

Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***MONITORING AND RESEARCH
DEPARTMENT***

REPORT NO. 21-11

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

May 2021

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 2021 EFFLUENT SAMPLE FROM
METROPOLITAN WATER RECLAMATION DISTRICT (MWRD)**

By

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



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

Prepared for:

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

Prepared by:

EA Engineering, Science, and Technology, Inc., PBC
231 Schilling Circle
Hunt Valley, Maryland 21031
For questions, please contact Michael Chanov
ph: 410-584-7000

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

A handwritten signature in black ink, appearing to read 'Michael K. Chanov II', is written over a horizontal line.

Michael K. Chanov II
Laboratory Director

26 April 2021

Date

EA Project Number 70019.TOX



EA Report Number 8542

INTRODUCTION

At the request of Metropolitan Water Reclamation District (MWRD), EA Engineering, Science, and Technology performed acute toxicity testing on a composite sample of Outfall 001 final effluent from MWRD's O'Brien Water Reclamation Plant in Skokie, Illinois. The effluent composite sample was collected on 12-13 April 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 12-13 April 2021 Outfall 001 final 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 100 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 80 percent survival in all of the effluent concentrations. The laboratory control had 95 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 in-house cultured test species. The results of the *C. dubia* reference toxicant test was acceptable, with a 48-hour LC50 of 2,050 mg/L NaCl, and acceptable control chart limits of 1,608-2,259 mg/L NaCl. The results of the *P. promelas* reference toxicant test was acceptable, with a 48-hour LC50 of 658 mg/L KCl, and acceptable control chart limits of 626-1,237 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: **AT1-214**

Collection Time and Date: 0600, 12 April 2021 to 0600, 13 April 2021

Receipt Time and Date: 0933, 14 April 2021

Dilution Water Description: **Moderately hard synthetic freshwater**

EA Test Number: **TN-21-214**

Test Initiation Time and Date: 1050, 14 April 2021

Test Completion Time and Date: 1040, 16 April 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-21-055

Test Date and Time: 1009, 12 April 2021 to 1040, 14 April 2021

Dilution Water: Moderately hard synthetic freshwater

48-hour LC50: 2,050 mg/L NaCl

Laboratory control chart acceptability range for 48-hour LC50: 1,608-2,259 mg/L NaCl

SUMMARY OF SAMPLE/TEST INFORMATION (continued)

Test Species: *Ceriodaphnia dubia* (water flea)
 Sample Description: Outfall 001 Final Effluent – MWRD
 Sample Date: 12-13 April 2021
 EA Test Number: TN-21-214

<u>Test Concentration (percent effluent)</u>	<u>48-Hour Survival (percent)</u>
Lab Control	100
6.25	100
12.5	100
25	100
50	100
100	100

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

<u>Water Quality Parameters on Test Solutions</u>	<u>Range</u>
Temperature (°C):	24.0 – 25.4
pH:	7.7 – 8.3
Dissolved Oxygen (mg/L):	8.2 – 9.0
Conductivity (µS/cm):	317 – 1,373

<u>Water Quality Parameters Measured on Sample Upon Receipt</u>	<u>Outfall 001 (AT1-214)</u>
Temperature (°C):	1.1
pH:	7.6
Total Residual Chlorine (mg/L):	<0.01
Alkalinity (mg/L as CaCO ₃):	156
Hardness (mg/L as CaCO ₃):	240
Conductivity (µS/cm):	1,155

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: **AT1-214**

Collection Time and Date: 0600, 12 April 2021 to 0600, 13 April 2021

Receipt Time and Date: 0933, 14 April 2021

Dilution Water Description: **Moderately hard synthetic freshwater**

EA Test Number: **TN-21-213**

Test Initiation Time and Date: 1100, 14 April 2021

Test Completion Time and Date: 1150, 18 April 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: FH1-4/10-11

Source: EA's Culture Facility (Hunt Valley, Maryland)

Age: 3-4 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-21-052

Test Date and Time: 1204, 6 April 2021 to 1115, 8 April 2021

Dilution Water: Moderately hard synthetic freshwater

48-hour LC50: 658 mg/L KCl

Laboratory control chart acceptability range for 48-hour LC50: 626-1,237 mg/L KCl

