Received
SEP 28 2011
DEQ-SWRO

HOLSTON REGIONAL WWTP

QUARTERLY ACUTE BIOASSAY

SAMPLE DATES: June 5-6, 2011

TEST DATES: June 7-9, 2011

Microbac Tri-Cities
71 Wilson Avenue
Johnson City, TN 37604

7/22/2011

Microbac®

Received
SEP 28 2011
DEQ-SWRO

7/22/2011

Scott County PSA
156 Legion Street
Weber City, VA 24290

SUMMARY
Quarterly Acute Bioassay
Holston Regional WWTP Effluent
Sample Dates: June 5-6, 2011
Test Dates: June 7-9, 2011

STATE PERMIT LIMIT		RESULT	
PIMEPHALES PROMELAS SURVIVAL:		**PIMEPHALES PROMELAS SURVIVAL:**	
LC50:	92%	**LC50:**	Greater than 100% effluent
CERIODAPHNIA DUBIA SURVIVAL:		**CERIODAPHNIA DUBIA SURVIVAL:**	
LC50:	92%	**LC50:**	Greater than 100% effluent

***For all test information, sample information, and dilution water information, see page 1 of the Chronic Bioassay Report

TEST METHOD

TEST METHOD: 48 Hr Acute Toxicity- Fathead minnows- EPA-821-R-02-012 Fifth Edition October 2002 Method 2000.0

DATE AND TIME TEST STARTED: 6/7/11 @ 0930

DATE AND TIME TEST TERMINATED: 6/9/11 @ 0930

TEST CHAMBERS: 300ml clear plastic beakers

VOLUME USED FOR CHAMBER: 250ml

TEST CONCENTRATIONS: 5.00% 10.00% 22% 47% 100%

NUMBER OF REPLICATES PER CONCENTRATION: 4

NUMBER OF ORGANISMS PER REPLICATE: 10

ACCLIMATION OF ORGANISMS: Normal

TEST TEMPERATURE - MEAN: 25 degrees C **RANGE:** 25 degrees C

LIGHT INTENSITY: 50-100 footcandles

TEST ORGANISMS

NAME: Pimephales promelas **SOURCE:** Aquatic Biosystems- Fort Collins, CO

AGE: 2-3 days

QUALITY ASSURANCE

STANDARD REFERENCE TOXICANT: Potassium chloride **SOURCE:** Microbac Tri-Cities

DATE AND TIME OF MOST RECENT TEST: 6/7-9/11 @ 1000

DILUTION WATER USED: Moderately Hard Synthetic Freshwater

RESULTS AND STATISTICAL METHOD (Standard Reference Toxicant)

PIMEPHALES PROMELAS SURVIVAL		METHOD
LC50:	6231 mg/l	Spearman Karber

TEST RESULTS:
FATHEAD MINNOWS
I. TEST ACCEPTABILITY

CONTROL SURVIVAL:	100%
100% EFFLUENT SURVIVAL:	100%

AVERAGE WEIGHT PER CONTROL ORGANISM:	N/A
AVERAGE NUMBER OF YOUNG PER CONTROL (C. dubia):	N/A
60% OF CONTROL FEMALES (C. dubia) WITH THREE BROODS:	N/A
TOTAL NUMBER OF MALES (C. dubia) IN THE TEST:	N/A

II. STATE PERMIT LIMITS

PIMEPHALES PROMELAS
SURVIVAL
LC50: 92%

III. RESULTS

RESULTS AND STATISTICAL METHOD (as appropriate)

PIMEPHALES PROMELAS	**METHOD**
SURVIVAL	
LC50*: Greater than 100 % effluent	Spearman Karber

*COMMENTS: There was not a 50% reduction in survival of fathead minnows in any concentration.

TEST METHOD:

TEST METHOD: Acute Toxicity- Ceriodaphnia dubia- EPA-821-R-02-012 Fifth Edition October 2002 Method 2002.0

DATE AND TIME TEST STARTED: 6/7/11 @ 1300

DATE AND TIME TEST TERMINATED: 6/9/11 @ 1300

TEST CHAMBERS: 30 ml clear plastic containers

VOLUME USED FOR CHAMBER: 20ml

TEST CONCENTRATIONS: 6.25% 12.50% 25% 50% 100%

NUMBER OF REPLICATES PER CONCENTRATION: 4

NUMBER OF ORGANISMS PER REPLICATE: 5

ACCLIMATION OF ORGANISMS: Normal

TEST TEMPERATURE-MEAN: 25 degrees C **RANGE:** 25 degrees C

LIGHT INTENSITY: 50-100 footcandles **PHOTOPERIOD:** 16hr light/ 8hr dark

TEST ORGANISMS

NAME: Ceriodaphnia dubia **SOURCE:** Aquatic Research Organisms New Hampshire

AGE: Less than 24 hours

QUALITY ASSURANCE

STANDARD REFERENCE TOXICANT: Sodium Chloride **SOURCE:** Microbac Tri-Cities

DATE AND TIME OF MOST RECENT TEST: 6/7-9/11 @ 1030

DILUTION WATER USED: Moderately Hard Synthetic Freshwater

RESULTS AND STATISTICAL METHOD (Standard Reference Toxicant)

CERIODAPHNIA DUBIA SURVIVAL:
LC50: 2450 mg/l

METHOD: Spearman Karber

TEST RESULTS:
Ceriodaphnia dubia

I. TEST ACCEPTABILITY

CONTROL SURVIVAL:	100%
AVERAGE WEIGHT PER CONTROL ORGANISM:	N/A
AVERAGE NUMBER OF YOUNG PER CONTROL (C. dubia):	N/A
60% OF CONTROL FEMALES (C. dubia) IN THE TEST:	N/A
TOTAL NUMBER OF MALES (C. dubia) IN THE TEST:	N/A

II. STATE PERMIT LIMITS

CERIODAPHNIA DUBIA
SURVIVAL
LC50: 92% effluent

III. RESULTS

RESULTS AND STATISTICAL METHOD (as appropriate)

CERIODAPHNIA DUBIA SURVIVAL	**METHOD:**
LC50*: Greater than 100% effluent	Spearman Karber

***Comments:** There was not a 50% reduction in survival of ceriodaphnia dubia in any concentration.

Report Prepared By: Kimberly Storey

Reviewed By: Wilma A. Huddleston

Approved By: Kimberly Storey
Laboratory Director

Fathead Survival Countsheet

Facility: Scott Co. Weber City Test Start Date: 6/7/11

	Replicate	Number of Survivors Day 1	2 (*)	3	4	5	6	7	Remarks
Control 0	1	10	10	10	10	10	10	10	~~20% Dil. Min. Water~~
	2	10	10	10	10	10	10	10	MHSFW
	3	10	10	10	10	10	10	10	
	4	10	10	10	10	10	10	10	
Conc: 5%	1	10	10	10	10	10	10	10	
	2	10	10	10	10	10	10	10	
	3	10	10	10	10	10	10	9	
	4	10	10	10	10	10	10	10	
Conc: 10%	1	10	10	10	10	10	10	10	
	2	10	10	10	10	10	10	10	
	3	10	10	10	10	10	10	10	
	4	10	10	10	10	10	10	10	
Conc: 22%	1	10	10	10	10	10	10	10	
	2	10	10	10	10	10	10	10	
	3	10	10	10	10	10	10	10	
	4	10	10	10	10	10	10	10	
Conc: 47%	1	10	10	10	10	10	10	10	
	2	10	10	10	10	10	10	10	
	3	10	10	10	10	10	10	10	
	4	10	10	10	10	10	10	10	
Conc: 100%	1	10	10	10	10	10	10	10	
	2	10	10	10	10	10	10	10	
	3	10	10	10	10	10	10	10	
	4	10	10	10	10	10	10	10	

6/14/11
KS 10:00

Comments:

(*) Fathead minnow survival at 48 hours is 100%, therefore the 48 hours LC50 value is greater than 100% effluent.

ACUTE CERIODAPHNIA DUBIA

MORTALITY MEASUREMENTS

Lab ID# : 11F0047

Project:	Date:	Time:	Analyst:
Scott Co. Weber City	4/7/11	1:00	KS

Conc. Effluent	Temp.	D.O.	pH	# Fish Exposed	# Fish Dead	Comments
Control	25.0	7.3	7.5	5	0	
Control				5	0	
Control				5	0	
Control				5	0	
6.25	25.0	7.3	7.5	5	0	
↓				5	0	
				5	0	
				5	0	
12.5	25.0	7.3	7.5	5	0	
↓				5	0	
				5	0	
				5	0	
25	25.0	7.3	7.4	5	0	
↓				5	0	
				5	0	
				5	0	
50	25.0	7.4	7.4	5	0	
↓				5	0	
				5	0	
				5	0	
100	25.0	7.5	7.8	5	0	
↓				5	0	
				5	0	
				5	0	

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ACUTE CERIODAPHNIA DUBIA

MORTALITY MEASUREMENTS

Lab ID# : 11F0047

Project:	Date:	Time:	Analyst:
Scott Co. Weber City	6/8/11	1:15	KS

Conc. Effluent	Temp.	D.O.	pH	# Fish Exposed	# Fish Dead	Comments
Control	25.0	N/A		5	0	
Control				5	0	
Control				5	0	
Control				5	0	
6.25	25.0			5	0	
				5	0	
				5	0	
				5	0	
12.5	25.0			5	0	
				5	0	
				5	0	
				5	0	
25	25.0			5	0	
				5	0	
				5	0	
				5	0	
50	25.0			5	0	
				5	0	
				5	0	
				5	0	
100	25.0			5	0	
				5	0	
				5	0	
				5	0	

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ACUTE CERIODAPHNIA DUBIA

MORTALITY MEASUREMENTS

Lab ID#: 11E0047

Project:	Date:	Time:	Analyst:
Scott Co. Webber City	4/9/11	1:00	KS

Conc. Effluent	Temp.	D.O.	pH	# Fish Exposed	# Fish Dead	Comments
Control	25.0	7.0	7.4	5	0	100% survival
Control				5	0	
Control				5	0	
Control				5	0	
6.25	25.0	7.0	7.4	5	0	100% survival
↓				5	0	-all dilutions
				5	0	
				5	0	
12.5	25.0	7.0	7.4	5	0	
↓				5	0	
				5	0	
				5	0	
25	25.0	7.0	7.4	5	0	
↓				5	0	
				5	0	
				5	0	
50	25.0	7.1	7.5	5	0	
↓				5	0	
				5	0	
				5	0	
100	25.0	7.1	7.5	5	0	
↓				5	0	
				5	0	
				5	0	

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MICROBAC TRI-CITIES DIVISION
BIOMONITORING
QUALITY ASSURANCE/REFERENCE TOXICANT DATA SECTION

ACUTE PIMEPHALES PROMELAS

MORTALITY MEASUREMENTS

Lab ID#: N/A

Project: 48 hr. NaCl Ref. Tox.	Date: 6/7/11	Time: 10:00	Analyst: NS

Conc. Effluent	Temp.	D.O.	pH	# Fish Exposed	# Fish Dead	Comments
Control	25.0	7.5	7.4	10	0	
Control				10	0	
5000 mg/L	25.0	7.5	7.4	10	0	
5000				10	0	
7500	25.0	7.5	7.4	10	0	
7500				10	0	
10,000	25.0	7.5	7.5	10	0	
10,000				10	0	
				10		
				10		
				10		
				10		

Project: 48 hr. NaCl Ref. Tox.	Date: 6/8/11	Time: 10:30	Analyst: KS

Conc. Effluent	Temp.	D.O.	pH	# Fish Exposed	# Fish Dead	Comments
Control	25.0	7.2	7.5	10	0	
Control				10	0	
5000 mg/L	25.0	7.2	7.5	10	0	
5000				10	0	
7500	25.0	7.2	7.6	10	6	
7500				10	4	
10,000	25.0	7.3	7.7	10	10	
10,000				10	10	
				10		
				10		
				10		
				10		

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ACUTE PIMEPHALES PROMELAS

MORTALITY MEASUREMENTS

Lab ID#: n/a

Project: 48 hr. NaCl Ref. Tox.			Date: 6/9/11		Time: 10:30	Analyst: KS
Conc. Effluent	Temp.	D.O.	pH	# Fish Exposed	# Fish Dead	Comments
Control	25.0	7.0	7.6	10	0	100% survival
Control				10	0	
5000 mg/L	25.0	7.0	7.6	10	0	100% survival
5000				10	0	
7500	25.0	7.1	7.8	10	10	5% survival
7500				10	9	
10,000	X	X	X	10	10	0% survival
10,000				10	10	
				10		
				10		
				10		
				10		

Test: AC-Acute Fish Test
Test ID: 1NACL
Species: PP-Pimephales promelas
Protocol: EPAAW02-EPA/821/R-02-012
Sample ID: REF-Ref Toxicant
Sample Type: NACL-Sodium chloride
Start Date: 6/7/2011 End Date: 6/9/2011
Lab ID:

Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	D-Control	10	10	10			
	2	2	D-Control	10	10	10			
	3	1	5000	10	10	10			
	4	2	5000	10	10	10			
	5	1	7500	10	4	0			
	6	2	7500	10	6	1			
	7	1	10000	10	0	0			
	8	2	10000	10	0	0			

Comments: Sodium Chloride Reference Toxicant

Acute Fish Test-48 Hr Survival

Start Date:	6/7/2011	Test ID:	1NACL	Sample ID:	REF-Ref Toxicant
End Date:	6/9/2011	Lab ID:		Sample Type:	NACL-Sodium chloride
Sample Date:	6/7/2011	Protocol:	EPAAW02-EPA/821/R-02-01	Test Species:	PP-Pimephales promelas
Comments:	Sodium Chloride Reference Toxicant				

