STS Consultants Ltd.
Consulting Engineers

540 Lambeau Street
Green Bay, Wisconsin 54303
(414) 494-9656

October 1, 1986

Wisconsin Department of Natural Resources
Antigo Area Headquarters
P. O. Box 310
Antigo, Wisconsin 54409

Attention: Mr. Jack Saltes

STS Job 12776-B

Re: Wausau Chemical Corporation Groundwater Extraction Program Interim Report.

Dear Mr. Saltes:

In response to your September 17, 1986 request, we are submitting a brief progress report concerning the Wausau Chemical Corporation groundwater extraction program. Henceforth, field and laboratory data sheets wil be submitted monthly.

System start-up was attempted in late May and early June, 1986. However, difficulties were encountered because the areal groundwater table had been lowered due to increased pumping from approximately 1000 to 1400 gpm in municipal pumping well #4. The lower water table reduced the extraction well yields significantly. However, the original design concept for the extraction system provided flexibility in adapting to changes. To alleviate the problem, the pumps in the wells were lowered. After a tuning period, the system was started on June 24, 1986. These operational problems generally were not encountered in 1985.

As indicated on the enclosed Daily Operational Logs, the overall pumping rate generally has been approximately 125 to 130 gpm. Small fluctuations on either side of this range have occurred. The pumps have operated continuously over the past 2-1/2 months except for three brief periods and one 3-day period in August. The longer shutdown occurred because the control box shorted out on a Saturday and was not discovered until Monday.

The following table and the attached graph present a summary of the airstripper influent and effluent perchloroethylene concentration (parts per million) and the airstripper efficiency for sampling dates through August 29, 1986. Note that the influent and effluent concentrations generally have stabilized.

Sampling Date	Stripper Influent (ppm)	Stripper Effluent (ppm)	Stripper Efficiency
6-24-86	9.360	1.475	84.2%
6-26-86	7.770	1.350	82.5%
6-30-86	6.300	1.050	83.3%
7-7-86	5.290	0.815	84.6%
7-14-86	5.150	0.770	85.0%
7-21-86	3.870	0.605	84.4%
7-28-86	2.840	0.345	87.9%
8-4-86	3.240	0.410	87.3%
8-12-86	2.810	0.340	87.9%
8-20-86	3.140	0.370	88.2%
8-27-86	2.630	0.425	83.8%
8-29-86	2.840	0.337	88.1%

Calculated flow rates and perchloroethylene air emission quantities are included on the attached Daily Operational Logs. Up-to-date laboratory results also are enclosed. The perchloroethylene removal rate (air emission) has ranged from approximately 14.5 to 3.4 pounds per day.

Extraction Wells 10, 11 and 12 were sampled on August 27 and 29 for perchloroethylene. These results are included on the attached Zimpro reports. Although the concentrations increased slightly from August 27 to August 29, the increase in the three wells is consistent and it is our opinion that these increases are within the range of analytical error. The perchloroethylene concentration in Well 10 prior to system start-up in the fall of 1985 was 144.0 ppm. On August 29, 1986, the perchloroethylene concentration in Well 10 was 2.21 ppm. Thus, the quality has improved approximately 98.5% at that well. Although there are no original test results for Wells 11 and 12, we believe that water quality has improved similarly and perchloroethylene concentrations generally have stabilized.

Because of the perchloroethylene concentration stabilization and a review of water level data (also attached), the pumps were moved from Wells 9 and 12, and re-installed in Wells 4 and 5; the pumps in Wells 7, 8, 10 and 11 remained as they were. This action was taken on September 20.

If you have any questions concerning this interim report or the attached data, please do not hesitate to contact us.

Yours very truly,

STS CONSULTANTS LTD.

Mark D. Millsop
Environmental Geologist

Doug J. Herman MDM
Douglas J. Hermann, P.E.
Vice President-Environmental Division

MDM/pk

cc Wausau Chemical Corporation
P. O. Box 953
Wausau, Wisconsin 54401
Attention: Mr. Jim Cherwinka

Charne, Glassner, Tehan, Clancy & Taitelman
211 W. Wisconsin Avenue
Milwaukee, WI 53203-2377
Attention: Mr. Ray Krueger

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CALCULATION SHEET

PROJECT: Wausau Chemical JOB NO.: 12776B PAGE ____ OF ____

SUBJECT: Summer 1986 Stripper Analysis - Cluster 2 DIVISION ____

ORIGINATOR: DJH/MDH DATE: ____ CHECKED BY: ____ DATE: ____

TOTAL VOC & TRICHLOROETHYLENE CONCENTRATION (PPM)

TOTAL DAILY FLOW (MGD)

Total VOC 24 #/day VOC Removed

14.5 #/day Perc removed

6.6 #/day Perc removed

6.6 #/day Perc Removed

4.6 #/day Perc removed

3.8 #/day Perc removed

4.4 #/day Perc removed

3.9 #/day Perc Removal

4.3 #/day Perc Removal

3.4 #/day Perc Removal

3.9 #/day Perc Removal

24% 27%

83%

25%

75%

84%

88%

87%

88%

88%

84% 88%

Influent

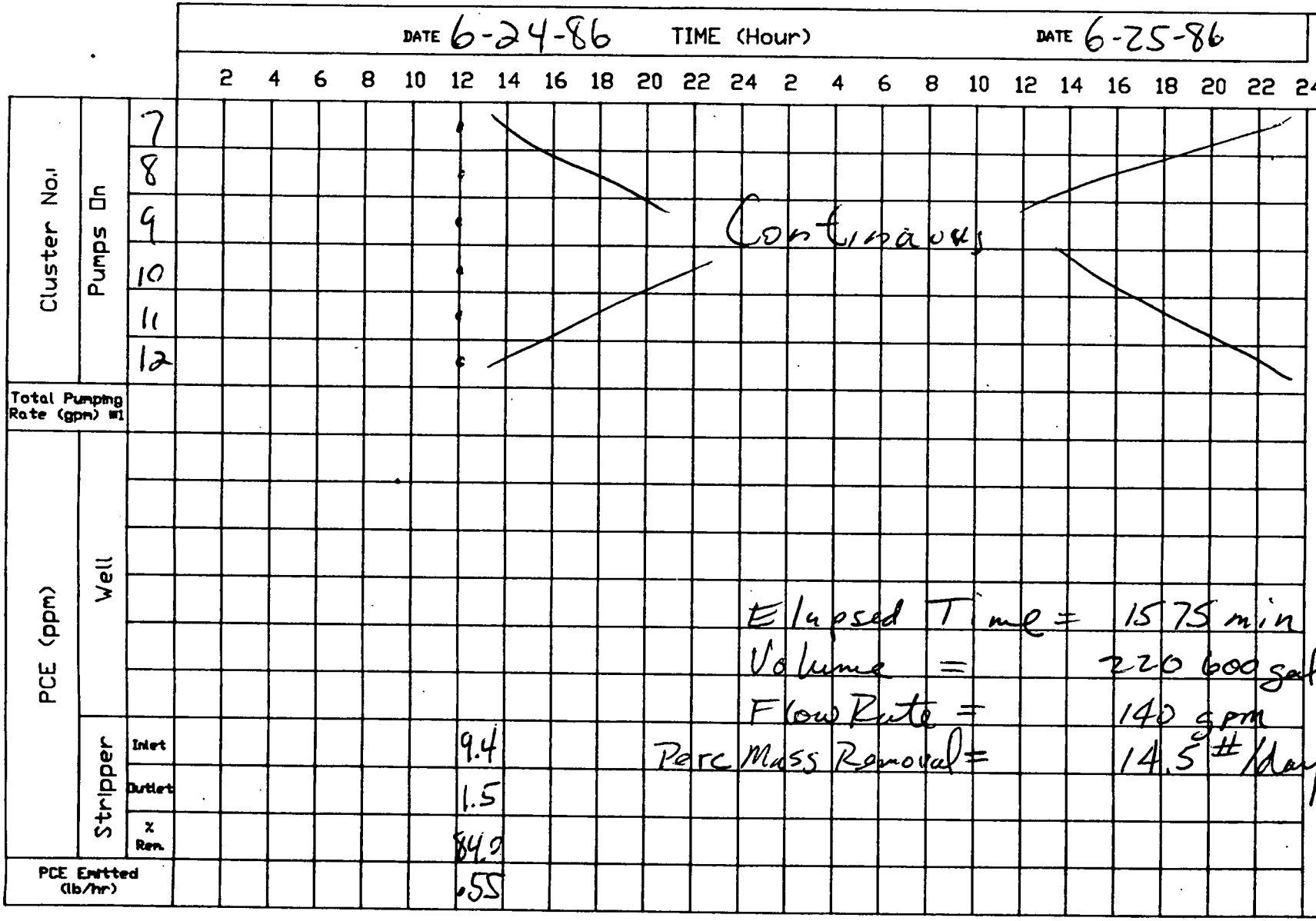
effluent

0 5 10 15 20 25 30 35

24 26 28 30 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8 10

JUNE | JULY | AUGUST | SEPTEMBER

WAUSAU CHEMICAL EXTRACTION PROGRAM



*1 : Estimated pumping rate = 27 gpm/pump
*2 : Limited by max. pumping capacity of 150 gpm
*3 : Using initial concentration
*4 : Using final concentration

WAUSAU CHEMICAL EXTRACTION PROGRAM

DATE 6-24-86 TIME (Hour) 1:00 p.m. DATE

2 4 6 8 10 12 14 16 18 20 22 24 2 4 6 8 10 12 14 16 18 20 22 24

Comments

Cluster No. / Pumps On: 7, 8, 9, 10, 11, 12

Total Pumping Rate (gpm) *1

Total VOCs (ppm) — Well

	Inlet	Outlet
Perc	9.36	1.48
Toluol	3.40	0.55
TCE	1.68	0.30
M-Xylene	0.45	0.08
O+P Xylene	0.56	0.13
	15.45	2.54

Stripper: Inlet, Outlet, % Rem.

84% Removal

24 #/day

Total VOCs Emitted (lb/hr)

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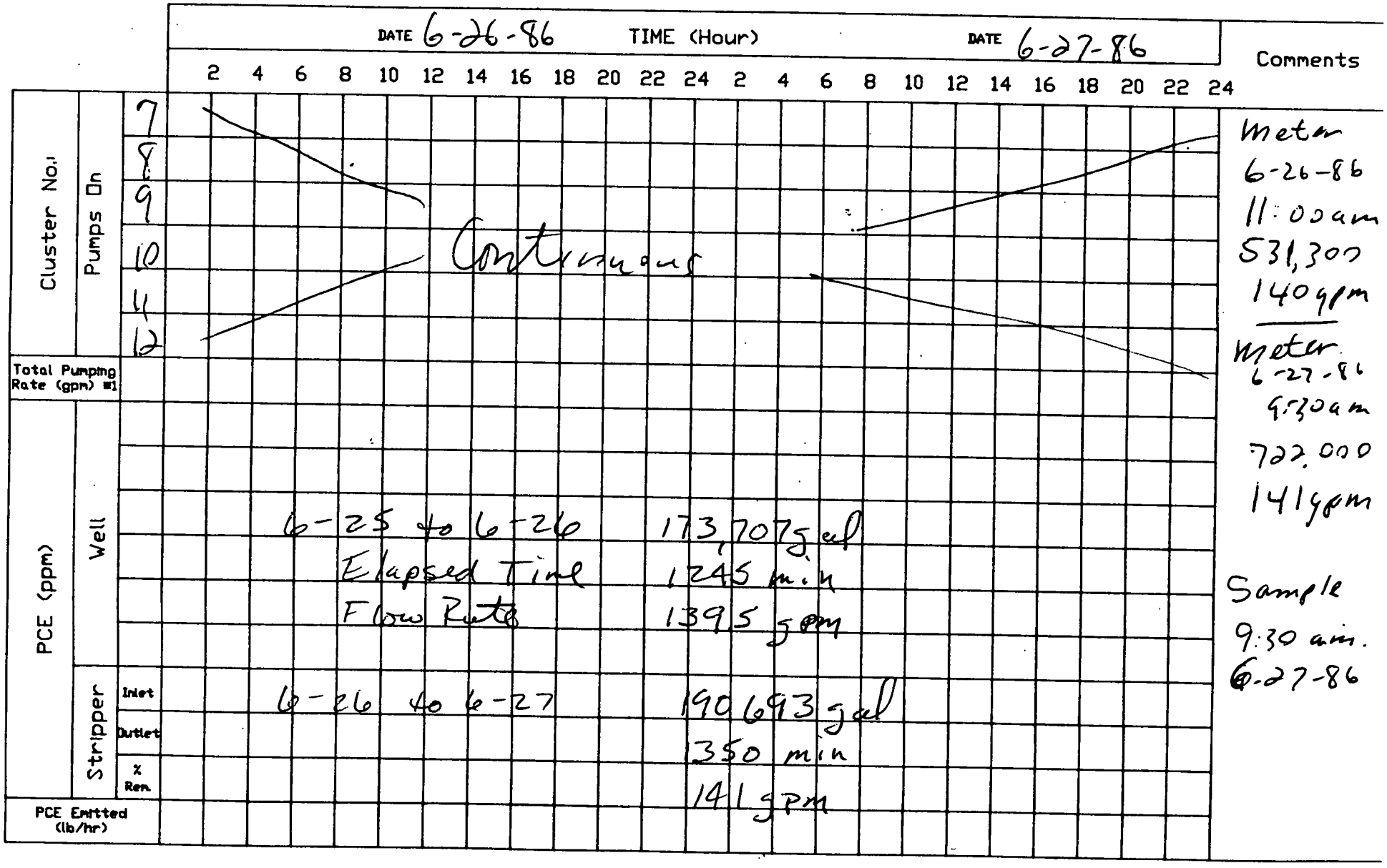
WAUSAU CHEMICAL EXTRACTION PROGRAM



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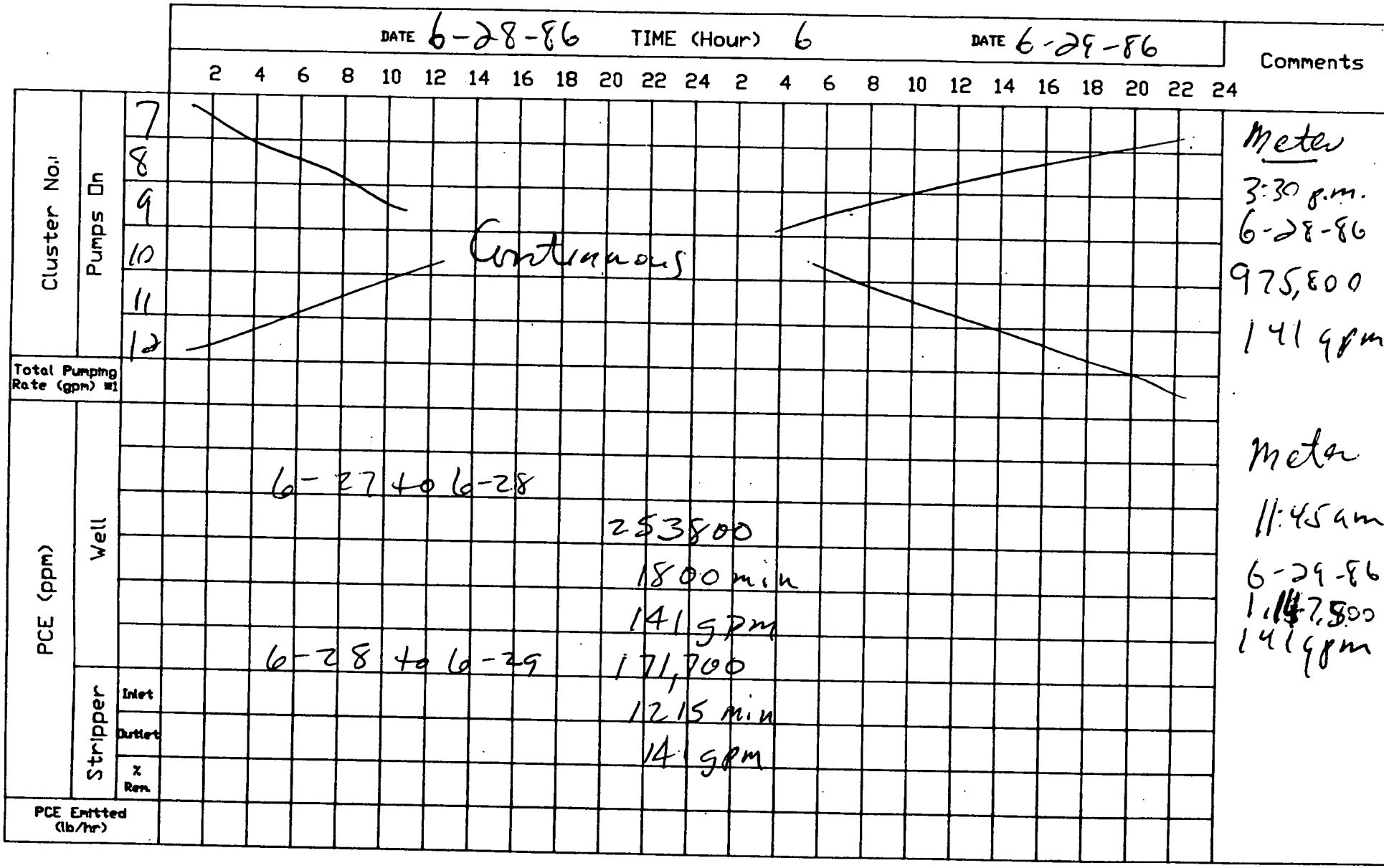

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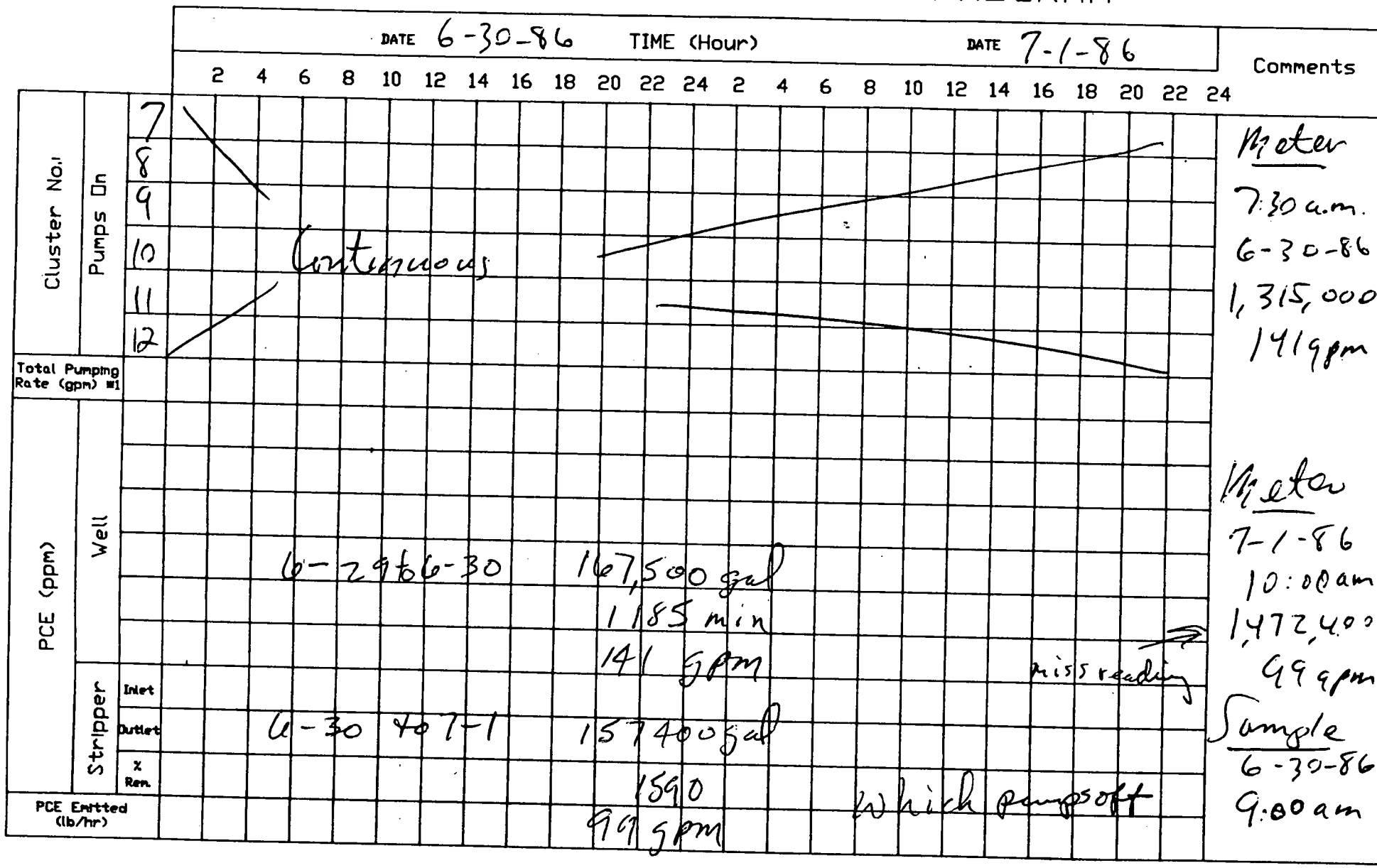

