7861 G-000-104.248

OHIO ENVIRONMENTAL PROTECTION AGENCY DISCHARGE MONITORING REPORTS - FERNALD ENVIRONMENTAL MANAGEMENT PROJECT - NPDES PERMIT NUMBER 1IO00004*ED - SEPTEMBER 1996

10/14/96

C:SWP(ARP):96-0009
FDF OEPA
30
REPORT

Fernald Environmental
FERMCO
Restoration Management Corporation P.O. Box 398704 Cincinnati, Ohio 45239-8704 (513) 738-6200

October 14, 1996

Fernald Environmental Management Project
Letter No. C:SWP(ARP):96-0009

Ohio Environmental Protection Agency
Division of Surface Water
C M & E - Permit Comp. Unit
P.O. Box 1049
Columbus, Ohio 43266-1049

Gentlemen:

OHIO ENVIRONMENTAL PROTECTION AGENCY DISCHARGE MONITORING REPORTS - FERNALD ENVIRONMENTAL MANAGEMENT PROJECT - NPDES PERMIT NUMBER 1IO00004*ED - SEPTEMBER, 1996

Enclosed are the Ohio Environmental Protection Agency Discharge Monitoring Report forms for the Fernald Environmental Management Project (FEMP) for September 1996. Also enclosed is the "Laboratory Analysis Report" detailing the results of the September 1996 Acute Toxicity Screen. The sampling, analysis, and reporting of this toxicity data were performed by CT&E Environmental Services, Inc. under subcontract to Fluor Daniel Fernald. The next scheduled toxicity screen is for November 1996.

If you have any questions or comments regarding these reports, please contact Marlene M. Landrum at (513) 648-4197.

Sincerely,

David J. Brettschneider, Project Manager
AWWT & Wastewater Project

DJB:MML
Enclosures

Fernald Environmental
FERMCO
Restoration Management Corporation

c: S. M. Beckman, Fluor Daniel Fernald, MS 65-2
D. J. Carr, Fluor Daniel Fernald, MS 9
K. A. Chaney, EM-423,QO
L. C. Goidell, Fluor Daniel Fernald, MS 52-3
E. H. Henry, Fluor Daniel Fernald, MS 52-5
W. A. Hertel, Fluor Daniel Fernald, MS 52-5
F. L. Johnston, Fluor Daniel Fernald, MS 50
J. D. Kappa, DOE-FEMP, MS 45
M. M. Landrum, Fluor Daniel Fernald, MS 50
C. C. Little, Fluor Daniel Fernald, MS 2
C. G. Seifert, Fluor Daniel Fernald, MS 50
E. P. Skintik, DOE-FEMP, MS 45
T. J. Walsh, Fluor Daniel Fernald, MS 65-2
AR Coordinator, MS 78
EDC File No. 52700

9002 M 9501 900212 4500
ONTHLY REPORT FORM

U.S. DEPARTMENT OF ENERGY 1IO00004001 SEP 1996 1 2 03/24/90 OH000958(
Fernald Environmental
Management Project
P.O. Box 538704
Cincinnati, OH 45253-8704

4001 PARSHALL FLUME, EFFLUENT TO GREAT MIAMI RIVE
Hamilton
FORM

	1	1	1	3	2	3	3	2	2	2
	999	999	999	1	998	1	1	998	998	998
	CONDUI FLOW MGD	pH (MIN) S.U.	pH (MAX) S.U.	WATER TEMP. C	TOT.SUSP SOLIDS MG/L	DISS. OXYGEN MG/L	O & G TOTAL MG/L	NITRO NH3-N MG/L	NITRO NO2+NO3 MG/L	FLUORID TOTAL MG/L
	50050	00402	00401	00010	00530	00300	00550	00610	00630	00951
01	2.836	7.2	7.3	17	AA					
02	0.160	7.2	7.6	22	AA					
03	0.122	7.4	7.5	24	2.2					
04	0.183	7.4	8.4	26	AA					
05	0.135	7.2	7.5	26	2.6	7.4	AA	0.14	17.7	2.32
06	1.073	7.3	7.5	22	AA					
07	1.958	7.4	7.5	21	AA					
08	1.929	7.4	7.4	21	AA					
09	2.102	7.4	7.5	22	AA					
10	1.491	7.4	8.6	19	AA					
11	2.411	7.1	7.4	20	AA	7.9	AA	0.11	4.1	0.46
12	2.604	7.3	7.4	18	AA					
13	3.555	7.3	7.4	16	2.4					
14	1.874	7.3	7.4	16	2.2					
15	2.542	7.3	7.4	16	3.2					
16	2.614	7.3	7.4	15	AA					
17	2.555	7.3	7.4	15	AA	7.9	AA	AA	1.6	0.41
18	2.534	7.3	7.4	15	AA					
19	2.645	7.3	7.4	16	2.6					
20	2.671	7.3	7.6	18	AA					
21	2.714	7.3	7.4	16	2.0					
22	2.634	7.2	7.6	16	AA					
23	2.548	7.3	9.9	16	AA	9.4	AA	AA	2.4	0.54
24	2.651	7.3	7.4	16	AA					
25	2.525	7.3	7.4	16	AA					
26	2.625	7.2	7.4	16	AA					
27	2.719	7.2	9.7	16	AA					
28	3.962	7.2	7.5	17	9.2					
29	3.626	7.2	7.7	16	8.4	8.6				
30	2.788	7.2	7.5	16	AA					
31										
	66.786	N/A	N/A	N/A	76.8	41.2	AA	0.45	25.8	3.73
	2.226	N/A	N/A	18	2.9	8.5	AA	0.10	2.9	0.50
	3.962	7.4	9.9	26	9.2	9.4	AA	0.14	17.7	2.32
	0.122	7.1	7.3	15	AA	7.4	AA	AA	1.6	0.41

AA: 00530 - 2.0 mg/l; 00550 - 5.0 mg/l; 00610 - 0.10 mg/l; 00630 - 0.1 mg/l;
AA: 00951 - 0.01 mg/l.

