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SIGNATORY AUTHORITY DOCUMENTATION

CITY OF ALBUQUERQUE

Office of the Mayor

August 23, 2010

EPA Region 6
Water Enforcement Branch (6EN-WT)
1445 Ross Avenue Suite 1200
Dallas, TX 75202-2733

RE: Delegation of Signatory Authority
NPDES Permit No. NMS000101

Dear Sirs,

As the Chief Administrative Officer for the City of Albuquerque in accordance with regulations found at 40 CFR 122.22(b), I hereby inform the EPA that I will be the Certifying Official for the purposes of reporting under the National Pollutant Discharge Elimination System (NPDES) reporting program.

I understand the role and responsibilities of the Principal Executive Officer as they relate to the permit and will be the sole signatory on the City's Data Monitoring Reports, Storm Water Management Plans, Notice of Intent (NOI), reports, certifications and/or information submitted to the EPA.

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

Signature

David S. Campbell
Name Printed

(505) 768-3000
Telephone

davidcampbell@cabq.gov
email address

Chief Administrative Officer
Title

8/25/10
Date

c: Brent Larson, Acting Chief Permits & Technical Assistance Section
Michael J. Riordan, P.E., Acting Director
Melissa Lozoya, P.E.; Engineering Division Manager
Roland Penttila, P.E.; Stormwater Section Manager
Kathy Verhage, P.E.; Stormwater Quality Engineer

Janet Saiers, Chair
Danny Hernandez, Vice Chair
Ronald D. Brown, Secretary-Treasurer
Tim Eichenberg, Assistant Secretary-Treasurer
Daniel F. Lyon, Director

Jerry M. Lovato, P.E.
Executive Engineer

Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority
2600 Prospect N.E., Albuquerque, NM 87107
Phone: (505) 884-2215 Fax: (505) 884-0214
Website: www.amafca.org

January 25, 2011

EPA Region 6
Water Enforcement Branch (6EN-WT)
1445 Ross Avenue Suite 1200
Dallas, TX 75202-2733

Re: Delegation of Signatory Authority
NPDES Permit No. NMS000101

Dear Sirs:

As the Executive Engineer of Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) and in accordance with regulations found at 40 CFR 122.22(b), I hereby inform the EPA that I will be the Certifying Official for the purposes of reporting under the National Pollutant Discharge Elimination System (NPDES) reporting program.

I understand the role and responsibilities of the Principal Executive Officer as they relate to the permit and will be the sole signatory on AMAFCA's Data Monitoring Reports, Storm Water Management Plans, Notice of Intent (NOI), reports, certifications and/or information submitted to the EPA.

Sincerely,
AMAFCA

Jerry M. Lovato, P.E.
Executive Engineer

cc: Kevin C. Daggett, P.E., P.S., Stormwater Quality Engineer, AMAFCA

New Mexico DEPARTMENT OF
TRANSPORTATION
MOBILITY FOR EVERYONE

Susana Martinez
Governor

Alvin C. Dominguez, P.E.
Cabinet Secretary Designate

February 4, 2011

EPA Region 6
Water Enforcement Branch (6EN-WT)
1445 Ross Avenue Suite 1200
Dallas, TX 75202-2733

RE: Delegation of Signatory Authority
NPDES Permit No. NMS000101

Dear Sirs:

As the District Three Engineer for the District Three Office of the New Mexcio Department of Transportation (NMDOT) and in accordance with regulations found at 40 CFR 122.22(b), I hereby inform the EPA that I will be the Certifying Official for the purposes of reporting under the National Pollutant Discharge Ellimination System (NPDES) reporting program.

I understand the role and responsibilities of the Principal Executive Officer as they relate to the permit and will be the sole signatory on the NMDOT's Data Monitoring Reports, Storm Water Management Plans, Notice of Intent (NOI), reports, certifications and/or information submitted to the EPA.

Sincerely,

Tamara P. Haas, P. E.
District Three Engineer

cc: Katherine J. Trujillo, P. E., Assistant District Engineer, Maintenance

THE UNIVERSITY of
NEW MEXICO

CERTIFICATE LETTER

I, the undersigned, certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

David W. Harris
Executive Vice President
for Administration
University of New Mexico

New Mexico DEPARTMENT OF
TRANSPORTATION
MOBILITY FOR EVERYONE

CERTIFICATE LETTER

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Tammy Haas

Tammy Haas, P.E.
District 3 Engineer
NM Department of Transportation

AMAFCA

CERTIFICATE LETTER

I, the undersigned, certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Jerry Lovato, P.E.
Executive Engineer
Albuquerque Metropolitan Arroyo
Flood Control Authority

CERTIFICATE LETTER

I, the undersigned, certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

David S. Campbell
Chief Administrative Officer
City of Albuquerque, New Mexico

Attachments

PDF-CC:
Kathy Verhage, COA
Roland Penttila, COA
Kevin Daggett, AMAFCA
KatherineTrujillo, NMDOT
Reza Afaghpour, NMDOT
Vern Hershberger, UNM
Richard Powell, NMED
Scott Bulgrin, Pueblo of Sandia
Jim Piatt, Pueblo of Isleta

5

BACTERIAL TMDL UPDATE

CITY OF ALBUQUERQUE

November 23, 2010

Ms. Suzanna Perea
U.S. EPA, Region 6
Water Quality Protection Division
Permits and Technical Section (6WQ-PP)
1445 Ross Avenue
Dallas, Texas 75202-2733

RE: Albuquerque Metropolitan Area Municipal Separate Storm Sewer System (MS4) Permit No. NMS000101 Total Maximum Daily Load (TMDL) Progress Report

As per Table III.B, Activity 12, of the Albuquerque Metropolitan Area MS4 Permit, the following is a summary of the progress made by the co-permittees to comply with the Fecal Coliform Total Maximum Daily Load (TMDL) of the 2003 permit. We believe that we are currently covered under the 2003 permit due to the draft nature of the pending permit.

Because the fecal coliform contamination appears to be a watershed-wide problem, the MS4 co-permittees continue to work with its other storm education partners including the County of Bernalillo, Southern Sandoval County Arroyo Flood Control Authority, and the Ciudad Soil and Water Conservation District (i.e. Stormwater Quality Team) to implement a watershed-wide public information program, targeted at the control of dog feces and other pollutant sources in the Middle Rio Grande Watershed. Increasing public awareness of problems associated with improper pet waste disposal is particularly important because a surface water treatment plant installed along the Rio Grande went on line in December 2008 to supplement the area's drinking water supply with surface water.

