Arkansas Analytical, Inc.

Toxicity Test Results

City of Hope
Permit Number: AR0038466
AFIN # 29-00034
First Quarter Test 2021

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

Ceriodaphnia dubia, Survival and Reproduction Test
Test 1002.0

Prepared for: **Bobby Arney**
City of Hope
P.O. Box 667
Hope, Arkansas 71802

Prepared by: Arkansas Analytical, Inc.
8100 National Drive
Little Rock, Arkansas 72209
Lab Number K2102001

Wednesday, February 10, 2021

Plant location

City of Hope WWTP: 3307 Hwy 67 West, Hope, AR 71801, West on Highway 67 to County Road 381, then 1 mile south on 381 to WWTP in Hempstead 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%, 42%, 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%, 42%, 56%, 75%, 100%
- Dilution water: Moderately hard synthetic
- No deviation from method

Reference Toxicant Data

REFERENCE TOXICANT (Potassium Chloride)

Ceriodaphnia dubia 1/5/21-1/11/21		*Pimephales promelas* 1/5/21-1/12/21	
NOEC Survival:	500 ppm KCl	NOEC Survival:	500 ppm KCl
LOEC Survival:	1000 ppm KCl	LOEC Survival:	1000 ppm KCl
NOEC Reproduction:	125 ppm KCl	NOEC Growth:	500 ppm KCl
LOEC Reproduction:	250 ppm KCl	LOEC Growth:	1000 ppm KCl

Summary of Results

City of Hope

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**	37.2%	%CV Growth Parameter: **TQP6C**	14.8%
PMSD Reproduction	39.8%	PMSD Growth	15.2%

Conclusion

Pimephales promelas, (Method 1000.0): The permit issued to the City of Hope, 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 Hope, 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, Emily Nichols, Jettie Parnell, Anna Allcorn

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
City of Hope	City of Hope	West Plant Toxicity Sample	1 Day (100%)
1603 West 3rd St.	P.O. Box 667		2 Day (50%)
Hope, AR 71801	Hope, AR 71801	Reporting Information	3 Day (25%)
		Telephone: 870-722-8644	Routine
Attn: Bobby Arney		Fax: 870-722-2511	Preservative Code: 1
		Email: wwlab@hopearkansas.net	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: Auto Sampler

Sampler(s) Printed

Field Number	SAMPLE COLLECTION Date/s	Time/s	Grab	Comp	Number of Bottles	Sample Matrix	SAMPLE IDENTIFICATION/ DESCRIPTION	TEST PARAMETERS: Chronic Toxicity	Bottle Type Code
	1/31-2/1	7am-7am		X	3	Water	Final Effluent Composite	X	A

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

Arkansas Analytical Work Order Number: K2102001

1. Relinquished by: (Signature)	Date/Time	2. Received by: (Signature)
Kalyn Provence	2/1/21 1025	
3. Relinquished by: (Signature)	Date/Time	4. Received by lab: (Signature)
		Amanda Forbes

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# 2	

FOR COMPLETION BY LAB ONLY

REMARKS / SAMPLE COMMENTS

Revision 3
1/4/16

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
City of Hope	City of Hope
1603 West 3rd St.	P.O. Box 667
Hope, AR 71801	Hope, AR 71801
Attn: Bobby Arney	

Project Description: West Plant Toxicity Sample

Reporting Information
Telephone: 870-722-8644
Fax: 870-722-2511
Email: wwlab@hopearkansas.net

Turnaround Time: 1 Day (100%) | 2 Day (50%) | 3 Day (25%) | Routine

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

Sampler(s) Printed: Auto Sampler

Field Number	SAMPLE COLLECTION Date/s	Time/s	Grab	Comp	Number of Bottles	Sample Matrix	SAMPLE IDENTIFICATION/ DESCRIPTION	Chronic Toxicity	TEST PARAMETERS	Arkansas Analytical Work Order Number:
	2/2-2/3	7Am-7Am		X	3	Water	Final Effluent Composite	X		K2102001
										B