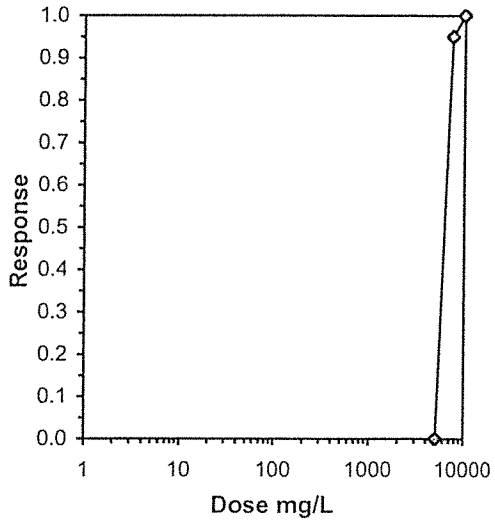
Conc-mg/L	1	2
D-Control	1.0000	1.0000
5000	1.0000	1.0000
7500	0.0000	0.1000
10000	0.0000	0.0000

			Transform: Arcsin Square Root					Number	Total
Conc-mg/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Resp	Number
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
5000	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
7500	0.0500	0.0500	0.2403	0.1588	0.3218	47.963	2	19	20
10000	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Normality of the data set cannot be confirmed				
Equality of variance cannot be confirmed				

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%	6230.77	6023.81	6444.83
5.0%	6189.42	6055.37	6326.42
10.0%	6189.42	6055.37	6326.42
20.0%	6189.42	6055.37	6326.42
Auto-0.0%	6230.77	6023.81	6444.83



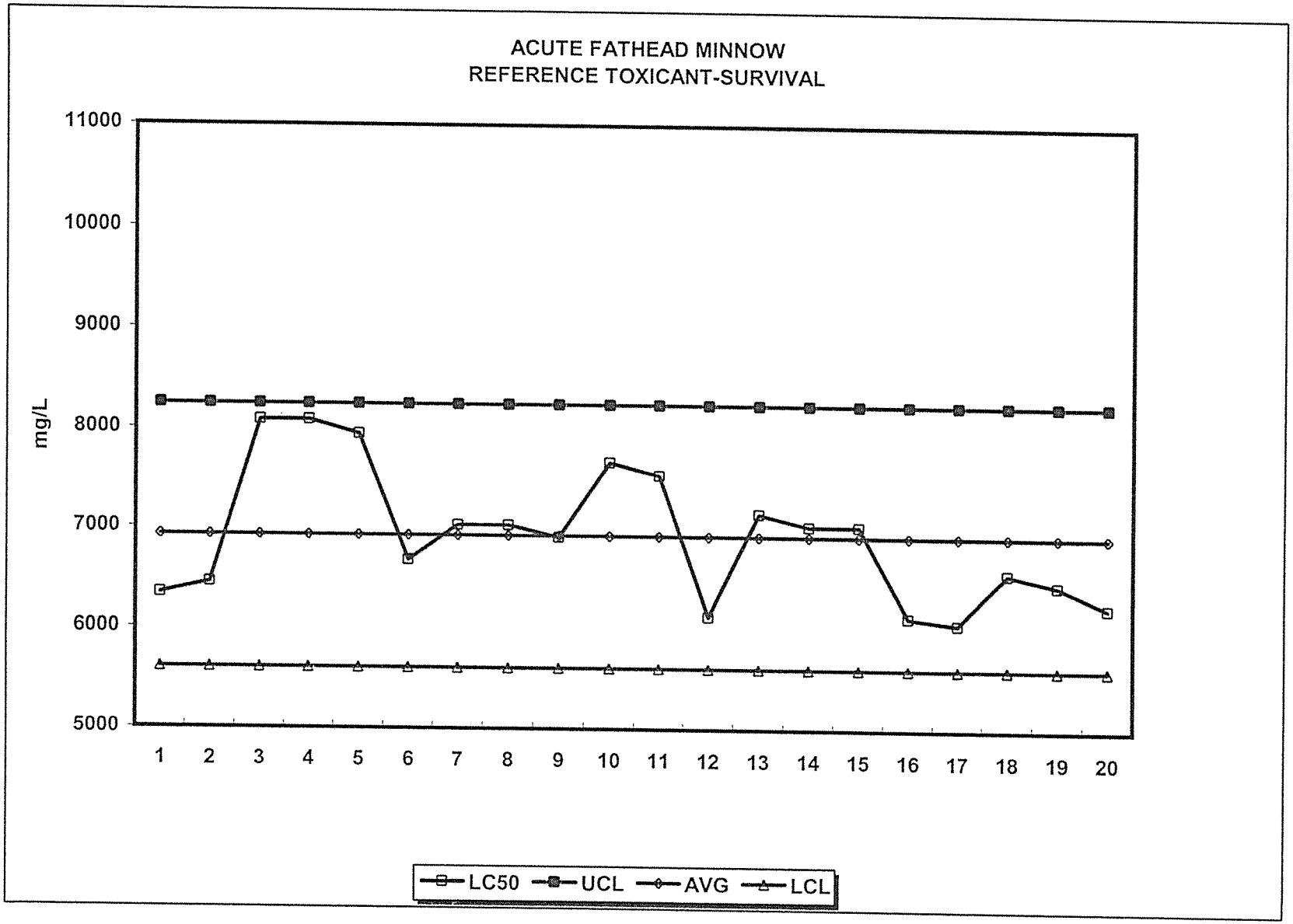
 ToxCalc v5.0.32 Reviewed by:_____

ACUTE FATHEAD MINNOW
REFERENCE TOXICANT-SURVIVAL

WKST2

DATE	TEST #	LC50		X2	UCL	AVG	LCL
12/10/08	1	6340	mg/L	40195600	8244	6927	5610
3/11/09	2	6450	mg/L	41602500	8244	6927	5610
6/25/09	3	8080	mg/L	65286400	8244	6927	5610
6/16/09	4	8080	mg/L	65286400	8244	6927	5610
9/9/09	5	7942	mg/l	63075364	8244	6927	5610
9/15/09	6	6678	mg/l	44595684	8244	6927	5610
10/27/09	7	7034	mg/l	49477156	8244	6927	5610
11/4/09	8	7034	mg/L	49477156	8244	6927	5610
12/1/09	9	6913	mg/L	47789569	8244	6927	5610
12/8/09	10	7671	mg/L	58844241	8244	6927	5610
12/15/09	11	7539	mg/L	56836521	8244	6927	5610
1/5/10	12	6124	mg/L	37503376	8244	6927	5610
3/16/10	13	7157	mg/L	51222649	8244	6927	5610
4/28/10	14	7034	mg/L	49477156	8244	6927	5610
5/11/10	15	7034	mg/L	49477156	8244	6927	5610
10/12/10	16	6124	mg/L	37503376	8244	6927	5610
12/7/10	17	6059	mg/L	36711481	8244	6927	5610
2/15/11	18	6563	mg/L	43072969	8244	6927	5610
3/15/11	19	6450	mg/L	41602500	8244	6927	5610
6/7/11	20	6231	mg/L	38825361	8244	6927	5610

Sum(LC50)=	138537
Avg(LC50)	6927
Std. Dev.	658
Upper C.L.	8244
Lower C.L.	5610


ACUTE FATHEAD MINNOW
REFERENCE TOXICANT-SURVIVAL
mg/L
11000
10000
9000
8000
7000
6000
5000
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
LC50
UCL
AVG
LCL

ACUTE CERIODAPHNIA DUBIA

MORTALITY MEASUREMENTS

Lab ID#: N/A

Project:	Date:	Time:	Analyst:
48 hr. NaCl Ref. Tox.	6/7/11	10:30	KS

Conc. Effluent	Temp.	D.O.	pH	# Fish Exposed	# Fish Dead	Comments
Control	25.0	7.5	7.4	5	0	
Control				5	0	
Control				5	0	
Control				5	0	
1000 mg/L	25.0	7.5	7.4	5	0	
1000				5	0	
1000				5	0	
1000				5	0	
2000	25.0	7.5	7.4	5	0	
2000				5	0	
2000				5	0	
2000				5	0	
3000	25.0	7.5	7.4	5	0	
3000				5	0	
3000				5	0	
3000				5	0	
				5		
				5		
				5		
				5		
				5		
				5		
				5		
				5		

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ACUTE CERIODAPHNIA DUBIA

MORTALITY MEASUREMENTS

Lab ID#: N/A

Project:	Date:	Time:	Analyst:
48 hr. NaCl Ref. Tox.	6/8/11	10:45	KS

Conc. Effluent	Temp.	D.O.	pH	# Fish Exposed	# Fish Dead	Comments
Control	25.0	N/A		5	0	
Control				5	0	
Control				5	0	
Control				5	0	
1000 mg/L	25.0			5	0	
1000				5	0	
1000				5	0	
1000				5	0	
2000	25.0			5	0	
2000				5	0	
2000				5	0	
2000				5	0	
3000	25.0			5	0	
3000				5	0	
3000				5	5	
3000		✓	✓	5	0	
				5		
				5		
				5		
				5		
				5		
				5		
				5		
				5		

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ACUTE CERIODAPHNIA DUBIA

MORTALITY MEASUREMENTS

Lab ID#: N/A

Project:	Date:	Time:	Analyst:
48 hr. NaCl Ref. Tox.	4/9/11	10:45	KS/AN

Conc. Effluent	Temp.	D.O.	pH	# Fish Exposed	# Fish Dead	Comments
Control	25.0	7.3	7.6	5	0	100% survival
Control				5	0	
Control				5	0	
Control				5	0	
1000 mg/L	25.0	7.3	7.6	5	0	95% survival
1000				5	1	
1000				5	0	
1000				5	0	
2000	25.0	7.3	7.6	5	1	80% survival
2000				5	1	
2000				5	1	
2000				5	1	
3000	25.0	7.2	7.5	5	3	20% survival
3000				5	4	
3000				5	5	
3000				5	4	
				5		
				5		
				5		
				5		
				5		
				5		
				5		

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Test: DA-Daphnid Acute Test
Test ID: 2NACL
Species: CD-Ceriodaphnia dubia
Protocol: EPAAW02-EPA/821/R-02-012
Sample ID: REF-Ref Toxicant
Sample Type: NACL-Sodium chloride
Start Date: 6/7/2011 End Date: 6/9/2011
Lab ID:

Pos	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	D-Control	5	5	5			
	2	2	D-Control	5	5	5			
	3	3	D-Control	5	5	5			
	4	4	D-Control	5	5	5			
	5	1	1000	5	5	5			
	6	2	1000	5	5	4			
	7	3	1000	5	5	5			
	8	4	1000	5	5	5			
	9	1	2000	5	5	4			
	10	2	2000	5	5	4			
	11	3	2000	5	5	4			
	12	4	2000	5	5	4			
	13	1	3000	5	5	2			
	14	2	3000	5	5	1			
	15	3	3000	5	0	0			
	16	4	3000	5	5	1			

Comments: Sodium Chloride Reference Toxicant

Daphnid Acute Test-48 Hr Survival

Start Date:	6/7/2011	Test ID:	2NACL	Sample ID:	REF-Ref Toxicant
End Date:	6/9/2011	Lab ID:		Sample Type:	NACL-Sodium chloride
Sample Date:	6/7/2011	Protocol:	EPAAW02-EPA/821/R-02-01	Test Species:	CD-Ceriodaphnia dubia
Comments:	Sodium Chloride Reference Toxicant				

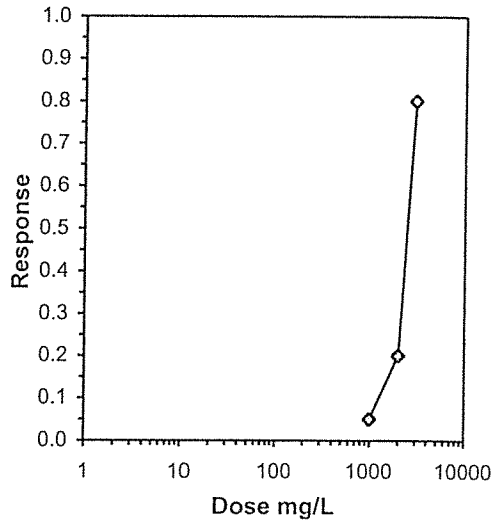
Conc-mg/L	1	2	3	4
D-Control	1.0000	1.0000	1.0000	1.0000
1000	1.0000	0.8000	1.0000	1.0000
2000	0.8000	0.8000	0.8000	0.8000
3000	0.4000	0.2000	0.0000	0.2000

			Transform: Arcsin Square Root					Number	Total
Conc-mg/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Resp	Number
D-Control	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	0	20
1000	0.9500	0.9500	1.2857	1.1071	1.3453	9.261	4	1	20
2000	0.8000	0.8000	1.1071	1.1071	1.1071	0.000	4	4	20
3000	0.2000	0.2000	0.4594	0.2255	0.6847	40.823	4	16	20

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.77226	0.887	-0.4984	3.06796
Equality of variance cannot be confirmed				

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%			
5.0%			
10.0%			
20.0%	2449.49	2248.81	2668.08
Auto-20.0%	2449.49	1862.7	3221.13

