

Appendix *F* to the  
Sulphur River Basin Authority / Clean Rivers Program  
FY 2004/2005 QAPP

Targeted Flow Monitoring

Prepared by the Sulphur River Basin Authority

In Cooperation with the  
Texas Commission on Environmental Quality (TCEQ)

Effective Period  
March 2004 to August 2005

Questions concerning this QAPP should be directed to:

Michael Burke  
Executive Director / Project Manager  
911 N. Bishop, Suite C-104  
Wake Village, Texas 75501  
(903) 223-7887  
mburkesrba@cableone.net

**S-A1 APPROVAL PAGE**

The following signatures are required for the special study:

\_\_\_\_\_  
Michael Burke, SRBA Project Manager

\_\_\_\_\_  
Date

\_\_\_\_\_  
Mike Buttram, SRBA Quality Assurance Officer

\_\_\_\_\_  
Date

\_\_\_\_\_  
Patricia Wise, TCEQ CRP Project Manager

\_\_\_\_\_  
Date

\_\_\_\_\_  
Sharon Coleman, TCEQ CRP Lead Quality Assurance Specialist

\_\_\_\_\_  
Date

\_\_\_\_\_  
Laurie Curra, TCEQ CRP Project Quality Assurance Specialist

\_\_\_\_\_  
Date

The Sulphur River Basin Authority will secure written documentation from each project participant (e.g., subcontractors, other units of government, laboratories) stating the organization’s awareness of and commitment to requirements contained in this quality assurance project plan appendix and any amendments of this plan. The Sulphur River Basin Authority will maintain this documentation as part of the project’s quality assurance records, and will be available for review.

## A2 TABLE OF CONTENTS

SS-A1 .....	Approval Page
SS-A3 .....	Distribution List
SS-A4 .....	Project/Task Organization
SS-A5 .....	Problem Definition/Background
SS-A6 .....	Project/Task Description
SS-A7 .....	Quality Objectives and Criteria
SS-A8 .....	Special Training/Certification
SS-A9 .....	Documents and Records
SS-B1 .....	Sampling Process Design (Experimental Design)
SS-B2 .....	Sampling Methods
SS-B3 .....	Sample Handling and Custody
SS-B4 .....	Analytical Methods
SS-B5 .....	Quality Control
SS-B6 .....	Instrument/Equipment Testing, Inspection, and Maintenance
SS-B7 .....	Instrument Calibration and Frequency
SS-B8 .....	Inspection/Acceptance for Supplies and Consumables
SS-B9 .....	Non-Direct Measurements
SS-B10 .....	Data Management
SS-C1 .....	Assessment and Response Actions
SS-C2 .....	Reports to Management
SS-D1 .....	Data Review, Verification and Validation
SS-D2 .....	Verification and Validation Methods
SS-D3 .....	Reconciliation with User Requirements

### **Tables:**

Table SS-A7: Measurement Performance Specifications

Table SS-B1: Sampling Site and Monitoring Frequency

### **Figures:**

Figure SS-B1: Sampling Site Map

### **Attachments:**

Attachment 1 - Targeted Monitoring Data Report

## **LIST OF ACRONYMS**

As described in Section A2 of the basin-wide QAPP

## **SS-A3 DISTRIBUTION LIST**

As described in Section A3 of the basin-wide QAPP.

## **SS-A4 PROJECT/TASK ORGANIZATION**

As described in Section A3 of the basin-wide QAPP.

## **SS-A5 PROBLEM DEFINITION**

The TCEQ uses the seven-day, two-year low-flow (7Q2) and the harmonic mean flow to calculate water-quality based effluent limits and to establish whole effluent toxicity (WET) testing parameters in wastewater discharge permits. The TCEQ often has very little site-specific flow information upon which to base the 7Q2 and harmonic mean flow, and the uncertainty in the flows carries through to the permit limit calculations and the WET testing requirements. The TCEQ has identified sites at which flow information would improve the quality of permit limits and conditions. This QAPP appendix will address the flow monitoring to be conducted to allow the TCEQ to better characterize the flow regime of receiving streams and to determine the 7Q2 and the harmonic mean flow, as appropriate. This information will then be used by the TCEQ in setting permit discharge limits.

## **SS-A6 PROJECT/TASK DESCRIPTION**

This study will involve reconnaissance and site selection; monthly flow and field measurements, photographs, and field observations at the site; and a report when the study has been concluded. Flow will be measured and reported according to Exhibit 3D of the CRP Guidance and Reference Guide and the TCEQ Surface Water Quality Monitoring Procedures Manual Volume 1. Additionally, the Sulphur River Basin Authority will provide monitoring updates with the CRP quarterly progress report.

Stream discharge will be monitored monthly in one unclassified stream from March 2004 through August 2005 to help characterize flow conditions for the permitting process.

Flow will be measured at the site using a Marsh-McBirney FlowMate electronic flow meter and the stream discharge will be calculated consistent with TCEQ SWQM Procedures, Volume 1. Photographs will be taken at the point of flow measurement, upstream, and downstream of the measurement site. In addition to stream discharge, field parameters (water temperature, pH, dissolved oxygen, and specific conductance) also will be collected.

To avoid bias, flow measurements will be collected on a consistent basis (e.g., during the first week of each month). The exception will be if the stream is under the influence of a rainfall

event. Since the normal, yearly flow conditions are being characterized with this type of monitoring, flow measurements will not be taken if the stream is visibly under an immediate elevated flow event that will subside fairly quickly (e.g., a day).

## SS-A7 QUALITY OBJECTIVES AND CRITERIA

This study will involve monthly flow and field measurements, photographs, and field observations at each of the sites. The purpose of this study is to help the TCEQ characterize flow conditions for the permitting process.

The measurement performance specifications to support the project objectives for a data set are specified in Table SS- A7 and in the text following.

Table SS- A7 Measurement Performance Specifications

PARAMETER	UNITS	MATRIX	METHOD	STORET	AWRL	Lab Reporting Limit (RL)	RECOVER Y AT RLs	PRECISION (RPD of LCS/LCS dup)	BIAS (%Rec. of LCS)
<b>Field Parameters</b>									
pH	pH/ units	water	EPA 150.1 and TCEQ SOP	00400	NA*	NA	NA	NA	NA
DO	mg/L	water	EPA 360.1 and TCEQ SOP	00300	NA*	NA	NA	NA	NA
Conductivity	uS/cm	water	EPA 120.1 and TCEQ SOP	00094	NA*	NA	NA	NA	NA
Temperature	B C	water	EPA 170.1 and TCEQ SOP	00010	NA*	NA	NA	NA	NA
Days since last significant rainfall	days	NA	TCEQ SOP	72053	NA*	NA	NA	NA	NA
Flow	cfs	water	TCEQ SOP	00061	NA*	NA	NA	NA	NA
Flow measurement method	1-gage 2-electric 3-mechanical 4-weir/flume 5-doppler	water	TCEQ SOP	89835	NA*	NA	NA	NA	NA
Flow severity	1-no flow, 2-low, 3-normal, 4-flood, 5-high, 6-dry	water	TCEQ SOP	01351	NA*	NA	NA	NA	NA

**References:**

United States Environmental Protection Agency (USEPA) "Methods for Chemical Analysis of Water and Wastes," Manual #EPA-600/4-79-020  
TCEQ SOP - Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods for Water, Sediment, and Tissue, 2003.

### **Ambient Water Reporting Limits (AWRLs)**

Not applicable to this QAPP.

### **Precision**

As described in Section A7 of the basin-wide QAPP.

### **Bias**

As described in Section A7 of the basin-wide QAPP.

### **Representativeness**

Site selection, the appropriate sampling regime, and the use of only approved field methods will assure that the measurement data represents the conditions at the site. This data collection scheme as outlined by the TCEQ Water Quality Division has been determined to be spatially and temporally representative of flow conditions at the site. At a minimum, samples are collected over at least 18 months to reflect inter-seasonal and inter-year variation. Although data may be collected during varying regimes of weather and flow, the data sets will not be biased toward unusual conditions of flow because flow will not be measured during visibly high flow events. The goal for meeting total representation of the water body will be tempered by the potential funding for complete representativeness.

### **Comparability**

Confidence in the comparability of this data set for this project is based on the commitment of project staff to use only approved sampling and analysis methods and QA/QC protocols in accordance with quality system requirements and as described in this QAPP and in TCEQ SOPs. Comparability is also guaranteed by reporting data in standard units, by using accepted rules for rounding figures, and by reporting data in a standard format as specified in Section B10.

### **Completeness**

A 100% completeness goal is required for this monitoring project.

### **SS-A8 SPECIAL TRAINING/CERTIFICATION**

As described in Section A8 of the basin-wide QAPP.

### **SS-A9 DOCUMENTS AND RECORDS**

As described in Section A9 of the basin-wide QAPP.

## Data Reports

A data summary report as shown in Attachment 1 of this document will be submitted electronically on disk or CD at the termination of the project. Data events and results will be submitted in routine data submittals for inclusion in the TCEQ TRAC Activities database. Additionally, monitoring updates will be provided with the CRP quarterly progress report

## SS-B1 SAMPLING PROCESS DESIGN

The data collection design is summarized in Table SS-B1 (Sampling Site and Monitoring Frequency) and Figure SS-B1 (Sample Site Map).

