

Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***MONITORING AND RESEARCH
DEPARTMENT***

REPORT NO. 25-06

***RESULTS OF ACUTE TOXICITY TESTING WITH Ceriodaphnia dubia
AND Pimephales promelas ON AN APRIL 2025 EFFLUENT SAMPLE
FROM THE HANOVER PARK WATER RECLAMATION PLANT OF THE
METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER
CHICAGO***

May 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 AN APRIL 2025 EFFLUENT SAMPLE FROM THE HANOVER PARK 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. Podczerwinski, P.E.

Director of Monitoring and Research

May 12, 2025

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Illinois Environmental Protection Agency
Compliance Assurance Section CAS #19
2520 W. Iles Ave.
P.O. Box 19276
Springfield, IL 62794-9276

Subject: Biomonitoring Report for 2025 – Acute Toxicity Test Results for the
Hanover Park Water Reclamation Plant, National Pollutant Discharge
Elimination System Permit Number IL0036137

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 IL0036137, Special Condition 15. 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. Podczerwinski/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: April 10-14, 2025
Sample collection dates: April 8-9, 2025
Report date: April 16, 2025

Conducted For:
HANOVER PARK WRP
1200 Sycamore Avenue
Hanover Park, IL 60133

IL0036137

Conducted and Prepared By:
ENVIROSCIENCE, INCORPORATED
5070 Stow Rd.
Stow, OH 44224
330-688-0111



_____, Aquatic Biologist

April 16, 2025

Mr. Nicholas Kollias
Hanover Park WRP
1200 Sycamore Avenue
Hanover Park, IL 60133

Dear Mr. Kollias:

Enclosed is a copy of EnviroScience's report for the following whole effluent toxicity (WET) tests that were initiated on April 10, 2025 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 Hanover Park WRP, 04/2025
sample collection period 04/08-09/25

Effluent:

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

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: Hanover Park WRP
2. Address: 1200 Sycamore Ave., Hanover Park, IL, 60133
3. NPDES Permit No.: IL0036137
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: West Branch DuPage River
10. Outfall(s) Tested: 001
11. Test Species/Type: #1 Ceriodaphnia dubia (water flea) 48-hour definitive, static, non-renewal EPA 2002.0
#2 Pimephales promelas (fathead minnow) 96-hour definitive, static, non-renewal EPA 2000.0
12. Dechlorination?: no Original Chlorine Conc.: <0.02 mg/l
13. Report Contents:
 - General information.....Table 1
 - Sampling informationTable 2
 - Test dates and times.....Table 3
 - Initial chemistryTable 4
 - Test conditionsTable 5
 - Test results Plant EffluentTable 6
 - Additional InformationTable 7
 - Attachments
 - Chain-of-Custody, bench sheets/data analysis
 - SRT control charts


 Signature of preparer

04/16/25
 Date

Alexandria M. Tite
 Name (typed or printed)

Aquatic Biologist
 Title

Table 2. Sampling summary.

Outfall	Sample Type	Volume Collected	Sample Collection		Comments
			Begin MM/DD/YY- Time	End or Grab MM/DD/YY- Time	
001	composite	1 gallon	04/08/25-0700	04/09/25-0700	

Table 3. Testing periods.

<i>Ceriodaphnia dubia</i> (water flea)		<i>Pimephales promelas</i> (fathead minnow)	
Start Date: MM/DD/YY	04/10/25	Start Date: MM/DD/YY	04/10/25
Start Time:	1355 hrs	Start Time:	1420 hrs
End Date: MM/DD/YY	04/12/25	End Date: MM/DD/YY	04/14/25
End Time:	1255 hrs	End Time:	1340 hrs

Notes: Sample receipt: 04/10/25-1000; 1.5 °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	04/08-09/25	8.6	7.1	1195	174	368	<0.02	0.33

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., HACH TitraLab AT1000

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:	04/10/25-1355 to 04/12/25-1255	04/10/25-1420 to 04/14/25-1340
2. Test type and duration:	static, non-renewal, 48 hours	static, non-renewal, 96-hours
3. Age and source of organisms:	<24 hours, EnviroScience 04/09/25-1600	9 days, ES 03/31/25-1545
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
10. No. of vessels per solution:	4	2
11. Total no. of organisms per test level:	20	20
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 <u>alternate</u> source of primary control water:	NA	NA

Table 6. Percent cumulative mortality, LC₅₀, EC₅₀, and 95% confidence intervals for acute toxicity tests using *Ceriodaphnia dubia* and *Pimephales promelas* using effluent collected from **Outfall 001**.

