

Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***MONITORING AND RESEARCH
DEPARTMENT***

REPORT NO. 24-25

*RESULTS OF ACUTE TOXICITY TESTING WITH Ceriodaphnia dubia
AND Pimephales promelas ON A JUNE 2024 EFFLUENT SAMPLE
FROM THE METROPOLITAN WATER RECLAMATION DISTRICT OF
GREATER CHICAGO*

July 2024

Metropolitan Water Reclamation District of Greater Chicago
100 East Erie Street Chicago, Illinois 60611-2803 (312) 751-5600

**RESULTS OF ACUTE TOXICITY TESTING WITH *Ceriodaphnia dubia* AND
Pimephales promelas ON A JUNE 2024 EFFLUENT SAMPLE FROM
METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO**

By

**EnviroScience, Incorporated
5070 Stow Road
Stow, Ohio 44224**

RESULTS OF ACUTE TOXICITY TESTS

48 Hour - *Ceriodaphnia dubia* (water flea)
96 Hour - *Pimephales promelas* (fathead minnow)

Testing period: June 25-29, 2024
Sample collection dates: June 23-24, 2024
Report date: July 9, 2024

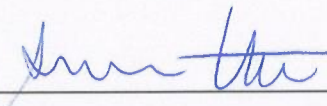
Conducted For:

JOHN E. EGAN WRP
550 South Meacham Road
Schaumburg, IL 60193

Conducted and Prepared By:

ENVIROSCIENCE, INCORPORATED
5070 Stow Rd.
Stow, OH 44224




_____, Aquatic Biologist

July 9, 2024

Mr. Nicholas Kollias
John E. Egan WRP
550 South Meacham Road
Schaumburg, IL 60193

Re: John E. Egan WRP

Dear Mr. Kollias:

Enclosed is a copy of EnviroScience's report for the following whole effluent toxicity (WET) tests that were initiated on June 25, 2024 with effluent collected from outfall 001:

- (1) 48-hour static acute bioassay using *Ceriodaphnia dubia* (water flea) and
- (1) 96-hour static acute bioassay using *Pimephales promelas* (fathead minnow).

The effluent sample was not shown to be toxic to either species. Acute Toxicity Units (TU_a) are listed below.

WET test endpoints for John E. Egan WRP, 06/2024
sample collection period 06/23-24/24

Ceriodaphnia dubia 48HR LC₅₀ = >100% effluent; TU_a = <1.0
(water flea)

Pimephales promelas 96HR LC₅₀ = >100% effluent; TU_a = <1.0
(fathead minnow)

(TU_a = 100/LC₅₀)

Please call me if you have any questions.

Sincerely,



Alexandria M. Tite, Aquatic Biologist

enclosures

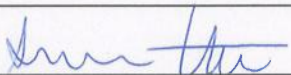


5070 Stow Road
Stow, OH 44224

 BIOMONITORING REPORT FORM FOR NPDES PERMIT REQUIREMENTS

Table 1. General Information

1. Facility: John E. Egan WRP
2. Address: 550 South Meacham Road, Schaumburg, IL 60193
3. NPDES Permit No.: IL0036340
4. Facility Contact: Nicholas Kollias 5. Phone No.: 708-588-4074
6. Testing Lab: EnviroScience, Inc., 5070 Stow Rd., Stow, OH 44224
7. Laboratory Contact: Alex Tite 8. Phone No.: 330-688-0111
9. Receiving Water(s) of Discharge: Salt Creek
10. Outfall(s) Tested: 001
11. Test Species/Type: #1 Ceriodaphnia dubia (water flea) 48-hour definitive, static, non-renewal
#2 Pimephales promelas (fathead minnow) 96-hour definitive, static, non-renewal
12. Dechlorination?: no Original Chlorine Conc.: <0.02 mg/l
13. Report Contents:
- | | |
|---|---------|
| General information | Table 1 |
| Sampling information | Table 2 |
| Test dates and times | Table 3 |
| Initial chemistry | Table 4 |
| Test conditions | Table 5 |
| Test results Untreated Plant Effluent | Table 6 |
| Additional Information | Table 7 |
- Attachments
- Chain-of-Custody, bench sheets/data analysis
 - SRT control charts



Signature of preparer

07/09/24
Date

Alexandria M. Tite
Name (typed or printed)

Aquatic Biologist
Title

Table 2. Sampling summary.

Outfall	Sample Type	Volume Collected	Sample Collection		Flow MGD
			Begin MM/DD/YY-Time	End or Grab MM/DD/YY-Time	
001	composite	2 gallons	06/23/24-0600	06/24/24-0600	

Table 3. Testing periods.

<i>Ceriodaphnia dubia</i> (water flea)		<i>Pimephales promelas</i> (fathead minnow)	
Start Date: MM/DD/YY	06/25/24	Start Date: MM/DD/YY	06/25/24
Start Time:	1355 hrs	Start Time:	1455 hrs
End Date: MM/DD/YY	06/27/24	End Date: MM/DD/YY	06/29/24
End Time:	1300 hrs	End Time:	1355 hrs

Notes: Sample receipt: 06/25/24-0920; 1.4°C.

Table 4. Initial chemistry. DO = dissolved oxygen. TRC = total residual chlorine.

sample # (Plant Effluent)	collection date	DO mg/L	pH s.u.	conductivity µmho/cm	alkalinity mg/L CaCO ₃	hardness mg/L CaCO ₃	TRC mg/L	Ammonia mg/l
001	06/23-24/24	8.6	6.7	849	130	220	<0.02	1.90

Methods or Instrumentation used in chemical analysis:

Dissolved Oxygen: APHA (1998, 20th ed.) 4500-O G., OX 4100L

pH: APHA (1998, 20th ed.) 4500-H⁺ B., Orion Star A211

Conductivity: APHA (1998, 20th ed.) 2510 B., Orion Star A212

Total Alkalinity: APHA (1998, 20th ed.) 2320 B.

Total Hardness: APHA (1998, 20th ed.) 2340 G.

