

February 14, 2020

Tom Myers
City of Siloam Springs
975 Anderson Avenue
Siloam Springs, AR 72761

RE: Project: SILOAM SPRINGS
Pace Project No.: 60328037

Dear Tom Myers:

Enclosed are the analytical results for sample(s) received by the laboratory on February 04, 2020. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Nolie Wood
nolie.wood@pacelabs.com
1(913)563-1401
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: SILOAM SPRINGS
Pace Project No.: 60328037

Pace Analytical Services Southeast Kansas

808 West McKay, Frontenac, KS 66763
Arkansas Certification #: 18-016-0
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10426

Louisiana Certification #: 03055
Oklahoma Certification #: 9935
Texas Certification #: T104704407
Utah Certification #: KS00021

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: SILOAM SPRINGS

Pace Project No.: 60328037

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60328037001	CITY OF SILOAM SPRINGS	Water	02/03/20 09:00	02/04/20 08:00

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SAMPLE ANALYTE COUNT

Project: SILOAM SPRINGS

Pace Project No.: 60328037

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60328037001	CITY OF SILOAM SPRINGS	EPA 821/R-02/013	TDH	1	PASI-SE

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ANALYTICAL RESULTS

Project: SILOAM SPRINGS

Pace Project No.: 60328037

Sample: CITY OF SILOAM SPRINGS	Lab ID: 60328037001	Collected: 02/03/20 09:00	Received: 02/04/20 08:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual

Chronic Toxicity

Analytical Method: EPA 821/R-02/013

Toxicity, Chronic

Complete

1.0 1

02/04/20 15:00

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QUALIFIERS

Project: SILOAM SPRINGS

Pace Project No.: 60328037

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-SE Pace Analytical Services - SE Kansas

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: SILOAM SPRINGS

Pace Project No.: 60328037

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60328037001	CITY OF SILOAM SPRINGS	EPA 821/R-02/013	638274		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60328037



Client Name: Siloam Springs

Courier: FedEx UPS VIA Clay PEX ECI Pace Xroads Client Other

Tracking #: _____ Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Other

Thermometer Used: T-243 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 3.6 Corr. Factor -1.6 Corrected 2.0

Date and initials of person examining contents:

2/4/00
EB 8:00

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> x/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> x/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date _____



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company: City of Siloam Springs
 Address: 975 Anderson Avenue
 Siloam Springs, AR
 Email To: tmyers@siloamsprings.com
 Phone: 479-228-0934
 Requested Due Date/TAT:

Section B Required Project Information:

Report To: Tom Myers
 Copy To:
 Purchase Order No.
 Project Name: Richard Mannz
 Project Number: 10809

Section C Invoice Information:

Attention:
 Company Name:
 Address:
 Pace Quote Reference:
 Pace Project Manager: Richard Mannz
 Pace profile #: 10809

REGULATORY AGENCY
 NPDES GROUND WATER DRINKING WATER
 UST RCRA OTHER
 Site Location: _____ STATE: AR

ITEM #	Section D Required Client Information	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WATER WATER WW WASTE WATER P PRODUCT SOIL/SOLID OIL WIPE AIR OTHER TISSUE TS	COLLECTED		MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	# OF CONTAINERS	Preservatives	Y/N	Requested Analysis Filtered (Y/N)
			COMPOSITE START	COMPOSITE END/GRAB						
1	City of Siloam Springs		02/16/20	10:20	2/3/20	9:00	39	1	X	Chronic WET Test
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										

ADDITIONAL COMMENTS
 *samples have a 24 hour hold time!
 *return samples to the Frontenac Lab on ice!

RELINQUISHED BY / AFFILIATION: Tony Brown
 DATE: 2/03/2020
 TIME: 15:30

ACCEPTED BY / AFFILIATION: Ethel...
 DATE: 2/14/20
 TIME: 8:00 AM

SAMPLE CONDITIONS:
 Received on Ice (Y/N)
 Custody Sealed Cooler (Y/N)
 Samples intact (Y/N)

SAMPLER NAME AND SIGNATURE
 PRINT Name of SAMPLER: Tony Brown
 SIGNATURE of SAMPLER: *Tony Brown*
 DATE Signed (MM/DD/YYYY): 02/03/2020

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.
 F-ALL-Q-020rev.08, 12-Oct-2007

REFERENCE #60328037

**CHRONIC TOXICITY TEST FOR
City of Siloam Springs**

PERMIT # AR0020273
AFIN # 04-00106

PERFORMED ON:

Pimephales promelas

and

Ceriodaphnia dubia

PREPARED FOR:

City of Siloam Springs
Attn: Tom Myers
975 Anderson Avenue
Siloam Springs, AR
1-479-228-0934

PREPARED BY:
Pace Analytical Services, Inc.
808 West McKay
Frontenac, KS 66763
1-620-235-0003

February 13, 2020

REFERENCE #60328037

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SUMMARY

A Chronic Whole Effluent Toxicity Test using the 7-day chronic fathead minnows (*Pimephales promelas*), static renewal larval survival and growth test, and three brood 7-day chronic Cladoceran (*Ceriodaphnia dubia*), static renewal survival and reproduction test, was conducted on effluent discharge water collected at the City of Siloam Springs effluent discharge from February 3, 2020 to February 7, 2020. All the test methods followed are as listed in EPA 821-R-02-013, "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms."