REPORTER

9002 M 9501 900212 4500
ONTHLY REPORT FORM

U.S. DEPARTMENT OF ENERGY 1IO00004001 SEP 1996 2 2 03/24/90 OH000958

Fernald Environmental
Management Project
P.O. Box 538704
Cincinnati, OH 45253-8704

4001 PARSHALL FLUME, EFFLUENT TO GREAT MIAMI RIVE
Hamilton
FORM

	2	3	2	2	2
	998	1	998	998	998
	COPPER TOT,REC UG/L	CHROMI HEX-DS UG/L	C-BOD 5 DAY MG/L	TOX ACU-CER TUa	TOX ACU-PI TUa
	01119	01220	80082	61425	61427
01					
02			AA		
03					
04					
05	14.5	AA			
06					
07					
08					
09			AA		
10					
11	AA	AA			
12					
13					
14					
15					
16			AA		
17	AA	AA			
18					
19					
20					
21					
22					
23	AA	AA	AA		
24					
25					
26				AA	AA
27					
28					
29					
30			AA		
31					
	56.5	AA	AA	N/A	N/A
	14.0	AA	AA	N/A	N/A
	14.5	AA	AA	N/A	N/A
	AA	AA	AA	N/A	N/A

AA: 01119 - 14.0 ug/l; 01220 - 6.0 ug/l; 80082 - 2.0 mg/l.
AA: 61425 & 61427 - less than 10 % mortality.

REPORTER

7861

9002 M 9501 900212 4500

MONTHLY REPORT FORM

U.S. DEPARTMENT OF ENERGY 1IO00004002 SEP 1996 1 2 03/24/90 OH000958

Fernald Environmental
Management Project
P.O. Box 538704
Cincinnati, OH 45253-8704

4002 SPILLWAY FROM STORMWATER RETENTION BASIN
Hamilton

FORM

2 4	3 1	2 4	3 1	2 4	2 4	2 4	2 4	2 4	2 4
CONDUI FLOW MGD	pH S.U.	TOT.SUSP SOLIDS MG/L	O & G Total MG/L	NITRO NH3-N MG/L	NITRO NO2+NO3 MG/L	PHOS TOTAL MG/L	FLUORI TOTAL MG/L	NICKEL TOT,REC UG/L	SILVE TOT,RE UG/L
50050	00400	00530	00550	00610	00630	00665	00951	01074	01079

01
02
03
04
05
06
07
08
09
10
11
12
13
14
15
16
17
18
19
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21
22
23
24
25
26
27
28
29
30
31

NO WATER OVERFLOWED FROM THE STORMWATER RETENTION BASIN

000005

REPORTER

7861

9002 M 9501 900212

4500

ONTHLY REPORT FORM

U.S. DEPARTMENT OF ENERGY
Fernald Environmental
Management Project
P.O. Box 538704
Cincinnati, OH 45253-8704

1IO00004002 SEP 1996 2 2 03/24/90 OH000958

4002 SPILLWAY FROM STORMWATER RETENTION BASIN
Hamilton

FORM

2	2	3	2
4	4	1	4
CHROMI TOT,REC UG/L	COPPER TOT,REC UG/L	CHROMI HEX-DS UG/L	CHLORINE TOT,RESI MG/L
01118	01119	01220	50060

01
02
03
04
05
06
07
08
09
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31

NO WATER OVERFLOWED FROM THE STORMWATER RETENTION BASIN.

000006

REPORTER

9005 M 9009 900212

4500

NTHLY REPORT FORM

U.S. DEPARTMENT OF ENERGY 1IO00004589 SEP 1996 1 1 03/24/90 OH0009580

Fernald Environmental
Management Project
P.O. Box 538704
Cincinnati, OH 45253-8704

4589 SEWAGE SLUDGE AFTER PLANT 8 DEWATERING
Hamilton

FORM

3	3	3	3	3	3	3	3
1	1	1	1	1	1	1	1
CADMIUM CD,TOT MG/KG	CHROMI CR,TOT MG/KG	COPPER CU,TOT MG/KG	LEAD PB,TOT MG/KG	NICKEL NI,TOT MG/KG	ZINC ZN,TOT MG/KG	SLUDGE WEIGHT D-TONS	MERCURY HG,TOT MG/KG
01028	01029	01043	01052	01068	01093	70316	71921

NO SLUDGE REMOVED DURING MONTH.

REPORTER

9002 M 9501 900212 4500
NTHLY REPORT FORM

U.S. DEPARTMENT OF ENERGY 1IO00004601 SEP 1996 1 1 03/24/90 OH0009580

Fernald Environmental
Management Project
P.O. Box 538704
Cincinnati, OH 45253-8704

4601 SEWAGE TREATMENT PLANT EFFLUENT
Hamilton

FORM

	1	3	2	2	2	3
	999	1	998	998	998	1
	CONDUI FLOW MGD	pH S.U.	C-BOD 5 DAY MG/L	TOT.SUSP SOLIDS MG/L	AMMONI NH3-N MG/L	FEC CO MF-FCB #/100ML
	50050	00400	80082	00530	00610	31616
01	0.120	7.4				
02	0.091	7.5	AA	AA		AA
03	0.138	7.7				
04	0.159	7.5	AA	2.2		
05	0.121	6.6			0.10	
06	0.127	7.3				
07	0.104	7.5				
08	0.090	7.3				
09	0.168	7.5	AA	AA		340
10	0.136	7.3				
11	0.129	7.2	AA	AA		
12	0.121	7.3				
13	0.086	7.1				
14	0.041	6.5				
15	0.042	7.1				
16	0.122	7.8	AA	3.0		AA
17	0.092	7.3			0.18	
18	0.091	7.4	AA	2.8		
19	0.085	7.1				
20	0.103	7.0				
21	0.079	7.2				
22	0.056	7.4				
23	0.104	7.6	AA	2.0		AA
24	0.099	7.5				
25	0.088	7.5	AA	3.4		
26	0.094	7.4				
27	0.030	7.4				
28	0.232	7.5				
29	0.061	7.5				
30	0.127	7.7	AA	5.0		AA
31						
	3.136	N/A	AA	24.4	0.28	420
	0.105	N/A	AA	2.7	0.13	35
	0.232	7.8	AA	5.0	0.18	340
	0.030	6.5	AA	AA	0.10	AA

AA: 00530 - 2.0 mg/l; 00610 - 0.10 mg/l; 31616 - 20 colonies/100ml.
AA: 80082 - 2.0 mg/l.

