Arkansas Analytical, Inc.

Toxicity Test Results

City of Cabot
NPDES PERMIT NUMBER: AR0021661
2nd Biannual Test 2022

Fathead Minnow, *Pimephales promelas,* Larval Survival and Growth Test
Test 1000.0

Ceriodaphnia dubia, Survival and Reproduction Test
Test 1002.0

Prepared for: **Tim Joyner**
Cabot Water Works
P.O. Box 1287
Cabot, AR 72023

Prepared by: Arkansas Analytical
8100 National Dr.
Little Rock, Arkansas 72209
Lab Number K2211008

Friday, December 16, 2022

Plant location

The plant is located at 76 Marshall Lane, Cabot, AR 72023, from Hwy 168 N, to Hwy 321 E then north on Kerr Station Road to Marshall Lane then west to the site, in Lonoke County, Arkansas.

Test Methods

EPA Method 1000.0 *Pimephales promelas*, Larval survival and growth test

- Test chambers: 500 mL plastic cups
- Test solution volume: 250 mL
- Number of test organisms per chamber: 10
- Number of replicates per concentration: 5
- Test temperature 25°C ± 1°C
- Test concentrations: 0%, 32%, 45%, 56%, 75%, 100%
- Dilution water: Moderately hard synthetic
- No deviation from method

EPA Method 1002.0 *Ceriodaphnia dubia*, Survival and reproduction test

- Test chambers: 30 mL plastic cups
- Test solution volume: 15 mL
- Number of test organisms per chamber: 1
- Number of replicates per concentration: 10
- Test temperature 25°C ± 1°C
- Test concentrations: 0%, 32%, 45%, 56%, 75%, 100%
- Dilution water: Moderately hard synthetic
- No deviation from method

Reference Toxicant Data

REFERENCE TOXICANT (Potassium Chloride)

Ceriodaphnia dubia 10/11/22-10/18/22		*Pimephales promelas* 10/11/22-10/18/22	
NOEC Survival:	500 ppm KCl	NOEC Survival:	500 ppm KCl
LOEC Survival:	1000 ppm KCl	LOEC Survival:	1000 ppm KCl
NOEC Reproduction:	250 ppm KCl	NOEC Growth:	500 ppm KCl
LOEC Reproduction:	500 ppm KCl	LOEC Growth:	1000 ppm KCl

Summary of Results

City of Cabot

Ceriodaphnia dubia		*Pimephales promelas*	
NOEC Survival Parameter: **TOP3B**	100%	NOEC Survival Parameter: **TOP6C**	100%
Pass/Fail Survival Parameter: **TLP3B**	Pass	Pass/Fail Survival Parameter: **TLP6C**	Pass
NOEC Reproduction Parameter: **TPP3B**	100%	NOEC Growth Parameter: **TPP6C**	100%
Pass/Fail Reproduction Parameter: **TGP3B**	Pass	Pass/Fail Growth Parameter: **TGP6C**	Pass
%CV Reproduction Parameter: **TQP3B**	27.4%	%CV Growth Parameter: **TQP6C**	12.6%
PMSD Reproduction	24.9%	PMSD Growth	15.5%

Conclusion

Pimephales promelas, (Method 1000.0): The permit issued to the City of Cabot, specifies that the **critical dilution is 100% effluent**. The effluent samples **did not** exhibit lethal or sublethal effects at the critical dilution, and, as such, **passed** both portions of the test.

Ceriodaphnia dubia, (Method 1002.0): The permit issued to the City of Cabot, specifies that the **critical dilution is 100% effluent**. The effluent samples **did not** exhibit lethal or sublethal effects at the critical dilution, and, as such, **passed** both portions of the test.