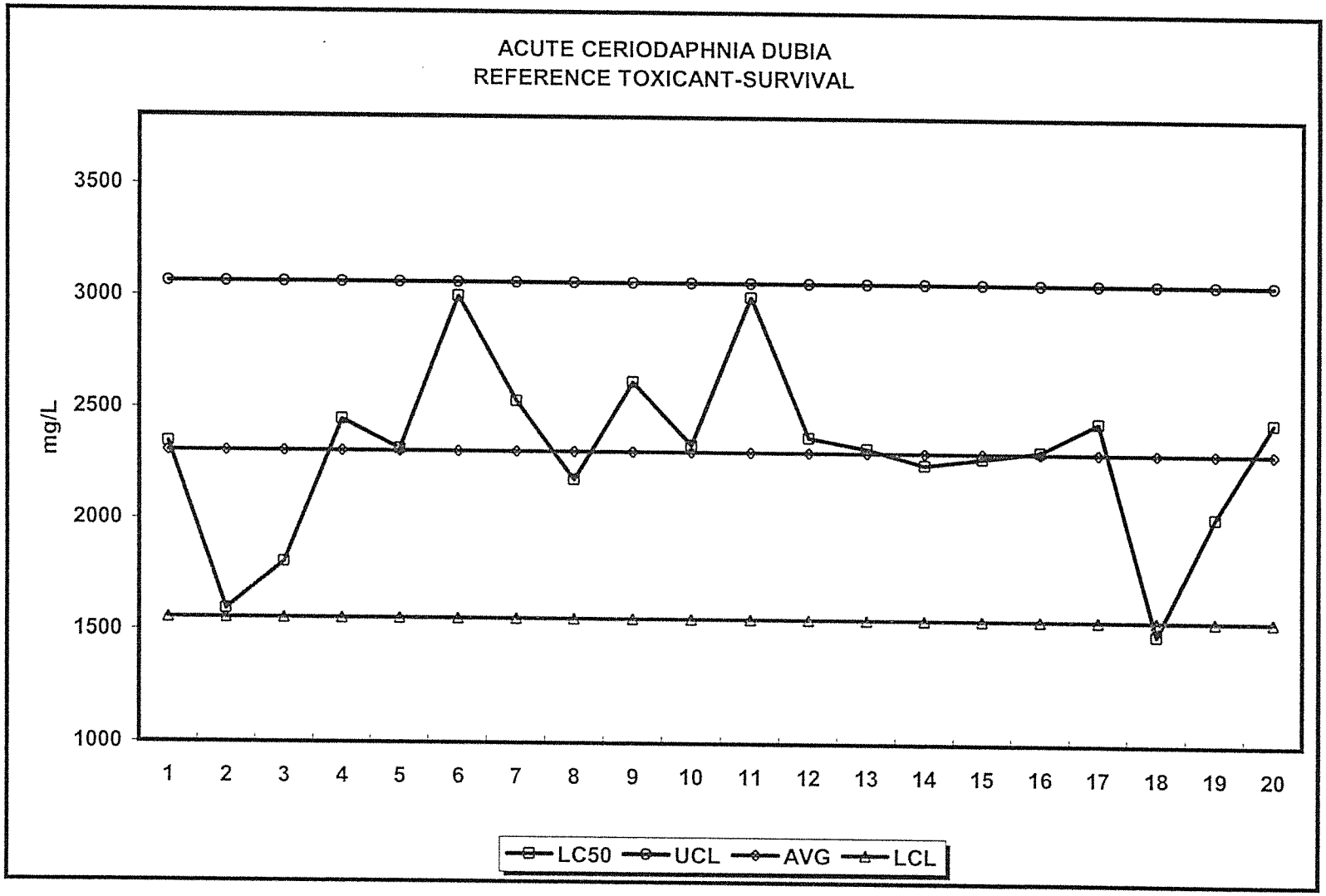


 ToxCalc v5.0.32 Reviewed by:_____

ACUTE CERIODAPHNIA DUBIA
REFERENCE TOXICANT-SURVIVAL

WKST2

DATE	TEST #	LC50	X2	UCL	AVG	LCL
12/10/08	1	2348 mg/L	5513104	3063	2309	1554
3/11/09	2	1594 mg/l	2540836	3063	2309	1554
6/25/09	3	1805 mg/l	3258025	3063	2309	1554
6/16/09	4	2450 mg/L	6002500	3063	2309	1554
9/9/09	5	2319 mg/L	5377761	3063	2309	1554
9/15/09	6	3000 mg/l	9000000	3063	2309	1554
10/27/09	7	2534 mg/l	6421156	3063	2309	1554
11/4/09	8	2182 mg/l	4761124	3063	2309	1554
12/1/09	9	2621 mg/L	6869641	3063	2309	1554
12/8/09	10	2339 mg/L	5470921	3063	2309	1554
12/15/09	11	3000 mg/L	9000000	3063	2309	1554
1/5/10	12	2376 mg/l	5645376	3063	2309	1554
3/16/10	13	2328 mg/L	5419584	3063	2309	1554
4/28/10	14	2256 mg/L	5089536	3063	2309	1554
5/11/10	15	2287 mg/L	5230369	3063	2309	1554
10/12/10	16	2318 mg/L	5373124	3063	2309	1554
12/7/10	17	2449 mg/L	5997601	3063	2309	1554
2/15/11	18	1494 mg/L	2232036	3063	2309	1554
3/15/11	19	2021 mg/L	4084441	3063	2309	1554
6/7/11	20	2450 mg/L	6002500	3063	2309	1554
	Sum (LC50)=	46171				
	Avg(LC50)=	2309				
	Std Dev =	377				
	Upper C.L.=	3063				
	Lower C.L.=	1554				


ACUTE CERIODAPHNIA DUBIA
REFERENCE TOXICANT-SURVIVAL
mg/L
3500
3000
2500
2000
1500
1000
1
2
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13
14
15
16
17
18
19
20
LC50
UCL
AVG
LCL

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524

Toll Free: 800/331-5916
Tel: 970/484-5091 Fax:970/484-2514

ORGANISM HISTORY

DATE: 6/6/2011

SPECIES: *Pimephales promelas*

AGE: N/A

LIFE STAGE: Embryo

HATCH DATE: 6/6/2011

BEGAN FEEDING: N/A

FOOD: N/A

Water Chemistry Record:	Current	Range
TEMPERATURE:	25°C	--
SALINITY/CONDUCTIVITY:	--	--
TOTAL HARDNESS (as $CaCO_3$):	132 mg/l	--
TOTAL ALKALINITY (as $CaCO_3$):	85 mg/l	--
pH:	7.83	--

Comments:

Facility Supervisor

Aquatic Research Organisms

DATA SHEET

I. Organism History

Species Ceriodaphnia dubia

Source: Lab reared X Hatchery reared_____ Field collected_____

Hatch date 6/5/2011 Receipt date_____

Lot number 06 06 11 CD Strain ARO

Brood origination EPA OH

II. Water Quality

Temperature 24 °C Salinity — ppt D.O. SAT ppm

pH 7.4 su Hardness ≈ 120 ppm Alkalinity ≈ 140 ppm

III. Culture Conditions

Freshwater X Saltwater_____ Other_____

Recirculating_____ Flow through_____ Static renewal X

DIET: Flake food_____ Phytoplankton X Trout chow X

Artemia_____ Rotifers_____ YCT X Other_____

Prophylactic treatments:_____

Comments: All gravid as of 2:00pm EDST

IV. Shipping Information

Client: Microbac TN # of Organisms 100/line

Carrier: fedEx Date shipped 6/6/11

Biologist:_____

PO BOX 1271 HAMPTON NH 03843-1271 (603) 926-1650 AROFISH@AOL.COM

Received
SEP 28 2011
DEQ-SWRO

HOLSTON REGIONAL WWTP

QUARTERLY CHRONIC BIOASSAY

Sample Dates: June 5-10, 2011

Test Dates: June 7-15, 2011

Microbac Tri-Cities
71 Wilson Avenue
Johnson City, TN 37604

7/22/2011

Microbac®

Received
SEP 28 2011
DEQ-SWRO

7/22/2011

Scott County Public Service Authority
156 Legion Street
Weber City, VA 24290

SUMMARY

Holston Regional WWTP Quarterly Chronic Bioassay
Sample Dates: June 5-10, 2011
Test Dates: June 7-15, 2011
Permit #: VA0067351

STATE PERMIT LIMITS		RESULTS	
PIMEPHALES PROMELAS SURVIVAL		**PIMEPHALES PROMELAS SURVIVAL**	
*NOEC:	10% effluent	*IC25:	Greater than 100% effluent
*T U c:	10	*NOEC:	100% effluent
		*T U c:	1
		Result:	Non-toxic
GROWTH		**GROWTH**	
*NOEC:	10% effluent	*IC25:	Greater than 100% effluent
*T U c:	10	*NOEC:	100% effluent
		*T Uc:	1
		Result:	Non-toxic
CERIODAPHNIA DUBIA SURVIVAL		**CERIODAPHNIA DUBIA SURVIVAL**	
*NOEC:	10% effluent	*IC25:	Greater than 100% effluent
*T Uc:	10	*NOEC:	100% effluent
		*T Uc:	1
		Result:	Non-toxic
REPRODUCTION		**REPRODUCTION**	
*NOEC:	10% effluent	*IC25:	Greater than 100% effluent
*T Uc:	10	*NOEC:	100% effluent
		*T Uc:	1
		Result:	Non-toxic

*NOEC: No Observed Effect Concentration
*T Uc (Chronic Toxic Units) = 100 / NOEC
*IC25: Concentration where a 25% reduction occurs
*LC50: Concentration that is lethal to 50% of the organisms exposed

MICROBAC TRI-CITIES
BIOMONITORING
TEST SUMMARY SHEET

FACILITY: Holston Regional WWTP **PERMIT NO.:** VA0067351

ADDRESS: Scott County PSA 156 Legion Street
Weber City, VA 24290

CONTACT: Daniel A. Danko **PHONE NO.:** (276) 386-6004

RECEIVING STREAM: Holston River, North Fork

PERSONS CONDUCTING TEST: K. Storey, N. Street, A. Mullins

SAMPLE INFORMATION:

I. EFFLUENT **Lab ID:** 11F0047 1 through 3

SAMPLE POINT: Final Effluent

COLLECTION DATES AND TIMES:

SAMPLE COLLECTED BY: Microbac Tri-Cities

COLLECTION METHOD: 24 hr. composite

CONDITION OF SAMPLE

Temperature (collection)	<4 degrees C	**D.O. (at receipt)**	7.7-8.0 mg/l*
Temperature (lab receipt)	3.8-4.3 degrees C	**D.O. (test start)**	7.5 mg/l
Temperature (test start)	25.0 degrees C	**CONDUCTIVITY**	530-540 umhos/cm*
pH (test start)	7.8 su	**ALKALINITY**	112-116 mg/l as CaCO3*
CHLORINE	<0.1 mg/l*	**HARDNESS**	162-170 mg/l as CaCO3*
Appearance/Odor	clear, slight odor, no solids		

*Range of values for the samples collected. See individual daily values on bench sheets. **aerated before use

II. DILUTION WATER

SOURCE: Moderately Hard Synthetic Freshwater

COLLECTION DATES AND TIMES: made as needed in lab

PRETREATMENT: aerated overnight

CONDITION OF DILUTION WATER (Test Start)

TEMPERATURE	25.0 Degrees C	**CONDUCTIVITY**	204-265 umhos/cm**
pH	7.5 su		
CHLORINE	<0.1 mg/l	**ALKALINITY**	50-68 mg/l as CaCO3**
Appearance/odor	Clear / no odor		
D.O.	7.3 mg/l	**HARDNESS**	62-76 mg/l as CaCO3**

**Range of values for the controls prepared. See individual daily values on bench sheets.

TEST METHOD:

TEST METHOD: Method 1000.0 Fathead Minnow, Pimephales promelas, larval survival & growth, EPA-821-R-02-013 Fourth Edition October 2002

DATE AND TIME TEST STARTED: 6/7/11 @ 0930

DATE AND TIME TEST TERMINATED: 6/14/11 @ 1000

TEST CHAMBERS: 300 ml clear plastic cups

VOLUME USED FOR CHAMBER: 250 ml

TEST CONCENTRATIONS: 5.00% 10.0% 22.0% 47.0% 100.0%

NUMBER OF ORGANISMS PER REPLICATE: 10

NUMBER OF REPLICATES PER CONCENTRATION: 4

ACCLIMATION OF ORGANISMS: Normal

TEST TEMPERATURE - MEAN: 25.0 Degrees C **RANGE:** 24.0-26.0 Degrees C

FEEDING: 0.15 g artemia (brine shrimp) twice daily

LIGHT INTENSITY: 50-100 footcandles **PHOTOPERIOD:** 16 hr. light / 8 hr. dark

TEST ORGANISMS

NAME: Fathead Minnows (Pimephales promelas) **SOURCE:** Aquatic BioSystems- Fort Collins, CO

AGE: Less than 24 hours **LIFE STAGE:** Larvae

QUALITY ASSURANCE

STANDARD REFERENCE TOXICANT: Potassium Chloride **SOURCE:** Microbac Tri-Cities

DATE AND TIME OF MOST RECENT TEST: 6/7-14/11 @ 0900

DILUTION WATER USED: Moderately Hard Synthetic Freshwater

RESULTS AND STATISTICAL METHOD (Standard Reference Toxicant)

Fathead Minnows
Survival
IC25: 580 mg/l **Method:** Linear Interpolation Method

Fathead Minnows
Growth
IC25: 290 mg/l **Method:** Linear Interpolation Method

TEST RESULTS (Pimephales Promelas):

I. TEST ACCEPTABILITY

CONTROL SURVIVAL:	100%
AVERAGE WEIGHT PER CONTROL ORGANISM:	4.17 mg
AVERAGE NUMBER OF YOUNG PER CONTROL (C. dubia):	N/A
60% OF CONTROL FEMALES (C. dubia) WITH THREE BROODS:	N/A
TOTAL NUMBER OF MALE (C. dubia) IN THE TEST:	N/A

II. STATE PERMIT LIMITS (Pimephales Promelas)

Pimephales Promelas
Survival
*NOEC: 10% effluent
*T Uc: 10.0

Pimephales Promelas
Growth
*NOEC: 10% effluent
*T Uc: 10.0

III. RESULTS

RESULTS AND STATISTICAL METHOD (Pimephales Promelas)

Pimephales Promelas
Survival

*NOEC:	100% effluent	METHOD:	Dunnett
*T Uc:	1.0		
*IC25:	>100% effluent	METHOD:	Linear Interpolation
*48 hour LC50:	>100% effluent	METHOD:	Spearman Karber

Pimephales Promelas
Growth

*NOEC:	100% effluent	METHOD:	Dunnett
*T Uc:	1.00		
*IC25:	>100% effluent	METHOD:	Linear Interpolation

*NOEC: No Observed Effect Concentration

*T Uc: (Chronic Toxic Units) = 100 / NOEC

*IC25: Concentration where a 25% reduction occurs.

*LC50: Concentration that is lethal to 50% of the organisms exposed.