REPORTER

9002 M 9501 900212 4500
NTHLY REPORT FORM

U.S. DEPARTMENT OF ENERGY 1IO00004901 SEP 1996 1 1 03/24/90 OH0009580

Fernald Environmental
Management Project
P.O. Box 538704
Cincinnati, OH 45253-8704

4901 DOWNSTREAM MONITORING FOR ACUTE TOXICITY
Hamilton FORM

3	3
1	1
TOX ACU-CER % Aff	TOX ACU-PI % Aff
61432	61444
AA	AA

AA: NO MORTALITIES OBSERVED.

REPORTER

CT&E Environmental Services Inc.
Environmental Sciences Division

4440 Glen Este-Withamsville Road
Suite 900
Cincinnati, OH 45245-1331
Tel: (513) 752-9696
Fax: (513) 752-2614

September 30, 1996

Mr. Larry Evans
FERMCO
P.O. Box 398704
Cincinnati, OH 45239-8704

RE: ENCLOSED SEPTEMBER ACUTE BIOASSAY SCREEN

Dear Mr. Evans:

Enclosed please find the revised original copy of the Acute Bioassay Screening Report for FERMCO for the month of September 1996.

If you have any questions or require additional information, please give me a call at 752-9696. CT&E looks forward to continue providing your operations with quality analytical/bioassay services.

Sincerely,

CT&E ENVIRONMENTAL SERVICES INC.

Kendall Sutler,
Laboratory Manager

KS/sm

Enclosures

SGS Member of the SGS Group (Société Générale de Surveillance)

7861

CT&E Environmental Services Inc.
Laboratory Division

Laboratory Analysis Report

OHIO EPA NPDES BIOMONITORING REPORT FORM

GENERAL INFORMATION

1. Facility Name: FERMCO OH68186-88
2. Address: P.O. Box 398704 Reporting date: 09/30/96
   Cincinnati, OH 45239-8704
3. Ohio EPA Permit Number: 1I000004*ED
4. Application (NPDES) Number: _____
5. Facility Contact: Mr. Larry Evans 6. Phone No.: (513)648-5376
7. Consultant/Testing Lab Name: CT&E Environmental Services Inc.
8. Consultant/Lab Contact: Kevin Howerton 9. Phone No.: (513)752-9696
10. Receiving Water(s) of Discharge: _____
11. Outfall(s) Tested: Effluent Upstream NearField
    Average Daily Flows on Day Sampled(MGD): _____ _____ _____

12. Is your current Standard Operating Procedure (SOP) Manual on file with Ohio EPA?(Yes/No) Yes. If yes, date submitted: 01/09/96 . If no, a SOP that follows Ohio EPA and/or U.S. EPA protocols must be submitted as soon as possible in order to eliminate the need to include this information with every report.

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

[signature] 10/14/96
Signature Date

DAVID BRETTSCHNEIDER AWWT & WASTEWATER PROJECT MGR.
Name(typed or printed) Title

000011

1258 Greenbrier Street, Charleston, WV 25311-1002 — Tel: (304) 346-0725 Fax: (304) 346-0761
4643 Benson Avenue, Baltimore, MD 21227-1410 — Tel: (410) 247-7400 Fax: (410) 247-7402
4440 Glen Este-Withamsville Road, Suite 900, Cincinnati, OH 45245-1331 — Tel: (513) 752-9696 Fax: (513) 752-2614

ENVIRONMENTAL FACILITIES IN ALASKA, CALIFORNIA, FLORIDA, ILLINOIS, MARYLAND, MICHIGAN, MISSOURI, NEW JERSEY, OHIO, WEST VIRGINIA

OEPA Permit No.: 1I000004*ED

ACUTE TOXICITY TEST SAMPLING DATA

TABLE 1

Sampling Summary for Acute Toxicity Tests

Sampling Location & Description	Sample Collection Beginning MM/DD/Time	Sample Collection Ending MM/DD/Time	Weather/Receiving Stream Conditions
Final Effluent:			
Outfall No.: 1I000004001 Type: Composite Volume Collected: 1 Gal	09/26/10:45	09/27/10:45	
Upstream Station:			
Waterbody: Great Miami River Station No.: Type: Grab Volume Collected: 1 Gal	09/27/11:10		
Downstream Station(Near-field):			
Waterbody: Great Miami River Station No.: 1I000004901 Type: Grab Volume Collected: 1 Gal	09/27/11:20		
Additional Stations(If needed):			
Waterbody: Station No.: Type: Volume Collected:			

OEPA Permit No.: 1I000004*ED

TOXICITY TEST CONDITIONS

TABLE 2

Summary of Toxicity Test Conditions

1. Test Species and Age: Pimephales promelas 20 days old
2. Test Type and Duration: 48 Hour Static Acute Screen
3. Test Dates: 09/27/96 - 09/29/96
4. Test Temperature: 25°C
5. Light Quality: Ambient Laboratory Illumination
6. Photoperiod: 16 hours light, 8 hours darkness
7. Feeding Regime: none
8. Size of Test Vessel: 1.5 L beaker
9. Volume and Depth of Test Solutions: volume=1000 ml depth=9cm
10. No. of Test Organisms per Test Vessel: ten (10)
11. No. of Test Vessels per Test Solution: two (2)
12. Total No. of Test Organisms per Test Solution: twenty (20)
13. Test Concentrations
    (as percent by volume effluent): 100
    Upstream: 100
    Near Field: 100
14. Renewal of Test Solutions: none
15. Dilution and Primary Control Water: Upstream
16. Secondary Control Water: Rearing Unit Water
17. Aeration? Before/During Test: none
18. Endpoints Measured: LC50 and EC50
19. If secondary control water used as diluent due to toxicity in primary control water, indicate number of consecutive tests conducted with alternate diluent: NA

OEPA Permit No.: 1I000004*ED

ACUTE TOXICITY TEST RESULTS

TABLE 3

Results of a *Pimephales promelas* 24-Hour Static Acute Toxicity Test Conducted 09/27/96 -09/29/96 Using Effluent from Outfall 1I000004001.

