Little Rock Water Reclamation Authority
NPDES Permit No.: AR 0021806
AFIN Number 60-00409

Chronic Biomonitoring Report
for
March 2024

TABLE OF CONTENTS

SECTION I
INTRODUCTION

1. Permit Number

   The NPDES permit number for the Adams Field Water Reclamation Facility is AR0021806. This facility is a publicly owned treatment works operated by Little Rock Water Reclamation Authority.

2. Toxicity Testing Requirements of Permit

   Quarterly Whole Effluent Toxicity monitoring for two test species. They are:

   - Chronic static renewal 7-day survival and reproduction test using *Ceriodaphnia dubia* (Method 1002.0).

   - Chronic static renewal 7-day larval survival and growth test using fathead minnows (*Pimephales promelas*) (Method 1000.0).

3. Plant Location

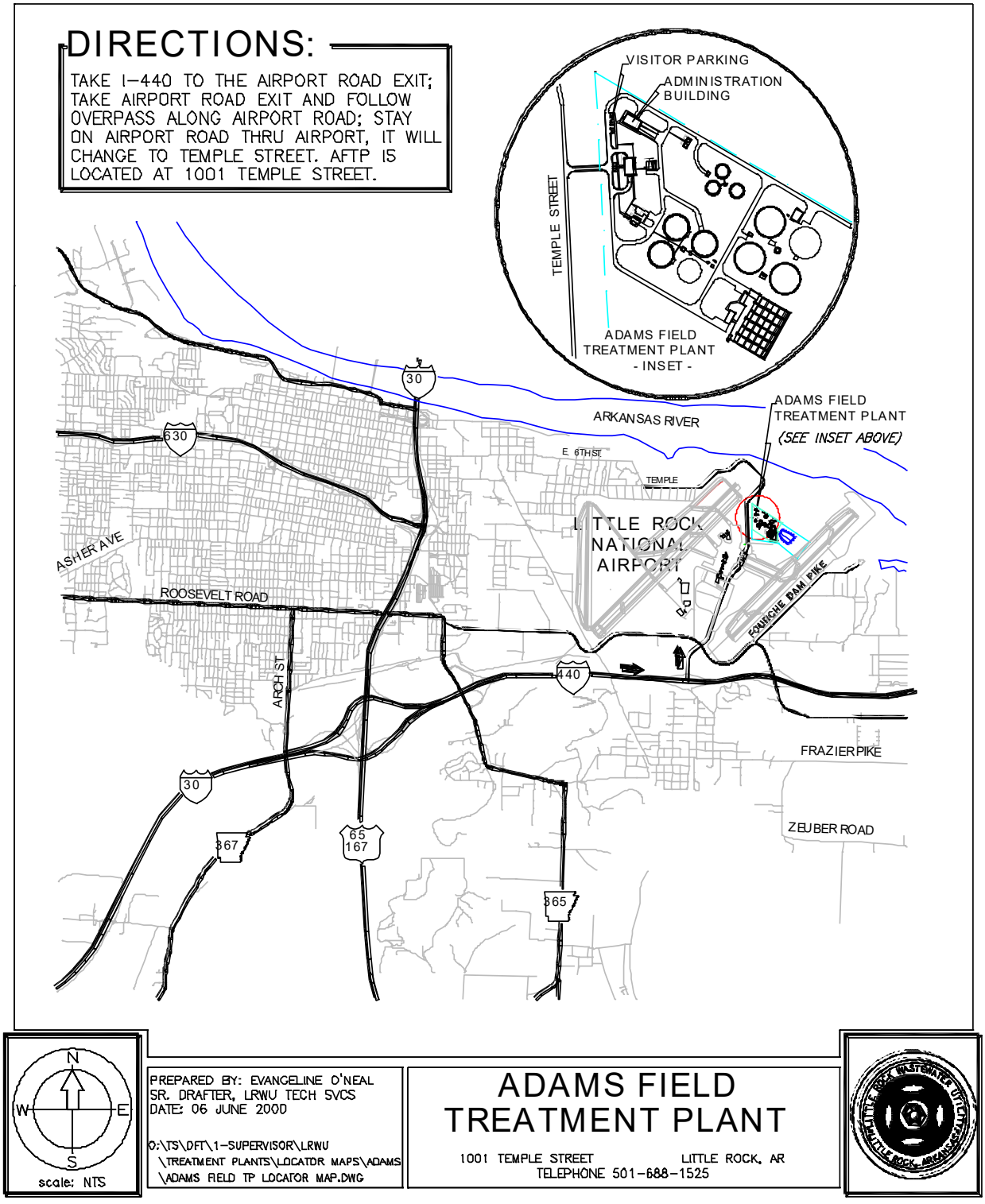
   The Adams plant is located at 1001 Temple Street in Little Rock which is on the southwest side of the Arkansas River just east of Little Rock's Adams Field Municipal Airport. (See page 2 for vicinity map location.)

4. Name of Receiving Water Body

   Arkansas River

5. Contract Laboratory (If the Tests are Performed Under Contract)

   Arkansas Analytical, Inc.
   8100 National Drive
   Littlerock, AR 72209
   Telephone: (501)455-3233


DIRECTIONS:
TAKE I-440 TO THE AIRPORT ROAD EXIT; TAKE AIRPORT ROAD EXIT AND FOLLOW OVERPASS ALONG AIRPORT ROAD; STAY ON AIRPORT ROAD THRU AIRPORT, IT WILL CHANGE TO TEMPLE STREET. AFTP IS LOCATED AT 1001 TEMPLE STREET.
VISITOR PARKING
ADMINISTRATION BUILDING
TEMPLE STREET
ADAMS FIELD TREATMENT PLANT - INSET -
ADAMS FIELD TREATMENT PLANT
(SEE INSET ABOVE)
ARKANSAS RIVER
E 6TH ST
TEMPLE
LITTLE ROCK NATIONAL AIRPORT
ASHER AVE
ROOSEVELT ROAD
ARCH ST
FOURCHE DAM PIKE
FRAZIER PIKE
ZEUBER ROAD
30
630
440
65
167
367
365
N
W
E
S
scale: NTS
PREPARED BY: EVANGELINE O'NEAL
SR. DRAFTER, LRWU TECH SVCS
DATE: 06 JUNE 2000
O:\TS\DFT\1-SUPERVISOR\LRWU \TREATMENT PLANTS\LOCATOR MAPS\ADAMS \ADAMS FIELD TP LOCATOR MAP.DWG
ADAMS FIELD TREATMENT PLANT
1001 TEMPLE STREET LITTLE ROCK, AR
TELEPHONE 501-688-1525

SECTION II
PLANT OPERATIONS

1. Product(s)

   Treated effluent from a publicly owned treatment works that receives municipal sewage.

2. Raw Materials

   Raw sewage sources are mainly domestic from household waste, pretreated industrial waste with some contributions from commercial sources.

3. Operating Schedule

   The Water Reclamation Facility receives and subsequently discharges flow at a continuous rate. The Water Reclamation Facility is staffed twenty-four hours a day by one operator or shift supervisor. During the day shift, Monday - Friday, one extra relief crew is on duty as well as the Plant Superintendent.

4. Description of Waste Treatment

   Preliminary Treatment. All incoming municipal sewage enters a screen chamber with 3/8 inch openings for screening followed by flow measurement.

   Primary Treatment. All Flow from the preliminary treatment units is treated in the primary clarifiers. Primary Treatment includes grit and scum removal which returns to the preliminary treatment building for disposal.