Concentration	<i>C. dubia</i> (water flea) <u>04/10/25 to 04/12/25</u>		<i>P. promelas</i> (fathead minnow) <u>04/10/25 to 04/14/25</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	0	0	0	0
DMW, lab water	0	0	0	10	10	10
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.						
TUa (100+LC ₅₀)		<1.0				<1.0
Methods:	Cetis 2.1.6.					

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; $TU_a = 100 \div LC_{50}$ (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.
5070 Stow Road
Stow, OH 44224
Phone (330) 688-0111
Fax (330) 688-3858
1-800-940-4025

Client: Hanover Park WRP
Address: 6001 West Pershing Road 1200 Symantec Avenue
Cicero, IL 60804 Hanover Park, IL 60133
Contact: Nicholas Kollias
Phone: 708-588-4074
Permit #: IL

SAMPLE SUBMISSION AND CHAIN OF CUSTODY FORM

Test(s) to be performed:

- () Chronic Definitive
() Acute Definitive
() 48 hr. Screening
() 24 hr. Stormwater
() Pass/Fail
- Test Species
() 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 Cubitainers	Chemistry				
						Comp	Grab		TRC	Cond	D.O.	pH	Temp. °C
4/8/25	0700	4/9/25	0700	007	HPWRP Final Effluent	✓		1	0	1159	11.03	7.41	6.8

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			
Effluent	Collectors Name:	Collected By:	
✓	Jorge Abreu	Collectors Signatures:	
Upstream			
Near Field			
Far Field			
Plume Determined By What Method?			

Comments:

Received From:			Received by:			Shipping Information			EnviroScience Use Only		
MWR DGC			Paul Rym			Date Shipped			Client		
						Time Shipped			Sample ID's		
						Method Shipped			Cond. Of Container		
						ES Vehicle			Temp. °C		

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

Client Hanover Park

ES Sample ID HAPA 041025 EFF

Cooler Received by: PL

Date Cooler Received and Opened 041025

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 1.5 °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: HAPA

No.: 140036137

Start Date: 04/05 Time: 1355

End Date: 04/05 Time: 1255

Organism: C. dubia

Source: B033025 A

Hatch/Age: 04/07/85 1100/22hrs

Diluent: MPE

Sample #: HAPA 04/02/85 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
MHE	A	5	0 / 0	0 / 0	24.0	24.4	24.0	8.6		8.6	7.2		7.5	385		319
	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	24.4	24.0	8.6		8.6	7.2		7.4	322		413
	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	24.6	24.0	8.6		8.6	7.4		7.4	345		424
	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	24.7	24.0	8.6		8.6	7.3		7.4	403		416
	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	24.5	24.0	8.6		8.6	7.2		7.4	513		565
	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	24.4	24.0	8.6		8.6	7.1		7.8	733		778
	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	24.2	24.0	8.6		8.6	7.0		7.8	1185		1247
	B	5	0 / 0	0 / 0												
	C	5	0 / 0	0 / 0												
	D	5	0 / 0	0 / 0												
Time	1355		1310	1255	1335	1310	1255	1230		1240	1300		1240	1230		1305
Tech	KB		TM	KB	KB	TM	KB	TM		DA	TM		DA	TM		DA
					1	1	1	OX 4100L			Orion Star A211 A			Orion Star A212		
					ID or ✓ instrument used			TM		DA			DA			DA
					Other:			Orion Star A211 B			Other:					
											TM					

M

CETIS Analytical Report

Report Date: 15 Apr-25 12:01 (p 1 of 2)
Test Code/ID: 7A25C87E / 20-4929-6510

Ceriodaphnia 48-h Acute Survival Test

EnviroScience

Analysis ID: 16-4851-7539	Endpoint: 48h Survival Rate	CETIS Version: CETIS v2.1.6
Analyzed: 15 Apr-25 12:01	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 15 Apr-25 0:00	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 007-869-049-5
Batch ID: 06-7491-0421	Test Type: Survival (48h)	Analyst:
Start Date: 10 Apr-25 13:55	Protocol: EPA/821/R-02-012 (2002)	Diluent: Upstream of Discharge
Ending Date: 12 Apr-25 12:55	Species: Ceriodaphnia dubia	Brine:
Test Length: 47h	Taxon: Branchiopoda	Source: In-House Culture Age:
Sample ID: 15-3474-4522	Code: 5B7A57CA	Project:
Sample Date: 09 Apr-25 07:00	Material: POTW Effluent	Source: Discharge Monitoring Report
Receipt Date: 10 Apr-25 10:00	CAS (PC):	Station: 001
Sample Age: 31h	Client: Hanover Park, IL	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	344205	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

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	D	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	D	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	D	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