1. Relinquished by: (Signature)	Date/Time	2. Received by: (Signature)
Kaeyn Florence	2/3/21 10:42	2-3-21 /1042
3. Relinquished by: (Signature)	Date/Time	4. Received by lab: (Signature)
	2-3-21 1358	Amanda Forbush

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# 2	

FOR COMPLETION BY LAB ONLY

REMARKS / SAMPLE COMMENTS

COC Rec'd w/ white out on it - AF 2/5/21

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
City of Hope	City of Hope
1603 West 3rd St.	P.O. Box 667
Hope, AR 71801	Hope, AR 71801
Attn: Bobby Arney	

Project Description: West Plant Toxicity Sample

Reporting Information
Telephone: 870-722-8644
Fax: 870-722-2511
Email: wwlab@hopearkansas.net

Turnaround Time: 1 Day (100%) / 2 Day (50%) / 3 Day (25%) / Routine

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

Sampler(s) Printed: Auto Sampler

Arkansas Analytical Work Order Number: K2102001

Field Number	SAMPLE COLLECTION Date/s	Time/s	Grab	Comp	Number of Bottles	Sample Matrix	SAMPLE IDENTIFICATION/ DESCRIPTION	TEST PARAMETERS: Chronic Toxicity	Bottle Type Code
	2/4 - 2/5	7AM - 7AM		X	3	Water	Final Effluent Composite	X	C

1. Relinquished by: (Signature) Kalyn Florence — Date/Time 2/5/21 10:36A

2. Received by: (Signature)

3. Relinquished by: (Signature) — Date/Time

4. Received by lab: (Signature) Amanda Johnson

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:	3 °C	
6. TEMPERATURE GUN ID:	HHT# 2	

FOR COMPLETION BY LAB ONLY

REMARKS / SAMPLE COMMENTS

COC Rec'd w/ white out on it AF 2/5/21

CETIS Summary Report

Fathead Minnow 7-d Larval Survival and Growth Test

Arkansas Analytical

Batch ID:	12-7382-7265	**Test Type:**	Growth-Survival (7d)	**Analyst:**	Emily Nichols
Start Date:	02 Feb-21 12:25	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	09 Feb-21 11:42	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Test Length:	6d 23h	**Taxon:**	Actinopterygii	**Source:**	Aquatox, AR **Age:** <24
Sample ID:	17-0583-9714	**Code:**	K2102001FH	**Project:**	WET Quarterly Compliance Test (1Q)
Sample Date:	01 Feb-21 07:00	**Material:**	POTW Effluent	**Source:**	Hope (AR0038466)
Receipt Date:	01 Feb-21 10:25	**CAS (PC):**		**Station:**	
Sample Age:	29h (1 °C)	**Client:**	Hope		

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	K2102001B	03 Feb-21 07:00	03 Feb-21 13:58	04 Feb-21 00:00	1
2	K2102001C	05 Feb-21 07:00	05 Feb-21 10:26	06 Feb-21 00:00	3

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
11-5452-9204	7d Survival Rate	Steel Many-One Rank Sum Test		100	>100	n/a	1	6.06%	1
17-1233-2064	Mean Dry Biomass-mg	Steel Many-One Rank Sum Test		100	>100	n/a	1	15.2%	1

Test Acceptability

				TAC Limits			
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision
11-5452-9204	7d Survival Rate	Control Resp	0.98	0.8	>>	Yes	Passes Criteria
17-1233-2064	Mean Dry Biomass-mg	Control Resp	0.3784	0.25	>>	Yes	Passes Criteria
17-1233-2064	Mean Dry Biomass-mg	PMSD	0.1522	0.12	0.3	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	0.9800	0.9245	1.0000	0.9000	1.0000	0.0200	0.0447	4.56%	0.00%
32		5	0.9600	0.8920	1.0000	0.9000	1.0000	0.0245	0.0548	5.71%	2.04%
42		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-2.04%
56		5	0.9800	0.9245	1.0000	0.9000	1.0000	0.0200	0.0447	4.56%	0.00%
75		5	0.9800	0.9245	1.0000	0.9000	1.0000	0.0200	0.0447	4.56%	0.00%
100		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-2.04%