Test Solutions	Cumulative Percent Mortality (Cumulative Percent Mortality)a			
	24-hr	48-hr	72-hr	96-hr
Primary Control/ Dilution Water	0 (0)	0 (0)	( )	( )
Secondary Control	0 (0)	5 (5)	( )	( )
10% Effluent	( )	( )	( )	( )
18% Effluent	( )	( )	( )	( )
32% Effluent	( )	( )	( )	( )
56% Effluent	( )	( )	( )	( )
100% Effluent	0 (0)	0 (0)	( )	( )
Near Field Sample	0 (0)	0 (0)	( )	( )

LC50 Values (EC50) Values

24-hr >100%(>100%)

48-hr >100%(>100%)

72-hr ( )

96-hr ( )

Calculated TUa Value: AA (AA)

Method(s) used to Determine LC50, EC50 and Confidence Limit Values:

LC50 95% Confidence Limits (EC50 95% Confidence Limits)

	24-hr	48-hr	72-hr	96-hr
LL(Lower Limit)	( )	( )	( )	( )
UL(Upper Limit)	( )	( )	( )	( )

a = cumulative percent effected is the total percentage of test organisms observed dead, immobile, exhibiting loss of equilibrium or other defined endpoints.

OEPA Permit No.: 1I000004*ED

TOXICITY TEST CONDITIONS

TABLE 4

Summary of Toxicity Test Conditions

1. Test Species and Age: Ceriodaphnia dubia less than 24 hours old
2. Test Type and and Duration: 48 Hour Static Acute Screen
3. Test Dates: 09/27/96 - 09/29/96
4. Test Temperature: 25°C
5. Light Quality: Ambient Laboratory Illumination
6. Photoperiod: 16 hours light, 8 hours darkness
7. Feeding Regime: none
8. Size of Test Vessel: 30 ml cup
9. Volume and Depth of Test Solutions: volume=20 ml depth=2 cm
10. No. of Test Organisms per Test Vessel: four (4)
11. No. of Test Vessels per Test Solution: five (5)
12. Total No. of Test Organisms per Test Solution: twenty (20)
13. Test Concentrations
    (as percent by volume effluent): 100
    Upstream: 100
    Near Field: 100
14. Renewal of Test Solutions: none
15. Dilution and Primary Control Water: Upstream
16. Secondary Control Water: Rearing Unit Water
17. Aeration? Before/During Test: none
18. Endpoints Measured: LC50 and EC50
19. If secondary control water used as diluent due to toxicity in primary control water, indicate number of consecutive tests conducted with alternate diluent: NA

OEPA Permit No.: 1I000004*ED

ACUTE TOXICITY TEST RESULTS

TABLE 5

Results of a *Ceriodaphnia dubia* 24-Hour Static Acute Toxicity Test Conducted 09/27/96 -09/29/96 Using Effluent from Outfall 1I000004001.

Test Solutions	Cumulative Percent Mortality (Cumulative Percent Mortality)a			
	24-hr	48-hr	72-hr	96-hr
Primary Control/ Dilution Water	0 (0)	10 (10)	( )	( )
Secondary Control	0 (0)	0 (0)	( )	( )
10% Effluent	( )	( )	( )	( )
18% Effluent	( )	( )	( )	( )
32% Effluent	( )	( )	( )	( )
56% Effluent	( )	( )	( )	( )
100% Effluent	0 (0)	0 (0)	( )	( )
Near Field Sample	0 (0)	0 (0)	( )	( )

LC50 Values (EC50) Values

24-hr >100% (>100%)

48-hr >100% (>100%)

72-hr ( )

96-hr ( )

Calculated TUa Value: AA (AA)

Method(s) used to Determine LC50, EC50 and Confidence Limit Values:

LC50 95% Confidence Limits (EC50 95% Confidence Limits)

	24-hr	48-hr	72-hr	96-hr
LL(Lower Limit)	( )	( )	( )	( )
UL(Upper Limit)	( )	( )	( )	( )

a = cumulative percent effected is the total percentage of test organisms observed dead, immobile, exhibiting loss of equilibrium or other defined endpoints.

OEPA Permit No.: 1I000004*ED

ADDITIONAL TOXICITY TEST INFORMATION

1. Limit all raw data and statistical calculations/printouts obtained during test(s). Data must be presented in tabular form and must include all physical and/or chemical measurements recorded during the tests and sampling (e.g. temperature, conductivity, dissolved oxygen, pH, hardness, alkalinity, etc.). See attached

2. Method(s) used to verify near-field and/or far-field sampling locations must be included if instream testing is required. Maps, sketches and/or drawings may be used to show locations.

CONCLUSIONS/COMMENTS

Indicate below any other relevant information that may aid in the evaluation of this report. Include any deviations from your SOP that were necessary for these tests and any recent Standard Reference Toxicant(SRT) results obtained. Do these results agree with previous SRT results? Attach additional pages as needed.

Attached, September Quality Assurance/Quality Control Report. See attached cusum chart for summary of previous QA/QC test results.