Total Residual Chlorine: APHA (1998, 20th ed.) 4500-Cl D., TitraLab AT1000

Ammonia nitrogen: APHA (1992, 18th ed.) 4500-NH₃ C., HI 95715

Table 5. Summary of toxicity test conditions for testing with <i>Ceriodaphnia dubia</i> and <i>Pimephales promelas</i>.		
	<i>Ceriodaphnia dubia</i>	<i>Pimephales promelas</i>
1. Test dates:	06/25/24-1355 to 06/27/24-1300	06/25/24-1455 to 06/29/24-1355
2. Test type and duration:	static, non-renewal, 48 hours	static, non-renewal, 96-hours
3. Age and source of organisms:	<24 hours, EnviroScience 06/24/24-1600	7 days, ABS 06/17/24-1600
4. Photoperiod/ Light quality:	16 hours light / 8 hours dark fluorescent light, 50-100fc	16 hours light / 8 hours dark fluorescent light, 50-100fc
5. Test temperature:	25±1 °C	25±1 °C
6. Feeding regime:	fed alga <i>Selenastrum capricornutum</i> and YAT prior to test only	fed <500 brine shrimp/vessel at 48-hours
7. Size of test vessel:	30 ml plastic cup	600 ml glass beaker
8. Volume and depth of test solutions:	15 ml and 24 mm	250 ml and 42 mm
9. No. of test organisms per vessel:	5	10, unless otherwise noted
10. No. of vessels per solution:	4	2
11. Total no. of organisms per test level:	20	20, unless otherwise noted
12. Test concentrations as % effluent:	6.25, 12.5, 25, 50, and 100	6.25, 12.5, 25, 50, and 100
13. Dilution and primary control water:	moderately hard reconstituted water, MHRW	moderately hard reconstituted water, MHRW
14. Secondary control:	moderately hard dilute mineral water, DMW	moderately hard dilute mineral water, DMW
15. Aeration:	none	none
16. Endpoints:	mortality - no movement with gentle prodding (LC ₅₀); plus behavioral effects such as atypical swimming (EC ₅₀)	mortality - no movement with gentle prodding (LC ₅₀); plus behavioral effects such as atypical swimming (EC ₅₀)
17. No. of consecutive tests conducted with an alternate source of primary control water:	NA	NA

Table 6. Percent cumulative mortality, LC ₅₀ , EC ₅₀ , and 95% confidence intervals for acute toxicity tests using <i>Ceriodaphnia dubia</i> and <i>Pimephales promelas</i> using effluent collected from Outfall 001 .						
Concentration	<i>C. dubia</i> (water flea) <u>06/25/24 to 06/27/24</u>		<i>P. promelas</i> (fathead minnow) <u>06/25/24 to 06/29/24</u>			
	24-hours % mortality	48-hours % mortality	24-hours % mortality	48-hours % mortality	72-hours % mortality	96-hours % mortality
MHRW lab water, diluent	0	0	5	10	10	10
DMW lab water	0	0	5	25	25	25
6.25% effluent	0	0	0	20	20	35
12.5% effluent	0	0	5	35	40	55
25% effluent	0	0	5	45	45	60
50% effluent	0	0	0	30	30	45
100% effluent	0	0	5	25	30	45
LC ₅₀	>100% effluent	>100% effluent	>100% effluent	>100% effluent	>100% effluent	>100% effluent
95% C.I.						
EC ₅₀	>100% effluent	>100% effluent	>100% effluent	>100% effluent	>100% effluent	>100% effluent
95% C.I.						
TU _a (100+LC ₅₀)		<1.0				<1.0
Methods:	Cetis 2.1.5 TU _a = 100/LC ₅₀ .					

Table 7. Additional Information:

Indicate below any other relevant information that may aid in the evaluation of this report. Include any deviations from current SOP that were necessary. Attach additional pages as needed.

7.1 Deviations/relevant information.

7.2 Terms.

LC₅₀ = median lethal concentration. A mathematical estimate of the effluent concentration that would kill 50% of the exposed specimens during the specified exposure period.

TU_a = Acute Toxicity Unit; TU_a = 100÷LC₅₀ (usually 48-hour LC₅₀ for water fleas and 96-hour LC₅₀ for FHM)

ATTACHMENTS

Chain-of-Custody/Sample Submission
Bench sheets
Standard Reference Toxicant Control Charts

EnviroScience, Inc. Cooler Receipt Form (Form 7050-2 rev. 03/30/22)

Client John E. Egan WRR

ES Sample ID JOEG 062524 EEF

Cooler Received by: DA

Date Cooler Received and Opened 062524

Received from: FedEx UPS Client Drop Off ES Courier

1. Were custody seals on the outside of cooler? Yes No
Were custody seals signed, dated and intact? Yes No
2. Did Chain of Custody (COC) accompany the samples? Yes No
3. Were the COC's signed in the appropriate places? Yes No
If No explain _____
4. Was the sample time and date filled in correctly? Yes No
5. Sample Temperature upon receipt 1.4 °C
6. Did all sample container labels match the samples written on the COC? Yes No
Were the sample containers in good condition? Yes No
7. Was sufficient quantity received to perform indicated tests? Yes No
8. Was this sample received within required holding time? Yes No
9. EPA method code: 1000.0: 1002.0: 2000.0: 2002.0:

Explain any discrepancies or client notifications that occurred regarding this sample: _____



5070 Stow Road
Stow, Ohio 44224
Phone (330) 688-0111; 1-800-940-4025
Fax (330) 688-3858



Acute, 48-hour, non-renewal Bioassay:

Project: JOEE1

No.: _____

Start Date: 06/24 Time: 1355

End Date: 06/24 Time: 1300

Organism: C. dubia

Source: Mass Whitings

Hatch/Age: D02424 1600/1624 hrs

Diluent: MHR

Sample #: JOEE0624 EFF

test levels	Biological Parameters				Chemistry and Physical Parameters											
	Rep	n	Dead / Affected		Temperature (Celsius)			Dissolved Oxygen (mg/L)			pH (s.u.)			Conductivity (µmhos/cm)		
			24 hr	48 hr	0	24	48	0	24	48	0	24	48	0	24	48
MHR	A	5	0/0	0/0	24.0	24.0	24.9	8.6		8.6	7.5		7.2	283		309
	B	5	0/0	0/0												
	C	5	0/0	0/0												
	D	5	0/0	0/0												
DMW	A	5	0/0	0/0	24.6	24.6	25.0	8.6		8.6	7.4		7.3	180		217
	B	5	0/0	0/0												
	C	5	0/0	0/0												
	D	5	0/0	0/0												
6.25%	A	5	0/0	0/0	24.7	24.7	25.0	8.6		8.6	7.0		7.2	316		321
	B	5	0/0	0/0												
	C	5	0/0	0/0												
	D	5	0/0	0/0												
12.5%	A	5	0/0	0/0	24.7	24.7	24.9	8.6		8.6	7.0		7.2	351		350
	B	5	0/0	0/0												
	C	5	0/0	0/0												
	D	5	0/0	0/0												
25%	A	5	0/0	0/0	24.7	24.7	24.9	8.6		8.6	6.9		7.2	435		418
	B	5	0/0	0/0												
	C	5	0/0	0/0												
	D	5	0/0	0/0												
50%	A	5	0/0	0/0	24.6	24.6	24.7	8.6		8.6	6.8		7.3	508		556
	B	5	0/0	0/0												
	C	5	0/0	0/0												
	D	5	0/0	0/0												
100%	A	5	0/0	0/0	24.3	24.3	24.0	8.6		8.6	6.7		7.5	864		671
	B	5	0/0	0/0												
	C	5	0/0	0/0												
	D	5	0/0	0/0												
Time	1355		1320	1300	1355	1320	1300	1320		1320	1340		1320	1320		1445
Tech	UB		HD	IC	UB	HD	IC	TM		SD	TM		SD	TM		ID
					10	5	5	OX4100L					Orion StarA211 A			Orion StarA212
					ID or √ instrument used			✓		✓	✓		✓	✓		✓
					Other:			Orion StarA211 B								