Biomonitoring Analysts: Melissa Bird, Jettie Parnell, Samantha Denton, Tracy Bounds

Reviewed by:

Melissa Bird

Melissa Bird

Appendices

Arkansas Analytical Inc.
8100 National Dr.
Little Rock, AR 72209
PHONE: 501-455-3233
FAX: 501-455-6118

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION	BILLING INFORMATION	Project Description	Turnaround Time
Cabot Water Works	Cabot Water Works	Outfall 001 Sample -- Chronic Toxicity	1 Day (100%)
One City Plaza, Suite B	P.O. Box 1287	AR0021661 -- Semi-Annual Sample (Jul-Dec)	2 Day (50%)
Cabot, AR 72023	Cabot, AR 72023	Reporting Information	3 Day (25%)
		Telephone: 501-843-4654	Routine
Attn: Tim Joyner		Email: tim@cabotwaterworks.com; ryan@cabotwaterworks.com	Preservative Code: 1
			Bottle Type: P

Preservation Codes:
1. Cool, 6 Degrees Centigrade
2. Sulfuric Acid (H_2SO_4), pH < 2
3. Nitric Acid (HNO_3), pH < 2
4. Thiosulfate for Dechlorination
5. Hydrochloric Acid(HCl)
6. Sodium Hydroxide (NaOH), pH > 12

Sampler(s) Signature: Ryan Jones
Sampler(s) Printed: Ryan Jones

Field Number	SAMPLE COLLECTION Date/s	Time/s	Grab	Comp	Number of Bottles	Sample Matrix	SAMPLE IDENTIFICATION/ DESCRIPTION	TEST PARAMETERS: Chronic Toxicity (Ceriodaphnia Dubia, PimephalesPromelas)	Bottle Type Code: Arkansas Analytical Work Order Number:
	11/13-14/22	0830-0930		X	3	Water	Outfall 001 Composite	X	K2211-008A
(8)	~~11-14-22~~	~~0830~~							

1. Relinquished by: (Signature)	Date/Time	2. Received by: (Signature)
Ryan Jones	11/14/22 0830	
3. Relinquished by: (Signature)	Date/Time	4. Received by lab: (Signature)
	11/14/22. 1345	Sydney James

SAMPLE CONDITION UPON RECEIPT IN LAB	
1. CUSTODY SEALS:	✓ Yes ___ No
2. CONTAINERS CORRECT:		Yes ___ No
3. COC/LABELS AGREE:		Yes ___ No
4. RECEIVED ON ICE:		Yes ___ No
5. TEMPERATURE ON RECEIPT:	1 °C
6. TEMPERATURE GUN ID:	HHT# 5
FOR COMPLETION BY LAB ONLY	

REMARKS / SAMPLE COMMENTS

Arkansas Analytical Inc.

8100 National Dr.
Little Rock, AR 72209
PHONE: 501-455-3233
FAX: 501-455-6118

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION	BILLING INFORMATION	Project Description	Turnaround Time
Cabot Water Works	Cabot Water Works	Outfall 001 Sample -- Chronic Toxicity	1 Day (100%)
One City Plaza, Suite B	P.O. Box 1287	AR0021661 -- Semi-Annual Sample (Jul-Dec)	2 Day (50%)
Cabot, AR 72023	Cabot, AR 72023	Reporting Information	3 Day (25%)
		Telephone: 501-843-4654	Routine
Attn: Tim Joyner		Email: tim@cabotwaterworks.com; ryan@cabotwaterworks.com	Preservative Code: 1
			Bottle Type: P

Preservation Codes:

1. Cool, 6 Degrees Centigrade
2. Sulfuric Acid (H_2SO_4), pH < 2
3. Nitric Acid (HNO_3), pH < 2
4. Thiosulfate for Dechlorination
5. Hydrochloric Acid(HCl)
6. Sodium Hydroxide (NaOH), pH > 12

Bottle Type Code: G = Glass; P = Plastic; V = Septum; A = Amber

Sampler(s) Signature: Ryan Jones

Sampler(s) Printed: Ryan Jones

Field Number	SAMPLE COLLECTION Date/s	Time/s	Grab	Comp	Number of Bottles	Sample Matrix	SAMPLE IDENTIFICATION/ DESCRIPTION	Chronic Toxicity (Ceriodaphnia Dubia, PimephalesPromelas)	Arkansas Analytical Work Order Number:
	11/14-15/22	0930-0930		X	3	Water	Outfall 001 Composite	X	K2211-008B

1. Relinquished by: (Signature)	Date/Time	2. Received by: (Signature)
Ryan Jones	11/15/22 0830	K. Bogan
3. Relinquished by: (Signature)	Date/Time 15 ~~1435~~ 11-14-22 1515	4. Received by lab: (Signature) Sydney James

SAMPLE CONDITION UPON RECEIPT IN LAB		
1. CUSTODY SEALS:	✓ Yes	No
2. CONTAINERS CORRECT:	Yes	No
3. COC/LABELS AGREE:	Yes	No
4. RECEIVED ON ICE:	Yes	No
5. TEMPERATURE ON RECEIPT:	1 °C	
6. TEMPERATURE GUN ID:	HHT# 5	

FOR COMPLETION BY LAB ONLY

REMARKS / SAMPLE COMMENTS

Arkansas Analytical Inc.