**There was not a 25% reduction in survival or growth of fathead minnows in any concentration of the effluent sample.

***At 48 hours, there was not 50% mortality of fathead minnows in any concentration of the effluent sample.

TEST METHOD:

TEST METHOD: Method 1002.0 Cladoceran Ceriodaphnia Dubia Survival & Reproduction, EPA-821-R-02-013 Fourth Edition October 2002

DATE AND TIME TEST STARTED: 6/7/11 @ 1230

DATE AND TIME TEST TERMINATED: 6/15/11 @ 1245

TEST CHAMBERS: 30 ml clear plastic cups

VOLUME USED FOR CHAMBER: 15 ml

TEST CONCENTRATIONS: 5.00% 10.0% 22.0% 47.0% 100.0%

NUMBER OF ORGANISMS PER REPLICATE: 1

NUMBER OF REPLICATES PER CONCENTRATION: 10

ACCLIMATION OF ORGANISMS: Normal

TEST TEMPERATURE - MEAN: 25.0 Degrees C RANGE: 24.0-26.0 Degrees C

FEEDING: 0.1 ml YCT and 0.1 ml selenestrum once daily.

LIGHT INTENSITY: 50-100 footcandles PHOTOPERIOD: 16 hr. light / 8 hr. dark

TEST ORGANISMS

NAME: Ceriodaphnia dubia SOURCE: Aquatic Research Organisms - New Hampshire

AGE: Less than 24 hours LIFE STAGE: Neonate

QUALITY ASSURANCE

STANDARD REFERENCE TOXICANT: Potassium Chloride SOURCE: Microbac Tri-Cities

DATE AND TIME OF MOST RECENT TEST: 6/7-15/11 @ 1200

DILUTION WATER USED: Moderately Hard Synthetic Freshwater

RESULTS AND STATISTICAL METHOD (Standard Reference Toxicant)

Ceriodaphnia dubia
Survival
IC25: 259 mg/l METHOD: Linear Interpolation Method

Ceriodaphnia dubia
Reproduction
IC25 : 213 mg/L METHOD: Linear Interpolation Method

TEST RESULTS (Ceriodaphnia Dubia):

I. TEST ACCEPTABILITY

CONTROL SURVIVAL: 90%

AVERAGE WEIGHT PER CONTROL ORGANISM: N/A

AVERAGE NUMBER OF YOUNG PER CONTROL (C. dubia): 19.4

60% OF CONTROL FEMALES (C. dubia) WITH THREE BROODS: Yes

TOTAL NUMBER OF MALE (C. dubia) IN THE TEST: 0

*Less than 50% males in each concentration. Males excluded from reproduction endpoints.

II. STATE PERMIT LIMITS (Ceriodaphnia dubia)

Ceriodaphnia dubia
Survival
*NOEC: 10% effluent
*T Uc: 10

Ceriodaphnia dubia
Reproduction
*NOEC: 10% effluent
*T Uc: 10

III. RESULTS

RESULTS AND STATISTICAL METHOD (Ceriodaphnia dubia)

Ceriodaphnia dubia
Survival

*NOEC:	100% effluent	METHOD:	Dunnett
*T Uc:	1		
*IC25:	Greater than 100% effluent	METHOD:	Linear Interpolation
*48hr LC50:	Greater than 100% effluent	METHOD:	Spearman Karber

Ceriodaphnia dubia
Reproduction

*NOEC:	100% effluent	METHOD:	Dunnett
*T Uc:	1		
*IC25:	Greater than 100% effluent	METHOD:	Linear Interpolation

*NOEC: No Observed Effect Concentration *T Uc (Chronic Toxic Units) = 100 / NOEC
*IC25; Concentration where a 25% reduction occurs.
*LC50: Concentration that is lethal to 50% of the organisms exposed

Report Prepared By: Kimberly Storey

Reviewed By: Warren C. Hodkins

Approved By: Kimberly Storey
Laboratory Director

Facility: Scott Co. Weber City Lab ID 11F0047 Test start: 6/7/11

Test: 7 day Fathead

Control		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0	25.0	25.0	25.0	24.0	24.0	25.0	
Conductivity		265	249	224	220	284	280	275	MHSFW
D.O.	Initial	7.3	7.2	7.3	7.2	8.5	8.0	7.9	
	Final	5.8	5.2	5.2	6.6	6.5	6.4	6.2	
pH	Initial	7.5	7.4	7.4	7.4	7.7	7.5	7.6	
	Final	7.3	7.3	7.3	7.7	7.4	7.3	7.4	
Date/Time		6/7/11	6/8/11	6/9/11	6/10/11	6/11/11	6/12/11	6/13/11	
Analyst		NS 9:30	NS 9:30	NS 9:30	NS 10:00	10:00 KS	9:20 KS NS	9:45 KS NS	

5%		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0	25.0	25.0	25.0	24.0	24.0	25.0	
Conductivity		247	260	241	238	298	290	282	
D.O.	Initial	7.3	7.2	7.3	7.2	8.4	8.0	7.9	
	Final	5.8	5.2	5.2	6.5	6.5	6.4	6.2	
pH	Initial	7.5	7.4	7.4	7.4	7.7	7.5	7.6	
	Final	7.3	7.3	7.3	7.7	7.4	7.3	7.4	

10%		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0	25.0	25.0	25.0	24.0	24.0	25.0	
Conductivity		280	300	270	282	325	317	316	
D.O.	Initial	7.3	7.2	7.3	7.2	8.4	8.0	7.9	
	Final	5.8	5.2	5.2	6.5	6.5	6.4	6.2	
pH	Initial	7.6	7.5	7.4	7.5	7.7	7.5	7.6	
	Final	7.3	7.3	7.3	7.7	7.4	7.3	7.4	

22%		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0	25.0	25.0	25.0	24.5	24.0	25.0	
Conductivity		289	321	319	311	400	365	349	
D.O.	Initial	7.3	7.2	7.3	7.2	8.4	8.0	7.9	
	Final	5.8	5.3	5.3	6.5	6.4	6.3	6.1	
pH	Initial	7.6	7.5	7.5	7.6	7.9	7.6	7.6	
	Final	7.4	7.3	7.4	7.8	7.4	7.4	7.4	

Facility: Scott Co. Weber City Lab ID 11F0047 Test start: 6/7/11

Test: 7 day Fathead (continued)

47%		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0	25.0	25.0	25.0	25.0	24.0	25.0	
Conductivity		377	395	407	411	432	428	431	
D.O.	Initial	7.4	7.2	7.4	7.3	8.2	7.9	7.9	
	Final	5.9	5.3	5.4	6.3	6.4	6.3	6.1	
pH	Initial	7.7	7.6	7.6	7.6	7.9	7.7	7.7	
	Final	7.4	7.3	7.4	7.8	7.6	7.4	7.5	

100%		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0	25.0	25.0	25.0	26.0	24.0	25.0	
Conductivity		540	545	528	521	591	586	577	
D.O.	Initial	7.5	7.3	7.4	7.4	8.0	7.9	7.9	
	Final	5.9	5.5	5.5	6.1	6.2	6.2	6.0	
pH	Initial	7.8	7.7	7.8	7.8	8.0	7.9	7.8	
	Final	7.5	7.4	7.6	8.0	7.6	7.6	7.5	

Fathead Survival Countsheet

Facility: Scott Co. Weber City Test Start Date: 6/7/11

	Replicate	Number of Survivors Day 1	2 (*)	3	4	5	6	7	Remarks
Control 0	1	10	10	10	10	10	10	10	~~20% Dil. Min. Water~~
	2	10	10	10	10	10	10	10	MHSFW
	3	10	10	10	10	10	10	10	
	4	10	10	10	10	10	10	10	
Conc: 5%	1	10	10	10	10	10	10	10	
	2	10	10	10	10	10	10	10	
	3	10	10	10	10	10	10	9	
	4	10	10	10	10	10	10	10	
Conc: 10%	1	10	10	10	10	10	10	10	
	2	10	10	10	10	10	10	10	
	3	10	10	10	10	10	10	10	
	4	10	10	10	10	10	10	10	
Conc: 22%	1	10	10	10	10	10	10	10	
	2	10	10	10	10	10	10	10	
	3	10	10	10	10	10	10	10	
	4	10	10	10	10	10	10	10	
Conc: 47%	1	10	10	10	10	10	10	10	
	2	10	10	10	10	10	10	10	
	3	10	10	10	10	10	10	10	
	4	10	10	10	10	10	10	10	
Conc: 100%	1	10	10	10	10	10	10	10	
	2	10	10	10	10	10	10	10	
	3	10	10	10	10	10	10	10	
	4	10	10	10	10	10	10	10	

6/14/11
KS 10:00

Comments:

(*) Fathead minnow survival at 48 hours is 100%, therefore the 48 hours LC50 value is greater than 100% effluent.

BIOASSAY FATHEAD WEIGHT SHEET

Scott Co. Weber City

Conc:	Rep. No. (R)	A Wgt. of boat (mg)	B Dry wgt: foil and larvae (mg)	B - A Total dry wgt. of larvae (mg)	C No. of larvae Surv.	C No. of larvae Exp.	(B-A)/C Mean dry wgt. of larvae (mg)	(R1+R2+R3)/4 Avg. mean dry wgt. of larvae (mg)	Remarks Boat #
Control	1	0.96541	0.97147		10	10			7
	2	0.96392	0.960666		10	10			8
0	3	0.96518	0.96906		10	10			9
	4	0.96537	0.96936		10	10			10
Conc:	1	0.96420	0.96752		10	10			11
	2	0.96051	0.96458		10	10			12
5%	3	0.95951	0.96320		9	10			13
	4	0.95870	0.96276		10	10			14
Conc:	1	0.95773	0.96091		10	10			15
	2	0.95615	0.96066		10	10			16
10%	3	0.95801	0.96138		10	10			17
	4	0.96186	0.96525		10	10			18
Conc:	1	0.96415	0.96874		10	10			19
	2	0.96385	0.96978		10	10			20
22%	3	0.95783	0.96251		10	10			21
	4	0.94976	0.95331		10	10			22
Conc:	1	0.95265	0.95887		10	10			23
	2	0.95571	0.96126		10	10			24
47%	3	0.96806	0.97328		10	10			25
	4	0.96716	0.97134		10	10			26
Conc:	1	0.96474	0.97050		10	10			27
	2	0.96575	0.97132		10	10			28
100%	3	0.96416	0.97041		10	10			29
	4	0.96487	0.96929		10	10			30
Blank									

Test: LF-Larval Fish Growth and Survival Test
Species: PP-Pimephales promelas
Sample ID: VA
Start Date: 6/7/2011 End Date: 6/14/2011

Test ID: 1SCOTTWEBE
Protocol: EPAFW02-EPA/821/R-02-013
Sample Type: EFF1-POTW
Lab ID:

Pos	ID	Rep	Group	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Total Wgt(	Tare Wgt(	Wgt Count
	1	1	D-Control	10	10	10	10	10	10	10	10	971.47	965.41	6.06
	2	2	D-Control	10	10	10	10	10	10	10	10	966.66	963.92	2.74
	3	3	D-Control	10	10	10	10	10	10	10	10	969.06	965.18	3.88
	4	4	D-Control	10	10	10	10	10	10	10	10	969.36	965.37	3.99
	5	1	5	10	10	10	10	10	10	10	10	967.52	964.2	3.32
	6	2	5	10	10	10	10	10	10	10	10	964.58	960.51	4.07
	7	3	5	10	10	10	10	10	10	10	9	963.2	959.51	3.69
	8	4	5	10	10	10	10	10	10	10	10	962.76	958.7	4.06
	9	1	10	10	10	10	10	10	10	10	10	960.91	957.73	3.18
	10	2	10	10	10	10	10	10	10	10	10	960.66	956.95	3.71
	11	3	10	10	10	10	10	10	10	10	10	961.38	958.01	3.37
	12	4	10	10	10	10	10	10	10	10	10	965.25	961.86	3.39
	13	1	22	10	10	10	10	10	10	10	10	968.74	964.15	4.59
	14	2	22	10	10	10	10	10	10	10	10	969.78	963.85	5.93
	15	3	22	10	10	10	10	10	10	10	10	962.51	957.83	4.68
	16	4	22	10	10	10	10	10	10	10	10	953.31	949.76	3.55
	17	1	47	10	10	10	10	10	10	10	10	958.87	952.65	6.22
	18	2	47	10	10	10	10	10	10	10	10	961.26	955.71	5.55
	19	3	47	10	10	10	10	10	10	10	10	973.28	968.06	5.22
	20	4	47	10	10	10	10	10	10	10	10	971.34	967.16	4.18
	21	1	100	10	10	10	10	10	10	10	10	970.5	964.74	5.76
	22	2	100	10	10	10	10	10	10	10	10	971.32	965.75	5.57
	23	3	100	10	10	10	10	10	10	10	10	970.41	964.1	6.31
	24	4	100	10	10	10	10	10	10	10	10	969.29	964.87	4.42

Comments: Scott County Weber City

Larval Fish Growth and Survival Test-7 Day Survival

Start Date:	6/7/2011	Test ID:	1SCOTTWEBE	Sample ID:	VA
End Date:	6/14/2011	Lab ID:		Sample Type:	EFF1-POTW
Sample Date:	6/7/2011	Protocol:	EPAFW02-EPA/821/R-02-01	Test Species:	PP-Pimephales promelas
Comments:	Scott County Weber City				

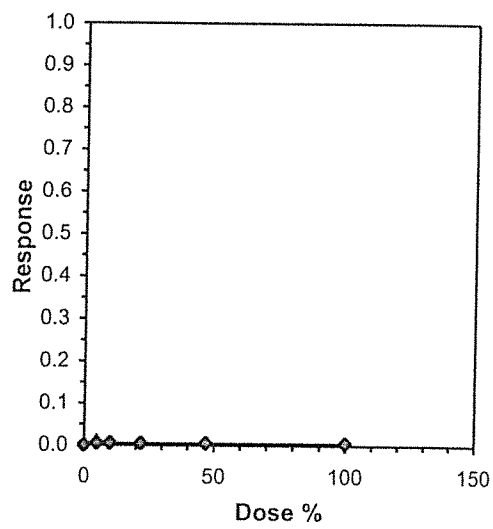
Conc-%	1	2	3	4
D-Control	1.0000	1.0000	1.0000	1.0000
5	1.0000	1.0000	0.9000	1.0000
10	1.0000	1.0000	1.0000	1.0000
22	1.0000	1.0000	1.0000	1.0000
47	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000