ACUTE TOXICITY TEST DATA

FERMCO

EFFLUENT

	Pimephales promelas		*Ceriodaphnia dubia*	
Concentration	% Mortality	% Effected	% Mortality	% Effected
100	0	0	0	0
Upstream Control	0	0	10	10
CT&E Control	5	5	0	0
Near Field	0	0	0	0
	48 LC50 = >100%		48 LC50 = >100%	
	48 EC50 = >100%		48 EC50 = >100%	
	TUa = AA (AA)		TUa = AA (AA)	

BIOASSAY LABORATORY TEST REPORT

FOR: FERMCO
September 1996 **LAB NO.** OH68186-88
DATE RECEIVED 09/27/96
SAMPLE DATE: 09/27/96 **TIME:** 10:45 **DATE ANALYZED** 09/27/96

SOURCE: Effluent, Near Field **ANALYST** KH, JH

NOTE: ALL RESULTS EXPRESSED IN MG/L UNLESS OTHERWISE DESIGNATED. < = LESS THAN

NOTE: METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS TO FRESHWATER & MARINE ORGANISMS EPA-600/4-85-013

Source of Dilution Water: Upstream (OH68188)

Test Species: *Ceriodaphnia dubia* **Age:** <24 Hrs **Temperature Range:** 25°C

Type of Test: 48 Hour Static Acute Screen **Test Container:** 30 ml cup

Replications: Two **No. of Organisms per Replications:** Ten

NPDES Permit No: _____ **Beginning: Date** 09/27/96 **Time** 15:00
Ending: Date 09/29/96 **Time** 15:00

Start **Temperature:** 25.0 °C

Effluent %	Upstream Control	2nd Control	100	Near Field			
Hardness	292	186	276	300			
DO	8.06	7.79	8.32	8.07			
pH, std. units	8.38	8.13	8.19	8.38			
Alkalinity	210.2	104.3	189.3	216.4			
Sp.Conductance umhos/cm	689	446	578	707			

24 Hours **Temperature:** 24.6°C

No. Surviving	20 (20)	20 (20)	20 (20)	20 (20)			

48 Hours **Temperature:** 24.7°C

No. Surviving	18 (18)	20 (20)	20 (20)	20 (20)			

Test Results: **48 Hours LC50 = >100%** **TUa = AA**
EC50 = >100% **TUa = AA**

NOTE: Number in parenthesis equals number not adversely effected(EC50).

NOTE: DUE TO FRAGILE STRUCTURE PER DAPHNIA ORGANISMS, DISSOLVED OXYGEN, HARDNESS, ALKALINITY, SP. CONDUCTANCE, & pH READING COULD NOT BE TAKEN AFTER THE ORGANISM HAD BEEN ADDED TO THE SAMPLE. THESE ANALYSES COULD CAUSE INJURY TO THE DAPHNIA ORGANISM.

BIOASSAY LABORATORY TEST REPORT

FOR: FERMCO
September 1996 **LAB NO:** OH68186-88
DATE RECEIVED: 09/27/96
SAMPLE DATE: 09/27/96 **TIME:** 10:45 **DATE ANALYZED:** 09/27/96

SOURCE: Effluent, NearField **ANALYST:** KH, JH
NOTE: ALL RESULTS EXPRESSED IN MG/L UNLESS OTHERWISE DESIGNATED. <=LESS THAN
NOTE: METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS TO FRESHWATER & MARINE ORGANISMS EPA-600/4-85-013
Source of Dilution Water: Upstream (OH68188)

Test Species: *Pimephales promelas* **Age:** 20 days **Temperature Range:** 25°C

Type of Test: 48 Hr Static Acute Screen **Test Container:** 1500 ml beaker

Replications: Two **No. of Organisms per Replications:** Ten

NPDES Permit No: **Beginning: Date** 09/27/96 **Time** 15:00
Ending: Date 09/29/96 **Time** 15:00

Start **Temperature:** 25.0°C

Effluent %	Upstream Control	2nd Control	100	Near Field			
Hardness	292	186	276	300			
D.O.	8.06	7.79	8.32	8.07			
pH, std units	8.38	8.13	8.19	8.38			
Alkalinity	210.2	104.3	189.3	216.4			
Sp.Conduct., umhos/cm	689	446	578	707			

24 Hours **Temperature:** 24.3°C

No. Surviving	20 (20)	20 (20)	20 (20)	20 (20)			
D.O.	7.98	7.86	7.83	7.97			
pH, std. units	8.52	8.24	8.39	8.51			

48 Hours **Temperature:** 24.3°C

No. Surviving	20 (20)	19 (19)	20 (20)	20 (20)			
D.O.	7.84	7.74	7.18	7.58			
pH, std. units	8.60	8.20	8.45	8.58			

72 Hours

No. Surviving							
D.O.							
pH, std. units							

96 Hours

No. Surviving							
D.O.							
pH, std. units							

TEST RESULTS: 48 Hour LC50 = >100% TUa = AA
48 Hour EC50 = >100% TUa = AA
NOTE: Number in parenthesis equals number not adversely effected(EC50).

QUALITY ASSURANCE/QUALITY CONTROL

ACUTE

SEPTEMBER 1996

BIOASSAY LABORATORY TEST REPORT

FOR: Quality Assurance/Quality Control
September 1996 LAB NO:
DATE RECEIVED:
SAMPLE DATE: TIME: DATE ANALYZED: 09/18/96

SOURCE: Sodium Chloride ANALYST: KH, JH

NOTE: ALL RESULTS EXPRESSED IN MG/L UNLESS OTHERWISE DESIGNATED. <=LESS THAN

NOTE: METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS TO FRESHWATER & MARINE ORGANISMS EPA-600/4-85-013

Source of Dilution Water: Rearing Unit Water

Test Species: *Pimephales promelas* Age: 10 Days Temperature Range: 25°C

Type of Test: 48 Hr Static Acute Test Container: 1500 ml beaker

Replications: Two No. of Organisms per Replications: Ten

NPDES Permit No: Beginning: Date 09/18/96 Time 15:00
Ending: Date 09/20/96 Time 15:00