Statistically significant ($p < 0.05$) mortality is determined by Dunnet's procedure using average percent survival of each test concentration versus the average survival of the controls. If significant mortality occurs, median lethal concentrations are calculated using effluent concentrations and their corresponding percent mortality data. The 95% confidence intervals are calculated where appropriate by the Spearman-Kärber method. Statistical analysis is accomplished by following steps in EPA 821-R-02-013, February 2002 and by use of Toxstat version 3.4.

In minnow section of testing, it was observed that the effluent had no significant effect on the survival of the larvae at the 100% concentration. No significant mortality was observed in the other effluent concentrations after the 7-day exposure period. The No Observed Effect Concentration (NOEC) was determined to be 100% for survival. No significant reduction in growth was observed in the 100% effluent concentration. The Toxic Units is < 1 . The IC₂₅ is > 100 . The NOEC for growth in effluent was determined to be 100%. The PMSD was 16.9.

In Cladoceran section of testing, it was observed that the effluent had no significant effect on the survival of the organisms in the 100% effluent concentration. No significant mortality was observed in the other effluent concentrations after the 7-day exposure period. The No Observed Effect Concentration (NOEC) was determined to be 100% for survival. No significant reduction in reproduction was observed in the 100% effluent concentrations. The Toxic Units is < 1 . The IC₂₅ is > 100 . The NOEC for reproduction in effluent was determined to be 100%. The PMSD was 15.0.

The chronic toxicity exhibited by the fathead minnows and the *Ceriodaphnia* treated by the effluent sampled from February 3 to February 7 from the City of Siloam Springs effluent discharge, is acceptable as described in EPA 821-R-02-013.

INTRODUCTION

Pace Analytical was contracted to perform this chronic toxicity test on effluent from the City of Siloam Springs effluent discharge. Chronic toxicity was measured using the Pimephales promelas at larval for survival and growth test and the Ceriodaphnia dubia survival and reproduction test described in EPA 821-R-02-013, "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms." The raw data of the study is stored at Pace Analytical Services, INC. 808 West McKay, Frontenac, KS 66763.

TEST MATERIAL

City of Siloam Springs personnel collected sampling of the effluent. A sample of the effluent was delivered to Pace by commercial carrier on 2-4-20. Subsequent samples followed by delivery on 2-6-20 and on 2-8-20. All samples were stored at $\leq 6^{\circ}$ Celsius. Moderately Hard Synthetic Water was used as a control and also to make the required dilutions in the test as described in EPA 821-R-02-013.

TEST METHODS

Pace used EPA test method 1000.0 for conducting the Fathead Minnow, Pimephales promelas, Larval Survival and Growth Test. EPA test method 1002.0 was used for conducting the Cladoceran, Ceriodaphnia dubia, Survival and Reproduction Test. The tests were conducted to estimate the NOEC, and LOEC for survival, growth, and reproduction of these test species.

The Pimephales and Ceriodaphnia tests were initiated on 2-4-20 and carried out until 2-11-20. The Pimephales tests were conducted in 500 ml plastic jars with 250 ml of test solution. Eight larvae were placed in each of at least 5 replicates to make a total of 40 larvae per sample concentration. The Ceriodaphnia tests were carried out in 35ml vials containing 25 ml of test solution. One Neonate was placed in each of 10 replicates to make a total of 10 neonates per sample concentration.

TEST ORGANISMS

The organisms used in these tests were cultured at Pace under controlled temperature and photoperiod conditions and/or were purchased from an external supplier. Pace maintains records of all culture techniques used in producing organisms.

REFERENCE #60328037

TABLE 1

Permittee: City of Siloam Springs Effluent discharge.