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

This year, as in previous years, a $50,000 contract has been awarded to a local public relations firm and a public information program has been implemented to reduce fecal coliform contamination. This program has emphasized the use of TV and radio spots to target dog feces and trash as unwanted storm water pollutants. The Stormwater Quality Team also continues to reduce fecal coliform contamination through the "Scoop the Poop" educational program. A one-page informational Scoop the Poop "rack card" was prepared by the educational partners in 2009 and is distributed along with other brochures describing good pet waste disposal practices at community events such as a sustainability fair, the state fair, and "Dia del Rio" or "River clean-up day". In addition, the MS4 partners have volunteered to speak at public meetings about the importance of picking up after pets. The Storm Drainage Section with the City of Albuquerque also works with the Open Space Division to add plastic bag dispensers at City Parks and Open Space areas at public request, particularly in areas where dog walking is prevalent.

The MS4 partners along with members of the Stormwater Quality Team have expanded their educational outreach efforts in the public school system by contributing to the River Xchange program and the Bosque Ecosystem Monitoring Program (BEMP). River Xchange is a semester long program conducted in 4th and 5th grade classrooms that deals with broader watershed issues, including practices that affect storm water quality. The BEMP includes student supervised sample collection of river water near key storm water outfalls along the Rio Grande. Bacterial e-coli are one of the parameters analyzed in these samples.

Flotables and sediment continue to be removed on the streets and within the storm drainage system by each of the partners thereby reducing surface areas to which bacteria may cling and lowering overall bacterial loads.

The fecal coliform TMDL results for 2009-2010 are summarized in Tables 1 and 2 and depicted in Figure 1. The 30-day geometric means (geomean) of the TMDL for each month of the current water year (October 1, 2009 to September 30, 2010) are presented in Table 1. Table 2 provides a comparison of the maximum loading results obtained for the past 6 years at each of the outfalls as well as the numeric target value. Figure 1 shows the maximum load in terms of a 30-day geomean for the current year as a percentage of the target load.

These results indicate that stormwater within the four conveyances managed by the MS4 partners are well within the numeric target values of the fecal coliform load allocations provided in Table III.B.2 of the 2003 permit. The maximum 30-day geomean at the North and South Diversion Channels remained about the same as the previous year. The maximum 30-day geomean at the San Jose Drain and Tijeras Arroyo increased by roughly an order of magnitude over those calculated for the previous year. Because the bacterial load calculation depends directly on discharge, loading results tend to be very dependent on rainfall events. Several monsoonal storm events with rainfall totals greater than 0.5 inches in the vicinity of these outfalls are suspected to have resulted in this increase. However, as indicated in both Table 2 and Figure 3, maximum loadings for both of these conveyances were still well within respective target loads.

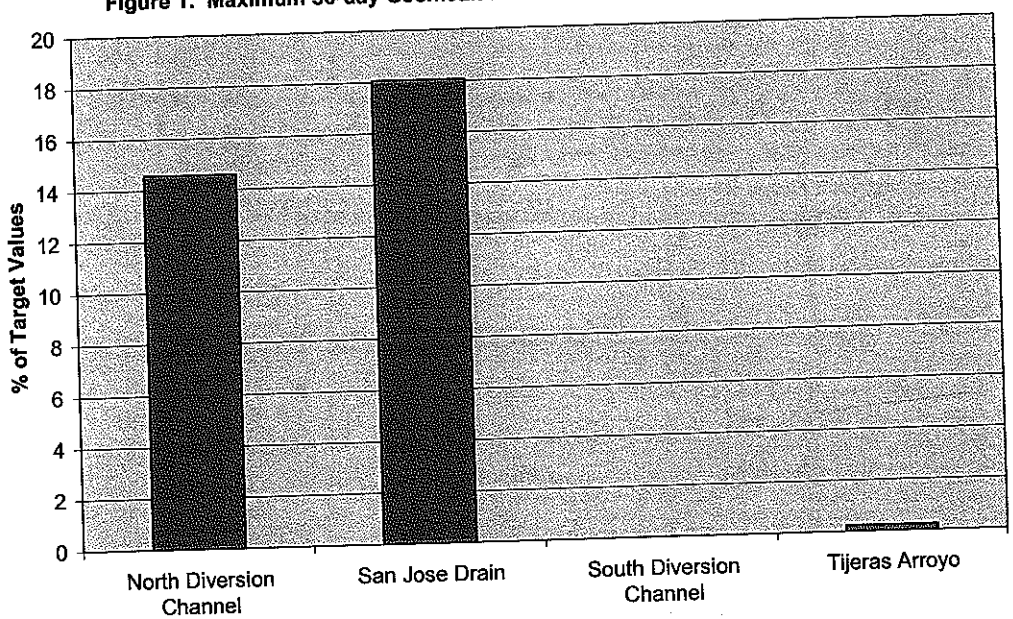
Please feel free to contact Kathy Verhage by phone at (505) 768-3654 or by email at kverhage@cabq.gov should you have any questions regarding this year's TMDL progress report. Note that per the 2003 permit, fecal coliform loads are reported. E-coli loads will be reported in the future with the issuance of the new permit.

Table 1. Annual Calculation of Total Maximum Daily Loads (TMDL) for 2009-2010 30-day Geometric Mean in coliform forming units (cfu)/day				
Month	San Jose Drain	Tijeras Arroyo	South Diversion Channel	North Diversion Channel
October 2009	2.960E+08	3.029E+06	6.491E+05	4.624E+10
November 2009	2.076E+08	4.082E+05	5.717E+05	1.957E+10
December 2009	1.922E+08	9.030E+05	8.705E+05	1.957E+10
January 2010	2.191E+08	6.686E+05	2.447E+05	2.626E+10
February 2010	2.155E+08	8.002E+05	2.447E+05	2.260E+10
March 2010	2.408E+08	1.827E+06	5.834E+05	2.791E+10
April 2010	2.748E+08	2.538E+06	6.015E+06	3.930E+10
May 2010	2.233E+08	1.254E+06	2.447E+05	2.306E+10
June 2010	2.283E+08	3.826E+06	1.272E+07	2.454E+10
July 2010	1.931E+09	2.711E+08	1.135E+06	5.947E+10
August 2010	1.715E+09	7.025E+07	2.839E+06	9.388E+10
September 2010	4.176E+08	1.704E+06	4.368E+06	4.348E+10

	Table 2. Maximum 30-day Geometric Mean from 2004 to 2010 in coliform forming units (cfu)/day						
Conveyance	Target*	2004 - 2005	2005 - 2006	2006 - 2007	2007-2008	2008-2009	2009 – 2010
North Diversion Channel	6.44×10^{11}	1.24×10^{10}	3.21×10^{11}	3.05×10^{10}	1.67×10^{11}	1.13×10^{11}	9.39×10^{10}
San Jose Drain	1.07×10^{10}	1.54×10^{9}	2.10×10^{9}	2.71×10^{8}	3.21×10^{9}	4.23×10^{8}	1.93×10^{9}
South Diversion Channel	1.44×10^{11}	3.9×10^{7}	4.85×10^{8}	1.67×10^{7}	8.49×10^{9}	1.23×10^{7}	1.27×10^{7}
Tijeras Arroyo	1.20×10^{11}	3.4×10^{6}	4.74×10^{9}	9.23×10^{6}	1.77×10^{10}	2.19×10^{7}	2.71×10^{8}

* Target values taken from Table III.B.2 of MS4 Permit NMS000101

Figure 1. Maximum 30-day Geomean for 2009-2010 Compared to Target Values



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TOXICITY TEST RESULTS

Bio-Aquatic Testing, Inc.