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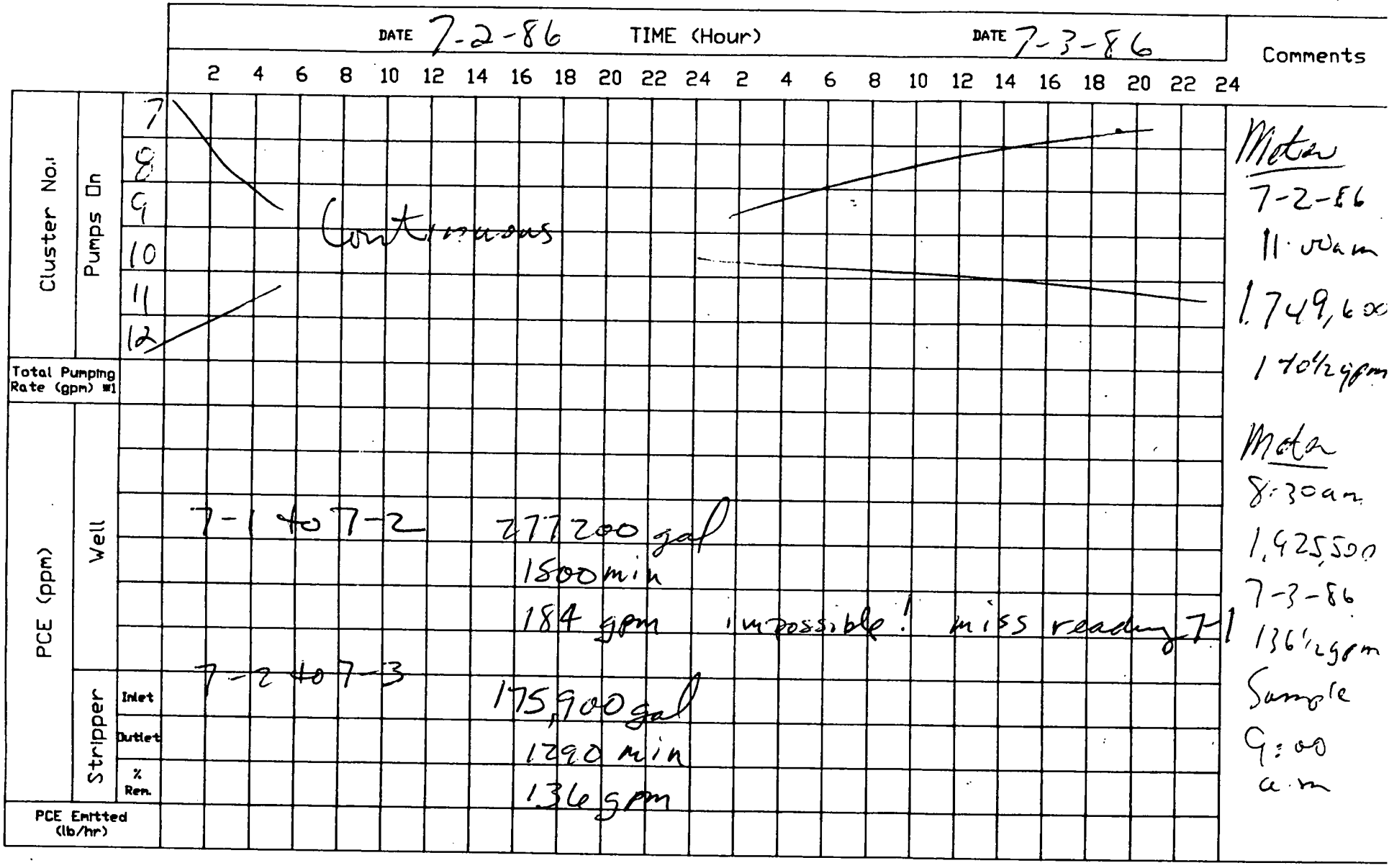

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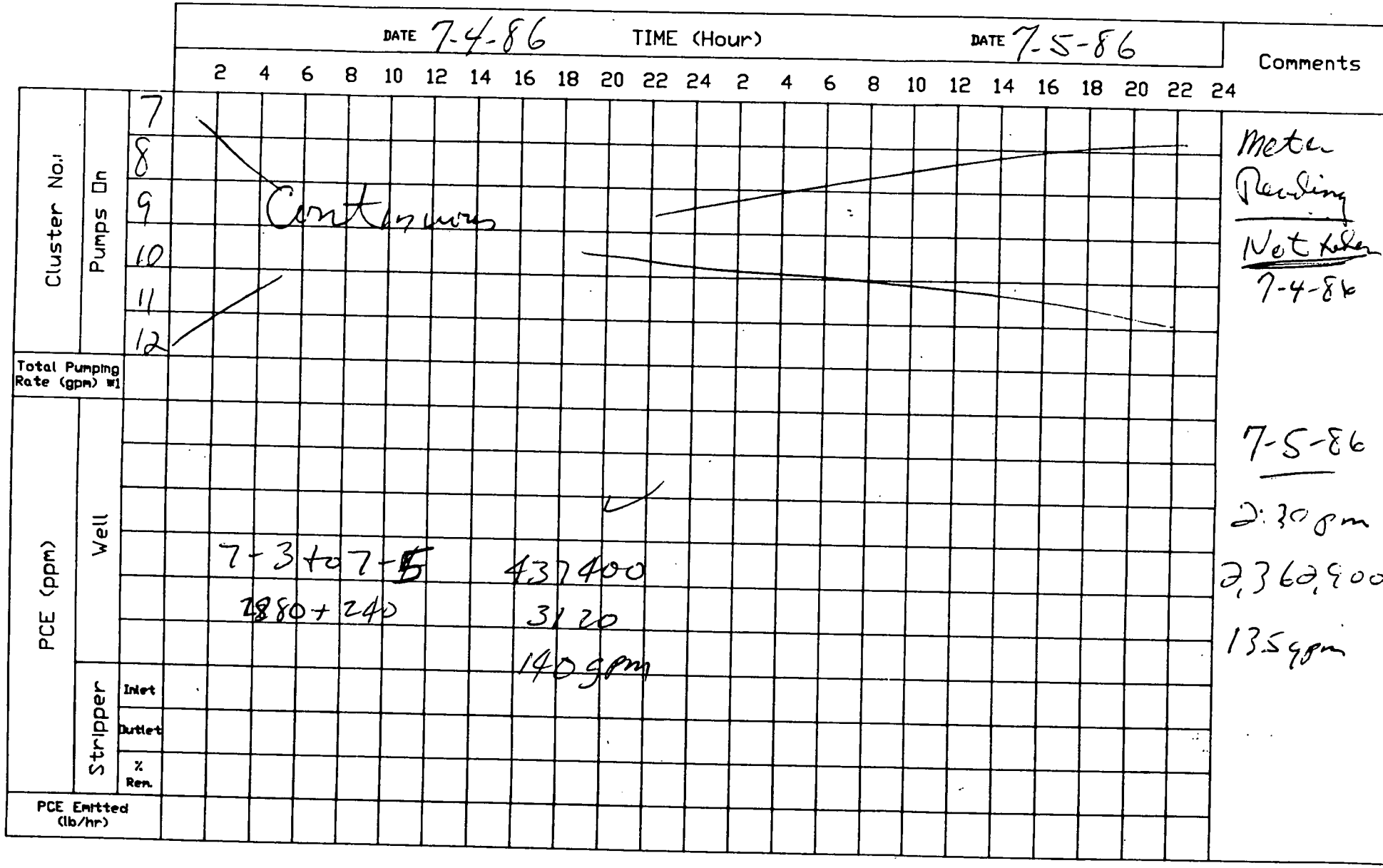

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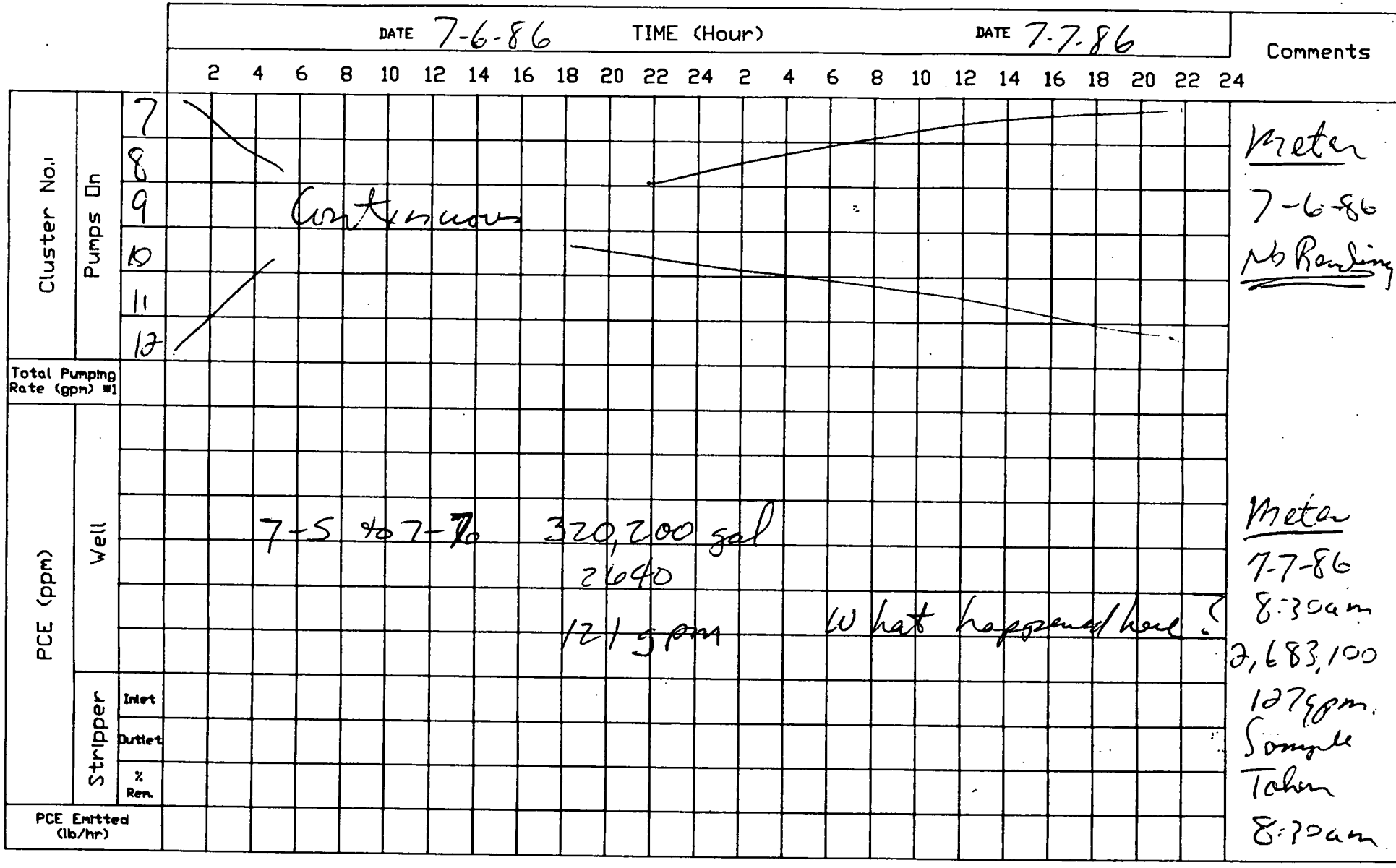

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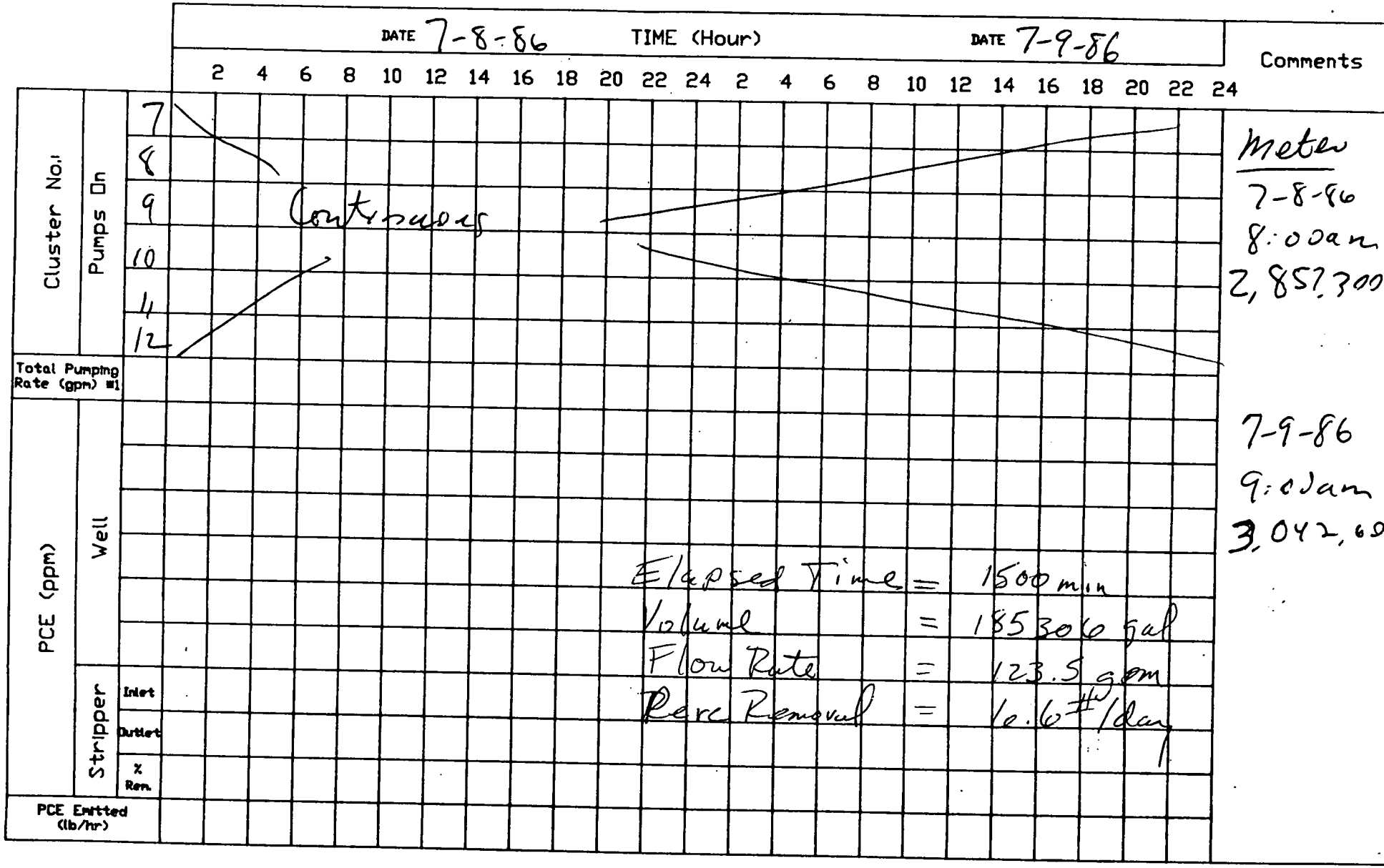

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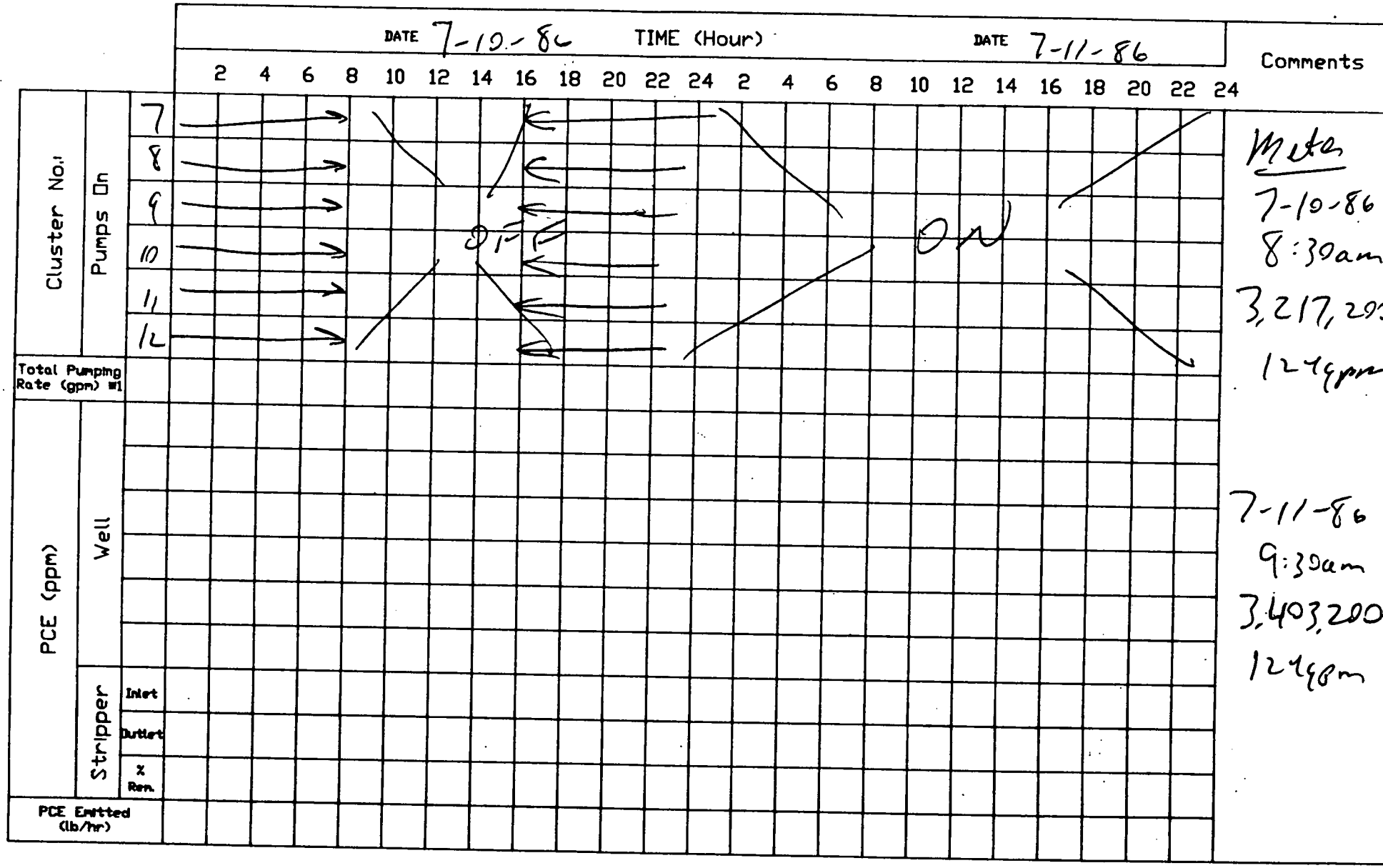

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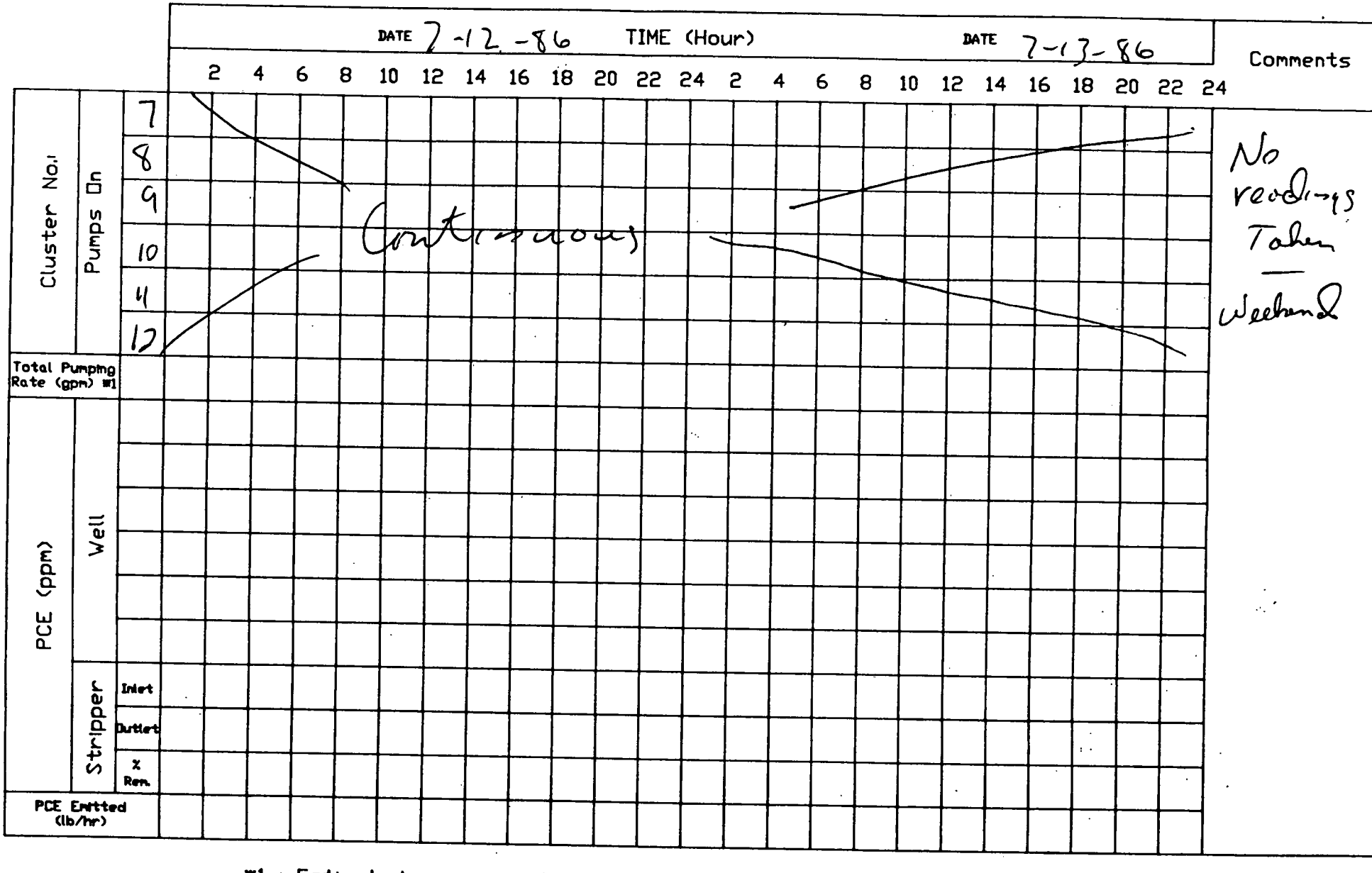