JAT

CETIS Analytical Report

Report Date: 09 Jul-24 08:57 (p 1 of 2)
 Test Code/ID: 258DEA96 / 06-3005-7622

Ceriodaphnia 48-h Acute Survival Test EnviroScience

Analysis ID: 03-6774-6009	Endpoint: 48h Survival Rate	CETIS Version: CETIS v2.1.5
Analyzed: 08 Jul-24 12:20	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 08 Jul-24 0:00	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 007-869-049-5
Batch ID: 07-3649-2393	Test Type: Survival (48h)	Analyst:
Start Date: 25 Jun-24 13:55	Protocol: EPA/821/R-02-012 (2002)	Diluent: Upstream of Discharge
Ending Date: 27 Jun-24 13:00	Species: Ceriodaphnia dubia	Brine:
Test Length: 47h	Taxon: Branchiopoda	Source: In-House Culture Age:
Sample ID: 00-9191-6516	Code: 57A88E4	Project:
Sample Date: 24 Jun-24 06:00	Material: POTW Effluent	Source: Discharge Monitoring Report
Receipt Date: 25 Jun-24 09:20	CAS (PC):	Station: 001
Sample Age: 32h	Client: John E Egan	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	299013	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.9	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
LC50	>100	---	---	<1	---	---

48h Survival Rate Summary

Conc-%	Code	Count	Calculated Variate(A/B)							Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	U	4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%

48h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	U	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	U	5/5	5/5	5/5	5/5
6.25		5/5	5/5	5/5	5/5
12.5		5/5	5/5	5/5	5/5
25		5/5	5/5	5/5	5/5
50		5/5	5/5	5/5	5/5
100		5/5	5/5	5/5	5/5

JAT

CETIS Analytical Report

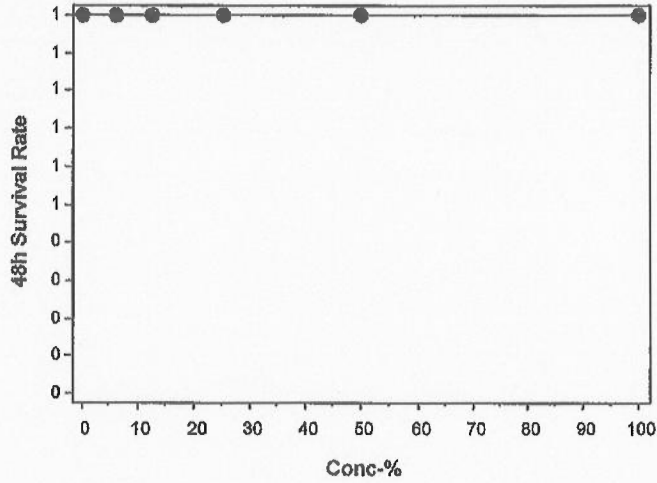
Report Date: 09 Jul-24 08:57 (p 2 of 2)
Test Code/ID: 258DEA96 / 06-3005-7622

Ceriodaphnia 48-h Acute Survival Test

EnviroScience

Analysis ID: 03-6774-6009	Endpoint: 48h Survival Rate	CETIS Version: CETIS v2.1.5
Analyzed: 08 Jul-24 12:20	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 08 Jul-24 0:00	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 007-869-049-5

Graphics





ACUTE, 96 HOUR, NON- RENEWAL BIOASSAY:

Organism: Pimephales promelas (FHM)

Project: JOEG

Source: ARS

No.: _____

Hatch/Age: 061724 1600 D # days 7 170-25

Start Date: 062524 Time: 1455

Diluent: MHR

End Date: 062924 Time: 1355

Sample #: JOEG 062524 EFF

Biological Parameters: # Mortalities / # Affected										
			test levels →							
			MHR	DMW	6.25%	12.5%	25%	50%	100%	
0 hours set-up	Tech	NS	n	A	10	10	10	10	10	10
	Time	1455	n	B	10	10	10	10	10	10
24 hours	Tech	RL	A		1/1	0/0	0/0	1/1	0/0	0/0
	Time	1320	B		0/0	1/1	0/0	0/0	1/1	0/0
48 hours	Tech	DA	A		2/2	2/2	0/0	4/4	5/5	3/3
	Time	1315	B		0/0	3/3	4/4	3/3	4/4	3/3
72 hours	Tech	UB	A		2/2	2/2	0/0	4/4	5/5	3/3
	Time	1255	B		0/0	3/3	4/4	4/4	4/4	3/3
96 hours	Tech	MS	A		2/2	2/2	1/1	4/4	8/8	4/4
	Time	1355	B		0/0	3/3	6/6	7/7	4/4	5/5