TCEQ NELAP Accredited

City of Albuquerque
Municipal Storm Sewer System
OUTFALL MS4

48 Hr Acute Biomonitoring Report

42962

Daphnia pulex
Pimephales promelas

June 30, 2010

Approved by: Ch. Robason

Chris Robason,
President

Bio-Aquatic Testing, Inc. • 2501 Mayes Rd. Ste. 100 • Carrollton, Texas • 75006

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Unless otherwise noted in the body of the report, all data reported in this document are in compliance with NELAC standards and apply only to the samples referenced within. This report document may not be edited or reproduced in part or in full by any other entity, unless Bio-Aquatic Testing, Inc. issues written approval.

***HAND-WRITTEN RAW DATA TABLES ARE AVAILABLE UPON REQUEST**

BIO-AQUATIC TESTING, INC.
2501 Mayes Road, Suite 100
Carrollton, Texas 75006
Tel: (972) 242-7750
Fax: (972) 242-7749

TOXICITY TEST REPORT - 48 Hr Acute

Client:	Albuquerque, City of	Sample:	MS4
Facility:	Municipal Storm Sewer System	Laboratory Number:	42962
Permit No.	NMS000101	Date:	June 30, 2010

Passed *Daphnia pulex* survival and *Pimephales promelas* survival testing requirements.

SAMPLE COLLECTION:

A composite effluent sample from the City of Albuquerque, Municipal Storm Sewer System, was transported to Bio-Aquatic Testing via Federal Express. The sample was received on June 30, 2010. The effluent sample was collected from Outfall MS4 by facility personnel. Only one sample was received.

The effluent sample was analyzed for total residual chlorine using the Hanna Ion Specific Meter #193711 and contained <0.10 mg/L. Effluent and laboratory dilution water pH, temperature, and dissolved oxygen data were collected daily.

TEST PROCEDURES:
Daphnia pulex

EPA METHOD: 2021
The 48 Hr Acute *Daphnia pulex* test was initiated at 13:30 hours on June 30, 2010. Five effluent concentrations of 12.5%, 25%, 50%, 75%, and 100% were prepared utilizing receiving water. The test was set up with 30mL plastic cups containing 15mL of test solution. Each concentration or control consisted of five replicate cups with eight organisms each, giving a total of 40 (forty) per treatment. The control was conducted concurrently with the test. Test organisms were less than 24-hour old laboratory cultured neonates. Organisms were introduced into the test solutions using a blocking design. Food consisting of a ten-microliter suspension of the green algae, *Selenastrum capricornutum,* YTC and cerophyll was added to the test solutions each day as food. The test proceeded for 48 hours. Data on survival was collected daily and water quality parameters were recorded after each 24-hour period. The test ended at 13:30 hours on July 02, 2010. Survival data was statistically (p=0.05) analyzed according to EPA procedures to determine the Lowest Observable Effect Concentration (LOEC) and the No Observable Effect Concentration (NOEC).

SURVIVAL:
Daphnia pulex

The *Daphnia pulex* survival data failed Shapiro Wilk's test for normality at the 0.01 (0.900) alpha level after the arc sine (square root (Y)) transformation. Bartlett's test for homogeneity is sensitive to non-normal data and should not be performed if data fails Shapiro Wilk's test. The non-parametric Steel's Many-One Rank test performed on *Daphnia pulex* survival data demonstrated no statistically significant differences between the control and any of the effluent concentrations tested.

LOEC: Not Calculable (Q)
NOEC: 100% Effluent

TEST PROCEDURES:
Pimephales promelas

EPA METHOD: 2000
The 48 Hr Acute *Pimephales promelas* test was initiated at 14:30 hours on June 30, 2010. Five effluent concentrations of 12.5%, 25%, 50%, 75%, and 100% were prepared utilizing receiving water. The test was set up with 450mL plastic cups containing 250mL of test solution as test chambers. Each concentration or control consisted of five replicate chambers containing eight organisms each, giving a total of 40 (forty) per treatment. The control was conducted concurrently with the test. Test organisms were laboratory cultured *P. promelas* one to fourteen days old, and all larvae used in each test are hatched within 24 hours of each other. The number of surviving larvae and water quality parameters were recorded after each 24 hour period. Surviving larvae in each test chamber were fed freshly hatched brine shrimp two times per day. The test proceeded for 48 hours. The test ended at 14:18 hours on July 02, 2010. Survival was statistically (p=0.05) analyzed according to EPA procedures to determine the Lowest Observable Effect Concentration (LOEC) and the No Observable Effect Concentration (NOEC).

SURVIVAL:
Pimephales promelas

Pimephales promelas survival data failed Shapiro Wilk's test for normality at the 0.01 (0.900) alpha level after the arc sine (square root (Y)) transformation. Bartlett's test for homogeneity is sensitive to non-normal data and should not be performed if data fails Shapiro Wilk's test. The non-parametric Steel's Many-One Rank test performed on *Pimephales promelas* survival data demonstrated no statistically significant differences between the control and any of the effluent concentrations tested.

LOEC: Not Applicable
NOEC: 100% Effluent

BIO-AQUATIC TESTING, INC.

TOXICITY TEST

48 Hr Acute *Daphnia pulex*

Lab ID: 42962

Client: Albuquerque, City of Municipal Storm Sewer System

Test Temperature (oC): 25 ± 1

Permit Number: NPDES NMS000101

Photo Period: 16 hours light 8 hours dark

Sample Type: Composite **Outfall Name:** MS4

Begin Date: 6/30/2010

Receiving Water Name: Rio Grande

End Date: 7/2/2010

Test Start Time: 13:30 Test End Time: 13:30

SURVIVAL

Effluent Con. %	Number Of Alive Per Replicate 6/30 A	6/30 B	6/30 C	6/30 D	6/30 E	7/1 A	7/1 B	7/1 C	7/1 D	7/1 E	7/2 A	7/2 B	7/2 C	7/2 D	7/2 E	Avg% Surv.
True Control	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	100.0%
PCON	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	100.0%
12.5	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	100.0%
25	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	100.0%
50	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	100.0%
75	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	100.0%
100	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	100.0%

BIO-AQUATIC TESTING, INC.