8100 National Dr.
Little Rock, AR 72209
PHONE: 501-455-3233
FAX: 501-455-6118

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION	BILLING INFORMATION	Project Description	Turnaround Time	Preservation Codes:
Cabot Water Works	Cabot Water Works	Outfall 001 Sample -- Chronic Toxicity	1 Day (100%)	1. Cool, 6 Degrees Centigrade / 4. Thiosulfate for Dechlorination
One City Plaza, Suite B	P.O. Box 1287	AR0021661 -- Semi-Annual Sample (Jul-Dec)	2 Day (50%)	2. Sulfuric Acid (H_2SO_4), pH < 2 / 5. Hydrochloric Acid(HCl)
Cabot, AR 72023	Cabot, AR 72023	Reporting Information	3 Day (25%)	3. Nitric Acid (HNO_3), pH < 2 / 6. Sodium Hydroxide (NaOH), pH > 12
		Telephone: 501-843-4654	Routine	TEST PARAMETERS / Bottle Type Code
Attn: Tim Joyner		Email: tim@cabotwaterworks.com; ryan@cabotwaterworks.com	Preservative Code:	1 / G = Glass; P = Plastic
			Bottle Type:	P / V = Septum; A = Amber

Sampler(s) Signature: Ryan Jones

Sampler(s) Printed: Ryan Jones

Field Number	SAMPLE COLLECTION Date/s	Time/s	Grab	Comp	Number of Bottles	Sample Matrix	SAMPLE IDENTIFICATION/ DESCRIPTION	Chronic Toxicity (Ceriodaphnia Dubia, PimephalesPromelas)	Arkansas Analytical Work Order Number:
	11/16-17/22	0830-0830		X	3	Water	Outfall 001 Composite	X	K2211-008C

1. Relinquished by: (Signature)	Date/Time	2. Received by: (Signature)	SAMPLE CONDITION UPON RECEIPT IN LAB	REMARKS / SAMPLE COMMENTS
Ryan Jones	11/17/22 0830	K. Boyer	1. CUSTODY SEALS: ✓ Yes ___ No	
			2. CONTAINERS CORRECT: ✓ Yes ___ No	
3. Relinquished by: (Signature)	Date/Time 1430 11-17-22	4. Received by lab: (Signature)	3. COC/LABELS AGREE: ✓ Yes ___ No	
K. Boyer		Sydney James	4. RECEIVED ON ICE: ✓ Yes ___ No	
			5. TEMPERATURE ON RECEIPT: 1 °C	
			6. TEMPERATURE GUN ID: HHT# 5	
			FOR COMPLETION BY LAB ONLY	

CETIS Summary Report

Fathead Minnow 7-d Larval Survival and Growth Test — **Arkansas Analytical**

Batch ID:	04-3734-1110	**Test Type:**	Growth-Survival (7d)	**Analyst:**	Jettie Parnell
Start Date:	15 Nov-22 12:25	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	22 Nov-22 13:46	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Test Length:	7d 1h	**Taxon:**	Actinopterygii	**Source:**	Aquatox, AR **Age:** <24
Sample ID:	06-0777-8422	**Code:**	K2211008FH	**Project:**	WET Biannual Compliance Test (2nd)
Sample Date:	14 Nov-22 08:30	**Material:**	POTW Effluent	**Source:**	Cabot (AR0021661)
Receipt Date:	14 Nov-22 13:45	**CAS (PC):**		**Station:**	
Sample Age:	28h (1 °C)	**Client:**	Cabot		

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	K2211008B	15 Nov-22 08:30	15 Nov-22 15:15	16 Nov-22 00:00	1
2	K2211008C	17 Nov-22 08:30	17 Nov-22 14:30	18 Nov-22 00:00	1