Chemical and Physical Data										
				MHR	DMW	6.25%	12.5%	25%	50%	100%
Temp. °C	0 hr	NS	1455	7	24.0	24.0	24.0	24.0	24.0	24.0
	24 hr	RL	1320	9	24.0	24.0	24.0	24.0	24.0	24.0
	48 hr	DA	1315	5	24.2	24.1	24.0	24.3	24.1	24.5
	72 hr	UB	1255	5	24.0	24.0	24.0	24.2	24.2	24.3
	96 hr	MS	1355	9	24.0	24.0	24.0	24.0	24.0	24.0
cond. µmhos/cm	0 hr	TM	1320	O160	283	180	316	351	435	568
	24 hr	NS	1250	O160	287	192	322	356	442	576
	48 hr	ID	1150	O160	285	187	315	350	566	439
	72 hr	NS	1310	O160	286	196	317	357	439	579
	96 hr	ID	1330	O160	306	205	326	369	459	597
DO mg/L	0 hr	TM	1320	OX 4100L	8.6	8.4	8.6	8.6	8.6	8.6
	24 hr	NS	1250	OX 4100L	8.0	7.9	8.2	8.0	8.0	7.9
	48 hr	1450 ID	1150	OX 4100L	7.9	7.9	8.6	8.5	7.8	8.6
	72 hr	NS	1310	OX 4100L	7.9	8.0	8.1	8.0	8.2	8.1
	96 hr	ID	1330	OX 4100L	8.6	8.6	8.6	8.6	8.6	8.5
pH s.u.	0 hr	TM	1340	A211B	7.5	7.4	7.0	7.0	6.8	6.7
	24 hr	NS	1250	A211B	7.1	7.1	7.1	7.0	7.0	7.2
	48 hr	ID	1150	A211B	7.1	7.0	7.1	7.1	7.1	7.2
	72 hr	NS	1420	A211B	7.1	7.0	7.1	7.1	7.1	7.1
	96 hr	ID	1400	A211B	7.3	7.2	7.2	7.2	7.2	7.2

JAT

CETIS Analytical Report

Report Date: 09 Jul-24 08:57 (p 1 of 2)
 Test Code/ID: 7FBOBE0A / 21-4228-9418

Fathead Minnow 96-h Acute Survival Test

EnviroScience

Analysis ID: 08-0536-7051	Endpoint: 96h Survival Rate	CETIS Version: CETIS v2.1.5
Analyzed: 08 Jul-24 12:21	Analysis: Linear Interpolation (LEPIN)	Status Level: 1
Edit Date: 08 Jul-24 0:00	MD5 Hash: 6D7F7F42915659480D4B9D94140DD0FD	Editor ID: 007-869-049-5
Batch ID: 14-7603-7610	Test Type: Survival (96h)	Analyst:
Start Date: 25 Jun-24 14:55	Protocol: EPA/821/R-02-012 (2002)	Diluent: Upstream of Discharge
Ending Date: 29 Jun-24 13:55	Species: Pimephales promelas	Brine:
Test Length: 95h	Taxon: Actinopterygii	Source: In-House Culture Age:
Sample ID: 19-8314-1113	Code: 763454F9	Project:
Sample Date: 24 Jun-24 06:00	Material: POTW Effluent	Source: Discharge Monitoring Report
Receipt Date: 25 Jun-24 09:20	CAS (PC):	Station: 001
Sample Age: 33h	Client: John E Egan	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1877596	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	0.9	0.9	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
LC50	>100	---	---	<1	---	---

96h Survival Rate Summary

Conc-%	Code	Count	Calculated Variate(A/B)						Isotonic Variate		
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	U	2	0.9000	0.9000	0.8000	1.0000	15.71%	0.00%	18/20	0.9000	0.00%
6.25		2	0.5500	0.5500	0.4000	0.7000	38.57%	38.89%	11/20	0.5500	38.89%
12.5		2	0.4500	0.4500	0.3000	0.6000	47.14%	50.00%	9/20	0.4875	45.83%
25		2	0.4000	0.4000	0.2000	0.6000	70.71%	55.56%	8/20	0.4875	45.83%
50		2	0.5500	0.5500	0.5000	0.6000	12.86%	38.89%	11/20	0.4875	45.83%
100		2	0.5500	0.5500	0.4000	0.7000	38.57%	38.89%	11/20	0.4875	45.83%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2
0	U	0.8000	1.0000
6.25		0.7000	0.4000
12.5		0.6000	0.3000
25		0.2000	0.6000
50		0.6000	0.5000
100		0.7000	0.4000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2
0	U	8/10	10/10
6.25		7/10	4/10
12.5		6/10	3/10
25		2/10	6/10
50		6/10	5/10
100		7/10	4/10

CETIS Analytical Report

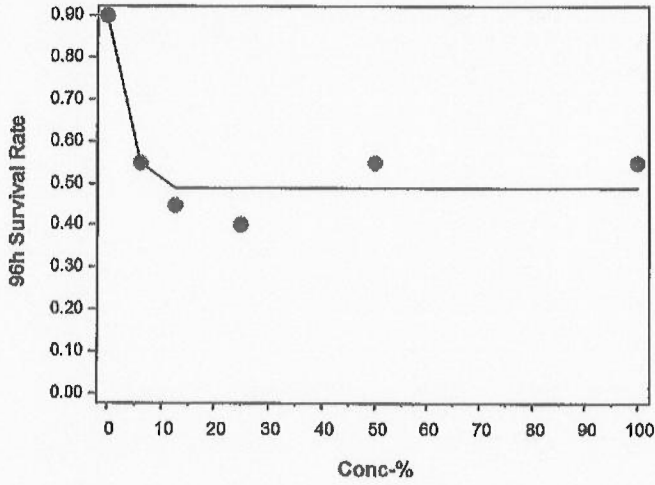
Report Date: 09 Jul-24 08:57 (p 2 of 2)
Test Code/ID: 7FB0BE0A / 21-4228-9418

Fathead Minnow 96-h Acute Survival Test

EnviroScience

Analysis ID: 08-0536-7051 Endpoint: 96h Survival Rate CETIS Version: CETIS v2.1.5
Analyzed: 08 Jul-24 12:21 Analysis: Linear Interpolation (ICPIN) Status Level: 1
Edit Date: 08 Jul-24 0:00 MD5 Hash: 6D7F7F42915659480D4B9D94140DD0FD Editor ID: 007-869-049-5

Graphics





Acute, Static Bioassay:
Initial Water Quality Checks (DO, pH, conductivity, chlorine, alkalinity, hardness) and Dilution Record

Client: JOEG
Date: 062524

Permit No.: _____

Initial Water Quality Data:

Sample Id	D. Oxygen (mg/L-%sat) >4 & <100%?	pH (s.u) 6-9?	Conductivity (µmhos/cm)	TRC _i (mg/L) <0.02?	TRC _A (mg/L)	Alkalinity (mg/L CaCO ₃) MDL = 20 mg/l	Hardness-EDTA (mg/L CaCO ₃) MDL = 5 mg/l
MHRW batch# <u>062324</u>	<u>8.6</u>	<u>7.5</u>	<u>377</u>	<u>21.02</u>	NA	<u>(26) 52</u>	<u>(24) 96</u>
<u>JOEG 062524 EFF</u>	<u>8.6</u>	<u>6.7</u>	<u>849</u>	<u>20.12</u>		<u>(65) 130</u>	<u>(59) 220</u>
INITIALS →	<u>TM</u>	<u>TM</u>	<u>TM</u>	<u>TM</u>		<u>TM</u>	<u>TM</u>