Table SS - B1 Sampling Site and Monitoring Frequency

Stream	Station ID	Start Date	End Date	Monit Resp	Monit Type	Permit	Field	Instan Flow
Wagoner Creek @ US 82	14475	03/01/2004	08/31/2005	SU/TC	FL	10374-007	18	18

Figure SS-B1



## **Sample Design Rationale and Site Selection Criteria**

Flow monitoring sites were picked by the TCEQ Water Quality Assessment Team. These sites were selected based on one of the following:

- 1) If the discharge is directly to a perennial or intermittent stream with perennial pools, the flow monitoring site should be located upstream of the discharge on the perennial or intermittent stream with perennial pools.
- 2) If the discharge is directly to an intermittent stream, the flow monitoring site should be located downstream of the discharge, but upstream of the confluence of the first perennial or intermittent stream with perennial pools.

## **SS-B2 SAMPLING METHODS**

### **Field Sampling Procedures**

As described in Section B2 of the basin-wide QAPP.

### **Sample volume, container types, minimum sample volume, preservation requirements, and holding time requirements.**

Not applicable to this QAPP.

### **Sample Containers**

Not applicable to this QAPP.

### **Processes to Prevent Contamination**

Not applicable to this QAPP.

### **Documentation of Field Sampling Activities**

As described in Section B2 of the basin-wide QAPP.

### **Recording Data**

As described in Section B2 of the basin-wide QAPP.

### **Deficiencies, Non-conformances and Corrective Action Related to Sampling Requirements**

As described in Section B2 of the basin-wide QAPP.



### **SS-B3 SAMPLING HANDLING AND CUSTODY**

Section is not applicable to this QAPP

### **SS-B4 ANALYTICAL METHODS**

Section is not applicable to this QAPP

### **SS-B5 QUALITY CONTROL**

#### **Sampling Quality Control Requirements and Acceptability**

As described in Section B5 of the basin-wide QAPP.

#### **Laboratory Measurement Quality Control Requirements and Acceptability Criteria**

Not applicable to this QAPP

#### **Failures in Field and Laboratory Quality Control and Corrective Action**

As described in Section B5 of the basin-wide QAPP

### **SS-B6 INSTRUMENT/EQUIPMENT TESTING, INSPECTION AND MAINTENANCE**

As described in Section B6 of the basin-wide QAPP.

### **SS-B7 INSTRUMENT CALIBRATION AND FREQUENCY**

As described in Section B7 of the basin-wide QAPP.

### **SS-B8 INSPECTION/ACCEPTANCE FOR SUPPLIES AND CONSUMABLES**

As described in Section B8 of the basin-wide QAPP

### **SS-B9 NON-DIRECT MEASUREMENTS**

As described in Section B9 of the basin-wide QAPP

### **SS-B10 DATA MANAGEMENT**

As described in Section B10 of the basin-wide QAPP

## **SS-C1 ASSESSMENTS AND RESPONSE ACTIONS**

As described in Section C1 of the basin-wide QAPP.

### **Corrective Action**

As described in Section C1 of the basin-wide QAPP.

## **SS-C2 REPORTS TO MANAGEMENT**

### **Reports to Planning Agency Project Management**

As described in Section C2 of the basin-wide QAPP.

### **Reports to TCEQ Project Management**

As described in Section C2 of the basin-wide QAPP.

### **Reports by TCEQ Project Management**

As described in Section C2 of the basin-wide QAPP.

## **SS-D1 DATA REVIEW, VERIFICATION, AND VALIDATION**

As described in Section D1 of the basin-wide QAPP.

## **SS-D2 VERIFICATION AND VALIDATION METHODS**

As described in Section D2 of the basin-wide QAPP.

## **SS-D3 RECONCILIATION WITH USER REQUIREMENTS**

As described in Section D2 of the basin-wide QAPP.

# **Attachment 1**

# TARGETED MONITORING SUMMARY REPORT

(Example Report)

Purpose of the monitoring: Stream discharge was monitored monthly in one unclassified stream from March 2004 through August 2005 to help characterize flow conditions for the permitting process.

Table 1. Monitoring Information

Stream	Station	Permit
Wagner Creek at US HWY 67	14475	10374-007

Basics of how the study was conducted: Flow was measured at the site using a Marsh-McBirney FlowMate electronic flow meter and the stream discharge was calculated consistent with the TCEQ SWQM Procedures Manual. Photographs were taken at the point of flow measurement, upstream, and downstream of the measurement site. In addition to stream discharge, field parameters (water temperature, pH, dissolved oxygen, and specific conductance) were also collected. All data has been submitted electronically for inclusion in the TCEQ TRACs database. Data have been summarized in the following tables.

Table 2. Summary of Monthly Data from Wagner Creek at US Hwy 67

Aqua WSC, Permit No. 10374-007, TCEQ Station Id Number 14475					
Date	Flow (cfs) 00061	Temp (°C) 00010	pH (SU) 00400	DO (mg/L) 00300	Specific Conductance (µS/cm) 00094

Photos from each event provided