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
09-0531-6120	7d Survival Rate	Dunnett Multiple Comparison Test		100	>100	n/a	1	10.5%	1
21-4725-8234	Mean Dry Weight-mg	Dunnett Multiple Comparison Test		100	>100	n/a	1	15.5%	1

Test Acceptability

				TAC Limits			
Analysis ID	**Endpoint**	**Attribute**	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
09-0531-6120	7d Survival Rate	Control Resp	0.96	0.8	>>	Yes	Passes Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	5	0.9600	0.8920	1.0000	0.9000	1.0000	0.0245	0.0548	5.71%	0.00%
32		5	0.9800	0.9245	1.0000	0.9000	1.0000	0.0200	0.0447	4.56%	-2.08%
45		5	0.9800	0.9245	1.0000	0.9000	1.0000	0.0200	0.0447	4.56%	-2.08%
56		5	0.9600	0.8920	1.0000	0.9000	1.0000	0.0245	0.0548	5.71%	0.00%
75		5	0.8800	0.7181	1.0000	0.7000	1.0000	0.0583	0.1304	14.82%	8.33%
100		5	0.9400	0.8720	1.0000	0.9000	1.0000	0.0245	0.0548	5.83%	2.08%

Mean Dry Weight-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	5	0.5948	0.5017	0.6879	0.477	0.658	0.03355	0.07501	12.61%	0.00%
32		5	0.5396	0.4881	0.5911	0.475	0.574	0.01856	0.04151	7.69%	9.28%
45		5	0.5892	0.4983	0.6801	0.481	0.672	0.03273	0.07318	12.42%	0.94%
56		5	0.6566	0.5759	0.7373	0.598	0.764	0.02908	0.06503	9.90%	-10.39%
75		5	0.5858	0.5095	0.6621	0.515	0.667	0.02748	0.06146	10.49%	1.51%
100		5	0.6296	0.571	0.6882	0.565	0.69	0.02111	0.04719	7.50%	-5.85%

Fathead Minnow 7-d Larval Survival and Growth Test — Arkansas Analytical

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	L	0.9000	1.0000	0.9000	1.0000	1.0000
32		0.9000	1.0000	1.0000	1.0000	1.0000
45		1.0000	1.0000	1.0000	0.9000	1.0000
56		0.9000	1.0000	0.9000	1.0000	1.0000
75		0.7000	0.9000	0.8000	1.0000	1.0000
100		0.9000	1.0000	1.0000	0.9000	0.9000

Mean Dry Weight-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	L	0.564	0.477	0.642	0.658	0.633
32		0.574	0.521	0.564	0.475	0.564
45		0.481	0.627	0.557	0.609	0.672
56		0.628	0.764	0.668	0.625	0.598
75		0.539	0.667	0.515	0.586	0.622
100		0.565	0.656	0.69	0.627	0.61

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	L	9/10	10/10	9/10	10/10	10/10
32		9/10	10/10	10/10	10/10	10/10
45		10/10	10/10	10/10	9/10	10/10
56		9/10	10/10	9/10	10/10	10/10
75		7/10	9/10	8/10	10/10	10/10
100		9/10	10/10	10/10	9/10	9/10

CETIS Summary Report

Test Code/ID: K2211008CD / 00-2317-8195

Ceriodaphnia 7-d Survival and Reproduction Test

Arkansas Analytical

Batch ID:	18-7974-9697	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Jettie Parnell		
Start Date:	15 Nov-22 09:08	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water		
Ending Date:	21 Nov-22 09:26	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable		
Test Length:	6d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture	**Age:**	<24
Sample ID:	13-6288-2458	**Code:**	K2211008CD	**Project:**	WET Biannual Compliance Test (2nd)		
Sample Date:	14 Nov-22 08:30	**Material:**	POTW Effluent	**Source:**	Cabot (AR0021661)		
Receipt Date:	14 Nov-22 13:45	**CAS (PC):**		**Station:**			
Sample Age:	25h (1 °C)	**Client:**	Cabot				

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	K2211008B	15 Nov-22 08:30	15 Nov-22 15:15	16 Nov-22 00:00	1
2	K2211008C	17 Nov-22 08:30	17 Nov-22 14:30	18 Nov-22 00:00	1

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
15-2976-4248	7d Survival Rate	Fisher Exact/Bonferroni-Holm Test		100	>100	n/a	1	n/a	1
03-2827-5607	Reproduction	Dunnett Multiple Comparison Test		100	>100	n/a	1	24.9%	1