   Secondary Treatments. The treatment works has a complete-mix activated sludge process for secondary treatment.

   Disinfection. The final effluent is UV disinfected prior to discharge to the Arkansas River.

   Solids Handling and Disposal. The main sources of solids are: 1) primary sludge, and 2) waste activated sludge. The waste activated and primary sludges are transferred to the Fourche Creek Water Reclamation Facility. All sludges are processed in gravity sludge thickeners or a gravity belt thickener prior to transfer to anaerobic digesters. The digested sludge is pumped to solids, storage lagoons and ultimately disposed of through approved land application methods.

5. Schematic of Waste Treatment

   See page 5 for plant schematics.

6. Retention Time (If Applicable)

Retention times at design flow:

Primary Treatment .....2 hours
Activated Sludge Process .....6 hours
A.S.P. Final Tanks.....2 hours
UV Disinfection .....Instantaneous
PAA Supplemental Disinfection ..... 7.2 min

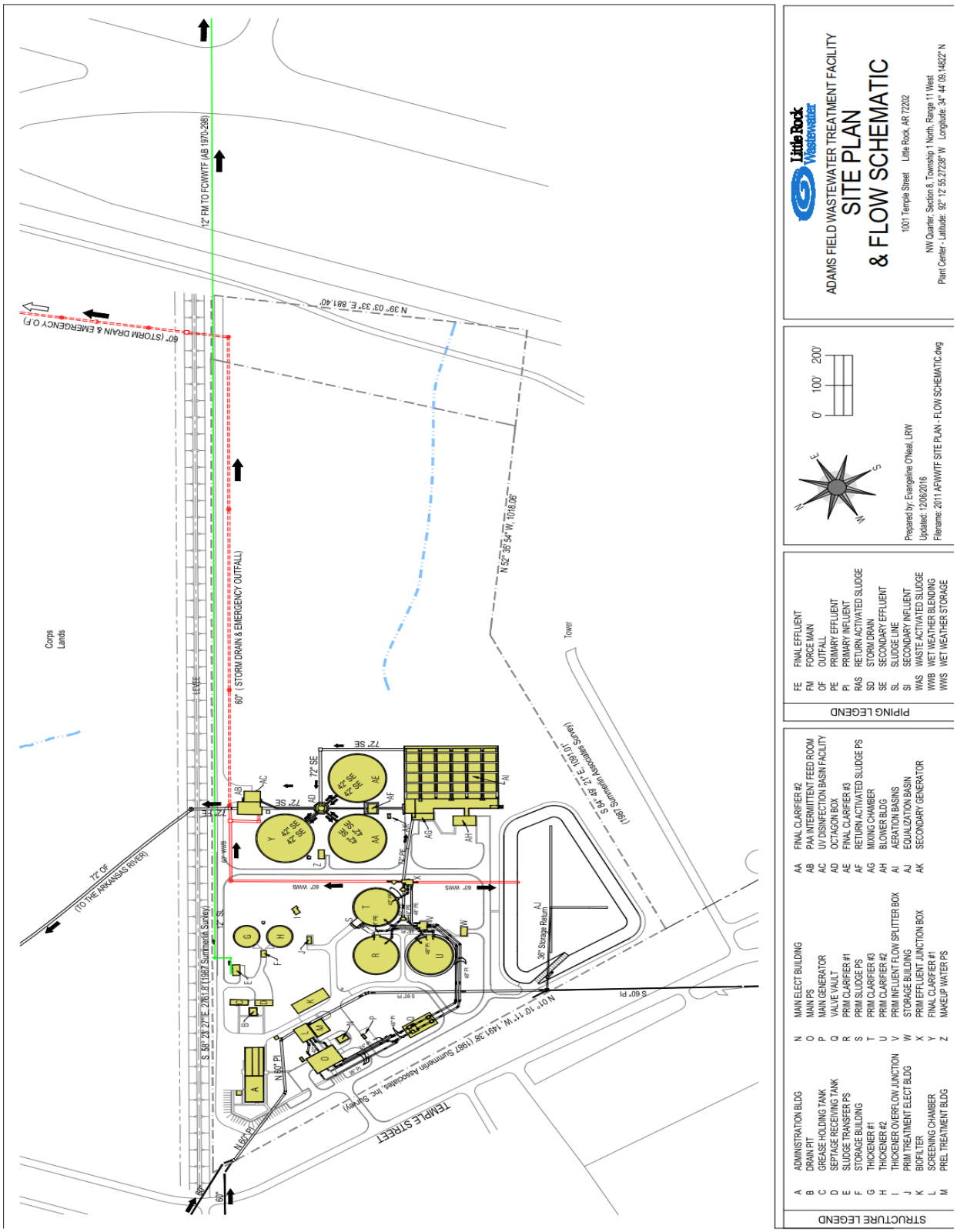
7. Volume of Waste Flow

The Adams Field Plant's effluent flows during the biomonitoring sampling event were:

Date	Flow, MGD
02/25/24 – 02/26/24	18.84
02/27/24 – 02/28/24	18.71
02/29/24 – 03/01/24	19.47

8. Design Flow of Treatment Facility at Time of Sampling

36 MGD


Little Rock Wastewater
ADAMS FIELD WASTEWATER TREATMENT FACILITY
SITE PLAN
& FLOW SCHEMATIC
1001 Temple Street Little Rock, AR 72202
NW Quarter, Section 8, Township 1 North, Range 11 West
Plant Center - Latitude: 92° 12' 55.2728" W Longitude: 34° 44' 09.14822" N
0' 100' 200'
Prepared by: Evangeline O'Neal, LRW
Updated: 12/06/2016
Filename: 2011 AFWWTF SITE PLAN - FLOW SCHEMATIC.dwg
PIPING LEGEND
FE FINAL EFFLUENT
FM FORCE MAIN
OF OUTFALL
PE PRIMARY EFFLUENT
PI PRIMARY INFLUENT
RAS RETURN ACTIVATED SLUDGE
SD STORM DRAIN
SE SECONDARY EFFLUENT
SL SLUDGE LINE
SI SECONDARY INFLUENT
WAS WASTE ACTIVATED SLUDGE
WWB WET WEATHER BLENDING
WWS WET WEATHER STORAGE
STRUCTURE LEGEND
A ADMINISTRATION BLDG
B DRAIN PIT
C GREASE HOLDING TANK
D SEPTAGE RECEIVING TANK
E SLUDGE TRANSFER PS
F STORAGE BUILDING
G THICKENER #1
H THICKENER #2
I THICKENER OVERFLOW JUNCTION
J PRIM TREATMENT ELECT BLDG
K BIOFILTER
L SCREENING CHAMBER
M PREL TREATMENT BLDG
N MAIN ELECT BUILDING
O MAIN PS
P MAIN GENERATOR
Q VALVE VAULT
R PRIM CLARIFIER #1
S PRIM SLUDGE PS
T PRIM CLARIFIER #3
U PRIM CLARIFIER #2
V PRIM INFLUENT FLOW SPLITTER BOX
W STORAGE BUILDING
X PRIM EFFLUENT JUNCTION BOX
Y FINAL CLARIFIER #1
Z MAKEUP WATER PS
AA FINAL CLARIFIER #2
AB PAA INTERMITTENT FEED ROOM
AC UV DISINFECTION BASIN FACILITY
AD OCTAGON BOX
AE FINAL CLARIFIER #3
AF RETURN ACTIVATED SLUDGE PS
AG MIXING CHAMBER
AH BLOWER BLDG
AI AERATION BASINS
AJ EQUALIZATION BASIN
AK SECONDARY GENERATOR
12" FM TO FCWWTF (AB 1970-288)
60" (STORM DRAIN & EMERGENCY O.F.)
60" (STORM DRAIN & EMERGENCY OUTFALL)
N 39° 03' 33" E, 881.40'
N 52° 35' 54" W, 1018.06'
Corps Lands
Levee
72" OF (TO THE ARKANSAS RIVER)
S 68° 28' 27"E, 2261.81' (1987 Summerlin Survey)
N 01° 10' 11" W, 1491.38' (1987 Summerlin Associates Inc. Survey)
S 64° 49' 27" E, 1991.07' (1987 Summerlin Associates Survey)
TEMPLE STREET
Tower
36" Storage Return
N 60° Pl
S 60° Pl
72" SE
60" WWS
60" WWB

