

RESULTS OF ACUTE TOXICITY TESTING WITH Ceriodaphnia dubia AND Pimephales promelas ON A JANUARY 2021 EFFLUENT SAMPLE FROM METROPOLITAN WATER RECLAMATION DISTRICT (MWRD)

By

EA Engineering, Science, and Technology, Inc., PBC 231 Schilling Circle Hunt Valley, MD 21031

Monitoring and Research Department Edward W. Podczerwinski, Director

February 2021



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Prepared for:

Metropolitan Water Reclamation District of Greater Chicago 6001 W. Pershing Road Cicero, Illinois 60804

Prepared by:

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Results relate only to the items tested or to the samples as received by the laboratory.

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This report contains 8 pages plus 2 attachments

Michael K. Chanov II Laboratory Director

EA Project Number 70019.TOX



19 February 2021

Date

EA Report Number 8478

INTRODUCTION

At the request of Metropolitan Water Reclamation District (MWRD), EA Engineering, Science, and Technology performed acute toxicity testing on composite samples of Outfall 001 final effluent from MWRD's O'Brien Water Reclamation Plant in Skokie, Illinois. The effluent composite sample was collected on 19-20 January 2021. The test organisms, *Ceriodaphnia dubia* (water flea) and *Pimephales promelas* (fathead minnow), were exposed to 100, 50, 25, 12.5 and 6.25 percent effluent, and a laboratory water control. The objective of this study was to assess the acute lethality of the effluent sample to the test species, expressed as a 48-hour (*C. dubia*), or 96-hour (*P. promelas*) median lethal concentration (LC50). This toxicity testing was conducted under the Section 10 biomonitoring requirements of Metropolitan Water Reclamation District's discharge permit number IL0028088.

This toxicity testing was conducted following EA's standard operating procedures (EA 2018) which are in accordance with US EPA guidance (2002). The results of the acute toxicity tests were analyzed using the ToxCalc statistical software package (Version 5.0, Tidepool Scientific Software) and followed US EPA guidance (2002). Summaries of sample and test information are presented on pages 5-6 for *C. dubia* and on pages 7-8 for *P. promelas*. Copies of raw data sheets and statistics are included in Attachment I. The Report Quality Assurance Record is included as Attachment II.

SUMMARY OF RESULTS

The results of the acute toxicity tests indicated that the 19-20 January 2021 Outfall 001 effluent sample was not acutely toxic to *Ceriodaphnia dubia* or *Pimephales promelas*. The results of these toxicity tests comply with current NELAC standards.

The results of the *C. dubia* acute toxicity test are presented on page 6. After 48 hours, there was 100 percent survival in all of the effluent concentrations and 95 percent survival in the dilution water control. The 48-hour *C. dubia* LC50 for this test was >100 percent effluent (<1.0 TU_a). In the *P. promelas* acute toxicity test (page 8), at the end of 96 hours there was a minimum of 85 percent survival in all of the effluent concentrations. The laboratory control had 100 percent survival. The resulting 96-hour LC50 for *P. promelas* was >100 percent effluent (<1.0 TU_a).

In conformance with EA's quality assurance/quality control program, monthly reference toxicant tests using sodium chloride (NaCl) and potassium chloride (KCl) were performed on the inhouse cultured test species. The results of the *C. dubia* reference toxicant test were acceptable, with a 48-hour LC50 of 1,980 mg/L NaCl, and acceptable control chart limits of 1,677-2,150 mg/L NaCl. The results of the *P. promelas* reference toxicant test were acceptable, with a 48-hour LC50 of 919 mg/L KCl, and acceptable control chart limits of 629-1,257 mg/L KCl.

REFERENCES

- EA. 2018. EA Ecotoxicology Laboratory Quality Assurance and Standard Operating Procedures Manual. EA Manual ATS-102. Internal document prepared by EA's Ecotoxicology Laboratory, EA Engineering, Science, and Technology, Inc., PBC, Hunt Valley, Maryland.
- US EPA. 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms. Fifth Edition. EPA-821-R-02-012. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.

