

Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***MONITORING AND RESEARCH
DEPARTMENT***

REPORT NO. 25-01

RESULTS OF ACUTE TOXICITY TESTING WITH *Ceriodaphnia dubia*

AND *Pimephales promelas* ON A DECEMBER 2024 EFFLUENT

SAMPLE FROM THE JOHN E. EGAN WATER RECLAMATION PLANT

OF THE METROPOLITAN WATER RECLAMATION DISTRICT OF

GREATER CHICAGO

January 2025

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 DECEMBER 2024 EFFLUENT SAMPLE FROM THE
JOHN E. EGAN WATER RECLAMATION PLANT OF THE METROPOLITAN WATER
RECLAMATION DISTRICT OF GREATER CHICAGO**

By

EnviroScience, Incorporated
5070 Stow Road
Stow, Ohio 44224

Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

CECIL LUE-HING RESEARCH AND DEVELOPMENT COMPLEX
6001 WEST PERSHING ROAD CICERO, ILLINOIS 60804-4112

Edward W. Podczewinski, P.E.

Director of Monitoring and Research

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January 17, 2025

Illinois Environmental Protection Agency
Compliance Assurance Section CAS # 19
1021 North Grand Avenue
P.O. Box 19276
Springfield, IL 62794-9276

Dear Sir or Madam:

Subject: Biomonitoring Report for 2024 – Acute Toxicity Test Results for the
John E. Egan Water Reclamation Plant, National Pollutant Discharge
Elimination System Permit Number IL0036340

The subject biomonitoring report including Acute Whole Effluent Toxicity test results for *Pimephales promelas* and *Ceriodaphnia dubia* is submitted in compliance with National Pollutant Discharge Elimination System Permit Number IL0036340, Special Condition 11. The report covers the monitoring done for samples collected in the twelfth month before the expiration of the permit.

The subject report prepared by EnviroScience, Inc., includes copies of all bench sheets, chain-of-custody forms, sample receipt, preparation forms, a summary of final results and test information, quality assurance record, and water quality results.

If you have any questions concerning this report, please contact Mr. Thomas Minarik, Principal Environmental Scientist, at (708) 588-4223.

Very truly yours,

Albert Cox
Environmental Monitoring and Research Manager
Monitoring and Research Department

AC:TM:NK:ek

Enclosure

cc: E. Podczewinski

J. Murray

H. Zhang

T. Minarik

N. Kollias

Via electronic mail

RESULTS OF ACUTE TOXICITY TESTS

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

Testing period: December 17-19, 2024
Sample collection dates: December 15-16, 2024
Report date: January 7, 2025

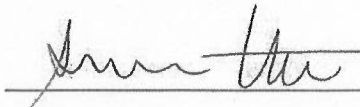
Conducted For:

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

January 7, 2025

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 December 17, 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, 12/2024
sample collection period 12/15-16/24

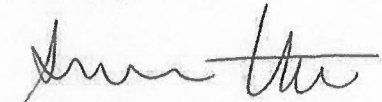
<i>Ceriodaphnia dubia</i> (water flea)	48HR LC ₅₀ = >100% effluent; TU _a = <1.0
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<i>Pimephales promelas</i> (fathead minnow)	96HR LC ₅₀ = >100% effluent; TU _a = <1.0
--	--

(TU_a = 100/LC₅₀)

Please call me if you have any questions.

Sincerely,



Alexandria M. Tite, Aquatic Biologist

enclosures

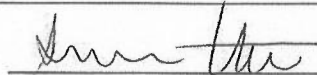


5070 Stow Road
Stow, OH 44224

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

01/07/25
 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	12/15/24-0600	12/16/24-0600	

Table 3. Testing periods.

<i>Ceriodaphnia dubia</i> (water flea)		<i>Pimephales promelas</i> (fathead minnow)	
Start Date: MM/DD/YY	12/17/24	Start Date: MM/DD/YY	12/17/24
Start Time:	1435 hrs	Start Time:	1400 hrs
End Date: MM/DD/YY	12/19/24	End Date: MM/DD/YY	12/21/24
End Time:	1335 hrs	End Time:	1310 hrs

Notes: Sample receipt: 12/17/24-1230; 0.4°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	12/15-16/24	8.6	6.7	908	102	232	<0.02	0.60

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 C.

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 *Ceriodaphnia dubia* and *Pimephales promelas*.

	<i>Ceriodaphnia dubia</i>	<i>Pimephales promelas</i>
1. Test dates:	12/17/24-1435 to 12/19/24-1335	12/17/24-1400 to 12/21/24-1310
2. Test type and duration:	static, non-renewal, 48 hours	static, non-renewal, 96-hours
3. Age and source of organisms:	<24 hours, EnviroScience 12/16/24-1600	7 days, ES 12/09/24-1600
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) 12/17/24 to 12/19/24		<i>P. promelas</i> (fathead minnow) 12/17/24 to 12/21/24			
	24-hours % mortality	48-hours % mortality	24-hours % mortality	48-hours % mortality	72-hours % mortality	96-hours % mortality
MHRW lab water, diluent	0	0	0	0	0	0
DMW lab water	0	0	0	0	0	0
6.25% effluent	0	0	0	0	0	0
12.5% effluent	0	0	0	0	0	0
25% effluent	0	0	0	0	0	0
50% effluent	0	0	0	0	0	0
100% effluent	0	0	0	0	0	0
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.

LC_{50} = 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; $TU_a = 100 \div LC_{50}$ (usually 48-hour LC_{50} for water fleas and 96-hour LC_{50} for FHM)

ATTACHMENTS

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



EnviroScience
Excellence In Any Environment

EnviroScience, Inc.
5070 Stow Road
Stow, OH 44224
Phone (330) 688-0111
Fax (330) 688-3858
1-800-940-4025

Client: John E. Egan WRP
Address: 6001 West Pershing Road
Cicero, IL 60804
Contact: Nicholas Kollias
Phone: 708-588-4074
Permit #: IL

SAMPLE SUBMISSION AND CHAIN OF CUSTODY FORM

Test(s) to be performed:

- () Chronic Definitive
(X) Acute Definitive
() 48 hr. Screening
() 24 hr. Stormwater
() Pass/Fail

Test Species

- (X) P. promelas and C. dubia
() P. promelas
() C. dubia
() D. magna
()

Wastewater Type (Circle One)
Industrial Other
Municipal
Other

When listing a composite sample in the table below, please provide the start and end time of the composite period.

Start Date	Time	End Date	Time	Station No.	Sample Site	Sample Type		Number of Subcontainers	Chemistry			
						Comp	Grab		TUR	Cond	D.O.	pH
12/15/2024	0600	12/16/2024	0600	BMOUT_JE	John E. Egan WRP	X		1	569	7.8		7.07
									834			
										12/16/24		

Comp. = Composite, D.O. = Dissolved Oxygen measured in mg/l, pH measured in s.u., Conductivity measured in uohm/cm

Sampling Collector's Information: please check all appropriate boxes

EnviroScience Personnel Only

X	Effluent	Upstream	Near Field	Far Field	Plume Determined By What Method?	Collector's Name		Effluent	Collected By
						Collector's Signature	Nick Kollias		

Comments:

Received from:		Received by:		Date		Time		Shipping Information		EnviroScience Use Only			
MWRDGC-Nick Kollias		Daniel Warrington		12/24		1230		Date Shipped	12/16/2024	Client	JOEG		
								Time Shipped	1100	Sample ID's	JOEG	12-17-24	
								Method Shipped	UPS	Cond. Of Container	good		
								ES Vehicle		Temp. °C	0.4		

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

Client John E. Egan WRP

ES Sample ID JOEG 121724 EEP

Cooler Received by: DA

Date Cooler Received and Opened 121724

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 0.4 °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: JOEG

No.: 1L0036340

Start Date: 12/11/14 Time: M35

End Date: 12/11/14 Time: 1335

Organism: C. dubia

Source: BB120824

Hatch/Age: 12/11/14 1600 < 24 hrs

Diluent: MYR

Sample #: JOEG 12/11/14 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
MMR	A	5	0 / 0	0 / 0	24.0	24.8	24.3	8.6		8.6	7.2		6.9	271		280
	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	24.0	24.8	24.1	8.6		8.6	7.1		7.3	181		287
	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	24.0	24.9	24.4	8.6		8.6	7.0		7.4	328		433
	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	24.0	24.9	24.5	8.6		8.3	6.9		7.3	351		440
	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	24.0	24.9	24.4	8.6		8.2	6.9		7.3	420		505
	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	24.0	24.9	24.3	8.6		8.0	6.7		7.5	567		690
	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	24.0	24.5	24.3	8.6		8.3	6.6		7.6	843		1011
	B	5	0 / 0	0 / 0												
	C	5	0 / 0	0 / 0												
	D	5	0 / 0	0 / 0												
Time	1435		1235	1335	1435	1435	1335	1345		1415	1345		1440	1345		1415
Tech	CE		MM	KB	CE	MM	KB	PL		CE	PL		CE	PL		CE
					1	1	1	OX4100L			Orion StarA211 A			Orion StarA212		
					ID or ✓ instrument used			✓		✓	✓		✓	✓		✓
					Other:			Orion StarA211 B								

USEPA Method: 2002.0

JMS

CETIS Analytical Report

Report Date: 03 Jan-25 10:15 (p 1 of 2)
Test Code/ID: 1AB4B2C7 / 04-4804-9863

Ceriodaphnia 48-h Acute Survival Test

EnviroScience

Analysis ID: 21-2984-2544	Endpoint: 48h Survival Rate	CETIS Version: CETIS v2.1.5
Analyzed: 03 Jan-25 10:08	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edlt Date: 03 Jan-25 0:00	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 007-869-049-5
Batch ID: 08-6657-5129	Test Type: Survival (48h)	Analyst:
Start Date: 17 Dec-24 14:35	Protocol: EPA/821/R-02-012 (2002)	Diluent: Upstream of Discharge
Ending Date: 19 Dec-24 13:35	Species: Ceriodaphnia dubia	Brine:
Test Length: 47h	Taxon: Branchiopoda	Source: In-House Culture Age:
Sample ID: 02-4210-2697	Code: E6E31A9	Project:
Sample Date: 16 Dec-24 06:00	Material: POTW Effluent	Source: Discharge Monitoring Report
Receipt Date: 17 Dec-24 12:30	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	863678	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

TAC Limits

Attribute	Test Stat	Lower	Upper	Overlap	Decision
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

Calculated Variate(A/B)

Isotonic Variate

Conc-%	Code	Count	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

CETIS Analytical Report

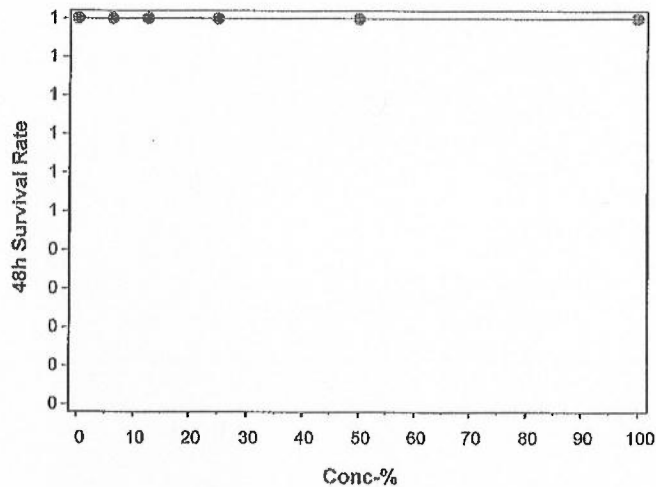
Report Date: 03 Jan-25 10:15 (p 2 of 2)
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Ceriodaphnia 48-h Acute Survival Test