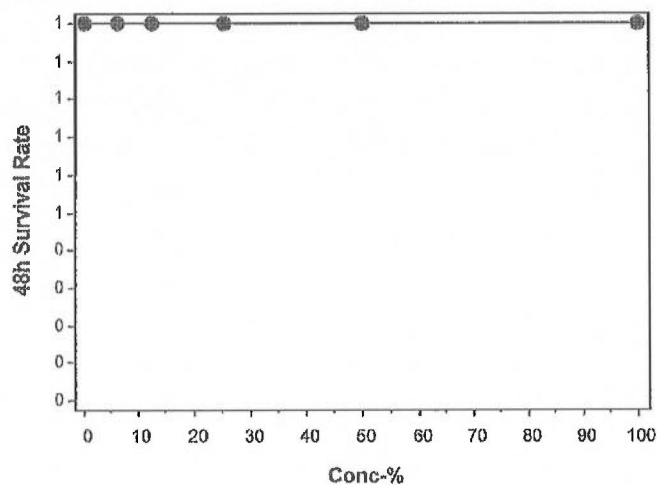
Report Date: 15 Apr-25 12:01 (p 2 of 2)
Test Code/ID: 7A25C87E / 20-4929-6510

Ceriodaphnia 48-h Acute Survival Test

EnviroScience

Analysis ID: 16-4851-7539	Endpoint: 48h Survival Rate	CETIS Version: CETIS v2.1.6
Analyzed: 15 Apr-25 12:01	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 15 Apr-25 0:00	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 007-869-049-5

Graphics





ACUTE, 96 HOUR, NON- RENEWAL BIOASSAY:

Project: HAPANo.: 120036137Start Date: 041025 Time: 1420End Date: 041475 Time: 1340Organism: Pimephales promelas (FHM)Source: ES culturesHatch/Age: 033125 1545 109 daysDiluent: MHR CB 4-10Sample #: HAPA 041025 EFF

Biological Parameters: # Mortalities / # Affected

test levels→				MHR	DMW	6.25%	12.5%	25%	50%	100%	
0 hours set-up	Tech	CE		n	A	10	10	10	10	10	10
	Time	1420		n	B	10	10	10	10	10	10
24 hours	Tech	UB		A	0/0	0/0	0/0	0/0	0/0	0/0	0/0
	Time	1240		B	0/0	0/0	0/0	0/0	0/0	0/0	0/0
48 hours	Tech	MS		A	0/0	0/0	0/0	0/0	0/0	0/0	0/0
	Time	1230		B	0/0	2/2	0/0	0/0	0/0	0/0	0/0
72 hours	Tech	SM		A	0/0	0/0	0/0	0/0	0/0	0/0	0/0
	Time	1230		B	0/0	2/2	0/0	0/0	0/0	0/0	0/0
96 hours	Tech	PL		A	0/0	0/0	0/0	0/0	0/0	0/0	0/0
	Time	1340		B	0/0	2/2	0/0	0/0	0/0	0/0	0/0

Chemical and Physical Data

	Tech	Time	Instr.#	MHR	DMW	6.25%	12.5%	25%	50%	100%
Temp. °C	0 hr	CE	1420	10	24.0	24.0	24.0	24.0	24.0	24.0
	24 hr	UB	1240	11	24.0	24.1	24.1	24.1	24.2	24.5
	48 hr	MJ	1230	11	24.0	24.0	24.0	24.0	24.0	24.0
	72 hr	PL/SM	1230	11	24.2	24.6	24.4	24.6	24.5	24.7
	96 hr	PL	1340	3	24.1	24.2	24.1	24.1	24.2	24.4
cond. µmhos/cm	0 hr	TM	1230	A212	285	322	345	403	513	733
	24 hr	CE	1020	A212	288	328	353	406	522	751
	48 hr	DA	1005	A212	310	331	358	413	524	749
	72 hr	PL	1120	A212	296	334	354	415	535	755
	96 hr	HD	1040	A212	314	338	360	420	530	763
DO mg/L	0 hr	TM	1230	OX 4100L	8.6	8.6	8.6	8.6	8.6	8.6
	24 hr	CE	1020	OX 4100L	7.5	7.5	7.6	7.6	7.5	7.6
	48 hr	DA	1005	OX 4100L	8.6	8.6	8.6	8.6	8.6	8.6
	72 hr	PL	1120	OX 4100L	8.6	8.6	8.6	8.5	8.5	8.5
	96 hr	HD	1040	OX 4100L	8.6	8.6	8.5	8.4	8.5	8.0
pH s.u.	0 hr	TM	1230	A211B	7.2	7.2	7.4	7.3	7.2	7.1
	24 hr	CE	1045	A211A	6.9	7.0	7.0	7.0	7.1	7.1
	48 hr	DA	1015	A211B	7.3	7.3	7.3	7.2	7.2	7.2
	72 hr	PL	1120	A211H	7.1	7.2	7.2	7.2	7.2	7.4
	96 hr	HD	1040	A211A	7.1	7.2	7.1	7.1	7.2	7.4