Test Acceptability

				TAC Limits			
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision
15-2976-4248	7d Survival Rate	Control Resp	1	0.8	>>	Yes	Passes Criteria
03-2827-5607	Reproduction	Control Resp	23.4	15	>>	Yes	Passes Criteria
03-2827-5607	Reproduction	PMSD	0.2488	0.13	0.47	Yes	Passes Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
32		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
45		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
56		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
75		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	10	23.4	18.81	27.99	12	30	2.029	6.415	27.42%	0.00%
32		10	21.9	19.89	23.91	18	25	0.8876	2.807	12.82%	6.41%
45		10	24	19.56	28.44	16	35	1.961	6.2	25.83%	-2.56%
56		10	23.6	18.48	28.72	11	32	2.262	7.152	30.31%	-0.85%
75		10	23.4	18.9	27.9	13	32	1.99	6.293	26.89%	0.00%
100		10	27.2	24.36	30.04	20	32	1.254	3.967	14.58%	-16.24%

Ceriodaphnia 7-d Survival and Reproduction Test — **Arkansas Analytical**

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	L	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
32		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
45		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
56		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
75		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

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	L	30	29	23	24	30	13	23	12	23	27
32		25	20	19	21	21	18	25	25	20	25
45		27	28	25	16	35	28	27	18	17	19
56		29	17	32	32	26	26	23	25	11	15
75		30	32	30	20	27	25	18	13	20	19
100		27	24	20	32	28	31	24	32	29	25

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	L	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
32		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
45		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
56		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
75		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CHEMICAL DATA SHEET FOR CHRONIC TOXICITY TESTING — Fathead Minnow

Lab # / Sample ID: H22-11008 — Test Start (Date/Time): 11/15/22 - 1225

Client: Cabot — Test End (Date/Time): 11/22/22 - 1346

		Day of Test							
		1	2	3	4	5	6	7	notes
Control	MHSC49	11/15	11/16	11/17	11/18	11/19	11/20	11/21	MHSC5C - 11/10
D.O. (mg/L)	INITIAL	8.7	8.4	8.1	8.2	9.0	9.1	9.1	
	FINAL	7.8	7.3	8.6	7.9	8.0	8.1	8.1	
pH (s.u.)	INITIAL	6.4	7.6	7.4	7.1	7.7	7.9	7.2	
	FINAL	8.0	8.1	7.3	7.7	7.5	7.6	7.2	
temp (C)	INITIAL	20	20	21	20	21	20	19	
	FINAL	25	25	25	25	25	25	25	
ALKALINITY (mg/L)		64	68						
HARDNESS (mg/L)		84	102						
CONDUCTIVITY (umho		317	337						
CHLORINE (mg/L)		<0.05							
CONC: 32									
D.O. (mg/L)	INITIAL	8.8	8.5	8.5	8.8	9.0	9.0	9.2	
	FINAL	7.7	7.3	8.5	7.7	7.5	7.7	7.6	
pH (s.u)	INITIAL	6.6	7.6	7.4	7.1	7.5	7.6	7.2	
	FINAL	7.9	7.9	7.3	7.6	7.5	7.6	7.4	
temp (C)	INITIAL	20	20	21	20	21	21	19	
	FINAL	25	25	25	25	25	25	25	
CONC: 45									
D.O. (mg/L)	INITIAL	8.8	8.8	8.8	9.1	9.0	8.9	9.2	
	FINAL	7.4	7.3	8.4	7.9	8.0	7.8	7.3	
pH (mg/L)	INITIAL	6.7	7.6	7.4	7.1	7.5	7.5	7.4	
	FINAL	7.9	7.8	7.3	7.7	7.6	7.6	7.5	
temp (C)	INITIAL	20	20	21	20	21	22	19	
	FINAL	25	25	25	25	25	25	25	
CONC: 56									
D.O. (mg/L)	INITIAL	8.9	8.8	8.9	9.2	9.1	8.9	9.3	
	FINAL	7.1	7.3	8.3	7.1	6.8	7.1	7.2	
pH (s.u.)	INITIAL	6.8	7.7	7.4	7.1	7.5	7.5	7.4	
	FINAL	7.9	7.8	7.4	7.6	7.6	7.6	7.6	
temp (C)	INITIAL	20	20	21	20	22	23	19	
	FINAL	25	25	25	25	25	25	25	
CONC: 80									
D.O. (mg/L)	INITIAL	8.8	8.9	9.0	9.4	9.1	8.9	9.2	
	FINAL	6.8	7.3	8.5	7.0	6.6	7.2	6.9	
pH (s.u.)	INITIAL	7.0	7.6	7.4	7.1	7.5	7.4	7.5	
	FINAL	7.7	7.7	7.5	7.6	7.6	7.6	7.6	
temp (C)	INITIAL	20	20	21	20	23	24	19	
	FINAL	25	25	25	25	25	25		
CONC: 100									
D.O. (mg/L)	INITIAL	8.5	8.7	5.1	11.6	9.2	9.1	9.3	
	FINAL	7.0	7.2	8.1	7.3	6.5	7.2	7.1	
pH (s.u.)	INITIAL	7.0	7.6	7.3	7.1	7.4	7.3	7.5	
	FINAL	7.7	7.7	7.5	7.6	7.6	7.6	7.6	
temp (C)	INITIAL	20	20	21	20	25	25	19	
	FINAL	25	25	25	25	25	25	25	
CONC:		A	B	A	C	B	C	C	
ALKALINITY (mg/L)		86	88	86	94	88	94		
HARDNESS (mg/L)		114	124	114	104	124	104		
CONDUCTIVITY (umho		477	457	477	476	457	476		
CHLORINE (mg/L)		<0.05							