Date Sampled	No. 1: 2-3-20	9:00
	No. 2: 2-5-20	9:00
	No. 3: 2-7-20	9:00

Test Initiated: 15:00

Date: 2-4-20

RESULTS

Ceriodaphnia dubia	Results
TLP3B	0
TGP3B	0
TOP3B	100
TPP3B	100
TQP3B	15.61
Pimephales promelas	Results
TLP6C	0
TGP6C	0
TOP6C	100
TPP6C	100
TQP6C	12.59

Dilution Water used: Moderately Hard Synthetic Water

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL
(Pimephales promelas)

DATA TABLE FOR GROWTH OF FATHEAD MINNOWS

Effluent Concentration (%)	Average Dry Weight in Milligrams in Replicate Chambers					Mean Dry Weight (mg)	CV% *
	A	B	C	D	E		
Control 0%	0.427	0.486	0.432	0.459	0.371	0.435	9.85
Dilution 1 32%	0.471	0.511	0.477	0.406	0.437	0.460	8.73
Dilution 2 42%	0.328	0.429	0.485	0.462	0.422	0.425	14.11
Dilution 3 56%	0.457	0.439	0.494	0.476	0.352	0.444	12.44
Dilution 4 75%	0.390	0.360	0.434	0.413	0.456	0.411	9.11
Dilution 5 100%	0.523	0.439	0.376	0.406	0.439	0.437	12.59

* Coefficient of Variation = Standard Deviation X 100 / Mean

FATHEAD MINNOW SURVIVAL

Conc. %	Percent Survival in Replicate Chambers					Mean Percent Survival			CV %
	A	B	C	D	E	24hr	48hr	7 day	
Control 0%	100	100	100	87.5	100	100	100	97.5	4.79
Dilution 1 32%	100	100	100	87.5	100	100	100	97.5	4.79
Dilution 2 42%	87.5	100	100	100	100	100	100	97.5	4.79
Dilution 3 56%	100	100	100	100	87.5	100	100	97.5	4.79
Dilution 4 75%	100	87.5	100	100	100	100	100	97.5	4.79
Dilution 5 100%	100	100	87.5	100	100	100	100	97.5	4.79

REFERENCE #60328037

Permittee: City of Siloam Springs Effluent discharge.

CERIODAPHNIA SURVIVAL AND REPRODUCTION

DATA TABLE FOR CERIODAPHNIA YOUNG PRODUCTION

Replicate	Control 0%	Dilution 1 32%	Dilution 2 42%	Dilution 3 56%	Dilution 4 75%	Dilution 5 100%
1	21	22	27	24	18	18
2	19	20	18	16	23	17
3	21	19	24	27	19	23
4	18	25	21	23	25	26
5	22	27	23	18	20	24
6	19	25	20	22	22	23
7	22	20	24	23	27	22
8	24	18	24	20	25	16
9	22	27	22	18	22	24
10	25	26	18	25	24	21
Mean	21.3	22.9	22.1	21.6	22.5	21.4
SD	2.214	3.479	2.885	3.502	2.877	3.340
CV %	10.39	15.19	13.05	16.21	12.79	15.61

CERIODAPHNIA MEAN PERCENT SURVIVAL

Percent Effluent (%)						
Time Elapsed	Control 0%	Dilution 1 32%	Dilution 2 42%	Dilution 3 56%	Dilution 4 75%	Dilution 5 100%
24 hrs	100	100	100	100	100	100
48 hrs	100	100	100	100	100	100
7-day	100	100	100	100	100	100
SD	0.000	0.000	0.000	0.000	0.000	0.000
CV %	0.00	0.00	0.00	0.00	0.000	0.000

TABLE 2
SUMMARY OF TEST CONDITIONS FOR THE FATHEAD MINNOW
(Pimephales promelas) LARVAL SURVIVAL AND GROWTH TEST

1. Test type	Static renewal
2. Temperature	25 degrees Celsius
3. Light quality	Ambient laboratory light
4. Light intensity	Ambient laboratory levels
5. Photoperiod	16 hr light, 8 hr dark
6. Test chamber size	500 ml
7. Test solution volume	250 ml
8. Renewal of test concentrations	Daily
9. Age of test organism	< 24 hours
10. No. larvae/chamber	8
11. No. replicates/concentration	5
12. No. larvae/concentration	40
13. Feeding regime	Feed 0.15 g newly hatched brine shrimp nauplii two times daily. Larvae are not fed 12 hours prior to termination of test.
14. Cleaning	Siphon daily, immediately before test solution renewal
15. Aeration	None

TABLE 2 (CONT.)

16. Dilution Water	Moderately Hard Synthetic Water prepared with MILLI-Q deionized water and reagent grade chemicals
17. Effluent concentrations	0%, 32%, 42%, 56%, 75%, 100%
18. Test duration	7 days
19. Endpoints	Survival and growth
20. Test acceptability	80% or greater survival in the controls, Average dry weight in controls >0.25 mg, Coefficient of variation in the control must not exceed 40%.

TABLE 2 (CONT.)

**SUMMARY OF TEST CONDITIONS FOR THE CLADOCERAN
(*Ceriodaphnia dubia*) SURVIVAL AND REPRODUCTION TEST**

1. Test type	Static renewal
2. Temperature	25 degrees Celsius
3. Light quality	Ambient laboratory light
4. Light intensity	Ambient laboratory levels
5. Photoperiod	16 hr light, 8 hr dark
6. Test chamber size	30 ml
7. Test solution volume	25 ml

REFERENCE #60328037

TABLE 2 (CONT.)