Start			Temperature 25.0°C				
Effluent mg/L	Control	8000	9000	10000	11000		
Hardness	194						
D.O.	7.50	7.71	7.78	7.77	7.83		
pH, std units	8.10	7.98	7.98	7.94	7.96		
Alkalinity	102.0				107.7		
Sp.Conduct., umhos/cm	594	12540	13910	15330	16480		

24 Hours			Temperature 24.2°C				
No. Surviving	19	19	13	2	1		
D.O.	7.76	7.71	7.91	7.83	7.67		
pH, std. units	8.11	8.10	8.15	8.15	8.10		

48 Hours			Temperature 24.2°C				
No. Surviving	19	19	9	0	0		
D.O.	8.17	7.83	7.93	7.96	7.74		
pH, std. units	8.24	8.11	8.12	8.12	8.08		

72 Hours							
No. Surviving							
D.O.							
pH, std. units							

96 Hours							
No. Surviving							
D.O.							
pH, std. units							

TEST RESULTS: 48 Hour LC50 = 8893 mg/L

TRIMMED SPEARMAN-KARBER METHOD. MONTANA STATE UNIV

FOR REFERENCE, CITE:
HAMILTON, M.A., R.C. RUSSO, AND R.V. THURSTON, 1977.
TRIMMED SPEARMAN-KARBER METHOD FOR ESTIMATING MEDIAN
LETHAL CONCENTRATIONS IN TOXICITY BIOASSAYS.
ENVIRON. SCI. TECHNOL. 11(7): 714-719;
CORRECTION 12(4):417 (1978).

DATE: 9/18/96 TEST NUMBER: QA/QC DURATION: 48 Hour
CHEMICAL: Sodium Chloride SPECIES: P. promel

RAW DATA:

CONCENTRATION(mg/L)	8000.00	9000.00	**********	
NUMBER EXPOSED:	20	20	20	20
MORTALITIES:	1	11	20	20

SPEARMAN-KARBER TRIM: 5.00%

SPEARMAN-KARBER ESTIMATES: LC50: 8893.49
95% LOWER CONFIDENCE: 8646.60
95% UPPER CONFIDENCE: 9147.42

BIOASSAY LABORATORY TEST REPORT

FOR: Quality Assurance/Quality Control
September 1996 LAB NO.
DATE RECEIVED
SAMPLE DATE: TIME: DATE ANALYZED 09/18/96

SOURCE: Sodium Chloride ANALYST KH, JH

NOTE: ALL RESULTS EXPRESSED IN MG/L UNLESS OTHERWISE DESIGNATED. < = LESS THAN

NOTE: METHODS FOR MEASURING THE ACUTE TOXICITY OF EFFLUENTS TO FRESHWATER & MARINE ORGANISMS EPA-600/4-85-013

Source of Dilution Water: Rearing Unit Water

Test Species: *Ceriodaphnia dubia* Age: <24 Hrs Temperature Range: 25°C

Type of Test: 48 Hour Static Acute Test Container: 30 ml cup

Replications: Five No. of Organisms per Replications: Four

NPDES Permit No: Beginning: Date 09/18/96 Time 15:00
Ending: Date 09/20/96 Time 15:00

Start Temperature 25.0°C

Effluent mg/L	Control	1000	2000	3000	4000		
Hardness	194						
DO	7.50	7.55	7.53	7.63	7.60		
pH, std. units	8.10	8.08	8.07	8.06	8.07		
Alkalinity	102.0				104.0		
Sp.Conductance umhos/cm	594	2370	4090	5690	7250		

24 Hours Temperature 25.4°C

No. Surviving	20	20	20	11	0		

48 Hours Temperature 25.5°C

No. Surviving	20	20	18	2	0		

Test Results: 48 Hours LC50 = 2448 mg/L

NOTE: DUE TO FRAGILE STRUCTURE PER DAPHNIA ORGANISMS, DISSOLVED OXYGEN, HARDNESS, ALKALINITY, SP. CONDUCTANCE, & pH READING COULD NOT BE TAKEN AFTER THE ORGANISM HAD BEEN ADDED TO THE SAMPLE. THESE ANALYSES COULD CAUSE INJURY TO THE DAPHNIA ORGANISM.

EPA PROBIT ANALYSIS PROGRAM
USED FOR CALCULATING EC VALUES
Version 1.4

QA/QC September 1996 C. dubia

Conc.	Number Exposed	Number Resp.	Observed Proportion Responding	Adjusted Proportion Responding	Predicted Proportion Responding
1000.0000	20	0	0.0000	0.0000	0.0000
2000.0000	20	2	0.1000	0.1000	0.0989
3000.0000	20	18	0.9000	0.9000	0.9026
4000.0000	20	20	1.0000	1.0000	0.9991

Chi - Square Heterogeneity = 0.022

Mu = 3.388776
Sigma = 0.068148

Parameter	Estimate	Std. Err.	95% Confidence Limits	
Intercept	-44.726521	10.044061	(-64.412880,	-25.040161)
Slope	14.673887	2.960181	(8.871933,	20.475842)

