

Texas Optimization Program Evaluations

Addendum 8

(Revision 2)

to the

Quality Assurance Project Plan for the Texas Commission on Environmental Quality Public Water System Supervision Program Relating to the Safe Drinking Water Act

Effective

November 10, 2022



List of Acronyms

Acronym	Definition
CA	corrective action
CAP	corrective action plan
CCEDS	Consolidated Compliance and Enforcement Data Systems
CCI	Comprehensive Compliance Investigation
CCP	Composite Correction Program
CPE	comprehensive performance evaluations
CTA	Comprehensive Technical Assistance
DWQT	Drinking Water Quality Team
EPA	Environmental Protection Agency
MAOP	Minimum Acceptable Operating Practices
mCPEs	Mandatory Comprehensive Performance Evaluations
NOV	notice of violation
NTU	nephelometric turbidity units
OW	Office of Water
PDWP	Public Drinking Water Program
PWS	public water system
PWSS	Public Water System Supervision
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
QMP	Quality Management Plan
RCDT	Response and Capacity Development Team
SDWA	Safe Drinking Water Act
SDWIS	Safe Drinking Water Information System
SOP	standard operating procedure
SPE	special performance evaluation
SWMOR	Surface Water Monthly Operating Report
SWTP	surface water treatment plant
SWTR	Surface Water Treatment Rule
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TOP	Texas Optimization Program
TOPAC	Texas Optimization Program Advisory Committee
WSD	Water Supply Division

(A) Project Management

A1 Approval

The following individuals are signatories on this QAPP Addendum because they are responsible for management and assurance of quality of the work described.


Brian Matthews, Team Leader

Texas Commission on Environmental Quality (TCEQ) Office of Water (OW)/Water Supply Division (WSD)/ Emergency Preparedness and Response Section (EPRS)/Texas Optimization Program (TOP) Team

Signature: Brian P. Matthews Date: 09/12/2022

Jessica Hoch, PWSS Program Lead Quality Assurance Specialist

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Signature:  Date: 09/09/2022

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A3 Distribution List

The PWSS Program Lead Quality Assurance Specialist (QAS) ensures the individuals on the distribution list in Section A3 of the QAPP Programmatic document receive a copy of the Programmatic QAPP and Addenda. Redistribution occurs when amendments or revisions are approved and published.

The Team Leader of the TCEQ Texas Optimization Program and Response Team (TOPRT) ensures the QAPP is distributed, or otherwise made available to all participants specified in Section A4 of this QAPP Addendum.

The current version of the Programmatic QAPP and Addenda are on the TCEQ PWSS Program webpage at <tceq.texas.gov/drinkingwater/pwss.html>.

A4 Project/Task Organization

The TCEQ's Texas Optimization and Response (TOPR) Team performs performance evaluations of public water system facility design and operation. This team is organized within the WSD's Emergency Preparedness and Response Section. Section A4 of the Programmatic QAPP document describes roles and responsibilities of key individuals in TCEQ WSD.

The individuals/groups listed below participate directly in activities related to TOP Evaluations. Additional information on TOP team roles and responsibilities is contained in the SOP - TOP Organization General Description (see Table A9.2)

A4.1 TOPR Team Leader

Leads the TOPRT to ensure TOP evaluation requirements related to the PWSS Program (e.g., oversight, SOPs, corrective actions, equipment, supplies, training, reporting, data/information management, etc.) are implemented. Coordinates with management as needed and required. Reviews AND SIGNS all TOP evaluation reports prior to distribution.

A4.2 TOP Team

The TOP Team is comprised of the TOPRT Leader, engineers, and technical specialists (including TCEQ contractors) who have knowledge of surface water treatment plant (SWTP) design and operation. During each evaluation, a CPE or SPE leader is selected who leads and coordinates the evaluation, schedules Factors and Exit meetings (see Section A6), and completes the final report (or designates a person to do so). A data manager may also be selected for CPEs or SPEs (depending on their nature) to ensure TOP data/information is maintained in accordance with program, division, and agency protocols.

A4.3 TOP Contract Manager(s)

Member(s) of the TOP Team who oversee contractor activities related to TOP evaluations. Ensure contracts are executed in accordance with agency and division

protocols and contractors comply with standards and deliverables. Coordinate with division and agency staffers who manage contracts.

A4.4 TOPAC

This committee is comprised of WSD, Regional Directors, and TOP Staff who serve as an inter-agency collaborative body coordinating WSD, regional, and TOP activities, initiatives, and priorities.