1040
HD
4-14

MS

CETIS Analytical Report

Report Date: 15 Apr-25 12:03 (p 1 of 2)
Test Code/ID: 37ECDE6A / 09-3827-0314

Fathead Minnow 96-h Acute Survival Test

EnviroScience

Analysis ID: 11-5485-3523 Endpoint: 96h Survival Rate
Analyzed: 15 Apr-25 12:03 Analysis: Linear Interpolation (ICPIN)
Edit Date: 15 Apr-25 0:00 MD5 Hash: 509FC2E8BA2BA32D9479C7B479A5A46A
CETIS Version: CETIS v2.1.6
Status Level: 1
Editor ID: 007-869-049-5

Batch ID: 16-4379-5626 Test Type: Survival (96h)
Start Date: 10 Apr-25 14:20 Protocol: EPA/821/R-02-012 (2002)
Ending Date: 14 Apr-25 13:40 Species: Pimephales promelas
Test Length: 95h Taxon: Actinopterygii
Analyst: Diluent: Upstream of Discharge
Brine: Source: In-House Culture Age:

Sample ID: 19-7572-6752 Code: 75C332A0
Sample Date: 09 Apr-25 07:00 Material: POTW Effluent
Receipt Date: 10 Apr-25 10:00 CAS (PC):
Sample Age: 31h Client: Hanover Park, IL
Project: Source: Discharge Monitoring Report
Station: 001

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1183807	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	D	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	D	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	D	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

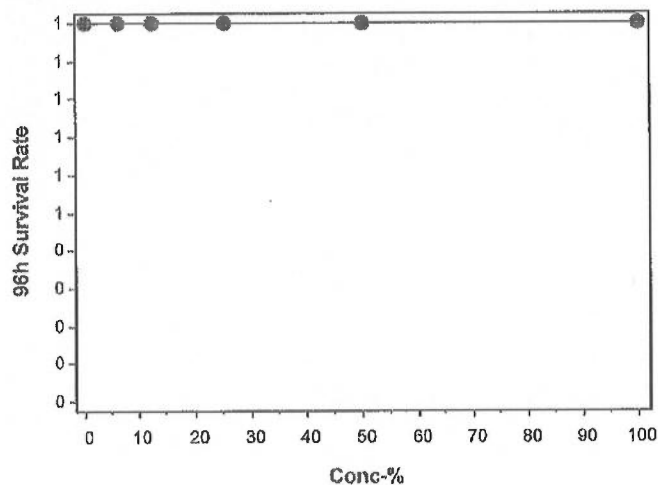
Report Date: 15 Apr-25 12:03 (p 2 of 2)
Test Code/ID: 37ECDE6A / 09-3827-0314

Fathead Minnow 96-h Acute Survival Test

EnviroScience

Analysis ID: 11-5485-3523	Endpoint: 96h Survival Rate	CETIS Version: CETIS v2.1.6
Analyzed: 15 Apr-25 12:03	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 15 Apr-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: HAPA

Permit No.: 1L0036137

Date: 04/02/25

Form 5000 rev. 01/09/25

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# 040825	8.6	7.2	285	<0.02	NA	(12.6) 52	(2.4) 96
HAPA 04/02/25 EFF	8.6	7.1	1195	20.02		(18.7) 174	(9.2) 368
INITIALS →	TM	TM	TM	TM		TM	TM

Dilution Record: Ammonia: 0.33mg/L

SAMPLE ID	Composited	60µm Filtered	% DILUTION	INITIATION		RENEWAL		No
				Effluent (mL)	Final (mL)	Effluent (mL)	Final (mL)	
HAPA 04/02/25	☐ Yes ☒ No	☐ Yes ☒ No						
	☐ Yes ☐ No	☐ Yes ☐ No	6.25%	62.5	1000			
	☐ Yes ☐ No	☐ Yes ☐ No	12.5%	12.5				
Comments:			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-CI D, TitraLab AT 1000 USEPA Methods: 2000.0; 2002.0			Dilution Water:	☐ Upstream ☒ MHR		☐ Upstream ☐ MHR		
			MHR Batch:	040825				