TOXICITY TEST

48 Hr Acute *Pimephales promelas*

Client: Albuquerque, City of Municipal Storm Sewer System

Lab ID: 42962

Permit Number: NPDES NMS000101

Test Temperature (oC): 25 ± 1

Sample Type: Composite **Outfall Name:** MS4

Photo Period: 16 hours light 8 hours dark

Receiving Water Name: Rio Grande

Begin Date: 6/30/2010

Test Start Time: 14:30 Test End Time: 14:18

End Date: 7/2/2010

SURVIVAL

Effluent Concentration %	Number Of Alive Per Replicate 6/30					7/1					7/2					Avg% Surv.
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	
True Control	8	8	8	8	8	8	8	8	8	8	7	8	8	8	8	97.5%
PCON	8	8	8	8	8	8	8	8	8	8	8	5	7	8	8	90.0%
12.5	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	100.0%
25	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	100.0%
50	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	100.0%
75	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	100.0%
100	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	100.0%

* cup spilled

APPENDIX A

STATISTICS SUMMARY

Both the lethal and sub-lethal endpoints were statistically calculated according to their respective EPA guidelines. The Chronic Freshwater organisms were calculated according to EPA-821-R-02-013, October 2002 Fourth Edition. The Chronic Marine and Estuarine organisms were calculated according to EPA-821-R-02-014, October 2002 Third Edition. The Acute Freshwater and Marine organisms were calculated according to EPA-821-R-02-012, October 2002 Fifth Edition. Listed below are the basic principles of these guidelines. If you would like a copy of the raw statistical calculations for your test then please contact us.

The chronic and acute *Pimephales promelas* and *Menidia beryllina* survival data is analyzed using Shipiro Wilks Test and Bartlett's Test. If the data passes both tests then the data is run through ANOVA and Dunnetts (parametric). If the data fails Shipiro Wilks Test or Bartlett's Test then Steels Many One Test (non-parametric) is used. The chronic *Pimephales promelas* and *Menidia beryllina* growth data is analyzed using Shipiro Wilks Test and Bartlett's Test. If the data passes one of these tests then the data is run through ANOVA and Dunnetts. If the data fails Shipiro Wilks Test and Bartlett's Test then Steels Many One Test is used.

The chronic *Mysidopsis bahia* survival data is analyzed using Chi-square test and Bartlett's Test. If the data passes both tests then the data is run through ANOVA and Dunnetts. If the data fails Chi-square test or Bartlett's Test then Steels Many One Test is used. *Mysidopsis bahia* growth data is analyzed using Chi-square test and Bartlett's Test. If the data passes one of these tests then the data is run through ANOVA and Dunnetts. If the data fails Chi-square test and Bartlett's Test then Steels Many One Test is used.

The acute *Mysidopsis bahia* survival data is analyzed using Shipiro Wilks Test and Bartlett's Test. If the data passes both tests then the data is run through ANOVA and Dunnetts. If the data fails Shipiro Wilks Test or Bartlett's Test then Steels Many One Test is used.

The chronic *Ceriodaphnia dubia* survival data are analyzed using the Fisher's Exact Test. The chronic *Ceriodaphnia dubia* reproduction and are analyzed using the Chi-square test and Bartlett Test. If the data passes one of these tests then the data is run through ANOVA and Dunnetts. If the data fails Chi-square test and Bartlett's Test then Steels Many One Test is used.

The acute *Daphnia pulex* and *Ceriodaphnia dubia* survival data is analyzed using Shipiro Wilks Test and Bartlett's Test. If the data passes both tests then the data is run through ANOVA and Dunnetts. If the data fails Shipiro Wilks Test or Bartlett's Test then Steels Many One Test is used.

Bio-Aquatic Testing, Inc.

42962

2501 Mayes Road, Suite 100
Carrollton, TX 75006
Tel: 972-242-7750
Fax: 972-242-7749

FRESH WATER TEST SETUP FORM

Client: Albuquerque, City of

Permit NMS000101

Facility: Municipal Storm Sewer System

Lab Number 42962

Outfall Name: MS4

Number of samples 1

Dilution Water: Receiving Stream

Receiving Water Name: Rio Grande

Dechlorinate Sample: No

Sx #	Rcvd Date	Rcvd Time	Sampling Dates Begin Date	Sampling Dates End Date	Sampling Times Start	Sampling Times End
1	06/30/10	09:48	06/28/10	06/28/10	17:10	17:10

Type of Test(s)

Daphnia pulex	48 Hr Acute
Pimephales promelas	48 Hr Acute

Start Sx # 1 Date: 6/30/2010

Renew Sx # 1 Date: 7/1/2010

Renew Sx # ____ Date: ____

Renew Sx # ____ Date: ____

Renew Sx # ____ Date: ____

Renew Sx # ____ Date: ____

Renew Sx # ____ Date: ____

Controls: True Control

pH Match: ____

Hardness Match: ____

Test Start Date: 6/30/2010

Test End Date: 7/2/2010

Daphnia pulex Test Set Up: 5 Reps & 8 Organisms per Rep

Pimephales Test Set Up: 5 Reps & 8 Organism per Rep

Concentrations: 12.5 25 50 75 100 % LF % 100

Test Chemistry on these dilutions: 12.5 25 50 75 100

Samples received by:

- ○ Greyhound
- ○ Pony Express
- ● Federal Express
- ○ UPS Next Day
- ○ Client Delivered
- ○ American Airlines
- ○ Delta Dash
- ○ Southwest Airlines
- ○ Bio Pick Up
- ○ Delta
- ○ DHL

Other: ____

BIO-AQUATIC TESTING, INC.

Hardness, Alkalinity, Residual Chlorine, Specific Conductivity, and Salinity Analysis Data

Client: Albuquerque, City of **Lab ID:** 42962

Facility: Municipal Storm Sewer System **Outfall:** MS4

Dilution Water(s): Receiving Stream **Test Date:** June 30, 2010

* 100 %

Effluent Sample #	Received Date	Received Time	* Residual Cl_2	DeChlor (ml/L)	* Ammonia mg/L	Analyst Initials	Initial Salinity	Adjusted Salinity	Temp. Received
1	6/30/10	09:48	<0.10	N/A	<0.25	DF	N/A	N/A	6

Chlorine Analysis Method: Hanna Ion Specific Meter #193711 **Dechlorination Reagent:** Sodium Thiosulfate

Sample #	Received Date	Received Time	Hardness (EDTA) As mg/L $CaCO_3$ CON	Hardness (EDTA) As mg/L $CaCO_3$ 100	ALKALINITY TO END POINT pH 4.50 =/- 0.05 as mg/L $CaCO_3$ CON	ALKALINITY TO END POINT pH 4.50 =/- 0.05 as mg/L $CaCO_3$ 100	Analyst Initials
1	6/30/10	09:48	118.0	62.0	96.0	47.0	PW

**Hardness taken post zeolite treatment

Date		Sample #	Values are at Highest Dilution: Specific Conductivity as umhos/cm	Values are at Highest Dilution: Salinity (ppt)	Values are at 100% Dilution: Residual Chlorine as mg Cl_2/L	Values are at 100% Dilution: [1]ml 0.02N $Na_2S_2O_3$/L	Analyst	Other
6/30	TCON		488	0.3			DP	
7/1	TCON		269	0.2			SF	
7/2	TCON						DP	
7/3	TCON							
7/4	TCON							
7/5	TCON							
7/6	TCON							
6/30	OUTFALL	1	233	0.1	<0.10	N/A	DP	
7/1	OUTFALL		181	0.1			SF	
7/2	OUTFALL						DP	
7/3	OUTFALL							
7/4	OUTFALL							
7/5	OUTFALL							
7/6	OUTFALL							

BIO-AQUATIC TESTING, INC.

pH, Dissolved Oxygen

48 Hr Acute **Daphnia pulex**

Client: Albuquerque, City of **Lab ID:** 42962

Facility: Municipal Storm Sewer System **Dilution Water(s):** Receiving Stream

Outfall: MS4 **Test Begin Date:** June 30, 2010

NR indicates that the test is non-renewal.