CHEMICAL DATA SHEET FOR CHRONIC TOXICITY TESTING — Ceriodaphnia Dubia

Lab # / Sample ID 22-11008 — Test Start (Date/Time) 11/15/22 - 0908

Client: Cabot — Test End (Date/Time) 11/21/22 - 0926

		Day of Test 1	2	3	4	5	6	7	notes/remarks
Control	MHS C49	11/15	11/16	11/17	11/18	11/19	11/20	11/21	MHS C50 - 11/16
D.O. (mg/L)	INITIAL	8.7	8.4	8.1	8.2	9.0	9.1	9.1	
	FINAL	8.6	9.1	8.7	7.1	8.2	8.6	~~7.5~~	23NOV22
pH (s.u.)	INITIAL	6.4	7.6	7.4	7.1	~~7.7~~	7.9	7.2	
	FINAL	7.8	7.8	7.6	7.9	7.3	7.6	~~7.7~~	23NOV22
temp (C)	INITIAL	20	20	21	20	21	20	19	
	FINAL	25	25	25	25	25	25	~~25~~	23NOV22
ALKALINITY (mg/L)		64	68						
HARDNESS (mg/L)		84	102						
CONDUCTIVITY (umhos/cm)		317	337						
CHLORINE (mg/L)		<0.05							
CONC: 32									
D.O. (mg/L)	INITIAL	8.8	8.5	8.5	8.8	9.0	9.0	9.2	
	FINAL	8.6	9.0	8.6	9.2	~~8.6~~ 7.5	8.9		
pH (s.u)	INITIAL	6.6	7.6	7.4	7.1	~~7.2~~	7.6	7.2	
	FINAL	7.8	7.8	7.6	8.1	7.4	7.7		
temp (C)	INITIAL	20	20	21	20	21	21	19	
	FINAL	25	25	25	25	25	25		
CONC: 45									
D.O. (mg/L)	INITIAL	8.8	8.8	8.8	9.1	9.0	8.9	9.2	
	FINAL	8.6	9.0	8.6	9.1	8.6	8.8		
pH (mg/L)	INITIAL	6.7	7.6	7.4	7.1	7.5	7.5	7.4	
	FINAL	8.0	8.0	7.6	8.0	7.6	7.8		
temp (C)	INITIAL	20	20	21	20	21	22	19	
	FINAL	25	25	25	25	25	~~18.3~~ 25		
CONC: 56									
D.O. (mg/L)	INITIAL	8.9	8.8	8.9	9.2	9.1	8.9	9.3	
	FINAL	8.7	9.0	8.6	9.0	8.8	8.7		
pH (s.u.)	INITIAL	6.8	7.7	7.4	7.1	7.5	7.5	7.4	
	FINAL	7.9	8.1	7.6	8.0	7.8	7.8		
temp (C)	INITIAL	20	20	21	20	22	23	19	
	FINAL	25	25	25	25	25	~~18.3~~ 25		
CONC: 80									
D.O. (mg/L)	INITIAL	8.8	8.9	9.0	9.4	9.1	8.9	9.2	
	FINAL	8.7	9.1	8.5	9.0	8.8	8.8		
pH (s.u.)	INITIAL	7.0	7.6	7.4	7.1	7.5	7.4	7.5	
	FINAL	8.0	8.1	7.6	8.0	7.9	7.8		
temp (C)	INITIAL	20	20	21	20	23	24	19	
	FINAL	25	25	25	25	25	25		
CONC: 100									
D.O. (mg/L)	INITIAL	8.9	8.7	9.1	11.6	9.2	9.1	9.3	
	FINAL	8.6	9.2	8.5	8.9	8.9	8.9		
pH (s.u.)	INITIAL	7.0	7.6	7.3	7.1	7.4	7.3	7.5	
	FINAL	8.0	8.2	7.6	8.1	8.0	7.9		
temp (C)	INITIAL	20	20	21	20	25	25	19	
	FINAL	25	25	25	25	25	25		
CONC:		A	B	A	C	B	C	C	
ALKALINITY (mg/L)		86	88	86	94	88	94		
HARDNESS (mg/L)		114	124	114	104	124	104		
CONDUCTIVITY (umhos/cm)		477	457	477	476	457	476		
CHLORINE (mg/L)		<0.05							

