

February 17, 2020

Mike Cole EEG 220 N Knoxville Avenue Russellville, AR 72801

RE: Project: CITY CORPORATION, L246-056046

Pace Project No.: 60328035

#### Dear Mike Cole:

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,

Jamie Church jamie.church@pacelabs.com 314-838-7223 Project Manager

Jami Church

Enclosures

cc: Mike Cole, Environmental Enterprise Group, Inc. Stacy Ness, EEG Stacy Ness-copy invoice, EEG, Inc.





9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665



#### **CERTIFICATIONS**

Project: CITY CORPORATION, L246-056046

Pace Project No.: 60328035

Pace Analytical Services Southeast Kansas

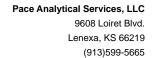
808 West McKay, Frontenac, KS 66763 Arkansas Certification #: 18-016-0

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10426

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

#### **REPORT OF LABORATORY ANALYSIS**





#### **SAMPLE SUMMARY**

Project: CITY CORPORATION, L246-056046

Pace Project No.: 60328035

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60328035001	OUTFALL 001	Water	02/03/20 07:18	02/04/20 08:00

#### **REPORT OF LABORATORY ANALYSIS**

(913)599-5665



#### **SAMPLE ANALYTE COUNT**

Project: CITY CORPORATION, L246-056046

Pace Project No.: 60328035

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory	
60328035001	OUTFALL 001	EPA 821/R-02/013	TDH	1	PASI-SE	

#### **REPORT OF LABORATORY ANALYSIS**

(913)599-5665



#### **ANALYTICAL RESULTS**

Project: CITY CORPORATION, L246-056046

Pace Project No.: 60328035

Date: 02/17/2020 07:51 AM

Sample: OUTFALL 001	Lab ID: 60	328035001	Collected: 02	2/03/2	0 07:18	Received:	02/04/20 08:00	Matrix: Water	
Parameters	Results	Units	Report Lir	mit _	DF	Prepared	Analyzed	CAS No.	Qual
Chronic Toxicity	Analytical Me	thod: EPA 82	21/R-02/013						
Toxicity, Chronic	Complete			1.0	1		02/04/20 15:0	00	



#### **QUALIFIERS**

Project: CITY CORPORATION, L246-056046

Pace Project No.: 60328035

#### **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**

Date: 02/17/2020 07:51 AM

PASI-SE Pace Analytical Services - SE Kansas

(913)599-5665



#### **QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: CITY CORPORATION, L246-056046

Pace Project No.: 60328035

Date: 02/17/2020 07:51 AM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60328035001	OUTFALL 001	EPA 821/R-02/013	638274		



#### Sample Condition Upon Receipt



Client Name: EEG City Gr	P			
Courier: FedEx   UPS   VIA Clay   F	PEX 🗆	EC		Pace ☐ Xroads ☐ Client ☐ Other ☐
Tracking #: Pac	e Shippi	ng Lal	bel Use	d? Yes □ No <b>X</b>
Custody Seal on Cooler/Box Present: Yes X No □	Seals	intact	Yes >	<b>〈</b> No □
Packing Material: Bubble Wrap □ Bubble Bags □		Fo	am 🗆	None <b>X</b> Other □
Thermometer Used: T-243 Type of	fice: (W	et) Bi	lue No	
Cooler Temperature (°C): As-read 3.8 Corr. Factor	or -1.6		Correc	ted 2.2 Date and initials of person examining contents:
Temperature should be above freezing to 6°C				2/4/20
Chain of Custody present:	XYes	□No	□n/a	# 8:00
Chain of Custody relinquished:	Yes	□No	□ N/A	
Samples arrived within holding time:	Yes	□No	□N/A	
Short Hold Time analyses (<72hr):	XYes	□No	□N/A	
Rush Turn Around Time requested:	□Yes	XNo	□n/a	
Sufficient volume:	XYes	□No	□n/a	
Correct containers used:	Xyes	□No	□N/A	
Pace containers used:	XYes	□No	□n/a	
Containers intact:	Xyes	□No	∐n/a	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes	□No	XN/A	
Filtered volume received for dissolved tests?	□Yes	□No	□x/A	
Sample labels match COC: Date / time / ID / analyses	X <sub>Yes</sub>	□No	□ N/A	
Samples contain multiple phases? Matrix:	□Yes	XNo	□n/a	
Containers requiring pH preservation in compliance? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	□Yes	□No	XN/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)	□Yes	□No		
Potassium iodide test strip turns blue/purple? (Preserve)	□Yes	□No		
Trip Blank present:	□Yes	□No	XN/A	
Headspace in VOA vials ( >6mm):	□Yes	□No	XN/A	
Samples from USDA Regulated Area: State	Ulyes	□No	X <sub>N/A</sub>	
Additional labels attached to 5035A / TX1005 vials in the field?	? []Yes	ШΝο	X <sub>x/A</sub>	
Client Notification/ Resolution: Copy COC to	Client?	Υ	/ N	Field Data Required? Y / N
Person Contacted: Date/T	ime:			
Comments/ Resolution:				
21			=====	2/4/20
Project Manager Review:			Date	