			Transform: Arcsin Square Root					Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	1.0000	1.0000
5	0.9750	0.9750	1.3713	1.2490	1.4120	5.942	4	0.9950	0.9950
10	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	0.9950	0.9950
22	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	0.9950	0.9950
47	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	0.9950	0.9950
100	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	0.9950	0.9950

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.46508	0.916	-3.0206	13.9892
Equality of variance cannot be confirmed				

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC25	>100			



ToxCalc v5.0.32

Reviewed by:_____

Larval Fish Growth and Survival Test-7 Day Survival

Start Date:	6/7/2011	Test ID:	1SCOTTWEBE	Sample ID:	VA
End Date:	6/14/2011	Lab ID:		Sample Type:	EFF1-POTW
Sample Date:	6/7/2011	Protocol:	EPAFW02-EPA/821/R-02-01	Test Species:	PP-Pimephales promelas
Comments:	Scott County Weber City				

Conc-%	1	2	3	4
D-Control	1.0000	1.0000	1.0000	1.0000
5	1.0000	1.0000	0.9000	1.0000
10	1.0000	1.0000	1.0000	1.0000
22	1.0000	1.0000	1.0000	1.0000
47	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4		
5	0.9750	0.9750	1.3713	1.2490	1.4120	5.942	4	16.00	10.00
10	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	18.00	10.00
22	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	18.00	10.00
47	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	18.00	10.00
100	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	18.00	10.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.46508	0.916	-3.0206	13.9892
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1
Treatments vs D-Control				

ToxCalc v5.0.32

Reviewed by:_____

Larval Fish Growth and Survival Test-7 Day Biomass

Start Date:	6/7/2011	Test ID:	1SCOTTWEBE	Sample ID:	VA
End Date:	6/14/2011	Lab ID:		Sample Type:	EFF1-POTW
Sample Date:	6/7/2011	Protocol:	EPAFW02-EPA/821/R-02-01	Test Species:	PP-Pimephales promelas
Comments:	Scott County Weber City				

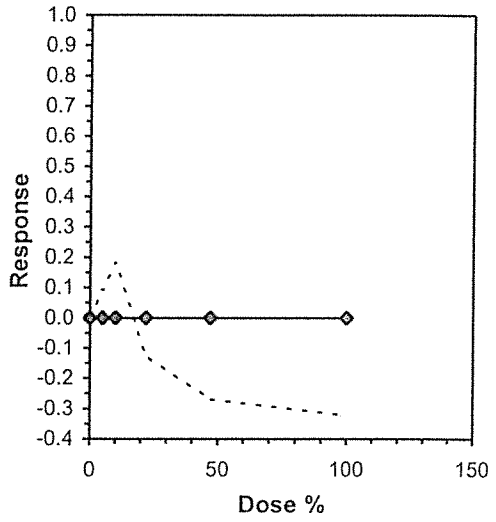
Conc-%	1	2	3	4
D-Control	0.6060	0.2740	0.3880	0.3990
5	0.3320	0.4070	0.3690	0.4060
10	0.3180	0.3710	0.3370	0.3390
22	0.4590	0.5930	0.4680	0.3550
47	0.6220	0.5550	0.5220	0.4180
100	0.5760	0.5570	0.6310	0.4420

			Transform: Untransformed					Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	0.4168	1.0000	0.4168	0.2740	0.6060	33.172	4	0.4477	1.0000
5	0.3785	0.9082	0.3785	0.3320	0.4070	9.429	4	0.4477	1.0000
10	0.3412	0.8188	0.3412	0.3180	0.3710	6.440	4	0.4477	1.0000
22	0.4687	1.1248	0.4687	0.3550	0.5930	20.783	4	0.4477	1.0000
47	0.5293	1.2699	0.5293	0.4180	0.6220	16.068	4	0.4477	1.0000
100	0.5515	1.3233	0.5515	0.4420	0.6310	14.408	4	0.4477	1.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.05)	0.94225	0.916	0.3156	0.90941
Bartlett's Test indicates equal variances (p = 0.11)	9.04472	15.0863		

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC25	>100			



 ToxCalc v5.0.32 Reviewed by:_____

Larval Fish Growth and Survival Test-7 Day Biomass

Start Date:	6/7/2011	Test ID:	1SCOTTWEBE	Sample ID:	VA
End Date:	6/14/2011	Lab ID:		Sample Type:	EFF1-POTW
Sample Date:	6/7/2011	Protocol:	EPAFW02-EPA/821/R-02-01	Test Species:	PP-Pimephales promelas
Comments:	Scott County Weber City				

Conc-%	1	2	3	4
D-Control	0.6060	0.2740	0.3880	0.3990
5	0.3320	0.4070	0.3690	0.4060
10	0.3180	0.3710	0.3370	0.3390
22	0.4590	0.5930	0.4680	0.3550
47	0.6220	0.5550	0.5220	0.4180
100	0.5760	0.5570	0.6310	0.4420

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
D-Control	0.4168	1.0000	0.4168	0.2740	0.6060	33.172	4			
5	0.3785	0.9082	0.3785	0.3320	0.4070	9.429	4	0.632	2.410	0.1458
10	0.3412	0.8188	0.3412	0.3180	0.3710	6.440	4	1.248	2.410	0.1458
22	0.4687	1.1248	0.4687	0.3550	0.5930	20.783	4	-0.860	2.410	0.1458
47	0.5293	1.2699	0.5293	0.4180	0.6220	16.068	4	-1.860	2.410	0.1458
100	0.5515	1.3233	0.5515	0.4420	0.6310	14.408	4	-2.228	2.410	0.1458

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.05)	0.94225	0.916	0.3156	0.90941
Bartlett's Test indicates equal variances (p = 0.11)	9.04472	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	0.14577	0.34979	0.02796	0.00732	0.01556	5, 18
Treatments vs D-Control										

Facility: Scott Co. Weber City Lab ID 11F0047 Test start: 6/7/11

Test: 7 day cerio

Control		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0	25.0	25.0	25.0	24.0	24.0	25.0	MHSFW
Conductivity		See	Fathead	minnow		benchsheets			
D.O.	Initial	7.3	7.2	7.3	7.2	8.5	8.0	7.9	
	Final	6.2	6.1	6.0	6.0	6.7	6.5	6.4	
pH	Initial	7.5	7.4	7.4	7.4	7.7	7.5	7.6	
	Final	7.7	7.7	7.6	7.6	7.8	7.6	7.7	
Date/Time		6/7/11	6/8/11	6/9/11	6/10/11	6/11/11	6/12/11	6/13/11	
Analyst		12:30 KS	1:00 KS	12:45 KS	12:15 KS	12:45 KS	12:15 KS	12:15 KS	

5%		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0	25.0	25.0	25.0	24.0	24.0	25.0	
Conductivity		See	Fathead	minnow		benchsheets			
D.O.	Initial	7.3	7.2	7.3	7.2	8.4	8.0	7.9	
	Final	6.2	6.1	6.0	6.1	6.9	6.6	6.4	
pH	Initial	7.5	7.4	7.4	7.4	7.7	7.5	7.6	
	Final	7.7	7.7	7.6	7.6	7.8	7.6	7.7	

10%		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0	25.0	25.0	25.0	24.0	24.0	25.0	
Conductivity		See	Fathead	minnow		benchsheets			
D.O.	Initial	7.3	7.2	7.3	7.2	8.4	8.0	7.9	
	Final	6.2	6.1	6.0	6.1	6.9	6.6	6.4	
pH	Initial	7.6	7.5	7.4	7.5	7.7	7.5	7.6	
	Final	7.7	7.6	7.6	7.6	7.8	7.6	7.7	

22%		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0	25.0	25.0	25.0	24.5	24.0	25.0	
Conductivity		See	Fathead	minnow		benchsheets			
D.O.	Initial	7.3	7.2	7.3	7.2	8.4	8.0	7.9	
	Final	6.2	6.1	6.0	6.1	6.9	6.6	6.4	
pH	Initial	7.6	7.5	7.5	7.6	7.9	7.6	7.6	
	Final	7.7	7.6	7.6	7.6	7.8	7.6	7.7	

Facility: Scott Co. Weber City Lab ID 11F0047 Test start: 6/7/11

Test: 7 day cerio (continued)

47%		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0	25.0	25.0	25.0	25.0	24.0	25.0	
Conductivity		See Fathead minnow benchsheets							
D.O.	Initial	7.4	7.2	7.4	7.3	8.2	7.9	7.9	
	Final	6.2	6.1	6.0	6.1	6.8	6.7	6.4	
pH	Initial	7.7	7.6	7.6	7.6	7.9	7.7	7.7	
	Final	7.7	7.5	7.7	7.7	7.7	7.5	7.6	

100%		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0	25.0	25.0	25.0	26.0	24.0	25.0	
Conductivity		See Fathead minnow benchsheets							
D.O.	Initial	7.5	7.3	7.4	7.4	8.0	7.9	7.9	
	Final	6.3	6.0	6.0	6.2	6.8	6.7	6.5	
pH	Initial	7.8	7.7	7.8	7.8	8.0	7.9	7.8	
	Final	7.7	7.5	7.7	7.6	7.7	7.6	7.6	

Cerio Reproduction Countsheet

Facility: Scott County Webster City Test Start Date: 6/7/11

Control	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Young	Adults	Young per adult
	1	0	0	0	0	0	0	0	0	0	0	0	10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	
	3	0	0	0	0	0	0	0	0	0	0	0	10	
0	4	4	3	4	3	2	0	5	2	0	6	29	10	
	5	0	0	0	0	0	2	0	0	X	0	2	9	
	6	6	3	7	4	5	0	3	3	X	4	25	9	175/9
	7	15	18	4	9	8	9	0	0	X	0	63	9	
	8	0	0	0	0	0	10	16	9	X	11	46	9	
	Total	25	24	15	16	15	21	24	14	X	21	175	9	19.4

Conc.	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Young	Adults	Young per adult
	1	0	0	0	0	0	0	0	0	0	0	0	10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	
	3	0	0	0	0	0	0	0	0	0	0	0	10	
5%	4	3	0	6	0	0	5	0	X	0	0	14	9	
	5	0	7	0	0	4	0	2	X	7	4	24	9	
	6	8	0	3	X	0	4	0	X	0	0	15	8	171/8
	7	8	15	0	X	11	0	3	X	5	2	44	8	
6/15/11	8	0	0	12	X	9	14	13	X	10	16	74	8	
1245	Total	19	22	21	X	24	23	18	X	22	22	171	8	21.4

Conc.	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Young	Adults	Young per adult
	1	0	0	0	0	0	0	0	0	0	0	0	10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	
	3	0	0	0	0	0	0	0	0	0	0	0	10	
	4	3	0	4	2	0	0	0	0	X	0	9	9	
10%	5	0	3	0	0	9	3	3	3	X	4	25	9	
	6	8	0	5	7	0	7	0	0	X	0	27	9	173/9
	7	0	3	0	0	3	0	12	8	X	11	37	9	
	8	10	6	11	14	8	9	0	8	X	9	75	9	
	Total	21	12	20	23	20	19	15	19	X	24	173	9	19.2

Conc.	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Young	Adults	Young per adult
	1	0	0	0	0	0	0	0	0	0	0	0	10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	
	3	0	0	0	0	0	0	0	0	0	0	0	10	
	4	0	0	0	0	0	4	4	3	0	0	11	10	
22%	5	2	6	2	4	9	0	0	0	3	4	30	10	
	6	0	0	X	0	0	8	4	11	0	0	23	9	183/9
	7	6	5	X	8	6	0	0	0	10	12	47	9	
	8	11	9	X	9	11	5	10	5	7	5	72	9	
	Total	19	20	2X	21	26	17	18	19	20	21	183	9	20.3

Conc.	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Young	Adults	Young per adult
	1	0	0	0	0	0	0	0	0	0	0	0	10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	
	3	0	0	0	0	0	0	0	0	0	0	0	10	
47%	4	0	2	0	0	0	0	0	2	3	2	9	10	
	5	6	7	5	4	3	6	4	0	0	0	35	10	
	6	0	0	0	0	0	0	0	3	5	7	15	10	182/10
	7	7	5	4	12	6	5	4	11	0	0	54	10	
	8	7	0	7	7	12	6	9	0	14	7	69	10	
	Total	20	14	16	23	21	17	17	16	22	16	182	10	18.2

Cerio Reproduction Countsheet

Facility: Scott County Weber City Test Start Date: 6/7/11

Conc.	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Young	Adults	Young per adult
	1	0	0	0	0	0	0	0	0	0	0	0	10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	
	3	0	0	0	0	0	0	0	0	0	0	0	10	
	4	2	0	0	0	3	0	0	0	0	3	8	10	
	5	0	4	4	9	0	4	9	6	2	0	38	10	213/10
100%	6	3	0	0	0	3	0	0	0	0	5	11	10	
	7	0	9	4	11	0	7	4	3	4	14	56	10	
	8	10	8	10	0	15	11	11	14	21	0	100	10	
	Total	15	21	19	20	21	22	24	23	27	~~21~~ 22	213	10	21.3

Test: CD-Ceriodaphnia Survival and Reproduction Test
Test ID: 2SCOTTWEBE
Species: CD-Ceriodaphnia dubia
Protocol: EPAFW02-EPA/821/R-02-013
Sample ID: VA
Sample Type: EFF1-POTW
Start Date: 6/7/2011 End Date: 6/15/2011
Lab ID:

Pos	ID	Rep	Group	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Sex	Number of Youn	Notes
	1	1	D-Control	1	1	1	1	1	1	1	1	F	25	
	2	2	D-Control	1	1	1	1	1	1	1	1	F	24	
	3	3	D-Control	1	1	1	1	1	1	1	1	F	15	
	4	4	D-Control	1	1	1	1	1	1	1	1	F	16	
	5	5	D-Control	1	1	1	1	1	1	1	1	F	15	
	6	6	D-Control	1	1	1	1	1	1	1	1	F	21	
	7	7	D-Control	1	1	1	1	1	1	1	1	F	24	
	8	8	D-Control	1	1	1	1	1	1	1	1	F	14	
	9	9	D-Control	1	1	1	1	0	0	0	0	F	0	
	10	10	D-Control	1	1	1	1	1	1	1	1	F	21	
	11	1	5	1	1	1	1	1	1	1	1	F	19	
	12	2	5	1	1	1	1	1	1	1	1	F	22	
	13	3	5	1	1	1	1	1	1	1	1	F	21	
	14	4	5	1	1	1	1	1	0	0	0	F	0	
	15	5	5	1	1	1	1	1	1	1	1	F	24	
	16	6	5	1	1	1	1	1	1	1	1	F	23	
	17	7	5	1	1	1	1	1	1	1	1	F	18	
	18	8	5	1	1	1	0	0	0	0	0	F	0	
	19	9	5	1	1	1	1	1	1	1	1	F	22	
	20	10	5	1	1	1	1	1	1	1	1	F	22	
	21	1	10	1	1	1	1	1	1	1	1	F	21	
	22	2	10	1	1	1	1	1	1	1	1	F	12	
	23	3	10	1	1	1	1	1	1	1	1	F	20	
	24	4	10	1	1	1	1	1	1	1	1	F	23	
	25	5	10	1	1	1	1	1	1	1	1	F	20	
	26	6	10	1	1	1	1	1	1	1	1	F	19	
	27	7	10	1	1	1	1	1	1	1	1	F	15	
	28	8	10	1	1	1	1	1	1	1	1	F	19	
	29	9	10	1	1	1	0	0	0	0	0	F	0	
	30	10	10	1	1	1	1	1	1	1	1	F	24	
	31	1	22	1	1	1	1	1	1	1	1	F	19	
	32	2	22	1	1	1	1	1	1	1	1	F	20	
	33	3	22	1	1	1	1	1	0	0	0	F	2	
	34	4	22	1	1	1	1	1	1	1	1	F	21	
	35	5	22	1	1	1	1	1	1	1	1	F	26	
	36	6	22	1	1	1	1	1	1	1	1	F	17	
	37	7	22	1	1	1	1	1	1	1	1	F	18	
	38	8	22	1	1	1	1	1	1	1	1	F	19	
	39	9	22	1	1	1	1	1	1	1	1	F	20	
	40	10	22	1	1	1	1	1	1	1	1	F	21	
	41	1	47	1	1	1	1	1	1	1	1	F	20	
	42	2	47	1	1	1	1	1	1	1	1	F	14	
	43	3	47	1	1	1	1	1	1	1	1	F	16	
	44	4	47	1	1	1	1	1	1	1	1	F	23	
	45	5	47	1	1	1	1	1	1	1	1	F	21	
	46	6	47	1	1	1	1	1	1	1	1	F	17	
	47	7	47	1	1	1	1	1	1	1	1	F	17	
	48	8	47	1	1	1	1	1	1	1	1	F	16	
	49	9	47	1	1	1	1	1	1	1	1	F	22	
	50	10	47	1	1	1	1	1	1	1	1	F	16	
	51	1	100	1	1	1	1	1	1	1	1	F	15	
	52	2	100	1	1	1	1	1	1	1	1	F	21	
	53	3	100	1	1	1	1	1	1	1	1	F	18	

Test: CD-Ceriodaphnia Survival and Reproduction Test
Test ID: 2SCOTTWEBE
Species: CD-Ceriodaphnia dubia
Protocol: EPAFW02-EPA/821/R-02-013
Sample ID: VA
Sample Type: EFF1-POTW
Start Date: 6/7/2011 End Date: 6/15/2011
Lab ID:

Pos	ID	Rep	Group	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Sex	Number of Youn	Notes
	54	4	100	1	1	1	1	1	1	1	1	F	20	
	55	5	100	1	1	1	1	1	1	1	1	F	21	
	56	6	100	1	1	1	1	1	1	1	1	F	22	
	57	7	100	1	1	1	1	1	1	1	1	F	24	
	58	8	100	1	1	1	1	1	1	1	1	F	23	
	59	9	100	1	1	1	1	1	1	1	1	F	27	
	60	10	100	1	1	1	1	1	1	1	1	F	22	

Comments: Scott County Weber City

Ceriodaphnia Survival and Reproduction Test-7 Day Survival

Start Date:	6/7/2011	Test ID:	2SCOTTWEBE	Sample ID:	VA
End Date:	6/15/2011	Lab ID:		Sample Type:	EFF1-POTW
Sample Date:	6/7/2011	Protocol:	EPAFW02-EPA/821/R-02-01	Test Species:	CD-Ceriodaphnia dubia
Comments:	Scott County Weber City				

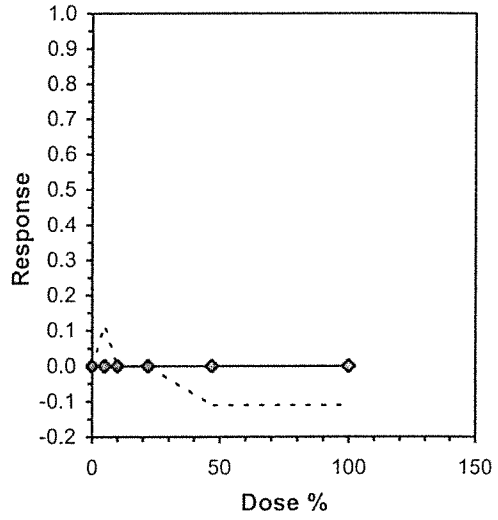
Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000
5	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000
22	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
47	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

			Transform: Arcsin Square Root					Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	0.9000	1.0000	0.9948	0.5236	1.0472	16.644	10	0.9167	1.0000
5	0.8000	0.8889	0.9425	0.5236	1.0472	23.424	10	0.9167	1.0000
10	0.9000	1.0000	0.9948	0.5236	1.0472	16.644	10	0.9167	1.0000
22	0.9000	1.0000	0.9948	0.5236	1.0472	16.644	10	0.9167	1.0000
47	1.0000	1.1111	1.0472	1.0472	1.0472	0.000	10	0.9167	1.0000
100	1.0000	1.1111	1.0472	1.0472	1.0472	0.000	10	0.9167	1.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.05)	3.26904	0.895	-2.7804	6.74305
Equality of variance cannot be confirmed				

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL	Skew
IC25	>100			



 ToxCalc v5.0.32 Reviewed by:_____

Ceriodaphnia Survival and Reproduction Test-7 Day Survival

Start Date:	6/7/2011	Test ID:	2SCOTTWEBE	Sample ID:	VA
End Date:	6/15/2011	Lab ID:		Sample Type:	EFF1-POTW
Sample Date:	6/7/2011	Protocol:	EPAFW02-EPA/821/R-02-01	Test Species:	CD-Ceriodaphnia dubia
Comments:	Scott County Weber City				

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000
5	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000
22	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
47	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Conc-%	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical
D-Control	0.9000	1.0000	1	9	10	10		
5	0.8000	0.8889	2	8	10	10	0.5000	0.0500
10	0.9000	1.0000	1	9	10	10	0.7632	0.0500
22	0.9000	1.0000	1	9	10	10	0.7632	0.0500
47	1.0000	1.1111	0	10	10	10	0.5000	0.0500
100	1.0000	1.1111	0	10	10	10	0.5000	0.0500

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	100	>100		1
Treatments vs D-Control				

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	6/7/2011	Test ID:	2SCOTTWEBE	Sample ID:	VA
End Date:	6/15/2011	Lab ID:		Sample Type:	EFF1-POTW
Sample Date:	6/7/2011	Protocol:	EPAFW02-EPA/821/R-02-01	Test Species:	CD-Ceriodaphnia dubia
Comments:	Scott County Weber City				

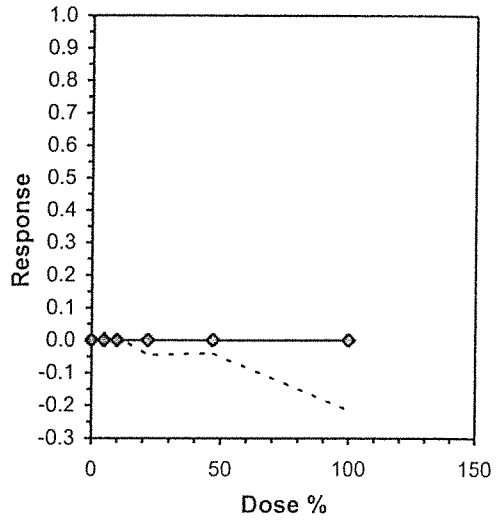
Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	25.000	24.000	15.000	16.000	15.000	21.000	24.000	14.000	0.000	21.000
5	19.000	22.000	21.000	0.000	24.000	23.000	18.000	0.000	22.000	22.000
10	21.000	12.000	20.000	23.000	20.000	19.000	15.000	19.000	0.000	24.000
22	19.000	20.000	2.000	21.000	26.000	17.000	18.000	19.000	20.000	21.000
47	20.000	14.000	16.000	23.000	21.000	17.000	17.000	16.000	22.000	16.000
100	15.000	21.000	18.000	20.000	21.000	22.000	24.000	23.000	27.000	22.000

			Transform: Untransformed					Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	17.500	1.0000	17.500	0.000	25.000	42.528	10	18.283	1.0000
5	17.100	0.9771	17.100	0.000	24.000	53.700	10	18.283	1.0000
10	17.300	0.9886	17.300	0.000	24.000	40.604	10	18.283	1.0000
22	18.300	1.0457	18.300	2.000	26.000	33.984	10	18.283	1.0000
47	18.200	1.0400	18.200	14.000	23.000	16.746	10	18.283	1.0000
100	21.300	1.2171	21.300	15.000	27.000	15.341	10	18.283	1.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.05)	1.37649	0.895	-1.6608	2.7494
Bartlett's Test indicates equal variances (p = 0.01)	14.8617	15.0863		

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL	Skew
IC25	>100			



Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	6/7/2011	Test ID:	2SCOTTWEBE	Sample ID:	VA
End Date:	6/15/2011	Lab ID:		Sample Type:	EFF1-POTW
Sample Date:	6/7/2011	Protocol:	EPAFW02-EPA/821/R-02-01	Test Species:	CD-Ceriodaphnia dubia
Comments:	Scott County Weber City				

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	25.000	24.000	15.000	16.000	15.000	21.000	24.000	14.000	0.000	21.000
5	19.000	22.000	21.000	0.000	24.000	23.000	18.000	0.000	22.000	22.000
10	21.000	12.000	20.000	23.000	20.000	19.000	15.000	19.000	0.000	24.000
22	19.000	20.000	2.000	21.000	26.000	17.000	18.000	19.000	20.000	21.000
47	20.000	14.000	16.000	23.000	21.000	17.000	17.000	16.000	22.000	16.000
100	15.000	21.000	18.000	20.000	21.000	22.000	24.000	23.000	27.000	22.000

			Transform: Untransformed					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
D-Control	17.500	1.0000	17.500	0.000	25.000	42.528	10		
5	17.100	0.9771	17.100	0.000	24.000	53.700	10	108.00	75.00
10	17.300	0.9886	17.300	0.000	24.000	40.604	10	100.50	75.00
22	18.300	1.0457	18.300	2.000	26.000	33.984	10	108.00	75.00
47	18.200	1.0400	18.200	14.000	23.000	16.746	10	105.00	75.00
100	21.300	1.2171	21.300	15.000	27.000	15.341	10	119.00	75.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.05)	1.37649	0.895	-1.6608	2.7494
Bartlett's Test indicates equal variances (p = 0.01)	14.8617	15.0863		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1
Treatments vs D-Control				

ToxCalc v5.0.32

Reviewed by:_____

Microbac

Microbac Tri-Cities Division, 71 Wilson Avenue, Johnson City, Tennessee 37604 Phone (423) 926-6385 Fax (423) 926-6997

CHAIN OF CUSTODY RECORD

Page ____ of ____

Account Name and Address: Scott Co. / Weber City

Contact:

Fax: ____ Yes ____ No

Fax #

Phone #

Project Name: Scott Co/Weber City Biomonitoring

Project Number

Sampler(s): (signature)

11F0047

ANALYSIS

Sample #	Sample Date	Sample Time	Comp Grab	# Cont.	Sample I.D.	Biomonitoring
	6/6/11	1415	Comp	2	Day 1	X

CK.	Preservative	
	pH<2 H2SO4+FAS	Phenol
	pH<2 H2SO4+NaThios	Ammonia
	pH<2 H2SO4	T. Phos,COD,TOC,TKN
	pH<2 HCL	Oil & Grease
	pH<2 HNO3	Metals-Total, Hardness
	pH<2 1:1HCL	VOC's, BTEX/GRO
	pH>9 NaOH+2NAcetate	Sulfide
	pH>12 NaOH	Cyanide
X	Unpreserved	
	Unpreserved TTO's	SVOC's*
	HCL	VOC's*

Relinquished by: (signature)	Date	Time	Received by: (signature)	Date	Time
	6/6/11	1505		6/6/11	1505
Relinquished by: (signature)	Date	Time	Received by: (signature)	Date	Time

Cooler Temp: 4.1°C

Properly Preserved? YES ⊗ NO ○

Chlorine Check? YES ○ NO ○

*If present NA2SO4 added to sample

pH

Temp.