A5 Problem Definition/Background

In 1993, the Surface Water Treatment Rule (SWTR) was promulgated by the EPA to assure adequate removal of *Giardia* cysts. The SWTR lowered the maximum allowable turbidity level for combined filter effluent and increased the minimum sampling frequency. To help treatment plants meet these new turbidity standards, the EPA developed a process for improving surface water treatment plant (SWTP) performance. The approach, called the Composite Correction Program (CCP), consists of two components: CPE and Comprehensive Technical Assistance (CTA).

The EPA began working with Texas and several other states to utilize the CCP process to achieve optimized performance goals. Initial optimization activities in Texas focused primarily on conducting voluntary CPE, and gradually expanded into a multi-faceted, statewide effort known as TOP.

TOP was formed at the TCEQ by a team of engineers and technical specialists from the WSD and the field offices to develop and implement a state-wide optimization program for SWTPs. Optimization of a SWTP is achieved by identifying and addressing the various factors that limit its performance. It is a continuous process that involves:

- Setting performance targets for each major unit in the SWTPs.
- Monitoring the performance of each of the major treatment units.
- Analyzing the data to determine if each unit is achieving the desired performance level.
- Taking corrective action if the performance objectives are not being met.

At times, the broad scale implementation of CPEs is prevented by cost and staff resources. For this reason, the TCEQ's TOP Team developed another evaluation tool called a special performance evaluation (SPE) to provide resource effective collection of essential performance data from SWTPs. (See Section A6 for differences between CPEs and SPEs.)

The results for plant capacity, operation, and sanitary conditions of all the water system facilities are used to determine compliance with specific regulatory requirements and are documented in Comprehensive Compliance Investigation (CCI) final reports. Issues not addressed in the CCI may be addressed in the CPEs

and SPEs. The CPE and SPE differ from a routine CCI in that they focus exclusively on the chemistry of the source water and the design and operations of the raw water pump station and the SWTP. There is also an administrative element of the CPE that is not addressed during the CCI.

Work performed for TOP evaluations can be considered environmental data operations as defined by the TCEQ Quality Management Plan (QMP) and *EPA Requirements for QAPPs, EPA QA/R-5*. As such, the QA processes regarding organization, planning, implementation, and assessment must be addressed in a QAPP which is reviewed and approved by the EPA. This document is written as an addendum to the PWSS Programmatic QAPP as referenced on the title page of this document. This addendum format will facilitate management, review, and future revision of this document.

A6 Project/Task Description

The TCEQ implements the TOP by conducting CPEs and the SPEs as diagrammed in Exhibit 1. TOP evaluations involve thorough assessments of plant design, operation, maintenance, and administration to identify the specific factors that are adversely affecting plant performance. During CPEs and SPEs, TOP Team members inspect facilities and review plant schematics; conduct operator interviews; and review historical performance records to evaluate the plant components listed in Table A6. During many TOP evaluations, team members break into groups to conduct the evaluation, train TOP Team members, and provide technical assistance to PWS operators.

Table A6 CPE and SPE Components

Facility Description	Component
Raw Water Source Information	<ul style="list-style-type: none"> • Intake Structure • Evidence of Siltation • Watershed Control • Contamination Sources

Facility Description	Component
Major Treatment Units	<ul style="list-style-type: none"> • Rapid Mixing • Flocculation • Sedimentation • Filtration • Clear Well Storage • Wastewater Management • Pumping and Chemical Feed Equipment • Flow Metering Equipment • Chemical Feed Equipment
Age and Condition of Facility	<ul style="list-style-type: none"> • Age of Facility • Condition of Facility • Filter Assessment • Maintenance Program
Unit Treatment Capacities	<ul style="list-style-type: none"> • Design Capacity • Approved Capacity • Maximum Daily Usage • Peak Flow Rate • Peak Flow Source • Flow Splitting
Operations	<ul style="list-style-type: none"> • Process Monitoring • Process Control Procedures • Data Records • Data Reporting
Administration	<ul style="list-style-type: none"> • Utility Administration • Administrative Policies • Plant Staffing • Operator Training • Capital Improvements • Utility Financial Status

The *TCEQ SOP Mandatory Comprehensive Performance Evaluation Activities Schedule* describes how the TCEQ schedules both CPEs and SPEs. The TCEQ conducts CPEs and SPEs by inspecting plant facilities, reviewing historical

performance records, reviewing engineering drawings and specifications, interviewing plant operators and administrators, and performing special studies during the evaluations. If performance-limiting factors are identified during a mandatory CPE, the CPE Team develops a Corrective Action Plan (CAP) to systematically correct the factors and improve plant performance. The CAP developed by TOP for the plant is not addressed in this Programmatic QAPP Addendum. Specific information on CPEs and SPEs is provided in Table A6.

