at the Wauleco site, inspected all known access points to the sanitary sewer for possible inadvertent releases of

PCP. As related in the attached May 14, 1996 memorandum, his inspection identified no potential for previously unknown releases of PCP to the sanitary sewer.

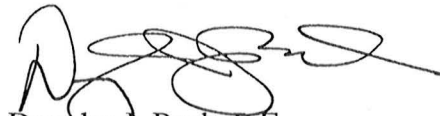
Split Sampling of the City's Wastewater Treatment Plant Effluent

As we discussed by telephone, both the April and May sampling results for the City's effluent showed elevated concentrations of PCP. Based on this information, we discussed the need to verify the presence of PCP through a more frequent sampling program. The attached May 23, 1996 memorandum from John Dadisman outlines a week-long sampling program to further evaluate the nature of the elevated PCP levels in the City's discharge. If acceptable to the City, we propose to implement this program in late June. We will coordinate this effort with Jim Riege at the City's wastewater treatment plant.

Wauleco remains committed to continued compliance with its present letter of agreement for discharge to the Wausau sanitary sewer system. We are also willing to assist the City in determining if any relationship exists between Wauleco's operations and the City's occasional elevated PCP concentrations. Please call with any questions or comments.

Sincerely,

MONTGOMERY WATSON



Douglas J. Bach, P.E.
Supervising Engineer

Enclosures: May 21, 1996 Memorandum - Wausau POTW Sample Data Review
May 14, 1996 Memorandum - Inspection of Access Points to Sanitary Sewer
May 23, 1995 Memorandum - Proposed Wausau Wastewater Sampling Plan

cc: Caroline Fribance - Wauleco
Robert Kammer - Wauleco
Peter Peshek - DeWitt, Ross, and Stevens

DJB/djd/KJQ
J:\4113\0040\WPAL\TR\93_GEHI.DOC
4113.0043-MD

MAY 21, 1996 MEMORANDUM

MAY

May 1, 1996

Doug Bach
Montgomery Watson
P.O. Box 5385
Madison, WI 53705

Dear Doug:

Attached is the sample information you requested on Enviroscan analytical #61671 for pentachlorophenol. The data pack includes quality control for both the primary and confirmation column, calibration information, analysis run sequence, and chromatograms for the check standards, blanks, and sample.

The sample was analyzed twice, once straight and once with a two fold dilution. The sample was diluted because confirmation of the PCP on the second column was not distinct due to the presence of interfering compounds. On the straight sample, a result of 13.2 ug/l was calculated using the information from the one column. The diluted sample concentration produced a result of 13.9 ug/l on the same channel. The second channel in both cases was used for confirmation of the PCP and not quantitation.

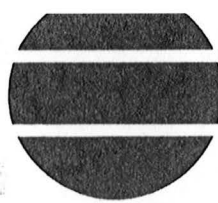
Due to the interference, the analyst also had the sample confirmed by GC/MS. All three major ions matched for the identification of PCP. The peak fit was 99.1% positive for PCP. The quantitation for PCP from the GC/MS data was 11.5 ug/l. (The MDL for PCP by GC/MS is 2.1 ug/l).

If you have any questions concerning the information enclosed, please contact me (715) 359-7226. Thank you.

Sincerely,



Karla M. Coenen
Quality Assurance Manager, ASQC CQA



Analysis	Pentachlorophenol, primary column	Pentachlorophenol, confirmation column
Date Sampled	3/5/96	3/5/96
Date Received by Laboratory	3/6/96	3/6/96
Date of Preparation	3/8/96	3/8/96
Preparation Method	EPA 604	EPA 604
Preparation Batch Id	S241	S241
Date Analyzed	3/11/96	3/11/96
Analysis Method	EPA 604 modified	EPA 604 modified
Analysis Batch Id	S424	S242
Analytical # in Batch	61671	61671
Check Standard, Calibration, and Blanks		
Calibration Date	3/3/96	3/3/96
Calibration Coefficient	0.9999	0.99995
Calibration Criteria	>0.995	>0.995
Check Standard True Concentration, mg/l	25	25
Initial Check Standard Concentration, mg/l	24.98	22.1
% Recovery of Initial Check Standard	99.92	88.4
Final Check Standard Concentration, mg/l	24.99	21.85
% Recovery of Final Check Standard	99.96	87.4
Reagent Blank Concentration, ug/l	<5.0	<5.0
Matrix Spike/Matrix Spike Duplicate		
Analytical # Spiked	60921	60921
Sample Concentration	<2.58	<2.58
Spike Concentration	87.72	87.72
Matrix Spike Concentration	83.72	75.23
Matrix Spike Duplicate Concentration	89.89	80.07
Matrix Spike % Recovery	95.44	85.76
Matrix Spike Duplicate, % Recovery	102.47	91.28
Duplicate, % Difference	7.11	6.23
Control Limits		
Check Standard Control Limits, % Recovery	85-115	85-115
Matrix Spike Control Limits, % Recovery	59.7-161	59.7-161
Duplicate Control Limits, % Difference	0-27.7	0-27.7
Surrogate Control Limits, % Recovery	23.9-65.4	23.9-65.4
Surrogate, 2-Fluorophenol		
Surrogate Recovery on Sample	52	52.4
Surrogate Recovery on Method Blank	36.1	40.9
Surrogate Recovery on Matrix Spike	51.3	44.9
Surrogate Recovery on Matrix Spike Duplicate	92.4	80.4

Calibration Information for Pentachlorophenol

Primary Column		Confirmation Column	
Standard Conc, mg/l	Area	Standard Conc, mg/l	Area
2.5	17667	2.5	12108
5	36939	5	24791
10	79807	10	54184
12.5	102027	12.5	69681
20	165952	20	115278
25	207849	25	146173
50	415885	50	296135
62.5	530330	62.5	376351

Line Equation: $y = mx + b$

m (slope)=	8,506.70	6,076.20
b (intercept) =	-4,817.70	-5,573.20
Correlation Coefficient	0.99992	0.99995

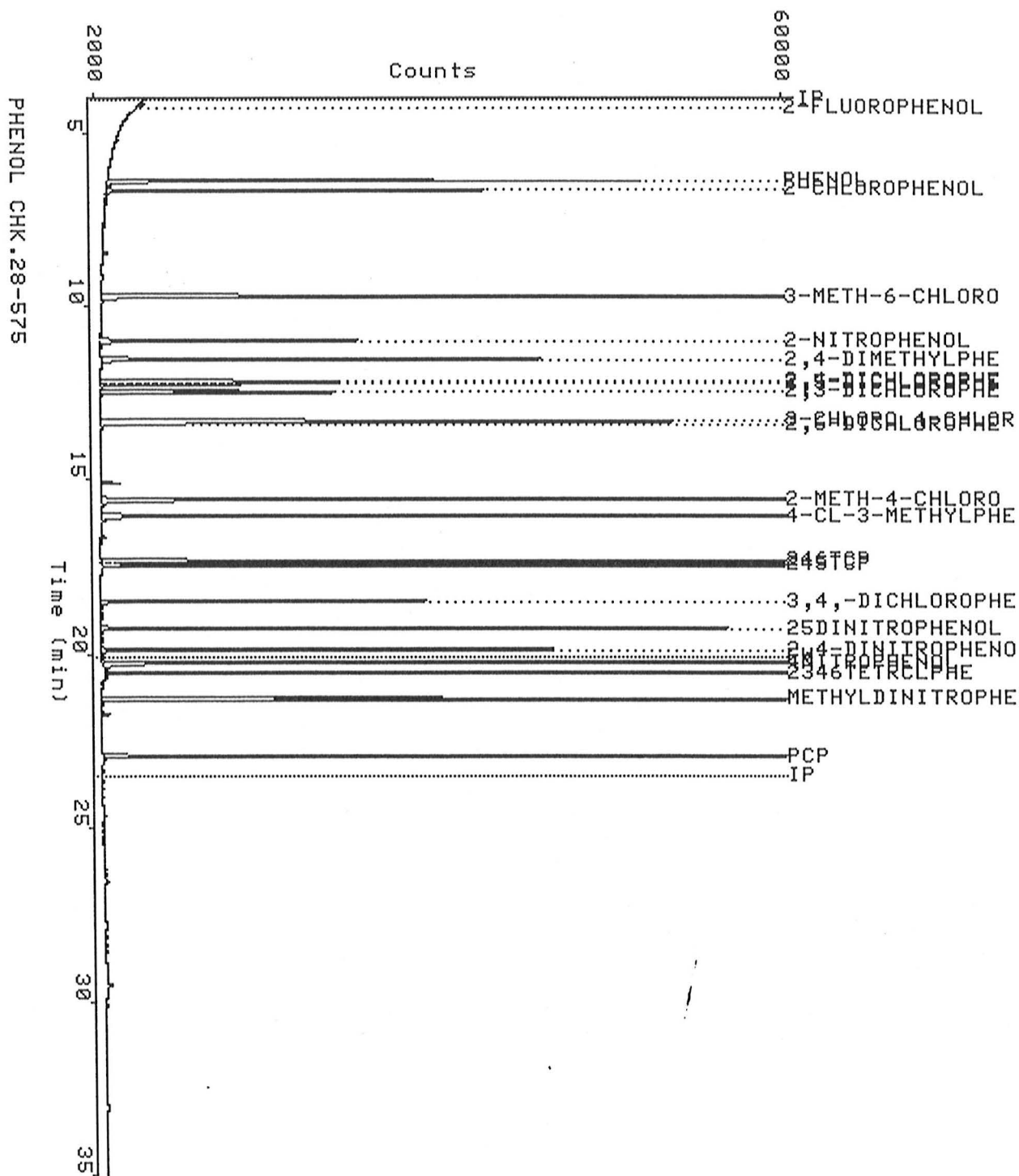
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Date: 14-MAR-1996 11:30:33.36

Spl	Sample Name	Inj	Method File	Calib RT CF	Data File
1	2-PROP	1	03MAR96A10PHENOL		3PHENOLSL393 <i>8 Mar 96</i>
2	phenol chk.28-575	1	03MAR96A10PHENOL		3PHENOLSL394
3	PHENOL 1:1000	1	03MAR96A10PHENOL		3PHENOLSL395
4	2-PROP	1	03MAR96A10PHENOL		3PHENOLSL396
5	PHENOL CHK. 28-575	1	03MAR96A10PHENOL		3PHENOLSL397
6	PHENOL 1:1000	1	03MAR96A10PHENOL		3PHENOLSL398
7	2-PROP	1	03MAR96A10PHENOL		3PHENOLSL399
8	PHENOL CHK. 28-575	1	03MAR96A10PHENOL		3PHENOLSL400 <i>10 Mar 96</i>
9	96-2038 H2O SPK.	1	03MAR96A10PHENOL		3PHENOLSL401
10	96-2039 H2O BLANK	1	03MAR96A10PHENOL		3PHENOLSL402
11	96-2026 (61671) WAUSAU	1	03MAR96A10PHENOL		3PHENOLSL403
12	2-PROP	1	03MAR96A10PHENOL		3PHENOLSL404
13	2-PROP	1	03MAR96A10PHENOL		3PHENOLSL405
14	96-2023 (60921)1:10 QC	1	03MAR96A10PHENOL		3PHENOLSL406
15	96-2024 (60921 MS)1:10	1	03MAR96A10PHENOL		3PHENOLSL407
16	96-2025 (60921 MSD)1:10	1	03MAR96A10PHENOL		3PHENOLSL408 <i>11 Mar 96</i>
17	2-PROP	1	03MAR96A10PHENOL		3PHENOLSL409
18	PHENOL CHK.28-575	1	03MAR96A10PHENOL		3PHENOLSL410
19	PHENOL 1:1000	1	03MAR96A10PHENOL		3PHENOLSL411
20	2-PROP	1	03MAR96A10PHENOL		3PHENOLSL412
21	96-2026 (61671)1:2 WAUSAU	1	03MAR96A10PHENOL		3PHENOLSL413
22	2-PROP	1	03MAR96A10PHENOL		3PHENOLSL414
23	PHENOL CHK. 28-575	1	03MAR96A10PHENOL		3PHENOLSL415
24	2-PROP	1	03MAR96A10PHENOL		3PHENOLSL416
25	PHENOL CHK. 28-575	1	03MAR96A10PHENOL		3PHENOLSL417 <i>12 Mar 96</i>
26	96-1903 (61393)1:2 WAUSAU	1	03MAR96A10PHENOL		3PHENOLSL418
27	2-PROP	1	03MAR96A10PHENOL		3PHENOLSL419
28	PHENOL CHK. 28-575	1	03MAR96A10PHENOL		3PHENOLSL420
29	2-PROP	1	03MAR96A10PHENOL		3PHENOLSL421 <i>13 Mar 96</i>
30	PHENOL CHK. 28-575	1	03MAR96A10PHENOL		3PHENOLSL422
31	PHENOL CHK. 28-575	1	03MAR96A10PHENOL		3PHENOLSL423
32	PHENOL CHK. 28-575	1	03MAR96A10PHENOL		3PHENOLSL424
33	PHENOL CHK. 28-575	1	03MAR96A10PHENOL		3PHENOLSL425
34	PHENOL 1:1000	1	03MAR96A10PHENOL		3PHENOLSL426