SUMMARY OF SAMPLE/TEST INFORMATION

Test: Ceriodaphnia dubia 48-hour static acute toxicity test

Test Procedure: EA Protocol CD-AC-05 Acute assay with water flea (*Ceriodaphnia dubia*)

Client Name: Metropolitan Water Reclamation District (MWRD)

Permit Number: IL0028088

Receiving Water: North Shore Channel

Sample Description: Outfall 001 Final Effluent

EA Accession Number: AT1-026

Collection Time and Date: 0600, 19 January 2021 to 0600, 20 January 2021 Receipt Time and Date: 1025, 21 January 2021

Dilution Water Description: Moderately hard synthetic freshwater

EA Test Number: TN-21-033

Test Initiation Time and Date: 1153, 21 January 2021 Test Completion Time and Date: 1156, 23 January 2021

Number of Replicates: 4

Number of Organisms Per Replicate: 5

Test Chamber: 30 ml cup

Volume per Test Chamber: 15 ml

Feeding: None

Organism Lot Information

Lot Number: N/A Source: EA's Culture Facility (Hunt Valley, Maryland) Age: <24 hours old

Reference Toxicant Test Information

Reference Toxicant: Sodium chloride (NaCl) Reference Toxicant Information: Lab Chem Lot #F214-24 (Received 9/7/16) EA Test Number: RT-21-011 Test Date and Time: 1135, 7 January 2021 to 1123, 9 January 2021 Dilution Water: Moderately hard synthetic freshwater 48-hour LC50: 1,980 mg/L NaCl Laboratory control chart acceptability range for 48-hour LC50: 1,677-2,150 mg/L NaCl

SUMMARY OF SAMPLE/TEST INFORMATION (continued)

Test Species:	Ceriodaphnia dubia (water flea)
Sample Description:	Outfall 001 Final Effluent - MWRD
Sample Date:	19-20 January 2021
EA Test Number:	TN-21-033

Test Concentration (percent effluent) Lab Control	48-Hour Survival (percent) 95
6.25	100
12.5	100
25	100
50	100
100	100

48-Hour LC50 (percent effluent): >100 (TUa <1.0)

Water Quality Parameters on Test Solutions	Range
Temperature (°C):	24.0 - 25.7
pH:	7.6 - 8.5
Dissolved Oxygen (mg/L):	7.9 - 8.7
Conductivity (µS/cm):	341 - 1,165

Water Quality Parameters Measured on Sample Upon Receipt Temperature (°C):	Outfall 001 (AT1-026) 0.6
pH:	8.1
Total Residual Chlorine (mg/L):	< 0.01
Alkalinity (mg/L as CaCO ₃):	150
Hardness (mg/L as CaCO ₃):	200
Conductivity (µS/cm):	1,080

SUMMARY OF SAMPLE/TEST INFORMATION

Test: Pimephales promelas 96-hour static renewal acute toxicity test

Test Procedure: EA Protocol FH-AC-05

Acute assay with fathead minnows (Pimephales promelas)

Client Name: Metropolitan Water Reclamation District (MWRD)

Permit Number: IL0028088

Receiving Water: North Shore Channel

Sample Description: Outfall 001 Final Effluent

EA Accession Number: AT1-026

Collection Time and Date: 0600, 19 January 2021 to 0600, 20 January 2021 Receipt Time and Date: 1025, 21 January 2021

Dilution Water Description: Moderately hard synthetic freshwater

EA Test Number: TN-21-034

Test Initiation Time and Date: 1303, 21 January 2021 Test Completion Time and Date: 1204, 25 January 2021