SECTION III
SOURCE OF EFFLUENT, RECEIVING WATER, AND DILUTION WATER

1. Plant Effluent Samples

(Special Samples Collected for Biomonitoring)

A. Sampling Point: Adams Field - Plant Effluent
Outfall 001: Latitude: 34° 44' 05"N; Longitude 92° 12'46"W

(See page 2 for a vicinity map that shows the sampling locations.)

B. Collection Dates and Times:

1st sample	Setup	02/25/24 @ 1000
	Takeoff	02/26/24 @ 0800

2nd sample	Setup	02/27/24 @ 1000
	Takeoff	02/28/24 @ 0800

3rd sample	Setup	02/29/24 @ 1000
	Takeoff	03/01/24 @ 0800

C. Sample Collection Method: 24 Hour Flow-Proportioned Composite (12/24HFC)

D. Physical and Chemical Data

(Additional data in the appendices)

E. Mean Daily Discharge on Sample Collection Date

Date	Flow, MGD
02/25/24 – 02/26/24	18.84
02/27/24 – 02/28/24	18.71
02/29/24 – 03/01/24	19.47

F. Lapsed Time from Sample Collection to Delivery and Sample Temperature when received by Contract Laboratory

Sample 1: Relinquished 02/26/24 @ 1356 – relinquished by LEH
Received 02/26/23 @ 1356 - Temperature upon arrival was 1.0°C
Sample 2: Relinquished 02/28/24 @ 1338 – Relinquished by LEH
Received 02/28/24 @ 1338 - Temperature upon arrival was 1.0°C
Sample 3: Relinquished 03/01/24 @ 1050 – Relinquished by LEH
Received 03/01/24 @ 1050 - Temperature upon arrival was 1.0°C

2. Plant Effluent Samples

(Regular NPDES Part I Monitoring)

A. Sampling Point: Adams Field - Plant Effluent

B. Collection Dates and Times:

The 24-hour flow composite time period begins at 8:00 a.m. daily on the date listed below as "Flow Date". Sample aliquots are collected every 2.0 hrs with the last aliquot collected at 6:00 a.m. of the next day.

C. Sample Collection Method: 24 Hour Flow Proportioned Composite (12/24HFC)

The sample aliquots are collected automatically and flow proportioned manually at the end of the sampling period. The volume of each sample aliquot used to prepare the composite sample is calculated based upon the instantaneous flow at the time the sample aliquot is collected.

D. Physical and Chemical Data

Adams Field Final Effluent Weekly Values

February 2024

Date	126 SPD - NPDES Plant Effluent Flow MGD	2096 LD-TSS Final Eff mg/L	2031 LD-BOD5 Final Eff mg/L	2007 LD-CBOD5 Final Eff mg/L	2081 LD-pH Final Eff S.U.	2069 LD-PAA Final Eff mg/L	2066 LD-FCB Final Eff (IDEXX) MPN/100m	2155 LD-NH3-N Final Eff mg/L	2200 LD-Phosphorus Final Eff (Grab) mg/L	2181 LD-NO2+NO3-N Final Eff (Grab) (V2167+V2178) mg/L	2068 LD-UV Transmittance %
Sun, Feb 25	18.84										
Mon, Feb 26	20.08	<2.5			7.18		5				70.10
Tue, Feb 27	18.71	<2.5	6.84		7.08		<5				65.00
Wed, Feb 28	18.37	<2.5									
Thu, Feb 29	19.47										
Fri, Mar 01	19.43										
Sat, Mar 02	18.30										
Minimum					7.08						65.00
Maximum					7.18						70.10
Average	19.03	<2.5	6.84				5				

- BOD for 2/26/2024 and 2/28/2024 were invalidated due to failing Blank control.
2/26/2024 CAR-006-BOD 2/28/2024 CAR-007-BOD

Calculations Verified by: JEH

3. Receiving Water Samples

A. Source

Synthetic laboratory water prepared by contract laboratory. Approval letter from Arkansas Department of Energy and Environment – Division of Environmental Quality attached in Appendix B.

B. Collection Dates and Times

Distilled, deionized laboratory water was reconstituted by Arkansas Analytical, Inc. to match the receiving stream's hardness, alkalinity, and pH for use as the test control and effluent dilutions.

C. Pretreatment

The city tap water is purified using the following treatment before being used in the preparation of synthetic laboratory water.

1. Distillation
2. Deionization

D. Physical and Chemical Characteristics

This data is included in Arkansas Analytical, Inc.'s Analytical Report attached as Appendix A.

4. Dilution Water Samples

A. Source

Synthetic laboratory water prepared by contract laboratory.

B. Collection Dates and Times

Distilled, deionized laboratory water was reconstituted by Arkansas Analytical, Inc. to match the receiving stream's hardness, alkalinity, and pH for use as the test control and effluent dilutions.

C. Pretreatment

The city tap water is purified using the following treatment before being used in the preparation of synthetic laboratory water.

3. Distillation
4. Deionization

D. Physical and Chemical Characteristics

This data is included in Arkansas Analytical, Inc Analytical Report attached as Appendix A.

SECTION IV
TEST METHODS

Part A - *Pimephales promelas*

1. Toxicity Test Method Used (Title, Number, Source)

7-Day Chronic Toxicity Test, Static Renewal, with *Pimephales promelas*, EPA Method 1000.0, (EPA-821-R-02-013)

2. Endpoint(s) of Test

Larval Survival and Growth

3. Deviation(s) from Reference Method, if any, and the Reason(s)

None

4. Date and Time Test Started

February 27, 2024 @ 1300

5. Date and Time Test Terminated

   March 05, 2024 @1445

6. Type and Volume of Test Chambers

   500 mL plastic cups

7. Volume of Solution Used Per Chamber

   250 mL solution/chamber

8. Number of Organisms Per Test Chamber

   10 organisms/chamber

9. Number of Replicate Test Chambers Per Concentration

   5 test chambers/concentration

10. Acclimation of Test Organisms (Temperature Mean and Range)

    The test organisms are cultured in-house by Arkansas Analytical Inc. and originated from a minimum of three in-house spawning.

11. Test Temperature (Mean and Range)

    25° ± 1°C

12. Specify if Aeration was Needed

    None

13. Feeding Frequency, and Amount and Type of Food

    Larvae in each test chamber were fed freshly hatched brine shrimp two times per day.