A6.1 Comprehensive Performance Evaluations (CPE)

There are two types of CPEs: Mandatory and Optimization. The TOP Team conducts Mandatory CPEs (mCPE) in response to regulatory triggers described in 30 TAC §290.111. When a trigger event occurs, the PWS must complete and submit a CPE Request Form with their Surface Water Monthly Operating Report (SWMOR) no later than the 10th day of the following month. In contrast, the TOP Team conducts Optimization CPEs to assist PWSs who voluntarily wish to optimize the quality of the drinking water produced by their SWTP. Optimization CPEs are also used to train staff on how to perform CPEs.

The TOP Team conducts CPEs in accordance with the SOP - Comprehensive Performance Evaluation Duties and Deadlines. This SOP also sets the timeline for the preparation of materials needed for the final report. During a CPE, the TOP Team (see Section A4) may spend a total of 350 to 450 person-hours doing the facility inspections; operator interviews, reviewing records, etc. and preparing the final report. At the end of the onsite portion of a CPE, the TOP team conducts a Factors meeting in accordance with the SOP - Comprehensive Performance Evaluation Factors meeting. A Factors meeting is an internal meeting of the TOP Team during an CPE in which the members discuss and compile the factors of the evaluation. The SOP describes how the TOP Team identifies the performance limiting factors that impede the ability of the plant to produce drinking water that meets all of the regulatory requirements or optimization standards related to microbial quality.

Following the Factors meeting, the TOP Team conducts an exit meeting with PWS officials to discuss the performance limiting factors. The TOP Team members prepare rough drafts of all the sections to be included in the final report (see Section A9.3). Within three to four weeks, the CPE leader of the TOP Team (or designee) compiles and completes the first draft of the final report and sends it to the other team members and management for review and comment. The CPE leader then finalizes and distributes the report as described in Section A9.3. The review and revision process takes four to eight weeks.

If the TOP Team identifies performance-limiting factors during a mCPE, the TOP Team develops a Corrective Action Plan (CAP) to systematically correct the factors and improve plant performance. Optimization CPEs are voluntary and do not include the development of CAPs. The CAP, if applicable, is part of the final report.A6.2

A6.2 Special Performance Evaluations (SPE)

SPEs involve some of the same technical components as a CPE but do not require the same commitment of time and staff, nor do they include the identification of performance-limiting factors. The SPE, including the onsite evaluation and preparation of the final report, takes a minimum of 38 hours to complete. This includes 24 hours per SPE team member at the treatment plant as indicated in Chapter 2 of the *TCEQ Guidance Manual for Conducting Surface Water Treatment Plant Special Performance Evaluations*.

SPEs are conducted at SWTPs that have difficulty meeting regulatory standards for filtered water turbidity levels, but have not reached a regulatory trigger. These plants are identified based on a review of the SWMORs submitted to the Public Drinking Water Program (PDWP) at the TCEQ. The TCEQ may initiate SPEs based on actual conditions that are observed at a plant during a CCI or focused investigation, or when a suspected waterborne disease outbreak is reported.

There are several conditions under which data included in a SWMOR might justify an SPE, such as:

- Combined filter effluent (CFE) turbidity readings above 1.0 NTU.
- Turbidity readings above 0.3 NTU in more than five percent of these samples measured during a month.
- Individual filter effluent turbidity readings above 1.0 NTU.
- Finished water turbidity and disinfectant data that do not appear to be accurate and may represent a public health concern.

The data audit portion of the SPE as described in Chapter 7 of the *Guidance Manual for Conducting Surface Water Treatment Plant Special Performance Evaluations* is performed to determine whether or not reported performance data is consistent with other data collected and stored by the operators and electronic equipment. The data audit is used to determine the degree of accuracy with which the information is transferred from the point of origin to the SWMOR. To determine if there are any systematic reporting problems, the SPE team members compare the SWMOR-reported data to the plant's laboratory reports, operation logs, strip charts, etc. If performance limiting factors are identified which would lead to CPE triggers, then a CPE may be required.

Once all the onsite evaluation activities associated with the SPE have been completed, an exit meeting is held with the plant manager and/or utility administrator to answer general questions related to the evaluation. The SPE team prepares rough drafts of the SPE report which are completed and reviewed as described above under CPEs.

If the SPE identifies violations of drinking water regulations, the SPE team informs the system that the TCEQ regional office will receive a copy of the final SPE report and may follow-up by issuing one or more Notices of Violation. Similarly, if the SPE identified performance data that would trigger a CPE, the SPE Team advises the water system of the findings. SPE team members record the performance data and

provide summaries and recommendations to the water system. TCEQ management makes the final decisions regarding appropriate follow-up action. Enforcement activities are not addressed in this Programmatic QAPP Addendum. However, TOP staff coordinate with TCEQ management including the Enforcement Division as required by the results of the SPE.