8. Renewal of test concentrations	Daily
9. Age of test organism	< 24 hours
10. No. larvae/chamber	1
11. No. replicates/concentration	10
12. No. larvae/concentration	10
13. Feeding regime	Feed 0.1 ml YCT and 0.1 ml of Algae daily. Larvae are not fed 12 hours prior to termination of test.
14. Cleaning	Siphon daily, immediately before test solution renewal
15. Aeration	None
16. Dilution Water	Moderately Hard Synthetic Water prepared with MILLI-Q deionized water and reagent grade chemicals
17. Effluent concentrations	0%, 32%, 42%, 56%, 75%, 100%
18. Test duration	Until 60% or more surviving control females have three broods or a maximum of 8 days.
19. Endpoints	Survival and Reproduction
20. Test acceptability	80% or greater survival in the controls, Average reproduction rate of 15 young / adult. Coefficient of variation in the control must not exceed 40%.

TABLE 2 (SECTION 2)

BIOMONITORING CHRONIC TOXICITY REPORT
 FATHEAD MINNOW (Pimephales promelas)
 CHEMICAL PARAMETERS CHART

Permittee: City of Siloam Springs Effluent discharge.

ANALYSTS: Pace Analytical Services, Inc.
 Timothy Harrell
 Mike Bollin
 Ethan Castagno

TABLE 2 (SECTION 2)
 INITIAL WATER QUALITY
 EFFLUENT CONCENTRATION

	Control	100%
PH	7.53	7.45
D.O.	8.40	8.30
Temp	25.0	25.0
Alk	58	114
Hard	92	116
Cond	344	291
Chlorine	<0.1	<0.1

- * D.O. is reported as mg/L
- Alkalinity is reported as mg/L CaCO₃
- Hardness is reported as mg/L CaCO₃
- Conductance is reported as umhos
- Ammonia is reported as mg/L
- Chlorine is reported as mg/L

TEST WATER QUALITY

24-Hour Water Quality Measurements

Effluent Concentration (%)	PH	D.O. (mg/l)	Temperature (C)
0% Control	7.83	7.10	25.1
32% Effluent	7.84	7.10	25.2
42% Effluent	7.84	7.10	25.2
56% Effluent	7.85	7.10	25.2
75% Effluent	7.88	6.90	25.2
100% Effluent	7.90	6.90	25.2

48-Hour Water Quality Measurements

Effluent Concentration (%)	PH	D.O. (mg/l)	Temperature (C)
0% Control	7.74	7.20	25.3
32% Effluent	7.86	7.20	25.1
42% Effluent	7.94	7.10	25.1
56% Effluent	8.00	7.10	25.1
75% Effluent	8.03	7.10	25.1
100% Effluent	8.07	7.00	25.1

REFERENCE #60328037

FINAL WATER QUALITY

EFFLUENT CONCENTRATION

	Control	100%
pH	7.77	7.86
D.O.	6.90	7.00
Temp	25.2	25.3
Alk	62	110
Hard	94	114
Cond	388	361

- * D.O. is reported as mg/L
- Alkalinity is reported as mg/L CaCO₃
- Hardness is reported as mg/L CaCO₃
- Conductance is reported as umhos

TEST VALIDITY

The Pimephales promelas control survival rate was 97.5. The mean dry weight (growth) of the Pimephales promelas was determined at 0.435 mg/organism in the controls. The percent coefficient of variation (%CV) values for the fathead minnow control for survival and growth were 4.79 and 9.85. The Ceriodaphnia dubia survival rates were 100 in the control. The Ceriodaphnia in the control produced an average of 21.3 young over the seven-day exposure period. Percent CV values for Ceriodaphnia dubia control survival and reproduction was 0.00 and 10.39. Control data met or exceeded all criteria set out by EPA 8100-R-02-013 for test acceptance.

REFERENCE #60328037

REFERENCE TOXICANTS

The absence of significant control mortality during this test indicated the health of the organisms and indicated that any significant mortality in the test concentrations was not due to contaminants or variations in testing conditions.

Reference toxicity testing is routinely performed by staff members in our biomonitoring - bioassay laboratory.