Dilution Record: AMMONIA : 1.90

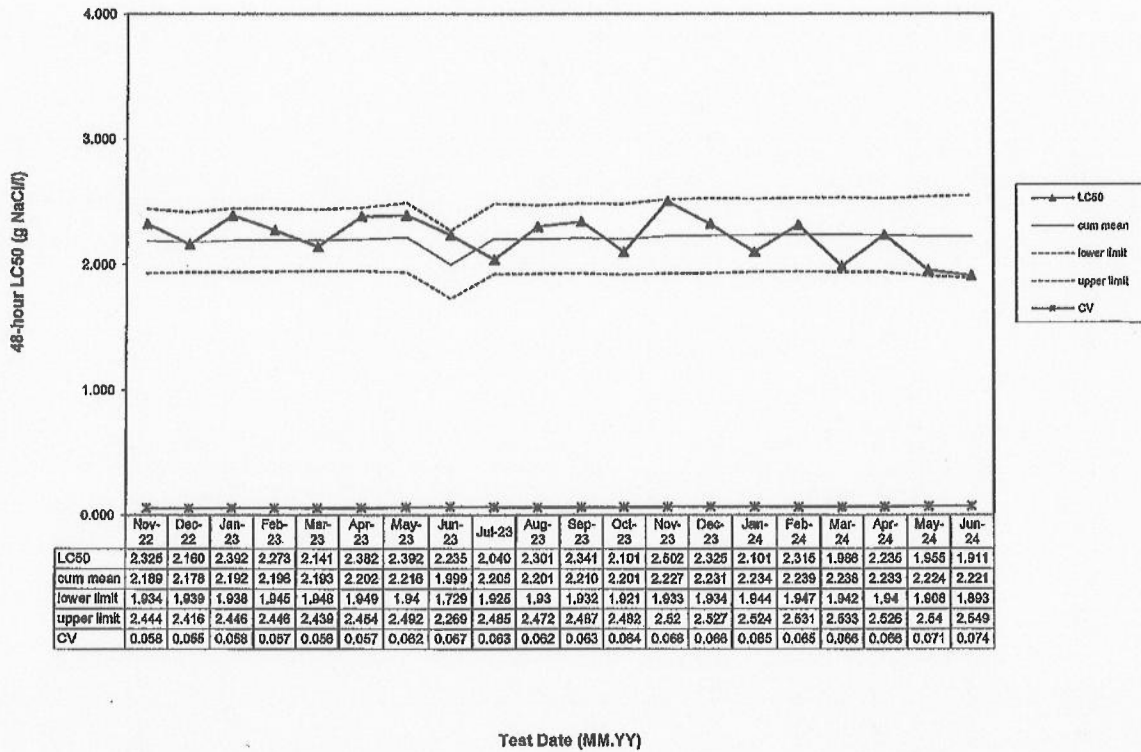
SAMPLE ID	Composited <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	60µm Filtered <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	% DILUTION	INITIATION		RENEWAL <input checked="" type="checkbox"/> No	
				Effluent (mL)	Final (mL)	Effluent (mL)	Final (mL)
<u>JOEG 062524 EFF</u>							
	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<u>625%</u>	<u>625</u>	<u>1000</u>		
	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<u>125%</u>	<u>125</u>	<u>↓</u>		
	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<u>25%</u>	<u>250</u>	<u>↓</u>		
	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<u>50%</u>	<u>500</u>	<u>↓</u>		
Comments:							
Methods/Instrumentation : DO: APHA (1998) 4500-O G, OX4100L pH: APHA (1998) 4500-H B, Orion 920A/Orion 2Star Conductivity: APHA (1998) 2510-B, Orion 160 Hardness: APHA (1998) 2340-C Alkalinity: APHA (1998) 2320-B TRC: APHA (1998) 4500-Cl D, Auto CAT 9000 USEPA Methods: 2000.0; 2002.0			Dilution Water: <input type="checkbox"/> Upstream <input checked="" type="checkbox"/> MHR	<input type="checkbox"/> Upstream <input checked="" type="checkbox"/> MHR			
			MHR Batch:	<u>062324</u>			

TRC_i = total residual chlorine, initial value
TRC_A = total residual chlorine, after dechlorination

JAK

Dechlorination procedure: Sodium thiosulfate is used to reduce Total Residual Chlorine by dosing with 6.7 mg Na₂S₂O₃ per mg TRC. A 6.7 mg/ml Na₂S₂O₃ solution is used; dose mL = X mg/L * liters in sample container being treated.

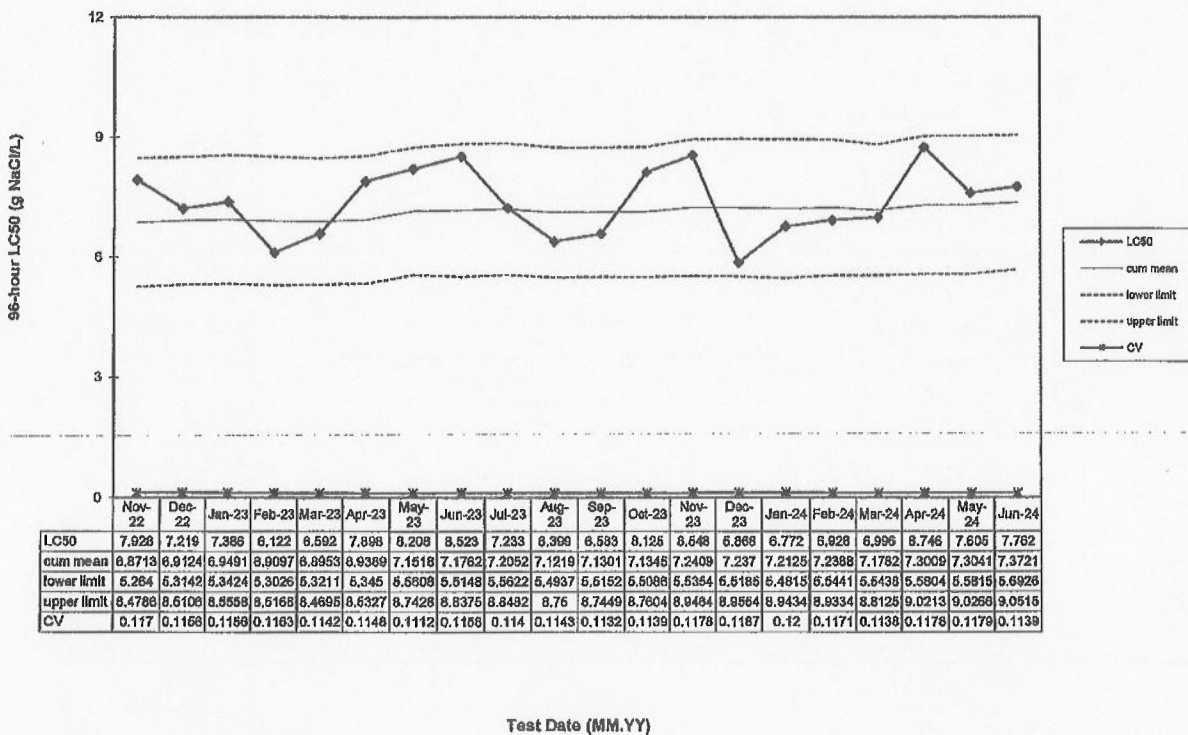
EnviroScience QC Chart - *Ceriodaphnia dubia*
Acute Toxicity endpoint - 25 C