Theoretical Spontaneous Response Rate = 0.0000

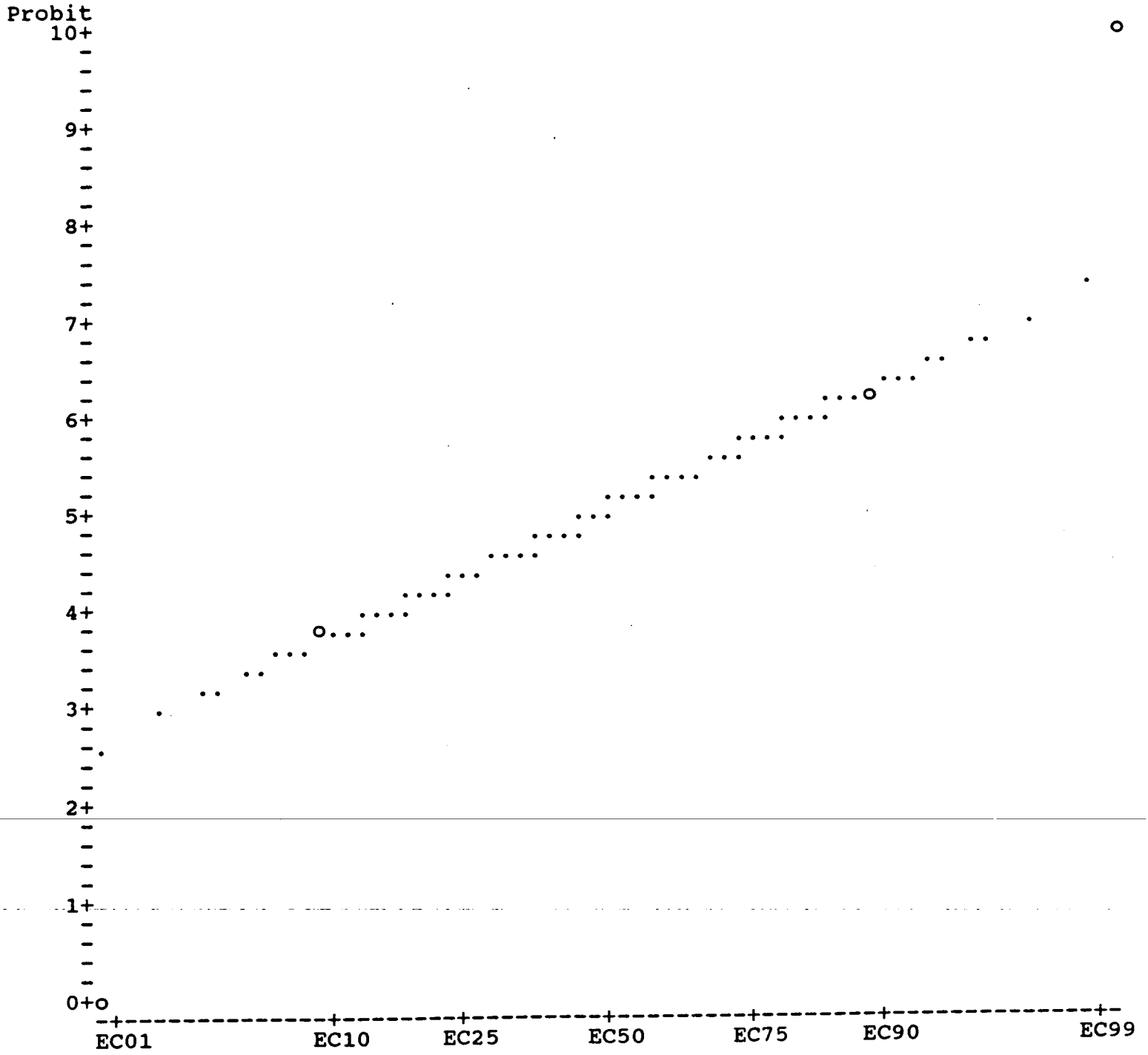
QA/QC September 1996 C. dubia

Estimated EC Values and Confidence Limits

Point	Conc.	Lower 95% Confidence Limits	Upper 95% Confidence Limits
EC 1.00	1699.1930	1303.2112	1930.1152
EC 5.00	1890.9457	1543.9262	2099.2014
EC10.00	2001.8768	1686.3771	2199.9785
EC15.00	2080.4026	1787.4611	2273.7844
EC50.00	2447.8020	2233.3894	2675.8093
EC85.00	2880.0842	2639.4783	3329.1646
EC90.00	2993.0586	2729.4189	3526.9226
EC95.00	3168.6431	2861.9460	3850.3184
EC99.00	3526.2217	3114.3704	4559.0039