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	5	0.3784	0.3208	0.436	0.317	0.439	0.02075	0.0464	12.26%	0.00%
32		5	0.3224	0.2873	0.3575	0.282	0.358	0.01265	0.02829	8.77%	14.80%
42		5	0.3588	0.3355	0.3821	0.329	0.38	0.008375	0.01873	5.22%	5.18%
56		5	0.342	0.2955	0.3885	0.28	0.379	0.01675	0.03745	10.95%	9.62%
75		5	0.3324	0.2737	0.3911	0.283	0.392	0.02115	0.0473	14.23%	12.16%
100		5	0.3012	0.246	0.3564	0.236	0.348	0.0199	0.04449	14.77%	20.40%

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	1.0000	1.0000	1.0000
32		0.9000	1.0000	0.9000	1.0000	1.0000
42		1.0000	1.0000	1.0000	1.0000	1.0000
56		1.0000	0.9000	1.0000	1.0000	1.0000
75		1.0000	0.9000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	L	0.37	0.317	0.439	0.406	0.36
32		0.317	0.338	0.282	0.317	0.358
42		0.329	0.38	0.362	0.357	0.366
56		0.348	0.342	0.28	0.379	0.361
75		0.304	0.31	0.283	0.392	0.373
100		0.278	0.236	0.348	0.328	0.316

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	L	9/10	10/10	10/10	10/10	10/10
32		9/10	10/10	9/10	10/10	10/10
42		10/10	10/10	10/10	10/10	10/10
56		10/10	9/10	10/10	10/10	10/10
75		10/10	9/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10	10/10

CETIS Summary Report

Ceriodaphnia 7-d Survival and Reproduction Test

Arkansas Analytical

Batch ID:	03-0243-2745	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Melissa Bird
Start Date:	02 Feb-21 09:03	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	09 Feb-21 10:00	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	7d 1h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture **Age:** <24
Sample ID:	10-0186-2867	**Code:**	K2102001CD	**Project:**	WET Quarterly Compliance Test (1Q)
Sample Date:	01 Feb-21 07:00	**Material:**	POTW Effluent	**Source:**	Hope (AR0038466)
Receipt Date:	01 Feb-21 10:25	**CAS (PC):**		**Station:**	
Sample Age:	26h (1 °C)	**Client:**	Hope		

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	K2102001B	03 Feb-21 07:00	03 Feb-21 13:58	04 Feb-21 00:00	1
2	K2102001C	05 Feb-21 07:00	05 Feb-21 10:26	06 Feb-21 00:00	3

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
20-2657-9925	7d Survival Rate	Fisher Exact/Bonferroni-Holm Test		100	>100	n/a	1	n/a	1
07-7136-8094	Reproduction	Dunnett Multiple Comparison Test		100	>100	n/a	1	39.8%	1

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits Lower	Upper	Overlap	Decision
20-2657-9925	7d Survival Rate	Control Resp	0.9	0.8	>>	Yes	Passes Criteria
07-7136-8094	Reproduction	Control Resp	21.6	15	>>	Yes	Passes Criteria
07-7136-8094	Reproduction	PMSD	0.3978	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	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	0.00%
32		10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	0.00%
42		10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	0.00%
56		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%
75		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	10	21.6	14.96	28.24	0	30	2.937	9.288	43.00%	0.00%
32		10	31.9	27.54	36.26	22	42	1.929	6.1	19.12%	-47.69%
42		10	21.5	14.32	28.68	6	34	3.174	10.04	46.68%	0.46%
56		10	30.2	24.72	35.68	14	40	2.421	7.657	25.35%	-39.81%
75		10	31.1	27.82	34.38	23	37	1.449	4.581	14.73%	-43.98%
100		10	29.3	21.5	37.1	14	47	3.448	10.9	37.22%	-35.65%