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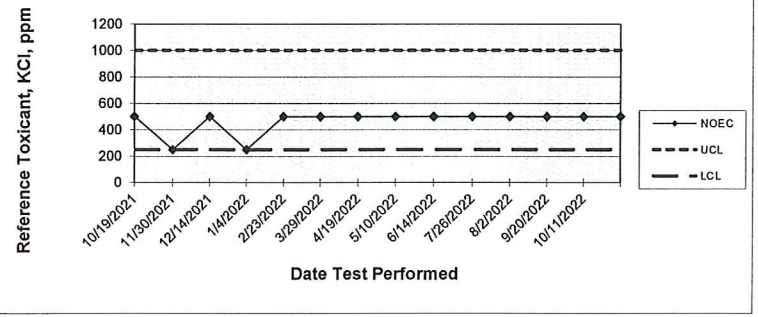
FATHEAD MINNOW SURVIVAL 7 Day
QUALITY ASSURANCE



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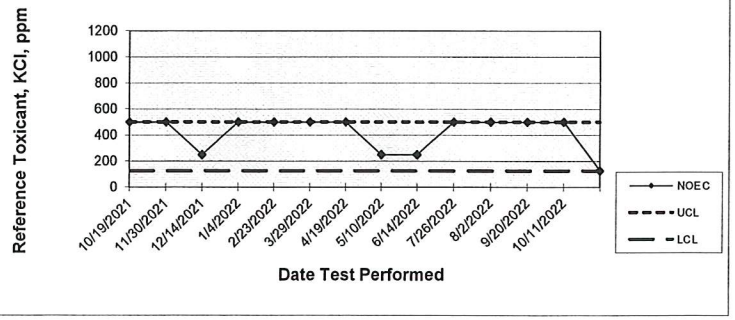
CERIODAPHNIA DUBIA SURVIVAL
QUALITY ASSURANCE



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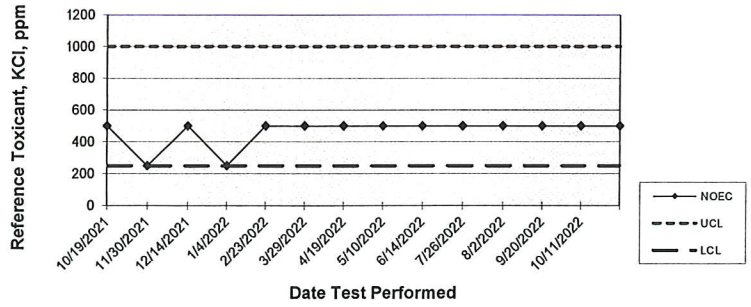
FATHEAD MINNOW GROWTH 7 Day
QUALITY ASSURANCE



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