Part B - *Ceriodaphnia dubia*

1. Toxicity Test Method Used (Title, Number, Source)

   7-Day Chronic Toxicity Test, Static Renewal, with *Ceriodaphnia d*ubia, EPA Method 1002.0, (EPA-821-R-02-013)

2. Endpoint(s) of Test

   Survival and Reproduction

3. Deviation(s) from Reference Method, if any, and the Reason(s)

None

4. Date and Time Test Started

   February 27, 2024 @ 1100

5. Date and Time Test Terminated

   March 04, 2024 @ 1310

6. Type and Volume of Test Chambers

   30 mL plastic cups

7. Volume of Solution Used Per Chamber

   15 mL solution/chamber

8. Number of Organisms Per Test Chamber

   1 Organism/chamber

9. Number of Replicate Test Chambers Per Concentration

   10 replicate cups/concentration

10. Acclimation of Test Organisms (Temperature Mean and Range)

    The test organisms were cultured in-house by Arkansas Analytical Inc.

11. Test Temperature (Mean and Range)

    25° ± 1°C

12. Specify if Aeration was Needed

    None

13. Feeding Frequency, and Amount and Type of Food

    Daily feeding consisted of 0.5 mL *algae* and YTC per test chamber.

SECTION V
TEST ORGANISMS

Part A: Fathead Minnow (*Pimephales promelas*)

1. Scientific Name

   Pimephales promelas

2. Age

   Less than 24 hours old at test initiation and originated from a minimum of three in-house spawning

3. Life Stage

   Larval stage

4. Mean Length and Weight (Where Applicable)

Test Concentration (% Effluent)	Average Fish Weight, mg
Synthetic Water Control	0.613
9%	0.629
12%	0.631
16%	0.575
21%	0.614
28%	0.618

5. Source

   Aquatox, AR age: <24H

6. Diseases and Treatment (Where Applicable)

   N/A

Part B: Water Flea (*Ceriodaphnia dubia*)

1. Scientific Name

   Ceriodaphnia dubia

2. Age

   Less than 24 hours old at test initiation and within eight hours of the same age at test initiation.

3. Life Stage

   Neonate

4. Mean Length and Weight (Where Applicable)

   N/A

5. Source

   Arkansas Analytical Inc. cultures their own *Ceriodaphnia dubia*

6. Diseases and Treatment (Where Applicable)

   N/A

SECTION VI
QUALITY ASSURANCE

The QA information supplied by Arkansas Analytical, Inc. is contained in Appendix A

SECTION VII
RESULTS

A summary of the whole effluent toxicity test results are listed below. Arkansas Analytical, Inc.'s complete report can be found in the appendix A.

Part A: *Pimephales promelas* (Fathead minnow) Results

The Adams Field's effluent showed no statistically significant differences between the control and any effluent dilutions. The "No Observable Effects Concentration" (NOEC) for survival and growth was 28%. The coefficient of variation for the blank was 13.6% for growth and 4.56% for survival. The coefficient of variation for the critical dilution was 8.74% for growth and 4.56% for survival. The Percent Minimum Significant Difference (PMSD) was 14.1% for growth and 8.57% for survival.

Part B: *Ceriodaphnia dubia* Results

The Adams Field's effluent showed no statistically significant differences between the control and any effluent dilutions. The "No Observable Effects Concentration" (NOEC) for survival and reproduction was 28%. The coefficient of variation for the blank was 31.91% for reproduction. The coefficient of variation for the critical dilution was 30.31% for reproduction and 0.00% for survival. The Percent Minimum Significant Difference (PMSD) was 28.2%.

Table Summary of Test Data as Reported for Discharge Monitoring Report	
7-Day Static Renewal Sub-Lethal Effects - Pass/Fail	
TGP3B – *Ceriodaphnia. dubia* – Reproduction	Pass (0)
TGP6C – *Pimephales promelas* – Growth	Pass (0)
7-Day Static Renewal Lethal Effects - Pass/Fail	
TLP3B – *Ceriodaphnia. dubia* - Survival	Pass (0)
TLP6C – *Pimephales promelas* – Survival	Pass (0)
7-Day Static Renewal Toxic Lethal - No Observable Effects Concentration	
TOP3B – *Ceriodaphnia dubia* Survival NOEC	28%
TOP6C – *Pimephales promelas* Survival NOEC	28%
7-Day Static Renewal Toxic Sub-Lethal - No Observable Effects Concentration	
TPP3B – *Ceriodaphnia dubia* – Reproduction NOEC	28%
TPP6C – *Pimephales promelas* – Growth NOEC	28%
Coefficient of Variation (CV)	
TQP3B – *Ceriodaphnia dubia* Reproduction	31.9%
TQP6C – *Pimephales promelas* Growth	13.6%

Part C: Conclusions and Recommendations

The NPDES Permit Chronic WET testing requirements were met with this passing test.

APPENDIX A

Arkansas Analytical Full Report
March 2024

1. **Outfall 001 DMR Reporting**
2. **Biomonitoring Form Chronic Toxicity Summary Form**
3. **Chronic Reference Toxicant Test Results**

Arkansas Analytical, Inc.

Toxicity Test Results

LITTLE ROCK WATER RECLAMATION AUTHORITY
ADAMS FIELD WATER RECLAMATION FACILITY
NPDES PERMIT NUMBER: AR0021806
First Quarter 2024

Fathead Minnow, *Pimephales promelas,* Larval Survival and Growth Test
Test 1000.0

Ceriodaphnia dubia, Survival and Reproduction Test
Test 1002.0

Prepared for: **Jared Evanov**
Little Rock Water Reclamation
9500 Birdwood Drive
Little Rock, Arkansas 72206

Prepared by: Arkansas Analytical, Inc.
8100 National Drive
Little Rock, Arkansas 72209
Lab Number K2402014

Thursday, March 14, 2024

Plant Location

The facility is located as follows: 1001 Temple Street, Little Rock, AR 72202, 0.5 mile northeast of the Little Rock National Airport terminal building in Pulaski County, Arkansas.

Test Methods

EPA Method 1000.0 *Pimephales promelas*, Larval survival and growth test

- Test chambers: 500 mL plastic cups
- Test solution volume: 250 mL
- Number of test organisms per chamber: 10
- Number of replicates per concentration: 5
- Test temperature 25°C ± 1°C
- Test concentrations: 0%, 9%, 12%, 16%, 21%, 28%
- Dilution water: Moderately Hard synthetic
- No deviation from method

EPA Method 1002.0 *Ceriodaphnia dubia*, Survival and reproduction test

- Test chambers: 30 mL plastic cups
- Test solution volume: 15 mL
- Number of test organisms per chamber: 1
- Number of replicates per concentration: 10
- Test temperature 25°C ± 1°C
- Test concentrations: 0%, 9%, 12%, 16%, 21%, 28%
- Dilution water: Moderately Hard synthetic
- No deviation from method

Reference Toxicant Data

REFERENCE TOXICANT (Potassium Chloride)

Ceriodaphnia dubia 1/17/24-1/24/24		*Pimephales promelas* 1/3/24-1/10/24	
NOEC Survival:	500 ppm KCl	NOEC Survival:	500 ppm KCl
LOEC Survival:	1000 ppm KCl	LOEC Survival:	1000 ppm KCl
NOEC Reproduction:	250 ppm KCl	NOEC Reproduction:	500 ppm KCl
LOEC Reproduction:	500 ppm KCl	LOEC Reproduction:	1000 ppm KCl

Summary of Results

Little Rock Water Reclamation – Adams Field

Ceriodaphnia dubia		*Pimephales promelas*	
NOEC Survival Parameter: **TOP3B**	28%	NOEC Survival Parameter: **TOP6C**	28%
Pass/Fail Survival Parameter: **TLP3B**	Pass	Pass/Fail Survival Parameter: **TLP6C**	Pass
NOEC Reproduction Parameter: **TPP3B**	28%	NOEC Growth Parameter: **TPP6C**	28%
Pass/Fail Reproduction Parameter: **TGP3B**	Pass	Pass/Fail Growth Parameter: **TGP6C**	Pass
%CV Reproduction Parameter: **TQP3B**	31.9%	%CV Growth Parameter: **TQP6C**	13.6%
PMSD Reproduction	28.2%	PMSD Growth	14.1%

Conclusion

Pimephales promelas, (Method 1000.0): The permit issued to Little Rock Water Reclamation Authority – Adams Field Facility, specifies that the **critical dilution is 21% effluent**. The effluent samples **did not** exhibit lethal or sublethal effects at the critical dilution and, as such, **passed** both portions of the test.