Number of Replicates: 2

Number of Organisms Per Replicate: 10

Test Chamber: 1-L beaker

Volume per Test Chamber: 250 ml

Feeding: 0.2 mL Artemia nauplii at 48 hours

Organism Lot Information

Lot Number: FH1-1/18-19 Source: EA's Culture Facility (Hunt Valley, Maryland) Age: 2-3 days old (hatched within a 24-hour period)

Reference Toxicant Test Information

Reference Toxicant: Potassium chloride (KCl) Reference Toxicant Information: GFS Lot #19430079 (Received 10/20/20) EA Test Number: RT-21-013 Test Date and Time: 1519, 7 January 2021 to 1430, 9 January 2021 Dilution Water: Moderately hard synthetic freshwater 48-hour LC50: 919 mg/L KCl Laboratory control chart acceptability range for 48-hour LC50: 629-1,257 mg/L KCl

SUMMARY OF SAMPLE/TEST INFORMATION (continued)

Test Species:	Pimephales promelas (fathead minnow)
Sample Description:	Outfall 001 Final Effluent - MWRD
Sample Date:	19-20 January 2021
EA Test Number:	TN-21-034

Test Concentration (percent effluent)	48-Hour Survival (percent)	96-Hour Survival (percent)
Lab Control	100	100
6.25	100	100
12.5	100	100
25	100	95
50	100	100
100	90	85

96-Hour LC50 (percent effluent): >100 (TUa <1.0)

Water Quality Parameters on Test Solutions	Range
Temperature (°C):	24.3 - 25.8
pH:	7.6 - 8.5
Dissolved Oxygen (mg/L):	7.4 - 8.5
Conductivity (µS/cm):	332 - 1,064

ATTACHMENT I

Data Sheets (18 pages)

EA Engineering, Science, and Technology	Chain-of-Custody Record
EA Ecotoxicology Laboratory 231 Schilling Circle It Valley, Maryland 21031 éphone: 410-584-7000 Fax: 410-584-1057	Sample Shipped By: (circle) Fed. Ex. UPS Other:
Client: <u>MWRDS-C</u> Project No.: <u>4652 - 126 -1</u> NPDES Number: <u>TL 002 8088</u> Client Purchase Order Number: <u>311991</u> City/State Collected: <u>SK-K-C</u> , <u>TL</u>	Tracking #: 12-2744740390509106 2 274 474 01 9887 4586

PLEASE READ SAMPLING INSTRUCTIONS ON BACK OF FORM

Accession Number (office use only)	Grab	Composite	Collection Start End Date/Time Date/Time		Sample Description (including Site, Station Number, and Outfall Number)	Number/Volume of Container
AT1-026			1/19/21 0600	1/20/21 0600	O'Brien with Final Efflwand	
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Sampled By: At 1/5 fills Sampler's Printed Name: Nick Kolligs	Date/Time 1/20/21 0900 Title: Aquelic Bidlesi St	Received By: And By Relinquished By	Date/Time //J/J/ /0J5 Date/Time
Relinquished By:	Date/Time	Received By Laboratory	Date/Time

Was Sample Chilled During Collection? Yes No

Comments:

Sample Collection Parameters

Visual Description: Clar, Green Temperature (°C): 7.4 pH: 7.17 TRC (mg/L): Ô ۲;



SAMPLE CHECK-IN FOR TESTING

Client: MWRD

EA Accession Number: ATI-026

Parameter	Acceptable Range	Measurement *	Meter	Date	Time	Initials
Temperature (°C)	⊴4	0.6	T-22	1/21/21	1031	JA (LAO
Is ice present?		Yes	N/A			
На	6.0-9.0	8.1	679			
TRC (mg/L)	⊲0.01	20.01	AT-01			
Visual Description		yellowish Hnt	N/A		J	V

*If outside acceptable range, contact project manager.

