

AMENDMENT NUMBER ONE

TO THE

RED RIVER AUTHORITY OF TEXAS
CLEAN RIVER PROGRAM
QUALITY ASSURANCE PROJECT PLAN
FY 2006 – FY 2007

*Prepared by the Red River Authority of Texas
In Cooperation with the
Texas Commission on Environmental Quality
Under the Authorization of the Texas Clean Rivers Act*

Clean Rivers Program
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Amended May 2006

Justification: This document details the modification made to the basin-wide Quality Assurance Project Plan to update Table A7.1, Measurement Performance Specifications, to reflect additional EPA methods used in laboratory analyses by the Red River Authority of Texas Regional Laboratory and to update certain parameters and EPA methods performed by the CRMWA and LCRA laboratories.

Summary of Changes: The following information in Amendment I is amended to add the following changes:

- Revision of Table A7.1 – Measurement Performance Specifications
- Addition of Chemical Water Analysis and *E. Coli* Bacteria Log Forms to QAPP Appendices

Detail of Changes: The addition of Red River Authority's Regional Laboratory conducting analysis of Chlorophyll *a* and Pheophytin by EPA Method 446.0; the analysis of Ortho Phosphate-P, Nitrite-N, Nitrate-N, Sulfate, Chloride, and Fluoride by EPA method 300.0; and the analysis of Ammonia-N by EPA method 350.3. In addition, Fecal Coliform will be added back to Table A7.1 and Total Hardness, Storet Codes 00900 and 82394 will be removed from the table for RRA. Also included in the update of Table A7.1 is the addition of EPA method 300.0 for the analysis of Ortho Phosphate-P, Nitrate-N, Sulfate, and Chloride, and Fluoride by the storet code 00950 has been removed from the table for the Canadian River Municipal Water Authority (CRMWA) Laboratory. In addition SM 9223-B for the analysis of *E. coli* by CRMWA has been added. A change in the EPA method number for Nitrite/Nitrate-N from 353.3 to 353.2 and changes to the method numbers for Chlorophyll *a* and Pheophytin to EPA Method 446.0, with a back-up method of SM 10200H, as performed by the Lower Colorado River Authority laboratory has also been made to Table A7.1. In addition, a newly developed storet code of 20424 has been added for Water Clarity to Table A7.1 under Field Parameters. Additionally, Chemical Water Analysis and *E. coli* Bacteria Log forms to be submitted by CRMWA have been added to Appendix C (see attached).

These changes will be incorporated into the Quality Assurance Project Plan for the Red and Canadian River Basins for FY 2004 – FY 2005. The Texas Commission on Environmental Quality and the Red River Authority of Texas will acknowledge and accept these changes by signing this amendment.

Curtis W. Campbell, RRA Project Manager

Date

David L. Holub, RRA Quality Assurance Officer

Date

Laurie Curra, CRP Project Manager

Date

CRP Lead Quality Assurance Specialist

Date

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Date

Table A7.1 - Measurement Performance Specifications

PARAMETER	UNITS	MATRIX	METHOD	STORET	AWRL	LAB REPORTING LIMIT (RL)	RECOVERY AT RLS	PRECISION (RPD OF LCS / LCS DUPS)	BIAS %REC. OF LCS	LAB
FIELD PARAMETERS										
Conductivity	uS/cm	Water	EPA 120.1, TCEQ SOP	00094	NA*	NA	NA	NA	NA	Field
Days Since Last Significant Rain	Days	NA	TCEQ SOP	72053	NA*	NA	NA	NA	NA	Field
DO	mg/L	Water	EPA 360.1, TCEQ SOP	00300	NA*	NA	NA	NA	NA	Field
Flow Measurement Method	1 - gage 2 - electric 3 - mechanical 4 - weir/flume	Water	TCEQ SOP	89835	NA*	NA	NA	NA	NA	Field
Flow Estimate	cfs	Water	TCEQ SOP	74069	NA*	NA	NA	NA	NA	Field
Flow	cfs	Water	TCEQ SOP	00061	NA*	NA	NA	NA	NA	Field
Flow Severity	1 - no flow 2 - low 3 - normal 4 - flood 5 - high 6 - dry	Water	TCEQ SOP	01351	NA*	NA	NA	NA	NA	Field
pH	pH/units	Water	EPA 150.1, TCEQ SOP	00400	NA*	NA	NA	NA	NA	Field
Present Weather	1 - clear 2 - ptly cloudy 3 - cloudy 4 - rain	NA	NA	89966	NA	NA	NA	NA	NA	Field
Salinity	ppt, marine only	Water	SM 2520, TCEQ SOP	00480	NA*	NA	NA	NA	NA	Field
Secchi Depth	meters	Water	TCEQ SOP	00078	NA*	NA	NA	NA	NA	Field
Temperature	° C	Water	EPA 170.1, TCEQ SOP	00010	NA*	NA	NA	NA	NA	Field
Turbidity	NTU	Water	SM 2130-B	82079	.5	.5	75-125	20	80-120	Field

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FIELD PARAMETERS (continued)										
Water Odor	1 - sewage 2 - chemical 3 - rotten egg 4 - musky 5 - fishy 6 - none 7 - other	NA	NA	89971	NA	NA	NA	NA	NA	Field
Water Clarity	1 - excellent 2 - good 3 - fair 4 - poor	NA	NA	20424	NA	NA	NA	NA	NA	Field
Water Color	1 - brownish 2 - reddish 3 - greenish 4 - blackish 5 - clear 6 - other	NA	NA	89969	NA	NA	NA	NA	NA	Field
CONVENTIONAL AND BACTERIOLOGICAL PARAMETERS										
Ammonia-N, Total	mg/L	Water	EPA 350.1	00610	.02	.02	75-125	20	80-120	RRA
Ammonia-N, Total	mg/L	Water	EPA 350.3	00610	.02	.02	75-125	20	80-120	RRA
Chloride	mg/L	Water	EPA 300.0	00940	10	10	75-125	20	80-120	CRMWA
Chloride	mg/L	Water	EPA 300.0	00940	10	10	75-125	20	80-120	RRA
Chlorophyll- <i>a</i> , Fluorometric Method	ug/L	Water	SM 10200-H	70953	5	5	75-125	20	NA	LCRA
Chlorophyll- <i>a</i> , Spectrophoto- metric Method	ug/L	Water	EPA 446.0	32211	5	5	75-125	20	NA	RRA
Chlorophyll- <i>a</i> , Spectrophoto- metric Method	ug/L	Water	EPA 446.0	32211	5	2	75-125	20	NA	LCRA
E. coli, IDEXX Colilert	MPN/100 mL	Water	SM 9223-B	31699	1	1	NA	.5 **	NA	CRMWA

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PARAMETER	UNITS	MATRIX	METHOD	STORET	AWRL	LAB REPORTING LIMIT (RL)	RECOVERY AT RLS	PRECISION (RPD OF LCS / LCS DUPS)	BIAS %REC. OF LCS	LAB
CONVENTIONAL AND BACTERIOLOGICAL PARAMETERS (continued)										
E. coli, IDEXX Colilert	MPN/100 mL	Water	SM 9223-B	31699	1	1	NA	.5 **	NA	RRA
Fecal Coliform	cfu / 100 mL	Water	SM 9222-D	31616	1	1	NA	.5 **	NA	RRA
Fluoride, Total	mg/L	Water	EPA 300.0	00951	.5	.5	75-125	20	80-120	CRMWA
Fluoride, Total	mg/L	Water	EPA 300.0	00951	.5	.5	75-125	20	80-120	RRA
Pheophytin, Fluorometric Method	ug/L	Water	SM 10200-H	32213	3	3	NA	20	NA	LCRA
Pheophytin, Spectrophoto- metric Method	ug/L	Water	EPA 446.0	32218	3	2	NA	20	NA	LCRA
Pheophytin, Spectrophoto- metric Method	ug/L	Water	EPA 446.0	32218	3	3	NA	20	NA	RRA
Sulfate	mg/L	Water	EPA 300.0	00945	10	10	75-125	20	80-120	RRA
Sulfate	mg/L	Water	EPA 300.0	00945	10	10	75-125	20	80-120	CRMWA
TDS, Calculated	mg/L	Water	Calculation	70294	NA	NA	NA	NA	NA	RRA
TDS, Dried at 180 Degrees C	mg/L	Water	EPA 160.1	70300	10	10	NA	20	NA	RRA
TSS	mg/L	Water	EPA 160.2	00530	4	4	NA	20	NA	RRA
FIELD, CONVENTIONAL AND BACTERIOLOGICAL PARAMETERS; NON-TSWQS METALS										
Alkalinity, Total	mg/L	Water	EPA 310.1	00410	10	10	NA	20	80-120	RRA
Alkalinity, Total	mg/L	Water	EPA 310.1	00410	10	10	NA	20	80-120	CRMWA
Calcium, Total	mg/L	Water	EPA 215.2	00916	.5	.5	75-125	20	80-120	RRA
COD	mg/L	Water	EPA 410.2	00335	10	10	75-125	20	80-120	RRA

Table A7.1 - Measurement Performance Specifications

PARAMETER	UNITS	MATRIX	METHOD	STORET	AWRL	LAB REPORTING LIMIT (RL)	RECOVERY AT RLS	PRECISION (RPD OF LCS / LCS DUPS)	BIAS %REC. OF LCS	LAB
FIELD, CONVENTIONAL AND BACTERIOLOGICAL PARAMETERS; NON-TSWQS METALS (continued)										
Magnesium, Dissolved	mg/L	Water	SM 3500-Mg-B	00925	0.5	0.5	75-125	20	75-125	CRMWA
Nitrate/Nitrite-N, Total	mg/L	Water	EPA 353.2	00630	.04	.04	75-125	20	80-120	LCRA
Nitrate-N	mg/L	Water	EPA 300.0	00620	.02	.02	75-125	20	80-120	CRMWA
Nitrate-N	mg/L	Water	EPA 300.0	00620	.02	.02	75-125	20	80-120	RRA
Nitrite-N	mg/L	Water	EPA 300.0	00615	.02	.02	75-125	20	80-120	CRMWA
Nitrite-N	mg/L	Water	EPA 300.0	00615	.02	.02	75-125	20	80-120	RRA
Ortho Phosphate-P, Field Filtered	mg/L	Water	EPA 300.0	00671	.04	.04	75-125	20	80-120	RRA
Ortho Phosphate-P, Field Filtered	mg/L	Water	EPA 300.0	00671	.04	.04	75-125	20	80-120	CRMWA
Ortho Phosphate-P, Field Filtered	mg/L	Water	EPA 365.3	00671	.04	.04	75-125	20	80-120	RRA
TOC	mg/L	Water	SM 5310-B	00680	2.0	2.0	75-125	20	80-120	RRA
Total Phosphorus-P	mg/L	Water	EPA 365.3	00665	.06	.06	75-125	20	80-120	RRA
VSS	mg/L	Water	EPA 160.4	00535	4	4	NA	20	80-120	RRA

* Reporting to be consistent with SWQM guidance and based on measurement capability.

** Based on a range statistic as described in Standard Methods, 20th Edition, 1998, Section 9020-B, “Quality Assurance/Quality Control - Intra laboratory Quality Control Guidelines. This criterion applies to bacteriological duplicates with concentrations >10 org./100mL.

References for Table A7.1:

United States Environmental Protection Agency (USEPA) “Methods for Chemical Analysis of Water and Wastes,” Manual #EPA-600/4-79-020

American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF), “Standard Methods for the Examination of Water and Wastewater,” 20th Edition, 1998.

TCEQ SOP - Surface Water Quality Monitoring Procedures Manual, most recent version.

American Society for Testing and Materials (ASTM) Annual Book of Standards, Vol. 11.02

APPENDIX C
FIELD DATA SHEETS

CANADIAN RIVER MUNICIPAL WATER AUTHORITY

CHEMICAL WATER ANALYSIS FORM

Station/Sample Location

	Station/Sample Location				
Date Sample Collected:					
Sample Caught At (Time):					
Air Temp: (°F)					
Wind Speed: (mph)					
Wind Direction:					
Ph (Standard Units)					
Specific Conductance (µµs/cm)					
Water Temperature: (°C)					
P. Alkalinity					
T. Alkalinity					
Fluoride					
Chloride					
Nitrate (as N)					
Phosphate					
Sulfate					
Sodium					
Potassium					
Calcium					
Magnesium					
Total Hardness					
Latitude N					
Longitude W					
Water Color					
(1-brown 2-red 3-green 4-black 5-clear 6-other*)					
Water Odor (1-Sewage 2-oily/chem					
3-rottin eggs 4-musky 5-fishy 6-none 7-other*)					
Weather					
(1-clear 2-partly cloudy 3-cloudy 4-rain)					
Water Clarity					
(1-excellent 2-good 3-fair 4-poor 5-other*)					
Flow (CFS):					
Collected By:					
Analyzed By:					
Date Analyzed:					
Sample Depth:					
Lake Depth:					
All values given as parts per million with the exception of pH and Specific Conductance.					
ND = Not Detected					
*** Value taken in field					
*Comments:					

CANADIAN RIVER MUNICIPAL WATER AUTHORITY

E. Coli BACTERIA LOG

Exp. Date of Media:		Collector(s):					
Date on:		Time on:		Start Temp: (°C)			
	Sample Location	Sample ID No.	mL Used	Dilution Factor	<i>E. coli</i>		
					Small Cells	Large Cells	MPN/ mL
1			100	None			
2			100	None			
3			100	None			
4			100	None			
5			100	None			
6			100	None			
7			100	None			
8			100	None			
9			100	None			
10			100	None			
11			100	None			
12			100	None			
13			100	None			
14			100	None			
15			100	None			
16			100	None			
17			100	None			
18			100	None			
19			100	None			
20			100	None			
Date off:		Time off:		End Temp: (°C)			
Method Used to Determine Counts: <i>E. coli</i> Idexx MPN Chart							
Comments:							