Ceriodaphnia dubia, (Method 1002.0): The permit issued to Little Rock Water Reclamation Authority – Adams Field Facility specifies that the **critical dilution is 21% effluent**. The effluent samples **did not** exhibit lethal or sublethal effects at the critical dilution and, as such, **passed** both portions of the test.

Biomonitoring Analysts: Melissa Bird, Justin Yeatts, Noah Limbaugh, Tracy Bounds, Kitty Derkson

Reviewed by:

Melissa Bird

Melissa Bird

Appendices

Misc Sampling 08-2

Water Reclamation Authority

K2402.014 A

ENVIRONMENTAL ASSESSMENT DEPARTMENT

CHAIN OF CUSTODY RECORD

Lot Identifier(s)	Sample Type: Composite	Sample Type: Grab Sample Date & Time	Record WWTP Flow for CN-, O&G, & Phenol Grabs	Preservative	Sample Bottle: Type: P/G	Sample Bottle: Number	Parameter(s) Requested (Circle When Parameter Completed)	Designated Laboratory	Tag/Seal Verification
1	24 HFC	NA	NA	ICE	P	LIMS 0293-01	TDS	LRWRA	
2	24 HFC	NA	NA	ICE	P	NA	Chronic Toxicity (48-hr Static Renewal)	AA	NA

	Yes	No
Custody Seals:		
Containers Correct:	✓	
COC/Labels Agree:	✓	
Received on Ice:		1.C
Temperature on Receipt:		
Temperature Gun ID: HHT # 5		

Custody Transfer(s)

Custody Transfer-Lot Identifier(s)	Sample Relinquished By (Signature) Date & Time	Received By (Signature) Date & Time
2	Lyndsey Bare 2/26/24 1:56p.m	Natasha Howard 2-26-24 13:56
Custody Transfer-Lot Identifier(s)	Sample Relinquished By (Signature) Date & Time	Received By (Signature) Date & Time
Custody Transfer-Lot Identifier(s)	Sample Relinquished By (Signature) Date & Time	Received By (Signature) Date & Time
Custody Transfer-Lot Identifier(s)	Sample Relinquished By (Signature) Date & Time	Received By (Signature) Date & Time

Comments:

EAD Laboratory Personnel's Initials: ☐ LLI ☐ NG ☐ MMS ☐ ANJ ☐ JEH ☐ ACF ☐ JRE ☐ ☐

Sampling Personnel's Initials (Only If Not Checked on Front of C of C) ☐ RKS ☐ JBV ☐ BPR ☑ WAM ☐ MLM ☐ COJ ☐ LEH ☐ ☐ ☐ ☐ ☐ ☐ ☐

Contract Lab Sample Custodian Name: (Print) Natasha Howard

Data Reviewed By: (Signature) Data Reviewed:

Sample Date(s): 02/25/24 - 02/26/24 (grab dates listed above) **Sample I.D. & No.** 005 - 002 **Classification** ☐ A ☒ B ☐ C

Misc Sampling 08-2

Water Reclamation Authority

K2402014 B

ENVIRONMENTAL ASSESSMENT DEPARTMENT

CHAIN OF CUSTODY RECORD

Lot Identifier(s)	Sample Type: Composite	Sample Type: Grab Sample Date & Time	Record WWTP Flow for CN-, O&G, & Phenol Grabs	Preservative	Sample Bottle: Type: P/G	Sample Bottle: Number	Parameter(s) Requested (Circle When Parameter Completed)	Designated Laboratory	Tag/Seal Verification
1	24 HFC	NA	NA	ICE	P	LIMS 0294-01	TDS	LRWRA	
2	24 HFC	NA	NA	ICE	P	NA	Chronic Toxicity (48-hr Static Renewal)	AA	NA

	Yes	No
Custody Seals:		
Containers Correct:	Y	
COC/Labels Agree:	Y	
Received on Ice:	Y	
Temperature on Receipt:	1.0	
Temperature Gun ID: HHT #	5	

Custody Transfer(s)

Custody Transfer-Lot Identifier(s)	Sample Relinquished By (Signature) Date & Time	Received By (Signature) Date & Time
2	J. Burr - 2-28-24@ 1:38pm	Natasha Howard 2-28-24 13:38
Custody Transfer-Lot Identifier(s)	Sample Relinquished By (Signature) Date & Time	Received By (Signature) Date & Time
Custody Transfer-Lot Identifier(s)	Sample Relinquished By (Signature) Date & Time	Received By (Signature) Date & Time
Custody Transfer-Lot Identifier(s)	Sample Relinquished By (Signature) Date & Time	Received By (Signature) Date & Time

Comments:

EAD Laboratory Personnel's Initials: ☐ LLI ☐ NG ☐ MMS ☐ ANJ ☐ JEH ☐ ACF ☐ JRE ☐ ☐

Sampling Personnel's Initials (Only If Not Checked on Front of C of C) ☐ RKS ☐ JBV ☐ BPR ☐ WAM ☐ MLM ☐ COJ ☐ LEH ☐ ☐ ☐ ☐ ☐ ☐ ☐

Contract Lab Sample Custodian Name: (Print) Natasha Howard

Data Reviewed By: (Signature) Data Reviewed:

Sample Date(s): 02/27/24 - 02/28/24 (grab dates listed above) **Sample I.D. & No.** 005 - 003 **Classification** ☐ A ☒ B ☐ C

Misc Sampling 08-2

Water Reclamation Authority

ENVIRONMENTAL ASSESSMENT DEPARTMENT

CHAIN OF CUSTODY RECORD

Lot Identifier(s)	Sample Type: Composite	Sample Type: Grab Sample Date & Time	Record WWTP Flow for CN-, O&G, & Phenol Grabs	Preservative	Sample Bottle: Type: P/G	Sample Bottle: Number	Parameter(s) Requested (Circle When Parameter Completed) K2402014C	Designated Laboratory	Tag/Seal Verification
1	24 HFC	NA	NA	ICE	P	LIMS 0295-01	TDS	LRWRA	
2	24 HFC	NA	NA	ICE	P	NA	Chronic Toxicity (48-hr Static Renewal)	AA	01 NA

	Yes	No
Custody Seals:		
Containers Correct:	✓	
COC/Labels Agree:	✓	
Received on Ice:	✓	
Temperature on Receipt:	1.6	
Temperature Gun ID: HHT #	5	

Custody Transfer(s)

Custody Transfer-Lot Identifier(s)	Sample Relinquished By (Signature) Date & Time	Received By (Signature) Date & Time
2	J. Ramirez 3-1-24 @ 10:50AM	Natasha Howard 3-1-24 10:50AM
Custody Transfer-Lot Identifier(s)	Sample Relinquished By (Signature) Date & Time	Received By (Signature) Date & Time
Custody Transfer-Lot Identifier(s)	Sample Relinquished By (Signature) Date & Time	Received By (Signature) Date & Time
Custody Transfer-Lot Identifier(s)	Sample Relinquished By (Signature) Date & Time	Received By (Signature) Date & Time