SUMMARY OF SAMPLE/TEST INFORMATION (continued)

Test Species: ***Pimephales promelas* (fathead minnow)**
 Sample Description: Outfall 001 Final Effluent – MWRD
 Sample Date: 12-13 April 2021
 EA Test Number: TN-21-213

<u>Test Concentration (percent effluent)</u>	<u>48-Hour Survival (percent)</u>	<u>96-Hour Survival (percent)</u>
Lab Control	100	95
6.25	85	80
12.5	100	100
25	100	100
50	95	85
100	90	90

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

<u>Water Quality Parameters on Test Solutions</u>	<u>Range</u>
Temperature (°C):	24.0 – 26.0
pH:	7.6 – 8.3
Dissolved Oxygen (mg/L):	6.3 – 8.5
Conductivity (µS/cm):	315 – 1,179

ATTACHMENT I

Data Sheets and Statistical Analysis
(18 pages)



**EA Engineering, Science,
and Technology**

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Chain-of-Custody Record

Client: MWRDGL Project No.: 4652-126-1

NPDES Number: IL 0028088 Client Purchase Order Number: 3111991

City/State Collected: Skokie, IL

Sample Shipped By: (circle) UPS Other: _____
 Fed. Ex. _____
 Tracking #: 1Z2744748493835356

PLEASE READ SAMPLING INSTRUCTIONS ON BACK OF FORM

Accession Number (office use only)	Grab	Composite	Collection		Sample Description (including Site, Station Number, and Outfall Number)	Number/Volume of Container
			Start Date/Time	End Date/Time		
<u>ATI-214</u>		<input checked="" type="checkbox"/>	<u>4/12/21 0600</u>	<u>4/13/21 0600</u>	<u>O'Brien WRP Final Effluent outfall # 001</u>	<u>1 gallon</u>

Sampled By: <u>[Signature]</u>	Date/Time <u>4/13/21 0900</u>	Received By:	Date/Time
Sampler's Printed Name: <u>Nick Kallies</u>	Title: <u>Aquatic Biologist</u>	Relinquished By:	Date/Time
Relinquished By: <u>[Signature]</u>	Date/Time <u>4/13/21</u>	Received By Laboratory: <u>[Signature]</u>	Date/Time <u>4/14/21 0933</u>

Was Sample Chilled During Collection? Yes No

Comments: _____

Sample Collection Parameters
 Visual Description: Clear, Green
 Temperature (°C): 5.6
 pH: 7.29
 TRC (mg/L): 0
 Other: _____



SAMPLE CHECK-IN
FOR TESTING.

Client: MWRD

EA Accession Number: AT1-214

Parameter	Acceptable Range	Measurement *	Meter	Date	Time	Initials
Temperature (°C)	≤4	1.1	T-21	4/14/21	0934 ³	TP
Is ice present?	—	yes	N/A	↓	↓	↓
pH	6.0-9.0	7.6	681	↓	↓	↓
TRC (mg/L)	<0.01	Lo.01	AT-01	↓	↓	↓
Visual Description	—	Clear	N/A	↓	↓	↓

*If outside acceptable range, contact project manager.

Ⓟ ISO 4/20/21
for TP

OTHER PARAMETERS IF REQUIRED (SEE STUDY PLAN):

Parameter	Acceptable Range	(✓)	Meter	Date	Time	Initials
Ammonia (preserve aliquot)	—		N/A			
Parameter	Acceptable Range	Measurement *	Meter	Date	Time	Initials
Salinity (ppt)	—					



TOXICITY TEST SET-UP BENCH SHEET

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN-21-213

TEST ORGANISM INFORMATION

Common Name: Fathead minnow Adults Isolated (Time, Date): _____
 Scientific Name: P. promelas Neonates Pulled & Fed (Time, Date): _____
 Lot Number: FH1-9110-11 Acclimation: <24 hrs Age: 3-4 days
 Source: EA Culture Water (T/S): 25-0 °C 0 ppt