Start: 1/7/20 11:45 End: 1/14/20 11:00

Reference Toxicant (NaCl)	<u>Pimephales promelas</u>			
	Avg. # of Live Organisms/replicate			
Concentration of Toxicant	0 hrs	24 hrs	48 hrs	7 days
10 g/l	40	3	0	0
8 g/l	40	35	24	2
6 g/l	40	39	35	25
4 g/l	40	40	40	40
2 g/l	40	40	40	40

IC25 (5.02 g/l Sodium Chloride)

Survival NOEC: 4.0 g/l

Reference Toxicant (NaCl)	<u>Ceriodaphnia Dubia</u>			
	Avg. # of Live Organisms/replicate			
Concentration of Toxicant	0 hrs	24 hrs	48 hrs	7 days
2.5 g/l	10	6	2	0
2.0 g/l	10	10	9	1
1.5 g/l	10	10	10	10
1.0 g/l	10	10	10	10
0.5 g/l	10	10	10	10

IC25 (1.13 g/l Sodium Chloride)

Survival NOEC: 1.5 g/l

Submitted By: _____
Timothy Harrell, Technical Director

60328037 Siloam Springs FATHEAD SURVIVAL
File: 6328037A Transform: ARC SINE(SQUARE ROOT(Y))

Chi-square test for normality: actual and expected frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	2.010	7.260	11.460	7.260	2.010
OBSERVED	6	0	24	0	0

Calculated Chi-Square goodness of fit test statistic = 38.1722

Table Chi-Square value (alpha = 0.01) = 13.277

Data FAIL normality test. Try another transformation.

Warning - The first three homogeneity tests are sensitive to non-normal data and should not be performed.

60328037 Siloam Springs FATHEAD SURVIVAL
File: 6328037A Transform: ARC SINE(SQUARE ROOT(Y))

Shapiro - Wilk's test for normality

D = 0.065

W = 0.490

Critical W (P = 0.05) (n = 30) = 0.927

Critical W (P = 0.01) (n = 30) = 0.900

Data FAIL normality test. Try another transformation.

Warning - The first three homogeneity tests are sensitive to non-normal data and should not be performed.

60328037 Siloam Springs FATHEAD SURVIVAL
 File: 6328037A Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	CONTROL	5	0.991	1.107	1.084
2	32%	5	0.991	1.107	1.084
3	42%	5	0.991	1.107	1.084
4	56%	5	0.991	1.107	1.084
5	75%	5	0.991	1.107	1.084
6	100%	5	0.991	1.107	1.084

60328037 Siloam Springs FATHEAD SURVIVAL
 File: 6328037A Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	CONTROL	0.003	0.052	0.023	4.79
2	32%	0.003	0.052	0.023	4.79
3	42%	0.003	0.052	0.023	4.79
4	56%	0.003	0.052	0.023	4.79
5	75%	0.003	0.052	0.023	4.79
6	100%	0.003	0.052	0.023	4.79

60328037 Siloam Springs FATHEAD SURVIVAL
 File: 6328037A Transform: ARC SINE(SQUARE ROOT(Y))

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	0.000	0.000	0.000
Within (Error)	24	0.065	0.003	
Total	29	0.065		

Critical F value = 2.62 (0.05,5,24)
 Since $F < \text{Critical } F$ FAIL TO REJECT H_0 : All equal

60328037 Siloam Springs FATHEAD SURVIVAL
 File: 6328037A Transform: ARC SINE(SQUARE ROOT(Y))

DUNNETT'S TEST

TABLE 1 OF 2

Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	CONTROL	1.084	0.780		
2	32%	1.084	0.780	0.000	
3	42%	1.084	0.780	0.000	
4	56%	1.084	0.780	0.000	
5	75%	1.084	0.780	0.000	
6	100%	1.084	0.780	0.000	

Dunnett table value = 2.36 (1 Tailed Value, P=0.05, df=24,5)

60328037 Siloam Springs FATHEAD SURVIVAL

File: 6328037A Transform: ARC SINE(SQUARE ROOT(Y))

DUNNETT'S TEST

TABLE 2 OF 2

Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	CONTROL	5			
2	32%	5	0.067	8.6	0.000
3	42%	5	0.067	8.6	0.000
4	56%	5	0.067	8.6	0.000
5	75%	5	0.067	8.6	0.000
6	100%	5	0.067	8.6	0.000

60328037 Siloam Springs FATHEAD GROWTH
File: 6328037B Transform: NO TRANSFORMATION

Shapiro - Wilk's test for normality

D = 0.058

W = 0.967

Critical W (P = 0.05) (n = 30) = 0.927

Critical W (P = 0.01) (n = 30) = 0.900

Data PASS normality test at P=0.01 level. Continue analysis.

60328037 Siloam Springs FATHEAD GROWTH
File: 6328037B Transform: NO TRANSFORMATION

Bartlett's test for homogeneity of variance
Calculated B1 statistic = 1.38

Table Chi-square value = 15.09 (alpha = 0.01, df = 5)

Table Chi-square value = 11.07 (alpha = 0.05, df = 5)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

60328037 Siloam Springs FATHEAD GROWTH
 File: 6328037B Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	CONTROL	5	0.371	0.486	0.435
2	32%	5	0.406	0.511	0.460
3	42%	5	0.328	0.485	0.425
4	56%	5	0.352	0.494	0.444
5	75%	5	0.360	0.456	0.411
6	100%	5	0.376	0.523	0.437