Tests conducted at Stow, OH facility

EnviroScience QC/SRT Chart rev. 07/09/24

EnviroScience QC Chart - *Pimephales promelas*
Acute Toxicity Endpoint - 25 C



Tests conducted at Stow, OH facility

EnviroScience QC/SRT Chart rev. 07/09/24

The WET Sample Chain-of-Custody

SAMPLE COLLECTION			SAMPLE TYPE	SAMPLE LOCATION	SAMPLE Temp °C	ON-SITE SAMPLE STORAGE (0.1-6 °C)	PRINT NAME & SIGNATURE
DATE	TIME	PERSONNEL INITIALS					
6/23/2024	0600	MS	Grab	OUT FALL	20	<input checked="" type="radio"/> YES <input type="radio"/> NO	MARLON SILEA <i>[Signature]</i>
6/23/2024	1200	KJM	Grab	OUT FALL	20°	<input checked="" type="radio"/> YES <input type="radio"/> NO	KEITH MYROA Keith J. Myroa
6/23/2024	1800	OV	Grab	OUT FALL	19.5°	<input checked="" type="radio"/> YES <input type="radio"/> NO	Omar Oued <i>[Signature]</i>
6/23/2024	2400	OO	Grab	Outfall	20	<input checked="" type="radio"/> YES <input type="radio"/> NO	JOSEPH JOSEPH <i>[Signature]</i>
6/24/2024	0600	OO	Grab	Outfall	20	<input checked="" type="radio"/> YES <input type="radio"/> NO	JOSEPH JOSEPH <i>[Signature]</i>

Note: Sample container should be rinsed and should be filled completely leaving no air space between contents & lid. Preserve samples on ice or refrigerator (0.1-6°C) immediately after collection. Transport samples in ice-packed coolers to the WET Laboratory. The WET laboratory is located in Room LE-100, Lue-Hing R&D Complex.

Indicate if the final effluent was chlorinated/dechlorinated (Yes / No / NA).

SAMPLES RELINQUISHED BY: Name JOSEPH JOSEPH Signature: *[Signature]* Date/Time: 6/24/24 / 0603
 SAMPLES TRANSPORTED TO WET LAB. BY Name Jorge Abram Signature: *[Signature]* Date/Time: 6/24/24 / 0826

FOR WET LABORATORY USE ONLY:

- Sample Received by: Name Nick Kallias Signature: *[Signature]* Date/Time: 6/24/24
- Samples received with prescribed holding time (within 4 h of collection)? (Not Applicable, if chronic test) 1. YES / No / (NA)
 - Samples logged in by Nick Kallias Date 6/24/24 Time 0925 2. YES / No
 - Each sample container labeled with a unique ID? 3. YES / No
 - Were collection times for effluent and receiving water within 1 h of each other? 4. Yes / No (NA)
 - Did samples have sufficient volume for analysis? 5. YES / No
 - Samples accepted 6. YES / No
- Special Observations _____

LIMS #	Sample Type/ID	Temp °C	pH	Residual Chlorine (mg/L) Initials	Sodium-thio-sulfate Added YES/NO	Sample Custodian Signature
9623198-A	BMOUT_JE A	9.3	7.03	0	Indicate Total _____ ml of 5%	<i>[Signature]</i>
9623198-B	BMOUT_JE B	8.9	7.03	Total Ammonia (mg-L) ALD Results	Sodium-thio-sulfate added. Initial _____	
9623198-C	BMOUT_JE C	6.1	7.06		Final _____	
9623198-D	BMOUT_JE D	5.7	7.16	0.986	Residual Cl ₂ reading = _____ mg/l	
9623198-E	BMOUT_JE E	8.0	7.15		Initial <u>NK</u>	

Note: Set aside one cubitainer for metals and chemical analyses

Sample Release for Disposal

Sample released for disposal following analysis on (Date) 7/1/24 by *[Signature]*

Samples Discarded by *[Signature]* Date/Time 7/1/24 1000

**Metropolitan Water Reclamation District of Greater Chicago
OCAL CHAIN OF CUSTODY RECORD**

From: Nick Kollias **Office Location:** Stickney

To: **ORGANIC COMPOUNDS ANALYTICAL LABORATORY, EGAN WRP**

COLLECTED			SAMPLE SOURCE/LOCATION	PARAMETER or CER CATEGORY	LIMS ID	# of CONTAINERS				LAB ID (Lab Use Only)
DATE	TIME (Military)	BY FULL NAME (PRINT)				Vials	Gallons	Quarts	Pints	
6/24/24	1020	Nick Kollias	BMOUT JE		9623198	3	1			
6/24/24		Nick Kollias	Trip Blanks			2				

Samples listed above were stored on site at 0.1 - 6°C immediately after collection, and remained in custody of collector(s) until relinquished.