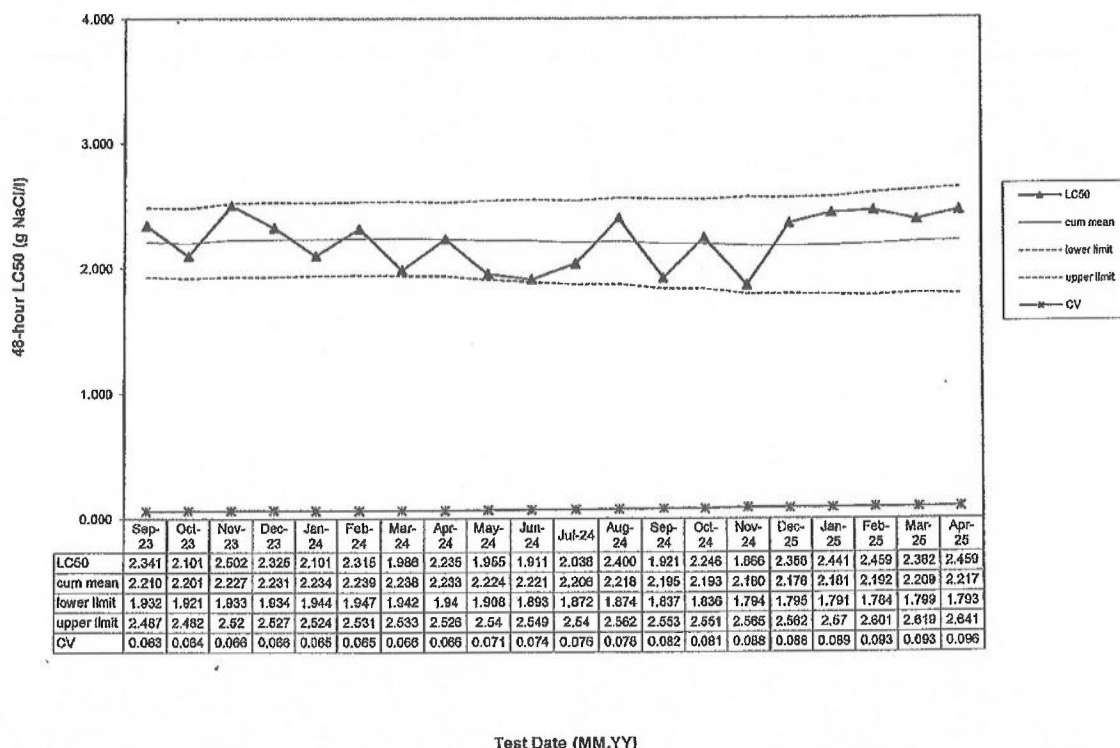
TRC_i = total residual chlorine, initial value

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.

JMS

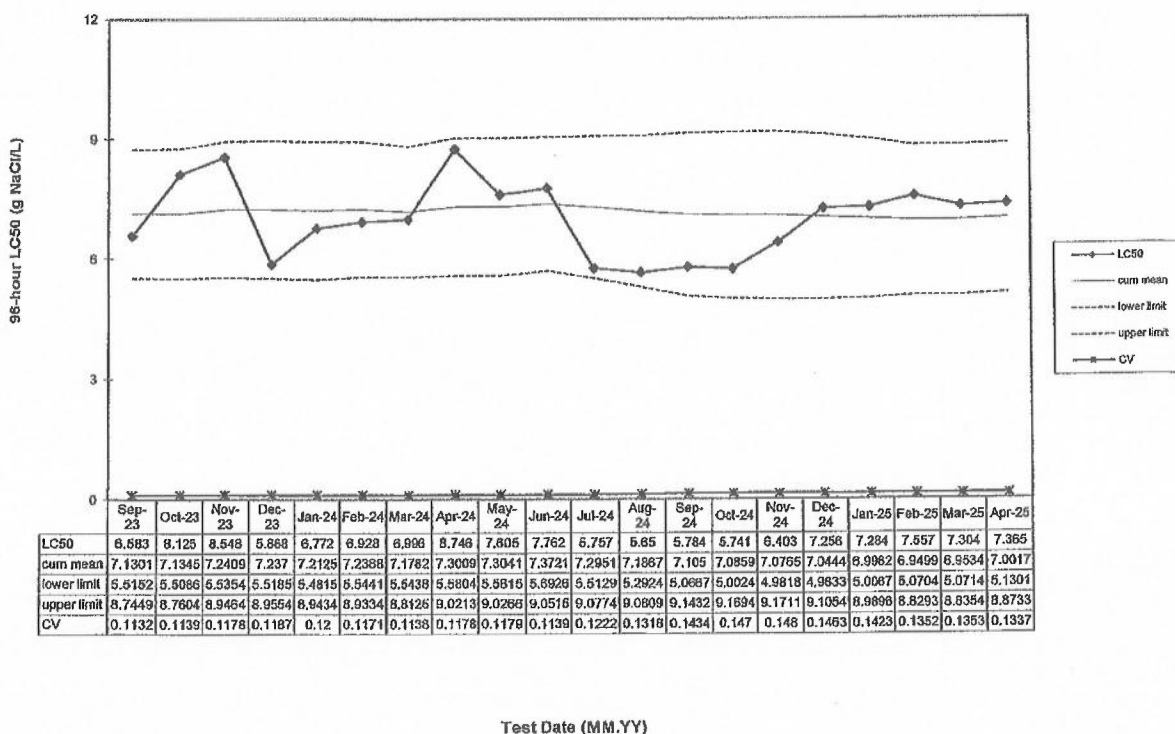
EnviroScience QC Chart - *Caridophnia dubia*
Acute Toxicity endpoint - 25 C