Environmental Enterprise Group, Inc.

# ghoaso-anza

Environmental Enterprise Group, Inc. 220 North Knoxville Russellville, Arkansas 72801 (479) 968-6767 Fax (479) 968-1956

Company Name:							Phone #:								۲		Red	ueste	Requested Analysis	ysis			
City Corporation	ח							(479) 968-4989	) 96	38-4	989												
Address:							Fax #:																
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Project Name or Number:	r Number:						Purchase Order #:	Order	#												Control	Remarks	
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Comments:													)				L	<b>&gt;</b>					

## CHRONIC TOXICITY TEST FOR CITY CORPORATION

PERMIT # AR 0021768 AFIN # 58-00105

PERFORMED ON:

Pimephales promelas

and

Ceriodaphnia dubia

PREPARED FOR:

Environmental Enterprise Group Inc. 220 North Knoxville Russellville, AR 72801 479-968-6767

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

February 13, 2020

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#### SUMMARY

A Chronic Whole Effluent Toxicity Test using the 7-day chronic fathead minnows (<u>Pimephales promelas</u>), static renewal larval survival and growth test, and three brood 7-day chronic Cladoceran (<u>Ceriodaphnia dubia</u>), static renewal survival and reproduction test, was conducted on effluent discharge water collected at the CITY CORPORATION effluent discharge from February 3, 2020 to February 7, 2020. All the test methods followed are as listed in <u>EPA 8100-R-02-013</u>, "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-Karber method. Statistical analysis is accomplished by following steps in <a href="EPA 8100-R-02-013">EPA 8100-R-02-013</a>, November 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 is 17.2.

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 is 12.9.

The chronic toxicity exhibited by the fathead minnows and the <u>Ceriodaphnia</u> treated by the effluent sampled from February 3 to February 7 from the CITY CORPORATION effluent discharge, is acceptable as described in <u>EPA 8100-R-02-013</u>.

#### INTRODUCTION

Pace Analytical was contracted to perform this chronic toxicity test on effluent from the CITY CORPORATION effluent discharge. Chronic toxicity was measured using the <u>Pimephales promelas</u> at larval for survival and growth test and the <u>Ceriodaphnia dubia</u> survival and reproduction test described in <u>EPA 8100-R-02-013</u>, "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**

EEG personnel collected sampling of the effluent. A sample of the effluent was delivered to Pace by CITY CORPORATION personnel on 2-4-20. Subsequent samples followed by delivery on 2-6-20 and on 2-7-20. All samples were stored at  $\leq 6^\circ$  Celsius. Moderately Hard Synthetic was used as the control and to make the required dilutions in the test as described in EPA 8100-R-02-013.

#### **TEST METHODS**

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

The <u>Pimephales</u> and <u>Ceriodaphnia</u> 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 <u>Ceriodaphnia</u> 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.

Permittee: CITY CORPORATION Effluent discharge.