60328037 Siloam Springs FATHEAD GROWTH
 File: 6328037B Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	CONTROL	0.002	0.043	0.019	9.85
2	32%	0.002	0.040	0.018	8.73
3	42%	0.004	0.060	0.027	14.11
4	56%	0.003	0.055	0.025	12.44
5	75%	0.001	0.037	0.017	9.11
6	100%	0.003	0.055	0.025	12.59

60328037 Siloam Springs FATHEAD GROWTH
 File: 6328037B Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	0.007	0.001	0.584
Within (Error)	24	0.058	0.002	
Total	29	0.065		

Critical F value = 2.62 (0.05,5,24)
 Since $F < \text{Critical } F$ FAIL TO REJECT H_0 : All equal

60328037 Siloam Springs FATHEAD GROWTH
 File: 6328037B Transform: NO TRANSFORMATION

DUNNETT'S TEST

- TABLE 1 OF 2

Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	CONTROL	0.435	0.435		
2	32%	0.460	0.460	-0.816	
3	42%	0.425	0.425	0.315	
4	56%	0.444	0.444	-0.276	
5	75%	0.411	0.411	0.784	
6	100%	0.437	0.437	-0.051	

Dunnett table value = 2.36 (1 Tailed Value, P=0.05, df=24,5)

60328037 Siloam Springs FATHEAD GROWTH

File: 6328037B

Transform: NO TRANSFORMATION

DUNNETT'S TEST

- TABLE 2 OF 2

Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	CONTROL	5			
2	32%	5	0.073	16.9	-0.025
3	42%	5	0.073	16.9	0.010
4	56%	5	0.073	16.9	-0.009
5	75%	5	0.073	16.9	0.024
6	100%	5	0.073	16.9	-0.002

FISHER'S EXACT TEST

IDENTIFICATION	NUMBER OF		
	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
32%	10	0	10
TOTAL	20	0	20

CRITICAL FISHER'S VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10.
 Since b is greater than 6 there is no significant difference
 between CONTROL and TREATMENT at the 0.05 level.

FISHER'S EXACT TEST

IDENTIFICATION	NUMBER OF		
	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
42%	10	0	10
TOTAL	20	0	20

CRITICAL FISHER'S VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10.
 Since b is greater than 6 there is no significant difference
 between CONTROL and TREATMENT at the 0.05 level.

FISHER'S EXACT TEST

IDENTIFICATION	NUMBER OF		
	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
56%	10	0	10

TOTAL 20 0 20

CRITICAL FISHER'S VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10.
 Since b is greater than 6 there is no significant difference
 between CONTROL and TREATMENT at the 0.05 level.

FISHER'S EXACT TEST

IDENTIFICATION	NUMBER OF		
	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
75%	10	0	10
TOTAL	20	0	20

CRITICAL FISHER'S VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10.
 Since b is greater than 6 there is no significant difference
 between CONTROL and TREATMENT at the 0.05 level.

FISHER'S EXACT TEST

IDENTIFICATION	NUMBER OF		
	ALIVE	DEAD	TOTAL ANIMALS
CONTROL	10	0	10
100%	10	0	10
TOTAL	20	0	20

CRITICAL FISHER'S VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10.
 Since b is greater than 6 there is no significant difference
 between CONTROL and TREATMENT at the 0.05 level.

SUMMARY OF FISHER'S EXACT TESTS

NUMBER NUMBER SIG

GROUP	IDENTIFICATION	EXPOSED	DEAD	(P= .05)
	CONTROL	10	0	
1	32%	10	0	
2	42%	10	0	
3	56%	10	0	
4	75%	10	0	
5	100%	10	0	

60328037 Siloam Springs CERIODAPHNIA DUBIA SURVIVA
File: 6328037D Transform: NO TRANSFORM

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	CONTROL	10	1.000	1.000	1.000
2	32%	10	1.000	1.000	1.000
3	42%	10	1.000	1.000	1.000
4	56%	10	1.000	1.000	1.000
5	75%	10	1.000	1.000	1.000
6	100%	10	1.000	1.000	1.000

60328037 Siloam Springs CERIODAPHNIA DUBIA SURVIVA
File: 6328037D Transform: NO TRANSFORM

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	CONTROL	0.000	0.000	0.000	0.00
2	32%	0.000	0.000	0.000	0.00
3	42%	0.000	0.000	0.000	0.00
4	56%	0.000	0.000	0.000	0.00
5	75%	0.000	0.000	0.000	0.00
6	100%	0.000	0.000	0.000	0.00

60328037 Siloam Springs CERIODAPHNIA DUBIA REPRODU
File: 6328037E Transform: NO TRANSFORMATION

Chi-square test for normality: actual and expected frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	4.020	14.520	22.920	14.520	4.020
OBSERVED	3	16	20	17	4

Calculated Chi-Square goodness of fit test statistic = 1.2053
Table Chi-Square value (alpha = 0.01) = 13.277

Data PASS normality test. Continue analysis.