Date/Time

COMPOSITE INFO: Start Date ____ Stop Date ____ Start Time ____ Stop Time ____

FLOW ____ GPD

WORK ORDER # 11F0047

Microbac

Microbac Tri-Cities Division, 71 Wilson Avenue, Johnson City, Tennessee 37604 Phone (423) 926-6385 Fax (423) 926-6997

CHAIN OF CUSTODY RECORD

Page ____ of ____

Account Name and Address: Scott Co / Weber City

Contact:

Fax: ____ Yes ____ No

Fax #

Phone #

Project Name: Scott Co / Weber City Biomonitoring

Project Number

Sampler(s): (signature)

ANALYSIS

Sample #	Sample Date	Sample Time	Comp Grab	# Cont.	Sample I.D.	Biomonitoring
	6/8/11	1357	Comp	2	Day 2	X

CK.	Preservative	
	pH<2 H2SO4+FAS	Phenol
	pH<2 H2SO4+NaThios	Ammonia
	pH<2 H2SO4	T. Phos,COD,TOC,TKN
	pH<2 HCL	Oil & Grease
	pH<2 HNO3	Metals-Total, Hardness
	pH<2 1:1HCL	VOC's, BTEX/GRO
	pH>9 NaOH+2NAcetate	Sulfide
	pH>12 NaOH	Cyanide
	Unpreserved	
	Unpreserved TTO's	SVOC's*
	HCL	VOC's*

Relinquished by: (signature)	Date	Time	Received by: (signature)	Date	Time
	6/8/11	1540		6/8/11	1540
Relinquished by: (signature)	Date	Time	Received by: (signature)	Date	Time

Cooler Temp: 3.8°C

Properly Preserved? YES ⊗ NO ○

Chlorine Check? YES ○ NO ○

*If present NA2SO4 added to sample

pH

Temp.

Date/Time

COMPOSITE INFO

Start Date 6/7/11 Stop Date 6/8/11

Start Time 0900 Stop Time 0900

FLOW

GPD

WORK ORDER # 11F0047

Microbac

Microbac Tri-Cities Division, 71 Wilson Avenue, Johnson City, Tennessee 37604 Phone (423) 926-6385 Fax (423) 926-6997

CHAIN OF CUSTODY RECORD

Page ____ of ____

Account Name and Address: Scott Co./Weber City

Contact:

Fax: ____ Yes ____ No

Fax # ____

Phone # ____

Project Name: Scott Co./Weber City Biomonitoring

Project Number

Sampler(s): (signature)

11F0047

ANALYSIS

Sample #	Sample Date	Sample Time	Comp Grab	# Cont.	Sample I.D.	Biomonitoring
	6/10/11	1358	Comp	2	Day 3	X

CK.	Preservative	
	pH<2 H2SO4+FAS	Phenol
	pH<2 H2SO4+NaThios	Ammonia
	pH<2 H2SO4	T. Phos,COD,TOC,TKN
	pH<2 HCL	Oil & Grease
	pH<2 HNO3	Metals-Total, Hardness
	pH<2 1:1HCL	VOC's, BTEX/GRO
	pH>9 NaOH+2NAcetate	Sulfide
	pH>12 NaOH	Cyanide
	Unpreserved	
	Unpreserved TTO's	SVOC's*
	HCL	VOC's*

Relinquished by: (signature)	Date	Time	Received by: (signature)	Date	Time
	6/10/11	1650		6/10/11	1650
Relinquished by: (signature)	Date	Time	Received by: (signature)	Date	Time

Cooler Temp: 4.3°C

Properly Preserved? YES ⊗ NO ○

Chlorine Check? YES ○ NO ○

*If present NA2SO4 added to sample

pH ____ Temp. ____ Date/Time ____

COMPOSITE INFO: Start Date 6/9/11 Stop Date 6/10/11 Start Time 0900 Stop Time 0900

FLOW ____ GPD

WORK ORDER # ~~HFOD~~ BR 6/10/11

H F0047

Scott County Weber City

CHRONIC BIOASSAY TEST CONDITIONS

FATHEAD MINNOWS

Treatment	Control	5%	10%	22%	47%	100%
# fatheads exposed	40	40	40	40	40	40
# fatheads surviving	40	39	40	40	40	40
% Survival	100%	98%	100%	100%	100%	100%
Mean dry weight-mg	4.17	3.78	3.41	4.69	5.29	5.52
Temp. range°C	24.0-25.0	24.0-25.0	24.0-25.0	24.0-25.0	24.0-25.0	24.0-26.0
D.O. range mg/L	5.2-8.5	5.2-8.4	5.2-8.4	5.3-8.4	5.3-8.2	5.5-8.0
pH range	7.3-7.7	7.3-7.7	7.3-7.7	7.3-7.9	7.3-7.9	7.4-8.0

CERIODAPHNIA DUBIA

# cerio exposed	10	10	10	10	10	10
# cerio surviving	9	8	9	9	10	10
% Survival	90%	80%	90%	90%	100%	100%
Avg. young/adult	19.4	21.4	19.2	20.3	18.2	21.3
Temp. range°C	24.0-25.0	24.0-25.0	24.0-25.0	24.0-25.0	24.0-25.0	24.0-26.0
D.O. range mg/L	6.0-8.5	6.0-8.4	6.0-8.4	6.0-8.4	6.0-8.2	6.0-8.0
pH range	7.4-7.8 ~~7.9~~ KS	7.4-7.8	7.4-7.8	7.5-7.9	7.5-7.9	7.5-8.0

Bioassay Chemical Data Sheet

Facility I.D.: Scott County: Webster City

	pH	Residual Chlorine	Dissolved Oxygen	Date/Time/Analyst
Sample 1	7.5	<0.1 mg/L	8.0	6/7/11 KS
Sample 2	7.4	<0.1 mg/L	8.0	6/9/11 KS
Sample 3	8.0	<0.1 mg/L	7.7	6/11/11 KS

	Visual/Odor	Date/Time/Analyst
Sample 1	Clear, slight odor, no solids	6/7/11 KS
Sample 2	clear, slight odor, no solids	6/9/11 KS
Sample 3	Clear, slight odor, no solids	6/11/11 KS

Alkalinity (mg/l)

	Mls smpl.	N H2SO4	ml H2SO4	Alkalinity
Sample 1	25	0.0200		112
Sample 2				116
Sample 3				114
Control 1				60
Control 2				54
Control 3				50
Control 4				60
Control 5				68
Control 6				56
Control 7				54
Dup. Cl				60
Standard				72
Blank			0.05	<0.1

Conductivity

	umhos/cm	Date/Time
Sample 1	537	6/18/11
Sample 2	530	
Sample 3	540	
Control 1	264	
Control 2	239	
Control 3	204	
Control 4	242	
Control 5	263	
Control 6	257	
Control 7	256	
Dup. Cl	265	
Standard	96.7	True = 101
Blank	0.96	

Hardness (mg/l) ICP/MS

	Mls smpl.	N EDTA	ml EDTA	Hardness
Sample 1				162
Sample 2				170
Sample 3				168
Control 1				75
Control 2				68
Control 3				62
Control 4				71
Control 5				76
Control 6				75
Control 7				74
Dup.				
Standard				
Blank				
CaCO3	10			

CHRONIC BIOASSAY
EFFLUENT USE SHEET

Test Identification: Fathead Minnows and Ceriodaphnia Dubia
Survival, Growth, Reproduction

Sample Identification: Scott County Weber City

Date/Time Sample Collected	Date/Time Sample Used	Test Day
6/5-6/11 @ 1415	6/7/11 @ 0930	1
	6/8/11 @ 0930	2
6/7-8/11 @ 1357	6/9/11 @ 0930	3
	6/10/11 @ 1000	4
6/9-10/11 @ 1358	6/11/11 @ 1000	5
	6/12/11 @ 0920	6
	6/13/11 @ 0945	7

Lapsed time from sample collection to delivery in laboratory	
Sample 1	~ 1 hour
Sample 2	~ 2 hours
Sample 3	~ 3 hours

Lapsed time from sample collection to first use of sample	
Sample 1	~ 18 hours
Sample 2	~ 19 1/2 hours
Sample 3	~ 20 hours

MICROBAC TRI-CITIES DIVISION
BIOMONITORING
QUALITY ASSURANCE/REFERENCE TOXICANT DATA SECTION

Facility: KCI Reference Toxicant Lab ID N/A Test start: 6/7/11

Test: 7 day fathead

Control		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0	25.0	25.0	25.0	24.0	24.0	25.0	MHSFW
D.O.	Initial	7.3	7.2	7.3	7.2	8.5	8.0	7.9	
	Final	5.8	5.2	5.2	6.6	6.5	6.4	6.2	
pH	Initial	7.5	7.4	7.4	7.4	7.7	7.5	7.6	
	Final	7.3	7.3	7.3	7.7	7.4	7.3	7.4	
Date/Time		6/7/11	6/8/11	6/9/11	6/10/11	6/11/11	6/12/11	6/13/11	
Analyst		NS 9:00	NS 9:00	NS 9:00	NS 9:30	9:30 KS	9:00 KS NS	9:30 KS NS	

500 mg/l		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0	25.0	25.0	25.0	24.0	24.0	25.0	
D.O.	Initial	7.3	7.4	7.4	7.3	7.9	8.0	7.9	
	Final	6.3	6.0	6.1	6.0	6.2	6.4	6.1	
pH	Initial	7.5	7.5	7.4	7.4	7.2	7.4	7.5	
	Final	7.3	7.3	7.3	7.5	7.2	7.3	7.4	

1000 mg/l		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0	25.0	25.0	25.0	24.0	24.0	25.0	
D.O.	Initial	7.3	7.4	7.4	7.3	7.9	8.0	7.9	
	Final	6.5	6.4	6.4	6.3	6.2	6.6	6.3	
pH	Initial	7.5	7.5	7.6	7.5	7.5	7.5	7.5	
	Final	7.3	7.4	7.4	7.4	7.3	7.2	7.3	

2000 mg/l		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0							All dead 6/8/11
D.O.	Initial	7.3							
	Final	6.5							
pH	Initial	7.4							
	Final	7.3							

BIOASSAY FATHEAD WEIGHT SHEET

Facility: KCl Reference Toxicant

Test Start Date:

Conc:	Rep. No. (R)	A Wgt. of boat (g)	B Dry wgt: foil and larvae (g)	B - A Total dry wgt. of larvae (mg)	C No. of larvae Surv.	C No. of larvae Exp.	(B-A)/C Mean dry wgt. of larvae (mg)	(R1+R2+R3)/4 Avg. mean dry wgt. of larvae (mg)	Remarks
Control	1	0.96541	0.97147		10	10			~~1~~
	2	0.96392	0.96666		10	10			~~2~~
	3	0.96518	0.96906		10	10			~~3~~
	4	0.96537	0.96936		10	10			~~4~~
									NS 6/14/11 Boat #
Conc: 500mg/l	1	0.96412	0.96535		6	10			~~5~~ 1
	2	0.96207	0.96452		8	10			~~6~~ 2
	3	0.95835	0.96183		10	10			~~7~~ 3
	4	0.95426	0.95659		10	10			~~8~~ 4
Conc: 1000mg/l	1					10			
	2					10			
	3	0.95591	0.95643		2	10			5
	4	0.95672	0.95823		7	10			6
Conc: 2000mg/l	1					10			
	2					10			
	3					10			
	4					10			

Larval Fish Growth and Survival Test-7 Day Survival

Start Date:	6/7/2011	Test ID:	1KCL	Sample ID:	REF-Ref Toxicant
End Date:	6/14/2011	Lab ID:		Sample Type:	KCL-Potassium chloride
Sample Date:	6/7/2011	Protocol:	EPAFW02-EPA/821/R-02-01	Test Species:	PP-Pimephales promelas
Comments:	KCl Reference Toxicant				

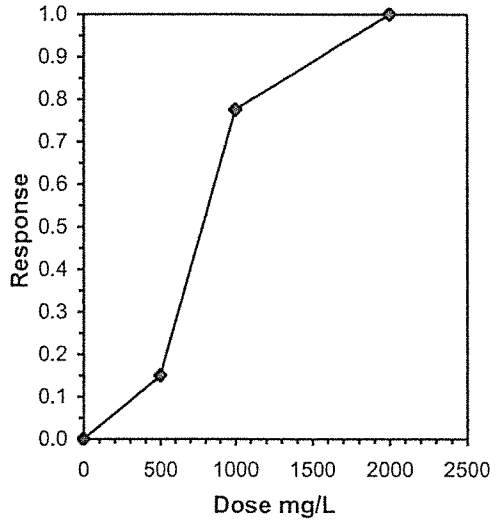
Conc-mg/L	1	2	3	4
D-Control	1.0000	1.0000	1.0000	1.0000
500	0.6000	0.8000	1.0000	1.0000
1000	0.0000	0.0000	0.2000	0.7000
2000	0.0000	0.0000	0.0000	0.0000

			Transform: Arcsin Square Root					Isotonic	
Conc-mg/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	1.0000	1.0000
500	0.8500	0.8500	1.2043	0.8861	1.4120	21.278	4	0.8500	0.8500
1000	0.2250	0.2250	0.4431	0.1588	0.9912	88.610	4	0.2250	0.2250
2000	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	4	0.0000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.05)	0.90384	0.859	0.76878	1.11212
Equality of variance cannot be confirmed				

Linear Interpolation (200 Resamples)

Point	mg/L	SD	95% CL(Exp)		Skew
IC25	580.00	74.48	318.67	772.00	-0.8665



CHRONIC FATHEAD MINNOWS
KCI REFERENCE TOXICANT-SURVIVAL

DATE		IC25	X2	LCL	IC25	UCL	AVG
Jan-10	1	698 mg/L	487204	453	698	737	595
Feb-10	2	622 mg/l	386884	453	622	737	595
Feb-10	3	635 mg/L	403225	453	635	737	595
Mar-10	4	643 mg/L	413449	453	643	737	595
Mar-10	5	680 mg/L	462400	453	680	737	595
Apr-10	6	557 mg/L	310249	453	557	737	595
Apr-10	7	639 mg/l	408321	453	639	737	595
May-10	8	615 mg/l	378225	453	615	737	595
Jun-10	9	636 mg/L	404496	453	636	737	595
Jul-10	10	605 mg/L	366025	453	605	737	595
Aug-10	11	398 mg/L	158404	453	398	737	595
Sep-10	12	591 mg/L	349281	453	591	737	595
Oct-10	13	611 mg/L	373321	453	611	737	595
Nov-10	14	598 mg/L	357604	453	598	737	595
Dec-10	15	560 mg/l	313600	453	560	737	595
Jan-11	16	549 mg/L	301401	453	549	737	595
Feb-11	17	504 mg/L	254016	453	504	737	595
Apr-11	18	500 mg/L	250000	453	500	737	595
May-11	19	681 mg/l	463761	453	681	737	595
Jun-11	20	580 mg/L	336400	453	580	737	595