Date Sampled

No. 1: 2-3-20

7:18

No. 2: 2-5-20

7:18

No. 3: 2-7-20

7:16

Test Initiated: 15:00

Date: 2-4-20

Ceriodaphnia dubia	Results
TLP3B	0
TGP3B	0
ТОР3В	100%
TPP3B	100%
TQP3B	11.34
Pimephales promelas	Results
TLP6C	0
TGP6C	0
TOP6C	100%
TPP6C	100%
TQP6C	9.85

Dilution Water used: Moderately Hard Synthetic

# FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL (Pimephales promelas)

## DATA TABLE FOR GROWTH OF FATHEAD MINNOWS

Effluent Concentration (%)		e Dry W	eight in Mi te Chamb C	lligrams in	E	Mean Dry Weight (mg)	CV% *
Control 0%	0.427	0.486	0.432	0.459	0.371	0.435	9.85
Dilution 1 32%	0.441	0.381	0.401	0.510	0.451	0.437	11.43
Dilution 2 42%	0.438	0.362	0.496	0.456	0.433	0.437	11.14
Dilution 3 56%	0.396	0.508	0.391	0.329	0.486	0.422	17.49
Dilution 4	0.471	0.478	0.437	0.506	0.401	0.459	8.83
Dilution 5 100%	0.401	0.476	0.474	0.483	0.435	0.454	7.71

<sup>\*</sup> Coefficient of Variation = Standard Deviation X 100 / Mean

#### FATHEAD MINNOW SURVIVAL

Conc. %	Pe		urvival ir	n Replica	ate	Mean	Percent S	Survival	CV %
	Α	В	С	D	E	24hr	48hr	7 day	
Control 0%	100	100	100	100	87.5	100	100	97.5	4.79
Dilution 1 32%	100	100	100	100	100	100	100	100	0.00
Dilution 2 42%	100	87.5	100	100	100	100	100	97.5	4.79
Dilution 3 56%	100	100	100	87.5	100	100	100	97.5	4.79
Dilution 4 75%	100	100	100	100	100	100	100	100	0.00
Dilution 5 100%	100	100	100	100	100	100	100	100	0.00

Permittee: CITY CORPORATION Effluent discharge.

#### CERIODAPHNIA SURVIVAL AND REPRODUCTION

## DATA TABLE FOR CERIODAPHNIA YOUNG PRODUCTION

Replicate	Control	Dilution 1	Dilution 2	Dilution 3	Dilution 3	Dilution 4
	0%	32%	42%	56%	75%	100%
1	21	27	23	25	20	25
2	19	21	24	27	26	24
3	21	19	24	23	26	18
4	18	26	18	23	20	26
5	22	22	25	26	24	23
6	19	26	28	27	28	23
7	22	24	23	24	27	27
8	24	26	28	27	25	25
9	22	24	27	19	25	26
10	25	25	22	27	27	21
Mean	21.3	24.0	24.2	24.8	24.8	23.8
SD	2.214	2.582	3.048	2.616	2.781	2.700
CV %	10.39	10.76	12.59	10.55	11.21	11.34

## CERIODAPHNIA MEAN PERCENT SURVIVAL

		Perd	ent Effluent	(%)		
Time	Control	Dilution 1	Dilution 2	Dilution 3	Dilution 4	Dilution 5
Elapsed	0%	32%	42%	56%	75%	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
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

( Den

## 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
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%.

1

#### **TABLE 2 (SECTION 2)**

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

Permittee: CITY CORPORATION 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	7.41
D.O.	8.40	8.90
Temp	25.0	25.0
Alk	58	60
Hard	92	40
Cond	344	360
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
Chlorine is reported as mg/L

#### TEST WATER QUALITY

24-Hour Water Quality Measurements

_			
Effluent	PH	D.O.	Temperature
Concentration (%)		(mg/l)	(C)
0% Control	7.83	7.10	25.1
32% Effluent	7.86	7.10	25.1
42% Effluent	7.88	7.10	25.1
56% Effluent	7.92	7.10	25.1
75% Effluent	7.95	7.00	25.1
100% Effluent	7.99	6.90	25.1