Comments:

EAD Laboratory Personnel's Initials: ☐ LLI ☐ NG ☐ MMS ☐ ANJ ☐ JEH ☐ ACF ☐ JRE ☐ ☐

Sampling Personnel's Initials (Only If Not Checked on Front of C of C) ☐ RKS ☐ JBV ☐ BPR ☐ WAM ☐ MLM ☐ COJ ☐ LEH ☐ ☐ ☐ ☐ ☐ ☐ ☐

Contract Lab Sample Custodian Name: (Print) Natasha Howard

Data Reviewed By: (Signature) Data Reviewed:

Sample Date(s): 02/29/24 - 03/01/24 (grab dates listed above) **Sample I.D. & No.** 005 - 004 **Classification** ☐ A ☒ B ☐ C

Fathead Minnow 7-d Larval Survival and Growth Test — Arkansas Analytical

Batch ID:	00-8988-8324	**Test Type:**	Growth-Survival (7d)	**Analyst:**	Melissa Bird
Start Date:	27 Feb-24 13:00	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	05 Mar-24 14:45	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Test Length:	7d 2h	**Taxon:**	Actinopterygii	**Source:**	Aquatox, AR **Age:** <24
Sample ID:	01-1712-7851	**Code:**	K2402014FH	**Project:**	WET Quarterly Compliance Test (1Q)
Sample Date:	26 Feb-24 08:00	**Material:**	Industrial Effluent	**Source:**	LRWRA Adams Field (AR0021806)
Receipt Date:	26 Feb-24 13:56	**CAS (PC):**		**Station:**	
Sample Age:	29h (1 °C)	**Client:**	LRWRA Adams Field		

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	K2402014B	28 Feb-24 08:00	28 Feb-24 13:38	29 Feb-24 00:00	1
2	K2402014C	01 Mar-24 08:00	01 Mar-24 10:50	02 Mar-24 00:00	1

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
14-0822-6414	7d Survival Rate	Steel Many-One Rank Sum Test		28	>28	n/a	3.571	8.57%	1
20-9511-7625	Mean Dry Weight-mg	Dunnett Multiple Comparison Test		28	>28	n/a	3.571	14.1%	1

Test Acceptability

				TAC Limits			
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision
14-0822-6414	7d Survival Rate	Control Resp	0.98	0.8	>>	Yes	Passes Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	5	0.9800	0.9245	1.0000	0.9000	1.0000	0.0200	0.0447	4.56%	0.00%
9		5	0.9800	0.9245	1.0000	0.9000	1.0000	0.0200	0.0447	4.56%	0.00%
12		5	0.9400	0.8720	1.0000	0.9000	1.0000	0.0245	0.0548	5.83%	4.08%
16		5	0.9600	0.8489	1.0000	0.8000	1.0000	0.0400	0.0894	9.32%	2.04%
21		5	0.9800	0.9245	1.0000	0.9000	1.0000	0.0200	0.0447	4.56%	0.00%
28		5	0.9400	0.8720	1.0000	0.9000	1.0000	0.0245	0.0548	5.83%	4.08%

Mean Dry Weight-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	5	0.6126	0.5091	0.7161	0.484	0.689	0.03727	0.08334	13.60%	0.00%
9		5	0.6294	0.5717	0.6871	0.584	0.693	0.02079	0.04649	7.39%	-2.74%
12		5	0.6312	0.5921	0.6703	0.594	0.667	0.01407	0.03146	4.98%	-3.04%
16		5	0.5748	0.5105	0.6391	0.51	0.639	0.02317	0.05182	9.01%	6.17%
21		5	0.6142	0.5475	0.6809	0.535	0.655	0.02401	0.05368	8.74%	-0.26%
28		5	0.618	0.535	0.701	0.518	0.67	0.02988	0.06681	10.81%	-0.88%

Fathead Minnow 7-d Larval Survival and Growth Test
Arkansas Analytical

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	L	0.9000	1.0000	1.0000	1.0000	1.0000
9		1.0000	0.9000	1.0000	1.0000	1.0000
12		0.9000	0.9000	1.0000	1.0000	0.9000
16		0.8000	1.0000	1.0000	1.0000	1.0000
21		1.0000	0.9000	1.0000	1.0000	1.0000
28		0.9000	0.9000	1.0000	0.9000	1.0000

Mean Dry Weight-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	L	0.665	0.689	0.576	0.649	0.484
9		0.655	0.629	0.693	0.584	0.586
12		0.667	0.604	0.654	0.637	0.594
16		0.612	0.639	0.543	0.57	0.51
21		0.655	0.644	0.582	0.535	0.655
28		0.67	0.659	0.663	0.518	0.58

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	L	9/10	10/10	10/10	10/10	10/10
9		10/10	9/10	10/10	10/10	10/10
12		9/10	9/10	10/10	10/10	9/10
16		8/10	10/10	10/10	10/10	10/10
21		10/10	9/10	10/10	10/10	10/10
28		9/10	9/10	10/10	9/10	10/10

CETIS Summary Report

Ceriodaphnia 7-d Survival and Reproduction Test

Arkansas Analytical

Batch ID:	10-1823-8468	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Melissa Bird
Start Date:	27 Feb-24 11:00	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	04 Mar-24 13:10	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 2h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture **Age:** <24
Sample ID:	11-2811-6600	**Code:**	K2402014CD	**Project:**	WET Quarterly Compliance Test (1Q)
Sample Date:	26 Feb-24 08:00	**Material:**	Industrial Effluent	**Source:**	LRWRA Adams Field (AR0021806)
Receipt Date:	26 Feb-24 13:56	**CAS (PC):**		**Station:**	
Sample Age:	27h (1 °C)	**Client:**	LRWRA Adams Field		

Sample Renewals

Renewal	Sample Code	Sample Date	Receive Date	Renewal Date	Temp °C
1	K2402014B	28 Feb-24 08:00	28 Feb-24 13:38	29 Feb-24 00:00	1
2	K2402014C	01 Mar-24 08:00	01 Mar-24 10:50	02 Mar-24 00:00	1

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
03-8718-1384	7d Survival Rate	Fisher Exact/Bonferroni-Holm Test		28	>28	n/a	3.571	n/a	1
07-6833-7908	Reproduction	Dunnett Multiple Comparison Test		28	>28	n/a	3.571	28.2%	1

Test Acceptability

				TAC Limits			
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision
03-8718-1384	7d Survival Rate	Control Resp	1	0.8	>>	Yes	Passes Criteria
07-6833-7908	Reproduction	Control Resp	30.2	15	>>	Yes	Passes Criteria
07-6833-7908	Reproduction	PMSD	0.2817	0.13	0.47	Yes	Passes Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
9		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12		10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	10.00%
16		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
21		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
28		10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	10.00%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	L	10	30.2	23.31	37.09	17	45	3.047	9.636	31.91%	0.00%
9		10	27.8	21.34	34.26	13	38	2.855	9.028	32.48%	7.95%
12		10	27.8	21.97	33.63	14	39	2.577	8.149	29.31%	7.95%
16		10	23.3	20.3	26.3	16	29	1.325	4.191	17.99%	22.85%
21		10	28.3	22.16	34.44	17	47	2.712	8.577	30.31%	6.29%
28		10	25.7	19.2	32.2	5	37	2.872	9.081	35.33%	14.90%