60328037 Siloam Springs CERIODAPHNIA DUBIA REPRODU
File: 6328037E Transform: NO TRANSFORMATION

Bartlett's test for homogeneity of variance
Calculated B1 statistic = 2.38

Table Chi-square value = 15.09 (alpha = 0.01, df = 5)
Table Chi-square value = 11.07 (alpha = 0.05, df = 5)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

60328037 Siloam Springs CERIODAPHNIA DUBIA REPRODU
 File: 6328037E Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	CONTROL	10	18.000	25.000	21.300
2	32%	10	18.000	27.000	22.900
3	42%	10	18.000	27.000	22.100
4	56%	10	16.000	27.000	21.600
5	75%	10	18.000	27.000	22.500
6	100%	10	16.000	26.000	21.400

60328037 Siloam Springs CERIODAPHNIA DUBIA REPRODU
 File: 6328037E Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	CONTROL	4.900	2.214	0.700	10.39
2	32%	12.100	3.479	1.100	15.19
3	42%	8.322	2.885	0.912	13.05
4	56%	12.267	3.502	1.108	16.21
5	75%	8.278	2.877	0.910	12.79
6	100%	11.156	3.340	1.056	15.61

60328037 Siloam Springs CERIODAPHNIA DUBIA REPRODU
 File: 6328037E Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	20.733	4.147	0.436
Within (Error)	54	513.200	9.504	
Total	59	533.933		

Critical F value = 2.45 (0.05,5,40)
 Since $F < \text{Critical } F$ FAIL TO REJECT H_0 : All equal

60328037 Siloam Springs CERIODAPHNIA DUBIA REPRODU
 File: 6328037E Transform: NO TRANSFORMATION

DUNNETT'S TEST - TABLE 1 OF 2

Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	CONTROL	21.300	21.300		
2	32%	22.900	22.900	-1.161	
3	42%	22.100	22.100	-0.580	
4	56%	21.600	21.600	-0.218	
5	75%	22.500	22.500	-0.870	
6	100%	21.400	21.400	-0.073	

Dunnnett table value = 2.31 (1 Tailed Value, P=0.05, df=40,5)

60328037 Siloam Springs CERIODAPHNIA DUBIA REPRODU
 File: 6328037E Transform: NO TRANSFORMATION

DUNNETT'S TEST - TABLE 2 OF 2

Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	CONTROL	10			
2	32%	10	3.185	15.0	-1.600
3	42%	10	3.185	15.0	-0.800
4	56%	10	3.185	15.0	-0.300
5	75%	10	3.185	15.0	-1.200
6	100%	10	3.185	15.0	-0.100

Conc. ID	1	2	3	4	5	6
Conc. Tested	0	32	42	56	75	100
Response 1	.427	.471	.328	.457	.390	.523
Response 2	.486	.511	.429	.439	.360	.439
Response 3	.432	.477	.485	.494	.434	.376
Response 4	.459	.406	.462	.476	.413	.406
Response 5	.371	.437	.422	.352	.456	.439

*** Inhibition Concentration Percentage Estimate ***

Toxicant/Effluent: Siloam Spring

Test Start Date: 2/4/20 Test Ending Date: 2/11/20

Test Species: Fathead

Test Duration: 7 Day

DATA FILE:

Conc. ID	Number Replicates	Concentration	Response Means	Std. Dev.	Pooled Response Means
1	5	0.000	0.435	0.043	0.448
2	5	32.000	0.460	0.040	0.448
3	5	42.000	0.425	0.060	0.434
4	5	56.000	0.444	0.055	0.434
5	5	75.000	0.411	0.037	0.424
6	5	100.000	0.437	0.055	0.424

*** No Linear Interpolation Estimate can be calculated from the input data since none of the (possibly pooled) group response means were less than 75% of the control response mean.

Conc. ID	1	2	3	4	5	6
Conc. Tested	0	32	42	56	75	100
Response 1	21	22	27	24	18	18
Response 2	19	20	18	16	23	17
Response 3	21	19	24	27	19	23
Response 4	18	25	21	23	25	26
Response 5	22	27	23	18	20	24
Response 6	19	25	20	22	22	23
Response 7	22	20	24	23	27	22
Response 8	24	18	24	20	25	16
Response 9	22	27	22	18	22	24
Response 10	25	26	18	25	24	21

*** Inhibition Concentration Percentage Estimate ***

Toxicant/Effluent: Siloam Springs

Test Start Date: 2/4/20 Test Ending Date: 2/11/20

Test Species: Fathead ~~fish~~ *Dubin 2/12/24*

Test Duration: 7 Day

DATA FILE:

Conc. ID	Number Replicates	Concentration	Response Means	Std. Dev.	Pooled Response Means
1	10	0.000	21.300	2.214	22.100
2	10	32.000	22.900	3.479	22.100
3	10	42.000	22.100	2.885	22.100
4	10	56.000	21.600	3.502	22.050
5	10	75.000	22.500	2.877	22.050
6	10	100.000	21.400	3.340	21.400

*** No Linear Interpolation Estimate can be calculated from the input data since none of the (possibly pooled) group response means were less than 75% of the control response mean.