ANALYST	DATE	TIME	SX#	UNIT	Concentration True	12.5	25	50	75	100		
DP	6/30	Start	1	pH	8.1	8.1	8.1	8.0	8.0	7.8		
		25 ± 1		DO (mg/L)	9.4	9.3	9.3	9.0	9.0	7.9		
SF	7/1	24 Hr	1	pH	8.0	7.9	7.8	7.8	7.8	7.8		
		25 ± 1		DO (mg/L)	8.3	8.2	8.1	8.0	8.3	8.4		
		Renew		pH	8.0	8.1	8.0	7.8	7.7	7.6		
				DO (mg/L)	9.9	9.8	9.7	9.4	9.3	9.0		
DP	7/2	48 Hr		pH	8.0	7.9	7.9	7.8	7.9	7.8		
		25 ± 1		DO (mg/L)	7.6	8.1	8.1	8.1	8.1	8.2		
		Renew		pH								
				DO (mg/L)								
	7/3	72 Hr		pH								
		25 ± 1		DO (mg/L)								
		Renew		pH								
				DO (mg/L)								
	7/4	96 Hr		pH								
		25 ± 1		DO (mg/L)								
		Renew		pH								
				DO (mg/L)								
	7/5	120 Hr		pH								
		25 ± 1		DO (mg/L)								
		Renew		pH								
				DO (mg/L)								
	7/6	144 Hr		pH								
		25 ± 1		DO (mg/L)								
		Renew		pH								
				DO (mg/L)								
	7/7	168 Hr		pH								
		25 ± 1		DO (mg/L)								

BIO-AQUATIC TESTING, INC.

pH, Dissolved Oxygen

48 Hr Acute **Pimephales promelas**

Client: Albuquerque, City of
Facility: Municipal Storm Sewer System
Outfall: MS4

Lab Number: 42962
Dilution Water(s): Receiving Stream
Test Begin Date: June 30, 2010

NR indicates that the test is non-renewal.

ANALYST	DATE	TIME	SX#	UNIT	Concentration: True	12.5	25	50	75	100		
DP	6/30	Start	1	pH	8.1	8.1	8.1	8.0	8.0	7.8		
		25 ± 1		DO (mg/L)	9.4	9.3	9.3	9.0	9.0	7.9		
SF	7/1	24 Hr	1	pH	7.9	8.0	7.7	7.7	7.6	7.5		
		25 ± 1		DO (mg/L)	7.8	7.9	7.8	7.7	7.7	7.6		
		Renew		pH	8.0	8.1	8.0	7.8	7.7	7.6		
				DO (mg/L)	9.9	9.8	9.7	9.4	9.3	9.0		
DP	7/2	48 Hr		pH	8.3	8.0	8.0	8.0	8.0	7.8		
		25 ± 1		DO (mg/L)	8.3	8.2	8.2	8.5	8.5	8.2		
		Renew		pH								
				DO (mg/L)								
	7/3	72 Hr		pH								
		25 ± 1		DO (mg/L)								
		Renew		pH								
				DO (mg/L)								
	7/4	96 Hr		pH								
		25 ± 1		DO (mg/L)								
		Renew		pH								
				DO (mg/L)								
	7/5	120 Hr		pH								
		25 ± 1		DO (mg/L)								
		Renew		pH								
				DO (mg/L)								
	7/6	144 Hr		pH								
		25 ± 1		DO (mg/L)								
		Renew		pH								
				DO (mg/L)								
	7/7	168 Hr		pH								
		25 ± 1		DO (mg/L)								

Appendix B

Daphnia pulex

BIO-AQUATIC TESTING, INC.

Carrollton, TX

REFERENCE TOXICANTS

Bio-Aquatic Testing conducts reference toxicant testing monthly for organisms cultured in-house. For studies requiring purchased organisms, reference toxicant testing is performed simultaneously. Reference toxicant testing validates data and measures organism consistency. Only reagent grade chemicals are used of the following choices: sodium laurel sulfate (SLS), copper sulfate, cadmium chloride, and sodium chloride. Organism responses are tracked with control charts for each reference toxicant/organism combination. The data are examined for sensitivity trends and to determine if results are within EPA described limits.

ACUTE REFERENCE TOXICANT TEST RESULTS

DILUTION WATER:	Standard Synthetic Freshwater
CHEMICAL:	Sodium Chloride
DURATION:	48 Hour Acute
TEST NUMBER:	220
PROJECT NUMBER:	44975
START DATE:	5/19/2010
START TIME:	14:55
TOTAL NUMBER EXPOSED:	40 organisms per concentration

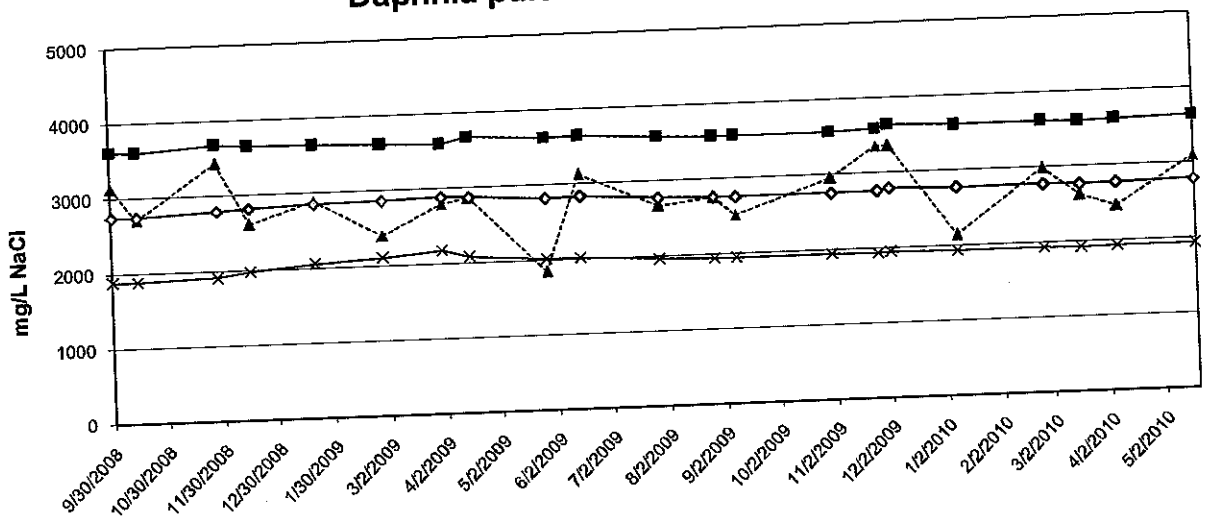
CONCENTRATIONS (mg/L):	CON	250	500	1000	2000	3000	4000
NUMBER DEAD PER CONCENTRATION:	0	0	0	0	0	13	40