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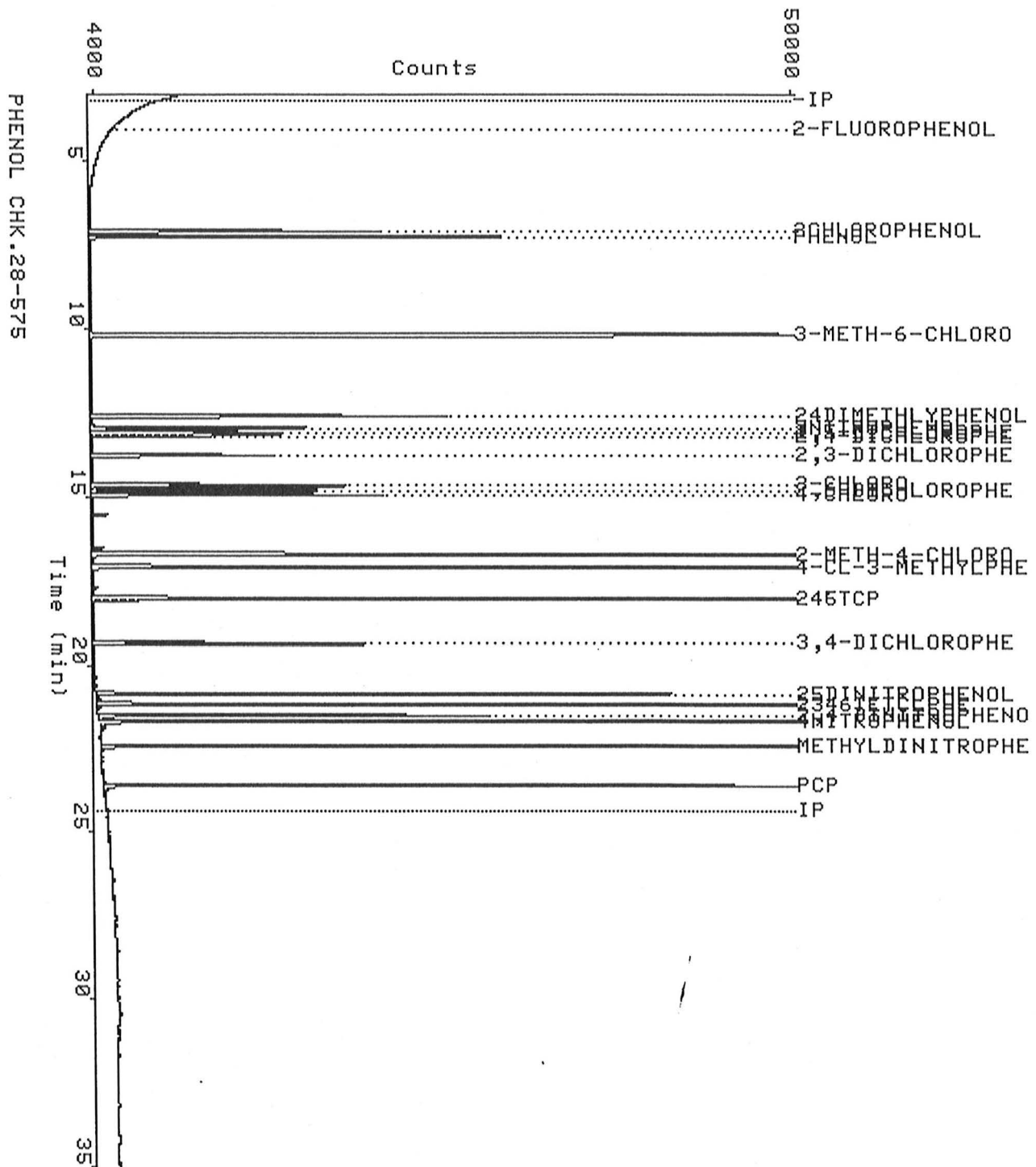
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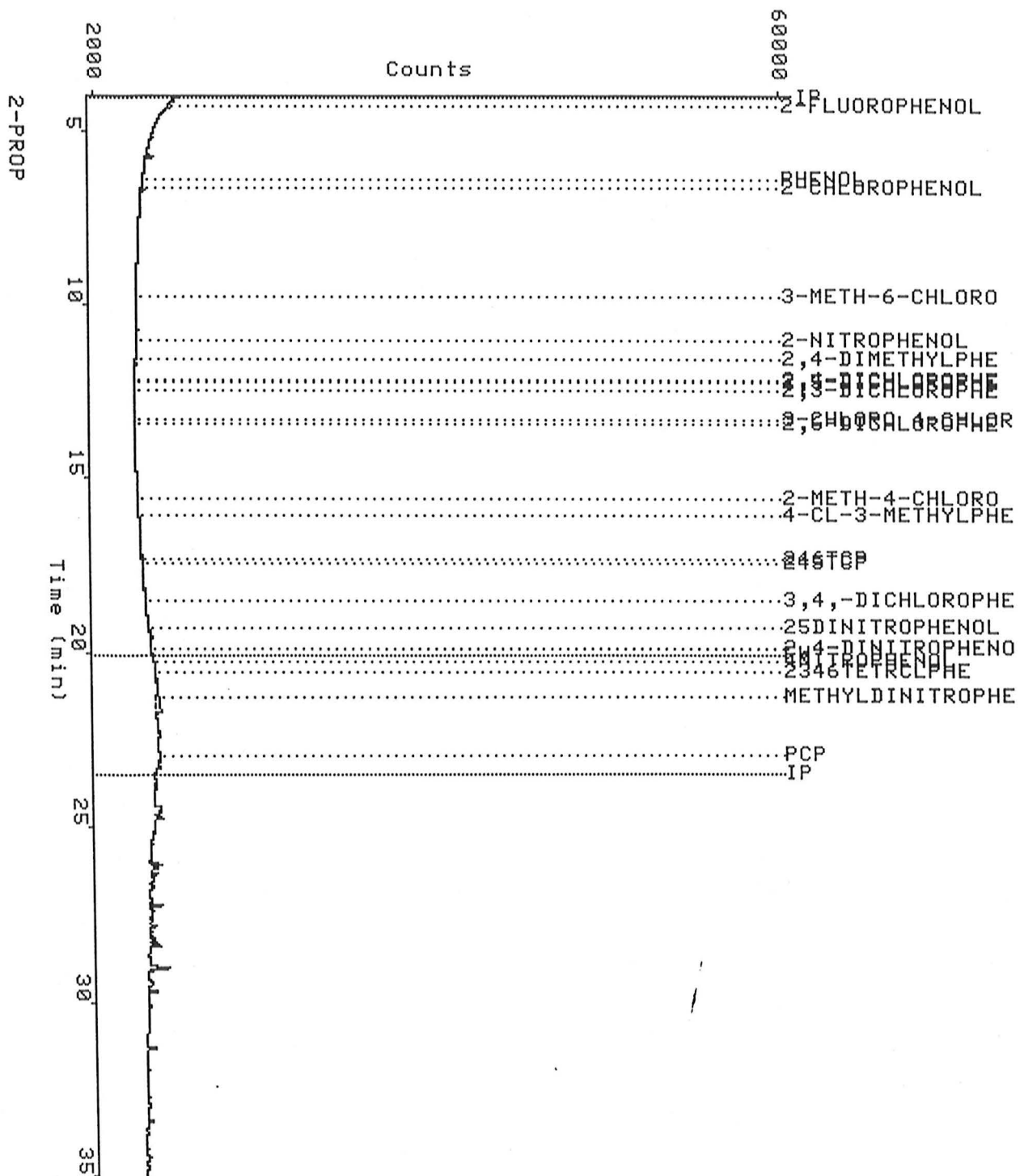
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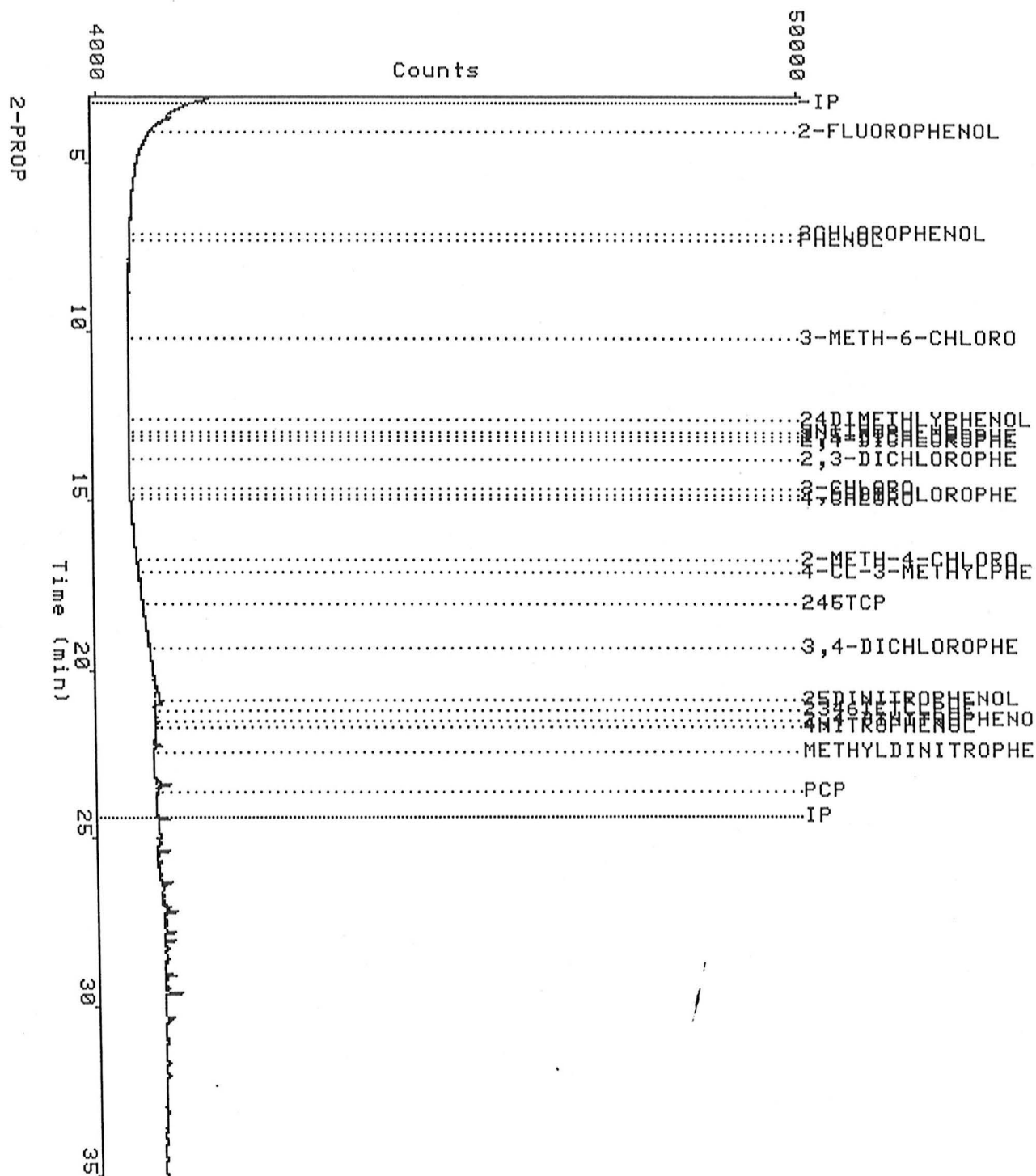
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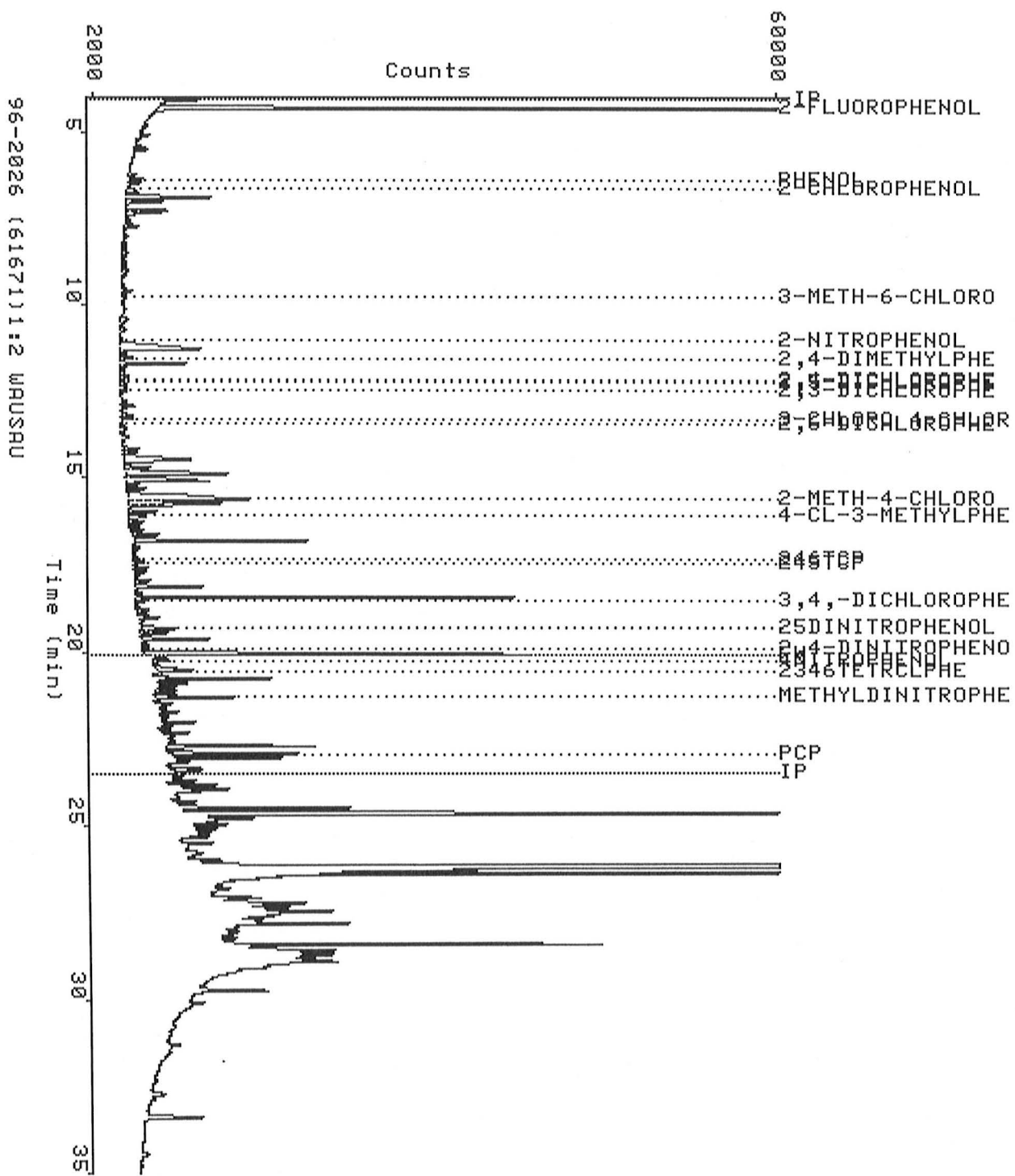
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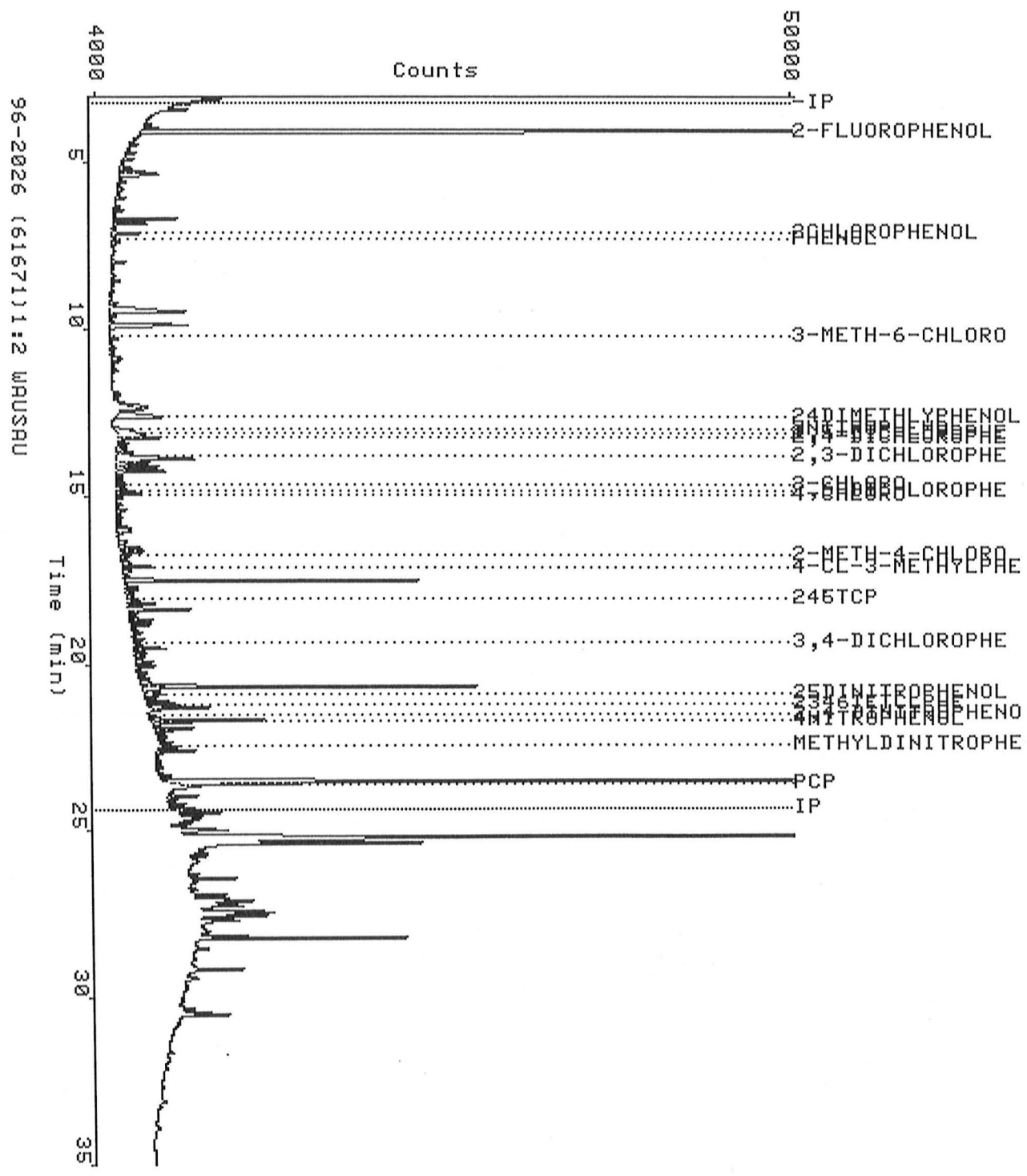
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1030/2

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Time range:

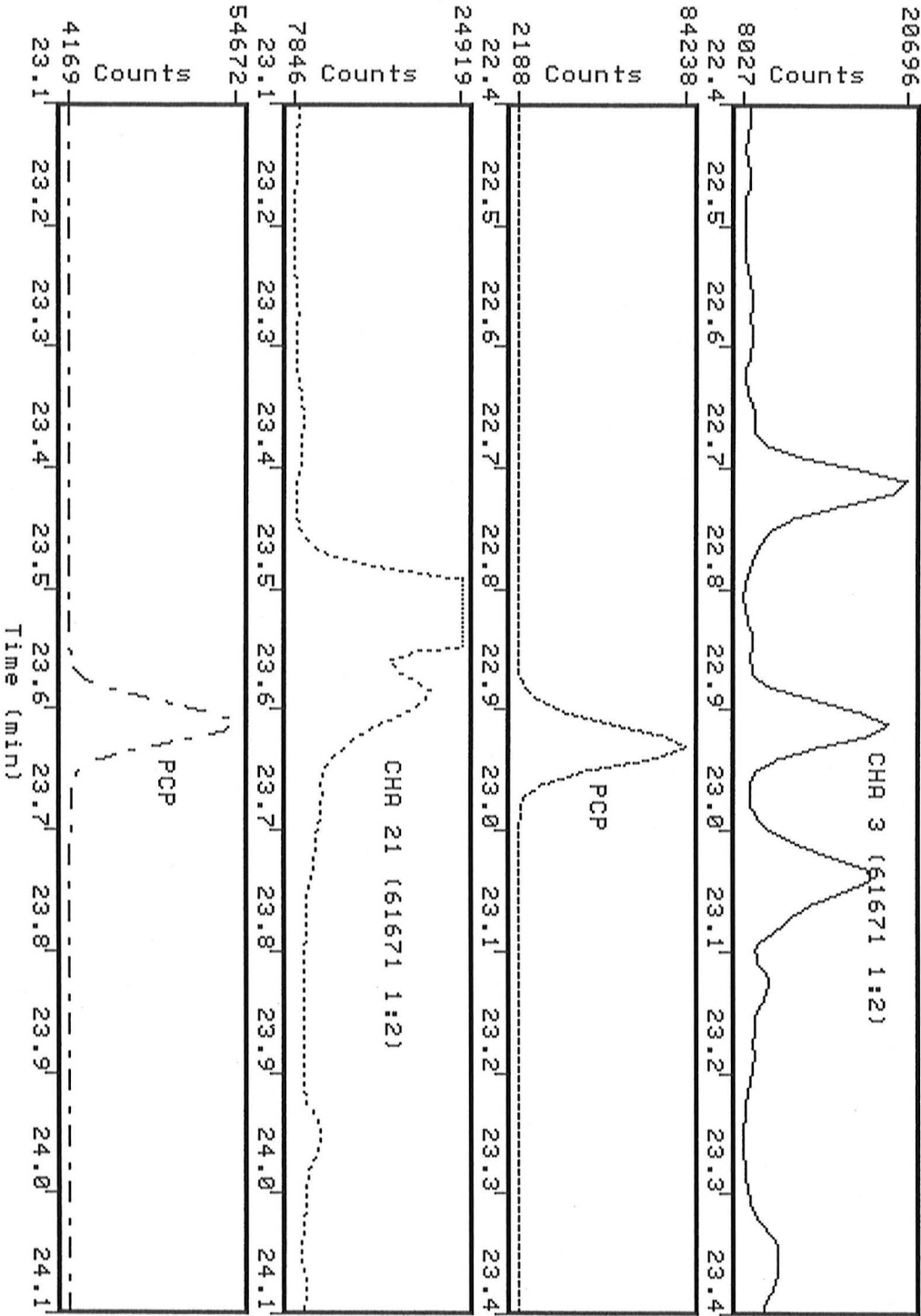
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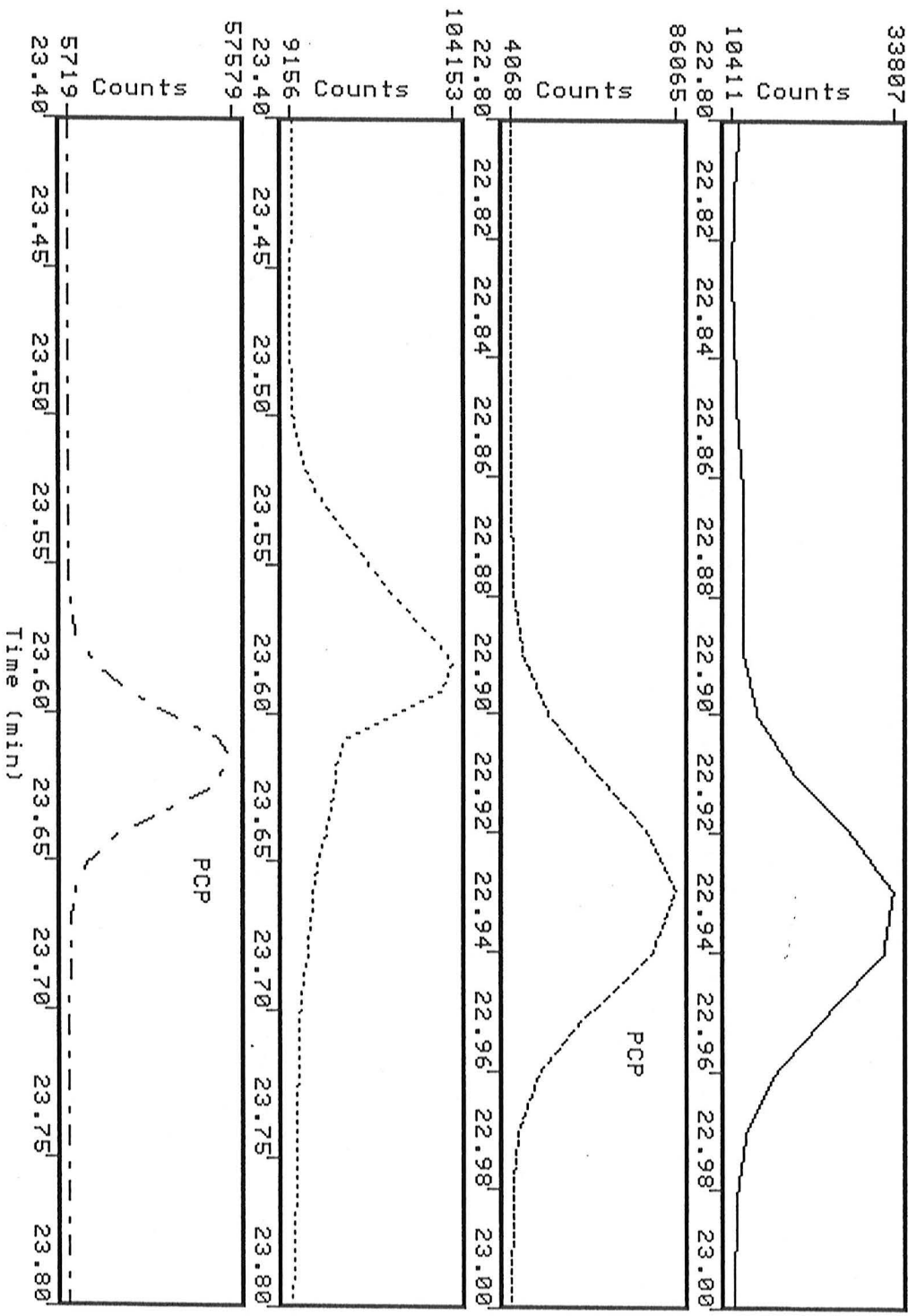
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1030/2

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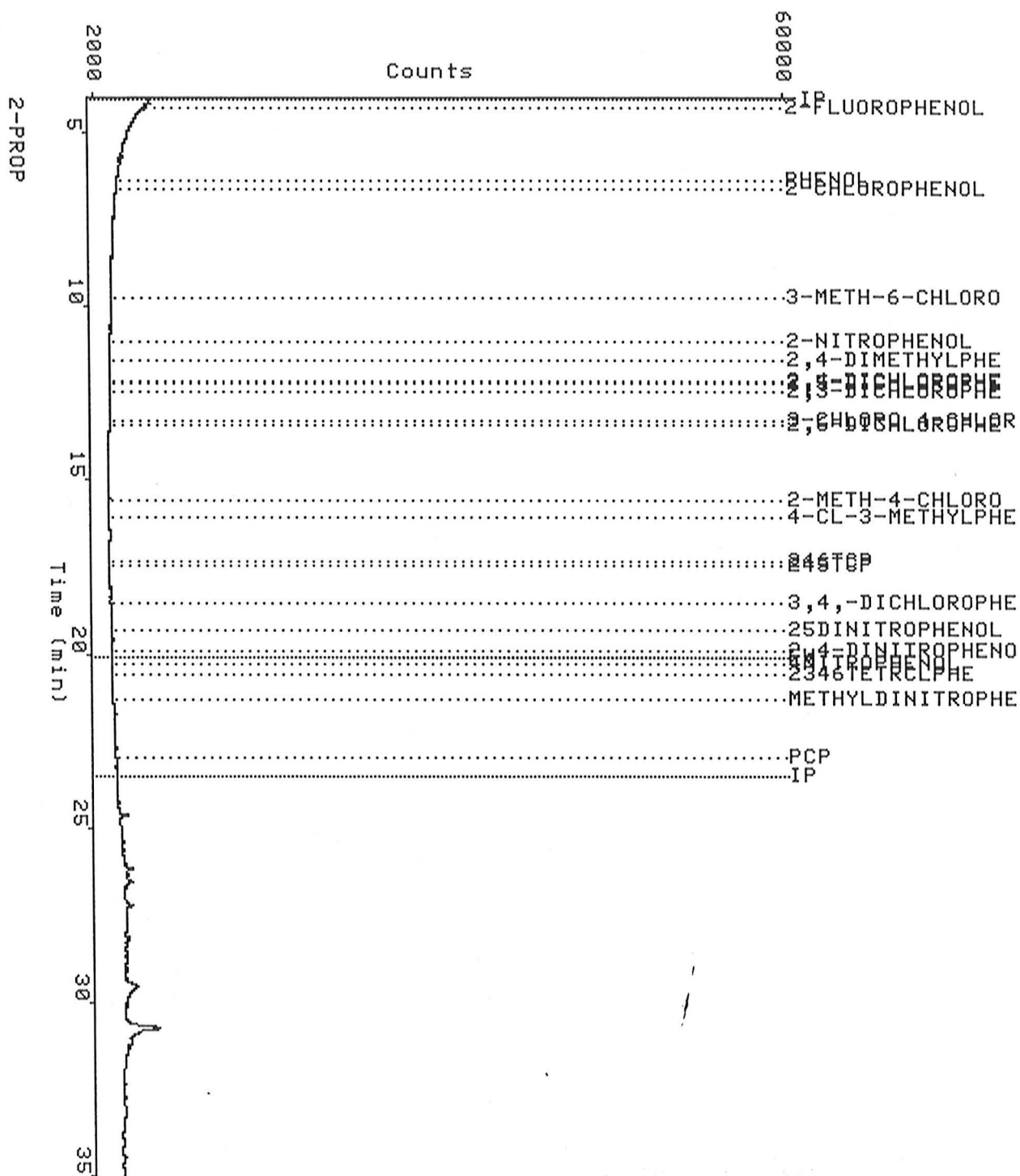


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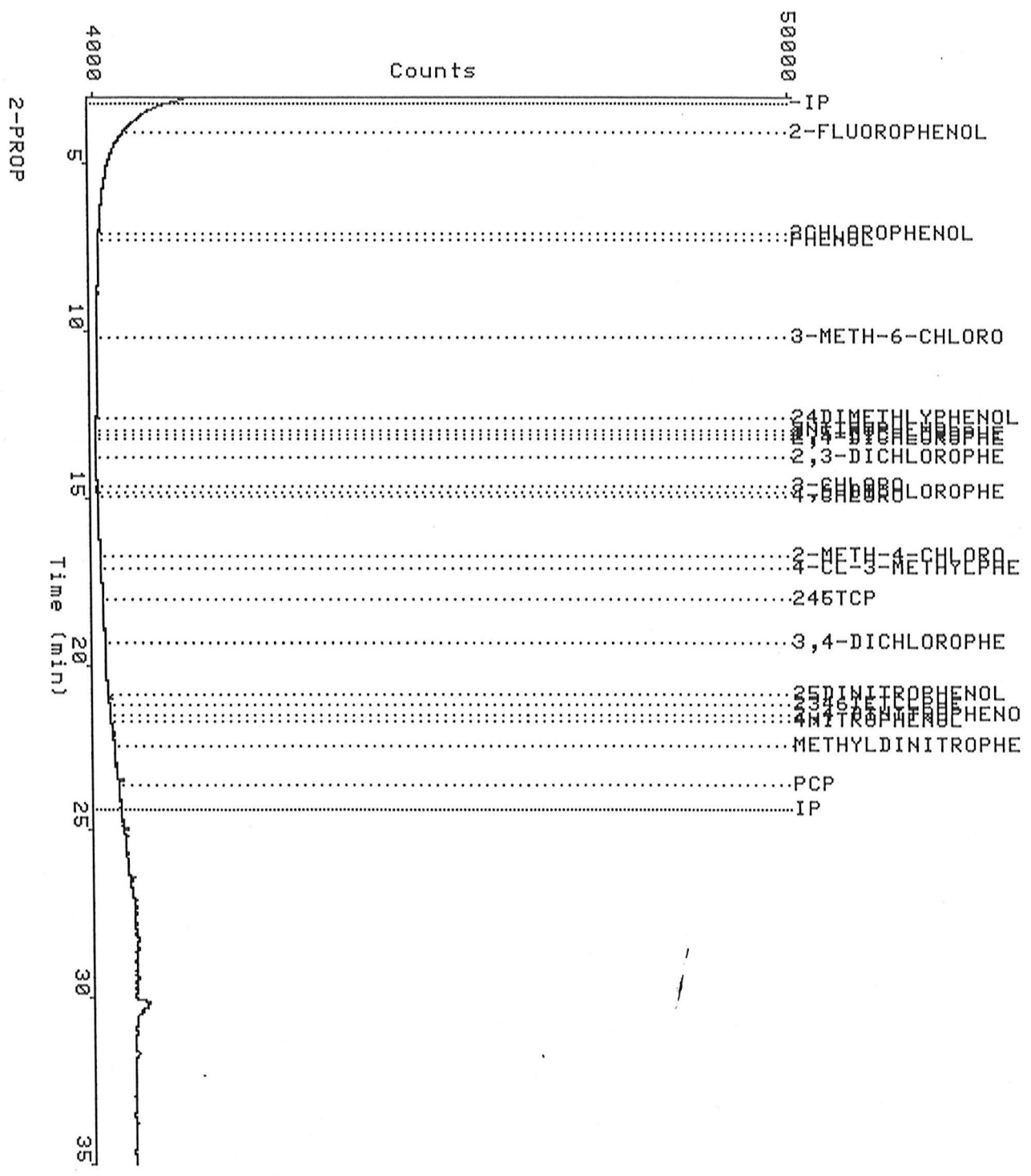


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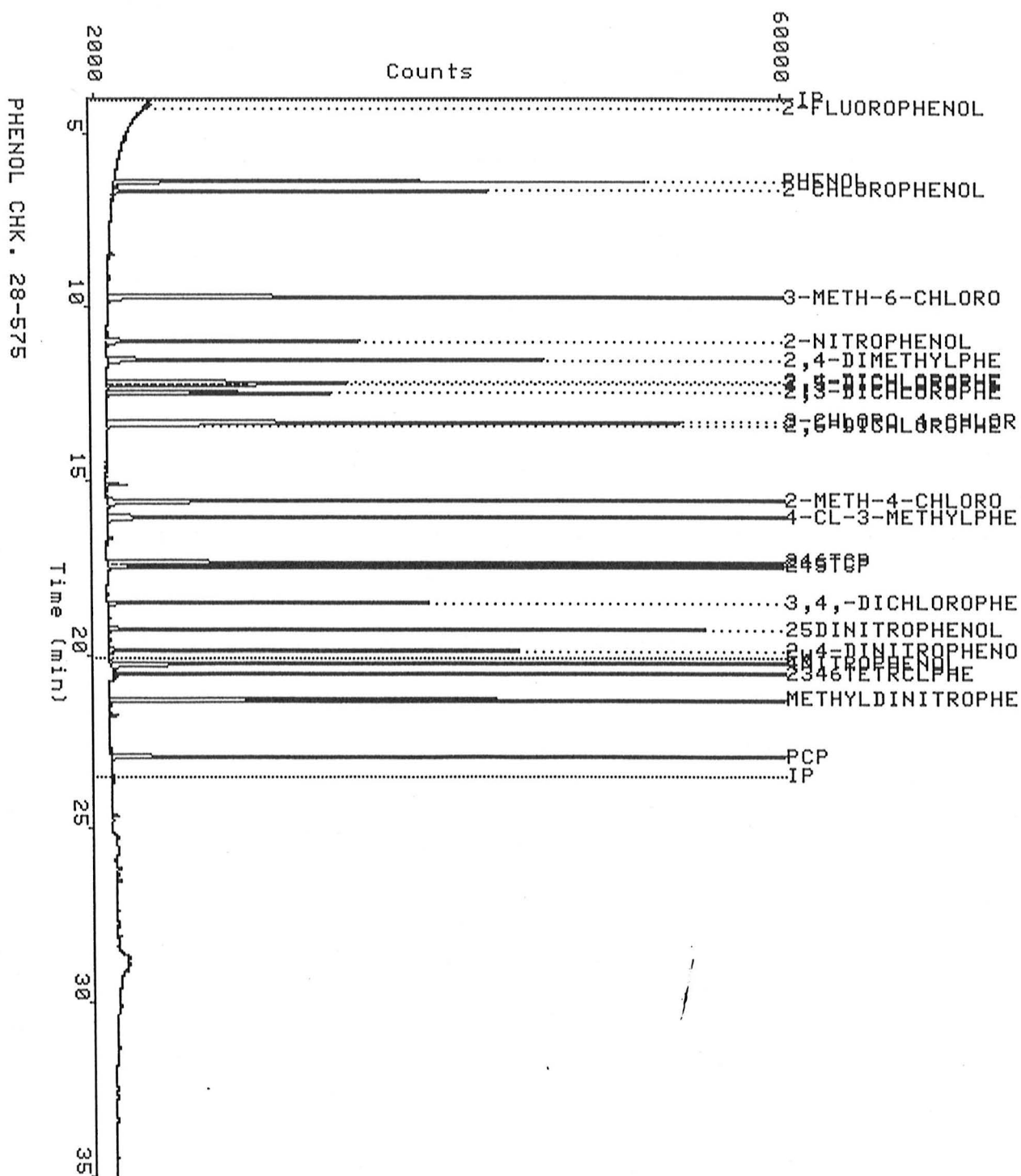