<u>*</u>8

OTHER PARAMETERS IF REQUIRED (SEE STUDY PLAN):

Parameter	Acceptable Range	(~)	Meter	Date	Time	Initials
Ammonia (preserve aliquot)			îN/A			
Parameter	Acceptable Range	Measurement *	Meter	Date	Time	Initials
Salinity (ppt)						

E/3

TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN- 21-033

TEST ORGAN	JISM INFORMATION
Common Name: Water flea	Adults Isolated (Time, Date): 1030 (2021
Scientific Name: <u>C. dubia</u>	Neonates Pulled & Fed (Time, Date): 1040 1 21
Lot Number: N/A	Acclimation: <24hrs Age: <24 hrs
Source: EA	Culture Water (T/S): _24,2 _℃ 0 ppt

Date Var DI	Time	Initials	Activity
1 Janes	1108	LAD	Dilutions Made
	\checkmark	\checkmark	Test Vessels Filled
	1153	(AO	Organisms Transferred
\bigvee	1204	018-	Head Counts

TEST SET-UP	
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Sample Number: Dilution Number:		
Test Concentration	Volume Test Material	Final Volume
Control	0 ml	200 ml
6.25%	12.5 ml	
12.5%	25 ml	
25%	50 ml	
50%	100 ml	
100%	200 ml	
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Accession Number: AT 1-6 Dilution Water: Mod Hard Accession Number: Accession Number: L01-633 Concentration Rep 0 Concentration Rep 0 Control A 5 6.25% A 5 7 5 5 8 5 5 9 5 5 6.25% A 5 7 5 5 7 5 5 8 5 5 9 5 5 6 5 5 7 5 5 8 5 5 9 5 5 7 5 5 7 5 5 8 5 5 7 5 5 7 5 5 <t< th=""><th>Client: <u>MWRD</u> OC Test Number: <u>TN- 21-633</u> Test Material: <u>Effluent</u> Accession Number: <u>AT1- 65</u> Accession Number: <u>AT1- 65</u> Accession Number: <u>L01- 63</u> Accession Number: <u>L01- 63</u> Accession Number: <u>C01- 63</u> Accession Number: <u>C11- 63</u> A</th><th>$\sim \sim$</th><th>72 72</th><th>TAI 79</th><th>Scientific Na Scientific Na Scientific Na ARGET VALU Temp: 25±1 Photoperiod: Photoperiod: 25,4 2,4,0 24 (25,3 24,0 24 (25,3 24,0 24 (25,4 2,4,0 24 (25,3 24,0 24 (25,4 2,4,0 24 (25,4,0 24 (25,</th><th>TEST ORGANISM Common Name: Water flea Scientific Name: C.dubia TARGET VALUES Temp: 25±1 °C pH:C Photoperiod: <u>16 I, 8 d</u> Photoperiod: <u>16 I, 8 d</u> Photoperiod: <u>16 I, 8 d</u> 25,4 24,0 24 48 72 96 25,4 24,0 24 48 72 96 25,4 24,0 24 34,3 72 96 25,4 24,0 24,3 72 96 25,4 24,0 24,0 72 72 96 25,4 24,0 24,0 72 72 72 72 72 72 72 72 72 72 72 72 72</th><th>e: <u>C.d.