Tests conducted at Stow, OH facility

EnviroScience QC/SRT Chart rev. 04/11/25

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



Tests conducted at Stow, OH facility

EnviroScience QC/SRT Chart rev. 04/11/25

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					
4/3/8/2025	0700	AV	Grab	007 OUTFALL	11.8	☒ YES / ☐ NO	Anthony Vanzo
4/3/8/2025	1300	NSR	Grab	007 OUTFALL	11.9	☒ YES / ☐ NO	Norberto Sanchez
4/3/8/2025	1900	PK	Grab	007 OUTFALL	14.5	☒ YES / ☐ NO	Paul Kuzminski
4/3/9/2025	0100	MB	Grab	007 OUTFALL	13.8	☒ YES / ☐ NO	Paul Kuzminski Manuel Borowicz
4/3/9/2025	0700	NSR	Grab	007 OUTFALL	12.5	YES / NO	Norberto Sanchez

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 LB-100, Lue-Hing R&D Complex.

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

SAMPLES RELINQUISHED BY: Name Norberto Sanchez Signature: [Signature]

Date/Time: 4/4/25 7:28 AM

SAMPLES TRANSPORTED TO WET LAB. BY Name Jorge Abreu Signature: [Signature]

Date/Time: 4/9/25 09:13 AM

FOR WET LABORATORY USE ONLY:

Sample Received by: Name Jorge Abreu Signature [Signature] Date/Time 4/9/25 0830

1. Samples received with prescribed holding time (within 4 h of collection)? (Not Applicable, if chronic test)
2. Samples logged in by Jorge Abreu Date 4/9/25 Time 0830
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
9792545-A	BMOUT HP A	3.7	7.43	0 JA	Indicate Total ml of 5% Sodium-thio-sulfate added. Initial <u>JA</u> Final Residual Cl ₂ reading = <u>N/A</u> mg/l Initial <u>JA</u>	<u>[Signature]</u>
9792545-B	BMOUT HP B	3.2	7.46	Total Ammonia (mg-L) ALD Results		
9792545-C	BMOUT HP C	1.9	7.43			
9792545-D	BMOUT HP D	2.3	7.45			
9792545-E	BMOUT HP E	5.4	7.49	< 0.300		

Note: Set aside one cubitainer for metals and chemical analyses

Sample Release for Disposal

Sample released for disposal following analysis on (Date) 4/9/25 by [Signature]

Samples Discarded by [Signature] Date/Time 4/9/25 11:00

\\hawk\M&R\120_EM&R_Division\126_Aquatic_Ecology\126_Biologists\WET Testing\2025\Hanover Park\ALD COCs

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	
4/9/25	1014	Nick Kollias	BMOUT HP		9792545-5	3	1			25-243 0.4°
4/9/25	1014	Nick Kollias	Trip Blanks		9798458-1	2				25-242 5.8°

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	25-001G
Vials	24-090V

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	Paula Brinkman Low	4/9/25	10:27	Cooler D	4/9/25	10:27
Indicated above	Cooler D	4/10/25	0842	PARAKRAM SINH	4/10/25	0842
Indicated above	PARAKRAM SINH	4/10/25	1000	WILFREDO L. GENCUNA	4/10/25	1000
Indicated above						
Indicated above						

\\01-11-2008 14:00:00 File: 136 Acoustic_Ecology\136_Biologists\WET Testing\2005\Hannover Park\AD101005

Additional Comments:

\\hawk\M&R\120 EM&R Division\126 Aquatic Ecology\126 Biologists\WET Testing\2025\Hanover Park\ALD COCs

**TABLE 8: WATER QUALITY RESULTS OF A HANOVER PARK WATER RECLAMATION PLANT FINAL EFFLUENT COMPOSITE
SAMPLE COLLECTED APRIL 8 - APRIL 9, 2025, USED FOR WHOLE EFFLUENT TOXICITY TESTING**