Avg. neonates per surviving female in the 0%

$\bar{x} = 24$ CV = 23.7%

em 2-10-20

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	0.0000	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	0.0000	1.0000
42		1.0000	1.0000	1.0000	0.0000	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	20	30	0	28	28	29	12	24	23	22
32		22	29	36	29	40	28	34	31	28	42
42		18	34	24	6	23	31	9	11	28	31
56		31	30	34	39	33	22	14	30	29	40
75		29	26	33	23	32	28	37	32	34	37
100		26	39	28	47	32	36	18	14	37	16

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	0/1	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	0/1	1/1
42		1/1	1/1	1/1	0/1	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: KZ102001 — Test Start (Date/Time): 2-2-21/1225

Client: Hope — Test End (Date/Time): 2-9-21/1142

		Day of Test 1	2	3	4	5	6	7	notes
Control	MH5103	2/2	2/3	2/4	2/5	2/6	2/7	2/8	
D.O. (mg/L)	INITIAL	8.3	8.7	8.7	8.6	8.6	8.6	8.9	
	FINAL	8.3	7.8	8.1	8.7	8.7	8.7	8.9	
pH (s.u.)	INITIAL	8.2	8.2	8.0	7.9	8.3	8.5	8.1	
	FINAL	7.9	7.8	7.9	8.1	8.2	8.4	8.1	
temp (C)	INITIAL	20	21	20	21	21	21	20	
	FINAL	25	25	25	25	25	25	23	
ALKALINITY (mg/L)		54							
HARDNESS (mg/L)		100							
CONDUCTIVITY (umho		315							
CHLORINE (mg/L)		<0.05							
CONC: 32%									
D.O. (mg/L)	INITIAL	8.4	8.7	8.7	8.7	8.8	8.7	8.9	
	FINAL	8.0	7.7	7.1	8.5	8.8	8.7	8.9	
pH (s.u)	INITIAL	8.1	8.0	8.0	7.9	8.2	8.3	8.2	
	FINAL	7.9	8.0	8.2	8.3	8.2	8.4	8.1	
temp (C)	INITIAL	21	22	20	21	21	21	20	
	FINAL	25	25	25	25	25	25	25	
CONC: 42%									
D.O. (mg/L)	INITIAL	8.4	8.7	8.6	8.7	8.8	8.8	8.9	
	FINAL	7.8	7.4	8.1	8.5	8.8	8.7	8.9	
pH (mg/L)	INITIAL	8.1	8.0	8.0	8.0	8.2	8.3	8.3	
	FINAL	7.9	7.8	~~7.9~~ 8.2	8.4	8.3	8.4	8.2	
temp (C)	INITIAL	21	22	20	21	21	20	19	
	FINAL	25	25	25	25	25	25	25	
CONC: 56%									
D.O. (mg/L)	INITIAL	8.5	8.6	8.5	8.7	8.9	8.8	8.9	
	FINAL	7.8	7.5	8.2	8.4	8.4	8.8	8.8	
pH (s.u.)	INITIAL	8.1	8.0	8.0	8.0	8.2	8.3	8.3	
	FINAL	8.0	8.0	8.3	8.4	8.4	8.5	8.2	
temp (C)	INITIAL	21	22	20	21	20	20	19	
	FINAL	25	25	25	25	25	25	25	
CONC: 75%									
D.O. (mg/L)	INITIAL	8.5	8.5	8.5	8.7	8.9	9.0	8.9	
	FINAL	7.7	7.6	8.6	8.4	8.9	8.9	8.9	
pH (s.u.)	INITIAL	8.0	7.9	8.0	8.0	8.2	8.1	8.2	
	FINAL	8.1	8.1	8.4	8.5	8.4	8.5	8.3	
temp (C)	INITIAL	21	23	21	21	20	20	19	
	FINAL	25	25	25	25	25	25	25	
CONC: 100%									
D.O. (mg/L)	INITIAL	8.6	8.5	8.4	8.7	8.9	9.3	9.1	
	FINAL	7.8	7.7	8.4	8.4	8.8	8.9	9.0	
pH (s.u.)	INITIAL	8.0	7.9	8.0	7.9	8.1	7.9	8.0	
	FINAL	8.2	8.1	8.4	8.6	8.5	8.5	8.4	
temp (C)	INITIAL	22	23	21	21	20	20	19	
	FINAL	25	25	25	25	25	25	25	
CONC: 100%		A	A	B	B	C	C	C	
ALKALINITY (mg/L)		162		164		168			
HARDNESS (mg/L)		66		76		60			
CONDUCTIVITY (umho		762		848		896			
CHLORINE (mg/L)		<0.05		<0.05		<0.05			