</u></th><th>ecc of the second secon</th><th>DO: DO: Salin Salin 20: 1.1 0 Light</th><th>DO: >4.0 Salinity: 0 24 7 8.3 8 7 8.3 8 8 7 8 8 8 8 8 8 8 8 8 10 8 8 8 8 10 8 8 8 10 8 8 8 10 8 8 8 10 8 8 8 10 8 8 8 10 8 8 10 8 10 8 8 10 8 8 10 8 8 10 10 10 8 10 10 8 10 8 10 8 10 8 10 8 10 8 10 8 10 8 10 8 10 8 10 8 10 8 10 10 10 10 10 10 10 10 10 10 10 10 10</th><th>8:5 8:5 8:5 0</th><th>B DO: ≥4.0 m Salinity: 0 pi Light Intensity: <u>50 - 100</u> fc 7 8.5 72 96 7 8.5 72 96 7 8.5 85 7 8.5 72 96 7 8.5 72 96</th><th>Seginni Britishing Pitter TTYP</th><th></th><th></th><th></th><th></th><th>Time: Time: Time: nn-renewal nn-renewal nn-renewal up u</th><th></th><th></th></t<>	Client: <u>MWRD</u> OC Test Number: <u>TN- 21-633</u> Test Material: <u>Effluent</u> Accession Number: <u>AT1- 65</u> Accession Number: <u>AT1- 65</u> Accession Number: <u>L01- 63</u> Accession Number: <u>L01- 63</u> Accession Number: <u>C01- 63</u> Accession Number: <u>C11- 63</u> A	$\sim \sim $	72 72	TAI 79	Scientific Na Scientific Na Scientific Na ARGET VALU Temp: 25±1 Photoperiod: Photoperiod: 25,4 2,4,0 24 (25,3 24,0 24 (25,3 24,0 24 (25,4 2,4,0 24 (25,3 24,0 24 (25,4 2,4,0 24 (25,4,0 24 (25,	TEST ORGANISM Common Name: Water flea Scientific Name: C.dubia TARGET VALUES Temp: 25±1 °C pH:C Photoperiod: <u>16 I, 8 d</u> Photoperiod: <u>16 I, 8 d</u> Photoperiod: <u>16 I, 8 d</u> 25,4 24,0 24 48 72 96 25,4 24,0 24 48 72 96 25,4 24,0 24 34,3 72 96 25,4 24,0 24,3 72 96 25,4 24,0 24,0 72 72 96 25,4 24,0 24,0 72 72 72 72 72 72 72 72 72 72 72 72 72	e: <u>C.d.</u>	ecc of the second secon	DO: DO: Salin Salin 20: 1.1 0 Light	DO: >4.0 Salinity: 0 24 7 8.3 8 7 8.3 8 8 7 8 8 8 8 8 8 8 8 8 10 8 8 8 8 10 8 8 8 10 8 8 8 10 8 8 8 10 8 8 8 10 8 8 8 10 8 8 10 8 10 8 8 10 8 8 10 8 8 10 10 10 8 10 10 8 10 8 10 8 10 8 10 8 10 8 10 8 10 8 10 8 10 8 10 8 10 8 10 10 10 10 10 10 10 10 10 10 10 10 10	8:5 8:5 8:5 0	B DO: ≥4.0 m Salinity: 0 pi Light Intensity: <u>50 - 100</u> fc 7 8.5 72 96 7 8.5 72 96 7 8.5 85 7 8.5 72 96 7 8.5 72 96	Seginni Britishing Pitter TTYP					Time: Time: Time: nn-renewal nn-renewal nn-renewal up u		
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, EPA Test Method: EPA 821-R-02-012 (CHECK ONE) Ceriodaphnia: 2002.0 X Magna/pulex: 2021.0