Container Type (specify vial, gallon, pint, or quart)	Case ID (copy from case label)
Vials	24-19V
Gallons	24-0236

Container Type (specify vial, gallon, pint, or quart)	Case ID (copy from case label)

ITEMS TRANSFERRED	RELINQUISHED BY			RECEIVED BY		
	FULL NAME or COOLER	DATE	TIME (Military)	FULL NAME or COOLER	DATE	TIME (Military)
Indicated above	Jorge Abreu	6/24/24	1041	Cooler D	6/24/24	1041
Indicated above						
Indicated above						
Indicated above						
Indicated above						

Metropolitan Water Reclamation District of Greater Chicago
Custody Transfer Record for Environmental Monitoring and Research Division Samples
 (STFORMSR)

To: Stickney Analytical Lab

Year: 2024

Collection Date: 6/24/2024

Collected By: Nick Kollias

Preparation Date: 6/24/2024

From: Nick Kollias

Project Number/Support Request#: 4652-126-1, SR 15-24

Sample Type (grab/composite): Composite

Prepared By: Nick Kollias

COC Prepared By: Nick Kollias

Collection Information								For Lab Use Only					
Collection Time	Sample Point	LIMS ID	Trace Metals	Ammonia	Hardness				Temperature °C	Proper Container	Proper Label	Adequate Volume	Comments
10:20	BMOUT_JE	9623198	X	X	X				13.5	V	V	V	
ALD Specified Holding Time (in Days)													

Chilling process of samples started immediately after collection Y / N

Relinquished By	Date	Time	Received By	Date	Time
Jorge Abreu	6/24/24	1046	GB	6/24/24	1053

The relinquisher has read and fully understands the M&R Departments-Environmental Monitoring and Research Division's "Ethical and Legal Responsibilities - Version 1, dated March 13, 2019"

Metropolitan Water Reclamation District of Greater Chicago

Custody Transfer Record for Environmental Monitoring and Research Division Samples (STFORMSR)

To: EAL

Year: 2024

Collection Date: 6/24/2024
 Collected By: Nick Kollias
 Preparation Date: 6/24/2024

From: **Nick Kollias**
 Project Number/Support Request#: **4652-126-1, SR 15-24**
 Sample Type (grab/composite): **Composite**

Prepared By: *Nick Kollias*

COC Prepared By: *Nick Kollias*

For Lab Use Only				
Temperature °C	Proper Container	Proper Label	Adequate Volume	Comments

Collection Information			Alkalinity	Chloride																	
Collection Time	Sample Point	LIMS ID																			
10:20	BMOUT_JE	9623198	X	X																	

ALD Specified Holding Time (in Days)

Stilling process of samples started immediately after collection: Y N

Relinquished By	Date	Time	Received By	Date	Time
Jorge Abreu	6/24/24	1042	Coleen D	6/24/24	1042

The relinquisher has read and fully understands the M&R Departments-Environmental Monitoring and Research Division's "Ethical and Legal Responsibilities - Version 1, dated March 13, 2019"

TABLE 8: WATER QUALITY RESULTS OF A JOHN E. EGAN WATER RECLAMATION PLANT FINAL EFFLUENT COMPOSITE SAMPLE COLLECTED JUNE 23 - JUNE 24, 2024, USED FOR WHOLE EFFLUENT TOXICITY TESTING

Sampling point	Analysis	Units	Result
BMOUTJE	Ag	mg/L	<0.00400
BMOUTJE	As	mg/L	<0.00200
BMOUTJE	Ba	mg/L	0.01989
BMOUTJE	Be	mg/L	<0.00200
BMOUTJE	Cd	mg/L	<0.00200
BMOUTJE	Co	mg/L	<0.00200
BMOUTJE	Cr	mg/L	<0.00400
BMOUTJE	Cu	mg/L	0.01359
BMOUTJE	Fe	mg/L	0.1073
BMOUTJE	Mn	mg/L	0.02343
BMOUTJE	Mo	mg/L	0.00382
BMOUTJE	Ni	mg/L	0.00269
BMOUTJE	Pb	mg/L	<0.00200
BMOUTJE	Sb	mg/L	<0.00200
BMOUTJE	Se	mg/L	<0.00400
BMOUTJE	Zn	mg/L	0.03131
BMOUTJE	Tl	mg/L	<0.00200
BMOUTJE	NH3_N	mg/L	0.986
BMOUTJE	Al	mg/L	<1.00
BMOUTJE	Ca	mg/L	57.31
BMOUTJE	Hardness	mg/L	233
BMOUTJE	Mg	mg/L	21.86
BMOUTJE	CN	mg/L	0.005
BMOUTJE	ALKALINITY	mg/L	137.1
BMOUTJE	Cl	mg/L	118.839
BMOUTJE	Final Hg	ug/L	<0.500
BMOUTJE	1,1,1-Trichloroethane	ug/L	<5.000
BMOUTJE	1,1,2,2-Tetrachloroethane	ug/L	<5.000
BMOUTJE	1,1,2-Trichloroethane	ug/L	<5.000
BMOUTJE	1,1-Dichloroethane	ug/L	<5.000
BMOUTJE	1,1-Dichloroethylene	ug/L	<5.000
BMOUTJE	1,2,4-Trichlorobenzene	ug/L	<5.000
BMOUTJE	1,2-Dichlorobenzene	ug/L	<5.000
BMOUTJE	1,2-Dichloroethane	ug/L	<5.000
BMOUTJE	1,2-Dichloropropane	ug/L	<5.000
BMOUTJE	1,2-Diphenylhydrazine	ug/L	<5.000
BMOUTJE	1,3-Dichlorobenzene	ug/L	<5.000
BMOUTJE	1,3-Dichloropropylene	ug/L	<5.000
BMOUTJE	1,4-Dichlorobenzene	ug/L	<5.000
BMOUTJE	2,4,6-Trichlorophenol	ug/L	<10.000
BMOUTJE	2,4-Dichlorophenol	ug/L	<5.000
BMOUTJE	2,4-Dimethylphenol	ug/L	<10.000
BMOUTJE	2,4-Dinitrophenol	ug/L	<40.000
BMOUTJE	2,4-Dinitrotoluene	ug/L	<5.000
BMOUTJE	2,6-Dinitrotoluene	ug/L	<5.000
BMOUTJE	2-Chloroethyl vinyl ether	ug/L	<5.000

**TABLE 8: WATER QUALITY RESULTS OF A JOHN E. EGAN WATER RECLAMATION PLANT FINAL EFFLUENT COMPOSITE
SAMPLE COLLECTED JUNE 23 - JUNE 24, 2024, USED FOR WHOLE EFFLUENT TOXICITY TESTING**