TEST SET-UP

TEST INITIATION				CONCENTRATION SERIES		
Date	Time	Initials	Activity	Test Concentration	Volume Test Material	Final Volume
4/14/21	1021	LAD	Dilutions Made	Control	0 ml	500 ml
				6.25%	31.25 ml	
				12.5%	62.5 ml	
	1055	TP	Test Vessels Filled	25%	125 ml	
				50%	250 ml	
	1100	↓	Organisms Transferred	100%	500 ml	
	1141	LAD	Head Counts			

Comments:

INTERMEDIATE DILUTION PREPARATION AND FEEDING

DILUTION PREPARATION					FEEDING			
Day	Date	Time	Initials	Sample / Diluent	Food: <i>Artemia</i>			
					Day	Time, Initials, Amount	Time, Initials, Amount	Time, Initials, Amount
0	4/14/21	1021	LAD	AT1-214 TD1-218	0			
1					1			
2	4/14/21	0851	LAD	AT1-214 TD1-218	2		LAD 0746 3 drops	
3					3			
4					4			
5					5			
6					6			



ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019_TOX Beginning Date: 4/14/01 Time: 1100
 Client: MWRD Common Name: Fathead minnow Ending Date: 4/18/01 Time: 1150
 QC Test Number: IN-21-213 Scientific Name: P. promelas TEST TYPE: Static / Flowthrough
 Test Material: Effluent TARGET VALUES: Renewal / Non-renewal

Accession Number: AT-214 Temp: 25±1 °C DO: >4.0 mg/L Test Container: 1 L Beaker
 Dilution Water: Mod Hard pH: 6.0-9.0 Salinity: 0 ppt Test Volume: 250 ml
 Accession Number: LD-218 Photoperiod: 16L, 8d Light Intensity: 50-100 fc Test Duration: 96 hrs

Concentration	Rep	Number of Live Organisms					Temperature (°C)					pH					Dissolved Oxygen (mg/L)					Conductivity (µS/cm)					
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	
Control	A	10	10	10	10	10	21.6					7.9					8.5					8.3					315
	B	10	10	10	10	9	21.6																				
6.25%	A	10	8	8	7	7	21.5					7.9					8.3					8.3					369
	B	10	10	9	9	9	21.7																				
12.5%	A	10	10	10	10	10	21.5					7.9					8.3					8.3					416
	B	10	10	10	10	10	21.7																				
25%	A	10	10	10	10	10	21.4					7.8					8.3					8.3					519
	B	10	10	10	10	10	21.7																				
50%	A	10	10	9	7	7	21.2					7.8					8.3					8.3					741
	B	10	10	10	10	10	21.7																				
100%	A	10	9	9	9	9	21.0					7.7					8.4					8.2					1153
	B	10	9	9	9	9	21.7																				
Meter Number						660					661						680					681					681
Time		1141	1057	1126	1000	1027					1059						1077					1059					1059
Initials		WFD	WFD	WFD	WFD	WFD					WFD						WFD					WFD					WFD



ACUTE TOXICITY TEST DATA SHEET - OLD SOLUTIONS

Project Number: 70019_TOX TEST ORGANISM: 4/14/21 Beginning Date: 4/14/21 Time: 1100
 Client: MWRD Common Name: Fathead minnow Ending Date: 4/18/21 Time: 1150
 QC Test Number: TN-21-213 Scientific Name: P. promelas TEST TYPE: Static Flowthrough
 Test Material: Effluent TARGET VALUES: Renewal Non-renewal
 Accession Number: AT-214 Temp: 25±1 °C DO: >4.0 mg/L Test Container: 1 L Beaker
 Dilution Water: Mod Hard pH: 6.0 - 9.0 Salinity: 0 ppt Test Volume: 250 ml
 Accession Number: 01-218 Photoperiod: 16 L, 8 d Light Intensity: 50 - 100 fc Test Duration: 96 hrs