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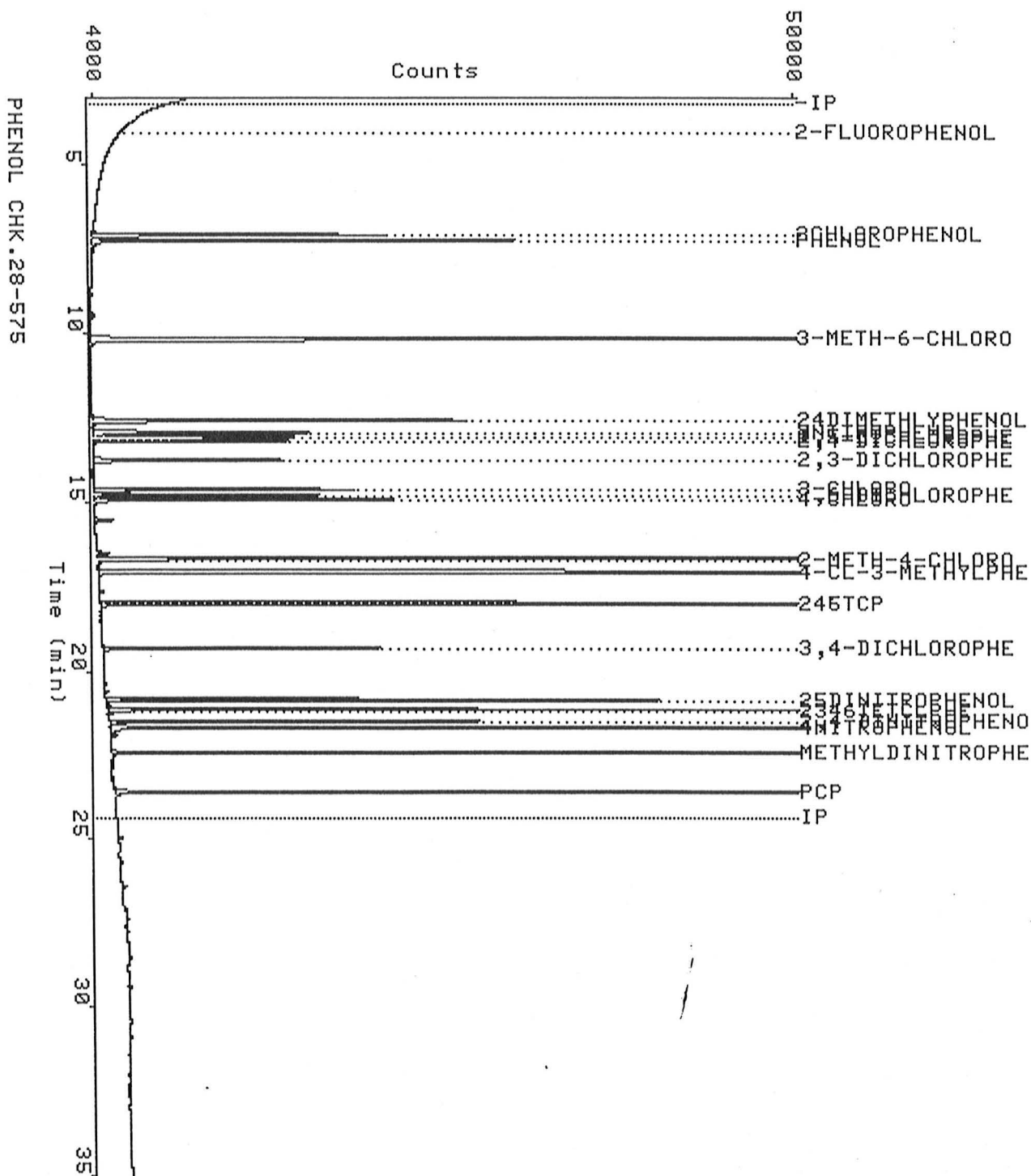
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CHK.

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CHK.

RIC+MASS CHROMATOGRAM

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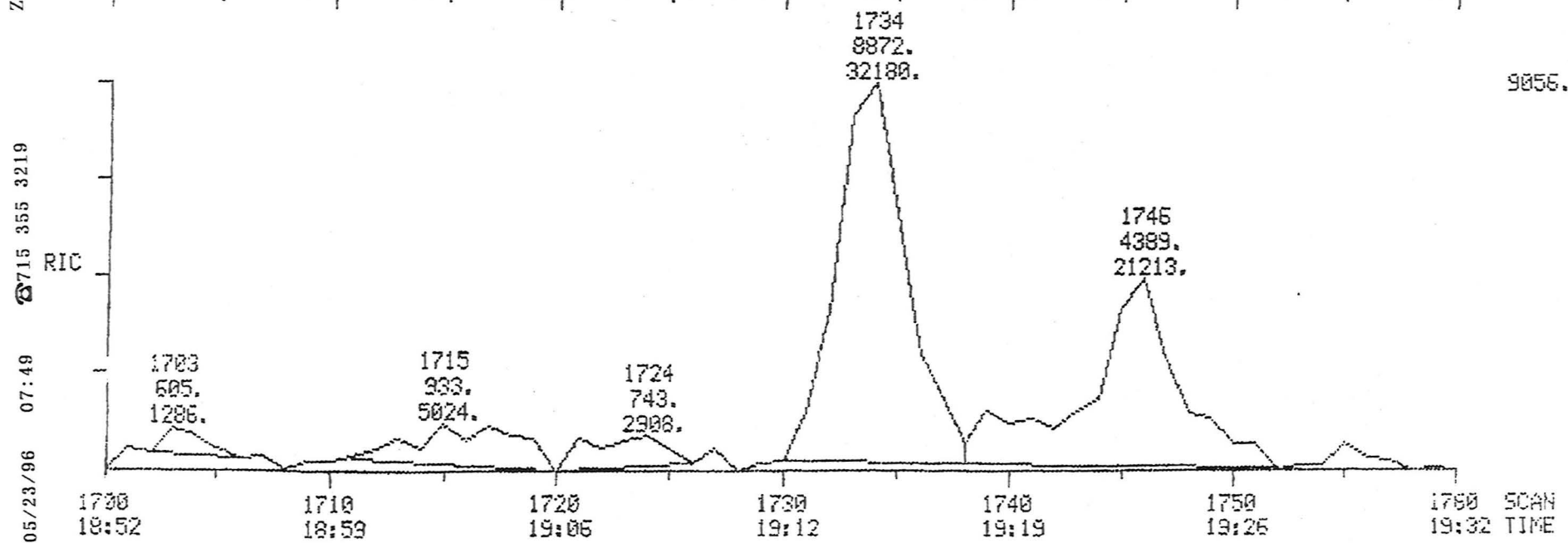
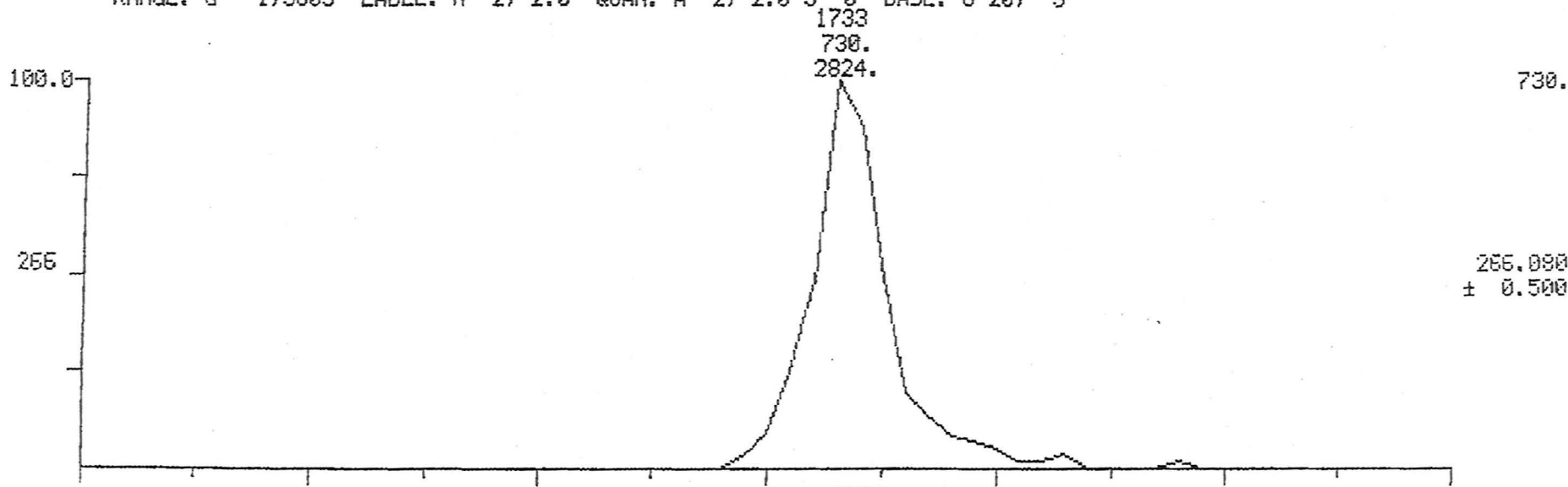
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CALI: 031196GC05 #3

SAMPLE: AN# 51671 (ST) PCP FOR DOM WITH IS (40NG)

CONDS.: 30 M X 0.32 MM ID DB-5.625, 1.0 UL SPLITLESS AUTO INJECTION

RANGE: G 1.3503 LABEL: N 2, 2.0 QUAN: A 2, 2.0 J 0 BASE: U 20, 3



RIC+MASS CHROMATOGRAMS

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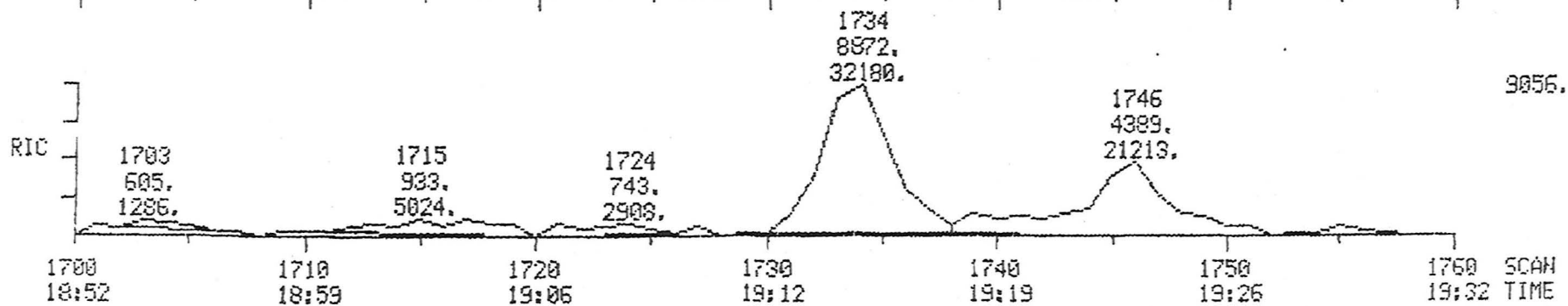
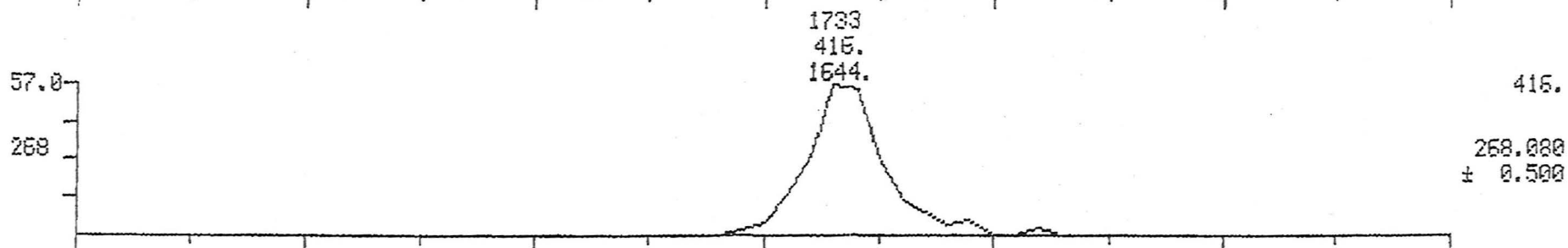
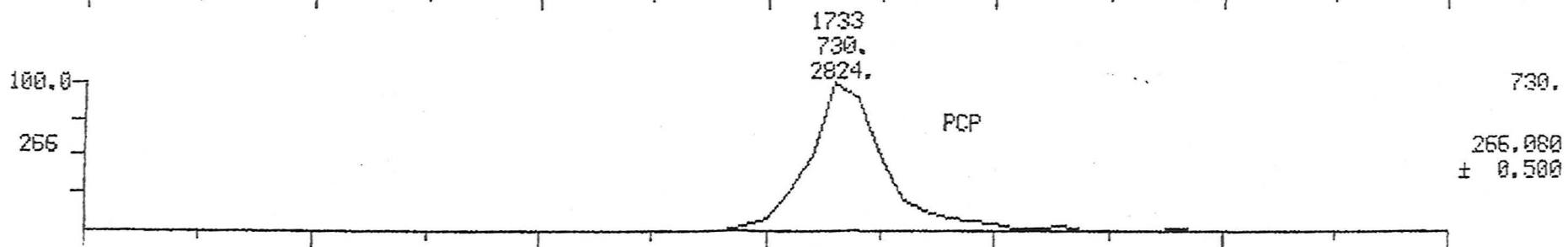
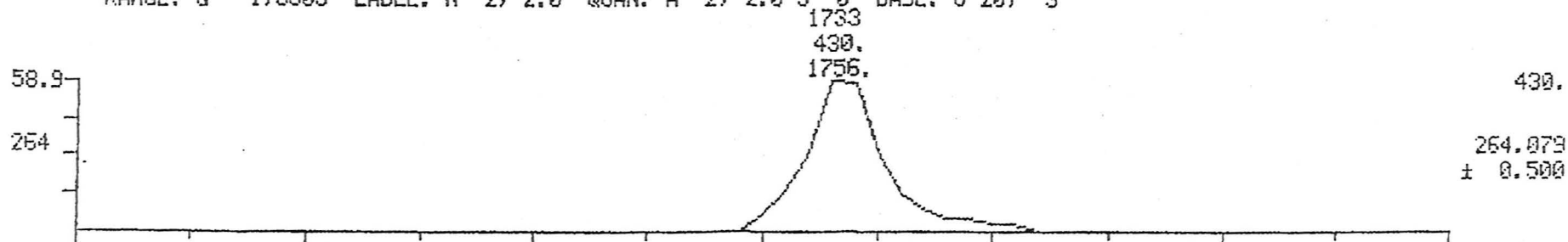
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SAMPLE: AN# 61671 (ST) PCP FOR DOM WITH IS (40NG)