48-Hour Water Quality Measurements

40-110ul Walei Qua	ity weasurements		
Effluent	PH	D.O.	Temperature
Concentration (%)		(mg/l)	(C)
0% Control	7.74	7.20	25.3
32% Effluent	7.79	7.10	25.3
42% Effluent	7.85	7.10	25.3
56% Effluent	7.92	7.10	25.3
75% Effluent	8.00	7.00	25.3
100% Effluent	8.04	6.90	25.3

#### FINAL WATER QUALITY

#### **EFFLUENT CONCENTRATION**

	Control	100%
рН	7.77	8.15
D.O.	6.90	6.70
Temp	25.2	25.2
Alk	62	62
Hard	94	42
Cond	388	402

\* 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 <u>Pimephales promelas</u> control survival rate was 97.5. The mean dry weight (growth) of the <u>Pimephales promelas</u> 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 <u>Ceriodaphnia dubia</u> survival rates were 100 in the control. The <u>Ceriodaphnia in the control produced an average of 21.3 young over the seven-day exposure period.</u>
Percent CV values for <u>Ceriodaphnia dubia</u> control survival and reproduction was 0.00 and 10.39. Control data met or exceeded all criteria set out by <u>EPA 8100-R-02-013</u> for test acceptance.

#### 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

Pimephales promelas Reference Toxicant (NaCl)

1 (CIOIOIIOO I OMO				
Concentration	P	vg. # of Live Orga	anisms/replicate	
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

Ceriodaphnia Dubia Reference Toxicant (NaCl)

TOTOTOTION TOXIS	Jane (1.15.5.)			
Concentration		Avg. # of Live Org	anisms/replicate	
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: I'm Hanell Timothy Harrell, Technical Director 60328035 EEG City Corp FATHEAD SURVIVAL

File: 6328035A 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 OBSERVED	2.010	7.260 0	11.460 27	7.260 0	2.010

Calculated Chi-Square goodness of fit test statistic = 38.0902 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.

60328035 EEG City Corp FATHEAD SURVIVAL File: 6328035A Transform: ARC SINE(SQUARE ROOT(Y))

Shapiro - Wilk's test for normality

D = 0.032

W = 0.597

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

60328035 EEG City Corp FATHEAD SURVIVAL

File: 6328035A 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	1.107	1.107	1.107	
3	42%	5	0.991	1.107	1.084	
4	56%	5	0.991	1.107	1.084	
5	75%	5	1.107	1.107	1.107	
6	100%	5	1.107	1.107	1.107	

60328035 EEG City Corp FATHEAD SURVIVAL

File: 6328035A Transform: ARC SINE(SQUARE ROOT(Y))

#### SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	CONTROL 32%	0.003	0.052	0.023 0.000	4.79 0.00
3	42% 56%	0.003	0.052 0.052	0.023 0.023	4.79 4.79
5	75% 100%	0.000	0.000	0.000	0.00 0.00
6	100%	0.000	0.000		

60328035 EEG City Corp FATHEAD SURVIVAL

File: 6328035A Transform: ARC SINE(SQUARE ROOT(Y))

#### ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	 5	0.004	0.001	0.600
Within (Error)	24	0.032	0.001	
Total	29	0.036		

Critical F value = 2.62 (0.05,5,24) Since F < Critical F FAIL TO REJECT Ho: All equal

60328035 EEG City Corp FATHEAD SURVIVAL

File: 6328035A Transform: ARC SINE(SQUARE ROOT(Y))

DUNNETT'S TEST	-	TABLE 1 OF 2	Ho:Control <treatment< th=""></treatment<>
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GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	CONTROL	1.084	0.780		
2	32%	1.107	0.800	-1.000	
3	42%	1.084	0.780	0.000	
4	56%	1.084	0.780	0.000	
5	75%	1.107	0.800	-1.000	
6	100%	1.107	0.800	-1.000	
Dunnet	t table value = 2.36	(1 Tailed	Value, P=0.05, df=24,	5)	

60328035 EEG City Corp FATHEAD SURVIVAL File: 6328035A 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	0.047	6.0	-0.020
3	42%	5	0.047	6.0	0.000
4	56%	5	0.047	6.0	0.000
5	75%	5	0.047	6.0	-0.020
6	100%	5	0.047	6.0	-0.020

60328035 EEG City Corp FATHEAD GROWTH

File: 6328035B Transform: NO TRANSFORMATION

Shapiro - Wilk's test for normality

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D = 0.060

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19/4

W = 0.981

Critical W (P = 0.05) (n = 30) = 0.927Critical W (P = 0.01) (n = 30) = 0.900

.........