Sampling point	Analysis	Units	Result
BMOUTH	Ag	mg/L	<0.00400
BMOUTH	As	mg/L	<0.00200
BMOUTH	Ba	mg/L	0.0365
BMOUTH	Be	mg/L	<0.00200
BMOUTH	Cd	mg/L	<0.00200
BMOUTH	Cr	mg/L	<0.00400
BMOUTH	Cu	mg/L	0.00458
BMOUTH	Fe	mg/L	0.02556
BMOUTH	Mn	mg/L	0.01518
BMOUTH	Mo	mg/L	0.00366
BMOUTH	Ni	mg/L	<0.00200
BMOUTH	Pb	mg/L	<0.00200
BMOUTH	Sb	mg/L	<0.00200
BMOUTH	Se	mg/L	<0.00400
BMOUTH	Zn	mg/L	0.02628
BMOUTH	NH3_N	mg/L	<0.300
BMOUTH	Al	mg/L	<1.00
BMOUTH	Ca	mg/L	75.84
BMOUTH	Hardness	mg/L	327
BMOUTH	Mg	mg/L	33.33
BMOUTH	CN	mg/L	<0.0050
BMOUTH	ALKALINITY	mg/L	184.4
BMOUTH	Cl	mg/L	171.819
BMOUTH	Final Hg	ug/L	<0.500
BMOUTH	1,1,1-Trichloroethane	ug/L	<5.000
BMOUTH	1,1,2,2-Tetrachloroethane	ug/L	<5.000
BMOUTH	1,1,2-Trichloroethane	ug/L	<5.000
BMOUTH	1,1-Dichloroethane	ug/L	<5.000
BMOUTH	1,1-Dichloroethylene	ug/L	<5.000
BMOUTH	1,2,4-Trichlorobenzene	ug/L	<5.000
BMOUTH	1,2-Dichlorobenzene	ug/L	<5.000
BMOUTH	1,2-Dichloroethane	ug/L	<5.000
BMOUTH	1,2-Dichloropropane	ug/L	<5.000
BMOUTH	1,2-Diphenylhydrazine	ug/L	<5.000
BMOUTH	1,3-Dichlorobenzene	ug/L	<5.000
BMOUTH	1,3-Dichloropropylene	ug/L	<5.000
BMOUTH	1,4-Dichlorobenzene	ug/L	<5.000
BMOUTH	2,4,6-Trichlorophenol	ug/L	<10.000
BMOUTH	2,4-Dichlorophenol	ug/L	<5.000
BMOUTH	2,4-Dimethylphenol	ug/L	<10.000
BMOUTH	2,4-Dinitrophenol	ug/L	<40.000
BMOUTH	2,4-Dinitrotoluene	ug/L	<10.000
BMOUTH	2,6-Dinitrotoluene	ug/L	<5.000
BMOUTH	2-Chloroethyl vinyl ether	ug/L	<5.000
BMOUTH	2-Chloronaphthalene	ug/L	<5.000

**TABLE 8: WATER QUALITY RESULTS OF A HANOVER PARK WATER RECLAMATION PLANT FINAL EFFLUENT COMPOSITE
SAMPLE COLLECTED APRIL 8 - APRIL 9, 2025, USED FOR WHOLE EFFLUENT TOXICITY TESTING**

Sampling point	Analysis	Units	Result
BMOUTH	2-Chlorophenol	ug/L	<10.000
BMOUTH	2-Nitrophenol	ug/L	<10.000
BMOUTH	3,3'-Dichlorobenzidine	ug/L	<15.000
BMOUTH	3,4-Benzofluoranthene	ug/L	<10.000
BMOUTH	4,4'-DDD	ug/L	<0.050
BMOUTH	4,4'-DDE	ug/L	<0.130
BMOUTH	4,4'-DDT	ug/L	<0.050
BMOUTH	4,6-Dinitro-o-cresol	ug/L	<25.000
BMOUTH	4-Bromophenyl phenyl ether	ug/L	<5.000
BMOUTH	4-Chlorophenyl phenyl ether	ug/L	<5.000
BMOUTH	4-Nitrophenol	ug/L	<20.000
BMOUTH	Acenaphthene	ug/L	<5.000
BMOUTH	Acenaphthylene	ug/L	<5.000
BMOUTH	Acrolein	ug/L	<50.000
BMOUTH	Acrylonitrile	ug/L	<10.000
BMOUTH	Aldrin	ug/L	<0.050
BMOUTH	Anthracene	ug/L	<5.000
BMOUTH	Benzene	ug/L	<2.000
BMOUTH	Benzo(a)anthracene	ug/L	<5.000
BMOUTH	Benzo(a)pyrene	ug/L	<10.000
BMOUTH	Benzo(g,h,i)perylene	ug/L	<10.000
BMOUTH	Benzo(k)fluoranthene	ug/L	<5.000
BMOUTH	Bis(2-chloro-iso-propyl)ether	ug/L	<10.000
BMOUTH	Bis(2-chloroethoxy)methane	ug/L	<10.000
BMOUTH	Bis(2-chloroethyl)ether	ug/L	<10.000
BMOUTH	Bis(2-ethylhexyl)phthalate	ug/L	<18.000
BMOUTH	Bromoform	ug/L	<5.000
BMOUTH	Butyl benzyl phthalate	ug/L	<10.000
BMOUTH	Carbon tetrachloride	ug/L	<5.000
BMOUTH	Chlorobenzene	ug/L	<5.000
BMOUTH	Chlorodibromomethane	ug/L	<2.000
BMOUTH	Chloroethane	ug/L	<5.000
BMOUTH	Chloroform	ug/L	<2.000
BMOUTH	Chrysene	ug/L	<5.000
BMOUTH	Di-n-butyl phthalate	ug/L	<10.000
BMOUTH	Di-n-octyl phthalate	ug/L	<15.000
BMOUTH	Dibenzo(a,h)anthracene	ug/L	<15.000
BMOUTH	Dichlorobromomethane	ug/L	<2.000
BMOUTH	Dieldrin	ug/L	<0.050
BMOUTH	Diethyl phthalate	ug/L	<10.000
BMOUTH	Dimethyl phthalate	ug/L	<5.000
BMOUTH	Endosulfan I	ug/L	<0.050
BMOUTH	Endosulfan II	ug/L	<0.050
BMOUTH	Endosulfan sulfate	ug/L	<0.050
BMOUTH	Endrin	ug/L	<0.050