ATS-T01 12/02/08

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Fathead: 2000.0 Trout: 2019.0

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ACUTE TOXICITY TEST DATA SHEET

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ATS-T01 12/02/08

Americanysis: 2007.0 Menidia:2006.0 Cyprinodon: 2004.0 OTHER:

Fathead: 2000.0 Trout: 2019.0

- EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0 X Magna/pulex: 2021.0



TOXICOLOGY LABORATORY BENCH SHEET

Project Number: <u>70019.TOX</u>

Client: _____MWRD______

QC Test Number: _______21-033______

Date/Time/Initials

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Comments/Activity



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RANDOMIZATION CHART

Project Number: _______70019.TOX

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Client: <u>MWRD</u>

QC Test Number: TN- 있나라권

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6	2	4	1	5	3
4	1	2	6	3	5
		2	0	3	5

ATS-T48c 03/01/00



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TOXICOLOGY LABORATORY BENCH SHEET -TESTING LOCATION

Project Number: _____ 70019.TOX

Client: MWRD

QC Test Number: <u>TN-21-033</u>

Day	Testing Location	Date	Time	Initials
0	17	1/21/21	1205	JA-
1	17	1/22/21	/306	JR To
2	17	1123121	1306	70
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TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Client: MWRD

QC Test Number: <u>TN- 21-033</u>

Correction Explanations

- (a) Technician Error-Mathematical
- (b) Technician Error-Manual Data Recording
- (c) Technician Error-Head Count Observation
- (d) Technician Error-Overwrite
- (e) Technician Error-Missing Data
- (f) Technician Error-Lost Organism
- (g) Technician Error-Transcription Error
- (h) Technician Error-Other:
- (i) Meter Malfunction



TOXICITY TEST SET-UP BENCH SHEET

Client: _____ MWRD _____

QC Test Number: ______ TN-_____ 71-034

TEST ORGA	VISM INFORMATION
Common Name: Fathead minnow	Adults Isolated (Time, Date):
Scientific Name: P. promelas	Neonates Pulled & Fed (Time, Date):
Lot Number: $F1+1 = 1/18-19$	Acclimation: Age: 23 2 days
Source: EA	Culture Water (T/S): 25.9 °C 0 ppt

	1	EST INITIA	TION	CONC	CENTRATION SERI	ES
<u>Date</u> 1/21/21	<u>Time</u> NIS	<u>Initials</u> LAD	Activity	Test <u>Concentration</u> Control	Volume <u>Test Material</u> Oml	Final <u>Volume</u> 500ml
1.1.1.	$\langle \rangle$		Dilutions Made	6.25% 12.5%	31.25mI 62.5ml	
	V	V	Test Vessels Filled	25% 50%	125ml 250ml	
	1303	UND	Organisms Transferred	100%	500ml	Ļ
\mathbb{V}	1510	TP	Head Counts			

<u>(1988)</u> 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -		INT	RMEDIA	TE DILUTION F	REPAR	ATION AND FE	EDING	
	DILU	FION PRE	PARATION	<u>۱</u>			FEEDING	
Day 0 1 2 3 4 5 6	Date 1/21/21 1123/21	<u>Time</u> (115 1022	Initials UAO TP	Sample / <u>Dihuent</u> ATI-036 UPI-039 ATI-026 UDI-037	Food: Day 0 1 2 3 4 5 6	Artemia Time, Initials, <u>Amount</u>	Time, Initials, <u>Amount</u>	Time, Initials, <u>Amount</u> <u>3 drops</u> <u>1615 TP</u> <u>1607 Utodrops</u> <u>3 drops</u> <u>1600 TP</u> <u>3 drops</u> <u>1000 TP</u>

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ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX	70019.T	XO					TEST	ORG/	TEST ORGANISM							ñ	ginnin	Beginning Date:		10101	10		Time:		1303
Client: MWRD							0	ommo	Common Name: Fathead minnow	:: Fat	nead n	nimow				Ē	Ending Date:	Date:		1/35/2	2 12	_	Time;	MORI	Z
QC Test Number: TN- 21-034	NI-	21-0	34				ŝ	cientifi	Scientific Name:	e: P.	P. prometas	stas				F	TEST TYPE:	(TPE:	3	Static /) Flov	D Flowthrough	đĝ		
Test Material: Effluent	fluent						TARC	HET V	TARGET VALUES										Ū	Renewal	/ \	Non-1	D Non-renewal	_	
Accession Number:	umber: _	ATI	CO - 1-	geo			T	Temp:	25±1		ပ္စ	ă	DO: <u>>4.0</u>	0		E E	_mg/L	f	est Co	Test Container:		-	1 L Beaker	.tet	
Dilution Water: Mod Hard	Mod Har	q					.d	pH:	6.0 - 9.0		Ī	Sa	Salinity: 0	0		ppt		Ĥ	est Vo	Test Volume: 250 ml	250 m				ĺ
Accession Number:		-IOI		039			đ	hotope	Photoperiod: 161,8d	61.8	7	Li	Light Intensity: <u>50 - 100 f</u> c	ensity.	: 50 - 1	00 fc		Ĥ	est Du	Test Duration: 96 hrs	<u>96 hr</u>	×		1	.[]
			N Live	Number of Live Organisms	r of nisms			Ten	Temperature (°C)	re				Hd			ñ	Dissolved Oxygen (mg/L)	lved Oxyg (mg/L)	cen	7	South	 Conductivity (μS/cm) Salinity (ppt) 	(µS/ci	A
Concentration	Rep	0	24	48	72	96	0	24	48	72	96	0	24	48%	72.	96	0	24 4	48 72	2 96	0	54	8	72	96
Control	¥	2	9	õ	2	01	ઝાવ		hhi		<u> </u>	1.0		8.5			58	6.8	-	-	345		332		
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Meter Number							180		680		3	1031	6 C	(080 .			(BI	105	080		ାକ୍ଷା		1080		
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Initials		q	ŝ	5	T	¥	(Zeg		Z		2	£	<u>,</u>	À	\neg		£	Å	Q		£		Å		

ATS-T01 12/02/08

Americanysis: 2007.0 Menidia:2006.0

EPA Test Method: EPA 821-R-02-012 (CHECK ONE)

Ceriodaphnia: 2002.0 Fathead: 2000,0 X

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ACUTE TOXICITY TEST DATA SHEET - OLD SOLUTIONS

Time:	1/25/21 Time: 1201	Static Flowthrough	Renewal Non-renewal	Test Container: 1 L Beaker	Test Volume: 250 ml	Test Duration: 96 hrs		ygen - Conductivity (µS/cm)	72 96 20 24 48 72 96	8.3 7.5 353 357 34A 353		8.1 7.5 2 373 393 586 388		8.0 h. 6 434 434 435 432 43		8.3 L. & 20 34 524 516		3,0 7,5 11/10 713 707 708		8.0 7.50 (100 Hold Hold 1056 1057		(0.81 (0.81 1891 1891 1981 1981	ND 555 255 355 1026 100 255	M
Beginning Date:	Ending Date:	TEST TYPE:		mg/L Test C	ppt Test V			Dissolved Oxygen (mg/L)	96 24 48	11 83		2 97 1.1 29 8r	44	2.0 8.0		92 91L J	1	7.7 2.7		1 14 75		087 103	an gral cien to sso	G)
	Fathead minnow	P. prometas		DO: >4.0	Salinity: 0	Light Intensity: 50 - 100 fc		Hd	24 48 72 9	7.7 8.4 8.1 4.		7.14 8.3 8.0 7.		P. 7.10 8.2 7.9 1.9		2. T. W. B. I. 7. 7.5		-1,1 8.6 h.s n.	·5- •	Tr 8.6 2.8 3.1	100	1991 690 681 621	201 011 0201 2021 202	1 m 1 0 v
TEST ORGANISM	Common Name: Fat	Scientific Name: P.1	TARGET VALUES	Temp: <u>25±1</u> °C	pH: 6.0 - 9.0	Photoperiod: 161,84		Temperature (°C)	24 48 72 96	2,25 245 243 25.5		25.3 25.2 25.0 35.15		25.5 25.4 25.5 25.4		35.4 25.7 25.0 34.4		25.5 25.7 25.N 25.N		25.4 25.8 25.3 25.V		1001 680 681 681	0111	-10 32
70019.TOX		TN- 31- 034	Effluent	AT1-026	Mod Hard	U01-4059	1 Aich anD	Number of Live Organisms											のないのである。					
Project Number:	Client: MWRD	QC Test Number:]	Test Material:E	Accession Number: $\frac{1}{3} \frac{1}{7} \sqrt{-1}$	Dilution Water: Mc	Accession Number: UD1-40539			Concentration Rep	Control A	в	6.25% A	В	12.5% A	B	25% A	B	50% A	В	100% A	B	Meter Number	Time	Initials