EnviroScience

Analysis ID: 21-2984-2544	Endpoint: 48h Survival Rate	CETIS Version: CETIS v2.1.5
Analyzed: 03 Jan-25 10:08	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 03 Jan-25 0:00	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 007-869-049-5

Graphics





ACUTE, 96 HOUR, NON- RENEWAL BIOASSAY:
 Project: J066
 No.: 1LDD3U340
 Start Date: 121724 Time: 1400
 End Date: 122124 Time: 1310

Organism: Pimephales promelas (FHM)
 Source: ES cultures 7¹²⁷⁷ HD
 Hatch/Age: 120924 1600/8 days
 Diluent: MHR
 Sample #: J066 121724 EFF

Biological Parameters: # Mortalities / # Affected											
test levels →				MHR		PMW	6.25	12.5	25	50	100
0 hours set-up	Tech	HD		n	A	10	10	10	10	10	10
	Time	1400		n	B	10	10	10	10	10	10
24 hours	Tech	CE		A		0/0	0/0	0/0	0/0	0/0	0/0
	Time	1215		B		0/0	0/0	0/0	0/0	0/0	0/0
48 hours	Tech	RL		A		0/0	0/0	0/0	0/0	0/0	0/0
	Time	1250		B		0/0	0/0	0/0	0/0	0/0	0/0
72 hours	Tech	HD+J06		A		0/0	0/0	0/0	0/0	0/0	0/0
	Time	1200 HD+J06		B		0/0	0/0	0/0	0/0	0/0	0/0
96 hours	Tech	DA		A		0/0	0/0	0/0	0/0	0/0	0/0
	Time	1310		B		0/0	0/0	0/0	0/0	0/0	0/0

Chemical and Physical Data											
		Tech	Time	Instr.#	MHR	PMW	6.25	12.5	25	50	100
Temp. °C	0 hr	HD	1400	6	24.0	24.0	24.0	24.0	24.0	24.0	24.0
	24 hr	CE	1215	6	25.1	24.6	25.2	24.5	25.2	24.1	24.0
	48 hr	RL	1250	10	24.7	24.3	24.9	25.0	25.3	24.5	24.3
	72 hr	HD	120	1	24.6	25.1	25.2	25.2	24.1	24.9	24.8
	96 hr	DA	1310	10	25.2	25.1	25.2	25.0	24.9	24.8	24.0
cond. µmhos/cm	0 hr	RL	1400	0160	271	181	328	351	420	567	8343
	24 hr	UB	1050	0160	323	171	357	390	457	608	930
	48 hr	CE	1140	0160	358	259	369	425	509	669	1036
	72 hr	UB	1350	0160	368	274	381	461	529	684	1101
	96 hr	UB	1010	0160	341	231	343	405	473	630	10163
DO mg/L	0 hr	RL	1345	OX 4100L	8.6	8.6	8.6	8.6	8.6	8.6	8.6
	24 hr	UB	1050	OX 4100L	8.0	8.4	8.0	8.0	8.0	8.4	8.0
	48 hr	CE	1140	OX 4100L	8.6	8.6	8.6	8.6	8.6	8.6	8.4
	72 hr	UB	1350	OX 4100L	8.0	8.0	8.0	8.0	8.5	8.5	8.4
	96 hr	UB	1010	OX 4100L	8.0	8.0	8.0	8.0	8.0	8.0	8.4
pH s.u.	0 hr	RL	1345	AZ11A	7.2	7.1	7.0	6.9	6.9	6.7	6.6
	24 hr	UB	1050	AZ11B	7.3	7.2	7.0	7.2	7.1	7.1	7.2
	48 hr	CE	1220	AZ11B	7.2	4.9	1.0	1.0	1.0	1.1	1.2
	72 hr	UB	1350	AZ11A	7.3	7.2	7.0	7.2	7.1	7.1	7.2
	96 hr	UB	1010	AZ11A	7.7	7.5	7.5	7.5	7.5	7.5	7.6