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

60328035 EEG City Corp FATHEAD GROWTH

Transform: NO TRANSFORMATION File: 6328035B

Bartlett's test for homogeneity of variance

Calculated B1 statistic = 2.64

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.

60328035 EEG City Corp FATHEAD GROWTH

File: 6328035B Transform: NO TRANSFORMATION

### SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	XAM	MEAN	
1	CONTROL	5	0.371	0.486	0.435	
2	32%	5	0.381	0.510	0.437	
3	42%	5	0.362	0.496	0.437	
4	56%	5	0.329	0.508	0.422	
5	75%	5	0.401	0.506	0.459	
_	, = -	5	0.401	0.483	0.454	
6	100%	5	0.401	0.405	0.131	

60328035 EEG City Corp FATHEAD GROWTH

File: 6328035B 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 11.43
3	42%	0.002 0.002 0.005	0.049	0.022	11.14 17.49
4 5	56% 75%	0.002	0.041	0.018	8.83
6	100%	0.001	0.035 	0.016 	7.71

60328035 EEG City Corp FATHEAD GROWTH

File: 6328035B Transform: NO TRANSFORMATION

#### ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	0.005	0.001	0.361
Within (Error)	24	0.060	0.003	
Total	29	0.065		
				(이용성하) 시부터 (프로젝트리트 (프로스 스 스 스 스 스 트 트 트 트 트 트 트 트 트 트 트 트 트 트

Critical F value = 2.62 (0.05,5,24) Since F < Critical F FAIL TO REJECT Ho: All equal

60328035 EEG City Corp FATHEAD GROWTH

File: 6328035B Transform: NO TRANSFORMATION

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DIM	ידדאמו	S	'1'EST

GROUP	TDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
GROUP	IDENTIFICATION	11111111			
1	CONTROL	0.435	0.435		
2	32%	0.437	0.437	-0.057	
3	42%	0.437	0.437	-0.063	
4	56%	0.422	0.422	0.411	
5	75%	0.459	0.459	-0.746	
6	100%	0.454	0.454	-0.594	

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

60328035 EEG City Corp FATHEAD GROWTH
File: 6328035B Transform: NO TRANSFORMATION

		DUNNETT'S TEST -	TABLE 2 O	F 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	0.075	17.2	-0.002
	2	42%	5	0.075	17.2	-0.002
	1	56%	5	0.075	17.2	0.013
رزد	٠ <u>+</u>	75%	5	0.075	17.2	-0.024
	5 6	100%	5	0.075	17.2	-0.019
	_					

#### FISHER'S EXACT TEST

Myr. II	DENTIFICATION	ALIVE	DEAD	TOTAL ANIMALS
	CONTROL	10	0	10
	32%	10		10
	TOTAL	20	0 == <b>====</b> ===	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

		NUMBER OF			
IDENTIFICATION	ALIVE	DEAD	TOTAL ANIMALS		
CONTROL	10	0	10		
42%	10	0	10		
TOTAL	20 === <b>===</b> ==	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

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

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

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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 

	NOMBER OF			
IDENTIFICATION	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

NUMBER OF

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	

60328035 EEG City Corp CERIODAPHNIA DUBIA SURVIVA File: 6328035D Transform: NO TRANSFORM

#### SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	XAM	MEAN
1	CONTROL	10	1.000	1.000	1.000
2	32%	10	1.000	1.000	1.000
Towns -	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
•					

60328035 EEG City Corp CERIODAPHNIA DUBIA SURVIVA File: 6328035D 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

60328035 EEG City Corp CERIODAPHNIA DUBIA REPRODU File: 6328035E Transform: NO TRANSFORMATION

Chi-square test for normality: actual and expected frequencies

Calculated Chi-Square goodness of fit test statistic = 6.5904

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

Data PASS normality test. Continue analysis.