Concentration	Rep	Number of Live Organisms	Temperature (°C)			pH			Dissolved Oxygen (mg/L)			Conductivity (µS/cm)					
			24	48	72	96	24	48	72	96	24	48	72	96			
Control	A																
	B					8.2	8.1	7.9	8.1	8.3	7.6	7.7	8.0	335	334	341	343
6.25%	A																
	B					8.2	8.0	7.9	8.0	8.2	7.6	6.8	7.8	382	380	390	392
12.5%	A																
	B					8.1	8.0	7.8	7.9	7.7	7.6	6.5	7.2	429	408	437	435
25%	A																
	B					8.1	8.1	7.8	7.9	7.7	7.6	6.3	7.1	530	528	540	537
50%	A																
	B					8.1	8.0	7.7	8.0	7.7	7.3	6.7	7.1	741	739	765	759
100%	A																
	B					8.2	8.3	7.6	8.0	7.4	7.2	6.3	7.0	1135	1132	1179	1163
Meter Number																	
Time																	
Initials																	



TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN-21213

Date/Time/Initials

Comments/Activity



RANDOMIZATION CHART

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN-21-213

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



TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN- 21-213

Day	Testing Location	Date	Time	Initials
0	16	4/14/21	1100	TD
1	16	4/15/21	1057	AT
2	16	4/16/21	1110	CAF
3	16	4/17/21	1020	TD
4	16	4/18/21	1145	AT
5				
6				
7				
8				
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10				
11				
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30				



TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN- 21-213

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

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN-21-214

TEST ORGANISM INFORMATION

Common Name: Water flea Adults Isolated (Time, Date): 4/13/21 1555
 Scientific Name: C. dubia Neonates Pulled & Fed (Time, Date): 4/14/21 0838
 Lot Number: N/A Acclimation: <24hrs Age: <24 hrs
 Source: EA Culture Water (T/S): 24.7 °C 0 ppt

TEST INITIATION

Date	Time	Initials	Activity
4/14/21	1021	UAD	Dilutions Made
↓	L	↓	Test Vessels Filled
	1050	TP	Organisms Transferred
	1158	UAD	Head Counts

TEST SET-UP

Sample Number: ATI-214

Dilution Number: CD1-218

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	



ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019_TOX Beginning Date: 4/11/21 Time: 1050
 Client: MWRD Common Name: Water flea Ending Date: 4/16/21 Time: 1040
 QC Test Number: TN-21-214 Scientific Name: C. dubia TEST TYPE: Static Flowthrough
 Test Material: Effluent TARGET VALUES Renewal / Non-renewal
 Accession Number: AT1-214 Temp: 25±1 °C DO: >4.0 mg/L Test Container: 30 ml cup
 Dilution Water: Mod Hard pH: 6.0-9.0 Salinity: 0 ppt Test Volume: 15 ml
 Accession Number: WT-212 Photoperiod: 16 L, 8 d Light Intensity: 50 - 100 fc Test Duration: 48 hrs

Concentration	Rep	Number of Live Organisms				Temperature (°C)				pH				Dissolved Oxygen (mg/L)				Conductivity (µS/cm)					
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96		
Control	A	5	5	5	5	5	24.6	24.5	24.0		7.9	7.8	7.8		8.5	8.5	8.7		317	353	407		
	B	5	5	5	5	5																	
	C	5	5	5	5	5																	
	D	5	5	5	5	5																	
6.25%	A	5	5	5	5	5	24.5	25.0	24.0		7.9	8.0	7.9		8.3	8.5	9.0		370	395	409		
	B	5	5	5	5	5																	
	C	5	5	5	5	5																	
	D	5	5	5	5	5																	
12.5%	A	5	5	5	5	5	24.5	25.2	24.4		7.9	8.0	8.0		8.3	8.4	8.9		417	443	484		
	B	5	5	5	5	5																	
	C	5	5	5	5	5																	
	D	5	5	5	5	5																	
Meter Number																							
Time	1150	1100	1040																				
Initials	UAD	JA	UAD																				