MS

CETIS Analytical Report

Report Date: 03 Jan-25 10:14 (p 1 of 2)
Test Code/ID: 1B0B851A / 04-5373-9802

Fathead Minnow 96-h Acute Survival Test

EnviroScience

Analysis ID: 08-0090-2103 Endpoint: 96h Survival Rate
Analyzed: 03 Jan-25 10:12 Analysis: Linear Interpolation (ICPIN)
Edit Date: 03 Jan-25 0:00 MD5 Hash: 509FC2E8BA2BA32D9479C7B479A5A46A
CETIS Version: CETIS v2.1.5
Status Level: 1
Editor ID: 007-869-049-5

Batch ID: 21-0261-1793 Test Type: Survival (96h) Analyst:
Start Date: 17 Dec-24 14:00 Protocol: EPA/821/R-02-012 (2002) Diluent: Upstream of Discharge
Ending Date: 21 Dec-24 13:10 Species: Pimephales promelas Brine:
Test Length: 95h Taxon: Actinopterygii Source: In-House Culture Age:

Sample ID: 01-4110-4334 Code: 86914CE Project:
Sample Date: 16 Dec-24 06:00 Material: POTW Effluent Source: Discharge Monitoring Report
Receipt Date: 17 Dec-24 12:30 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	1050578	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

TAC Limits

Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	1	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

Calculated Variate(A/B)

Isotonic Variate

Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	U	2	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
6.25		2	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
12.5		2	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
25		2	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
50		2	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
100		2	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%

96h Survival Rate Detail

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

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2
0	U	10/10	10/10
6.25		10/10	10/10
12.5		10/10	10/10
25		10/10	10/10
50		10/10	10/10
100		10/10	10/10

CETIS Analytical Report

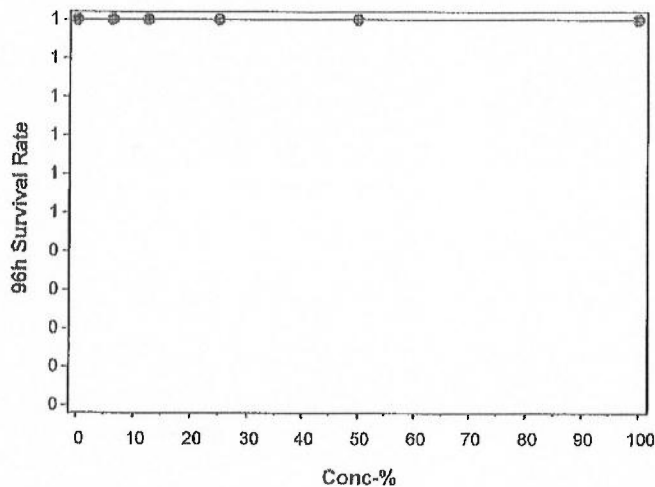
Report Date: 03 Jan-25 10:14 (p 2 of 2)
Test Code/ID: 1B0B851A / 04-5373-9802

Fathead Minnow 96-h Acute Survival Test

EnviroScience

Analysis ID: 08-0090-2103	Endpoint: 96h Survival Rate	CETIS Version: CETIS v2.1.5
Analyzed: 03 Jan-25 10:12	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 03 Jan-25 0:00	MD5 Hash: 509FC2E8BA2BA32D9479C7B479A5A46A	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: 12/17/24

Permit No.: 1LDO30 340

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# MHR121524	8.6	7.5	279	LO.02	NA	(2.7) 56	(2.0) 80
JOEG121724 EFF	8.6	6.7	908	LO.02	—	(5.1) 102	(3.8) 232
INITIALS →	PL	PL	PL	PL	PL	PL	PL

Dilution Record:

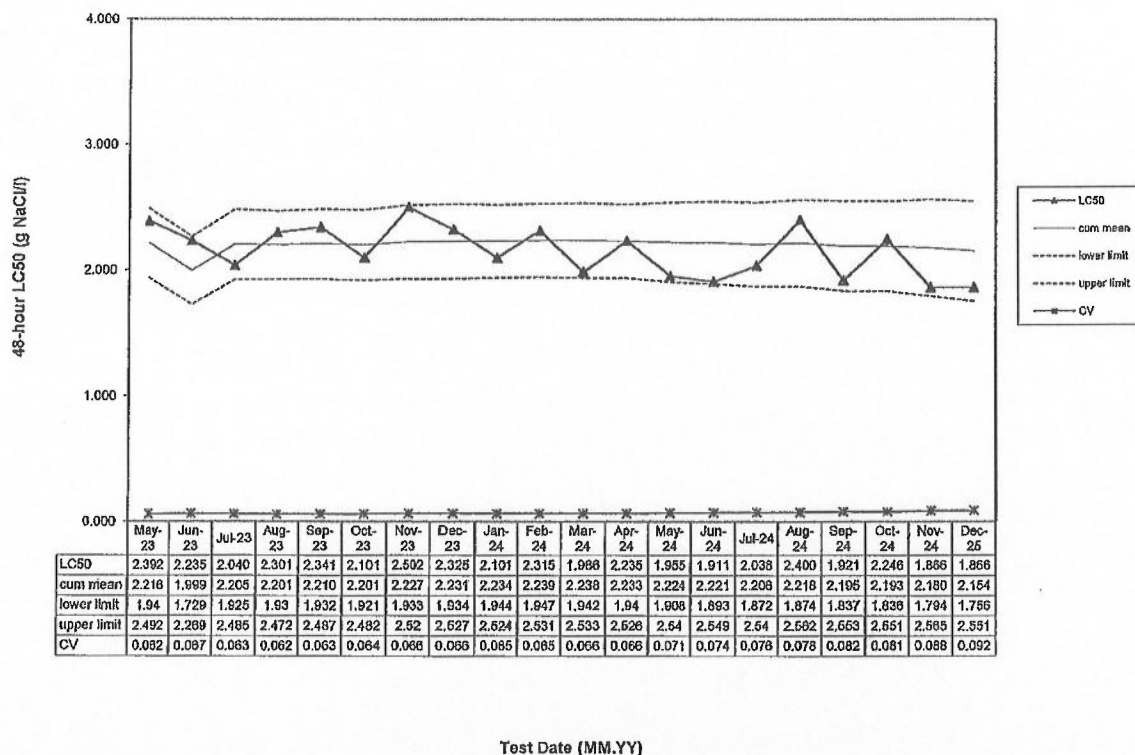
SAMPLE ID	Composited ☐ Yes ☒ No	60µm Filtered ☐ Yes ☒ No	% DILUTION	INITIATION		RENEWAL ☒ No	
				Effluent (mL)	Final (mL)	Effluent (mL)	Final (mL)
JOEG 121724 EFF	☐ Yes ☒ No	☐ Yes ☒ No					
	☐ Yes ☒ No	☐ Yes ☒ No	6.25	62.5	1000		
	☐ Yes ☒ No	☐ Yes ☒ No	12.5	125			
Comments: ammonia: 0.60 mg/L			25	250			
			50	500	✓		
Methods/Instrumentation : DO: APHA (1998) 4500-O G, OX4100L pH: APHA (1998) 4500-H B, Star A211 Conductivity: APHA (1998) 2510-B, Orion Star A212 Hardness: APHA (1998) 2340-C Alkalinity: APHA (1998) 2320-B TRC: APHA (1998) 4500-Cl D, TitraLab At 1000 USEPA Methods: 2000.0; 2002.0			Dilution Water:	☐ Upstream ☒ MHR		☐ Upstream ☒ MHR	
			MHR Batch:	MHR121524			

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

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.

MS

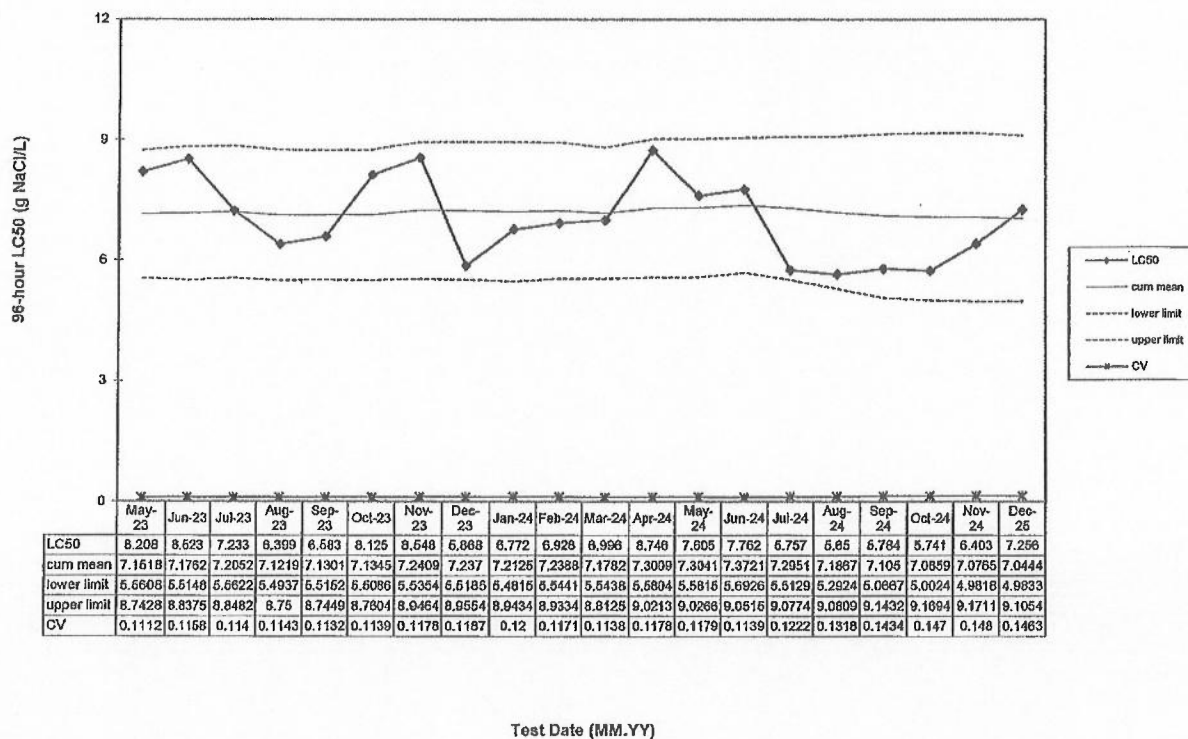
EnviroScience QC Chart - *Ceriodaphnia dubia*
Acute Toxicity endpoint - 25 C



Tests conducted at Stow, OH facility

EnviroScience QC/SRT Chart rev. 01/08/25

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



Tests conducted at Stow, OH facility

EnviroScience QC/SRT Chart rev. 01/08/25

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					
12/15/2024	0600	T.K.	Grab	outfall	17	☒ YES / ☐ NO	Tina Tracy Jones Kelen
12/15/2024	1200	K.R.	Grab	outfall	16'	☒ YES / ☐ NO	Katelyn R. Lue
12/15/2024	1800	HR	Grab	OUTFALL	17.5	☒ YES / ☐ NO	HAROLD R. RANSON
12/15/2024	2400	JO	Grab	Outfall	18	☒ YES / ☐ NO	JOSEPH & JOSEPH
12/16/2024	0600	JO	Grab	outfall	18	☒ YES / ☐ NO	JOSEPH & JOSEPH

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: JOSEPH & JOSEPH Date/Time: 12/16/2024

SAMPLES TRANSPORTED TO WET LAB. BY Name CAMERON MCGEE Signature: CAMERON MCGEE Date/Time: 12/16/24

FOR WET LABORATORY USE ONLY:

Sample Received by: Name NICK BLAS Signature: NICK BLAS Date/Time: 12/16/24 0845

1. Samples received with prescribed holding time (within 4 h of collection)? (Not Applicable, if chronic test)
 2. Samples logged in by NICK BLAS Date 12/16/24 Time 0845
 3. Each sample container labeled with a unique ID?
 4. Were collection times for effluent and receiving water within 1 h of each other?
 5. Did samples have sufficient volume for analysis?
 6. Samples accepted
- Special Observations _____

1. ☒ Yes / ☐ No / (NA)
2. ☒ Yes / ☐ No
3. ☒ Yes / ☐ No
4. ☒ Yes / ☐ No (NA)
5. ☒ Yes / ☐ No
6. ☒ Yes / ☐ No

LIMS #	Sample Type/ID	Temp °C	pH	Residual Chlorine (mg/L) Initials	Sodium-thio-sulfate Added YES/NO	Sample Custodian Signature
9729756-A	BMOUT JE A	14.0	6.99	0	Indicate Total	<u>NICK BLAS</u>
9729756-B	BMOUT JE B	3.0	7.08	Total Ammonia	ml of 5%	
9729756-C	BMOUT JE C	2.7	7.11	(mg-L) ALD Results	Sodium-thio-sulfate added. Initial	
9729756-D	BMOUT JE D	2.0	7.13		Final	
9729756-E	BMOUT JE E	9.6	7.08	0.396	Residual Cl ₂ reading = mg/l	
Note: Set aside one cubitainer for metals and chemical analyses					Initial <u>AL</u>	

Sample Release for Disposal

Sample released for disposal following analysis on (Date) 12/17/24 by upc/khw

Samples Discarded by upc/khw Date/Time 12/17/24 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 CFR CATEGORY	LIMS ID	# of CONTAINERS				LAB ID (Lab Use Only)
DATE	TIME (Military)	BY FULL NAME (PRINT)				Vials	Gallons	Quarts	Pints	
12/16/24	1005	Nick Kollias	BMOUT JE		9729756	3	1			
12/16/24		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)
Gallon	24-0966
Vials	24-081V

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	Nick Kollias	12/16/24	10:25	Cooler D		
Indicated above	Cooler D					
Indicated above						
Indicated above						
Indicated above						

\\hawk\M&R\120_EM&R_Division\126_Aquatic_Ecology\126_Biologists\WET Testing\2024\Egan\ALD COCs

\\hawk\M&R\120_EM&R_Division\126_Aquatic_Ecology\126_Biologists\WET Testing\2024\Egan\ALD COCs

**TABLE 8: WATER QUALITY RESULTS OF A JOHN E. EGAN WATER RECLAMATION PLANT FINAL EFFLUENT COMPOSITE
SAMPLE COLLECTED DECEMBER 15 - DECEMBER 16, 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	0.02264
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	0.00856
BMOUTJE	Fe	mg/L	0.08042
BMOUTJE	Mn	mg/L	0.0294
BMOUTJE	Mo	mg/L	0.00348
BMOUTJE	Ni	mg/L	0.00358
BMOUTJE	Pb	mg/L	<0.00200
BMOUTJE	Sb	mg/L	<0.00200
BMOUTJE	Se	mg/L	<0.00400
BMOUTJE	Zn	mg/L	0.02544
BMOUTJE	NH3_N	mg/L	0.396
BMOUTJE	Al	mg/L	<1.00
BMOUTJE	Ca	mg/L	53.98
BMOUTJE	Hardness	mg/L	220
BMOUTJE	Mg	mg/L	20.7
BMOUTJE	CN	mg/L	<0.0050
BMOUTJE	ALKALINITY	mg/L	104
BMOUTJE	Cl	mg/L	120.37
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 DECEMBER 15 - DECEMBER 16, 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	<2.000
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	<2.000
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

TABLE 8: WATER QUALITY RESULTS OF A JOHN E. EGAN WATER RECLAMATION PLANT FINAL EFFLUENT COMPOSITE
SAMPLE COLLECTED DECEMBER 15 - DECEMBER 16, 2024, USED FOR WHOLE EFFLUENT TOXICITY TESTING

Sampling point	Analysis	Units	Result
BMOUTJE	Endrin	ug/L	<0.050
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