A7 Quality Objectives & Criteria

The TCEQ's objective for TOP is consistent with the overall objective of the SDWA to protect drinking water and public health. Consequently, as the state's environmental agency, the TCEQ can provide better protection of the health of all Texas citizens currently served by PWSs and all those who consume water from the systems. The specific objectives related to TOP as described below reflect the objectives specified in the Programmatic QAPP.

Objectives and Project Decisions

The PWSS Program's goal for this project's quality objectives related to TOP evaluations undertaken by the TCEQ is to produce data and information of a known and verifiable quality that will meet the overall objectives of the SDWA. A combination of the following activities described in this document pursuant to state and federal rules and regulations ensure the data quality objectives are met:

- Management oversight
- Training
- Available and well defined TCEQ guidance
- Required reporting protocols and standardized forms
- TCEQ surveys and investigations
- TCEQ SOPs for acquiring, managing, and accepting data
- Corrective action procedures
- Data security process

Accuracy

Accuracy is a reflection of correctness. To be accurate, CPE and SPE data must be unique to each water system, logical, and representative of the real world. This ensures corrective actions are targeted to actual problems within the PWS.

Comparability

Comparability refers to the degree in which methods or data sets are considered to be similar under similar circumstances. CPEs and SPEs must be comparable to ensure consistent results over time so that changes in results reflect changes in the environment and/or problems within the PWS. Comparability of results is ensured by the use of the same tools and methods for all evaluations.

Completeness

The completeness of the data is basically a relationship of how much of the data or information is available for use compared to the total potential data. CPEs and SPEs must be complete and contain all the requisite data (including all performance limiting factors) to produce a meaningful report and target valid corrective actions.

Representativeness

Representativeness refers to the degree to which the data and information accurately represent a specific variable in the population—how well the data reflects the conditions where it was collected.

Data Integrity

CPE and SPE data are managed in such a way to ensure the confidentiality, integrity, and availability of data and information. Data management policies and procedures ensure data and information are recoverable and only used for their intended purposes.

Compliance

All TCEQ requirements associated with CPEs and SPEs have been developed to be consistent with state rules and federal regulations pursuant to the SDWA. This ensures all compliance and enforcement actions taken by the TCEQ are defensible.

A8 Special Training/Certifications

The TCEQ provides an advanced training program to transfer CPE and SPE skills to WSD staff and PWS investigators who have extensive knowledge and experience related to SWTPs. TOP team members provide training opportunities which are organized based on the availability of trainers; the interest of qualified trainees; the support of the WSD, Regional Water Section Managers, and Regional Directors; and the specific needs of individual regions. The TCEQ training process is included in the *TCEQ Guidance Manual for Conducting SWTP Special Performance Evaluations*. Hands-on training events are designed by TOP to achieve a progressive transfer of advanced evaluation skills. Additional detail is provided below.

A8.1 Comprehensive Performance Evaluation Training

CPE trainees participate in a one-day seminar that provides instruction and workshop opportunities to familiarize themselves with the CPE terminology and approach. After the seminar, CPE trainees participate in three live CPEs where they gain CPE skills through progressive training facilitated by experienced CPE providers. The training process is typically scheduled over a four to six-month period. The *EPA Handbook Optimizing Water Treatment Plant Performance Using the Composite Correction Program* Table 8-1 includes the Training Approach to Achieve Transfer of CPE Skills.

A8.2 Special Performance Evaluation Training

The TCEQ TOP implements a broad scale advanced training program for SPEs to transfer SPE skills to senior field staff. The primary goal of SPE training establishes a network of specially trained WSD staff and PWS investigators who can conduct performance-based evaluations of SWTPs. Additionally, SPE training facilitates other agency initiatives by contributing to a higher level of technical expertise in the field of surface water treatment. The advanced technical skills that are developed during the training process enhance the ability of investigators to perform other PWS duties related to enforcement and basic investigator training.

The *TCEQ Guidance Manual for Conducting a WTP SPE* Chapter 2 describes the SPE training program which consists of four modules which must be completed in order. The first three modules equip the WSD staff or PWS investigator to conduct SPEs independently, without the on-site supervision of an approved SPE trainer. The fourth module equips and entitles the SPE-trained person to train other WSD staff and PWS investigators to perform SPEs. Each of these modules contributes to the 32 hours of technical or professional development training that the PWS investigator must complete every two years. SPE training is provided by the members of the TOP Team. At least one SPE-trained person is necessary to conduct an SPE at a SWTP.