Ceriodaphnia 7-d Survival and Reproduction Test
Arkansas Analytical

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	L	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
9		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12		0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
16		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
21		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
28		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	L	24	45	34	30	37	23	17	18	42	32
9		24	20	33	23	34	19	13	38	37	37
12		14	29	39	33	39	21	24	29	20	30
16		22	26	26	29	24	16	24	17	22	27
21		33	18	25	47	31	17	31	31	26	24
28		32	28	37	23	22	29	35	25	5	21

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	L	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
9		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12		0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
16		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
21		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
28		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1

CHEMICAL DATA SHEET FOR CHRONIC TOXICITY TESTING — Fathead Minnow

Lab # / Sample ID: 624020194 — Test Start (Date/Time): 2-27-24, 1300

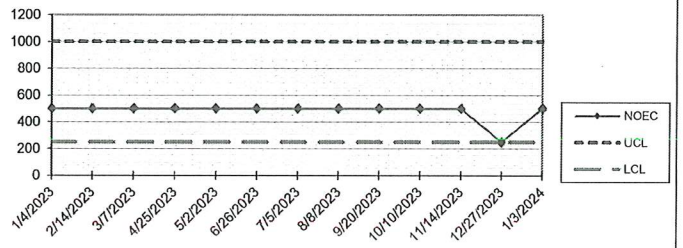
Client: Adams Hill — Test End (Date/Time): 3-5-24, 1445

		Day of Test							
		1	2	3	4	5	6	7	notes/remarks
Control	0%	2-27	2-28	2-29	3-1	3-2	3-3	3-4	MHS009
D.O. (mg/L)	INITIAL	9.0	9.1	9.3	9.2	9.2	9.1	8.9	
	FINAL	6.2	5.5	7.0	6.7	7.4	7.2	5.86	
pH (s.u.)	INITIAL	8.0	7.5	8.0	7.7	7.9	7.7	8.0	
	FINAL	7.4	7.3	7.6	7.6	7.5	7.6	7.5	
temp (C)	INITIAL	20	20	19	18	20	20	20	
	FINAL	25	25	25	25	25	25	25	
ALKALINITY (mg/L)		64	→	→	→	→	→	→	
HARDNESS (mg/L)		76	→	→	→	→	→	→	
CONDUCTIVITY (umhos/cm)		301	→	→	→	→	→	→	
CHLORINE (mg/L)		<0.05	→	→	→	→	→	→	
CONC:	6%								
D.O. (mg/L)	INITIAL	8.9	9.0	9.0	9.2	9.1	9.1	8.7	
	FINAL	5.0	7.4	7.0	7.5	7.7	6.9	5.7	
pH (s.u)	INITIAL	7.9	7.7	7.8	7.9	8.0	7.7	7.9	
	FINAL	7.3	7.3	7.6	7.7	7.8	7.7	7.5	
temp (C)	INITIAL	20	20	18	19	20	20	21	
	FINAL	25	25	25	25	25	25	25	
CONC:	12%								
D.O. (mg/L)	INITIAL	8.8	9.0	9.1	9.2	9.1	9.1	8.8	
	FINAL	6.3	5.6	7.4	5.6	7.6	7.0	6.4	
pH (mg/L)	INITIAL	7.9	7.8	7.8	7.9	8.0	7.8	7.9	
	FINAL	7.5	7.4	7.7	7.6	7.8	7.7	7.7	
temp (C)	INITIAL	20	20	19	19	20	20	21	
	FINAL	25	25	25	25	25	25	25	
CONC:	25%								
D.O. (mg/L)	INITIAL	8.8	9.0	9.1	9.2	9.1	9.1	8.9	
	FINAL	6.2	7.2	7.2	6.4	7.5	6.5	6.3	
pH (s.u.)	INITIAL	7.9	7.8	7.8	7.9	7.9	7.8	7.9	
	FINAL	7.5	7.7	7.7	7.7	7.8	7.7	7.7	
temp (C)	INITIAL	21	20	19	19	20	20	21	
	FINAL	25	25	25	25	25	25	25	
CONC:	50%								
D.O. (mg/L)	INITIAL	8.7	9.0	9.1	9.2	9.1	9.2	8.9	
	FINAL	5.8	7.0	7.3	6.2	7.7	6.5	6.5	
pH (s.u.)	INITIAL	7.8	7.8	7.8	7.8	7.9	7.8	7.8	
	FINAL	7.5	7.6	7.7	7.7	7.9	7.7	7.6	
temp (C)	INITIAL	21	20	19	19	20	21	22	
	FINAL	25	25	25	25	25	25	25	
CONC:	100%	8.6	9.0						
D.O. (mg/L)	INITIAL	6.4	6.3	9.3	9.3	9.2	9.2	8.8	
	FINAL	7.9	7.8	6.6	6.9	7.5	6.8	6.2	
pH (s.u.)	INITIAL	7.6	7.6	7.9	7.8	7.8	7.7	7.8	
	FINAL	21	20	7.7	7.8	7.9	7.7	7.7	
temp (C)	INITIAL	25	25	19	19	20	21	22	
	FINAL	25	25	25	25	25	25	25	
CONC:		A	A	B	B	C	C	C	
ALKALINITY (mg/L)		74	→	86	→	90	→	→	
HARDNESS (mg/L)		40	→	40	→	46	→	→	
CONDUCTIVITY (umhos/cm)		356	→	376	→	390	→	→	
CHLORINE (mg/L)		<0.05	→	<0.05	→	<0.05	→	→	