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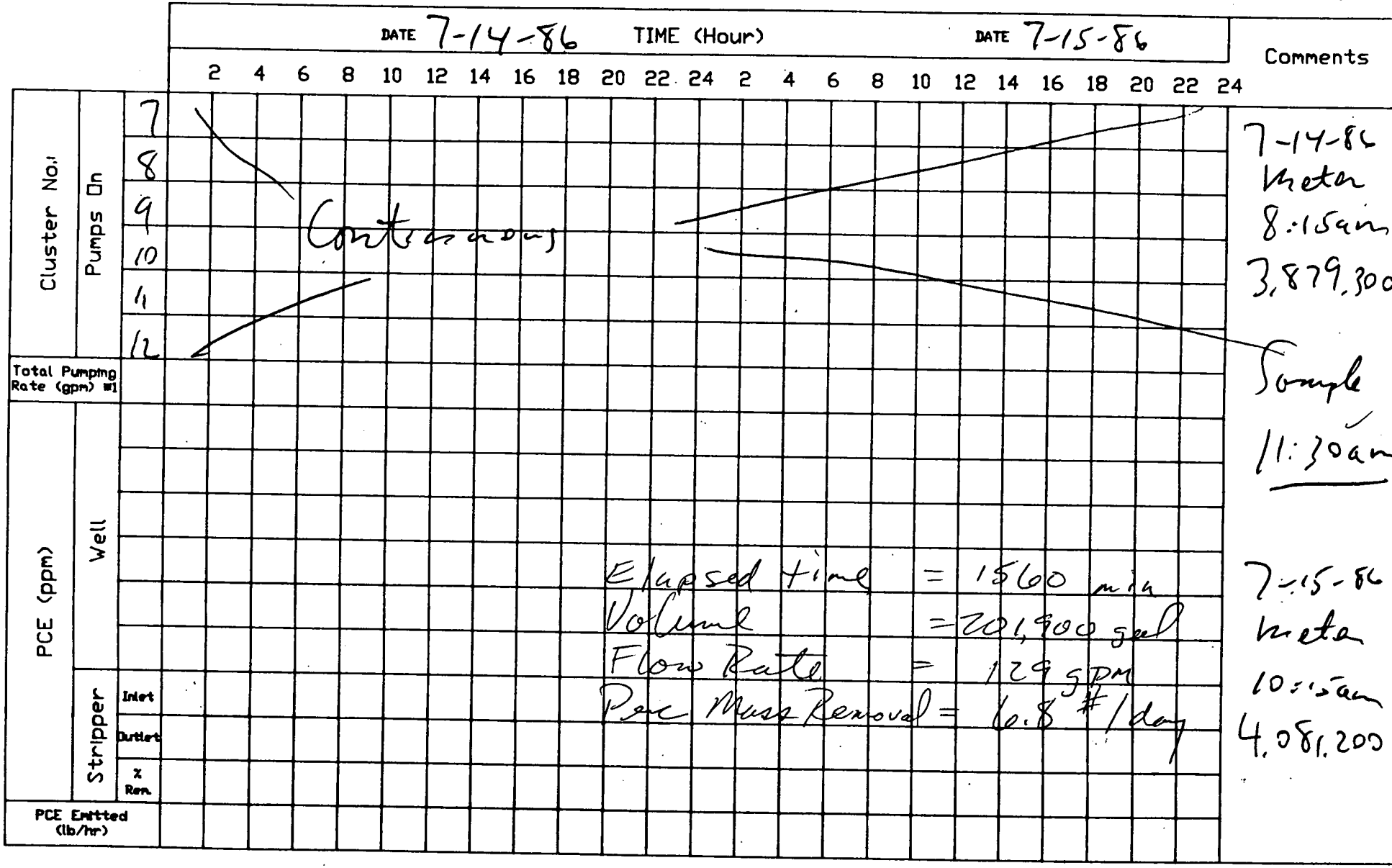

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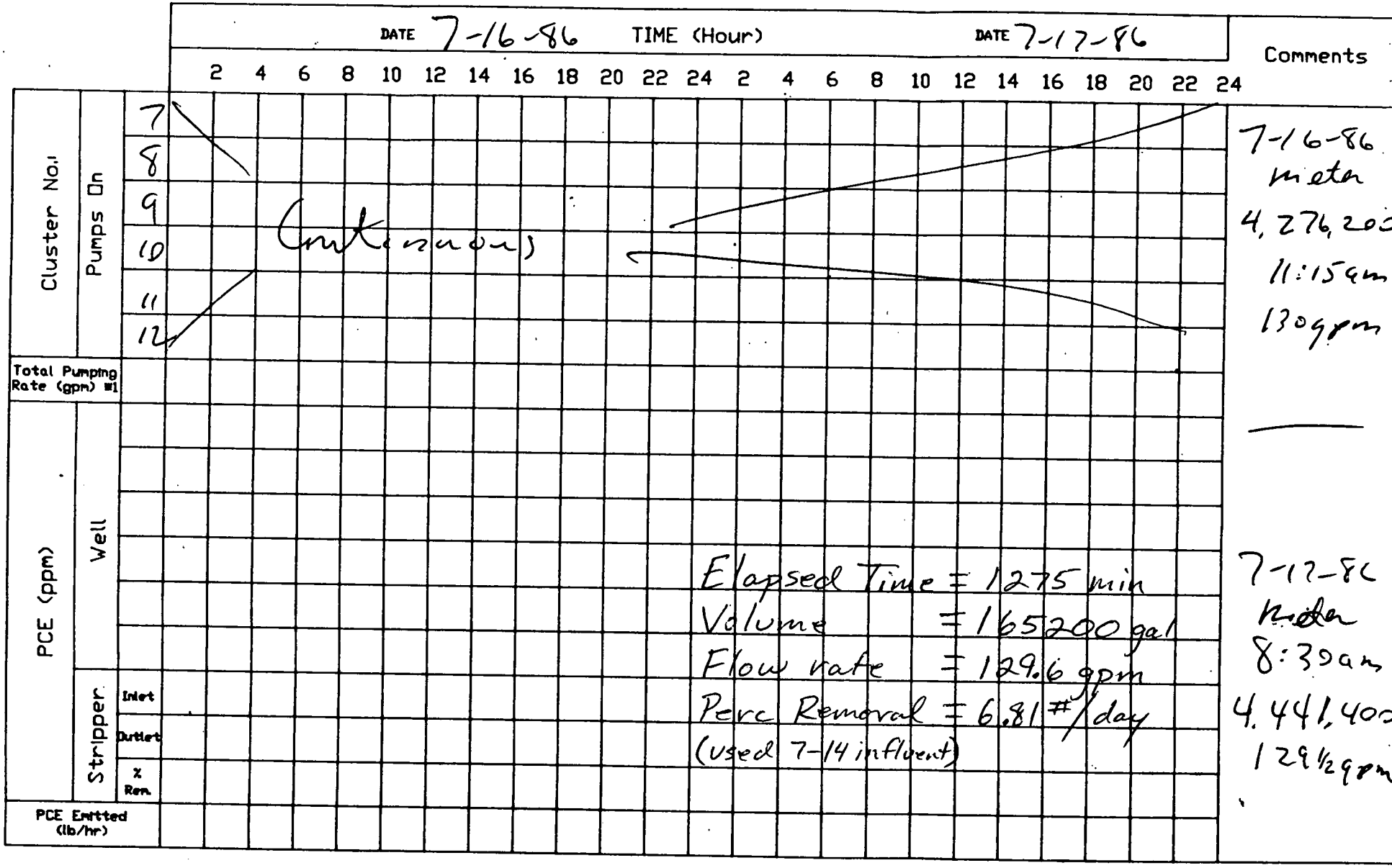

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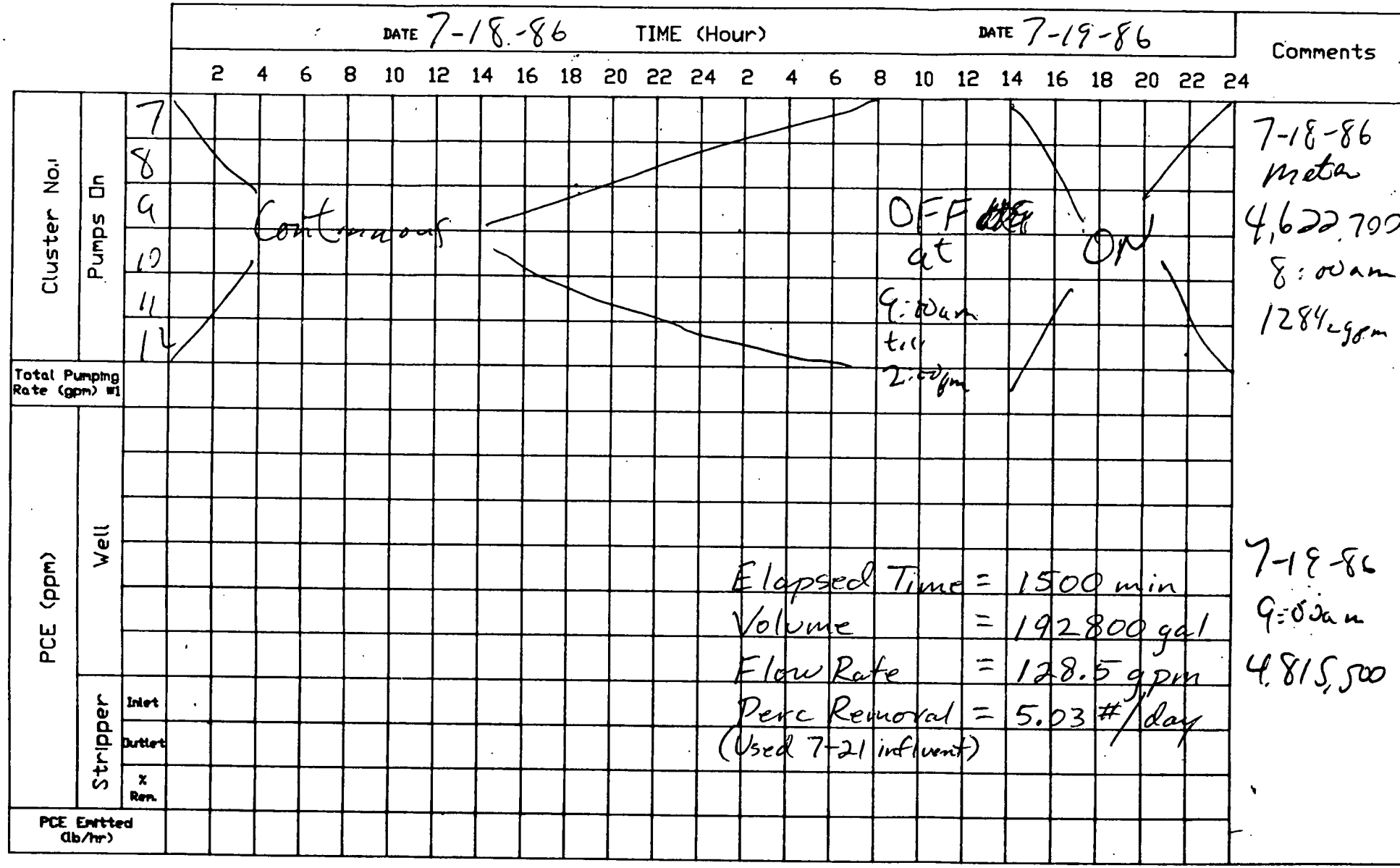

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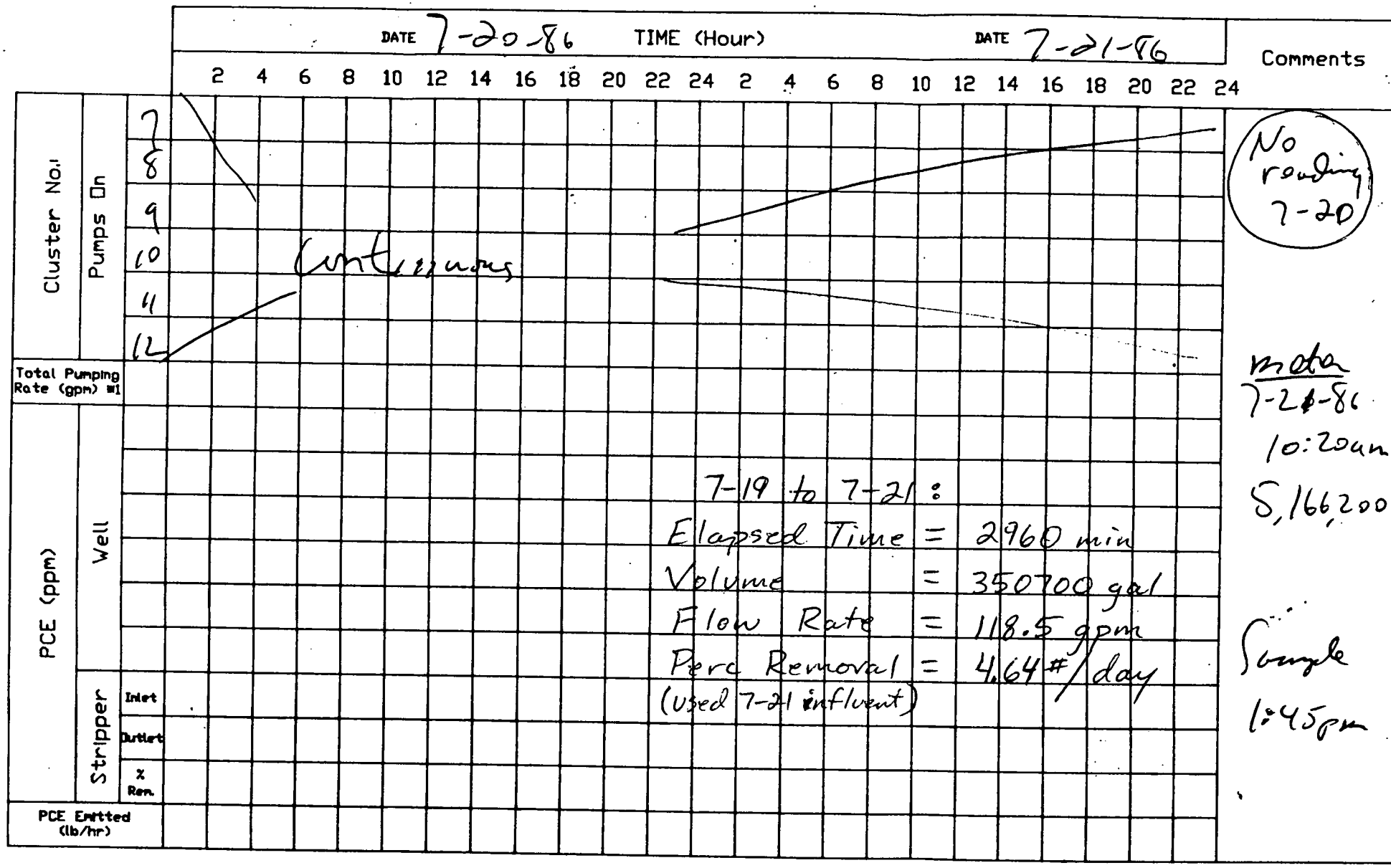

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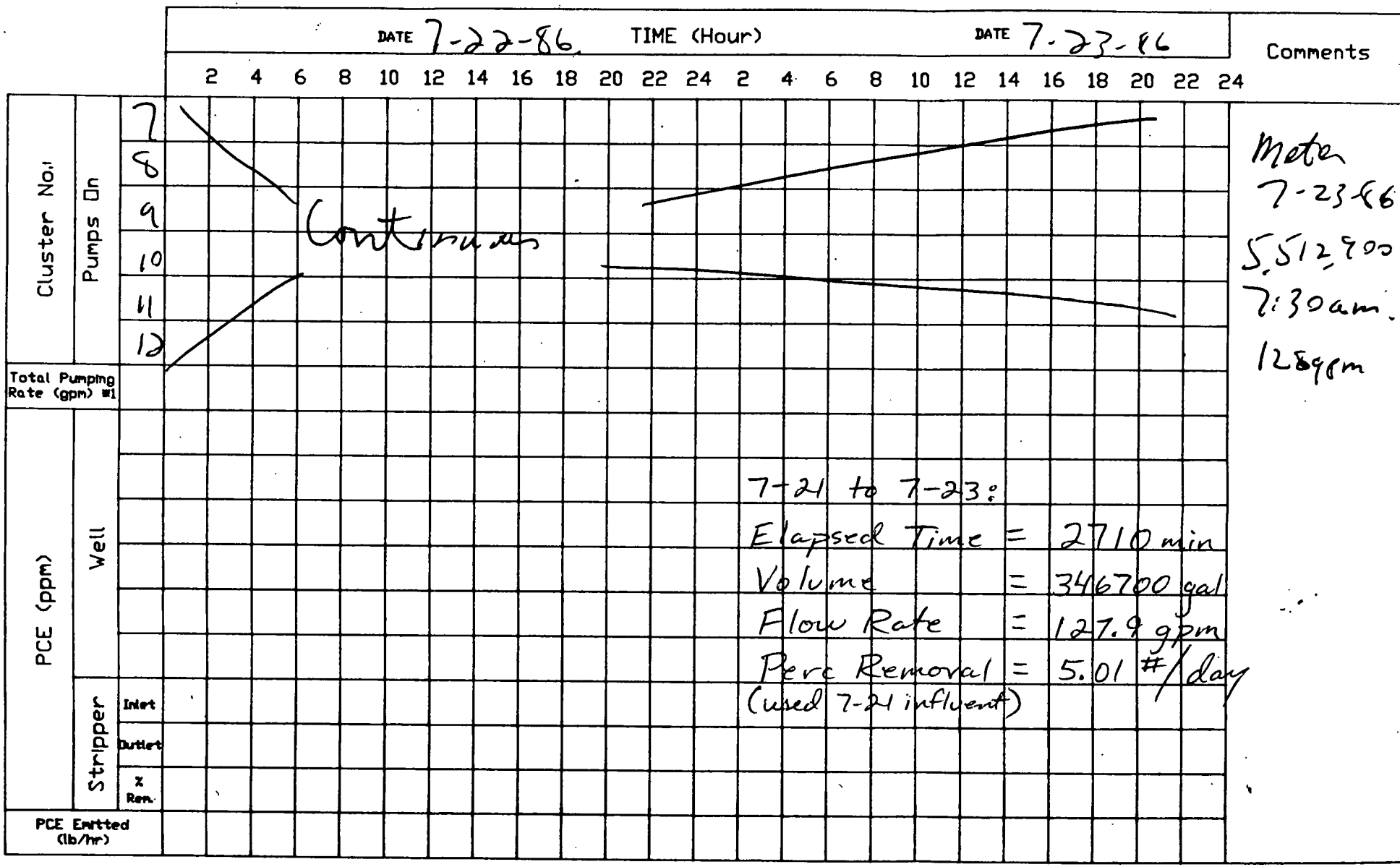

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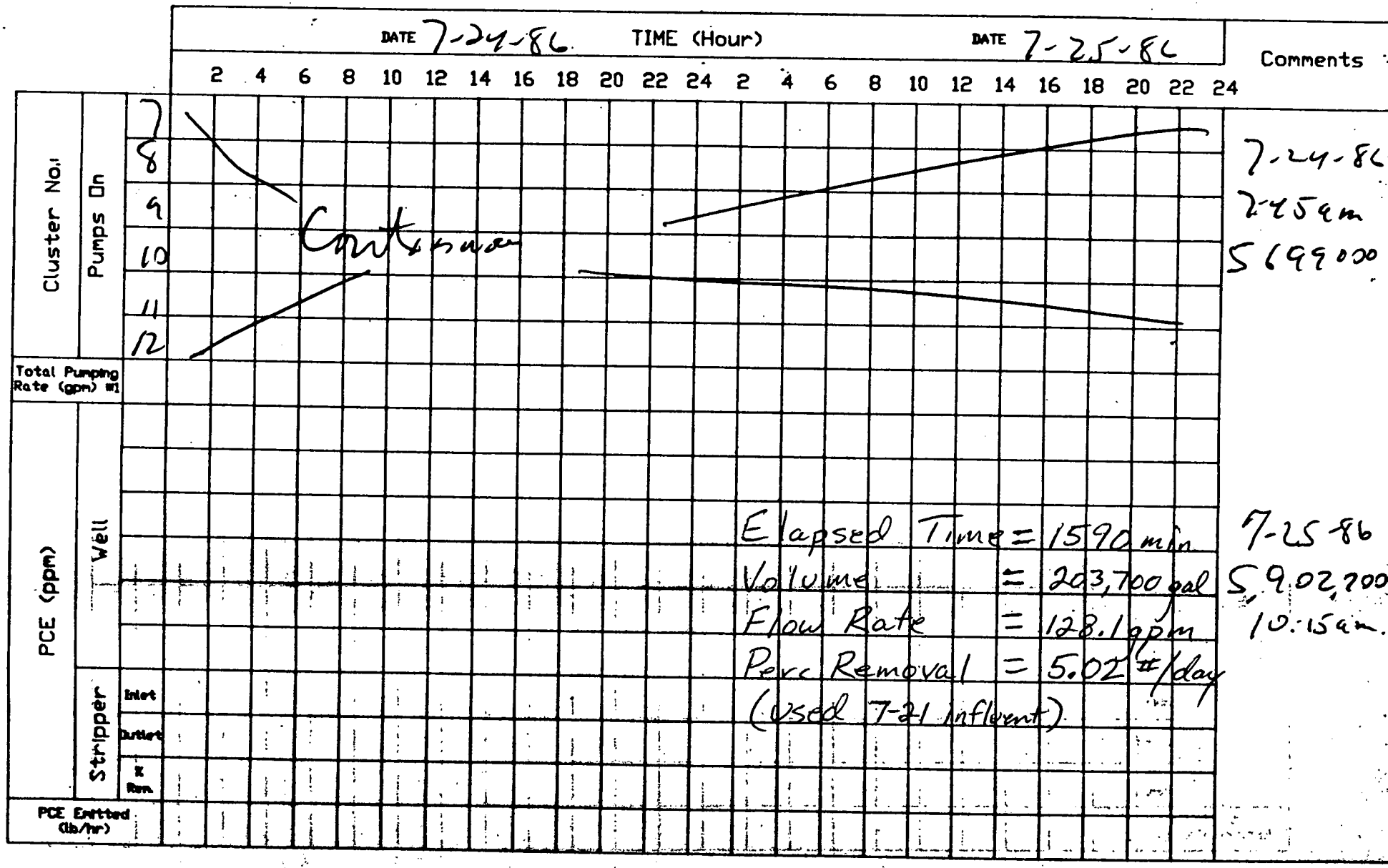