Sum of IC25 values :	11902	mg/L
Mean of IC25 values :	595	mg/L
Standard Deviation :	71	mg/L
Upper Control Limit :	737	mg/L
Lower Control Limit :	453	mg/L

Facility: KCl Reference Toxicant Lab ID N/A Test start: 6/7/11

Test: 7 day cerio

Control		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0	25.0	25.0	25.0	24.0	24.0	25.0	MHSFW
D.O.	Initial	7.3	7.2	7.3	7.2	8.5	8.0	7.9	
	Final	6.2	6.1	6.0	6.0	6.7	6.5	6.4	
pH	Initial	7.5	7.4	7.4	7.4	7.7	7.5	7.6	
	Final	7.7	7.7	7.6	7.6	7.8	7.6	7.7	
Date/Time		6/7/11	6/8/11	6/9/11	6/10/11	6/11/11	6/12/11	6/13/11	
Analyst		12:00/CS	12:30/CS	12:30/CS	12:00/CS	12:30/CS	12:00/CS	12:00/CS	

125 mg/l		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0	25.0	25.0	25.0	24.0	24.0	25.0	
D.O.	Initial	7.3	7.2	7.3	7.2	8.4	8.0	7.9	
	Final	6.2	6.1	6.0	6.2	6.7	6.5	6.4	
pH	Initial	7.5	7.4	7.4	7.4	7.7	7.5	7.6	
	Final	7.7	7.6	7.6	7.6	7.8	7.6	7.7	

250 mg/l		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0	25.0	25.0	25.0	24.0	24.0	25.0	
D.O.	Initial	7.3	7.3	7.3	7.2	8.4	8.0	7.9	
	Final	6.3	6.5	6.3	6.2	7.0	6.7	6.6	
pH	Initial	7.5	7.5	7.5	7.4	7.8	7.6	7.7	
	Final	7.7	7.6	7.7	7.5	7.8	7.8	7.9	

500 mg/l		Day 1	2	3	4	5	6	7	Remarks
Temperature °C		25.0	25.0						
D.O.	Initial	7.3	7.4						All dead 6/9/11
	Final	6.6	6.5						
pH	Initial	7.5	7.5						
	Final	7.7	7.6						

FORM 30-REV 3/4/97

Test: CD-Ceriodaphnia Survival and Reproduction Test | Test ID: 2KCL
Species: CD-Ceriodaphnia dubia | Protocol: EPAFW02-EPA/821/R-02-013
Sample ID: REF-Ref Toxicant | Sample Type: KCL-Potassium chloride
Start Date: 6/7/2011 End Date: 6/15/2011 | Lab ID:

Pos	ID	Rep	Group	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Sex	Number of Youn	Notes
	1	1	D-Control	1	1	1	1	1	1	1	1	F	25	
	2	2	D-Control	1	1	1	1	1	1	1	1	F	24	
	3	3	D-Control	1	1	1	1	1	1	1	1	F	15	
	4	4	D-Control	1	1	1	1	1	1	1	1	F	16	
	5	5	D-Control	1	1	1	1	1	1	1	1	F	15	
	6	6	D-Control	1	1	1	1	1	1	1	1	F	21	
	7	7	D-Control	1	1	1	1	1	1	1	1	F	24	
	8	8	D-Control	1	1	1	1	1	1	1	1	F	14	
	9	9	D-Control	1	1	1	1	0	0	0	0	F	0	
	10	10	D-Control	1	1	1	1	1	1	1	1	F	21	
	11	1	125	1	1	1	1	1	1	1	1	F	19	
	12	2	125	1	1	1	1	1	1	1	1	F	22	
	13	3	125	1	1	1	1	1	1	0	0	F	2	
	14	4	125	1	1	1	1	1	1	1	1	F	12	
	15	5	125	1	1	1	1	1	1	1	1	F	21	
	16	6	125	1	1	1	1	1	1	1	1	F	23	
	17	7	125	1	1	1	1	1	1	1	1	F	21	
	18	8	125	1	1	1	1	1	1	1	1	F	16	
	19	9	125	1	1	1	1	1	1	1	1	F	19	
	20	10	125	1	1	1	1	1	1	1	1	F	26	
	21	1	250	1	1	1	1	1	1	1	1	F	15	
	22	2	250	1	1	1	0	0	0	0	0	F	0	
	23	3	250	1	1	1	1	1	1	1	1	F	28	
	24	4	250	1	1	1	1	1	1	1	1	F	12	
	25	5	250	1	1	1	1	1	1	1	1	F	16	
	26	6	250	1	1	1	1	1	1	1	1	F	17	
	27	7	250	1	1	0	0	0	0	0	0	F	0	
	28	8	250	1	1	1	1	1	1	1	1	F	15	
	29	9	250	1	1	1	0	0	0	0	0	F	0	
	30	10	250	1	1	1	1	1	1	1	1	F	12	
	31	1	500	1	0	0	0	0	0	0	0	F	0	
	32	2	500	1	0	0	0	0	0	0	0	F	0	
	33	3	500	1	0	0	0	0	0	0	0	F	0	
	34	4	500	1	0	0	0	0	0	0	0	F	0	
	35	5	500	1	0	0	0	0	0	0	0	F	0	
	36	6	500	1	0	0	0	0	0	0	0	F	0	
	37	7	500	1	0	0	0	0	0	0	0	F	0	
	38	8	500	1	0	0	0	0	0	0	0	F	0	
	39	9	500	1	0	0	0	0	0	0	0	F	0	
	40	10	500	1	0	0	0	0	0	0	0	F	0	

Comments: KCl Reference Toxicant

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date:	6/7/2011	Test ID:	2KCL	Sample ID:	REF-Ref Toxicant
End Date:	6/15/2011	Lab ID:		Sample Type:	KCL-Potassium chloride
Sample Date:	6/7/2011	Protocol:	EPAFW02-EPA/821/R-02-01	Test Species:	CD-Ceriodaphnia dubia
Comments:	KCl Reference Toxicant				

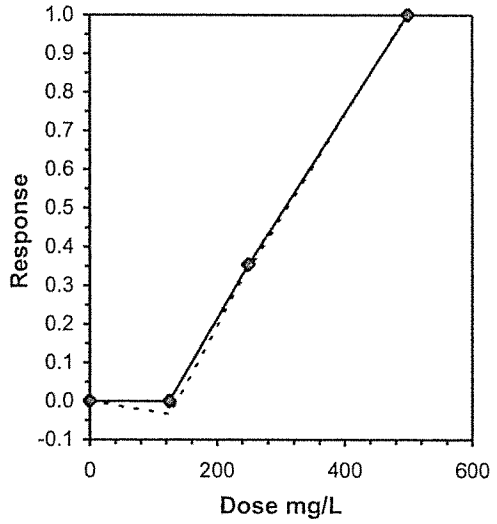
Conc-mg/L	1	2	3	4	5	6	7	8	9	10
D-Control	25.000	24.000	15.000	16.000	15.000	21.000	24.000	14.000	0.000	21.000
125	19.000	22.000	2.000	12.000	21.000	23.000	21.000	16.000	19.000	26.000
250	15.000	0.000	28.000	12.000	16.000	17.000	0.000	15.000	0.000	12.000
500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

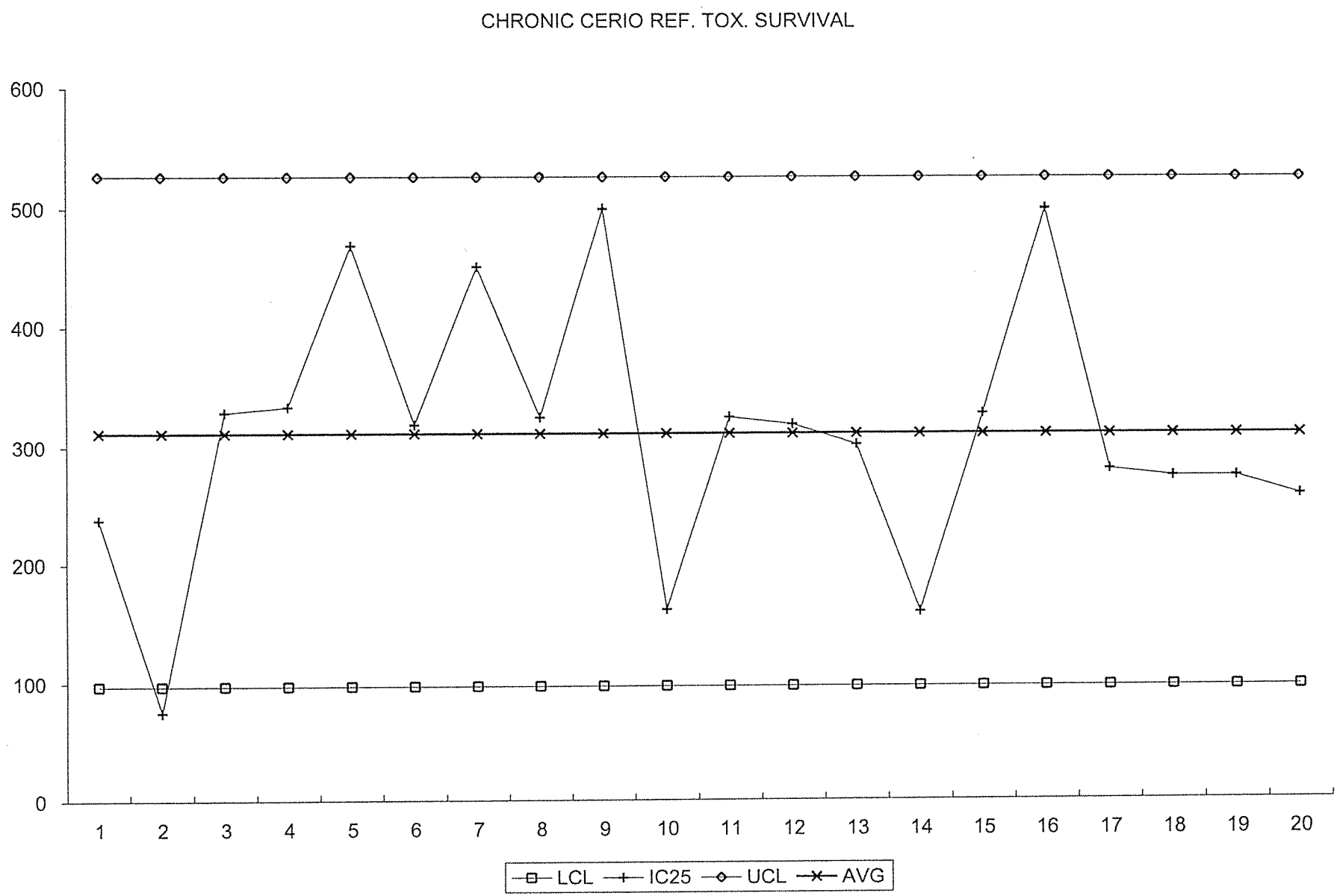
			Transform: Untransformed					Isotonic	
Conc-mg/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	17.500	1.0000	17.5000	0.0000	25.0000	42.528	10	17.800	1.0000
125	18.100	1.0343	18.1000	2.0000	26.0000	37.782	10	17.800	1.0000
250	11.500	0.6571	11.5000	0.0000	28.0000	79.088	10	11.500	0.6461
500	0.000	0.0000	0.0000	0.0000	0.0000	0.000	10	0.000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.92587	0.927	-0.6628	0.56332
Bartlett's Test indicates equal variances (p = 0.69)	0.75653	9.21034		

Linear Interpolation (200 Resamples)

Point	mg/L	SD	95% CL		Skew
IC25	213.29	44.15	137.40	303.63	0.2145




CHRONIC CERIO REF. TOX. SURVIVAL
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IC25
UCL
AVG

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524

Toll Free: 800/331-5916
Tel: 970/484-5091 Fax:970/484-2514

ORGANISM HISTORY

DATE: 6/6/2011

SPECIES: *Pimephales promelas*

AGE: N/A

LIFE STAGE: Embryo

HATCH DATE: 6/6/2011

BEGAN FEEDING: N/A

FOOD: N/A

Water Chemistry Record:	**Current**	**Range**
TEMPERATURE:	25°C	--
SALINITY/CONDUCTIVITY:	--	--
TOTAL HARDNESS (as $CaCO_3$):	132 mg/l	--
TOTAL ALKALINITY (as $CaCO_3$):	85 mg/l	--
pH:	7.83	--

Comments:

Facility Supervisor

Aquatic Research Organisms

DATA SHEET

I. Organism History

Species Ceriodaphnia dubia

Source: Lab reared X Hatchery reared ____ Field collected ____

Hatch date 6/5/2011 Receipt date ____

Lot number 06 06 11 cD Strain ARO

Brood origination EPA OH

II. Water Quality

Temperature 24 °C Salinity — ppt D.O. SAT ppm

pH 7.4 su Hardness ≈ 120 ppm Alkalinity ≈ 140 ppm

III. Culture Conditions

Freshwater X Saltwater ____ Other ____

Recirculating ____ Flow through ____ Static renewal X

DIET: Flake food ____ Phytoplankton X Trout chow ~~X~~

Artemia ____ Rotifers ____ YCT X Other ____

Prophylactic treatments: ____

Comments: All gravid as of 2:00pm EDST

IV. Shipping Information

Client: Microbac TN # of Organisms 100/line

Carrier: fedEx Date shipped 6/6/11

Biologist: ____

PO BOX 1271 HAMPTON NH 03843-1271 (603) 926-1650 AROFISH@AOL.COM