**TABLE 8: WATER QUALITY RESULTS OF A HANOVER PARK WATER RECLAMATION PLANT FINAL EFFLUENT COMPOSITE
SAMPLE COLLECTED APRIL 8 - APRIL 9, 2025, USED FOR WHOLE EFFLUENT TOXICITY TESTING**

Sampling point	Analysis	Units	Result
BMOUTHHP	Endrin aldehyde	ug/L	<0.050
BMOUTHHP	Ethylbenzene	ug/L	<2.000
BMOUTHHP	Fluoranthene	ug/L	<5.000
BMOUTHHP	Fluorene	ug/L	<5.000
BMOUTHHP	Heptachlor	ug/L	<0.070
BMOUTHHP	Heptachlor epoxide	ug/L	<0.050
BMOUTHHP	Hexachlorobenzene	ug/L	<5.000
BMOUTHHP	Hexachlorobutadiene	ug/L	<5.000
BMOUTHHP	Hexachlorocyclopentadiene	ug/L	<25.000
BMOUTHHP	Hexachloroethane	ug/L	<10.000
BMOUTHHP	Indeno(1,2,3-cd)pyrene	ug/L	<15.000
BMOUTHHP	Isophorone	ug/L	<10.000
BMOUTHHP	Methyl bromide	ug/L	<5.000
BMOUTHHP	Methyl chloride	ug/L	<5.000
BMOUTHHP	Methylene chloride	ug/L	<5.000
BMOUTHHP	N-Nitrosodi-n-propylamine	ug/L	<10.000
BMOUTHHP	N-Nitrosodimethylamine	ug/L	<5.000
BMOUTHHP	N-Nitrosodiphenylamine	ug/L	<5.000
BMOUTHHP	Naphthalene	ug/L	<5.000
BMOUTHHP	Nitrobenzene	ug/L	<10.000
BMOUTHHP	PCB-1016	ug/L	<0.800
BMOUTHHP	PCB-1221	ug/L	<0.800
BMOUTHHP	PCB-1232	ug/L	<0.800
BMOUTHHP	PCB-1242	ug/L	<0.800
BMOUTHHP	PCB-1248	ug/L	<0.800
BMOUTHHP	PCB-1254	ug/L	<0.800
BMOUTHHP	PCB-1260	ug/L	<1.160
BMOUTHHP	Pentachlorophenol	ug/L	<30.000
BMOUTHHP	Phenanthrene	ug/L	<5.000
BMOUTHHP	Phenol	ug/L	<5.000
BMOUTHHP	Pyrene	ug/L	<5.000
BMOUTHHP	Technical chlordane	ug/L	<0.500
BMOUTHHP	Tetrachloroethylene	ug/L	<5.000
BMOUTHHP	Toluene	ug/L	<2.000
BMOUTHHP	Toxaphene	ug/L	<1.000
BMOUTHHP	Trichloroethylene	ug/L	<5.000
BMOUTHHP	Trichlorofluoromethane	ug/L	<5.000
BMOUTHHP	Vinyl chloride	ug/L	<5.000
BMOUTHHP	alpha-BHC	ug/L	<0.050
BMOUTHHP	beta-BHC	ug/L	<0.070
BMOUTHHP	delta-BHC	ug/L	<0.050
BMOUTHHP	gamma-BHC (lindane)	ug/L	<0.050
BMOUTHHP	p-Chloro-m-cresol	ug/L	<5.000
BMOUTHHP	trans-1,2-Dichloroethylene	ug/L	<5.000