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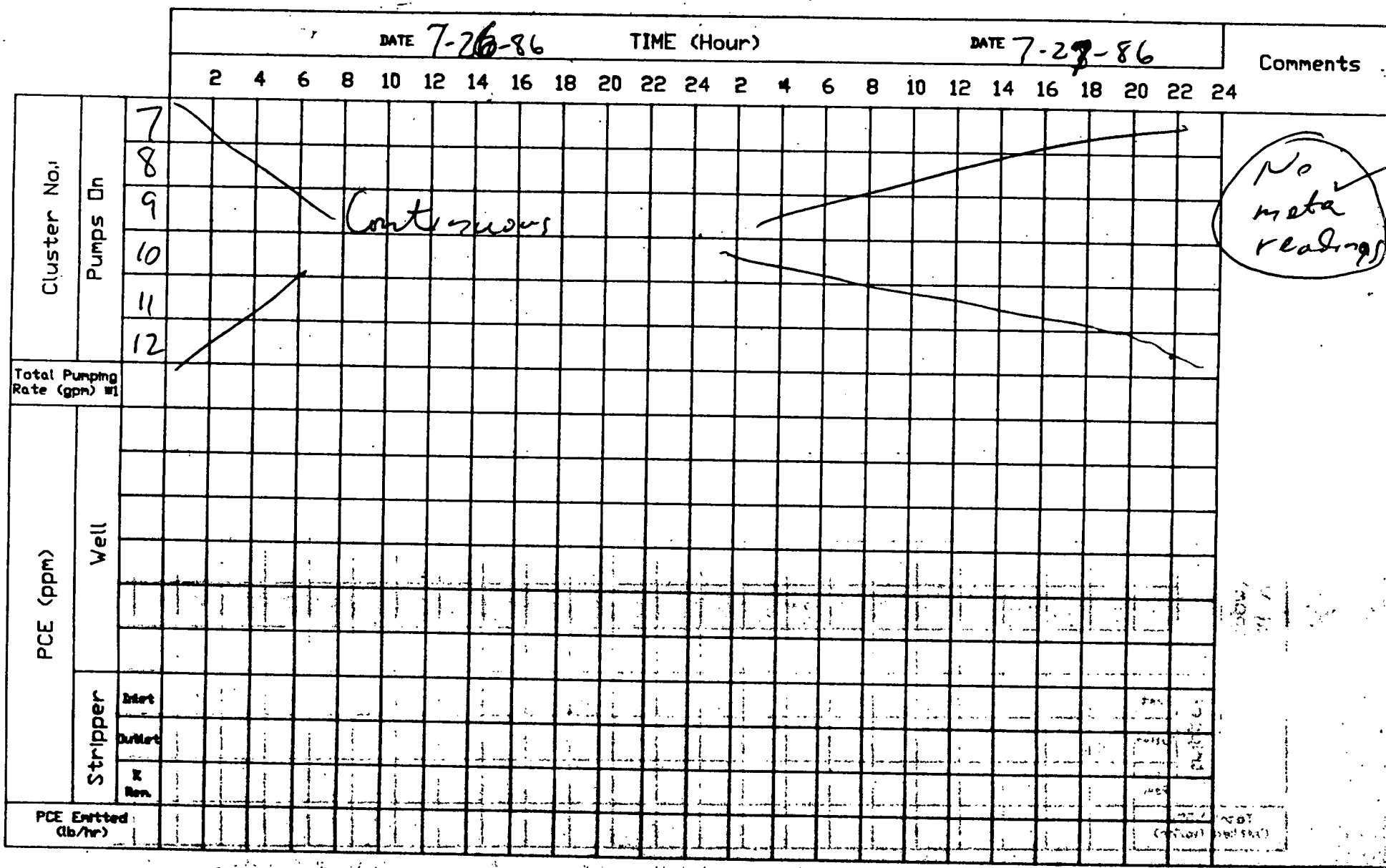

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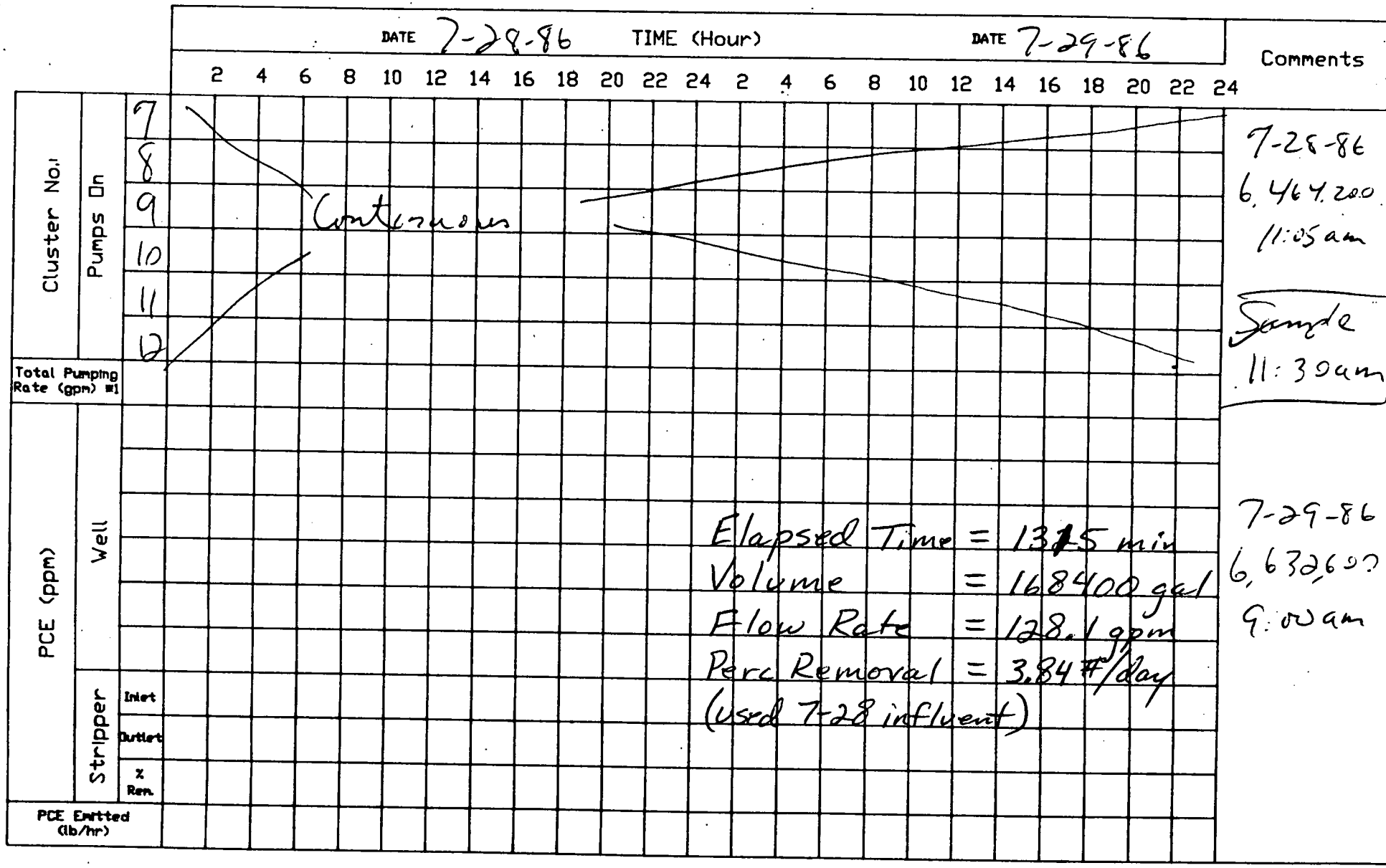

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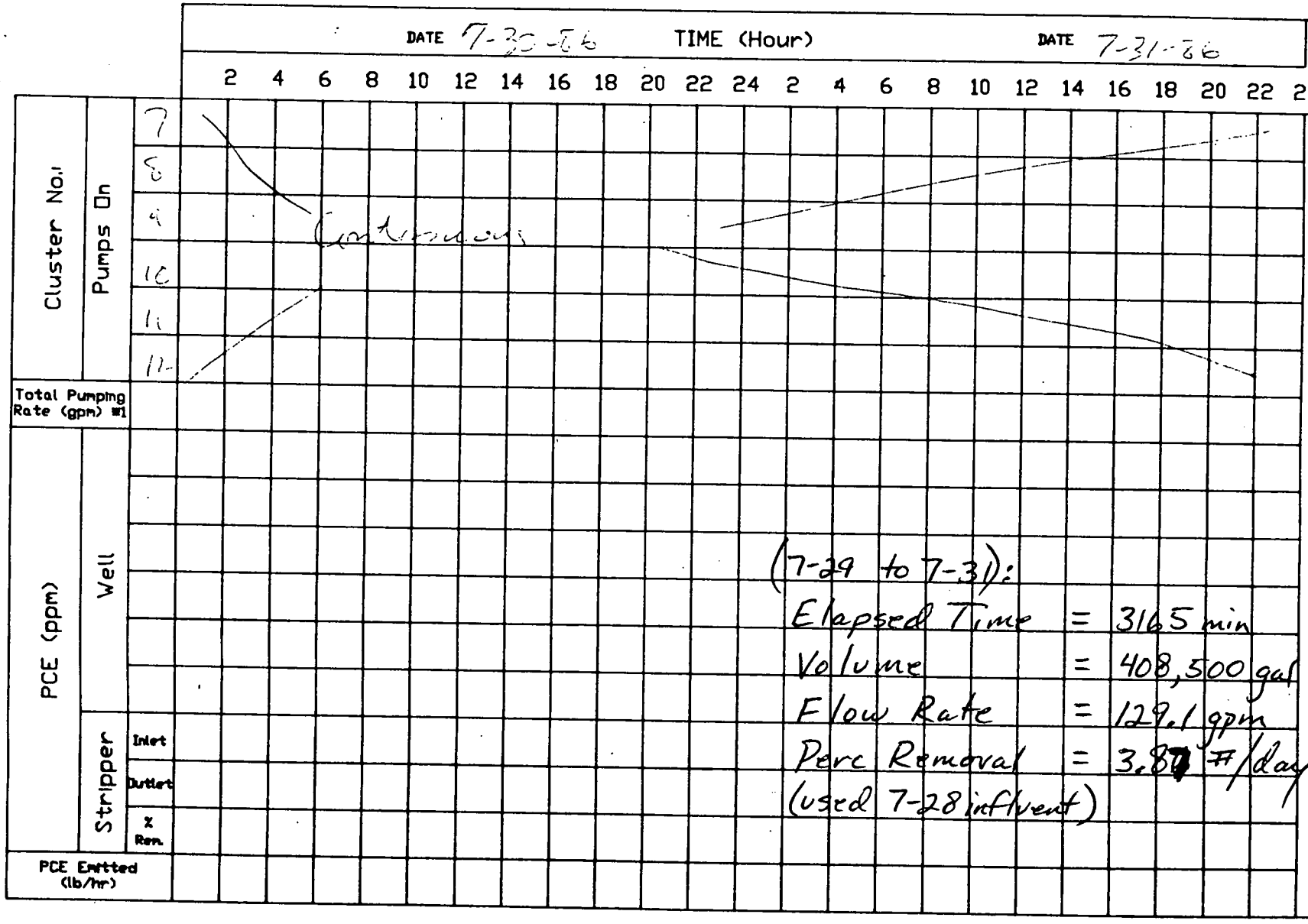

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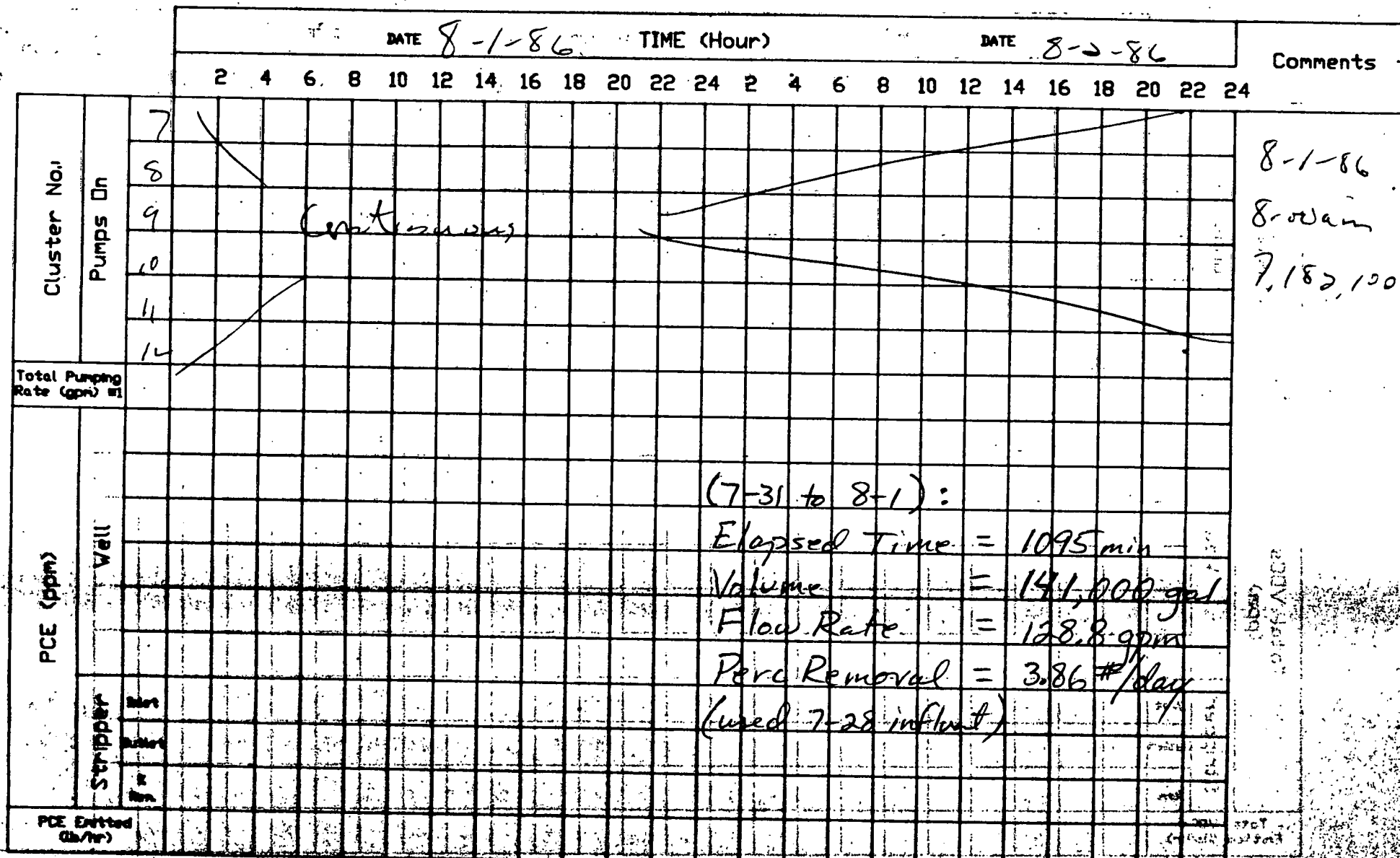

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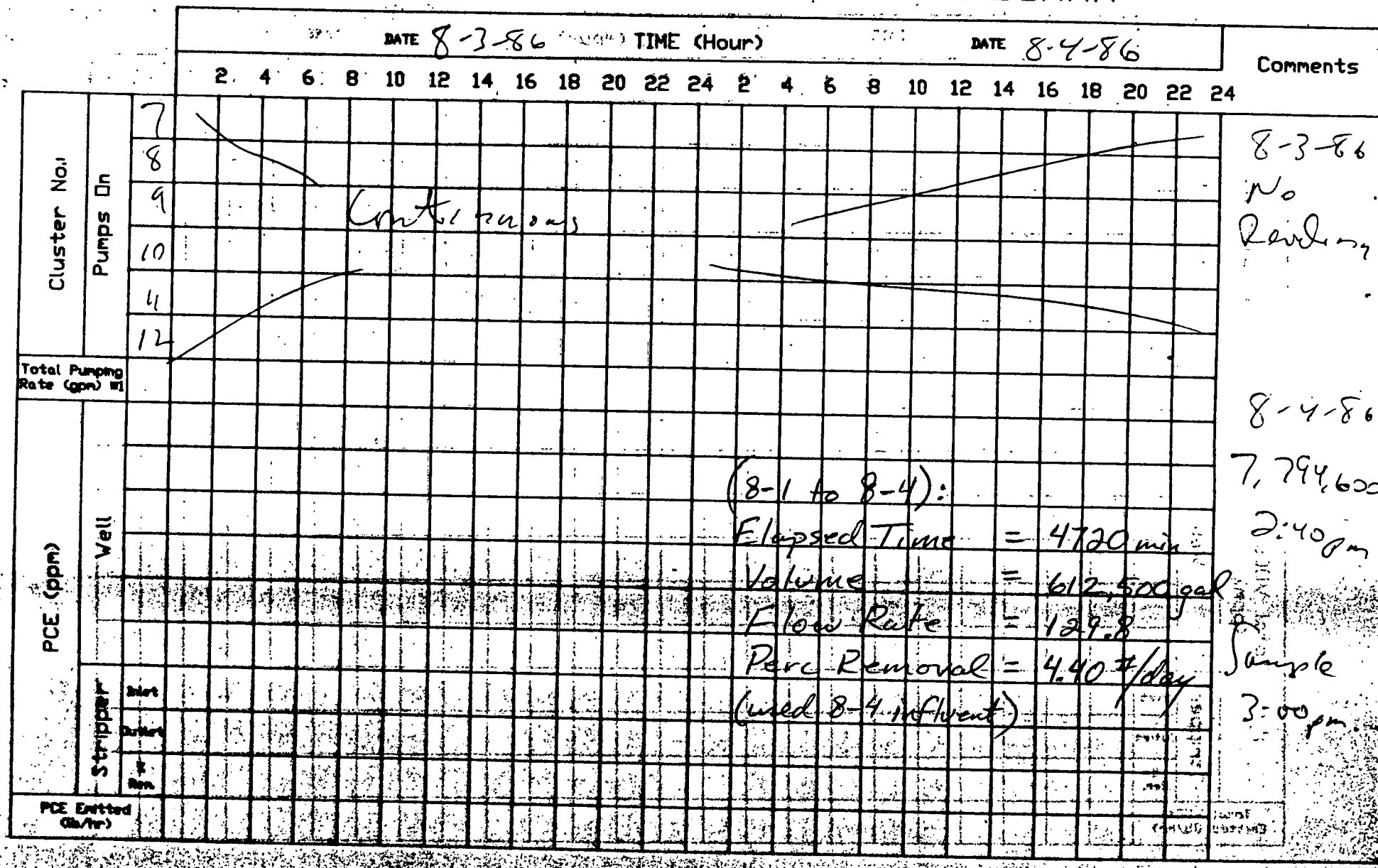
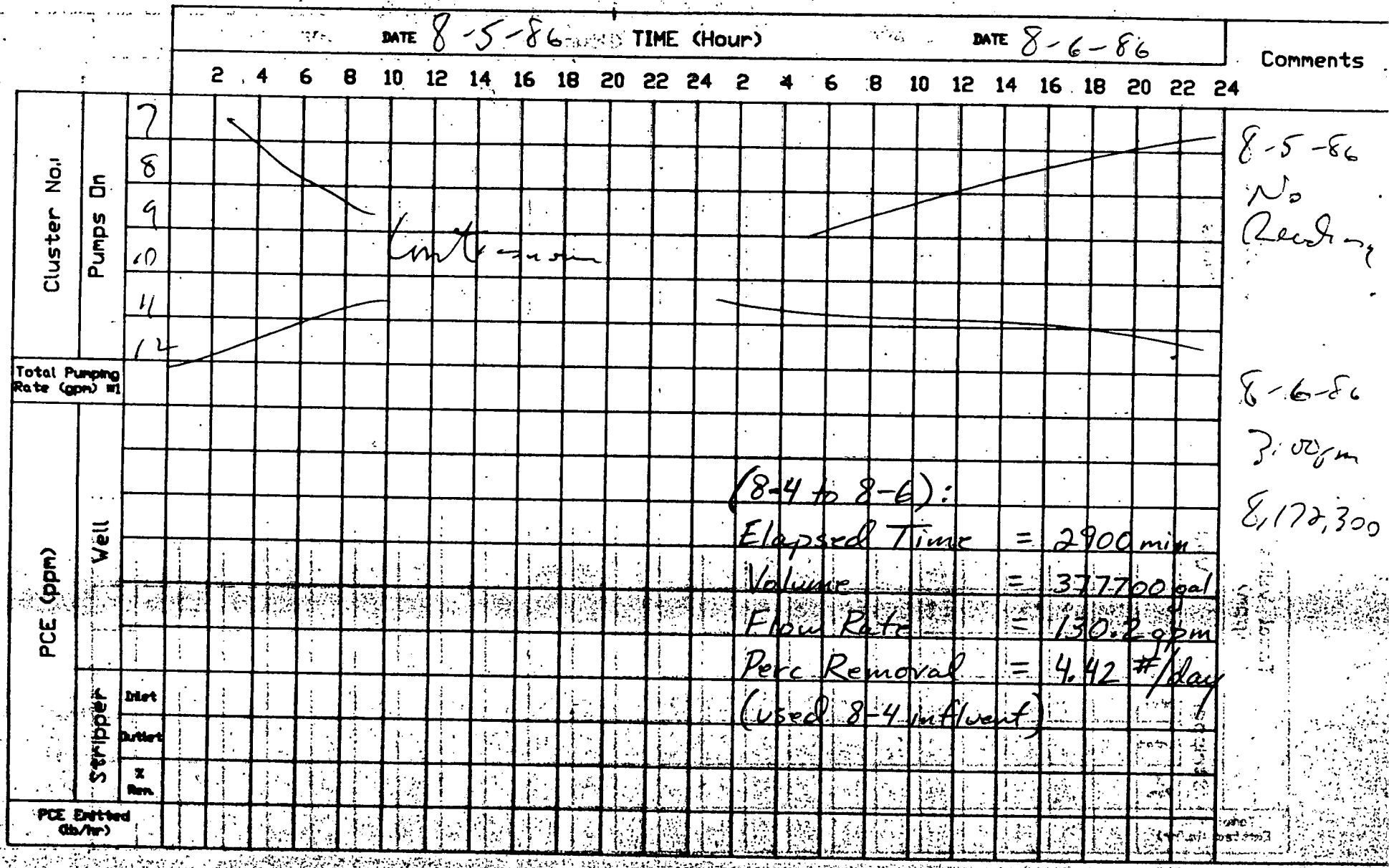
WAUSAU CHEMICAL EXTRACTION PROGRAM