40715

CHEMICAL DATA SHEET FOR CHRONIC TOXICITY TESTING — Ceriodaphnia Dubia

Lab # / Sample ID KZ102001 — Test Start (Date/Time) 2-2-21/0903

Client: Hope — Test End (Date/Time) 2-9-21/1000

		Day of Test 1	2	3	4	5	6	7	notes/remarks
Control	MHS 103	2/2	2/3	2/4	2/5	2/6	2/7	2/8	
D.O. (mg/L)	INITIAL	8.3	8.7	8.7	8.6	8.6	8.6	8.9	
	FINAL	8.5	8.7	9.3	9.2	9.2	8.7	8.8	
pH (s.u.)	INITIAL	8.2	8.2	8.0	7.9	8.3	8.5	8.1	
	FINAL	8.0	8.4	8.6	8.2	8.2	8.3	8.2	
temp (C)	INITIAL	20	21	20	21	21	21	20	
	FINAL	25	25	25	25	25	25	25	
ALKALINITY (mg/L)		54							
HARDNESS (mg/L)		100							
CONDUCTIVITY (umhos/cm)		315							
CHLORINE (mg/L)		<0.05							
CONC: 32%									
D.O. (mg/L)	INITIAL	8.4	8.7	8.7	8.7	8.8	8.7	8.9	
	FINAL	8.4	8.7	9.2	9.3	9.2	8.5	8.9	
pH (s.u)	INITIAL	8.1	8.0	8.0	7.9	8.2	8.3	8.2	
	FINAL	8.1	8.3	8.5	8.4	8.3	8.3	8.0	
temp (C)	INITIAL	21	22	20	21	21	21	20	
	FINAL	25	25	25	25	25	25	25	
CONC: 42%									
D.O. (mg/L)	INITIAL	8.4	8.7	8.6	8.7	8.8	8.8	8.9	
	FINAL	8.4	8.7	9.2	9.3	9.2	8.4	8.8	
pH (mg/L)	INITIAL	8.1	8.0	8.0	8.0	8.2	8.3	8.3	
	FINAL	8.2	8.4	8.5	8.4	8.4	8.3	8.2	
temp (C)	INITIAL	21	22	20	21	21	20	19	
	FINAL	25	25	25	25	25	25	25	
CONC: 56%									
D.O. (mg/L)	INITIAL	8.5	8.6	8.5	8.7	8.9	8.8	8.9	
	FINAL	8.4	8.7	9.1	9.2	9.2	8.5	8.7	
pH (s.u.)	INITIAL	8.1	8.0	8.0	8.0	8.2	8.3	8.3	
	FINAL	8.2	8.4	8.6	8.5	8.4	8.3	8.2	
temp (C)	INITIAL	21	22	20	21	20	20	19	
	FINAL	25	25	25	25	25	25	25	
CONC: 75%									
D.O. (mg/L)	INITIAL	8.5	8.5	8.5	8.7	8.9	9.0	8.9	
	FINAL	8.4	8.8	9.3	9.2	9.2	8.4	8.6	
pH (s.u.)	INITIAL	8.0	7.9	8.0	8.0	8.2	8.1	8.2	
	FINAL	8.3	8.5	8.8	8.6	8.5	8.4	8.3	
temp (C)	INITIAL	21	23	21	21	20	20	19	
	FINAL	25	25	25	25	25	25	25	
CONC: 100%									
D.O. (mg/L)	INITIAL	8.6	8.5	8.4	8.7	8.9	9.3	9.1	
	FINAL	8.4	8.8	9.4	9.2	9.1	8.5	8.6	
pH (s.u.)	INITIAL	8.0	7.9	8.0	7.9	8.1	7.9	8.0	
	FINAL	8.4	8.5	8.9	8.7	8.6	8.5	8.5	
temp (C)	INITIAL	22	23	21	21	20	20	19	
	FINAL	25	25	25	25	25	25	25	
CONC: 100%		A	A	B	B	C	C	C	
ALKALINITY (mg/L)		162		164		168			
HARDNESS (mg/L)		166		76		60			
CONDUCTIVITY (umhos/cm)		762		848		896			
CHLORINE (mg/L)		<0.05		<0.05		<0.05			