ATS-T2 06/21/06



TOXICOLOGY LABORATORY BENCH SHEET

Project Number: _____70019.TOX

Client: MWRD

QC Test Number: TN- 21-034

Date/Time/Initials

Comments/Activity



RANDOMIZATION CHART

 Project Number:
 70019.TOX

 Client:
 MWRD

 QC Test Number:
 TN- 21-034

5	4	1	3	6	2
1	5	3	2	4	6



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TOXICOLOGY LABORATORY BENCH SHEET -TESTING LOCATION

Project Number: _____70019.TOX

Client: <u>MWRD</u>

QC Test Number: TN- 21-034

Day	Testing Location	Date	Time	Initials
0	17	1121121	1511	TP
1		1)23/21	1304	LAD
2	(7 17	1123124	1027	40
3	17	1/24/21	רסכו	A1
4	17	1/25/21	1058	A
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ATS-T80 07/24/18



TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Client: ____MWRD_____

QC Test Number: TN- 21-034

Correction Explanations

- (a) Technician Error-Mathematical
- (b) Technician Error-Manual Data Recording
- (c) Technician Error-Head Count Observation
- (d) Technician Error-Overwrite
- (e) Technician Error-Missing Data
- (f) Technician Error-Lost Organism
- (g) Technician Error-Transcription Error
- (h) Technician Error-Other:
- (i) Meter Malfunction

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TOXICOLOGY LABORATORY BENCH SHEET

Project Number:	70019.TOX
Client: <u>MWR</u>	D
QC Test Number:	TN-21-033,034

Aliquot of sample warmed to test temperature, then aerated if supersaturated:

			ON AIR			OFF AIR	
		Initial DO			Final DO		
Date	Sample #	(mg/L)	Time	Initials	(mg/L)	Time	Initials
1-31-31	AT1-026	10.3	1643	ŝ	8.7	1053	ano
1123121	AT1 -026	9.1	0816	TP	82	0826	Tr
					0~	0000	

ATS-T49 03/01/00

ATTACHMENT II

Report Quality Assurance Record (2 pages)

REPORT QUALITY ASSURANCE RECORD

	ent: <u>MWRD</u>	EA Report Number:	70019.TOX 8478
Au	thor: <u>Rachael Brooks</u>	EA Report Number:	0170
	· · · · · · · · · · · · · · · · · · ·		
	REPOR	T CHECKLIST	
	OA/OC ITEM	REVIEWER	DATE
Ι.	Samples collected, transported, and received according to study plan requirements.	And 1	1/25/2021
2.	Samples prepared and processed according to study l plan requirements.	per L	1/25/2-21
3.	Data collected using calibrated instruments and equipment.	pul	125/2021
4.	Calculations checked: - Hand calculations checked	pr L	125/2021
	 Documented and verified statistical procedure used. 	pr c	1)2512021
5.	Data input/statistical analyses complete and correct.	Erson M Ruchfor	2/4/2021
6.	Reported results and facts checked against original sources.	Jess M Redifes	2/4/2021
7.	Data presented in figures and tables correct and in agreement with text.	Joss M Redifs	2/4/2021
8.	Results reviewed for compliance with study plan requirements.	pr 1	1/25/2021
		AUTHOR	DATE

- 9. Commentary reviewed and resolved.
- 10. All study plan and quality assurance/control requirements have been met and the report is approved:

W 1

PROJECT MANAGER

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WFFICER WIAL! RO

SENIOR TECHNICAL OFFICER

ə 21

2/4/202 DATE 1 r 12021

DATE

ATS-Q8 01/25/02