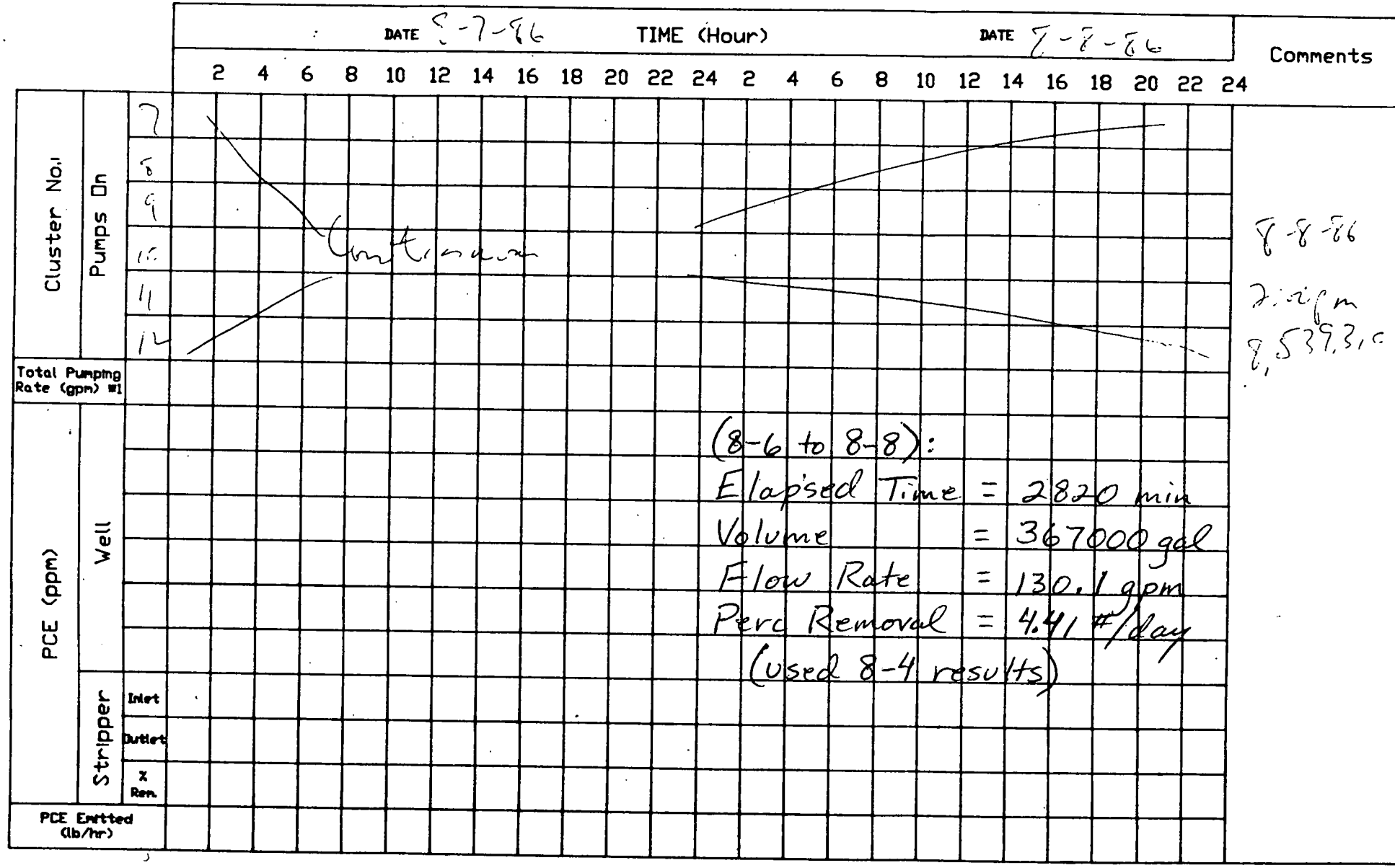
#1 : Estimated pumping rate = 27 gpm/pump
#2 : Limited by max. pumping capacity of 250 gpm
#3 : Using initial concentration
#4 : Using final concentration

WAUSAU CHEMICAL EXTRACTION PROGRAM



#1 : Estimated pumping rate = 27 gpm/pump
#2 : Limited by max. pumping capacity of 100 gpm
#3 : Using initial concentration
#4 : Using final concentration

WAUSAU CHEMICAL EXTRACTION PROGRAM



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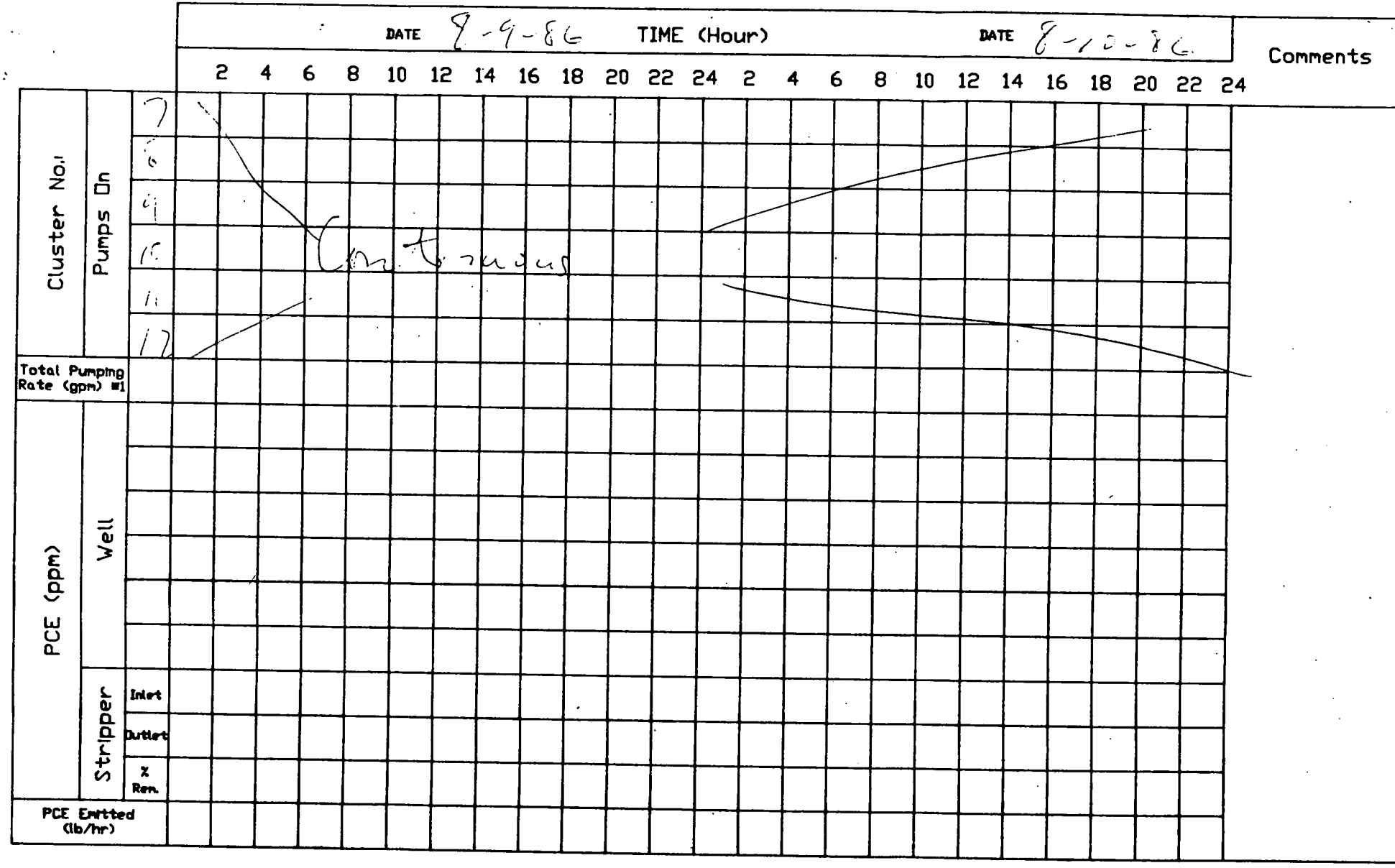
WAUSAU CHEMICAL EXTRACTION PROGRAM



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WAUSAU CHEMICAL EXTRACTION PROGRAM

DATE 8-11-86 TIME (Hour) DATE 8-12-86

Comments

			2	4	6	8	10	12	14	16	18	20	22	24	2	4	6	8	10	12	14	16	18	20	22	24	Comments
Cluster No.:	Pumps On	7																									8-11-86
		8																									3:00pm
		9			Continue																						9,061,300
		10																									
		11																									
		12																									
Total Pumping Rate (gpm) *1																											
PCE (ppm)	Well																										8-12-86
																											7:30am
																											9,244,700
	Stripper	Inlet															281										Sample
		Outlet															0.34										7:30am
		% Rem.																									
PCE Emitted (lb/hr)																											

(8-8 to 8-11):
Elapsed Time = 4380 min
Volume = 522,000 gal
Flow Rate = 119.2
Perc Removal = 3.53 #/day
(used 8-12 results)

(8-11 to 8-12):
Elapsed Time = 990 min
Volume = 183400 gal
Flow Rate = 185.3 gpm
Perc Removal = X
(used 8-12 results)

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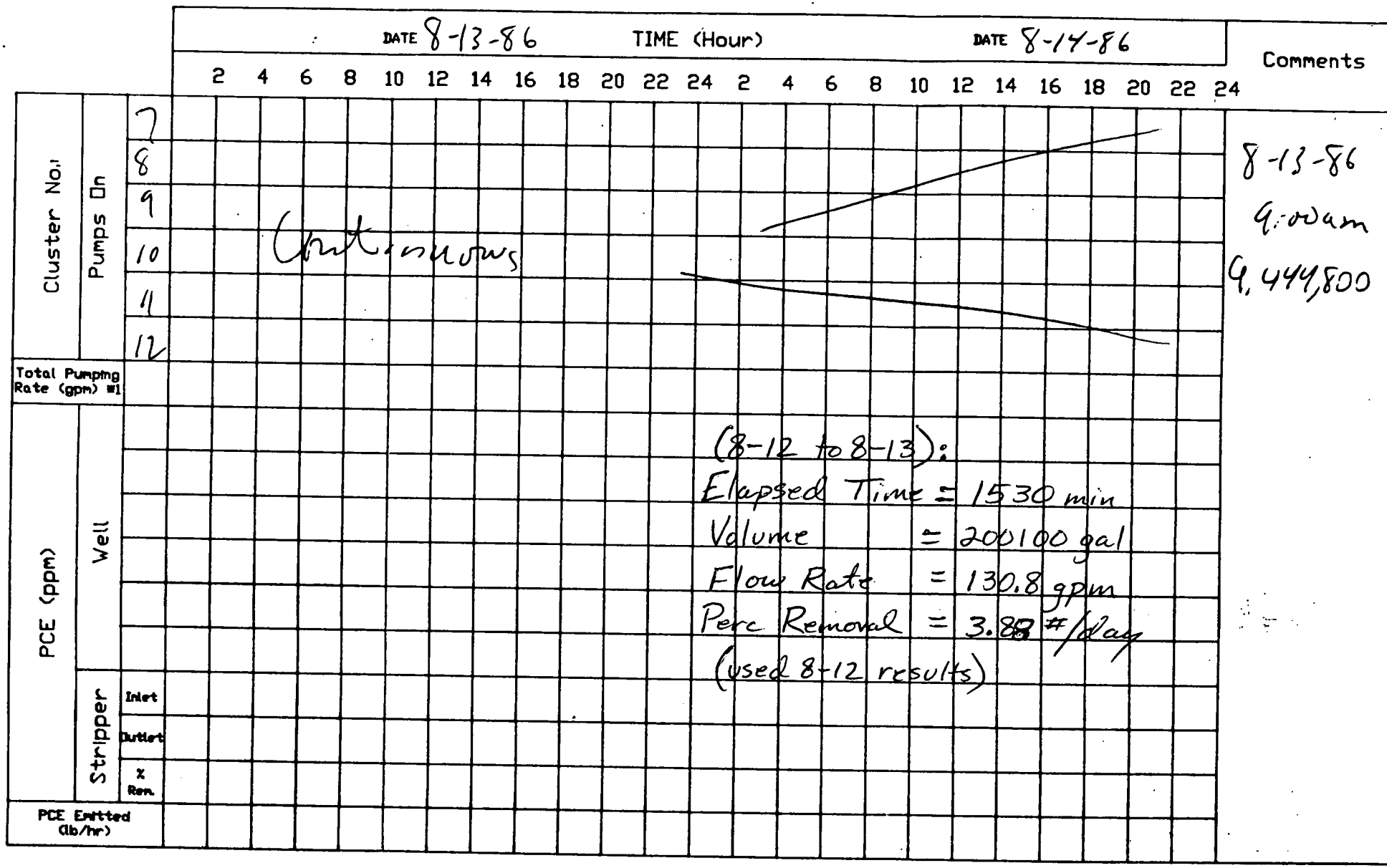
WAUSAU CHEMICAL EXTRACTION PROGRAM



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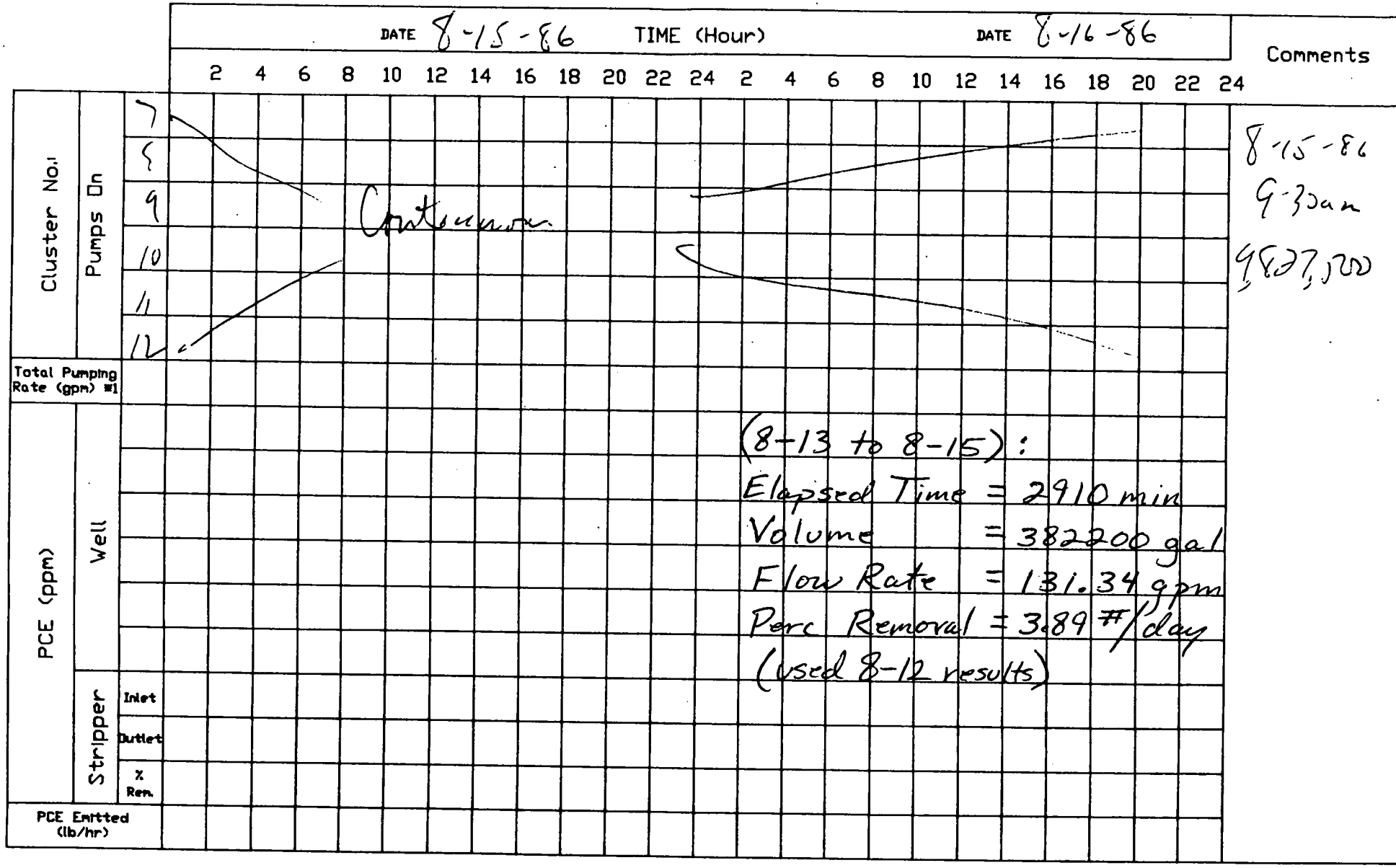

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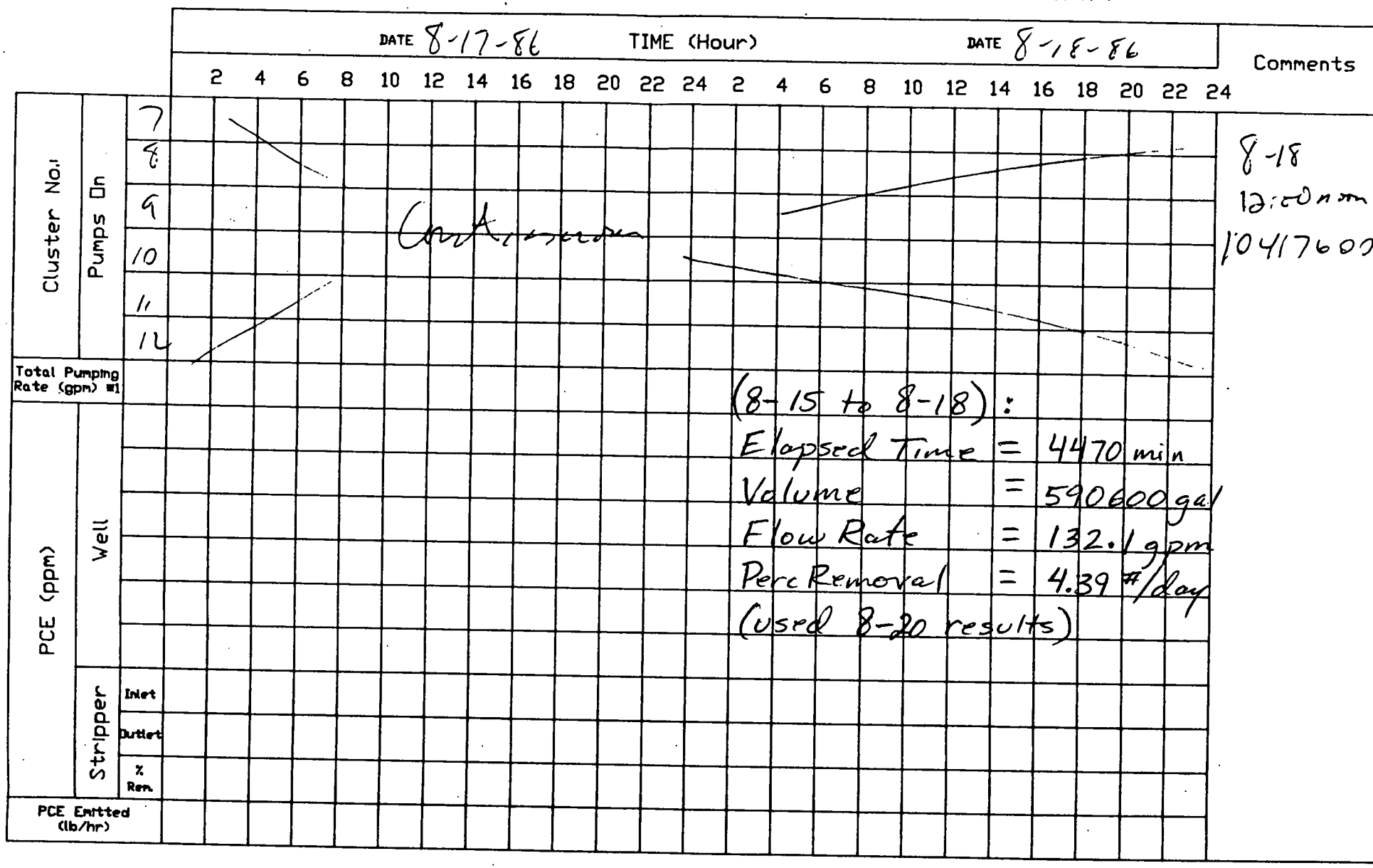