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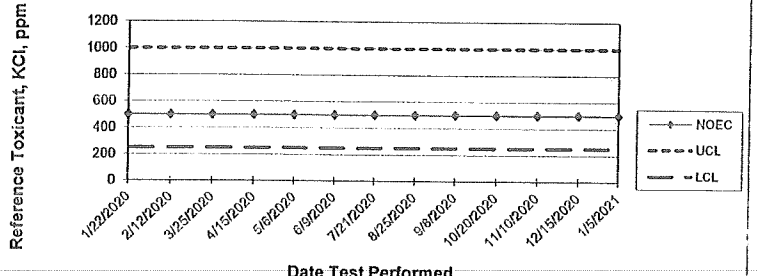
FATHEAD MINNOW SURVIVAL 7 Day
QUALITY ASSURANCE



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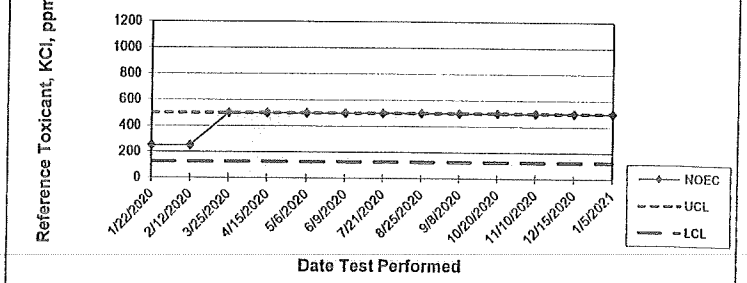
CERIODAPHNIA DUBIA SURVIVAL
QUALITY ASSURANCE



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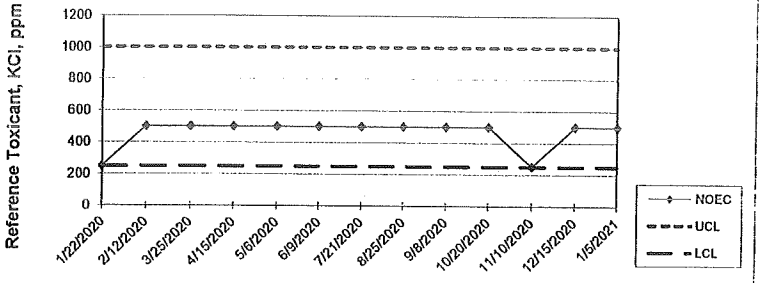
FATHEAD MINNOW GROWTH 7 Day
QUALITY ASSURANCE



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