Sampling point	Analysis	Units	Result
BMOUTJE	2-Chloronaphthalene	ug/L	<5.000
BMOUTJE	2-Chlorophenol	ug/L	<10.000
BMOUTJE	2-Nitrophenol	ug/L	<10.000
BMOUTJE	3,3'-Dichlorobenzidine	ug/L	<15.000
BMOUTJE	3,4-Benzofluoranthene	ug/L	<10.000
BMOUTJE	4,4'-DDD	ug/L	<0.050
BMOUTJE	4,4'-DDE	ug/L	<0.130
BMOUTJE	4,4'-DDT	ug/L	<0.050
BMOUTJE	4,6-Dinitro-o-cresol	ug/L	<25.000
BMOUTJE	4-Bromophenyl phenyl ether	ug/L	<5.000
BMOUTJE	4-Chlorophenyl phenyl ether	ug/L	<5.000
BMOUTJE	4-Nitrophenol	ug/L	<20.000
BMOUTJE	Acenaphthene	ug/L	<5.000
BMOUTJE	Acenaphthylene	ug/L	<5.000
BMOUTJE	Acrolein	ug/L	<50.000
BMOUTJE	Acrylonitrile	ug/L	<10.000
BMOUTJE	Aldrin	ug/L	<0.050
BMOUTJE	Anthracene	ug/L	<5.000
BMOUTJE	Benzene	ug/L	<2.000
BMOUTJE	Benzo(a)anthracene	ug/L	<5.000
BMOUTJE	Benzo(a)pyrene	ug/L	<10.000
BMOUTJE	Benzo(g,h,i)perylene	ug/L	<10.000
BMOUTJE	Benzo(k)fluoranthene	ug/L	<5.000
BMOUTJE	Bis(2-chloro-iso-propyl)ether	ug/L	<10.000
BMOUTJE	Bis(2-chloroethoxy)methane	ug/L	<10.000
BMOUTJE	Bis(2-chloroethyl)ether	ug/L	<10.000
BMOUTJE	Bis(2-ethylhexyl)phthalate	ug/L	<20.000
BMOUTJE	Bromoform	ug/L	<5.000
BMOUTJE	Butyl benzyl phthalate	ug/L	<10.000
BMOUTJE	Carbon tetrachloride	ug/L	<5.000
BMOUTJE	Chlorobenzene	ug/L	<5.000
BMOUTJE	Chlorodibromomethane	ug/L	<2.000
BMOUTJE	Chloroethane	ug/L	<5.000
BMOUTJE	Chloroform	ug/L	8.8059
BMOUTJE	Chrysene	ug/L	<5.000
BMOUTJE	Di-n-butyl phthalate	ug/L	<5.000
BMOUTJE	Di-n-octyl phthalate	ug/L	<15.000
BMOUTJE	Dibenzo(a,h)anthracene	ug/L	<15.000
BMOUTJE	Dichlorobromomethane	ug/L	2.2528
BMOUTJE	Dieldrin	ug/L	<0.050
BMOUTJE	Diethyl phthalate	ug/L	<10.000
BMOUTJE	Dimethyl phthalate	ug/L	<5.000
BMOUTJE	Endosulfan I	ug/L	<0.050
BMOUTJE	Endosulfan II	ug/L	<0.050
BMOUTJE	Endosulfan sulfate	ug/L	<0.050
BMOUTJE	Endrin	ug/L	<0.050

**TABLE 8: WATER QUALITY RESULTS OF A JOHN E. EGAN WATER RECLAMATION PLANT FINAL EFFLUENT COMPOSITE
SAMPLE COLLECTED JUNE 23 - JUNE 24, 2024, USED FOR WHOLE EFFLUENT TOXICITY TESTING**

Sampling point	Analysis	Units	Result
BMOUTJE	Endrin aldehyde	ug/L	<0.050
BMOUTJE	Ethylbenzene	ug/L	<2.000
BMOUTJE	Fluoranthene	ug/L	<5.000
BMOUTJE	Fluorene	ug/L	<5.000
BMOUTJE	Heptachlor	ug/L	<0.070
BMOUTJE	Heptachlor epoxide	ug/L	<0.050
BMOUTJE	Hexachlorobenzene	ug/L	<5.000
BMOUTJE	Hexachlorobutadiene	ug/L	<5.000
BMOUTJE	Hexachlorocyclopentadiene	ug/L	<30.000
BMOUTJE	Hexachloroethane	ug/L	<10.000
BMOUTJE	Indeno(1,2,3-cd)pyrene	ug/L	<15.000
BMOUTJE	Isophorone	ug/L	<10.000
BMOUTJE	Methyl bromide	ug/L	<5.000
BMOUTJE	Methyl chloride	ug/L	<5.000
BMOUTJE	Methylene chloride	ug/L	<5.000
BMOUTJE	N-Nitrosodi-n-propylamine	ug/L	<10.000
BMOUTJE	N-Nitrosodimethylamine	ug/L	<5.000
BMOUTJE	N-Nitrosodiphenylamine	ug/L	<5.000
BMOUTJE	Naphthalene	ug/L	<5.000
BMOUTJE	Nitrobenzene	ug/L	<10.000
BMOUTJE	PCB-1016	ug/L	<0.800
BMOUTJE	PCB-1221	ug/L	<0.800
BMOUTJE	PCB-1232	ug/L	<0.800
BMOUTJE	PCB-1242	ug/L	<0.800
BMOUTJE	PCB-1248	ug/L	<0.800
BMOUTJE	PCB-1254	ug/L	<0.800
BMOUTJE	PCB-1260	ug/L	<1.160
BMOUTJE	Pentachlorophenol	ug/L	<30.000
BMOUTJE	Phenanthrene	ug/L	<5.000
BMOUTJE	Phenol	ug/L	<5.000
BMOUTJE	Pyrene	ug/L	<5.000
BMOUTJE	Technical chlordane	ug/L	<0.500
BMOUTJE	Tetrachloroethylene	ug/L	<5.000
BMOUTJE	Toluene	ug/L	<2.000
BMOUTJE	Toxaphene	ug/L	<1.000
BMOUTJE	Trichloroethylene	ug/L	<5.000
BMOUTJE	Trichlorofluoromethane	ug/L	<5.000
BMOUTJE	Vinyl chloride	ug/L	<5.000
BMOUTJE	alpha-BHC	ug/L	<0.050
BMOUTJE	beta-BHC	ug/L	<0.070
BMOUTJE	delta-BHC	ug/L	<0.170
BMOUTJE	gamma-BHC (lindane)	ug/L	<0.050
BMOUTJE	p-Chloro-m-cresol	ug/L	<5.000
BMOUTJE	trans-1,2-Dichloroethylene	ug/L	<5.000