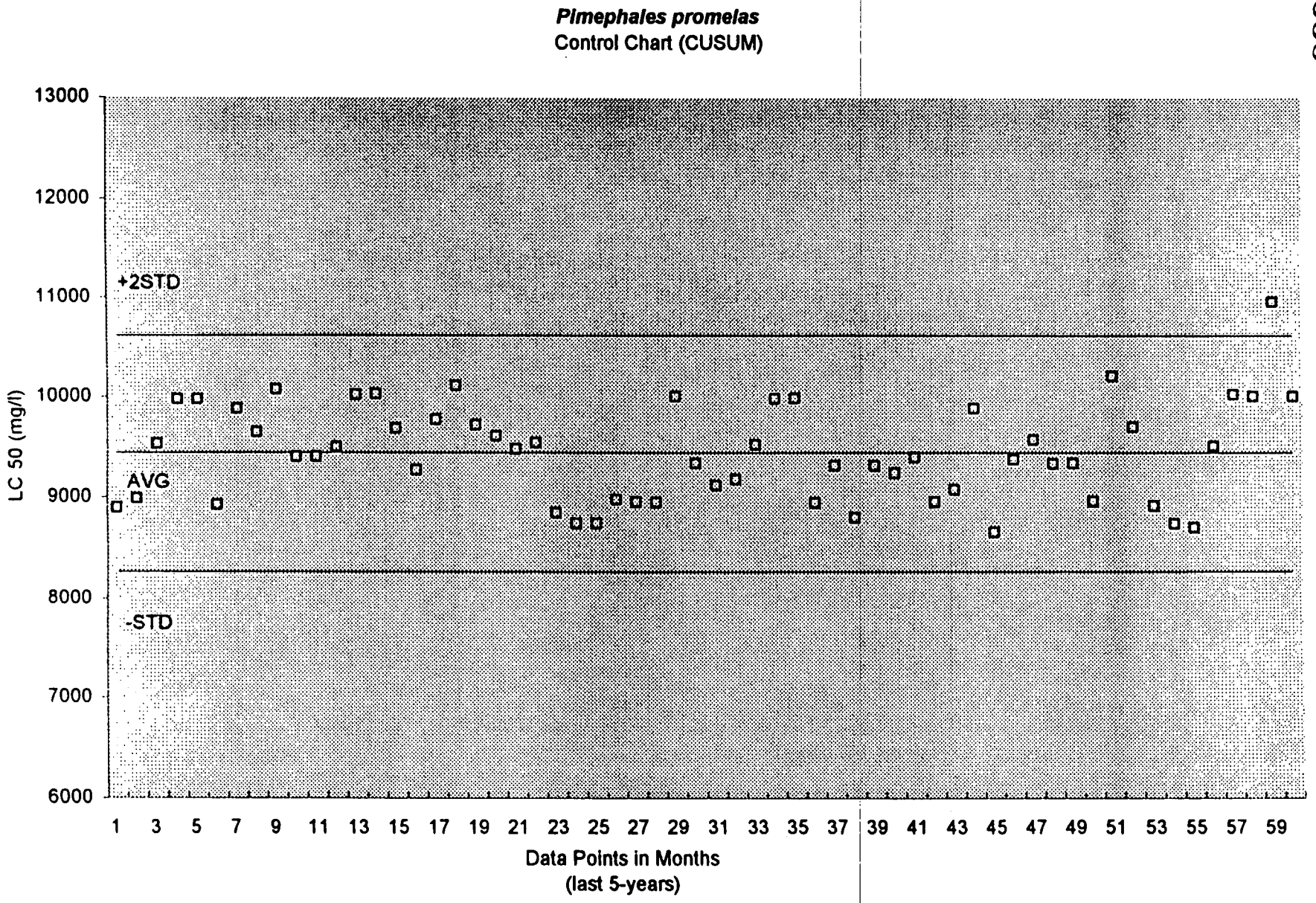
QA/QC September 1996 C. dubia

PLOT OF ADJUSTED PROBITS AND PREDICTED REGRESSION LINE



CONTROL (CUSUM) CHART

September 1996



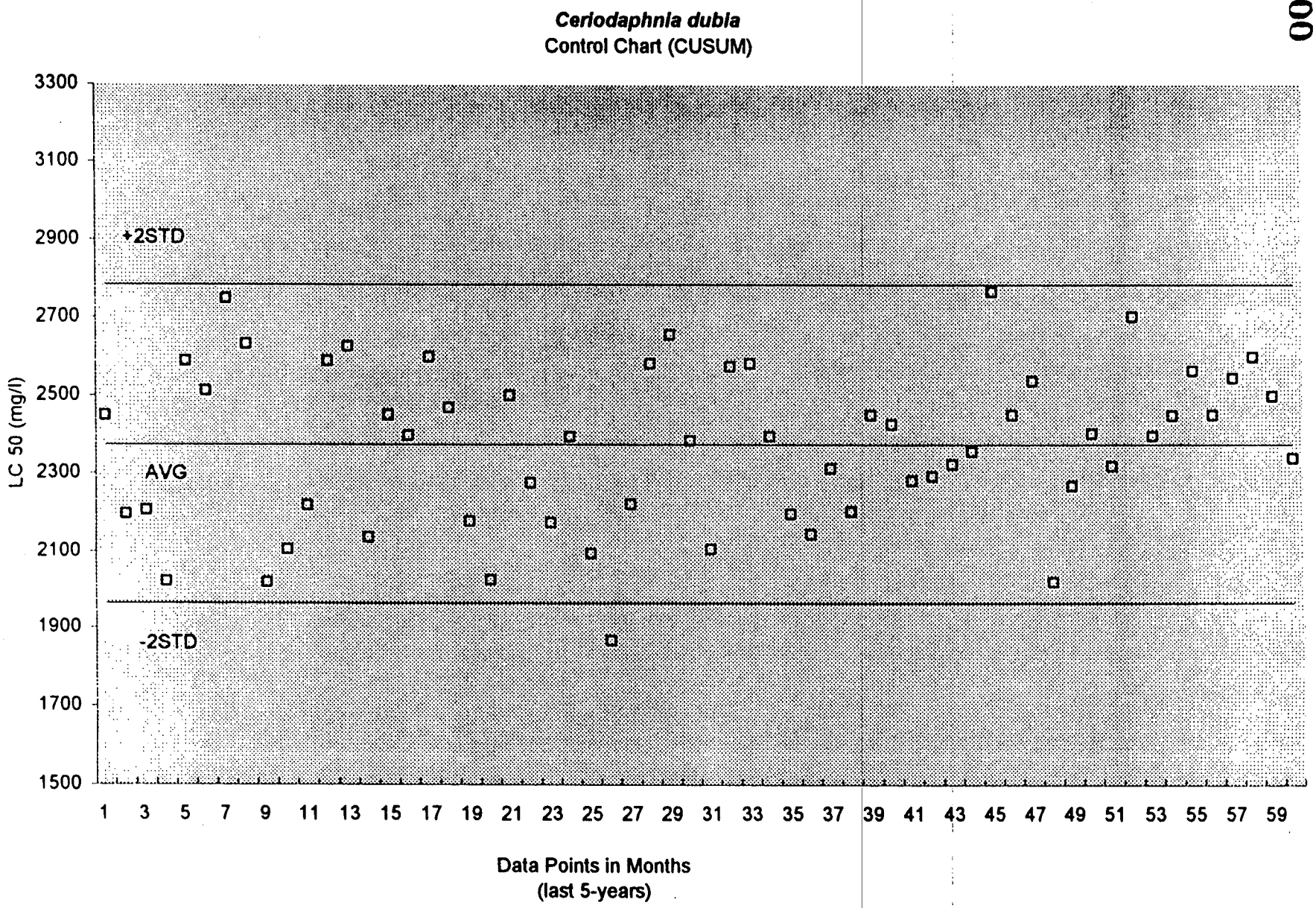
9/23/96

Note: data point #1 represents the most recent month.

1984

000029

September 1996



9/23/96

Note: Data point #1 represents the most recent month.

1982

000030