TEST METHODS:	As listed in EPA-821-R-02-012
STATISTICAL METHODS:	SURVIVAL: Trimmed Spearman-Karber
LC50:	3095.09 mg/L
95% LOWER CONFIDENCE LIMITS:	2940.22 mg/L
95% UPPER CONFIDENCE LIMITS:	3258.12 mg/L

REFERENCE TOXICANT STATISTICAL RESULTS: LC_{50} AND CONTROL LIMITS
Daphnia pulex EXPOSED TO SODIUM CHLORIDE, 48 HOUR STATIC RENEWAL

Test Number	Date	Project Number	Toxicant Lot Number	Statistical Method	LC_{50} mg/L	Mean	Twice Standard Deviation 2S	Upper Control Limit Mean+2S, mg/l	Lower Control Limit Mean-2S, mg/l
200	9/30/2008	39675	714814	Trimmed Spearman-Karber	3129.5	2743.2	864.5	3607.7	1878.8
201	10/14/2008	39912	714814	Trimmed Spearman-Karber	2703.4	2740.4	864.6	3605.0	1875.8
202	11/27/2008	40650	714814	Trimmed Spearman-Karber	3434.2	2794.1	884.3	3678.3	1909.8
203	12/15/2008	40898	714814	Trimmed Spearman-Karber	2604.4	2815.5	838.9	3654.4	1976.5
204	1/20/2009	41453	714814	Trimmed Spearman-Karber	2883.7	2846.3	793.8	3640.0	2052.5
205	2/26/2009	41788	714814	Trimmed Spearman-Karber	2393.3	2858.0	756.6	3614.5	2101.4
206	3/31/2009	41946	714814	Trimmed Spearman-Karber	2785.4	2881.5	710.3	3591.8	2171.2
207	4/15/2009	42160	714814	Trimmed Spearman-Karber	2862.9	2875.1	797.6	3672.8	2077.5
208	5/27/2009	42192	714814	Trimmed Spearman-Karber	1846.4	2818.2	805.2	3623.4	2012.9
209	6/15/2009	42423	714814	Trimmed Spearman-Karber	3122.0	2825.8	812.0	3637.7	2013.8
210	7/28/2009	42438	714814	Trimmed Spearman-Karber	2671.2	2772.2	813.2	3585.4	1959.0
211	8/27/2009	42657	714814	Trimmed Spearman-Karber	2756.0	2754.1	815.4	3569.5	1938.7
212	9/8/2009	42675	831604	Trimmed Spearman-Karber	2502.9	2752.8	812.4	3565.2	1940.3
213	10/31/2009	42971	831604	Trimmed Spearman-Karber	2953.0	2750.5	812.8	3563.3	1937.6
214	11/25/2009	43137	831604	Trimmed Spearman-Karber	3349.0	2755.2	831.0	3586.1	1924.2
215	12/2/2009	43168	831604	Trimmed Spearman-Karber	3358.4	2787.8	846.8	3634.6	1941.0
216	1/8/2010	44362	831604	Trimmed Spearman-Karber	2138.3	2764.8	841.9	3606.7	1922.9
217	2/25/2010	44563	831604	Trimmed Spearman-Karber	2989.7	2770.9	847.6	3618.5	1923.2
218	3/17/2010	44660	831604	Trimmed Spearman-Karber	2621.4	2762.0	843.4	3605.3	1918.6
219	4/6/2010	44776	831604	Trimmed Spearman-Karber	2458.3	2769.7	843.4	3613.1	1926.4
220	5/19/2010	44975	831604	Trimmed Spearman-Karber	3095.1	2783.0	851.6	3634.6	1931.4

Daphnia pulex Acute Control Chart



Appendix B

Pimephales promelas

BIO-AQUATIC TESTING, INC.

Carrollton, TX

REFERENCE TOXICANTS

Bio-Aquatic Testing conducts reference toxicant testing monthly for organisms cultured in-house. For studies requiring purchased organisms, reference toxicant testing is performed simultaneously. Reference toxicant testing validates data and measures organism consistency. Only reagent grade chemicals are used of the following choices: sodium laurel sulfate (SLS), copper sulfate, cadmium chloride, and sodium chloride. Organism responses are tracked with control charts for each reference toxicant/organism combination. The data are examined for sensitivity trends and to determine if results are within EPA described limits.

ACUTE REFERENCE TOXICANT TEST RESULTS

DILUTION WATER:	Standard Synthetic Freshwater
CHEMICAL:	Sodium Chloride
DURATION:	48 Hour Acute
TEST NUMBER:	220
PROJECT NUMBER:	44976
START DATE:	5/19/2010
START TIME:	15:30
TOTAL NUMBER EXPOSED:	40 organisms per concentration

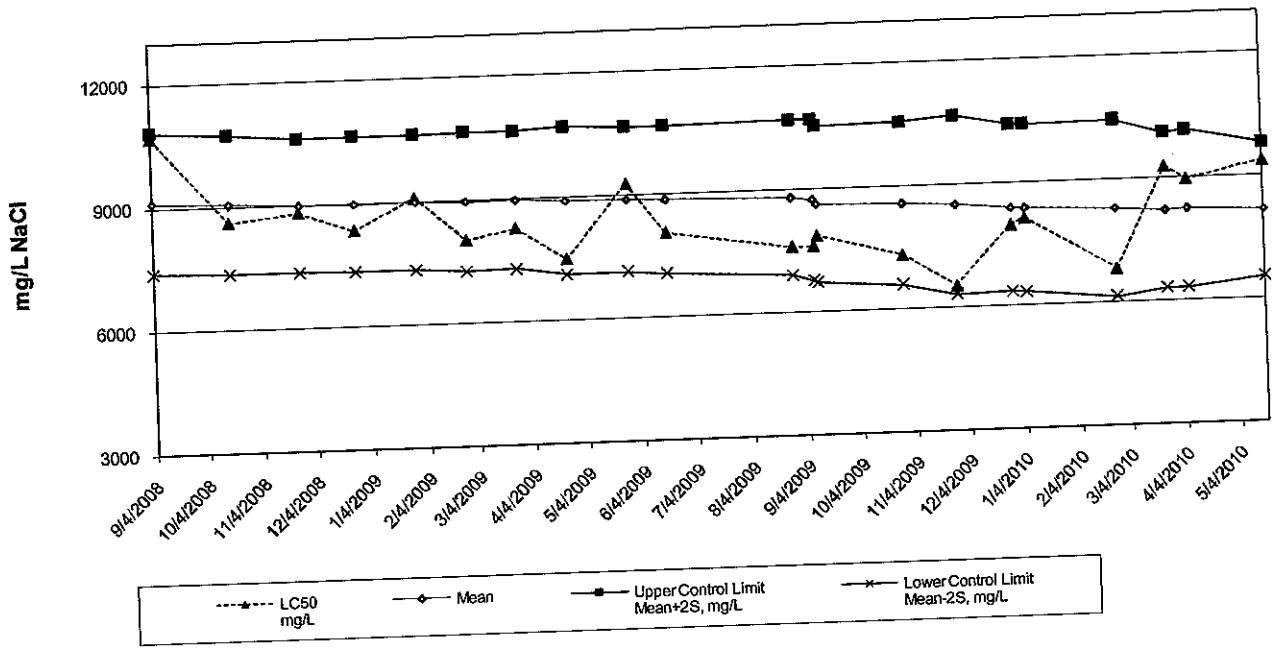
CONCENTRATIONS (mg/L):	CON	2000	4000	6000	8000	10000	12000
NUMBER DEAD PER CONCENTRATION:	0	0	1	1	3	28	40