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003

ZIMPRO/SCAN

715 355 3219

05/23/96 07:50

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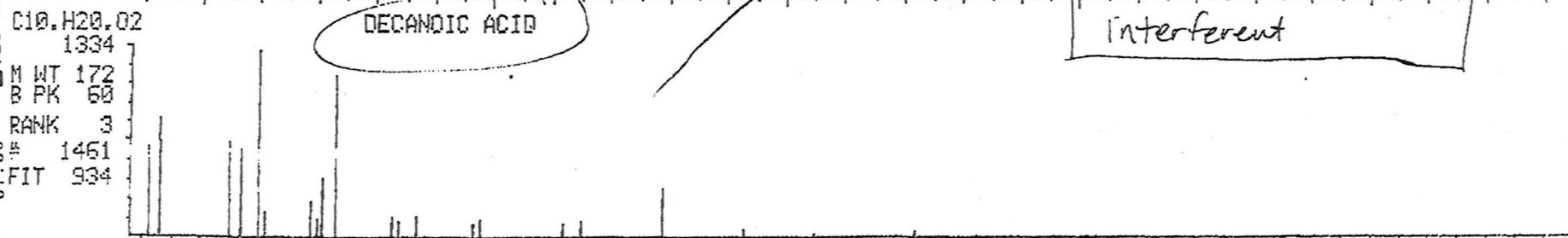
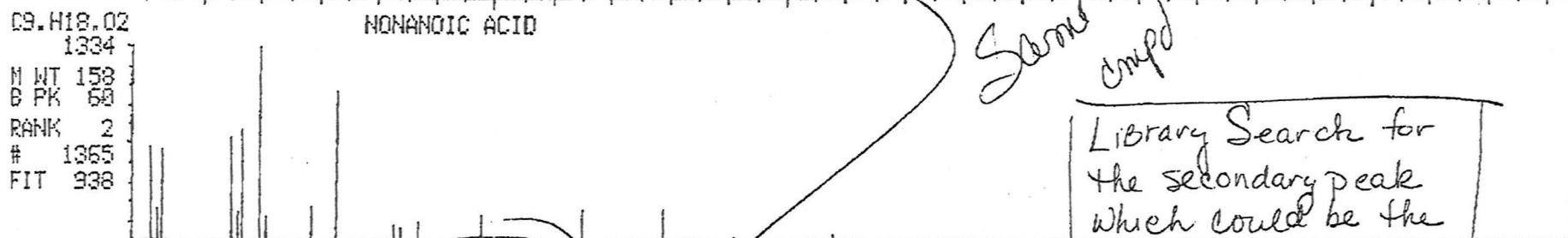
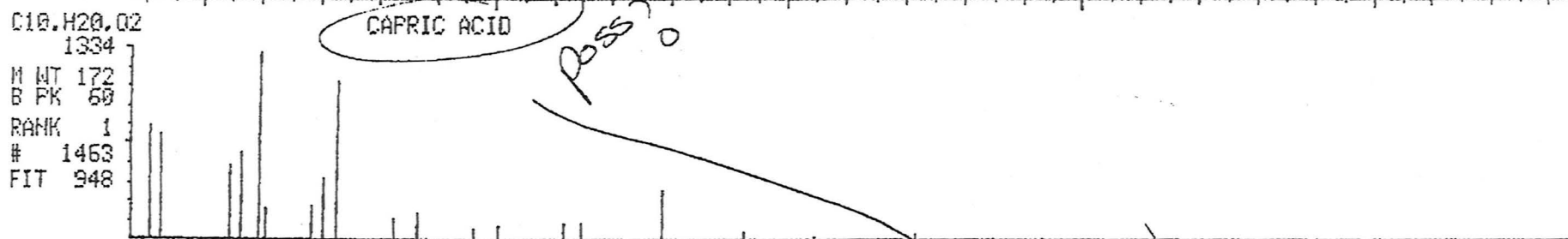
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RIC: 3984.

SAMPLE: AN# 61671 (ST) PCP FOR DOM WITH IS (40NG)

CONDS.: 30 M X 0.32 MM ID DB-5.625, 1.0 UL SPLITLESS AUTO INJECTION

ENHANCED (S 15B 2N 0T)



Library Search for
the secondary peak
which could be the
interferent

05/23/96 07:50 0715 355 3219 ZIMPRO/ESCAN 004

50 100 150 200 250 M/Z

PROCEDURE: TCA
 DATA FILE: 031196GC05
 REFERENCE: TC11TAB
 NAME LIST: TCDRIVER
 REPORT: TCRETENT

DIAGNOSTIC REPORT

3/12/96 6:27:00

INITIALIZATION OPTION: 2 PROCESSING OPTION: 3

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PROC	USED	POSS	RMS	PROC	USED	POSS	RMS	STANDARD/UNKNOWN	
6	6	16	316	12	9	1	306	TCRETENT/TCSURR	
6	6	1	316	12	6	1	316	TCRETENT/TCTARG01	
6	6	1	316	12	7	1	286	TCRETENT/TCTARG02	

24 COMPOUNDS PROCESSED, 10 FOUND

< COMPOUND ><		SEARCH						>< SAT ><		CHRD	
NO	LIB ENTRY	REF	PRED	SEL	DELTA	PEAKS	FIT	PEAKS	M/Z	TOP	DELTA PEAK
1	LP	1	787	787	791	4	2	999	152	.	.
2	LP	2	1062	1059	1057	-2	1	985	136	1057	.
3	LP	3	1451	1443	1440	-3	1	984	164	1440	.
4	LP	4	1781	1770	1768	-2	2	975	188	1768	.
5	LP	5	2376	2358	2358	.	2	973	240	2358	.
6	LP	6	2672	2651	2653	2	2	970	264	2653	.
7	LP	7	912	909	.	.	.	.	82	911	.
8	LP	8	1313	1306	1302	-4	1	940	172	1302	.
9	LP	9	2154	2138	2138	.	1	978	244	2138	.
10	LP	10	521	522	.	.	.	.	112	520	.
11	LP	11	743	742	.	.	.	.	99	.	.
12	LP	12	1629	1618	1616	-2	1	954	330	1617	1
13	LP	13	869	868	.	.	.	.	108	.	.
14	LP	14	906	904	.	.	.	.	108	.	.
15	LP	15	791	791	.	.	.	.	146	.	.
16	LP	16	1510	1502	.	.	.	.	165	.	.
17	LP	17	1694	1684	.	.	.	.	284	.	.
18	LP	18	1102	1098	.	.	.	.	225	.	.
19	LP	19	890	888	.	.	.	.	117	.	.
20	LP	20	932	930	.	.	.	.	77	.	.
21	LP	21	1746	1735	1734	-1	1	991	266	1733	-1
22	LP	22	228	234	.	.	.	.	79	.	.
23	LP	23	1301	1295	.	.	.	.	196	1295	.
24	LP	24	1294	1288	.	.	.	.	196	.	.

Data: 031196GC05.TI

03/11/96 14:44:00

Sample: AN# 61671 (ST) PCP FOR DOM WITH IS (40NG)

Conds.: 30 M X 0.32 MM ID DB-5.625, 1.0 UL SPLITLESS AUTO INJECTION

Formula: EM 750 V

Instrument: FINN

Weight: 0.000

Submitted by: ESCAN

Analyst: PDE

Acct. No.: QAQC

AMOUNT=AREA * REF AMNT/(REF AREA * RESP FACT)

Resp. fac. from average of whole .RL

No	Name		
1	CI30	1,4-DICHLOROENZENE-D4	** IS1 **
2	CI40	NAPHTHALENE-DB	** IS2 **
3	CI50	ACENAPHTHENE-D10	** IS3 **
4	CI60	PHENANTHRENE-D10	** IS4 **
5	CI70	CHRYSENE-D12	** IS5 **
6	CI75	PERYLENE-D12	** IS6 **
7	CS20	NITROBENZENE-D5	** BN SURR **
8	CS25	2-FLUOROBIPHENYL	** BN SURR **
9	CS30	TERPHENYL-D14	** BN SURR **
10	CS50	2-FLUOROPHENOL	** AC SURR **
11	CS45	PHENOL-D6	** AC SURR **
12	CS55	2,4,6-TRIBROMOPHENOL	** AC SURR **
13	C355	2-METHYLPHENOL (O-CRESOL)	
14	C365	4-METHYLPHENOL (P-CRESOL)	
15	C340	1,4-DICHLOROENZENE	
16	C570	2,4-DINITROTOLUENE	
17	C630	HEXACHLOROENZENE	
18	C460	HEXACHLOROBUTADIENE	
19	C375	HEXACHLOROETHANE	
20	C410	NITROBENZENE	
21	C635	PENTACHLOROPHENOL	
22	C660	PYRIDINE	
23	C520	2,4,5-TRICHLOROPHENOL	
24	C515	2,4,6-TRICHLOROPHENOL	

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	ZTot
1	NOT FOUND						6325		
2	136	1057	11:44	2	1.000	A BB	230259.	40.000 NG	19.17
3	164	1440	15:59	3	1.000	A BB	127165.	40.000 NG	19.17
4	188	1768	19:38	4	1.000	A BV	153865.	40.000 NG	19.17
5	240	2358	26:11	5	1.000	A BB	76342.	40.000 NG	19.17
6	264	2653	29:27	6	1.000	A BB	48207.	40.000 NG	19.17
7	82	911	10:07	2	0.862	A BV	306.	0.112 NG	0.05
8	172	1302	14:27	3	0.904	A BB	2027.	0.557 NG	0.27
9	244	2138	23:44	5	0.907	A BB	2170.	0.957 NG	0.46
10	112	520	5:46	1	ISNFD	A VB	58.	***** NG	00.00
11	NOT FOUND								
12	330	1617	17:57	3	1.123	A BB	402.	1.188 NG	0.57
13	NOT FOUND								
14	NOT FOUND								
15	NOT FOUND								
16	NOT FOUND								
17	NOT FOUND								
18	NOT FOUND								
19	NOT FOUND								

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
20		NOT FOUND							
21	266	1733	19:14	4	0.980	A BB	2824.	5.736 NG	2.75
22		NOT FOUND							
23	196	1295	14:23	3	0.899	A BB	150.	0.158 NG	0.08
24		NOT FOUND							

MAY 14, 1996 MEMORANDUM

Location 4 - Drain by Sand Filters

This drain is capped by an 6 inch threaded cap with Teflon tape and pipe joint compound . It also has a plate that is silicone sealed over the top of it so no water can enter to the threaded cap. This chamber stays sealed and no water is discharged to it for any reason.

Location 5 - Toilet and Sink in Bathroom

We do not discharge any process water into either of these locations.

Location 6 - Drain in Cold Storage Building

This is a drain on the far side of the cold storage building. It extends up about 1 foot above the ground and is capped.

I also reviewed all of our cleaning and operating procedures. I made sure we do not discharge any PCP containing water to the sewer that is not part of our normal discharge.

If you have any questions , please call.

MAY 23, 1996 MEMORANDUM

MEMORANDUM



MONTGOMERY WATSON

One Science Court
P.O. Box 5385
Madison, Wisconsin 53705-0385
Tel: (608)231-4747
Fax: (608)231-4777

To: Doug Bach **Date:** May 23, 1996
From: John Dadisman
Subject: Proposed Wausau Wastewater Sampling Plan

In response to recent pentachlorophenol (PCP) concentrations detected in effluent samples from the City of Wausau wastewater treatment plant, Montgomery Watson and the City of Wausau have discussed the possibility of performing a joint sampling program to further evaluate the nature of elevated PCP concentrations. As you requested, I have developed the following plan for implementing the joint sampling program.

Purpose of Sampling Program

The purpose of the proposed sampling program is to gain a better understanding of the nature of the observed elevated PCP concentrations in the City of Wausau Wastewater Treatment Plant. Specifically, the program seeks to evaluate the:

- Consistency of the elevated concentrations
- Appropriateness of sampling methods
- Relation of observed PCP concentrations to treatment plant operating parameters and effluent chemical characteristics

Sample Collection

Treatment facility personnel will collect the samples for analysis by both Montgomery Watson Analytical Testing Services (MWATS) and Wausau's laboratory contractor, EnviroScan in Rothschild, Wisconsin. Wauleco will cover analytical costs for samples analyzed at MWATS and the City will cover costs for samples analyzed at Enviroscan. Screening level samples will be collected by the City and analyzed at the Wauleco site in Wausau.

Composite samples for split analysis will be collected at the City's normal effluent collection point (prior to UV treatment). Screening level samples will be collected at various points in the treatment process as described in the following section.

Sampling Schedule and Analysis

- Daily composite samples will be collected at the routine effluent collection point (prior to UV treatment) for a seven day period. These samples will be split and laboratory analyzed for PCP by MWATS and Enviroscan. In addition, the MWATS samples will be analyzed for total suspended solids (TSS). During this time period we will obtain pH readings and flow rates from the facility.
- Grab samples for screening level analysis will be collected four times during the week long sampling program. The screening level samples will be collected at the system influent, the effluent composite sampler point, and after the UV treatment system. All screening level samples will be analyzed for PCP using the Wauleco on-site screening laboratory.

Historical Data Review

I will plan on visiting the treatment facility to review sampling locations prior to the start of the sampling program and to collect additional information related to past chemical data and flow rates at the treatment plant. I anticipate we will want to collect historic information on flow rates, pH, TSS, and PCP concentrations over a time period to include one or more PCP effluent concentration exceedance events.

The intent of these activities is to attempt to correlate PCP concentrations in the City of Wausau treatment system effluent to system flow and chemistry conditions.

JDD
J:\4113\0043\WWWMEMO2.DOC
4113.0043

8/23/96

Doug,

I believe the order
of TVing matches the log
report. I'll keep you
posted on proposals to further
investigate the sewer on
grout the joints.

Joe

WAUSAU SEWERAGE UTILITY

Street: EMTER ST

Tape # 109

Page #

Location: @ EDWARDS GOING SOUTH TO ADRIAN ST

Date: 8-14-96

Purpose for Televising: INFILTRATION

Viewed By: K. RYE

Line Size 36" CORR

Distance Reading	House Services				Manhole Type				Television Inspection Codes								Counter Reading	Remarks	
	N	S	E	W	T	PC	B	BL	BP	CP	PL	JL	BJ	SC	DP	R			
																		ØØØ	
0'									X										@ MH# 25
12'																			SIGNS OF LEAK - MINERAL DEPOSITS + WET
18'																			"
24'																			" w/ LIGHT ROOTS
48'																			" w/ LIGHT ROOT
96'																			" + WET
107'																			"
148																			"
? 154																			" + WET
160'																			"
166'																			"
184' + 190' + 195'																			
201												X							810 EST 1-2 GPM
243												X							972 EST 1 GPM
255																			" + WET
266																			" + WET
279																			" + WET
286'																			@ MH# 24

Codes:

- BP - Broken Pipe
- CP - Cracked Pipe
- PL - Pipe Leak
- JL - Joint Leak
- BJ - Bad Joint
- SC - Service Connection
- DP - Dip in Pipe
- R - Roots

General Sewer Condition:

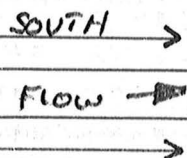
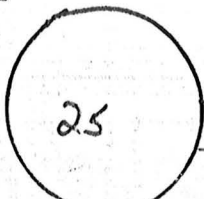
- Good, No repairs necessary
- Some problems, no repairs
- Repairs necessary

MH# 25 DEPTH: 14'2"

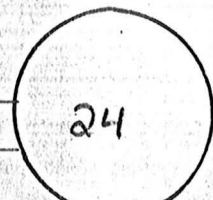
General Manhole Conditions:

- Good, No repairs necessary
- Repairs necessary
- Frame & cover good
- Frame &/or cover need replacement

M.H. #



DIRECTION OF CAMERA



M.H. #

WAUSAU SEWERAGE UTILITY

Street: EMTER ST

Tape # 109

Page #

Location: @ RIVER ST GOING SOUTH TO THOMAS ST

Date: 8-14-96

Purpose for Televising: INFILTRATION

Viewed By: K. RYE

Line Size 36" CONQ

Distance Reading	House Services					Manhole Type			Television Inspection Codes							Counter Reading	Remarks	
	N	S	E	W	T	PC	B	BL	BP	CP	PL	JL	BJ	SC	DP			R
																	1151	
0'								X										@ MH# 27
0'-40'																X		MODERATE ROOTS
57', 62', 69'																X		@ JOINT
80' - 104																X		MODERATE
116																X		" "
134'									SIGNS OF LEAK - MINERAL DEPOSIT - WET									
145																X	"	LIGHT ROOTS
157																X	"	" "
168																X		LIGHT
198												X					1692	1-2 6PM
205									SIGNS OF LEAK									
325																	1945	@ MH# 26

Codes:

- BP - Broken Pipe
- CP - Cracked Pipe
- PL - Pipe Leak
- JL - Joint Leak
- BJ - Bad Joint
- SC - Service Connection
- DP - Dip in Pipe
- R - Roots

General Sewer Condition:

- Good, No repairs necessary
- Some problems, no repairs
- Repairs necessary

General Manhole Conditions:

- Good, No repairs necessary
- Repairs necessary
- Frame & cover good
- Frame &/or cover need replacement

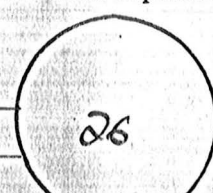
M.H. #



SOUTH →

DIRECTION OF CAMERA

Flow →



M.H. #

WAUSAU SEWERAGE UTILITY

Street: ADRIAN ST

Tape # 109

Page #

Location: @ ENTER ST GOING EAST TOWARDS McCleary

Date: 8-16-96

Purpose for Televising: INFILTRATION

Viewed By: K. RYK

Line Size 36" CORR

Distance Reading	House Services					Manhole Type			Television Inspection Codes							Counter Reading	Remarks	
	N	S	E	W	T	PC	B	BL	BP	CP	PL	JL	BJ	SC	DP			R
																	2116	
0'								X										@ MH # 11
3'											X							> 1 GPM
14'																		
32'											X							1 GPM
38'											X							2 GPM
44'																		
55'																		
61'																		
67'																		
79'																		
85'																		
91'																		
93'	X													X			2426	drippings
96'																		
102'																		
108'																		

Codes:

- BP - Broken Pipe
- CP - Cracked Pipe
- PL - Pipe Leak
- JL - Joint Leak
- BJ - Bad Joint
- SC - Service Connection
- DP - Dip in Pipe
- R - Roots

General Sewer Condition:

- Good, No repairs necessary
- Some problems, no repairs
- Repairs necessary

General Manhole Conditions:

- Good, No repairs necessary
- Repairs necessary
- Frame & cover good
- Frame &/or cover need replacement

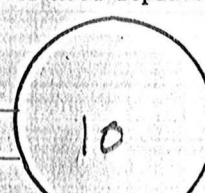
M.H. #



EAST

DIRECTION OF CAMERA

Flow



M.H. #

WAUSAU SEWERAGE UTILITY

Pg 2 of 3

Street: ADRIAN ST

Tape # 1089

Page #

Location: @ EMTER ST GOING EAST TOWARDS McCLEARY

Date:

Purpose for Televising: INFILTRATION

Viewed By: K. RYE

Line Size

Distance Reading	House Services					Manhole Type				Television Inspection Codes							Counter Reading	Remarks
	N	S	E	W	T	PC	B	BL	BP	CP	PL	JL	BJ	SC	DP	R		
120'																		
126'																		
138'																		
140	X																	
146S		X																
149																		
152'																		
156																		
161																		
179																		
185																		
191																		
203																		
205		X																
209																		
211	X																	

Codes:

- BP - Broken Pipe
- CP - Cracked Pipe
- PL - Pipe Leak
- JL - Joint Leak
- BJ - Bad Joint
- SC - Service Connection
- DP - Dip in Pipe
- R - Roots

General Sewer Condition:

- _____ Good, No repairs necessary
- _____ Some problems, no repairs
- _____ Repairs necessary

General Manhole Conditions:

- _____ Good, No repairs necessary
- _____ Repairs necessary
- _____ Frame & cover good
- _____ Frame &/or cover need replacement

M.H. #



DIRECTION OF CAMERA



M.H. #

WAUSAU SEWERAGE UTILITY

Street: ADRIAN ST

Tape # 109

Page #

Location: @ EMLER

Date: 8-16-96

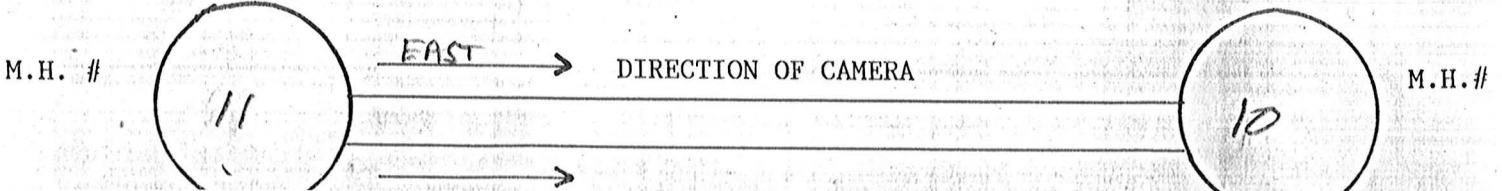
Purpose for Televising: INFILTRATION

Viewed By: K. RYE

Line Size 36" CONC

Distance Reading	House Services					Manhole Type			Television Inspection Codes							Counter Reading	Remarks	
	N	S	E	W	T	PC	B	BL	BP	CP	PL	JL	BJ	SC	DP			R
215												X					2746	2-3 GPM
220				SIGNS OF LEAKS														
227'				||							||							
233											X							dripping
245				||							||	WET						
255		X												X			2849	dripping
262				||							||							
265		X												X			2881	CAPPED-OFF w/ SIGNS OF LEAKING
271	X													X			2894	dripping
274											||	X						dripping
280				||							||							
294'																	2955	@ MH # 10

- Codes:
- BP - Broken Pipe
 - CP - Cracked Pipe
 - PL - Pipe Leak
 - JL - Joint Leak
 - BJ - Bad Joint
 - SC - Service Connection
 - DP - Dip in Pipe
 - R - Roots
- General Sewer Condition:
- _____ Good, No repairs necessary
 - _____ Some problems, no repairs
 - _____ Repairs necessary
- General Manhole Conditions:
- _____ Good, No repairs necessary
 - _____ Repairs necessary
 - _____ Frame & cover good
 - _____ Frame &/or cover need replacement



WAUSAU SEWERAGE UTILITY

Street: ADRIAN ST

Tape # 109

Page #

Location: @ 232 ADRIAN ST GOING EAST TO McCLEARY ST

Date: 8-22-96

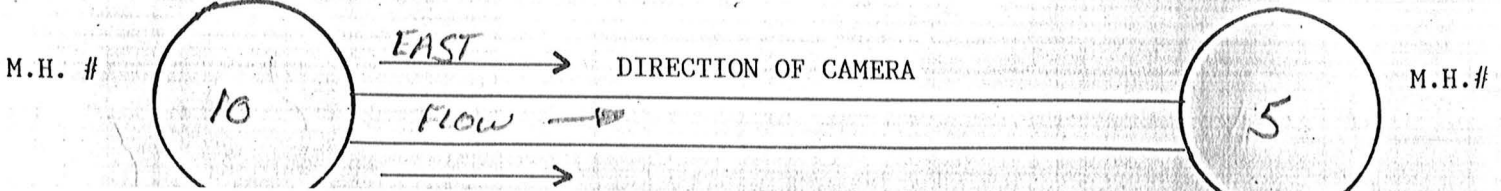
Purpose for Televising: INFILTRATION

Viewed By: K. RYE

Line Size 36" CONC

Distance Reading	House Services					Manhole Type			Television Inspection Codes							Counter Reading	Remarks	
	N	S	E	W	T	PC	B	BL	BP	CP	PL	JL	BJ	SC	DP			R
																	2953	
0'								X										@ M.H. # 10
3'		X												X				ACTIVE
16'																		SIGNS OF PREVIOUS LEAKING
22'																		" "
28'		X												X				ACTIVE
31'			X											X				BLK-HD-OFF
40'																		" "
46'																		" "
64'																		" "
70'												X						LIGHT DRIP
82'																		" "
84'		X												X				ACTIVE RUNNING
90'			X											X				ACTIVE RUNNING
94'																		" "
99'												X					3206	1/4 GPM
129'																		" + NET

- Codes:
- BP - Broken Pipe
 - CP - Cracked Pipe
 - PL - Pipe Leak
 - JL - Joint Leak
 - BJ - Bad Joint
 - SC - Service Connection
 - DP - Dip in Pipe
 - R - Roots
- General Sewer Condition:
- Good, No repairs necessary
 - Some problems, no repairs
 - Repairs necessary
- General Manhole Conditions:
- Good, No repairs necessary
 - Repairs necessary
 - Frame & cover good
 - Frame &/or cover need replacement



WAUSAU SEWERAGE UTILITY

Pg 2 of 2

Street: ADRIAN ST

Tape # 109

Page #

Location: 232 ADRIAN GOING EAST TO MCKLEARY

Date: 8-22-96

Purpose for Televising: INFILTRATION

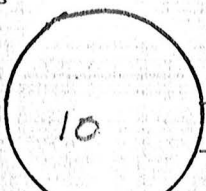
Viewed By: K. RYE

Line Size 36" concrete

Distance Reading	House Services					Manhole Type			Television Inspection Codes							Counter Reading	Remarks		
	N	S	E	W	T	PC	B	BL	BP	CP	PL	JL	BJ	SC	DP			R	
129'																			SIGNS OF LEAKING & WET
146'																			"
149'		X												X					ACTIVE - RUNNING
194'	X													X				3361	ACTIVE - RUNNING
205'																			" & WET
208'		X												X					ACTIVE - dripping
214'	X													X					BLK-HD-OFF
235'																			"
261	X													X					BLK-HD-OFF
267		X												X					BLK-HD-OFF
276'																			"
290'																		3533	@ MH # 5

- Codes:
- BP - Broken Pipe
 - CP - Cracked Pipe
 - PL - Pipe Leak
 - JL - Joint Leak
 - BJ - Bad Joint
 - SC - Service Connection
 - DP - Dip in Pipe
 - R - Roots
- General Sewer Condition:
- _____ Good, No repairs necessary
 - _____ Some problems, no repairs
 - _____ Repairs necessary
- General Manhole Conditions:
- _____ Good, No repairs necessary
 - _____ Repairs necessary
 - _____ Frame & cover good
 - _____ Frame &/or cover need replacement

M.H. #



EAST →

DIRECTION OF CAMERA

Flow →



M.H. #

WAUSAU SEWERAGE UTILITY

Street: ADRIAN ST

Tape # 109

Page #

Location: @ McCLEARY GOING EAST

Date: 8-22-96

Purpose for Televising: INFILTRATION

Viewed By: K. RYE

Line Size 36" CONC

Distance Reading	House Services					Manhole Type			Television Inspection Codes							Counter Reading	Remarks	
	N	S	E	W	T	PC	B	BL	BP	CP	PL	JL	BJ	SC	DP			R
																	3533	
0'								X										@ MH # 5
16'																		SIGNS OF PREVIOUS LEAKING
122'														X	"			
139'															"			
60'		X												X				BLK-HD-OFF
81'															"			
87'															"			
91'	X													X				LOOKS LIKE 2 SERVICES 2 PLUGGED 4-2 RUNNIN
93'															"			
105												X					3665	dripping
111															"			POSSIBLY LEAKING
122															"			
128															"			
140												X					3714	VERY SLOW DRIP
157															"			
163															"			

Codes: @ MH # 4 (375B)

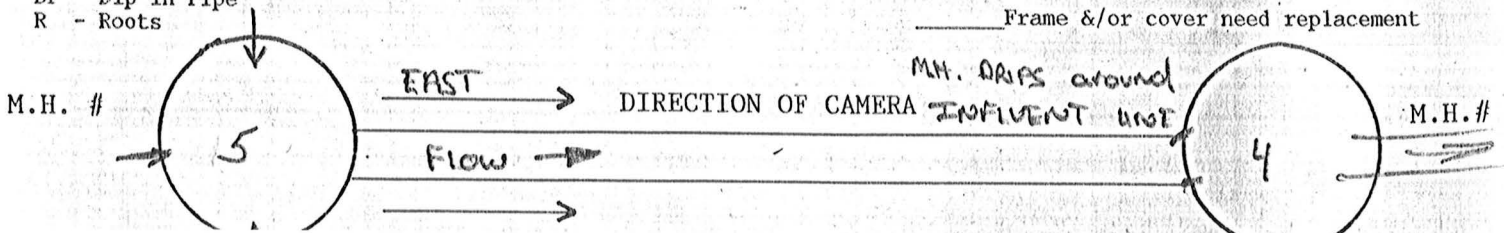
General Sewer Condition:

MH # 5 DEPTH 10'2"
General Manhole Conditions:

- BP - Broken Pipe
- CP - Cracked Pipe
- PL - Pipe Leak
- JL - Joint Leak
- BJ - Bad Joint
- SC - Service Connection
- DP - Dip in Pipe
- R - Roots

- Good, No repairs necessary
- Some problems, no repairs
- Repairs necessary

- Good, No repairs necessary
- Repairs necessary
- Frame & cover good
- Frame &/or cover need replacement



WAUSAU SEWERAGE UTILITY

Street: EMTER ST

Tape # 108

Page # _____

Location: @ THOMAS ST GOING SOUTH TO EDWARDS

Date: 8-13-96

Purpose for Televising: INFILTRATION

Viewed By: K. RYE

Line Size 36" CONC

Distance Reading	House Services					Manhole Type			Television Inspection Codes								Counter Reading	Remarks
	N	S	E	W	T	PC	B	BL	BP	CP	PL	JL	BJ	SC	DP	R		
																	5480	
0'								X										MH # 26
116'			X											X			5617	?
266.6'											X						5760	STEADY LIGHT DRIP
cst 274'																	5769	@ MH # 25
NOTE: AT MOST OF THE JOINTS JUST ABOVE THE FLOW LINE THERE ARE SIGNS OF PREVIOUS LEAKING																		

Codes:

- BP - Broken Pipe
- CP - Cracked Pipe
- PL - Pipe Leak
- JL - Joint Leak
- BJ - Bad Joint
- SC - Service Connection
- DP - Dip in Pipe
- R - Roots

General Sewer Condition:

- Good, No repairs necessary
- Some problems, no repairs
- Repairs necessary

MH # 26 DEPTH: 14'2"
General Manhole Conditions:

- Good, No repairs necessary
- Repairs necessary
- Frame & cover good
- Frame &/or cover need replacement

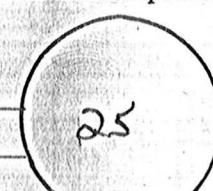
M.H. #



SOUTH →

DIRECTION OF CAMERA

Flow →



M.H. #



Wausau Water and
Sewerage Utilities

Joseph L. Gehin
Utilities Director

Managed by
Commission



September 6, 1996

Mr. Pete Hubbard
Wisconsin DNR
5301 Rib Mountain Drive
Wausau, WI 54401

Dear Mr. Hubbard:

Starting in March 1996, the wastewater treatment plant recorded four consecutive monthly effluent discharge violations for pentachlorophenol (PCP). The standard is based on the effluent pH. The general pH range of the effluent stream is between 6.0 and 7.0 pH which correlates to a PCP discharge standard of 12 ug/L. A copy of Wausau's monthly PCP discharge values are shown in table A.

In general, Wausau's discharge of PCP has been in compliance especially for 1992, 1993, 1994 and 1995. However, the recent violations recorded in 1996, prompted the Utility to look for possible sources of the PCP.

Since, WAULECO was the only known source of PCP, Mr. Jim Riege and myself arranged a visit of their treatment building. Initially, we thought inadvertent housekeeping activities at this treatment facility may be contributing to the unusual discharge of PCP. After viewing the facility and discussing the issue with staff at the site, it was quite apparent the unusual discharge of PCP was not originating from the treatment building. As part of that dialogue, lab procedures and QA/QC measures were reviewed regarding our data. All data appeared to be generated under acceptable sample and lab protocol.

With the cooperation of WAULECO and their consultant, samples of each of the four major interceptors was collected and tested for PCP. The four interceptor sewers are shown on the enclosed sketch (I) and receive sewage from the entire Wausau sewer service area. With this approach, any PCP discharge would be detected in the respective interceptor sewer. The result of this survey showed that PCP was only present in the **northwest interceptor system**. The WAULECO clean up site is served by the northwest interceptor system.

Pete Hubbard
September 6, 1996
Page 2

Knowing that the northwest interceptor had higher PCP levels, testing was conducted to confirm the location or locations where the PCP may be entering the main. Numerous samples were collected from the interceptor over a period of time which confirmed that the PCP was originating near Thomas Street. There was sufficient data to suggest that the interceptor sewer was being infiltrated with contaminated groundwater in the Thomas Street area. (See sketch II and supporting data.)

The sewer was constructed in the early 40's and the extent of its general condition was unknown. Utility crews TV'd the sewer from MH27 to MH 4. The 36" sewer was in excellent structural condition. All joints had originally been back plastered to minimize infiltration problems. A copy of our TV report is enclosed. In spite of the fact that the interceptor is partially submerged in the groundwater, there are very few infiltration points. However, near MH11 there are two or three infiltration points which collectively contribute 5 to 8 gpm. One of the inflow points was sampled and tested very high in PCP. Recognizing that PCP was now confirmed to be entering the sewer via the groundwater, additional testing would be necessary to confirm all joint leaks and to grout any leaky joints. I should note sewer TVing would only show leaks above the flow level in the sewer. The current flow is only about 6 to 10 inches deep.

Currently, the Utility is receiving quotes from sewer rehab firms to air test and grout leaking joints. Depending on the extent of the problem, the leaks will be reduced or eliminated. This procedure should resolve this unusual level of PCP entering Wausau's sewer system and eventual discharge to the Wisconsin River.

This letter recaps our efforts to resolve this matter. If you have any questions, please do not hesitate to call.

Sincerely yours,



Joseph L. Gehin
Utilities Director

cc: Mayor John Hess
Mr. Doug Bach
Attorney Konrad Tuchscherer (Commissioner)

JLG/dg

a:\dnr\pcp

WAUSAU WASTEWATER TREATMENT FACILITY

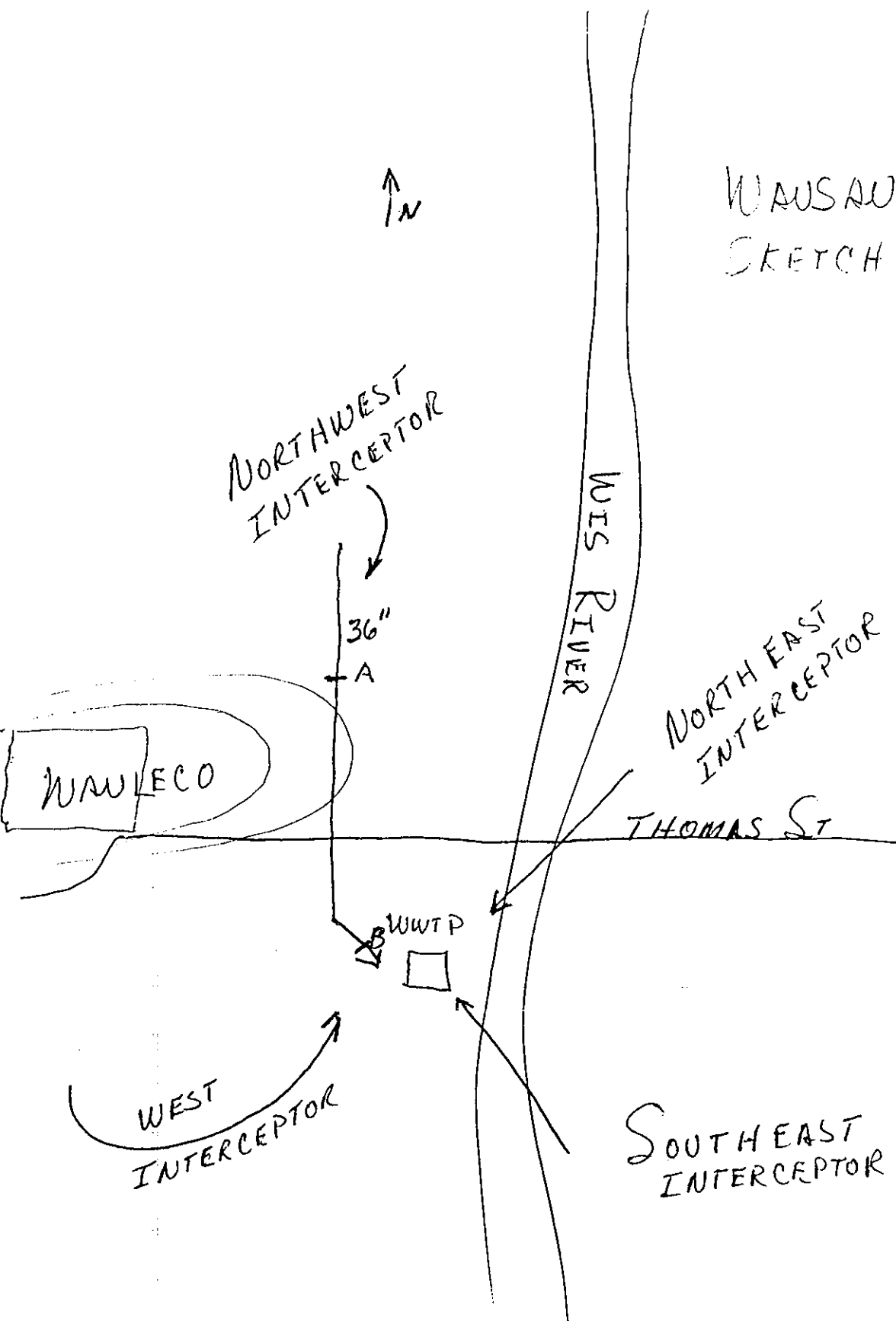
TABLE A

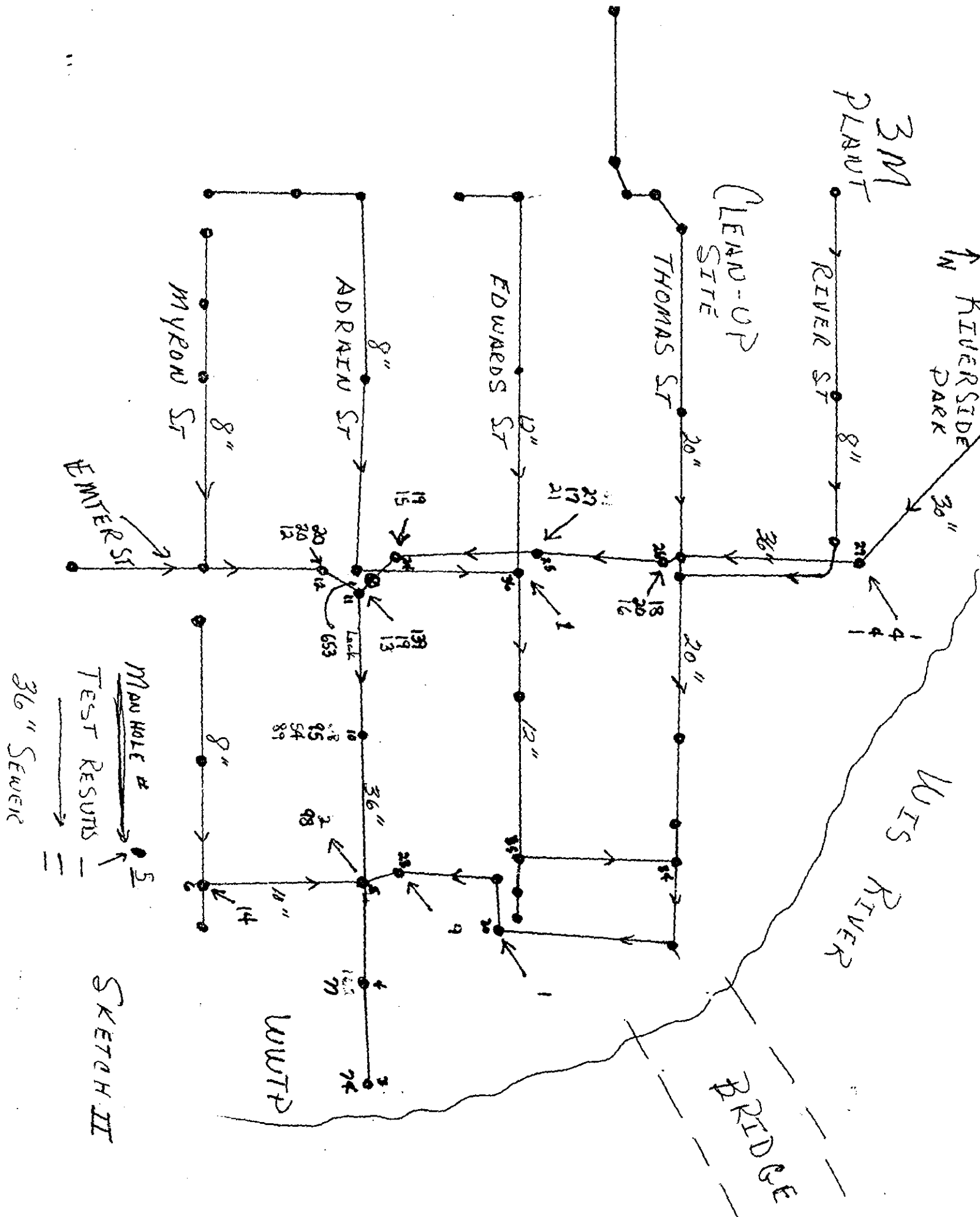
PENTACHLOROPHENOL - ug/l

☐ - penta detected
 - violation of limits

	1989	1990	1991	1992		1993		1994		1995		1996	
				Result	Limit	Result	Limit	Result	Limit	Result	Limit	Result	Limit
January			5.5	<5		<10		<5.1		<10		<5	
February	26.4	<10	11.9	<10		<50		<5.2		<260		7.62	12
March			11.6	<5		10.8	11	<5.1		<5		13.9	12
April			48.3	<10		<5		<10		<5		36	12
May	40	15	5.94	5.93	18	12.9	7	<5.4		<5		43.7	12
June	<5	26.4	11.3	<5		<10		<10		18	12	14.1 @ 16.7	12
July	<5	8.4	<5	<5		<10		<5.3		<5		<5	
August	8.1	8	<5	<5		<5		<10		<5		<5	
September	<5	<5	<10	<5		10.2	11	<5.5		8.3	12		
October		9.88	<5	<5		<10		<5.2		6.8	12		
November		<5	<50	<5		<10		<5.2		<5			
December		<5.3	<50	<5		<6		<5		<5.7			

WAUSAU
SKETCH I





MAN HOLE #
 TEST RESULTS
 36" Sewer

SKETCH II

WWTTP

BRIDGE

WIS RIVER

RIVERSIDE PARK

3M PLANT

CLEAN-UP SITE

THOMAS ST

RIVER ST

EDWARDS ST

ADRAIN ST

MYROW ST

FAWCETER ST

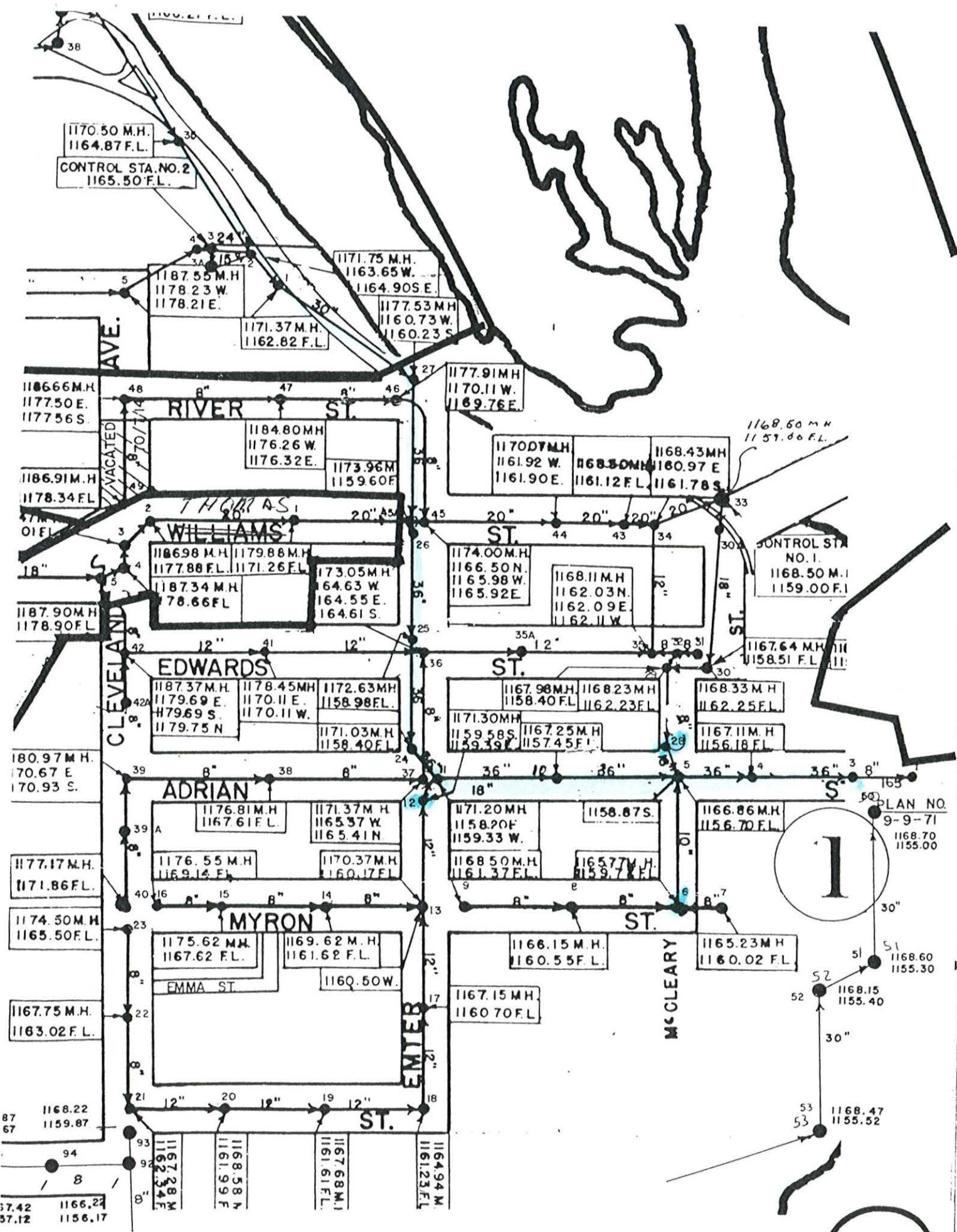
Lock

MAN HOLE #

TEST RESULTS

36" Sewer

N



SAN

MANHOLE SAMPLING FOR PCP

Sampling location	Pentachlorophenol, ug/L
Orange line	
Manhole # 27	1
Manhole # 4	68
Manhole # 10	
Manhole # 28	1
Manhole # 36	
Blue line	
Manhole # 5	
Manhole # 28	2
Manhole # 30	1

Manhole #28 was sampled from manhole 5 but just getting the flow from the .8 inch line.

Second sampling of WWTP

MANHOLE SAMPLING FOR PCP

Sample Date = 8/7/95

Sampling location

Pentachlorophenol, ug/L

Orange line (Northwest)

Manhole # 27

4

Manhole #16

18

Manhole #25

27

Manhole #24

under blacktop

Manhole #11

139

Manhole #10

95

Manhole #5

98

Manhole #4

77

Manhole #3

74

Manhole #2

20

Manhole #6

14

There was a rainfall event the night prior to the sampling. Manhole 24 was under the blacktop

Samples 3, 5, and 11 were all taken before the sidestreams entered the manhole

Third sampling

8/9/96 SAMPLES

MANHOLE SAMPLING FOR PCP

Sample Date = 8/9/96	
Sampling location	Pentachlorophenol, ug/L
Orange line (Northeast)	
Manhole # 4	151
Manhole # 10	193
Manhole # 11	116
Manhole # 24	93
Manhole # 25	110

P.02

7158487230

WARZYN

MANHOLE SAMPLING FOR PCP

Sample Date - 8/21/96	
Sampling location	Pentachlorophenol, ug/L
Grange line (Northwest)	
Manhole # 10	89
Manhole # 11	13
Manhole # 12	12
Manhole # 24	15
Manhole # 25	21
Manhole # 26	16
Manhole # 27	1

August 28th

MANHOLE SAMPLING FOR PCP

Sample Date = 8/28/86

Sampling location

Pentachlorophenol, ug/L

Orange Ave (Northwest)

Manhole # 10

54

Manhole # 11

19

Manhole # 12

20

Manhole # 14

19

Manhole # 25

17

Manhole # 26

20

Manhole # 27

4

Peak downstream from Manhole # 11

653

Sample Form by M. J. ...

Infratech

Infrastructure Technologies, Inc.

6248 Lakeland Avenue North • Suite 100
Brooklyn Park, MN 55428

FAX 612/533-4988 • Phone 612/533-4525

AUGUST 29, 1996

MR. JOE GEHIN
WAUSAU WATER & SEWERAGE UTILITY
407 GRANT STREET
WAUSAU, WI 54403

DEAR MR. GEHIN:

THANK YOU FOR INQUIRING WITH INFRATECH REGARDING RESTORATION OF YOUR 36" SANITARY SEWER LINE. BASED UPON OUR TELEPHONE CONVERSATION AND REVIEW OF THE VIDEO YOU PROVIDED WE OFFER THE FOLLOWING PROPOSAL:

INFRATECH WILL UTILIZE A "PACKER" (COMBINATION JOINT TESTER/SEALER) TO DIAGNOSE THE INTEGRITY OF EACH PIPE JOINT IN THE ABOVE MENTIONED PIPELINE. (PIPE JOINTS THAT ARE ACTIVELY LEAKING WILL NOT BE AIR TESTED). DIAGNOSIS WILL BE ACCOMPLISHED VIA JOINT ISOLATION AND AIR TEST. JOINT INTEGRITY WILL BE DETERMINED VIA A SUSTAINED LOW PRESSURE AIR TEST. JOINTS THAT FAIL THE INITIAL AIR TEST WILL BE SEALED WITH HYDROACTIVE POLYURETHANE GROUT CONTAINING ROOT TREATMENT DESIGNED TO DETER FUTURE ROOT GROWTH. AFTER JOINT SEALING IS PERFORMED A SECONDARY AIR TEST WILL BE PROVIDED TO CERTIFY THAT THE JOINT IS SEALED.

PIPE JOINT AIR TEST.....\$34.00 EA
PIPE JOINT SEAL AND SECONDARY AIR TEST.....\$68.00 EA
POLYURETHANE GROUT.....\$9.50 GAL
MOBILIZATION.....NO-CHARGE

TO QUALIFY THIS PROPOSAL WE WILL REQUIRE THE CITY TO PROVIDE, MAINTAIN AND MONITOR BYPASS PUMPING. A JETTER AND OPERATOR MUST ALSO BE MADE AVAILABLE FOR CLEANING PURPOSES.

IN ADDITION TO THOSE SERVICES LISTED ABOVE, INFRATECH WILL PROVIDE ROOT REMOVAL AND ASSIST CITY PERSONNEL IN SETTING UP THE BYPASS.

INFRA TECH WILL PROVIDE WRITTEN DOCUMENTATION OF THE TEST AND SEAL PROCEDURE. TEST RESULTS FOR EACH JOINT WILL INCLUDE INFORMATION SUCH AS PASS/FAIL STATUS, VOLUME OF GROUT PUMPED AND SECONDARY AIR TEST OUTCOME. UPON COMPLETION OF TEST AND SEAL OPERATIONS WE WILL TELEVISION THE LINE AND PROVIDE "POST" VIDEO DOCUMENTATION.

JOE, WE SINCERELY APPRECIATE THIS OPPORTUNITY AND LOOK FORWARD TO WORKING WITH YOU. IF YOU HAVE ANY QUESTIONS REGARDING THIS PROPOSAL OR THE ENCLOSED INFORMATION PLEASE CALL ME.

BEST REGARDS,

A handwritten signature in black ink, appearing to read "Matt Huston". The signature is fluid and cursive, with a long, sweeping underline that extends to the right.

MATT HUSTON
INFRASTRUCTURE TECHNOLOGIES, INC.
1-800-533-4244

Estimate of Cost to Air Test / Grout Leaks

280 joints tested at \$34 each = \$9520⁻

10% of 280 need to be grouted

28 joints grouted at \$68 each = \$1904⁻

Est of polyurethane grout

30 joints x 5 gals per joint at \$9.50/gal = \$1425⁻

Total est cost \$12849⁻

Doug

At this time, I only have
one quote for testing and grouting.
I expect a second quote from
View Sewer. I am open to
suggestions how to proceed.

Joe



**Miller
Pipeline
Corp.
Products and
Services Division**

A subsidiary of IWC Resources Corporation

8850 CRAWFORDSVILLE RD.

P.O. BOX 34141

INDIANAPOLIS, INDIANA 46234

TELEPHONE: (317) 293-0278

FAX: (317) 293-8502

November 22, 1996

Mr. Joseph L. Gehin
Utilities Director
Wausau Water and Sewerage Utilities
407 Grand Street
Wausau, WI 54403

RE: Permanently Sealing the Joints in the Existing 36" RCP
Wastewater Pipe with Our Patented and Proprietary Product
and Service Known as the AMEX-10/WEKO-SEAL Internal Joint
Sealing System

Dear Mr. Gehin:

We are pleased to provide for your consideration the following pre-inspection information and pricing to furnish and install AMEX-10/WEKO-SEALS to eliminate both infiltration and exfiltration in the above referenced pipeline.

As you know, since this is an internal joint seal the pipeline will need to be shutdown with a fail-safe method to protect the safety of the Miller confined-space technicians who gain access into the pipeline to accomplish the joint seal installations. We understand that access will be provided by others.

The joint seal installations would be accomplished by Miller's trained confined-space entry technicians who are not only trained to install the AMEX-10/WEKO-SEALS, but are also trained to comply with all the requirements of 29 CFR 1910.146 Federal OSHA's Permit Required Confined-Space Regulations.

Miller would be pleased to mobilize our experienced confined-space entry AMEX-10/WEKO-SEAL installation crew with all necessary confined-space internal safety apparatus including atmosphere monitors, air movers, intrinsically safe lighting, rescue and retrieval equipment, and other relevant safety and installation equipment to safely enter the already dewatered and isolated pipeline to prepare joints, furnish and install AMEX-10/WEKO-SEALS at the following price.

Mr. Joseph Gehin
 Wausau Water and Sewerage Utilities
 November 22, 1996
 Page 2

<u>Quantity</u>	<u>Description</u>	<u>Price</u>
10-15	36" AMEX-10/WEKO-SEALS	\$1,111.00 ea.

Cleaning of the pipe including root removal and removal of debris and deposits can be accomplished at \$1.75 per foot.

In order to protect the safety of our confined-space entrants, please understand that because of the fact that inflatable plugs can fail without warning, we do not like to work against them. We prefer an alternative means of stopping flow and, therefore, request the opportunity to evaluate options such as sand bags exclusively or a stop gate or other means of diverting flow and renegotiate pricing if additional costs are involved.

Miller would furnish all internal materials which become a permanent part of the pipeline including EPDM AMEX-10/WEKO-SEALS, Type 316 stainless steel retaining bands, wedges, shims and clips, equipment and tools needed for installation, and all internal confined-space safety apparatus except water pumps.

Infiltrating water with mineral spirits and pentachlorophenol in concentrations identified to us (10,000 ppb) will not adversely affect the performance of AMEX-10/WEKO-SEALS.

Any required pipeline shutdown, isolation, excavations, cutouts, dewatering, by-pass pumping, and traffic control would be provided by others.

Any additional work beyond the AMEX-10/WEKO-SEAL pricing above could be accomplished at the following time and material rates.

<u>CLASSIFICATION</u>	<u>STRAIGHT TIME</u>	<u>TIME AND ONE-HALF</u>	<u>DOUBLE TIME</u>
Foreman	\$62.00	\$93.00	\$124.00
Technician	\$60.00	\$90.00	\$120.00
Operator	\$62.00	\$93.00	\$124.00
Truck	\$10.00	\$10.00	\$10.00
Miscellaneous Tools	\$18.00	\$18.00	\$18.00
Air Compressor	\$21.00	\$21.00	\$21.00
Special Confined-Space Tools and Equipment	\$24.00	\$24.00	\$24.00

In the unlikely event any standby time would be necessitated

Mr. Joseph Gehin
Wausau Water and Sewerage Utilities
November 22, 1996
Page 3

The above pricing does not include any taxes. All applicable taxes would be added to the pricing unless we were provided with a tax exempt statement from the buyer.

Please allow two to three weeks from receipt of purchase order before work commences. We would expect the work to take about three (3) days to complete.

As you may know, Miller has installed over 115,000 AMEX-10/WEKO-SEALS ranging in size from 16" up to 210" diameter pipelines providing the customer with a permanent, flexible, noncorrodible, bottle-tight joint seal.

We would like to thank you for the opportunity to offer this estimated project pricing and look forward to providing this service. We are certain that you will be most pleased with the results.

If we can be of any further assistance, please do not hesitate to contact us.

Respectfully submitted,



Ralph Miller
Manager of Technical Services

RM:elb
cc: John Cianci



Wausau Water and
Sewerage Utilities

Joseph L. Gehin
Utilities Director

Managed by
Commission

January 23, 1997

Mr. Doug Bach
Montgomery Watson
One Science Court
PO Box 5385
Madison, WI 53705-0385

Dear Mr. Bach:

I hereby submit a statement regarding cost recovery associated with sealing the 36" interceptor sewer to prevent PCP infiltration. It is our understanding that the Wausau Sewerage Utility would be reimbursed 95% of all expenses with this project except staff time and Utility equipment rental. Enclosed is a copy of Utility payments made concerning this project to-date. The majority of the expense is for the installation of the joint seals.

A copy of the Miller Pipeline invoice is also enclosed. There are delay costs on Miller's statement due to the pump problems, some of which are weather related. I was able to reduce Miller's statement by \$458.00 and Fabco Equipment pump rental fee as problems were beyond our control.

The total project costs to date are \$22,870.79 with WAULECO's share at \$21,727.25.

Needless, to say, the Wausau Sewerage Utility has invested a great deal of resources to resolve this issue which are not reflected in the \$22,870.79. Our current estimate on staff time would approach 150 man-hours with the use of Utility equipment.

As we discussed, our preliminary test data would support that additional corrective measures may be needed. However, additional testing over a longer time frame may demonstrate that PCP infiltration is adequately under control. At this time, I will delay any written reports to the DNR until further testing can be completed.

If you have any questions, please do not hesitate to call.

Sincerely yours,

Joseph L. Gehin
Utilities Director

JLG/dg

f:\wpdata\gehin\wauleco1.wpd



WAUSAU SEWERAGE UTILITY
407 GRANT STREET - CITY HALL
WAUSAU, WI 54403-4783

715 843-1130

WAULECO
c/o Montgomery Watson
One Science Court
PO Box 5385
Madison, WI 53705-0385

January 23, 1997

Invoice No. SWR-1551

Clean-up Costs - Interceptor Sewer	\$ 22,870.79
Less 5% (Utility share of costs)	<u>-1,143.54</u>
AMOUNT DUE	\$ 21,727.25

MAKE CHECKS PAYABLE TO: WAUSAU CITY TREASURER

Net 20 Days



Miller Pipeline Corp.

A subsidiary of IWC Resources Corporation

REMIT TO: P.O. BOX 34141
INDIANAPOLIS, INDIANA 46234
TELEPHONE: (317) 293-0278

259
BILL TO: WAUSAU SEWERAGE UTILITY
407 GRANT STREET
WAUSAU

WI 544014783

259 149 90

REFERENCE ONLY

JOB SITE: WAUSAU SEWERAGE UTILITY
ATTN: JOE GEHIN
407 GRANT STREET
WAUSAU

WI 544014783

DATE	REFERENCE	CONTRACT NO.	SLSMN.	ST.	CTY.	TERMS	INV. NO.
1/08/97		PD#2750	01	WI	10	NET 30 DAYS	6390

LOCATION: WAUSAU, WI
FOREMAN: TERRY SMITH
CREW TYPE: WEKO SEAL CREW
BILLING PERIOD: 12/17/96 - 12/18/96

	PRODUCT	UNITS	RATE	EXTENSION
STALLED 36" EXTRA WIDE WEKO SEALS	03622200	12.00	1111.00	13332.00

AND BY TIME AS FOLLOWS:

REMAN	7.00	62.00	434.00
TECHS @ 7 HRS EACH	21.00	60.00	1260.00
UCK	7.00	10.00	70.00
EC. TOOLS	7.00	18.00	126.00
ECIAL CONFINED SPACE TOOLS & EQUIPMENT	7.00	24.00	168.00

SUB TOTAL: 15390.00

INVOICE GROSS: 15390.00
SALES TAX AMT: .00
INVOICE NET: 15390.00

REFERENCE ONLY

GL789

Transaction Detail Report - Actuals

Status 1

For Date Range 01/01/96 to 01/22/97

SS	Ident.	Batch	Sheet	Seq	Stat	Per	Date	Description	Trans Amount	Bal Forward	
163	15252	WAULECO CLEAN-UP PROJECT									0.00
AP	107985 00177	E-Z RENTAL & EQ	6253	5	1	3	10	10/23/96 DISCHARGE & SUCTION HOSE	1112.10		
AP	108330 01323	WAU CULVERT COR	6278	63	1	3	10	10/30/96 PVC PIPE	1674.20		
		Period	Total			10			2786.30	2786.30	
AP	108344 00038	ARIES INDUSTRIE	6289	5	1	3	11	11/06/96 STORM SEWER TRACTOR	400.00		
AP	108566 01548	VISU-SEWER CLEA	6298	42	1	3	11	11/13/96 36" PLUG	85.00		
		Period	Total			11			485.00	3271.30	
AP	108943 00198	FABCO EQUIPMENT	6334	30	1	3	12	12/04/96 EQUIPMENT RENTAL	900.00		
AP	108943 00198	FABCO EQUIPMENT	6334	31	1	3	12	12/04/96 EQUIPMENT RENTAL	150.00		
AP	109622 00009	ACE PLUMBING &	6401	3	1	3	12	12/31/96 PLUMBING SUPPLIES	11.37		
AP	109633 00066	FERGUSON ENTERP	6401	15	1	3	12	12/31/96 CHECK VALVES	49.29		
AP	109658 01323	WAU CULVERT COR	6401	67	1	3	12	12/31/96 PVC	1833.00		
AP	109869 00198	FABCO EQUIPMENT	6427	12	1	3	12	12/31/96 PUMP RENTAL	474.75		
AP	109869 00198	FABCO EQUIPMENT	6427	13	1	3	12	12/31/96 PUMP RENTAL	79.13		
AP	109881 00250	GREBES INC	6427	23	1	3	12	12/31/96 ROPE MANILA	24.13		
AP	109881 00250	GREBES INC	6427	24	1	3	12	12/31/96 NYLON ROPE	72.29		
AP	109881 00250	GREBES INC	6427	25	1	3	12	12/31/96 ROPE NYLON	68.77		
AP	110205 01965	US FILTER/WATER	6458	24	1	3	12	12/31/96 SEWER PLUG RENTAL	851.00		
AP	110205 01965	US FILTER/WATER	6458	24	2	3	12	12/31/96 CREDIT	400.00		
AP	110136 02001	LAKEVILLE MOTOR	6458	25	1	3	12	12/31/96 FREIGHT	95.76		
		Period	Total			12			4209.49	7480.79	
Total Debits		7,880.79		Total Credits		400.00					

Certified 20% post consumer

GL789

Transaction Detail Report - Actuals

Status 1

For Date Range 01/01/96 to 01/22/97

SS	Ident	Batch	Sheet	Seq	Stat	Per	Date	Description	Trans Amount	Bal Forward
163	15252							WAULECO CLEAN-UP PROJECT		0.00
AP	110153 02004 MILLER PIPELINE	6459	38	1	2	1	1/15/97	AMEX WEKO SEALS	15390.00	
		Period	Total				01		15390.00	15390.00
	Total Debits		15,390.00	Total Credits			0.00			

JEANNE COOPER WCC 1/22/97



MONTGOMERY WATSON

Bach

April 4, 1997

Mr. Joe Gehin
Wausau Water and Sewerage Utilities
407 Grant Street
Wausau, Wisconsin 54403-4783

Re: Wausau Sewer Sampling Program

Dear Mr. Gehin:

This letter outlines a sewer sampling program designed to monitor the effectiveness of the installation of WECO seals to prevent infiltration of groundwater contaminated with pentachlorophenol (PCP). Since installation of the WECO seals in December 1996, the Wausau wastewater treatment plant has had no PCP exceedences in its effluent. However, samples collected within the sewer approximately one month after installation of the seals indicated elevated levels of PCP. The following routine sewer sampling and analysis plan is proposed to provide a consistent means to evaluate the effectiveness of the WECO seals over a longer time frame.

To identify possible PCP infiltration points along the 36-in sewer main that runs down Emter and Adrian Streets we are proposing weekly sampling at manholes No. 3, 4, 5, 10, 11, 24, 25, 26, and 27. A weekly sample should also be collected at the WWTP influent point. In order to minimize the effect of sewer flow rate variables, an attempt should be made to collect the samples at the same hour and day each week. In addition, to further minimize variables, samples should be collected from approximately the same location within each manhole (relative to incoming laterals).

To assess the contribution from smaller laterals (if any) weekly samples will also be collected for a three-week period from the following locations:

- Manhole No. 6 - to monitor flow and PCP concentration from the 10-in lateral that originates along Myron Street, and runs along McCleary Street.
- Manhole No 28 - to monitor flow and concentration in the 18-in lateral from McCleary Street
- Manhole No 12 - to monitor flow and concentration in the 12-in lateral from Emter Street South.

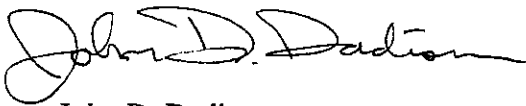
If sewer flow rates, and/or PCP concentrations are so low as to be insignificant, the sampling of one or all of the lateral locations will be discontinued after the three week period.

All samples will be analyzed by Montgomery Watson's on-site laboratory at the Wauleco facility. The weekly samples will be collected for at least eight weeks, after which time the data will be evaluated, and recommendations made for program modification or additional infiltration reduction measures.

If the proposed sampling program is acceptable, we will work with you to select a mutually convenient weekly sample collection day and time. Please call if you have any questions or comments.

Sincerely,

MONTGOMERY WATSON



John D. Dadisman
Senior Chemist



Douglas J. Bach, P.E.
Supervising Engineer

cc: Ms. Caroline Fribance - Wauleco
Mr. Robert Kammer - Wauleco
Mr. Peter Peshek - DeWitt, Ross, and Stevens

JDD/djh/DJB
J:\1242\057\04\WPALTR\99_GEHIN.DOC
1242057.04010101-MD