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information: Company: City of Siloam Springs Address: 975 Anderson Avenue Siloam Springs, AR Email To: tmyers@siloamsprings.com Phone: 479-228-0934 Fax: _____ Requested Due Date/TAT: _____		Section B Required Project Information Report To: Tom Myers Copy To: _____ Purchase Order No. _____ Project Name: _____ Project Number: _____		Section C Invoice Information: Attention: _____ Company Name: _____ Address: _____ Pace Quote Reference: _____ Pace Project Manager: Richard Mannz Pace Profile #: 10809	
Section D Required Client Information SAMPLE ID (A-Z, 0-9 / . -) Sample IDs MUST BE UNIQUE		REGULATORY AGENCY <input checked="" type="checkbox"/> NPDES <input type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER Site Location: _____ STATE: AR			

ITEM #	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WASTE WATER WT WASTE WATER PRODUCT P SOIL/SOLID SL OIL OL WIPE WP AIR AR OTHER OT TISSUE TS	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS	Preservatives Unpreserved H ₂ SO ₄ HNO ₃ HCl NaOH Na ₂ S ₂ O ₃ Methanol Other <i>ACF</i>	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. <i>2016-001</i>
		COMPOSITE START	COMPOSITE END/GRAB							
1				2/4/20	10:00	2/5/20	9:00	2:30		
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										

ADDITIONAL COMMENTS *Samples have a 24 hour hold time! *return samples to the Frontenac Lab on ice!		RELINQUISHED BY / AFFILIATION Tony Brown	DATE 2/5/2020	TIME 15:30	ACCEPTED BY / AFFILIATION <i>Chau...</i>	DATE 2/6/20	TIME 8:00	SAMPLE CONDITIONS Received on ice (Y/N) Y Custody Sealed Cooler (Y/N) Y Samples Inlet (Y/N) Y	
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: Tony Brown SIGNATURE of SAMPLER: <i>Tony Brown</i>		DATE Signed (MM/DD/YY): 2/5/2020							



Sample Condition Upon Receipt

Client Name: Siloam Springs

Courier: FedEx UPS VIA Clay PEX ECI Pace Xroads Client Other

Tracking #: _____ Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Other

Thermometer Used: T-243 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 3.6 Corr. Factor -1.6 Corrected 2.0

Date and initials of person examining contents:

2/6/20
TD 8:00

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> x/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> x/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information: **Section B** Required Project Information **Section C** Invoice Information

Company: City of Siloam Springs
 Address: 975 Anderson Avenue
 Email To: tmyers@siloamsprings.com
 Phone: 479-228-0934 Fax: _____
 Report To: Tom Myers
 Copy To: _____
 Purchase Order No.: _____
 Project Name: Richard Mannz
 Project Number: _____
 Requested Due Date/TAT: _____

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER
 UST RCRA OTHER

Site Location: _____ STATE: AR

ITEM #	Section D Required Client Information	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WASTE WATER WW PRODUCT P SOL/SOLID SL OIL OI AIR A OTHER OT TISSUE TS	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS	Preservatives	Y/N	Requested Analysis Filtered (Y/N)		Pace Project No./ Lab I.D.
			COMPOSITE START	COMPOSITE END/GRAB						DATE	TIME	
1	City of Siloam Springs	WW C	2/6/20	10:00	2/7/2020	9:00	2.6	2				Residual Chlorine (Y/N)
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

ADDITIONAL COMMENTS

*samples have a 24 hour hold time!
 *return samples to the Frontenac Lab on ice!

RELINQUISHED BY / AFFILIATION: Tony Brown Taylor
 DATE: 2/7/2020
 TIME: 15:30

ACCEPTED BY / AFFILIATION: Alan Capora Pace
 DATE: 2/8/2020
 TIME: 8:00

Temp in °C: _____
 Received on Ice (Y/N): _____
 Custody Sealed (Y/N): _____
 Samples Intact (Y/N): _____

SAMPLER NAME AND SIGNATURE: Tony Brown
 PRINT Name of SAMPLER: Tony Brown
 SIGNATURE of SAMPLER: *Tony Brown*
 DATE Signed (MM/DD/YYYY): 2/7/2020



Sample Condition Upon Receipt

Client Name: Siloam Springs

Courier: FedEx UPS VIA Clay PEX ECI Pace Xroads Client Other

Tracking #: _____ Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Other

Thermometer Used: T-243 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 3.6 Corr. Factor -1.6 Corrected 2.0

Date and initials of person examining contents:

2/8/20
8:00

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> x/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> x/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____