TEST METHODS:	As listed in EPA-821-R-02-012
STATISTICAL METHODS:	SURVIVAL: Trimmed Spearman-Karber
LC50:	9118.27 mg/L
95% LOWER CONFIDENCE LIMITS:	8687.33 mg/L
95% UPPER CONFIDENCE LIMITS:	9570.59 mg/L

REFERENCE TOXICANT STATISTICAL RESULTS: LC_{50} AND CONTROL LIMITS
Pimephales promelas EXPOSED TO SODIUM CHLORIDE, 48 HOUR STATIC RENEWAL

Test Number	Date	Project Number	Toxicant Lot Number	Statistical Method	LC_{50} mg/L	Mean	Twice Standard Deviation 2S	Upper Control Limit Mean+2S, mg/L	Lower Control Limit Mean-2S, mg/L
200	9/4/2008	39689	714814	Trimmed Spearman-Karber	10688.3	9112.8	1714.5	10827.2	7398.3
201	10/17/2008	39911	714814	Trimmed Spearman-Karber	8602.5	9048.1	1687.4	10735.4	7360.7
202	11/25/2008	40709	714814	Trimmed Spearman-Karber	8807.5	8988.5	1629.1	10617.6	7359.4
203	12/26/2008	41134	714814	Trimmed Spearman-Karber	8332.7	8976.4	1645.5	10621.9	7330.9
204	1/29/2009	41581	714814	Trimmed Spearman-Karber	9091.5	8980.4	1646.3	10626.7	7334.1
205	2/26/2009	41783	714814	Trimmed Spearman-Karber	8024.2	8954.6	1690.9	10645.5	7263.8
206	3/26/2009	41923	714814	Trimmed Spearman-Karber	8264.1	8963.3	1673.9	10637.2	7289.4
207	4/23/2009	42084	714814	Trimmed Spearman-Karber	7478.9	8904.5	1797.5	10702.1	7107.0
208	5/27/2009	42191	714814	Trimmed Spearman-Karber	9266.9	8880.3	1762.3	10642.6	7118.1
209	6/18/2009	42274	714814	Trimmed Spearman-Karber	8038.9	8852.0	1798.7	10650.7	7053.2
210	8/27/2009	42650	714814	Trimmed Spearman-Karber	7596.5	8793.6	1884.5	10678.1	6909.1
211	9/8/2009	42684	831604	Trimmed Spearman-Karber	7597.0	8724.0	1955.6	10679.6	6768.4
212	9/10/2009	42685	831604	Trimmed Spearman-Karber	7852.5	8616.6	1895.5	10512.1	6721.1
213	10/28/2009	42975	831604	Trimmed Spearman-Karber	7314.1	8562.1	1981.9	10544.0	6580.2
214	11/27/2009	43134	831604	Trimmed Spearman-Karber	6529.1	8489.2	2169.4	10658.6	6319.8
215	12/28/2009	43991	831604	Trimmed Spearman-Karber	7961.8	8378.8	2029.6	10408.5	6349.2
216	1/5/2010	44302	831604	Trimmed Spearman-Karber	8116.9	8363.9	2032.9	10396.8	6331.0
217	2/25/2010	44557	831604	Trimmed Spearman-Karber	6815.5	8274.1	2142.6	10416.7	6131.5
218	3/25/2010	44735	831604	Trimmed Spearman-Karber	9270.1	8203.0	1883.4	10086.4	6319.6
219	4/6/2010	44779	831604	Trimmed Spearman-Karber	8944.3	8229.7	1910.7	10140.4	6318.9
220	5/19/2010	44976	831604	Trimmed Spearman-Karber	9360.0	8163.2	1621.3	9784.5	6541.9

Fathead Minnow Acute Control Chart



APPENDIX C

LITERATURE REFERENCES

U.S.E.P.A., 2002. Short-Term Methods For Estimating The Chronic Toxicity Of Effluents And Receiving Water To Freshwater Organisms (Fifth Edition) U.S. Environmental Protection Agency, Office of Water, Washington D.C., EPA-821-R-02-012.

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U.S.E.P.A., 2002. Short-Term Methods For Estimating The Chronic Toxicity Of Effluents And Receiving Water To Freshwater Organisms (Fourth Edition) U.S. Environmental Protection Agency, Office of Water, Washington D.C., EPA-821-R-02-013.

U.S.E.P.A., 1991. Technical Support Document For Water Quality-Based Toxics Control, U.S. Environmental Protection Agency, EPA-505-2-90-001.

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CHAIN-OF-CUSTODY SHEETS

Appendix D

BIO-AQUATIC TESTING, INC.
2501 MAYES RD., STE. 100
CARROLLTON, TX 75006
PH: 972-242-7750 FAX: 972-242-7749

CHAIN OF CUSTODY

Please Review & Complete Sections A, B, C, & D.

Check Sample No.: ____ First, ____ Second, or ____ Third.

Lab Id: 42962
Sample No: 42962 - ____
P.O. No:

Client: Albuquerque, City of
Facility: Municipal Storm Sewer System
Permit No: NMS000101
Outfall: MS4
Client Contact: Kathy Verhage
Client Phone: 505-768-3654

A. REVIEW SCHEDULED TEST(s):

48 Hr Acute	Daphnia pulex
48 Hr Acute	Pimephales promelas

Concentration: 12.5 25 50 75 100

Include Semi-annual 24hr Acute Test?