CHEMICAL DATA SHEET FOR CHRONIC TOXICITY TESTING									Ceriodaphnia Dubia
Lab # / Sample ID: K2402014						Test Start (Date/Time): 2-27-24, 1100			
Client: Adams Field						Test End (Date/Time): 3-4-24, 1310			
		Day of Test							
		1	2	3	4	5	6	7	notes/remarks
Control	0%	2-27	2-28	2-29	3-1	3-2	3-3	3-4	MHS 009
D.O. (mg/L)	INITIAL	9.0	9.1	9.3	9.2	9.2	9.1	8.9	
	FINAL	8.9	9.1	9.1	8.3	8.1	7.6	—	
pH (s.u.)	INITIAL	8.0	7.5	8.0	7.7	7.9	7.7	8.0	
	FINAL	8.0	7.9	8.2	8.2	7.9	7.9	—	
temp (C)	INITIAL	20	20	19	18	20	20	20	
	FINAL	25	25	25	25	25	25	—	
ALKALINITY (mg/L)		64	—					→	
HARDNESS (mg/L)		76	—					→	
CONDUCTIVITY (umhos/cm)		301	—					→	
CHLORINE (mg/L)		<0.05	—					→	
CONC:	9%								
D.O. (mg/L)	INITIAL	8.9	9.0	9.0	9.2	9.1	9.1	8.7	
	FINAL	8.5	9.0	9.3	9.3	8.0	7.9	—	
pH (s.u)	INITIAL	7.9	7.7	7.8	7.9	8.0	7.7	7.9	
	FINAL	8.1	8.2	8.2	8.4	8.1	8.0	—	
temp (C)	INITIAL	20	20	18	19	20	20	21	
	FINAL	25	25	25	25	25	25	—	
CONC:	12%								
D.O. (mg/L)	INITIAL	8.8	9.0	9.1	9.2	9.1	9.1	8.8	
	FINAL	8.7	9.2	9.3	8.3	8.3	8.1	—	
pH (mg/L)	INITIAL	7.7	7.8	7.8	7.9	8.0	7.8	7.9	
	FINAL	8.1	8.2	8.2	8.2	8.2	8.0	—	
temp (C)	INITIAL	20	20	19	19	20	20	21	
	FINAL	25	25	25	25	25	25	—	
CONC:	16%								
D.O. (mg/L)	INITIAL	8.8	9.0	9.1	9.2	9.1	9.1	8.9	
	FINAL	8.6	9.1	9.2	7.8	8.2	8.3	—	
pH (s.u.)	INITIAL	7.9	7.8	7.8	7.9	7.9	7.8	7.9	
	FINAL	8.2	8.2	8.2	8.2	8.2	8.1	—	
temp (C)	INITIAL	21	20	19	19	20	20	21	
	FINAL	25	25	25	25	25	25	—	
CONC:	21%								
D.O. (mg/L)	INITIAL	8.7	9.0	9.1	9.2	9.1	9.2	8.9	
	FINAL	8.6	9.2	9.2	8.1	8.4	8.5	—	
pH (s.u.)	INITIAL	7.8	7.8	7.8	7.8	7.9	7.8	7.8	
	FINAL	8.2	8.2	8.2	8.2	8.2	8.1	—	
temp (C)	INITIAL	21	20	19	19	20	21	22	
	FINAL	25	25	25	25	25	25	—	
CONC:	28%								
D.O. (mg/L)	INITIAL	8.6	9.0	9.3	9.3	9.2	9.2	8.8	
	FINAL	8.8	9.3	9.3	8.2	8.7	8.5	—	
pH (s.u.)	INITIAL	7.9	7.8	7.9	7.8	7.8	7.7	7.8	
	FINAL	8.2	8.2	8.2	8.2	8.2	8.2	—	
temp (C)	INITIAL	21	20	19	19	20	21	22	
	FINAL	25	25	25	25	25	25	—	
CONC:		A	A	B	B	C	C	C	
ALKALINITY (mg/L)		74	→	86	→	90	→	→	
HARDNESS (mg/L)		40	→	40	→	46	→	→	
CONDUCTIVITY (umhos/cm)		356	→	376	→	390	→	→	
CHLORINE (mg/L)		<0.05	→	<0.05	→	<0.05	→	→	

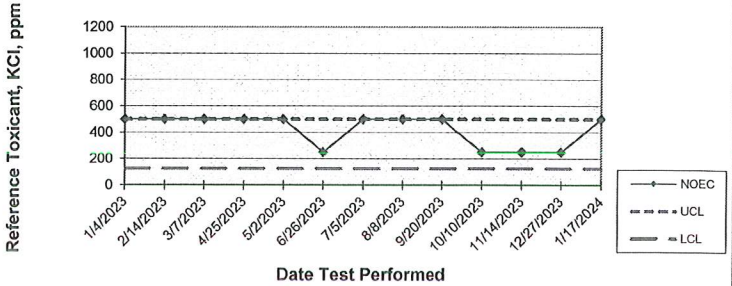
ARKANSAS ANALYTICAL, INC.

FATHEAD MINNOW SURVIVAL 7 Day
QUALITY ASSURANCE



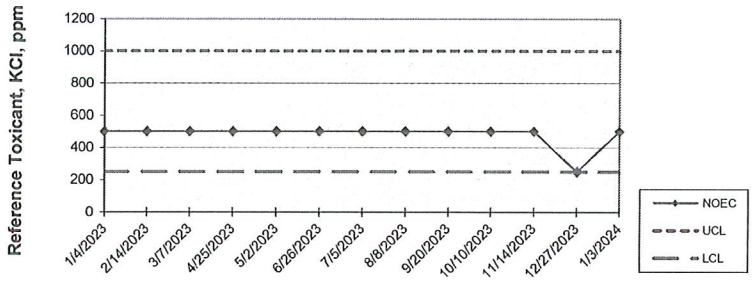
ARKANSAS ANALYTICAL, INC.

CERIODAPHNIA DUBIA SURVIVAL
QUALITY ASSURANCE



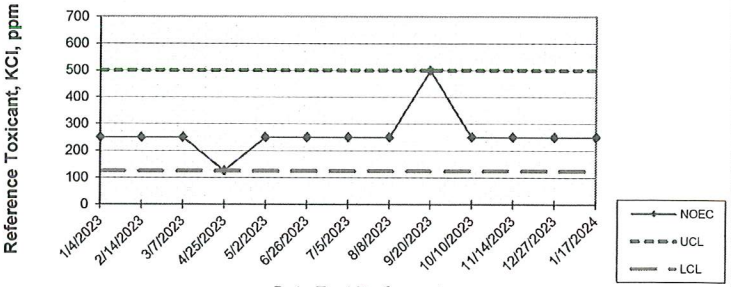
ARKANSAS ANALYTICAL, INC.

FATHEAD MINNOW GROWTH 7 Day
QUALITY ASSURANCE



ARKANSAS ANALYTICAL, INC.

CERIODAPHNIA DUBIA REPRODUCTION
QUALITY ASSURANCE



APPENDIX B

ADEE-DEQ Approval Letter for use of Synthetic Water as Receiving Water

July 13, 2023

Jared Evanov
Little Rock Water Reclamation Authority
9500 Birdwood Dr.
Little Rock, AR 72206

RE: Control and dilution water for Whole Effluent Toxicity (WET) Testing
NPDES Permit No.: AR0040177 Outfall: 001 AFIN: 60-01021
NPDES Permit No.: AR0021806 Outfall: 001 AFIN: 60-00409

Mr. Evanov:

The Division has reviewed requirements for acceptability of receiving water for use as dilution water. According to Chapter 6 of EPA Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing, "the receiving water should support adequate performance of the test organisms with respect to survival, growth, reproduction, or other responses that may be measured in the test," i.e., "the 100% receiving water concentration used as a dilution water control should consistently meet test acceptability criteria for control responses."

The receiving water (Arkansas River) control in the AR0021806 May 2023 *P. promelas* test failed to meet the following test acceptance criteria:

- "The toxicity test control (0% effluent) must have survival equal to or greater than 80%." (NPDES Permit No. AR0021806 Part II.10.C.i.a.)
    - Mean *P. promelas* survival in the AR0021806 May 2023 test was 30%.

- "The mean dry weight of surviving Fathead minnow larvae at the end of the 7 days in the control (0% effluent) must be 0.25 mg per larva or greater." (NPDES Permit No. AR0021806 Part II.10.C.i.d.)
    - The mean dry weight of surviving Fathead minnow was 0.145 mg in the AR0021806 May 2023 test.

- "The percent coefficient of variation between replicates shall be 40% or less in the control (0% effluent) for: the young of surviving females in the reproduction test; the growth and survival endpoints of the Fathead minnow test." (NPDES Permit No. AR0021806 Part II.10.C.i.e.)
    - The coefficient of variation was 44.3% in the AR0021806 May 2023 receiving water control for *P. promelas* growth.

EPA method guidance states that when receiving water is inappropriate for use as dilution water, synthetic water should be used. The Division approves use of synthetic dilution water that approximates the chemical characteristics of the receiving water (Arkansas River) for future WET tests.

For the remainder of the permit term, synthetic dilution water may be used for WET tests (both organisms) for NPDES Permit No.: AR0021806, Outfall 001.

For the remainder of the permit term, synthetic dilution water may be used for WET tests (both organisms) for NPDES Permit No.: AR0040177, Outfall 001.

Please contact me if you have any questions.

Sincerely,

Mary Barnett
Ecologist Coordinator

ECC: Mary Barnett, OWQ Planning
Kristen Graham, OWQ Enforcement