ACUTE TOXICITY TEST DATA SHEET

Project Number: 70019.TOX Beginning Date: 4/14/21 Time: 1050
 Client: MWRD Ending Date: 4/16/21 Time: 1040
 QC Test Number: IN-21-214 TEST TYPE: Static / Flowthrough
 Test Material: Effluent Renewal / Non-renewal
 Accession Number: AT1-214 Test Container: 30 ml cup
 Dilution Water: Mod Hard pH: 6.0-9.0 DO: >4.0 mg/L Test Volume: 15 ml
 Accession Number: W1-210 Photoperiod: 16L, 8d Light Intensity: 50 - 100 fc Test Duration: 48 hrs

TARGET VALUES

Concentration	Rep	Number of Live Organisms				Temperature (°C)				pH				Dissolved Oxygen (mg/L)				Conductivity (µS/cm)						
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96			
25%	A	5	5	5	5	5	24.4	25.4	24.3		7.0	8.1	8.0		8.3	8.4	8.9		520	549	598			
	B	5	5	5	5	5																		
	C	5	5	5	5	5																		
	D	5	5	5	5	5																		
50%	A	5	5	5	5	5	24.2	25.4	21.5		7.8	8.2	8.0		8.3	8.3	8.9		707	770	813			
	B	5	5	5	5	5																		
	C	5	5	5	5	5																		
	D	5	5	5	5	5																		
100%	A	5	5	5	5	5	24.0	25.4	24.0		7.7	8.3	8.0		8.4	8.2	8.8		1135	1224	1373			
	B	5	5	5	5	5																		
	C	5	5	5	5	5																		
	D	5	5	5	5	5																		
Meter Number																								
Time	1150	1100	1040																					
Initials	UAD	K	UAD																					



TOXICOLOGY LABORATORY BENCH SHEET

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN-21-214

Date/Time/Initials

Comments/Activity



RANDOMIZATION CHART

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN-21-214

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



TOXICOLOGY LABORATORY BENCH SHEET - TESTING LOCATION

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN-21-214

Day	Testing Location	Date	Time	Initials
0	16	4/14/21	1050	TP
1	16	4/15/21	1102	AT
2	16	4/16/21	1042	VFD
3				
4				
5				
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7				
8				
9				
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TOXICOLOGY LABORATORY CORRECTION BENCH SHEET

Project Number: 70019.TOX

Client: MWRD

QC Test Number: TN- 21-214

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

ATTACHMENT II

Report Quality Assurance Record
(2 pages)



REPORT QUALITY ASSURANCE RECORD

Client: MWRD Project Number: 70019.TOX
 Author: Rachael Brooks EA Report Number: 8542

REPORT CHECKLIST

<u>QA/OC ITEM</u>	<u>REVIEWER</u>	<u>DATE</u>
1. Samples collected, transported, and received according to study plan requirements.	<u>[Signature]</u>	<u>4/19/2021</u>
2. Samples prepared and processed according to study plan requirements.	<u>[Signature]</u>	<u>4/19/2021</u>
3. Data collected using calibrated instruments and equipment.	<u>[Signature]</u>	<u>4/19/2021</u>
4. Calculations checked: - Hand calculations checked - Documented and verified statistical procedure used.	<u>[Signature]</u>	<u>4/19/2021</u>
	<u>[Signature]</u>	<u>4/19/2021</u>
5. Data input/statistical analyses complete and correct.	<u>[Signature]</u>	<u>4/25/2021</u>
6. Reported results and facts checked against original sources.	<u>[Signature]</u>	<u>4/25/2021</u>
7. Data presented in figures and tables correct and in agreement with text.	<u>[Signature]</u>	<u>4/25/2021</u>
8. Results reviewed for compliance with study plan requirements.	<u>[Signature]</u>	<u>4/19/2021</u>

	<u>AUTHOR</u>	<u>DATE</u>
9. Commentary reviewed and resolved.	<u>[Signature]</u>	<u>4/26/2021</u>
10. All study plan and quality assurance/control requirements have been met and the report is approved:	<u>[Signature]</u>	<u>4/26/21</u>
	PROJECT MANAGER	DATE
	<u>[Signature]</u>	<u>4/25/2021</u>
	QUALITY CONTROL OFFICER	DATE
	<u>[Signature]</u>	<u>4/26/21</u>
	SENIOR TECHNICAL OFFICER	DATE