A9 Documents and Records

A9.1 QA Project Plan Distribution

The distribution of the QAPP is described in Section A3 of this QAPP Addendum.

A9.2 TOP Documents and Records

The documents and records that describe, specify, instruct, and report TOP evaluation activities are listed in Table A9.2.

Table A9.2 Documents and Records

Document or Record	Purpose	Format/Location
QAPP for the TCEQ PWSS Program Relating to the SDWA	Document that describes QA requirements and activities of the PWSS Program designed to ensure maintenance of appropriate quality and quantity of drinking water in Texas as well as compliance with the SDWA	Electronic https://www.tceq.texas.gov/drinkingwater/pwss.html
TOP QAPP Addendum 8	Project specific addendum to the <i>Programmatic QAPP</i> that addresses QA processes for TOP evaluations to plan, implement, and assess associated activities.	Electronic: https://www.tceq.texas.gov/drinkingwater/pwss.html

Document or Record	Purpose	Format/Location
TCEQ QMP	TCEQ document that describes the organizational arrangements, processes, procedures, and requirements of the TCEQ's QA Program	Electronic: https://www.tceq.texas.gov/agency/qa
SOP TOP Equipment Inventory and Maintenance	TCEQ document that describes the equipment for which the TOP is responsible and describes how to maintain the inventory of that equipment.	WSD Network Drives
SOP TOP Organization General Description	Describes TOP background, Key Objectives, TOP Team roles and responsibilities.	WSD Network Drives
SOP TOP Mandatory CPE Activities Schedule	Describes how to plan and schedule a CPE.	WSD Network Drives
TOP CPE Duties and Deadlines	Describes the duties related to conducting the various activities during a CPE.	WSD Network Drives
TOP CPE Factors Meeting	Describes the steps that the CPE team goes through during the Factors meeting.	WSD Network Drives
CPE Design Data Collection Guidance	Describes the process of CPE data gathering.	WSD Network Drives
TCEQ Guidance Manual for Conducting SWTP SPE	Provides instructions for planning, conducting, and documenting a SPE at a SWTP.	WSD Network Drives
Technical Guidance for Conducting Mandatory CPEs	Provides instructions for planning, conducting, and documenting a CPE at a SWTP.	WSD Network Drives
CPE Final Reports	Records of facility information, performance assessment, major unit process evaluations, limiting-performance factors, Factors meeting and corrective action plans (CAP).	Hardcopies stored at PWS, Regional Office, Central File Room
SPE Final Reports	Contain the data/information collected during the SPE; including the RSF Chart which contains data from the previous 12 months of SWMORs used to produce the raw data, settled water, and filtered water, and the IFE Chart which contains the data from the previous 12 months of SWMORs used to produce the individual filter effluent.	Hardcopies stored at PWS, Regional Office, Central File Room
Work product records (e.g., checklists, worksheets, field notes, data forms, etc.)	Records documenting activities associated with SPEs and CPEs.	WSD Network Drives

Document or Record	Purpose	Format/Location
EPA Handbook: Optimizing Water Treatment Plant Performance Using the Composite Correction Program EPA/625/6-91/027 Revised 1998	EPA document that describes the wastewater treatment, water treatment optimization, comprehensive performance evaluations, conducting and reporting CPEs, and comprehensive technical assistance.	Electronic: http://nepis.epa.gov/Exe/ZyPDF.F.cgi/30004D17.PDF?Dockey=30004D17.PDF
Hach 1720E Set-up SOP	TCEQ document describes turbidimeter calibration and operation.	WSD Network Drives
SOP TOP Equipment Inventory and Maintenance	Describes TOP equipment and how to maintain the inventory.	WSD Network Drives
Turbidimeter calibration records	TCEQ record documenting calibration was performed	Maintained within turbidimeter.

A9.3 Quarterly and/or Final Reports

The final evaluation report (CPE or SPE) contains a summary of findings related to the evaluation. The report also includes data and information which support the findings. Following the exit meeting with PWS officials, the TOP team members draft sections of reports and data based on the components they evaluated. TOP Team members may produce multiple versions of their sections before the CPE or SPE leader (or designee) completes a rough draft. The goal of multiple drafts is to create a document as complete and accurate as possible. After the CPE or SPE leader (or designee) completes the rough draft, they submit it to the TOPRT Leader and EPRS Manager for review and comment. The CPE or SPE leader (or designee) then finalizes the report and the TOPRT Leader signs it. The CPE or SPE leader (or designee) transmits a hardcopy of the report to the respective PWS. In addition, the CPE or SPE leader (or designee) distributes copies of final reports with cover letters to the following groups and individuals.

- Water Section Manager in the Regional Office for inclusion in the PWS regional file
- Central Records
- TOP files
- SWAP Folder
- Drinking Water Standards Section Surface Water Treatment Rule Compliance Officer
- TOP Team members and TOPRT Leader

In the case of mCPEs, the CPE leader typically develops the CAP for addressing the performance-limiting factors after completing the first draft of the CPE report. The CAP is forwarded to the CPE team, WSD management, Region management, and Enforcement for review prior to distribution of the report.

(B) Data Generation and Acquisition

B1 Sampling Process

See Section B4.

B2 Sampling Methods

See Section B4.

B3 Sample Handling and Custody

Not applicable.

B4 Analytical Methods

During the process control part of the CPE, TOP Team members take in situ turbidity measurements to compare results produced by plant operators. On day one, the TOP Team sets up online turbidity monitoring equipment and begins collection of continuous turbidity measurements to check operator performance and to ensure treatment tests are performed correctly using approved methods according to state and federal rules and regulations.

TOP Team members conduct online turbidity monitoring according to 30 TAC §290.111 and confirm that equipment used by PWS operators for compliance measurements is maintained and calibrated in accordance with 30 TAC §290.46(s) relating to Minimum Acceptable Operating Practices for PWSs. TOP Team members compare continuously monitored (every 15 minutes) turbidity levels with plant performance data to ensure turbidity data reported to the TCEQ are both accurate and compliant with standards.

B5 Quality Control

TCEQ staff ensures adherence to the quality control (QC) objectives described in Section A7 for TOP evaluations by a combination of management oversight; peer review and management review of letters and reports; staff training including experience and coordination with technical experts; standardized evaluation processes; evaluation checklists; and strict adherence to schedules and allotted timeframes.

The QC described in this section applies to the turbidity measurements that are taken during the TOP evaluations to check operator performance and to ensure treatment tests are performed correctly using approved methods according to state and federal rules and regulations.

TOP evaluators conduct online turbidity monitoring according to 30 TAC §290.111 and confirm that equipment used by operators for compliance measurements is maintained and calibrated in accordance with 30 TAC §290.46(s) relating to Minimum Acceptable Operating Practices (MAOP) for PWSs. TOP evaluators compare continuously monitored (every 15 minutes) turbidity levels with plant

performance data to ensure turbidity levels that are reported to the TCEQ are both accurate and compliant with standards.

B6 Instrument/Equipment Testing, Inspection, and Maintenance

The TOP Team maintains online turbidity meters in accordance with manufacturer recommendations and the SOP TOP - Equipment Inventory and Maintenance (see Table A9.2). Each fiscal year, a TOP Team Member reviews equipment manuals; generates a schedule for yearly routine maintenance; and records any items that require repair. Each fiscal year, a TOP Team member also prints a copy of the list of equipment and performs a physical inventory, verifying the location and condition of each piece of equipment and all chemicals and appurtenances. The TOP Team member assigned to this activity is also responsible for placing orders for new equipment to replace outmoded or inoperable equipment.

B7 Instrument/Equipment Calibration and Frequency

The TOP Team calibrates online turbidity meters onsite using primary standards in accordance with the regulations specified in 30 TAC §290.46: Minimum Acceptable Operating Practices for Public Drinking Water Systems. TOP Team members follow the calibration procedures recommended by manufacturers of the equipment. In addition, TOP Team members follow the TCEQ SOP 1720E Set-Up SOP to install and calibrate the turbidimeters at the beginning of each evaluation. TOP team members document and maintain records of the turbidity standard's certification and lot number.

B8 Inspection/Acceptance of Supplies and Consumables

During each fiscal year, the same TOP Team member assigned to equipment (see Section B6) inspects reagents, discards those that have expired, and orders replacements as stated in the TCEQ SOP TOP Equipment Inventory and Maintenance.

B9 Non-Direct Measurements

Not applicable

B10 Data Management

B10.1 Comprehensive Performance Evaluations (CPE)

TOP team members collect CPE data/information in several formats and use standardized forms to record data/information related to the plant components listed in Table A6.1. The records team members create prior to and during a CPE include, but are not limited to the following data/information.

- Microsoft Excel spreadsheet used to consolidate and evaluate plant performance data reported to the TCEQ in SWMORs.

- Microsoft Excel spreadsheet used to calculate and compare regulatory treatment capacities of the major unit processes with historical treatment flow rates.
- Plant schematics generated in Microsoft Visio or Microsoft Excel.
- Written field notes, team meeting notes, and photographs to document CPE activities.
- Microsoft PowerPoint presentation for the CPE Factors meeting that summarizes the activities and results of the evaluation.

The CPE Team's data manager (or designee), compiles and consolidates all the forms, meeting notes, field notes, etc. generated during the evaluation into a single binder or folder, often referred to as the Den Mother's Book. The data manager (or designee) turns over the Den Mother's Book to the CPE leader, or designee assigned to write the CPE report. In addition to writing the report, the report writer is responsible for scanning and saving copies of the report, forms, notes, and electronic files to a CPE report folder in a limited access network drive. A hardcopy of the CPE report is transmitted to the PWS as well as other groups/individuals (see Section A9.3). Except for the SWTP staff and administrator interview forms which are considered confidential, the hard copies of materials in the Den Mother's Book are usually returned to the plant at the completion of the CPE project. Copies of interview forms are destroyed.

B10.2 Special Performance Evaluations (SPE)

The TOP Team manages SPE data/information as described in Chapter 6 of the Guidance Manual for Conducting Surface Water Treatment Plant Special Performance Evaluations. The Team uses a Microsoft Excel spreadsheet to document the data collected during the SPE. The main portion of the electronic report is contained in a file identified as SPE_Report.xlsx. Two supporting files identified as RSF_Chart.xlsx and IFE_Chart.xlsx are used to transfer turbidity data from the electronic SWMORS into performance charts in the SPEReport file.

When an SPE report is entered into the Consolidated Compliance and Enforcement Data System (CCEDS) by a PWS Investigator, the Letter of Transmittal may be an NOV with citations appropriate for any deficiencies. However, when the SPE Report is prepared and distributed by a TOP Team member, a Letter of Transmittal is used to transmit the report to the system. Unless the SPE report is forwarded to the water system by the Regional Office under an NOV, the Letter of Transmittal contains no statements pertaining to the possibility of subsequent actions by the TCEQ.

To help protect data integrity, the TOP Team members maintain CPE and SPE reports by PWS ID number on a network drive with access limited to Water Supply Division staff.

(C) Assessment and Oversight

C1 Assessments and Response Actions

C1.1.1 Overview

All TCEQ staff working on behalf of this QAPP are responsible for identifying deficiencies when there are nonconformances with established procedures involving the performance of their work. Deficiencies may be identified during the performance of routine work, or during audits and oversight.

Most nonconformances are not “deficiencies” as addressed in this section. Staff routinely encounter, document, and correct technical and procedural nonconformances at the point of origin using established procedures defined in SOPs that include documentation of problem, solution, implementation and follow-up. These nonconformances are documented at the point of origin and maintained with the applicable project records. However, the level of corrective action described in this section may be warranted when established procedures don’t prevent a situation from recurring.

C1.1.2 Deficiencies Requiring a Corrective Action Plan (CAP)

Deficiencies are unique nonconformances that cannot be corrected by established procedures and will require actions to be defined and documented in a corrective action plan (CAP) within 14 days. Upon detection of a deficiency, staff are responsible for notifying their management in writing.

For this project, deficiencies may involve, but are not limited to the following situations.

- TOP results or conclusions are jeopardized
- Nonconformances with state or federal regulations
- Intentional misrepresentation of data or information
- Repeat nonconformances or deviations from standard practices

The preparation of CAPs is assigned to appropriate staff by managers who are responsible for assuring that CAPS are:

- Appropriately prepared, reported, implemented, and verified effective.
- Implemented in ways that will most likely eliminate the problem and prevent recurrence.
- Forwarded to PWSQA@tceq.texas.gov within 14 days of initial notification.

The PWSS Program Lead Quality Assurance Specialist, or designee, receives and reviews CAPs to determine if actions planned to resolve the deficiency are acceptable, provides feedback on any items determined to be insufficient, tracks reported CAPs, and may monitor implementation. Appropriate staff may be designated to review and track corrective actions that are not deemed significant, as described in C1.1.3.

C1.1.2 Required Content for a CAP

The procedure for preparing a CAP following the identification of a deficiency begins with an investigation to determine the root cause(s). Procedures for CAPs are specified in laboratory, contractor, or PWSS Program SOPs. Management selects and implements CAPs that will mostly like eliminate the problem, prevent recurrence, and are appropriate for the magnitude and degree of risk of the deficiency.

CAPs must include the following information:

- Description of the deficiency
 - What happened, how was it identified, and the date identified?
- Root cause
 - What was the underlying cause? Why did the deficiency occur?
- Programmatic or data impact(s)
 - How did the deficiency affect data or program decisions and what was reviewed (including timeframe) to determine the impact?
- Corrective action taken
 - What was done to correct the deficiency?
- Timeline for corrective action(s)
- Documentation
 - How will the corrective action(s) be documented?
- Actions to prevent recurrence
 - What actions will be taken to prevent the deficiency from occurring again? These must be distinctly different from the corrective actions.
- Timeline for action(s) to prevent recurrence
- Documentation
 - How will the preventative action(s) be documented?
- Verification of effectiveness
 - Who will verify effectiveness, when will verification occur, and how will verification be documented?

The TCEQ QA Program has developed a standardized template form that may be used, TCEQ QAF-005. This template can be accessed through the [TCEQ Quality Assurance](#)¹ webpage under the Corrective Action Process section. The form is also available by request at PWSQA@tceq.texas.gov.

¹ www.tceq.texas.gov/agency/qa

C1.1.3 Significant Deviations

The PWSS Program Lead Quality Assurance Specialist determines whether an identified or reported deficiency is a significant deviation as defined by, but not limited to, any of the following:

- It jeopardizes the integrity of results or conclusions.
- Results in non-conformance with state or federal regulations.
- Was associated with the intentional misrepresentation of data or information.

The PWSS Program Lead Quality Assurance Specialist will forward information related to CAPs for significant deviations to the TCEQ QA Manager, WSD Grant Manager, affected Deputy Director(s), Program and Section Managers within 30 days of receipt of the CAP, as applicable. The Lead Quality Assurance Specialist will monitor the implementation and completion of CAPs related to significant deviations and advise management of the status of the CAP (recurring, closed, etc.).

C1.2 Authorization to Stop Work

TCEQ management will authorize work stoppage if conditions are identified that indicate compliance is in jeopardy or if primacy requirements are not being met. The PWSS Program Lead Quality Assurance Specialist, Grant Manager, or TCEQ QA Manager may also request a work stoppage.

C2 Reports to Management

C2.1 Status Reports

TOP Team Members provide status reports regarding corrective actions (related to performance evaluations conducted) to the TOPRT Leader, who then reports to the Section Manager. The Section Manager reports to the WSD Deputy Director, as applicable.

C2.2 SPE and CPE Reports

The CPE and SPE final reports referenced in Sections A6 and B10 contain a summary of findings related to the evaluation. In the case of mandatory CPEs, as applicable, the CPE report writer typically develops the CAP for addressing the performance-limiting factors after completion of the CPE Report first draft. The CAP is forwarded to the CPE team, WSD management, Region management, and Enforcement for review.

The CPE and SPE final reports with cover letters are distributed to the following:

- Water Section Manager in the Regional Office for inclusion in the water system's regional file

TOP makes additional copies as appropriate, for:

- Central File Room

- TOP files
- SWAP Folder
- Drinking Water Standards Section SWTR Compliance Officer
- Other persons and/or sections, as appropriate
- The authors of the report and the Team Leader

(D) Data Review and Usability

D1 Data Review, Verification, and Validation

The review of TOP evaluations involves the verification of reports and data/information to ensure they are of known and defensible quality (i.e., complete, correct, and comply with regulatory and procedural requirements). TOP evaluations are either deemed acceptable or unacceptable based on the review and verification of reports and data/information. In general, validation extends the evaluation of data beyond regulatory and procedural requirements (i.e., data verification) to determine their quality so they can be qualified appropriately, and issues can be communicated to the data users. TOP evaluations do not involve data/information which is validated and qualified by data users.

D2 Verification and Validation Methods

Following the exit meeting with the utility officials, the CPE or SPE leader (or designee) prepares multiple, rough drafts of the final report (see Section A9.3). First and second drafts of reports are peer-reviewed by TOP Team members who check the technical data, findings, and conclusions. They also check for omissions and style/spelling errors, and then return comments and suggested edits to the CPE or SPE leader (or designee) who compiles the final draft which is forwarded for review and comment to the TOPRT Leader, the EPRS Manager, and the Water Section Manager in the applicable region before the report is finalized, signed, and distributed.

D3 Reconciliation with User Requirements

PWSSs use the findings and the data/information from TOP evaluations to optimize their treatment plant processes and to comply with regulatory requirements. The reports are only finalized and distributed when the verification steps described above are completed. The primary user requirements of TOP evaluations include the following conditions.

- TOP evaluations are conducted in accordance with state and federal regulations.
- Conclusions are supported by collected data.
- Data/information are of known and defensible quality (see Section A7.1).

Exhibit 1: Workflow for Conducting CPEs and SPEs