60328035 EEG City Corp CERIODAPHNIA DUBIA REPRODU File: 6328035E Transform: NO TRANSFORMATION

Bartlett's test for homogeneity of variance
Calculated B1 statistic = 0.93

Section 1

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.

60328035 EEG City Corp CERIODAPHNIA DUBIA REPRODU File: 6328035E Transform: NO TRANSFORMATION

#### SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

60328035 EEG City Corp CERIODAPHNIA DUBIA REPRODU File: 6328035E Transform: NO TRANSFORMATION

#### SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1 2 3 4 5	CONTROL 32% 42% 56% 75% 100%	4.900 6.667 9.289 6.844 7.733 7.289	2.214 2.582 3.048 2.616 2.781 2.700	0.700 0.816 0.964 0.827 0.879 0.854	10.39 10.76 12.59 10.55 11.21 11.34

60328035 EEG City Corp CERIODAPHNIA DUBIA REPRODU File: 6328035E Transform: NO TRANSFORMATION

#### ANOVA TABLE

SS	MS	F
84.483	16.897	2.373
384.500	7.120	
468.983		
	384.500	384.500 7.120

Critical F value = 2.45 (0.05,5,40) Since F < Critical F FAIL TO REJECT Ho: All equal

60328035 EEG City Corp CERIODAPHNIA DUBIA REPRODU File: 6328035E Transform: NO TRANSFORMATION

T STAT SIG

-2.263 -2.430 -2.933 -2.933 -2.095

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GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS
1	CONTROL	21.300	21.300
2	32%	24.000	24.000
3	42%	24.200	24.200
4	56%	24.800	24.800
5	75%	24.800	24.800
6	100%	23.800	23.800

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

60328035 EEG City Corp CERIODAPHNIA DUBIA REPRODU File: 6328035E Transform: NO TRANSFORMATION

	DUNNETT'S TEST -	TABLE 2 O	F 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	2.757	12.9	-2.700
3	42%	10	2.757	12.9	-2.900
4	56%	10	2.757	12.9	-3.500
5	75%	10	2.757	12.9	-3.500
6	100%	10	2.757	12.9	-2.500
•					

Conc. ID		1	2	3	4	5	6
Conc. Tes	ted	0	32	42	56	75	100
Response Response Response Response Response	1 2 3 4 5	.427 .486 .432 .459 .371	.441 .381 .401 .510	.438 .362 .496 .456 .433	.396 .508 .391 .329	.471 .478 .437 .506	.401 .476 .474 .483

\*\*\* Inhibition Concentration Percentage Estimate \*\*\*

Toxicant/Effluent: EEG City Corp

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

Test Species: Fathead

Test Duration: 7 Day

DATA FILE:

Conc.	Number Replicates	Concentration	Response Means	Std. Dev.	Pooled Response Means
1 2 3 4 5	5 5 5 5 5 5	0.000 32.000 42.000 56.000 75.000	0.435 0.437 0.437 0.422 0.459 0.454	0.043 0.050 0.049 0.074 0.041 0.035	0.441 0.441 0.441 0.441 0.441

<sup>\*\*\*</sup> 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. Tes	sted	0	32	42	56	75	100
Response	1	21	27	23 24	25 27	20 26	25 24
Response Response	2 3	19 21	21 19	24	23	26	18 26
Response Response	4 5	18 22	26 22	18 25	23 26	20 24	23
Response Response	6 7	19 22	26 24	28 23	27 24	28 27	23 27
Response Response	8 9	24 22	26 24	28 27	27 19	25 25	25 26
Response	10	25	25	22	27	27	21

\*\*\* Inhibition Concentration Percentage Estimate \*\*\*

Toxicant/Effluent: EEG City Corp

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

Test Species: Fathead

Test Duration: 7 Day

DATA FILE:

 Conc.
 Number Replicates
 Concentration Means
 Response Means
 Std. Dev. Response Means

 1
 10
 0.000
 21.300
 2.214
 23.820

 2
 10
 32.000
 24.000
 2.582
 23.820

 3
 10
 42.000
 24.200
 3.048
 23.820

 4
 10
 56.000
 24.800
 2.616
 23.820

 5
 10
 75.000
 24.800
 2.781
 23.820

 6
 10
 100.000
 23.800
 2.700
 23.800

<sup>\*\*\*</sup> 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.