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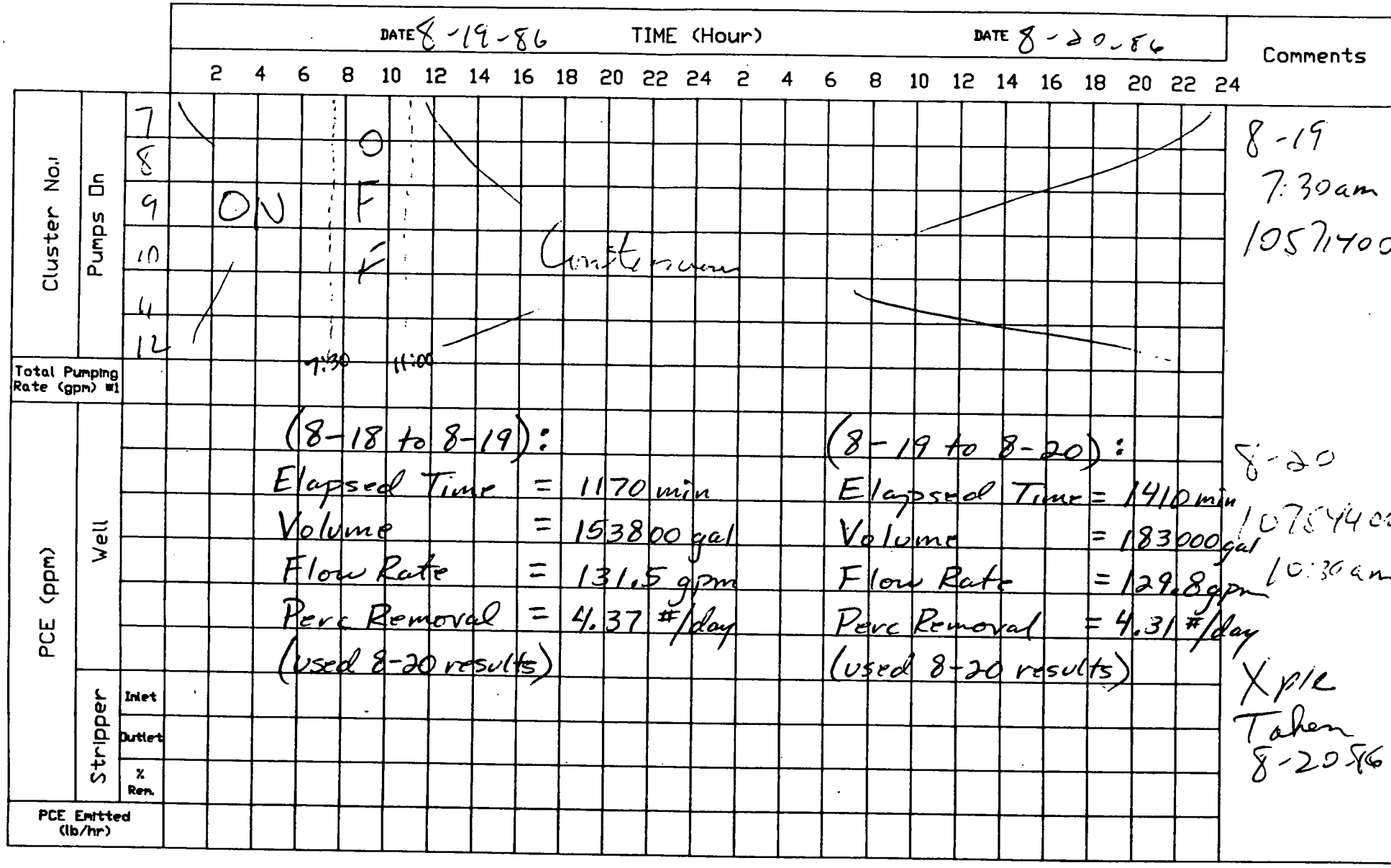

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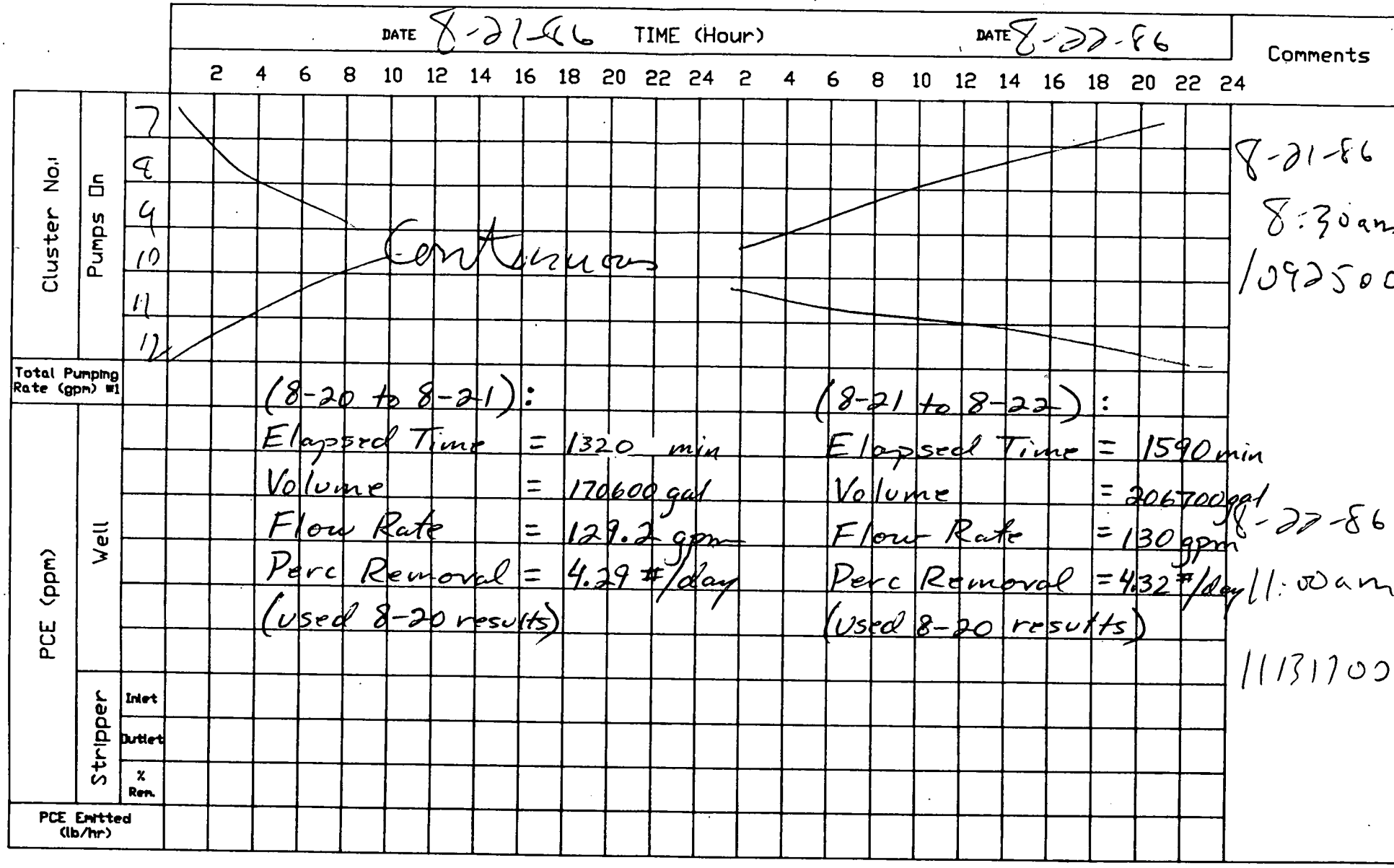

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WAUSAU CHEMICAL EXTRACTION PROGRAM

DATE 8-23-86 TIME (Hour) DATE 8-24-86

Cluster No.	Pumps On		2	4	6	8	10	12	14	16	18	20	22	24	2	4	6	8	10	12	14	16	18	20	22	24	Comments
		7	Sometime over weekend control																								
		8	box shorted out & burned out wiring																								
		9	which shut system down.																								
		10	Discovered Monday morning 8-25-86																								
		11	about 10:00 am. Meter reading 11,230,450																								
		12																									
Total Pumping Rate (gpm) *1																											
PCE (ppm)	Well																										
	Stripper	Inlet																									
		Outlet																									
		% Ren.																									
PCE Emitted (lb/hr)																											

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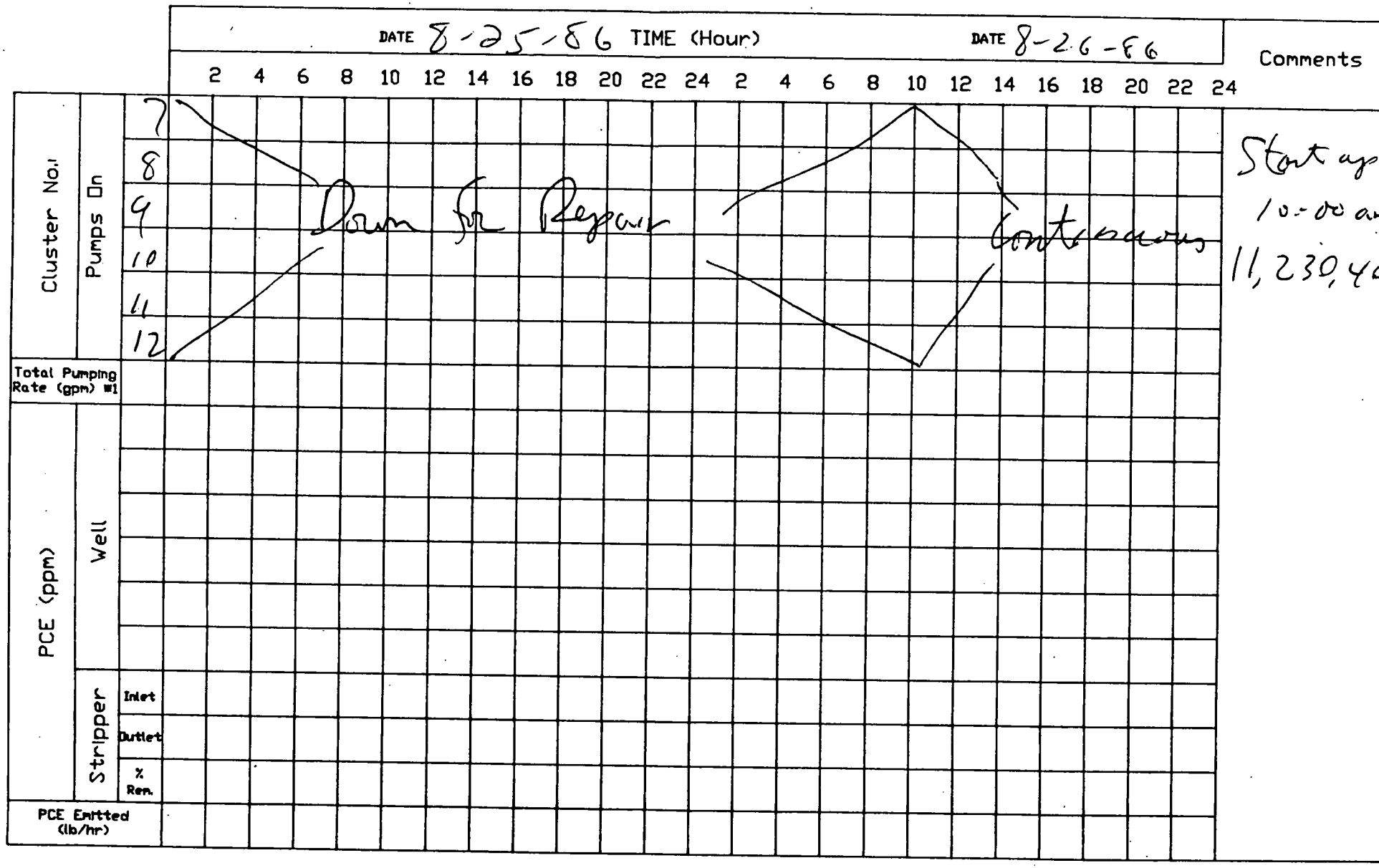

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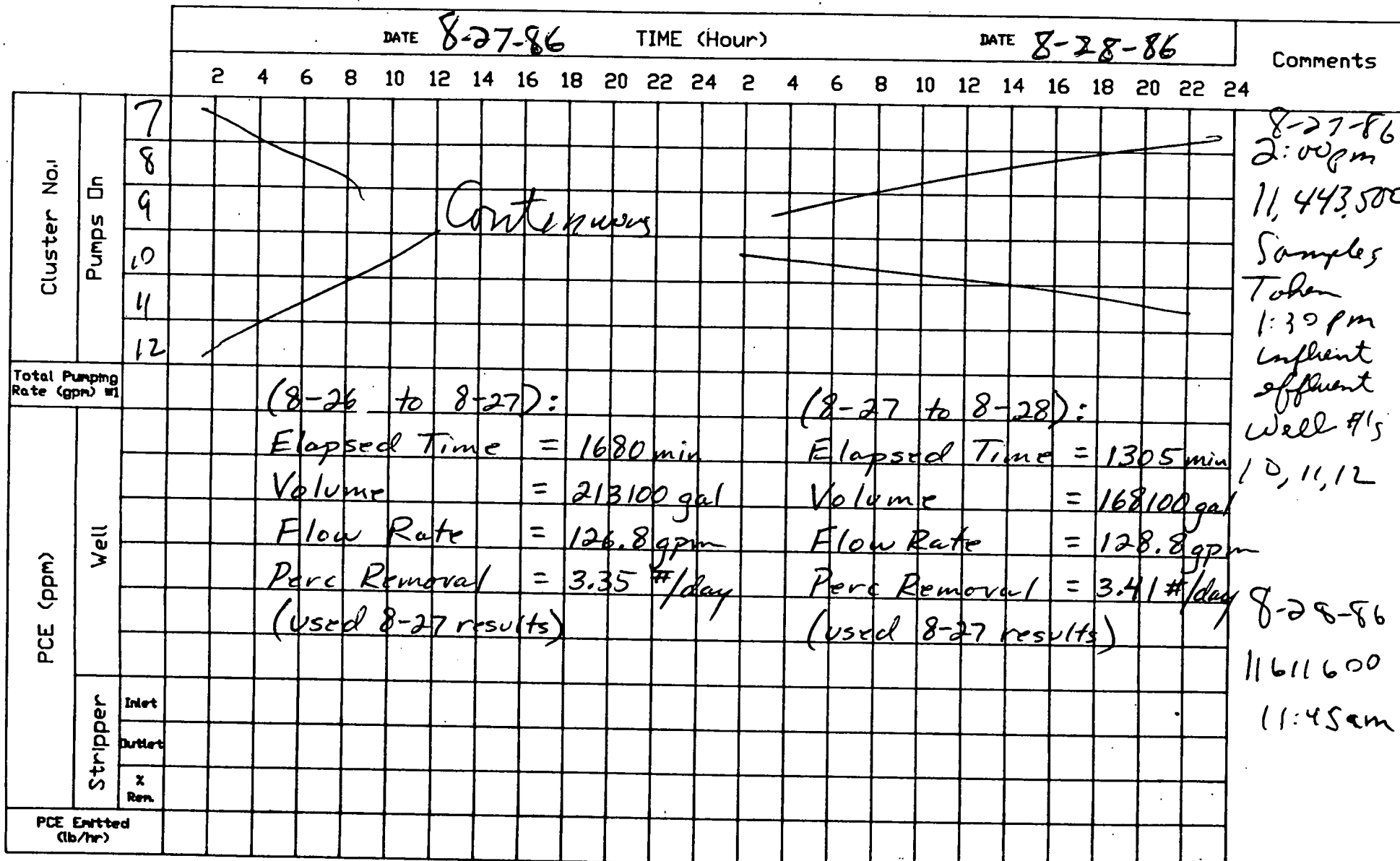
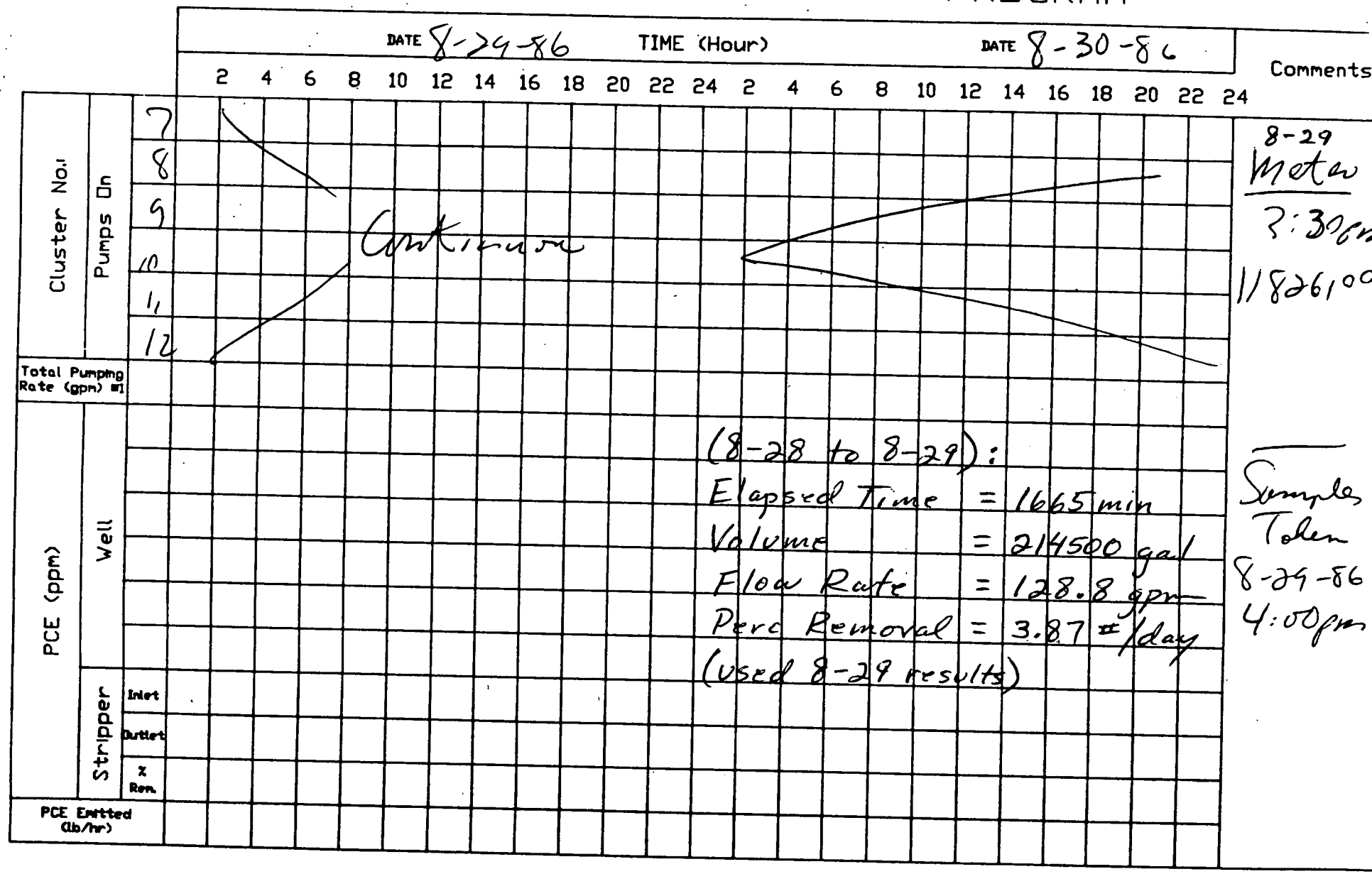
*4 : Using final concentration

WAUSAU CHEMICAL EXTRACTION PROGRAM



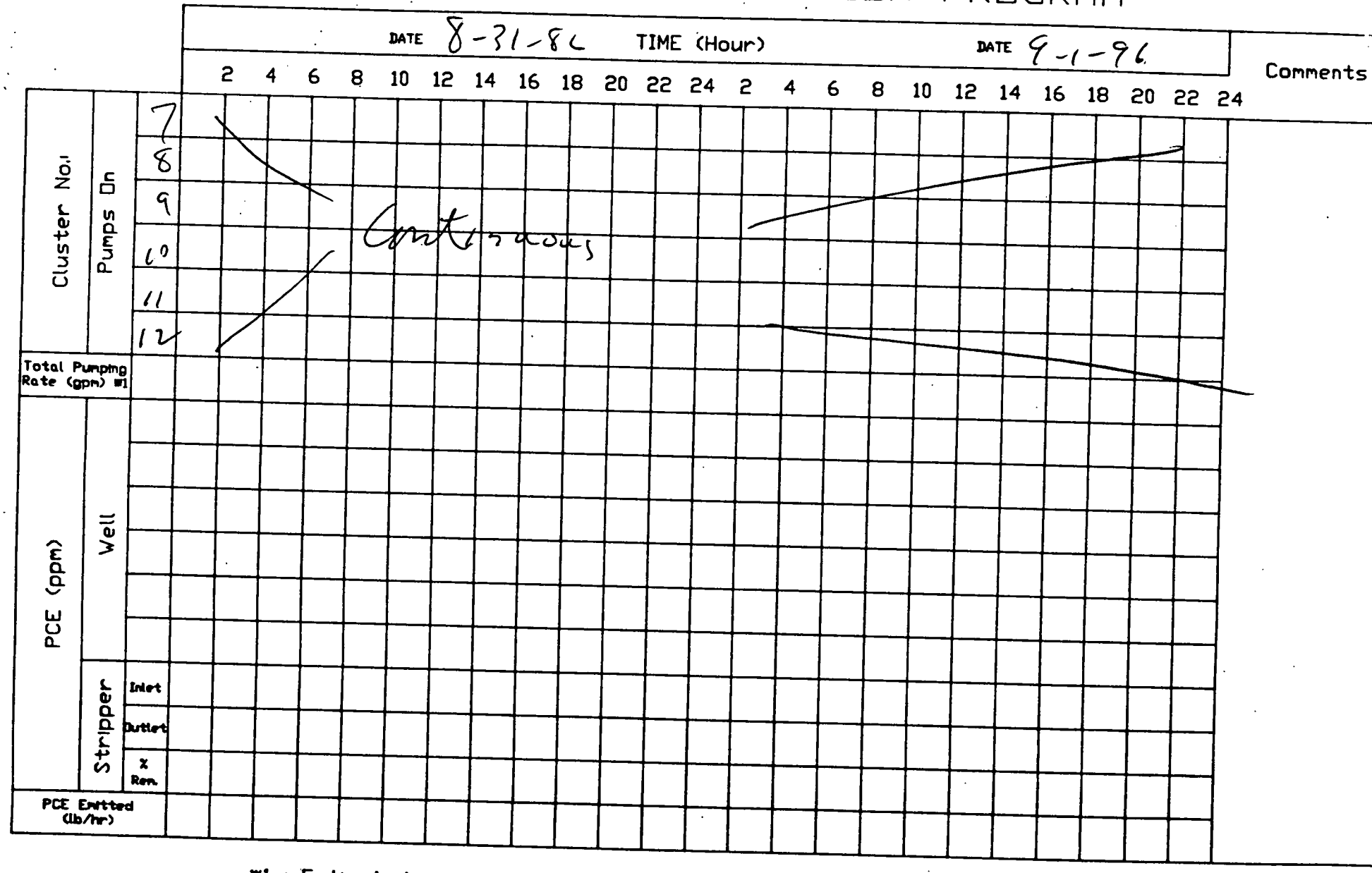
*1 : Estimated pumping rate = 27 gpm/pump
*2 : Limited by max. pumping capacity of 150 gpm
*3 : Using initial concentration
*4 : Using final concentration

WAUSAU CHEMICAL EXTRACTION PROGRAM



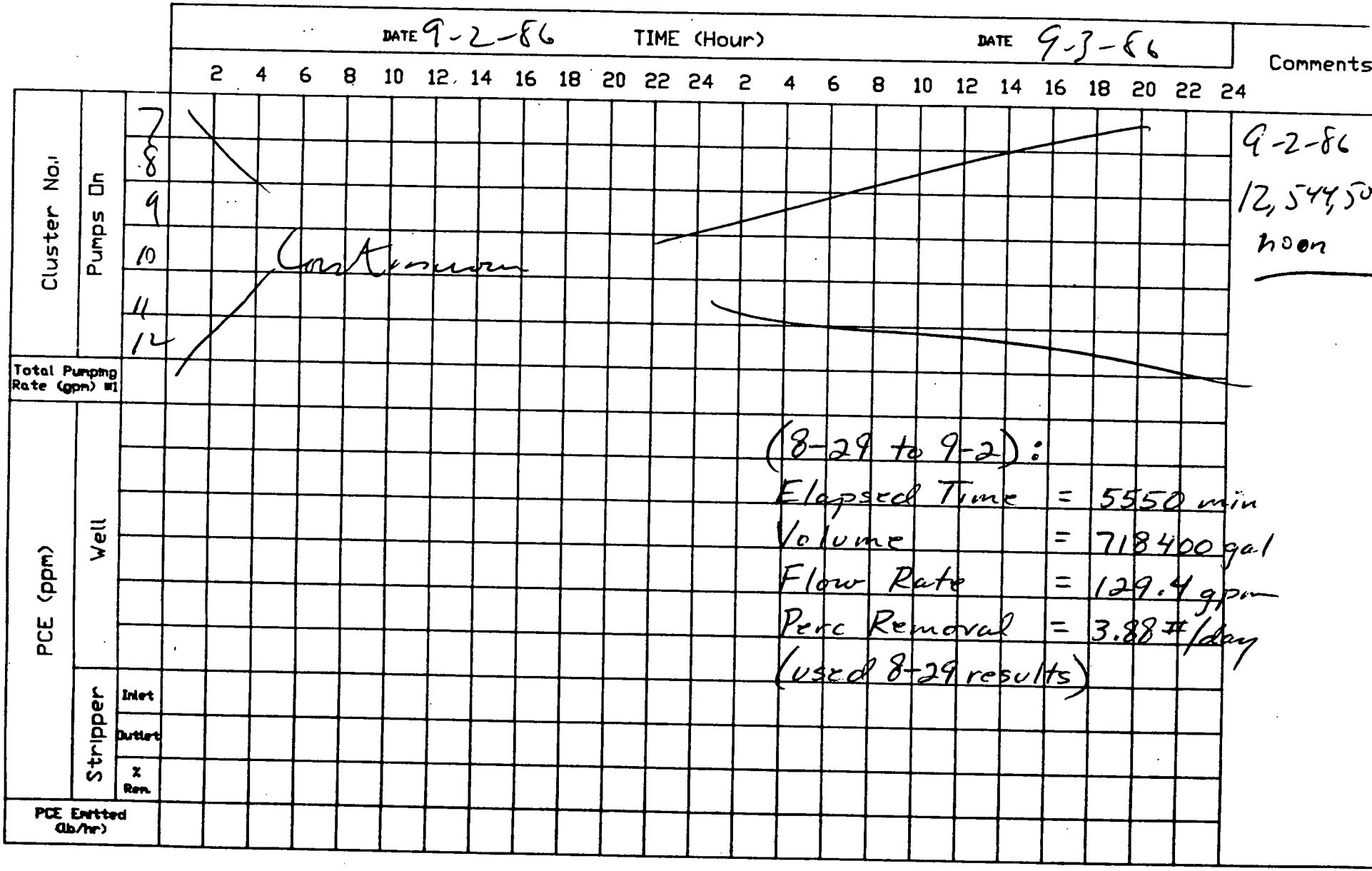
#1 : Estimated pumping rate = 27 gpm/pump
#2 : Limited by max. pumping capacity of 150 gpm
#3 : Using initial concentration
#4 : Using final concentration

WAUSAU CHEMICAL EXTRACTION PROGRAM



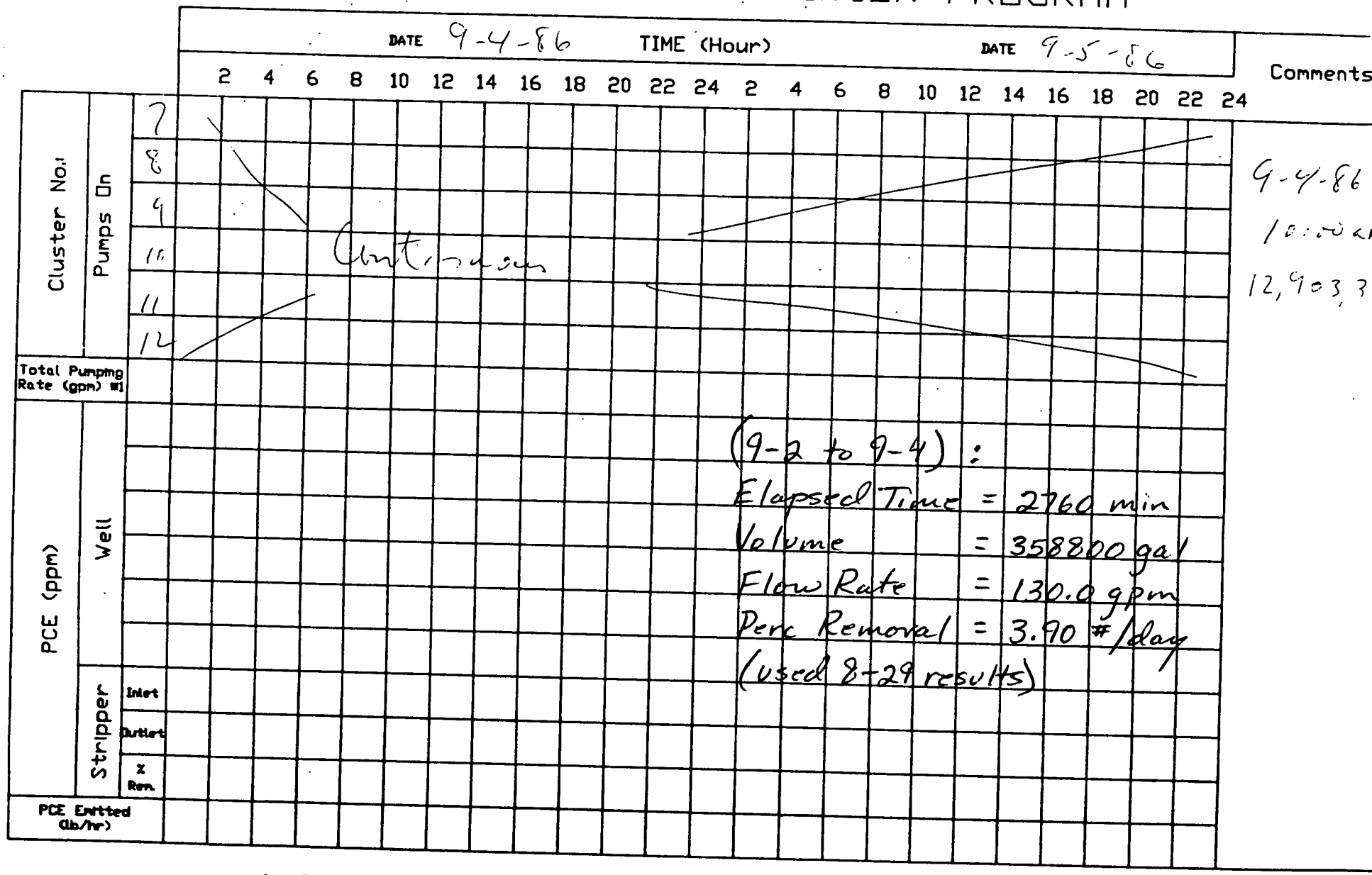
*1 : Estimated pumping rate = 27 gpm/pump
*2 : Limited by max. pumping capacity of 150 gpm
*3 : Using initial concentration
*4 : Using final concentration

WAUSAU CHEMICAL EXTRACTION PROGRAM



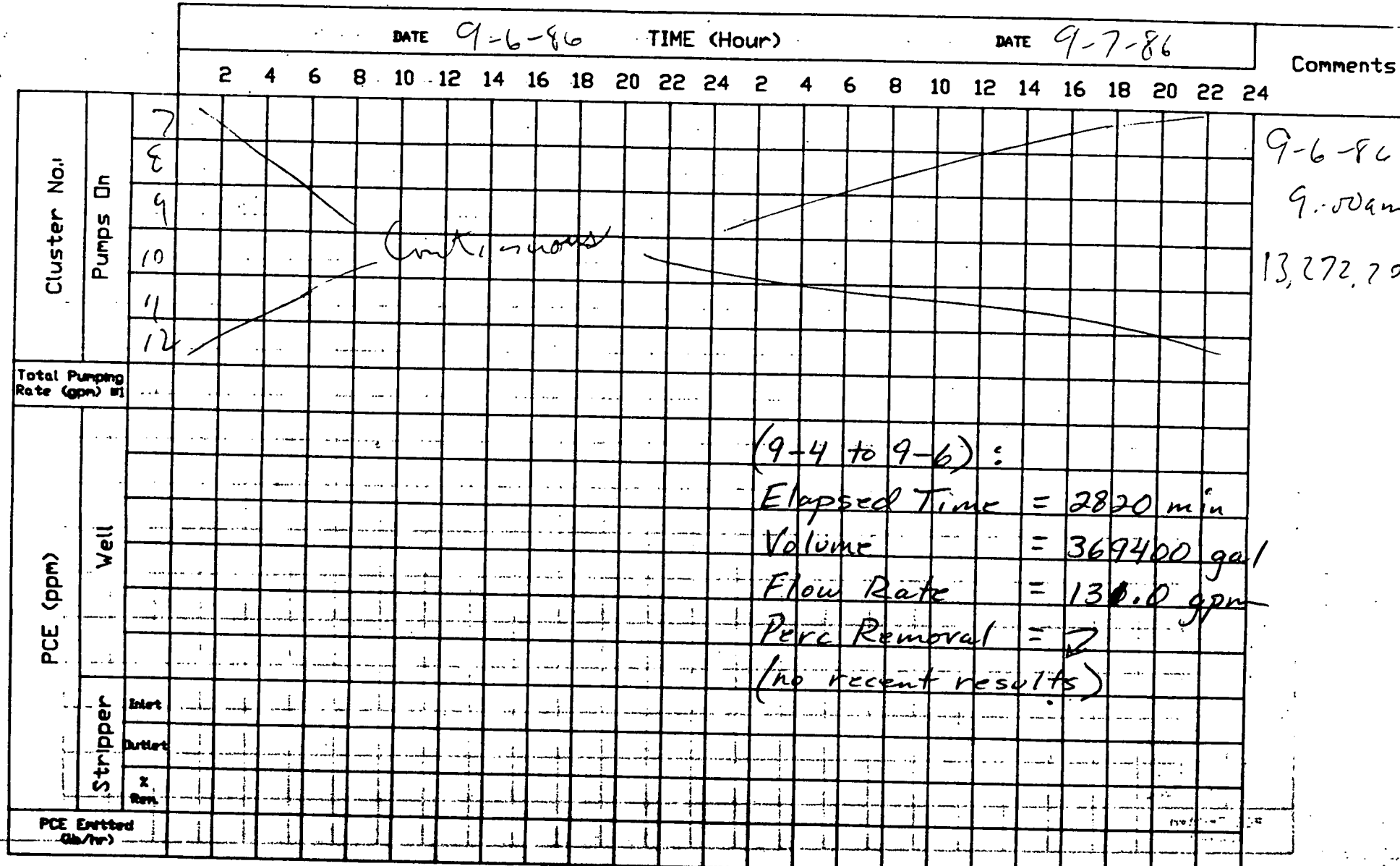
#1 : Estimated pumping rate = 27 gpm/pump
#2 : Limited by max. pumping capacity of 150 gpm
#3 : Using initial concentration
#4 : Using final concentration

WAUSAU CHEMICAL EXTRACTION PROGRAM



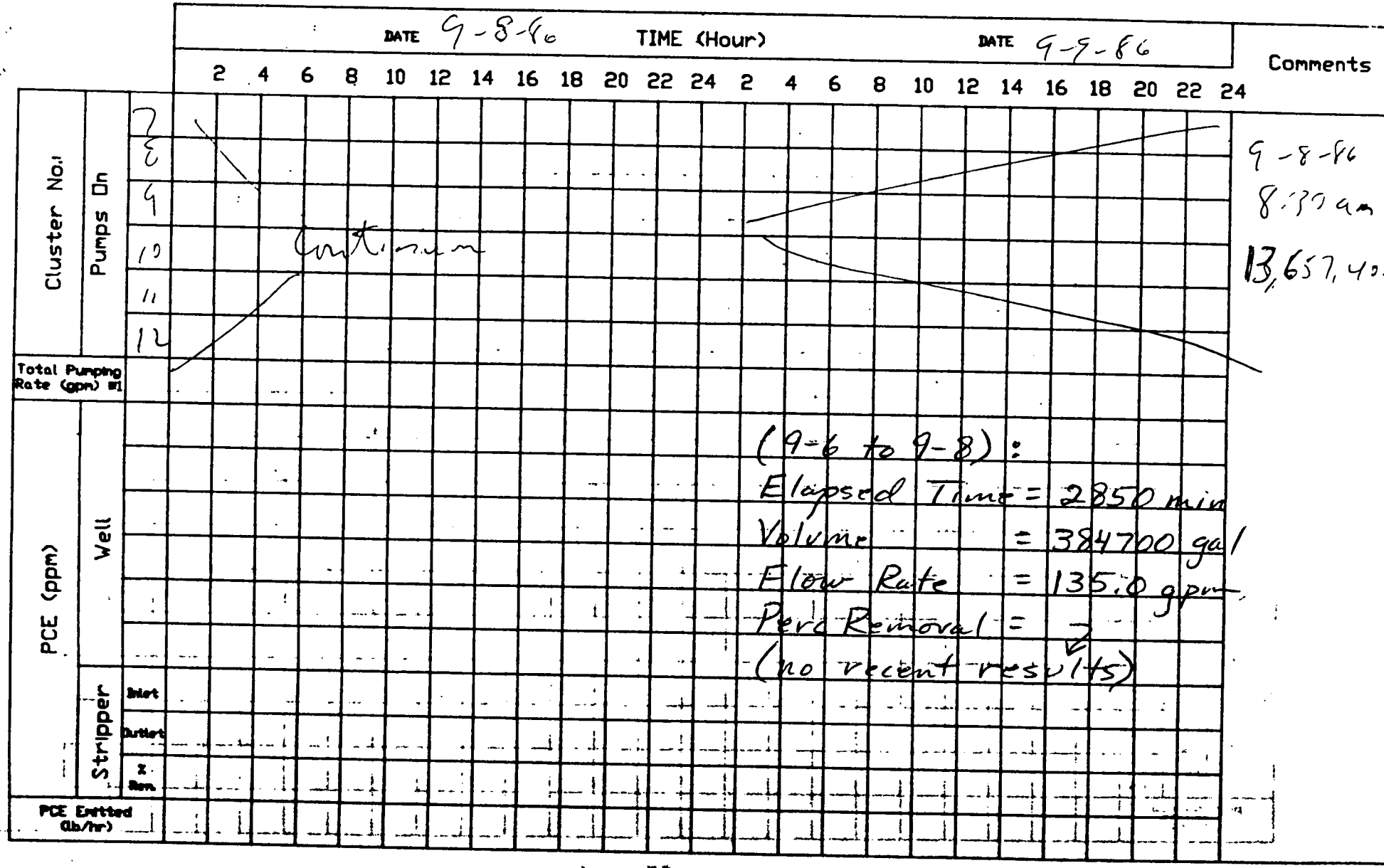
#1 : Estimated pumping rate = 27 gpm/pump
#2 : Limited by max. pumping capacity of 150 gpm
#3 : Using initial concentration
#4 : Using final concentration

WAUSAU CHEMICAL EXTRACTION PROGRAM



#1 : Estimated pumping rate = 27 gpm/pump
#2 : Limited by max. pumping capacity of 150 gpm
#3 : Using initial concentration
#4 : Using final concentration

WAUSAU CHEMICAL EXTRACTION PROGRAM



#1 : Estimated pumping rate = 27 gpm/pump
#2 : Limited by max. pumping capacity of 150 gpm
#3 : Using initial concentration
#4 : Using final concentration

WAUSAU CHEMICAL EXTRACTION PROGRAM
WATER LEVEL SUMMARY

Date: 6-4-86
Technician: Art Flashinski

		Time:				Time:				Time:				Time:				Comments
		W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	
Pumping Wells	1	15' 11"			OFF													
	2	16' 2"			|													
	3	16' 2"			|													
	4	15' 9"			|													
	5	20' 0"			|													
	6	16' 4"			|													
Other Wells	7	18' 11"	17'	22' 8"	|													
	8	18' 8"	17'	20' 4"	|													
	9	15' 9"	14'	18' 4"	|		Test Wells											
	10	19' 10"	17'	22' 9"	|													
	11	20' 2"	17'	24'	|	1	13' 5"											
	12	16' 2"	14'	20' 9"	|	2	14' 7"											
	13	15' 10"			|	3	14' 10"											T.F.C.: Top float control set at
	14	15' 8"			|	5	12' 10"											B.F.C.: Bottom float control set at
	15	15' 6"			↓	6	15' 8"											W.L.: Water level

WAUSAU CHEMICAL EXTRACTION PROGRAM
WATER LEVEL SUMMARY

Pumps all lowered to bottom of wells on 6-13-86 – about one (1) foot in every case

Date: 6-24-86
Technician: AF & RF

		Time: 11:00 a.m.				Time:				Time: 11:00 am				Time: 6-25-86				Comments
		W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	
Pumping Wells	7	17' 8"	21'	24' 8"	OFF					21' 7"			ON					
	8	17' 5"	21'	23' 0"						20' 9"								
	9	14' 11"	19'	21' 4"						17' 5"								
	10	15' 7"	21'	24' 9"						23' 0"								
	11	19' 0"	21'	22' 6"						20' 4"								
	12	15' 2"	19'	21' 9"	↓					18' 4"			↓					
Other Wells	1	15' 0"								15' 3"								
	2	15' 2"								15' 7"								
	3	15' 7"								16' 0"								
	4	17' 6"								18' 5"								
	5	18' 9"								19' 8"								
	6	15' 7"								16' 1"								
	13	14' 16"								15' 7"								
	14	14' 9"								15' 2"								
	15	14' 8"								15' 1"								

Test Wells

1	12' 6"
2	13' 9"
3	14' 0"
5	12' 0"
6	15' 0"

Test Wells

1	12' 6"
2	14' 0"
3	13' 8"
5	11' 9"
6	14' 10"

T.F.C.: Top float control set at

B.F.C.: Bottom float control set at

W.L.: Water level

WAUSAU CHEMICAL EXTRACTION PROGRAM
WATER LEVEL SUMMARY

Date: 6-07-86
Technician: RS

		Time: 8:30 am				Time:				Time:				Time:				Comments
		W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	
Pumping Wells	7	22' 0"	Same		ON													
	8	21' 6"	as															
	9	17' 10"	last															
	10	23' 5"																
	11	22' 9"																
	12	18' 3"	↓		↓													
Other Wells	1	15' 6"																
	2	16' 0"																
	3	16' 2"																
	4	18' 6"																
	5	20' 0"																
	6	16' 3"																
	13	15' 3"																
	14	15' 6"																
	15	15' 3"																

T.F.C.: Top float control set at

B.F.C.: Bottom float control set at

W.L.: Water level

WAUSAU CHEMICAL EXTRACTION PROGRAM
WATER LEVEL SUMMARY

Date: 6-20-96
Technician: RC

		Time:				Time:				Time:				Time:				Comments
		W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	
Pumping Wells	7	21' 10"	Same		ON													
	8	21' 0"	as															
	9	17' 5"																
	10	23' 2"	Last															
	11	20' 3"																
	12	18' 3"	↓		↓													
Other Wells	1	15' 5"																
	2	15' 7"																
	3	16' 1"																
	4	18' 8"																
	5	19' 9"																
	6	16' 4"																
	13	15' 4"																
	14	15' 5"																
	15	15' 1"																

Test Wells

1	12' 11"
2	14' 0"
3	14' 6"
5	13' 10"
6	14' 11"

T.F.C.: Top float control set at

B.F.C.: Bottom float control set at

W.L.: Water level

WAUSAU CHEMICAL EXTRACTION PROGRAM
WATER LEVEL SUMMARY

Date: 7-3-86
Technician: RS

		Time: 12:30 pm				Time:				Time:				Time:				Comments
		W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	
Pumping Wells	7	21' 4"																
	8	19' 11"																
	9	18' 0"																
	10	22' 0"																
	11	22' 6"																
	12	17' 3"																
Other Wells	1	15' 0"																
	2	15' 3"																
	3	15' 7"																
	4	17' 11"																
	5	19' 8"																
	6	15' 11"																
	13	15' 0"																
	14	15' 1"																
	15	14' 11"																

Test Wells

1	12' 7"
2	13' 7"
3	13' 7"
5	11' 10"
6	15' 0"

T.F.C.: Top float control set at

B.F.C.: Bottom float control set at

W.L.: Water level

WAUSAU CHEMICAL EXTRACTION PROGRAM
WATER LEVEL SUMMARY

Date: 7-7-86
Technician: R.F

		Time: 3:00 pm				Time:				Time:				Time:				Comments
		W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	
Pumping Wells	7	21' 5"																
	8	19' 11"																
	9	18' 2"																
	10	21' 1"																
	11	22' 5"																
	12	17' 7"																
Other Wells	1	15' 4"																
	2	15' 6"																
	3	15' 7"																
	4	18' 1"																
	5	19' 6"																
	6	16' 1"																
	13	15' 3"																
	14	15' 0"																
	15	15' 0"																

T.F.C.: Top float control set at

B.F.C.: Bottom float control set at

W.L.: Water level

WAUSAU CHEMICAL EXTRACTION PROGRAM
WATER LEVEL SUMMARY

Date: 7-9-86
Technician: RF

		Time: 11:30 a.m.				Time:				Time:				Time: 7-9-86				Comments
		W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	
Pumping Wells	7	21' 8"			OFF													
	8	20' 0"																
	9	18' 0"																
	10	22' 1"																
	11	22' 0"																
	12	17' 9"																
Other Wells	1	15' 4"																
	2	15' 5"																
	3	15' 9"																
	4	18' 2"																
	5	19' 7"																
	6	16' 2"																
	13	15' 3"																
	14	15' 4"																
	15	15' 2"																

T.F.C.: Top float control set at

B.F.C.: Bottom float control set at

W.L.: Water level

WAUSAU CHEMICAL EXTRACTION PROGRAM
WATER LEVEL SUMMARY

Date: 7-10-86 11:30am
Technician: QT.

		Time:				Time:				Time:				Time:				Comments
		W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	
Pumping Wells	7	18' 1"			OFF													
	8	17' 10"																
	9	15' 0"																
	10	18' 11"																
	11	19' 2"																
	12	15' 5"			↓													
Other Wells	1	15' 3"																
	2	15' 6"																
	3	15' 7"																
	4	17' 11"																
	5	19' 0"																
	6	15' 9"																
	13	15' 2"																
	14	15' 0"																
	15	14' 10"																

T.F.C.: Top float control set at

B.F.C.: Bottom float control set at

W.L.: Water level

WAUSAU CHEMICAL EXTRACTION PROGRAM
WATER LEVEL SUMMARY

Date: 7-14-86 9:30 a.m.
Technician: B.F.

		Time:				Time:				Time:				Time:				Comments
		W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	
Pumping Wells	7	21' 10"																
	8	19' 10"																
	9	18' 0"																
	10	22' 0"																
	11	22' 2"																
	12	17' 10"																
Other Wells	1	15' 4"																
	2	15' 5"																
	3	15' 8"																
	4	18' 0"																
	5	14' 8"																
	6	16' 1"																
	13	15' 2"																
	14	15' 2"																
	15	15' 1"																

T.F.C.: Top float control set at

B.F.C.: Bottom float control set at

W.L.: Water level

WAUSAU CHEMICAL EXTRACTION PROGRAM
WATER LEVEL SUMMARY

Date: 7-19-86
Technician: RJ

		Time: 8:39 am				Time:				Time:				Time:				Comments
		W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	
Pumping Wells	7	21' 6"																
	8	19' 11"																
	9	17' 10"																
	10	21' 9"																
	11	22' 0"																
	12	17' 5"																
Other Wells	1	15' 2"																
	2	15' 3"																
	3	15' 11"																
	4	18' 0"																
	5	19' 9"																
	6	16' 0"																
	13	13' 0"																
	14	15' 0"																
	15	15' 0"																

T.F.C.: Top float control set at

B.F.C.: Botton float control set at

W.L.: Water level

WAUSAU CHEMICAL EXTRACTION PROGRAM
WATER LEVEL SUMMARY

Date: 7-24-86
Technician: RZ.

		Time:				Time:				Time:				Time:				Comments
		W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	
Pumping Wells	7	21' 9"																
	8	20' 0"																
	9	17' 2"																
	10	21' 9"																
	11	22' 0"																
	12	17' 8"																
Other Wells	1	15' 3"																T.F.C.: Top float control set at B.F.C.: Bottom float control set at W.L.: Water level
	2	15' 5"																
	3	15' 11"																
	4	16' 2"																
	5	19' 9"																
	6	16' 2"																
	13	15' 2"																
	14	15' 2"																
	15	15' 3"																

WAUSAU CHEMICAL EXTRACTION PROGRAM
WATER LEVEL SUMMARY

Date: 7-28-86
Technician: RF.

		Time:				Time:				Time:				Time:				Comments
		W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	
Pumping Wells	7	22' 2"																
	8	20' 5"																
	9	18' 8"																
	10	22' 2"																
	11	22' 9"																
	12	18' 3"																
Other Wells	1	16' 0"																
	2	16' 1"																
	3	16' 6"																
	4	18' 9"																
	5	20' 0"																
	6	16' 2"																
	13	15' 6"																
	14	15' 2"																
	15	15' 4"																

T.F.C.: Top float control set at

B.F.C.: Bottom float control set at

W.L.: Water level

WAUSAU CHEMICAL EXTRACTION PROGRAM
WATER LEVEL SUMMARY

Date: 8-4-86
Technician:

		Time: 3:00 pm				Time:				Time:				Time:				Comments
		W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	
Pumping Wells	7	[illegible] 11' 8"																
	8	20' 0"																
	9	17' 4"																
	10	22' 0"																
	11	22' 1"																
	12	17' 7"																
Other Wells	1	15' 4"																
	2	15' 5"																
	3	16' 0"																
	4	18' 5"																
	5	19' 7"																
	6	26' 0"																
	13	15' 4"																
	14	15' 3"																
	15	15' 1"																

T.F.C.: Top float control set at

B.F.C.: Bottom float control set at

W.L.: Water level

WAUSAU CHEMICAL EXTRACTION PROGRAM
WATER LEVEL SUMMARY

Date: 9-12-86
Technician: A.Z.

		Time: 7 30 a.m.				Time:				Time:				Time:				Comments
		W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	
Pumping Wells	7	15' 10"																
	8	23' 3"																
	9	17' 6"																
	10	22' 6"																
	11	22' 6"																
	12	17' 5"																
Other Wells	1	15' 2"																
	2	15' 4"																
	3	15' 9"																
	4	15' 4"																
	5	15' 6"																
	6	15' 10"																
	13	15' 3"																
	14	15' 3"																
	15	15' 0"																

T.F.C.: Top float control set at

B.F.C.: Bottom float control set at

W.L.: Water level

WAUSAU CHEMICAL EXTRACTION PROGRAM
WATER LEVEL SUMMARY

Date: 8-15-86
Technician: DJ

		Time: 12:30 p.m.				Time:				Time:				Time:				Comments
		W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	
Pumping Wells	7	21'6"																
	8	20'0"																
	9	16'6"																
	10	21'7"																
	11	22'2"																
	12	17'4"																
Other Wells	1	15'6"																
	2	15'5"																
	3	15'11"																
	4	18'0"																
	5	19'6"																
	6	15'11"																
	13	15'2"																
	14	15'1"																
	15	15'0"																

Monitoring Wells

1	12'9"
2	13'7"
3	14'2"
5	12'0"
6	15'0"

T.F.C.: Top float control set at

B.F.C.: Botton float control set at

W.L.: Water level

WAUSAU CHEMICAL EXTRACTION PROGRAM
WATER LEVEL SUMMARY

Date: 8-19-86
Technician: QW

		Time: 10:30am				Time:				Time:				Time:				Comments
		W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	
Pumping Wells	7	18'6"			O													Wells shut down 7:30am
	8	17'7"			F													Read 10:30am
	9	14'11"			F													Restarted 11:00am
	10	19'1"			/													Flow rate reduced to create ~~Cyclonic~~
	4	19'6"			/													
	12	15'4"			V													2:30 Back to full flow after phone discussion w/ Mark Phillips
Other Wells	1	15'1"																T.F.C.: Top float control set at
	2	15'3"																B.F.C.: Bottom float control set at
	3	15'7"																W.L.: Water level
	4	17'9"					Monitor Wells											
	5	19'1"				1	12'8"											
	6	15'9"				2	13'10"											
	13		14'8"			3	13'11"											
	14		14'7"			5	12'1"											
	15		14'5"			6	14'11"											

WAUSAU CHEMICAL EXTRACTION PROGRAM
WATER LEVEL SUMMARY

Date: 8-27-86
Technician: R.F.

		Time: 12:30 pm				Time:				Time:				Time:				Comments
		W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	
Pumping Wells	7	21'5"			ON													
	8	20'7"																
	9	17'7"																
	10	22'2"																
	11	18'7"																
	12	17'6"			✓													
Other Wells	1	15'2"																
	2	15'2"																
	3	15'11"				Monitoring Wells												
	4	18'0"																
	5	19'1"				1	12'5"											
	6	16'0"				2	13'9"											
	13	15'0"				3	13'11"											
	14	15'0"				5	12'0"											
	15	14'10"				6	14'7"											

T.F.C.: Top float control set at

B.F.C.: Bottom float control set at

W.L.: Water level

WAUSAU CHEMICAL EXTRACTION PROGRAM
WATER LEVEL SUMMARY

Date: 8-29-86
Technician: RJ.

		Time: 2:30 p m				Time:				Time:				Time:				Comments
		W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	
Pumping Wells	7	21'7"																
	8	23'6"																
	9	17'5"																
	10	21'9"																
	11	22'0"																
	14	17'8"																
Other Wells	1		15'4"															
	2		15'4"															
	3		15'9"				Monitor Wells											
	4		18'4"			1	12'10"											
	5		19'7"			2	13'9"											
	6		16'0"			3	14'0"											
	13		15'3"			5	12'2"											T.F.C.: Top float control set at
	14		15'1"			6	14'9"											B.F.C.: Bottom float control set at
	15		15'1"															W.L.: Water level

WAUSAU CHEMICAL EXTRACTION PROGRAM
WATER LEVEL SUMMARY

Date: 9-6-76
Technician: RJ

		Time: 9:00 am				Time:				Time:				Time:				Comments
		W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	W.L.	T. F.C.	B. F.C.	ON/ OFF	
Pumping Wells	7	21'	6"															
	8	23'	8"															
	9	17'	8"															
	10	21'	10"															
	11	22'	1"															
	12	17'	7"															
Other Wells	1	15'	4"															
	2	15'	7"															
	3	15'	11"															
	4	18'	1"			1	13' 2"											
	5	19'	6"			2	14' 0"											
	6	16'	0"			3	14' 1"											
	13	15'	0"			5	12' 1"											
	14	15'	0"			6	14' 9"											
	15	15'	0"															

Monitoring Wells

T.F.C.: Top float control set at

B.F.C.: Bottom float control set at

W.L.: Water level

ZIMPRO INC
ENVIRONMENTAL & ENERGY SYSTEMS

RECEIVED JUN 2 7 1986

June 26, 1986

Wausau Chemical
2001 N. River Drive
Wausau, WI 54401

Attn: Art Flashinski

Re: VOC Analysis

Attachced are the results for samples taken June 24, 1986. EPA Method 601 was used to complete the analysis.

If you have any questions, please call.

Sincerely,

ZIMPRO INC.

Mary C. Christie Heuser

Mary C. Christie Heuser
Instrumentation Chemist

MCCH/ls

cc: J.W. Barr
J.R. Salkowski

MILITARY ROAD
ROTHSCHILD, WISCONSIN 54474

ZIMPRO
ENVIRONMENTAL & ENERGY SYSTEMS

Wausau Chemical
VOC Analysis (ug/l)

	Influent 6-24-86	Effluent 6-24-86
Perc	9,360.	1,475.
Toluene	3,400.	550.
TCE	1,680.	360.
m-Xylene	450.	77.
o & p-Xylene (as o-Xylene)	560.	136.
Analytical No.	19605	19606

ZIMPRO
ENVIRONMENTAL & ENERGY SYSTEMS

Wausau Chemical
VOC Analysis (ug/l)

	Effluent 6-24-86
Chloroform	<5.
1,1-Dichlorethane	<5.
1,1-Dichloroethylene	<25.
1,2-Dichloroethylene	230.
Ethylbenzene	16.
1,1,1-Trichloroethane	10.
Vinyl Chloride	<100.
Analytical No.	19606

	Influent 6-24-86
Chloroform	<10.
1,1-Dichlorethane	<10.
1,1-Dichloroethylene	<50.
1,2-Dichloroethylene	1,180.
Ethylbenzene	330.
1,1,1-Trichloroethane	90.
Vinyl Chloride	<200.
Analytical No.	19605

Sample	Date	Perc	Analytical No.
Influent	6-27-86	7,700.	19715
Effluent	6-27-86	1,350.	19716
Influent	6-30-86	6,300.	19731
Effluent	6-30-86	1,050.	19732

ZIMPRO
ENVIRONMENTAL & ENERGY SYSTEMS

Wausau Chemical
VOC Analysis (ug/l)

	Influent 6-24-86	Effluent 6-24-86
Perc	9,360.	1,475.
Toluene	3,400.	550.
TCE	1,680.	360.
m-Xylene	450.	77.
o & p-Xylene (as o-Xylene)	560.	136.
Analytical No.	19605	19606

ZIMPRO
ENVIRONMENTAL & ENERGY SYSTEMS

Wausau Chemical
VOC Analysis (ug/l)

	Detection Limit	Influent 7-21-86
Chloroform	10	30
1,1-Dichlorethane	10	X
1,1-Dichloroethylene	50	X
1,2-Dichloroethylene	30	130
Ethylbenzene	20	X
Tetrachloroethylene	10	3,870
Toluene	10	20
1,1,1-Trichloroethane	10	10
Trichloroethylene	10	490
Vinyl Chloride	200	X
Analytical No.		20159

X = Analyzed but not detected

ZIMPRO
ENVIRONMENTAL & ENERGY SYSTEMS

Wausau Chemical
VOC Analysis (ug/l)

	Detection Limit	Effluent 7-21-86
Chloroform	5	15
1,1-Dichlorethane	5	X
1,1-Dichloroethylene	25	X
1,2-Dichloroethylene	15	35
Ethylbenzene	10	X
Tetrachloroethylene	5	605
Toluene	5	X
1,1,1-Trichloroethane	5	X
Trichloroethylene	5	80
Vinyl Chloride	100	X
Analytical No.		20160

X = Analyzed but not detected

ZIMPRO INC
ENVIRONMENTAL & ENERGY SYSTEMS

RECEIVED SEP 8 1986

September 5, 1986

Wausau Chemical Corp.
2001 N. River Drive
Wausau, WI 54401

Attn: Art Flashinski

Re: VOC Analysis

Attached are the results for August 27, 1986 water samples. The analysis was done according to EPA Method 601.

If you have any questions, please call.

Sincerely,

ZIMPRO INC.

Mary C. Christie Heuser

Mary C. Christie Heuser
Instrumentation Chemist

MCCH/ls

cc: J.W. Barr
J.R. Salkowski

(over)

MILITARY ROAD
ROTHSCHILD, WISCONSIN 54474

ZIMPRO
ENVIRONMENTAL & ENERGY SYSTEMS

Wausau Chemical
VOC Analysis (ug/l)

	Well #10 8-27-86	Well #11 8-27-86	Well #12 8-27-86
Tetrachloroethylene	1,620	5,740	600
Analytical No.	21368	21369	21370

Wausau Chemical
VOC Analysis (ug/l)

	Detection Limit	Influent 8-27-86	Effluent 8-27-86
Chloroform	10	30	10
1,1-Dichlorethane	10	X	X
1,1-Dichloroethylene	50	X	X
1,2-Dichloroethylene	30	150	27
Ethylbenzene	20	X	X
Tetrachloroethylene	10	2,630	425
Toluene	10	200	X
1,1,1-Trichloroethane	10	20	X
Trichloroethylene	10	380	68
Vinyl Chloride	200	X	X
Analytical No.		21371	21372

X = Analyzed but not detected

Anne
Send copy to
Mark
Millsop
& Give to Art

RECEIVED AUG 18 1986

ZIMPRO INC.
ENVIRONMENTAL & ENERGY SYSTEMS

August 15, 1986

Wausau Chemical Corp.
2001 N. River Drive
Wausau, WI 54401

Attn: Jim Cherwinka

Re: VOC Analysis

Attached are the results for the July 28 - August 12, 1986 water samples. EPA Method 601 was used for the analysis.

If you have any questions, please call.

Sincerely,

ZIMPRO INC.

Mary C. Christie Heuser

Mary C. Christie Heuser
Instrumentation Chemist

MCCH/ls

cc: J.W. Barr
J.R. Salkowski

MILITARY ROAD
ROTHSCHILD, WISCONSIN 54474
TELEPHONE (715)359-7211 TELEX

ZIMPRO
ENVIRONMENTAL & ENERGY SYSTEMS

Wausau Chemical
VOC Analysis (ug/l)

Sample	Date	Perc	Analytical No.
Influent	7-28-86	2,840	20366
Effluent	7-28-86	345	20367
Influent	8-4-86	3,240	20580
Effluent	8-4-86	410	20581
Influent	8-12-86	2,810	20758
Effluent	8-12-86	340	20759

ZIMPRO INC
ENVIRONMENTAL & ENERGY SYSTEMS

RECEIVED SEP 4 1986

September 3, 1986

Wausau Chemical Corp.
2001 N. River Drive
Wausau, WI 54401

Attn: Art Flashinski

Re: VOC Analysis

Attached are the results for August 20, 1986 water samples. The analysis was done according to EPA Method 601.

If you have any questions, please call.

Sincerely,

ZIMPRO INC.

Mary C. Christie Heuser

Mary C. Christie Heuser
Instrumentation Chemist

MCCH/ls

cc: J.W. Barr
J.R. Salkowski

MILITARY ROAD
ROTHSCHILD, WISCONSIN 54474

ZIMPRO
ENVIRONMENTAL & ENERGY SYSTEMS

Wausau Chemical
VOC Analysis (ug/l)

	Detection Limit	Effluent 8-20-86	Influent 8-20-86
Chloroform	5	5	10
1,1-Dichlorethane	5	X	X
1,1-Dichloroethylene	25	X	X
1,2-Dichloroethylene	15	20	120
Ethylbenzene	10	X	X
Tetrachloroethylene	5	370	3,140
Toluene	5	X	X
1,1,1-Trichloroethane	5	X	10
Trichloroethylene	5	45	390
Vinyl Chloride	100	X	X
Analytical No.		21050	21049

X = Analyzed but not detected

ZIMPRO INC
ENVIRONMENTAL & ENERGY SYSTEMS

RECEIVED SEP 17 1986

September 16, 1986

Wausau Chemical Corp.
2001 N. River Drive
Wausau, WI 54401

Attn: Art Flashinski

Re: VOC Analysis

Attached are the results for August 29, 1986 water samples. The analysis was done according to EPA Method 601.

If you have any questions, please call.

Sincerely,

ZIMPRO INC.

Mary C. Christie Heuser

Mary C. Christie Heuser
Instrumentation Chemist

MCCH/ls

cc: J.W. Barr
J.R. Salkowski

MILITARY ROAD
ROTHSCHILD, WISCONSIN 54474
TELEPHONE (715) 359-7211 TELECOPIER

ZIMPRO
ENVIRONMENTAL & ENERGY SYSTEMS

Wausau Chemical
VOC Analysis (ug/l)

	Well #10 8-29-86	Well #11 8-29-86	Well #12 8-29-86
Perc	2,210	5,820	797
Analytical No.	21437	21438	21439

ZIMPRO
ENVIRONMENTAL & ENERGY SYSTEMS

Wausau Chemical
VOC Analysis (ug/l)

	Detection Limit	Influent 8-29-86
Chloroform	10	X
1,1-Dichlorethane	10	X
1,1-Dichloroethylene	50	X
1,2-Dichloroethylene	30	160
Ethylbenzene	20	X
Tetrachloroethylene	10	2,840
Toluene	10	X
1,1,1-Trichloroethane	10	10
Trichloroethylene	10	400
Vinyl Chloride	200	X
Analytical No.		21435

X = Analyzed but not detected

ZIMPRO
ENVIRONMENTAL & ENERGY SYSTEMS

Wausau Chemical
VOC Analysis (ug/l)

	Detection Limit	Effluent 8-29-86
Chloroform	5	X
1,1-Dichlorethane	5	X
1,1-Dichloroethylene	25	X
1,2-Dichloroethylene	15	27
Ethylbenzene	10	X
Tetrachloroethylene	5	337
Toluene	5	X
1,1,1-Trichloroethane	5	X
Trichloroethylene	5	50
Vinyl Chloride	100	X
Analytical No.		21436

X = Analyzed but not detected