To Ship the 1st Sample on: 10/26/2009

B. Use below to make changes, if different from the Scheduled Test(s) in "A":

Freshwater Species					Saltwater Species	
C. dubia (water flea)	*D. pulex (water flea)*	*D. magna (water flea)*	*P. promelas (minnow)*	*Selenastrum (green algae)*	*M. beryllina (minnow)*	*Mysidopsis (shrimp)*
☐Chronic	☐Chronic	☐Chronic	☐Chronic	☐96 Hour	☐Chronic	☐Chronic
☐96 Hour	☐96 Hour	☐96 Hour	☐96 Hour	☐48 Hour	☐96 Hour	☐96 Hour
☐48 Hour	☐48 Hour	☐48 Hour	☐48 Hour	☐24 Hour	☐48 Hour	☐48 Hour
☐24 Hour	☐24 Hour	☐24 Hour	☐24 Hour		☐24 Hour	☐24 Hour

Notes: RIVER water will be checked for chlorine and ammonia prior to testing If detected,use thiosulfate for Cl2 and aeration or pH adjustment for ammonia - on RIVER Sample - NOT OUTFALL.

C.

	Sample ID or Location: (Outfall No. or Name)	Sample Type: E = Effluent RS = Rec. Stream S = Sediment	Sample Date From	Sample Date To	Sample Time (military) From	Sample Time (military) To	Grab or Composite	Sampled By: (Sign and Print Name)	Number Of Containers Shipped
1	UR-9901	1-Storm 1-River (Receiving water)	6-28-10	Same	1710	—	Grab	Todd M. Kelly Todd m. Kelly	2
2	(W. Floodway Equip. Crossing)								
3									

D.

	Relinquished By:	Date	Time	Received By:	Date	Time
1	Todd Kelly - USGS	6-29-10	1045		6-30-10	0915
2	(Phone 505-362-6326)					
3						

Bio-Aquatic Sample Login

BAT sample personnel: ● Yes ○ No
Check for Ammonia: ● Yes ○ No
Dechlorinate Sample: ○ Yes ● No
Dilution Water: ● Receiving Stream ○ Synthetic Lab

Date: 6-30	Time: 0948	By:	
Temperature: 6 (C)	Int. Salinity: ppt	Adj. Salinity: ppt	
Chlorine: 0.1 mg/l	Ammonia: 1.25	Other:	
pH: 8.1	DO: 9.6 mg/l	Condition: Good	

RS pH 8.1 DO-9.6 Cl2 0.1 NH3 1.25 40 bowl

REGULATORY AGENCY TABLES

Appendix E

Table 1 (Sheet 1 of 2)

BIOMONITORING REPORT

Daphnia pulex SURVIVAL TEST

Permittee: Albuquerque, City of - Municipal Storm Sewer System

Permit No.: NMS000101

Outfall No.: MS4

		Date/Time		Date/Time
Dates and times Composites were collected:	FROM:	6/28/2010 @17:10	TO:	6/28/2010@ 17:10
	FROM:	@	TO:	@

Test Initiation: Time: 13:30 Date: 6/30/2010

Dilution Water Used: [X] Receiving Water [ ] Synthetic Dilution Water

DATA TABLE FOR SURVIVAL OF *Daphnia pulex*

TIME	REPLICATE	EFFLUENT CONCENTRATION (%)						
		TCON	PCON	12.5 %	25 %	50 %	75 %	100 %
24 HOUR	A	100	100	100	100	100	100	100
	B	100	100	100	100	100	100	100
	C	100	100	100	100	100	100	100
	D	100	100	100	100	100	100	100
	E	100	100	100	100	100	100	100
48 HOUR	A	100	100	100	100	100	100	100
	B	100	100	100	100	100	100	100
	C	100	100	100	100	100	100	100
	D	100	100	100	100	100	100	100
	E	100	100	100	100	100	100	100
MEAN		100	100	100	100	100	100	100
CV %[1]		0.00	0.00	0.00	0.00	0.00	0.00	0.00

[1] Coefficient of Variation = (standard deviation/mean) x 100)

?= cannot be calculated due to 100% mortality

DUNNETT'S PROCEDURE OR STEEL'S MANY-ONE RANK TEST (as appropriate for Lethality)

Is the mean survival at 48 hours significantly different (p=0.05) than the control's survival for the low flow or critical dilution?

CRITICAL DILUTION (100 %) : _____ YES ___X___ NO

If you report NO, enter a '0' on the DMR form for Parameter No. TEM3D, other wise enter a '1'.

Enter the percent effluent corresponding to each NOEC below:

NOEC SURVIVAL: 100 % Effluent (Parameter TOM3D)

LOEC SURVIVAL: Q* % Effluent (Parameter TXM3D)

Q* refers to a value that is not calculable

Prepared by: Deanna Blake

Approved by: Ch. Robison

Table 1 (Sheet 2 of 2)

BIOMONITORING REPORT

Pimephales promelas SURVIVAL TEST

Permittee: Albuquerque, City of - Municipal Storm Sewer System

Permit No.: NMS000101

Outfall No.: MS4

		Date/Time		Date/Time
Dates and times Composites were collected:	FROM:	6/28/2010 @ 17:10	TO:	6/28/2010 @ 17:10
	FROM:	@	TO:	@

Test Initiation: Time: 14:30 Date: 6/30/2010

Dilution Water Used: [X] Receiving Water [ ] Synthetic Dilution Water

DATA TABLE FOR SURVIVAL OF *Pimephales promelas*

TIME	REPLICATE	EFFLUENT CONCENTRATION (%)						
		TCON	PCON	12.5 %	25 %	50 %	75 %	100 %
24 HOUR	A	100	100	100	100	100	100	100
	B	100	100	100	100	100	100	100
	C	100	100	100	100	100	100	100
	D	100	100	100	100	100	100	100
	E	100	100	100	100	100	100	100
48 HOUR	A	100	100	100	100	100	100	100
	B	100	62.5	100	100	100	100	100
	C	100	87.5	100	100	100	100	100
	D	100	100	100	100	100	100	100
	E	100	100	100	100	100	100	100
MEAN		97.5	90	100	100	100	100	100
CV %[1]		5.73	18.11	0.00	0.00	0.00	0.00	0.00

[1] Coefficient of Variation = (standard deviation/mean) x 100)

?= cannot be calculated due to 100% mortality

DUNNETT'S PROCEDURE OR STEEL'S MANY-ONE RANK TEST (as appropriate for Lethality)

Is the mean survival at 48 hours significantly different (p=0.05) than the control's survival for the low flow or critical dilution?

CRITICAL DILUTION (100 %) : _____ YES ___X___ NO

If you report NO, enter a '0' on the DMR form for Parameter No. TEM6C, other wise enter a '1'.

Enter the percent effluent corresponding to each NOEC below:

NOEC SURVIVAL: 100 % Effluent (Parameter TOM6C)

LOEC SURVIVAL: Q* % Effluent (Parameter TXM6C)

Q* refers to a value that is not calculable

Prepared by: Deanna Blake

Approved by: Ch. Robson