Environmental Enterprise Group, Inc.

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Environmental Enterprise Group, Inc. 220 North Knoxville Russellville, Arkansas 72801 (479) 968-6767 Fax (479) 968-1956

Company Name:							Phone #:								$\Box$	Reques	Requested Analysis	/sls			
City Corporation	_							(479) 968-4989	968-	498	တ္										
Address:							Fax #:														_
P.O. Box 3186 Russellville, AR 72811-3186	3 Russellvi	ille, AR 7	281	1-31	186			(479) 968-3430	-896	343	0					,		_	Laboratory	J	
Project Name or Number:	Number:						Purchase Order #:	Order #:										_	Control	Remarks	
WET Testing																			Number	(Please note special detection limits below)	_ 5
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Sample : D	Date	Time	24hrComp	Grab	Plast.	Glass	# of Containers	HSSO4	HCF	lce	None Water	lioS	1iA appul2	Sludge Other	WET Testin					(103/2035	
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Environmental Enterprise Group, Inc. PROVIDING CUSTOMIZED SERVICES NATIONWIDE

940-154046

Environmental Enterprise Group, Inc. 220 North Knoxville Russellville, Arkansas 72801 (479) 968-6767 Fax (479) 968-1956

Company Name:						<b>n</b>	Phone #:									_		ž	Requested Analysis	ted A	nalys	<u>s</u>				
City Corporation	_							(47	6	368	(479) 968-4989	39														
Address:						Ľ	Fax #:																			
P.O. Box 3186 Russellville, AR 72811-3186	6 Russellvi	lle, AR 72	2811	-31	98			(47	6	368	(479) 968-3430	30												Laboratory		
Project Name or Number:	· Number:					6	Purchase Order #:	Orde	#															Control	Remarks	
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# Sample Condition Upon Receipt

Client Name:			
	PEX 🗆	ECI 🗆	Pace □ Xroads □ Client □ Other □
, ,	e Shipping	Label Use	d? Yes □ No X
Custody Seal on Cooler/Box Present: Yes X No □	Seals int	act: Yes	<b>〈</b> No □
Packing Material: Bubble Wrap □ Bubble Bags □		Foam □	None X Other □
Thermometer Used: T-243 Type of	Ice: Wet	Blue No	Date and initials of person
Cooler Temperature (°C): As-read 410 Corr. Factor	or <u>-1.6</u>	Correc	tedexamining contents:
Temperature should be above freezing to 6°C			2/6/26
Chain of Custody present:	<b>X</b> Yes □	lno □n/A	\$ 8:00
Chain of Custody relinquished:	Yes 🗆	No □N/A	
	Yes 🗆	No □N/A	
Samples arrived within holding time:	XYes 🗆		
Short Hold Time analyses (<72hr):			
Rush Turn Around Time requested:	□Yes X	No □N/A	
Sufficient volume:	XYes 🗆	No □N/A	
Correct containers used:	XYes 🗆	No □N/A	
Pace containers used:	XYes [	]No □N/A	_=
Containers intact:	XYes [	]no □n/a	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes □	]No XN/A	
	□Yes □		
Filtered volume received for dissolved tests?			
Sample labels match COC: Date / time / ID / analyses	XYes [		
Samples contain multiple phases? Matrix:	□Yes X		
Containers requiring pH preservation in compliance?	□Yes □	□No <b>X</b> N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
(HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)			
Cyanide water sample checks:		7	7
Lead acetate strip turns dark? (Record only)	□Yes □		
Potassium iodide test strip turns blue/purple? (Preserve)	□Yes □		
Trip Blank present:	□Yes □	□No XN/A	
Headspace in VOA vials ( >6mm):	□Yes	□No XN/A	
Samples from USDA Regulated Area: State:	□Yes□	□No <b>X</b> N/A	
Additional labels attached to 5035A / TX1005 vials in the field	d? □Yes □	□No <b>X</b> x/A	
Client Notification/ Resolution: Copy COC		Y / N	Field Data Required? Y / N
Person Contacted: Date/	Time:		
Comments/ Resolution:			
Project Manager Review:		Da	ate:

Environmental Enterprise Group, Inc. PROVIDING CUSTOMIZED SERVICES NATIONWIDE

146-050-046 J

Environmental Enterprise Group, Inc. 220 North Knoxville Russellville, Arkansas 72801 (479) 968-6767 Fax (479) 968-1956

Company Name:							Phone #:					Ì					P.	Requested Analysis	sted A	Analy	sis				
City Corporation	_							(479) 968-4989	96 (1	4-8	989														
Address:							Fax #:																		
P.O. Box 3186 Russellville, AR 72811-3186	) Russellvill	e, AR 728	311-	318	9		(479) 968-3430	(475	96 (1	38-3	430												Laboratory		
Project Name or Number:	· Number:						Purchase (	Order	#														Control	Rei	Remarks
WET Testing																							Number	(Please   detection	(Please note special detection limits below.)
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Comments:																		P	<b>-</b>						



## Sample Condition Upon Receipt

City Corp

	Client Name:			
	Courier: FedEx □ UPS □ VIA Clay □	PEX 🗆 E	CI 🗆	Pace ☐ Xroads ☐ Client ☐ Other ☐
	Tracking #: Pac	ce Shipping L	abel Used	d? Yes □ No X
	Custody Seal on Cooler/Box Present: Yes X No □	Seals inta	ct: Yes X	No □
	Packing Material: Bubble Wrap □ Bubble Bags		Foam □	None X Other □
经游戏	Thermometer Used: T-243 Type o	of Ice: (Wet)	Blue No	
	Cooler Temperature (°C): As-readCorr. Fac	tor <u>-1.6</u>	Correct	ted 2 0 Date and initials of person examining contents:
	Temperature should be above freezing to 6°C			2/7/20
	Chain of Custody present:	XYes □N	o 🗆 N/A	FB 15:36
	Chain of Custody relinquished:	√2Yes □N	o 🗆 N/A	
	Samples arrived within holding time:	Yes 🗆 N	lo 🗆 N/A	
	Short Hold Time analyses (<72hr):	<b>X</b> Yes □N	o 🗆 N/A	
	Rush Turn Around Time requested:	□Yes XNo	o 🗆 N/A	
	Sufficient volume:	<b>X</b> Yes □N	o 🗆 N/A	
	Correct containers used:	XYes □N	lo 🗆 N/A	
	Pace containers used:	<b>X</b> Yes □N	lo □N/A	
5 1944	Containers intact:	XYes □N	lo □N/A	
360	Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes □N	lo <b>X</b> N/A	
	Filtered volume received for dissolved tests?	□Yes □N	lo □x/A	
	Sample labels match COC: Date / time / ID / analyses	<b>X</b> Yes □N	lo □N/A	
	Samples contain multiple phases? Matrix:	□Yes <b>X</b> N	o 🗆 N/A	
	Containers requiring pH preservation in compliance?	□Yes □N	lo XN/A	List sample IDs, volumes, lot #'s of preservative and the
	(HNO₃, H₂SO₄, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)			date/time added.
40,00	(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)  Cyanide water sample checks:			
	Lead acetate strip turns dark? (Record only)	□Yes □N	lo	
	Potassium iodide test strip turns blue/purple? (Preserve)	□Yes □N	lo	
	Trip Blank present:	□Yes □N	lo <b>X</b> N/A	
	Headspace in VOA vials ( >6mm):	□Yes □N	lo <b>X</b> N/A	
	Samples from USDA Regulated Area: State:	□Yes □N	lo <b>X</b> N/A	
	Additional labels attached to 5035A / TX1005 vials in the field	d? □Yes □N	lo <b>X</b> x/A	
	Client Notification/ Resolution: Copy COC		/ N	Field Data Required? Y / N
	Person Contacted: Date	/Time:		
	Comments/ Resolution:			
	**************************************			
<b>35.2</b> s	Project Manager Review:	_	Dat	e: