BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

TECHNICAL SERVICES DIVISION
QUALITY MANAGEMENT PLAN

REVISION 2.00

8/9/2012

Technical Services Division 939 Ellis Street San Francisco CA 94109

TECHNICAL SERVICES DIVISION APPROVAL SHEET

This Quality Management Plan has been approved by the following individuals in the Bay Area Air Quality Management District's Technical Services Division:

8/29/12

Name: Mark Stoelting Date
Title: Quality Assurance Officer

8/29/12

Name: Glen C. Colwell Date
Title: Air Monitoring Manager

8/28/12

Name: James Hesson Date
Title: Laboratory Services Manager

8/29/12

Name: Acting Manager Date
Title: Source Test Manager

8/28/12

Name: Eric D. Stevenson Date
Title: Technical Services Division Director

EPA APPROVAL SHEET

U.S. ENVIRONMENTAL PROTECTION AGENCY APPROVAL SHEET

This Quality Management Plan has been approved by the following individuals in the EPA Region IX Air and Radiation Division:

Eugenia McNaughton — 11/14/08

Name: Eugenja McNaughton
Title: Quality Assurance Manager
Date

Sean Hogan — 11/13/08

Name: Sean Hogan
Title: Manager, Air Quality Analysis Office
Date

EPA ACCEPTANCE LETTER

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

November 10, 2008

Mr. Gary Kendall, Director
Technical Services Division
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

SUBJECT: Quality Management Plan (QMP) for the Bay Area Air Quality Management District Technical Services Division (QA Program Document Control Number AIRP0153PV2)

Dear Mr. Kendall:

Thank you for submitting the revision of the Quality Management Plan for the Bay Area Air Quality Management District's (BAAQMD's) Air Quality Monitoring Network, dated October 20, 2008, that was prepared by your Technical Services Division. The Quality Assurance Office and Air Division have reviewed the subject document based on "EPA Requirements for Quality Management Plans," EPA R-2, December, 2001 (EPA/240/B-01/002) and EPA's comments transmitted in a letter dated September 15, 2008.

The revised QMP covers all areas specified in the guidance, and addresses all of EPA's previous concerns. The QMP is approved. Original concerns are reproduced below in bold face type. An evaluation of the revised plan follows in normal type. If you have any questions concerning this memorandum, please feel free to call David Taylor of the QA Office at (415) 972-3803 or by email at Taylor.David@epa.gov.

Concerns:

1. [Section 2.2, Structure of the Organization] **Is there a separate QMP and/or QAPP for the Air Quality Engineering and Source Test Section?**

   This comment has been satisfactorily addressed. The QMP has clarified that the present document does not include the activities of the Air Quality Engineering and Source Test Section.

2A. [Section 2.3, Administrative Responsibilities] **The roles and responsibilities of the Quality Assurance Officer and the Quality Assessment Group Supervisor should be described in this section. The responsibilities of these individuals are described incrementally in different parts of this document and the accompanying QA Project**

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Plan (QAPP). In some cases, these responsibilities are not consistent. For example, the QMP indicates that the QA Officer reviews and approves all standard operating procedures (SOPs), but the QAPP expands upon this and indicates that he also approves the QAPP. However, his signature block is not included in the document. The Quality Assessment Group Supervisor position, one that has significant QA responsibilities, is only described in the QAPP. The responsibilities of the Quality Assessment Group Supervisor should also be described here.

The revised plan includes a description of both the QA Officer for the BAAQMD and for the individual assigned responsibilities in its laboratory. The statement regarding the QA Officer's signature block was in error. The responsibilities of the Quality Assessment Group Supervisor have been included in this section. This comment has been satisfactorily addressed.

2B. **The description of the responsibilities of the Meteorology and Quality Assurance Section indicates that it is responsible for reviewing all the BAAQMD's data. What should be clarified is whether this review is only to make sure that the data are temporally and spatially consistent or whether this also includes an oversight review of the quality control information associated with the data themselves.**

The oversight and review responsibilities of the Meteorology and Quality Assurance Section have been clarified. This comment has been satisfactorily addressed.

2C. **It is recommended that the environmental measurement activities of the Air Quality Engineering and Source Test Section be covered here for information purposes. (See also Concern 1).**

The plan has clarified that the Quality System for the Air Quality Engineering and Source Test Section are not covered by the subject document. This comment has been adequately addressed.

3. [Section 2.4, Quality Assurance] **Objectives in 40 CFR Part 58 which are captured in Table 2-1 relate to the measurement quality objectives associated with the instruments and measurements being conducted. What is not discussed in this section are data quality objectives as they relate to the attainment of air quality regulations. 40 CFR 58 makes this link, but the QMP also should discuss this. In addition, defining DQOs for special projects and pollutants not covered by 40 CFR 58 should be discussed.**

The plan now mentions that the data from air monitoring are used in assessing attainment status. The issues in this section are now covered in Section 8.1, The Elements of Systematic Planning.

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4. [Section 2.4.1, Quality Assurance Policy] **Many of the numbered points in this section summarize the activities of the BAAQMD rather than actually stating policy. Although the information is useful and germane to the QMP, most of it does not reflect statements defining program requirements. It is recommended that the existing discussion be moved to a different section and that actual policy statements be provided.**

   This comment has been satisfactorily addressed. The points have been recast to state activities in terms of policies.

5. [Section 2.4.2, Quality Assurance Goal] **The first part of this paragraph reflects a goal, but the second part does not. An additional section on the independence of the QA function should be added.**

   Information on the independence of the QA function has been included in Section 2.2. The language with respect to goals has been simplified. This comment has been satisfactorily addressed.

6. [Section 3.1, Quality Assurance Project Plan] **The first line of this section is ambiguous with respect to how many QAPPs are required. Does each division air monitoring program have a QAPP or are all the activities captured in one QAPP? Since the latter appears to be the case, it is suggested that the first line be reworded to state something to the effect of, "All Division air monitoring program activities are described in the Division's QAPP, which is approved by the Division Director…" If this is not the case, the section should be more explicit regarding other QAPPs.**

   Section 3.2 of the QMP now clarifies that only one QAPP will be prepared and that it will cover all of the Air District's programs. This comment has been satisfactorily addressed.

7. [Section 3.2, Standard Operating Procedures] **This section states that meteorology data are reviewed by staff in the Research and Modeling Section of the Planning Division. Does this represent an independent QA review? If it does, this section should be discussed earlier in the section on organization since it has QA responsibilities.**

   The QMP now makes clear that the review is independent. This comment has been satisfactorily addressed.

8. [Section 4.1, Qualifications, Appendix A, Job Descriptions for Positions in the Technical Services Division] **Many of the qualifications statements referenced in Section 4.1 and provided in Appendix A, date to January 1992. In a world of rapidly changing technology and changes to air regulations, a re-examination and updating of the qualifications of personnel would seem to be appropriate. The job descriptions,**

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which are based on classifications used by the Air District, do not contain a functional description for positions of the Quality Assurance Officer or the Quality Assessment Group Supervisor. These should be added.

The EPA and the BAAQMD discussed the job descriptions provided in the appendix and concluded that since these were tied into state personnel job descriptions, that the value of changing them would be time consuming and would not affect the quality of data produced by the BAAQMD. It was concluded that the descriptions in the QMP itself were sufficient and that no further action was necessary.

9. [Section 4.2, Air Monitoring Section; Section 4.3, Laboratory Section; Section 4.4, Quality Assessment Group in the MQA Section; Section 4.5, Meteorology Group in the MQA Section] **It is suggested that these sections be made subsections to the section on Training since that is the topic they discuss.**

The BAAQMD declined to make the suggested changes based on the fact they felt the discussion was clear. As this was a suggestion and will not affect data quality, EPA is comfortable with this position.

10A. [Section 6, Documents and Records; Admin SOP 001, Quality Document Changes] **This section states that the Quality Assurance Officer approves all SOPs, but Admin SOP 001 indicates his role is more as the person who maintains the list of SOPs and the SOP database. Other sections also indicate the QA Officer has approval authority. This discrepancy should be clarified. Does the QA Officer approve the QAPP or the QMP?**

It has been clarified that the QA Officer approves SOPs and also the QAPP and QMP. This comment has been satisfactorily addressed.

10B. **This section should clarify whether older versions of revised SOPs are maintained in case they are needed for reference.**

A discussion of the archiving of older versions of SOPs has been added. This comment has been satisfactorily addressed.

11. [Section 8, Planning] **This discussion should be expanded to discuss the use of air monitoring data in a broader context. Although conformance with the requirements of 40 CFR Part 58 is important, the need for data of known and documented quality should center on the data's end use. The key aspect is whether results can be used to ensure that an area meets or exceeds attainment status or does ambient air does not pose a health threat to the public. Statements should be added that reflect this aspect of planning.**

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A statement has been added with respect to the use of air monitoring data for attainment determinations and data usage. This comment has been satisfactorily addressed.

12. [Section 8.2, Developing, Reviewing, Approving, Implementing, and Revising a QAPP] **What is the role of the QA Officer in this process? The suggestion in this section is that project specific QAPPs are only reviewed and approved by project staff. An independent review should also be conducted.**

The QA Officer's role as a reviewer has been clarified. This comment has been satisfactorily addressed.

13. [Section 10.3, Internal Audits] Does the Air Quality Engineering and Source Test **Section conduct any performance or system audits of the Meteorology Group's activities?**

The discussion of audits has been revised to more clearly describe the different audits and what organization or individual conducts them. This comment has been satisfactorily addressed.

14. [Section 10.5, Assessment Staff] **Reference is made to Quality Assurance Staff in this section. What group constitutes the Quality Assurance Staff or should this be Quality Assessment Group Staff?**

References to the Quality Assurance Group have been removed. The Performance Evaluation Group replaces it. The discussion in Section 2.2 on organization has been expanded to better describe the Group's role. This comment has been satisfactorily addressed.

Sincerely yours,

Eugenia McNaughton, Ph.D., Manager
Quality Assurance Office

Sean Hogan, Manager
Air Quality Analysis Office

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LIST OF ACRONYMS

AMTAC	Air Monitoring Technical Advisory Committee
AQC	Air Quality Chemist I/II
AQIS	Air Quality Instrument Specialist I/II
AQLT	Air Quality Laboratory Technician I/II
AQM	Air Quality Meteorologist I/II
AQS	Air Quality System
AQTA	Air Quality Technical Assistant
ARB	California Air Resources Board
ATPI	Air Pollution Technology Institute
AWMA	Air and Waste Management Association
BAAQMD	Bay Area Air Quality Management District
DAS	Data Acquisition System
District	Bay Area Air Quality Management District
Division	Technical Services Division, a Division of BAAQMD
DMS	Data Management System
DQO	Data Quality Objective
EPA	U.S. Environmental Protection Agency
ESC	Environmental Systems Corporation (now Agilaire)
GC/MS	Gas Chromatograph/Mass Spectrometry
GC	Gas Chromatograph
HPLC	High Pressure Liquid Chromatograph
IC	Ion Chromatograph

MQA	Meteorology and Quality Assurance
N/A	Not Applicable
NATTS	National Air Toxic Trends Stations
NEIEN	National Environmental Information Exchange Network
NPAP	National Performance Audit Program
PAMS	Photochemical Assessment Monitoring Stations
PM	Particulate Matter
PM_{10}	Particulate Matter less than or equal to 10 microns in size
$PM_{2.5}$	Particulate Matter less than or equal to 2.5 microns in size
QAO	Quality Assurance Officer
QAPP	Quality Assurance Project Plan
QA	Quality Assessment
QC	Quality Control
QMP	Quality Management Plan
SLAMS	State and Local Air Monitoring Station
SOP	Standard Operating Procedure
TSA	Technical Systems Audits
TSD	Technical Services Division

1.0 INTRODUCTION

1.1 PURPOSE OF DOCUMENT

The Bay Area Air Quality Management District (BAAQMD or Air District) is a regional governmental agency responsible for air quality in a nine-county region surrounding San Francisco Bay. This Quality Management Plan (QMP) describes the quality management system utilized by the Air District Technical Services Division (TSD or Division). Quality assurance goals, policies, procedures, organizational responsibilities, evaluation and reporting requirements, and other elements of the Division quality management system are addressed within this QMP.

A companion document to the QMP is the Quality Assurance Project Plan (QAPP), which includes Division Standard Operating Procedures (SOPs). The Division has elected to maintain a single QAPP document for all ambient air quality monitoring projects underway within the Division.

1.2 DOCUMENT APPROVAL

This QMP and associated QAPP must be approved and signed by the Technical Services Division Quality Assurance Officer and division management including the Air Monitoring Manager, the Laboratory Services Manager, the Source Test Manager, and the Director of Technical Services on the approval page. Upon submission to U.S. Environmental Protection Agency (EPA) Region 9, signature/approvals are required by the EPA Quality Assurance Manager and the Air Quality Analysis Office Manager. After document approvals are complete, parts of these documents may be revised using a version control and approval/notification system outlined below. EPA Region 9 will be notified of any approved changes to the QMP/QAPP. Both documents will undergo a comprehensive review by Division management and the Quality Assurance Officer every five years.

The Air District publishes and maintains the official Technical Services Division QMP and QAPP documents on the agency web site at www.baaqmd.gov/tec/index.htm. Each section in these documents can be independently revised in accordance with "Admin SOP 001 Quality Document Changes", which is included in the QAPP. The Quality Assurance Officer maintains a published list of the current versions and a history of changes for each QMP and QAPP section and each SOP. Document users may also contact the Quality Assurance Officer through the web site to be placed on the Quality System Notification List to receive e-mail revision notification.

2.0 AIR DISTRICT ORGANIZATION AND OBJECTIVES

2.1 AIR DISTRICT MISSION STATEMENT

"The Bay Area Air Quality Management District is committed to protect and improve public health, air quality, and the global climate." The Technical Services Division QMP supports this mission by providing a Quality Assurance Project Plan to ensure that all air quality monitoring operations administered by the Division produce scientifically defensible regulatory data that meet or exceed California Air Resources Board (ARB), EPA, and Air District data quality objectives.

2.2 STRUCTURE OF THE ORGANIZATION

Under California State Law, the Air District is charged with managing the air quality for a nine-county region surrounding the San Francisco Bay. **Figure 2-1** shows a map of the Air District region surrounding San Francisco Bay consisting of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, the western half of Solano and the southern half of Sonoma counties. The governing body is a Board of Directors composed of elected officials from the represented counties. The Board hires a Chief Executive Officer who is also the Air Pollution Control Officer responsible for compliance with State and Federal air quality laws. The Air District is organized into seven administrative divisions to carry out the agency mission and objectives. **Figure 2-2** shows an organizational chart of the BAAQMD.

Figure 2-1 Map of the Bay Area Air Quality Management District monitoring region.

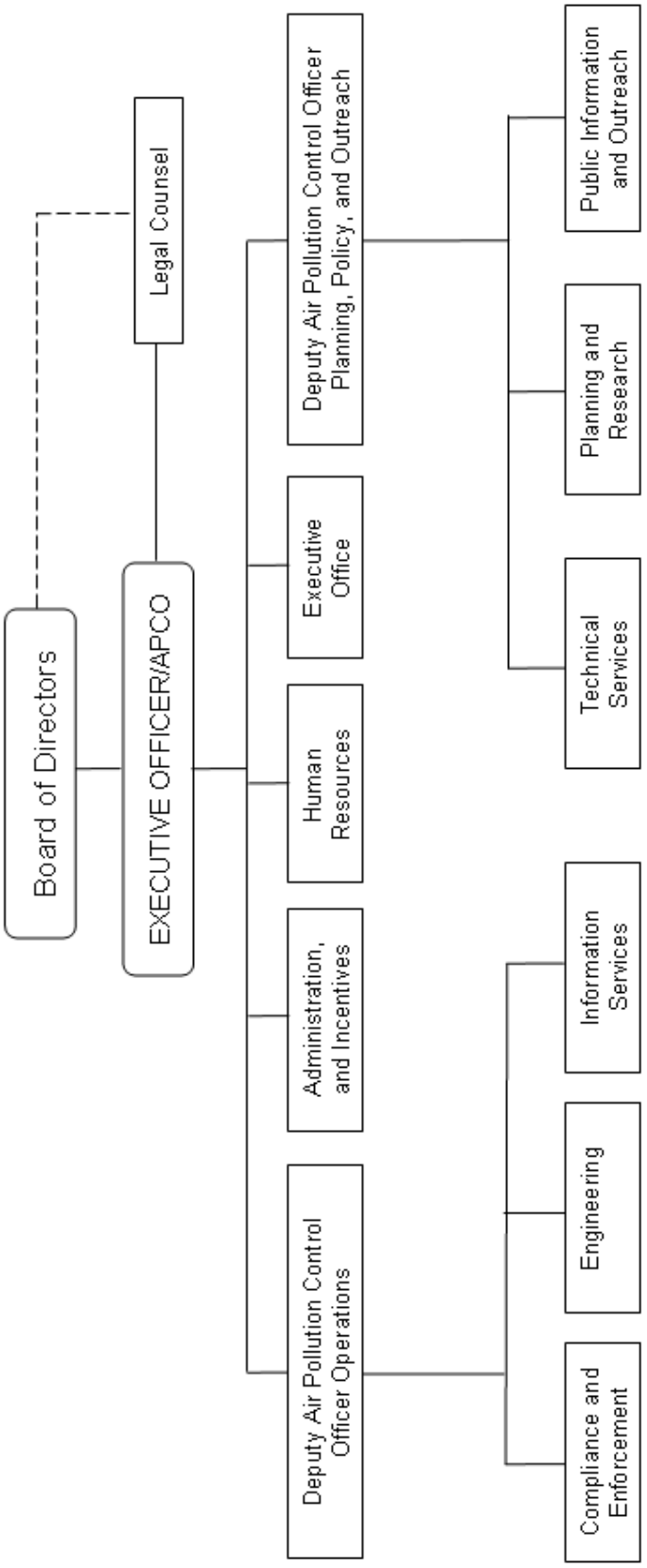

Figure 2-1. BAAQMD organizational chart.

The **Technical Services Division** is responsible for collecting air quality data pursuant to the regulatory, health, and informational needs of the Air District, industry, and the public. TSD staff maintains the Air District's air monitoring network, including meteorological measurements, and are responsible for Quality Assessment/Quality Control (QA/QC) and data submission to the Air Quality System (AQS), the National regulatory database maintained by EPA. The TSD also maintains a laboratory capable of analyzing a wide range of ambient and source related air samples as including metals. An organization chart of the Technical Service Division is shown in **Figure 2-3**.

The **Air Monitoring Section** is responsible for collecting and reviewing data at ambient air monitoring sites. Air Monitoring staff are also responsible for collecting gaseous and filter samples for analysis by the Laboratory Services Section. The Air Monitoring Section maintains a set of Standard Operating Procedures to operate, repair, and evaluate the performance of all monitoring equipment in order to meet or exceed ARB and EPA data quality objectives. Air Monitoring staff also provide the first level of ambient air quality data review in accordance with QAPP Data Management Standard Operating Procedures.

The **Laboratory Services Section** is responsible for analyzing gaseous and filter samples collected at monitoring sites as well as samples related to toxics and hazardous airborne substances. The Laboratory Services Section maintains a set of Standard Operating Procedures to operate, repair, and evaluate the performance of all laboratory analytical equipment in order to meet or exceed ARB and EPA data quality objectives. Laboratory Services staff also provide the first level of data review for all laboratory measurements in accordance with QAPP Data Management Standard Operating Procedures.

The **Meteorology and Quality Assurance (MQA) Group** is a small group consisting of air quality meteorologists and the Quality Assurance Officer that report directly to the Division Director. In addition to air quality forecasting and other data management/analysis duties, Meteorology staff provides a final review of all air quality data from the Air Monitoring and Laboratory Services sections before submission to the EPA AQS database. This review ensures that data collected from a network of monitoring locations are both temporally and spatially consistent and are supported by meteorological conditions. The Quality Assurance Officer is responsible for maintaining the Technical Division Quality System (QMP, QAPP, SOPs), Quality System staff training, the Data Management System (DMS) database provide oversight of the Division's meteorological network maintained by the Performance Evaluation Group (PEG or PE Group) and Air Monitoring field staff.

The **Source Test Section** is responsible for auditing data collection by permitted facilities throughout the District and conducting direct emission measurements at facilities as needed. The PE Group, a small group also within Source Test, is responsible for maintaining traceable environmental measurement standards and auditing ambient measurements conducted by the Air Monitoring Section. PEG prepares quarterly audit data for review and submission to AQS by the Meteorology Group. The PE group operates under the direction of the PE Group supervisor who reports directly to the Source Test manager. This structure is designed to ensure the operational and management independence of the PE Group from the Air Monitoring Programs and

personnel it audits. The PE group is responsible for conducting internal performance evaluations and flow rate audits, as well as performance evaluations of ground level monitoring (GLM) sites, and special projects as needed. Staff also perform technical system audits, where sampling systems and siting are evaluated, and assist with any performance evaluations or technical system audits conducted by outside agencies such as EPA and ARB.

The Planning Division uses data produced by the District's meteorological monitoring network. As part of this process, a Planning Division air quality Meteorologist is responsible for performing an independent, level two review of the District's meteorological data. This person does not report to any Technical Services Division manager, but does discuss issues and recommendations with MQA staff before editing the data.

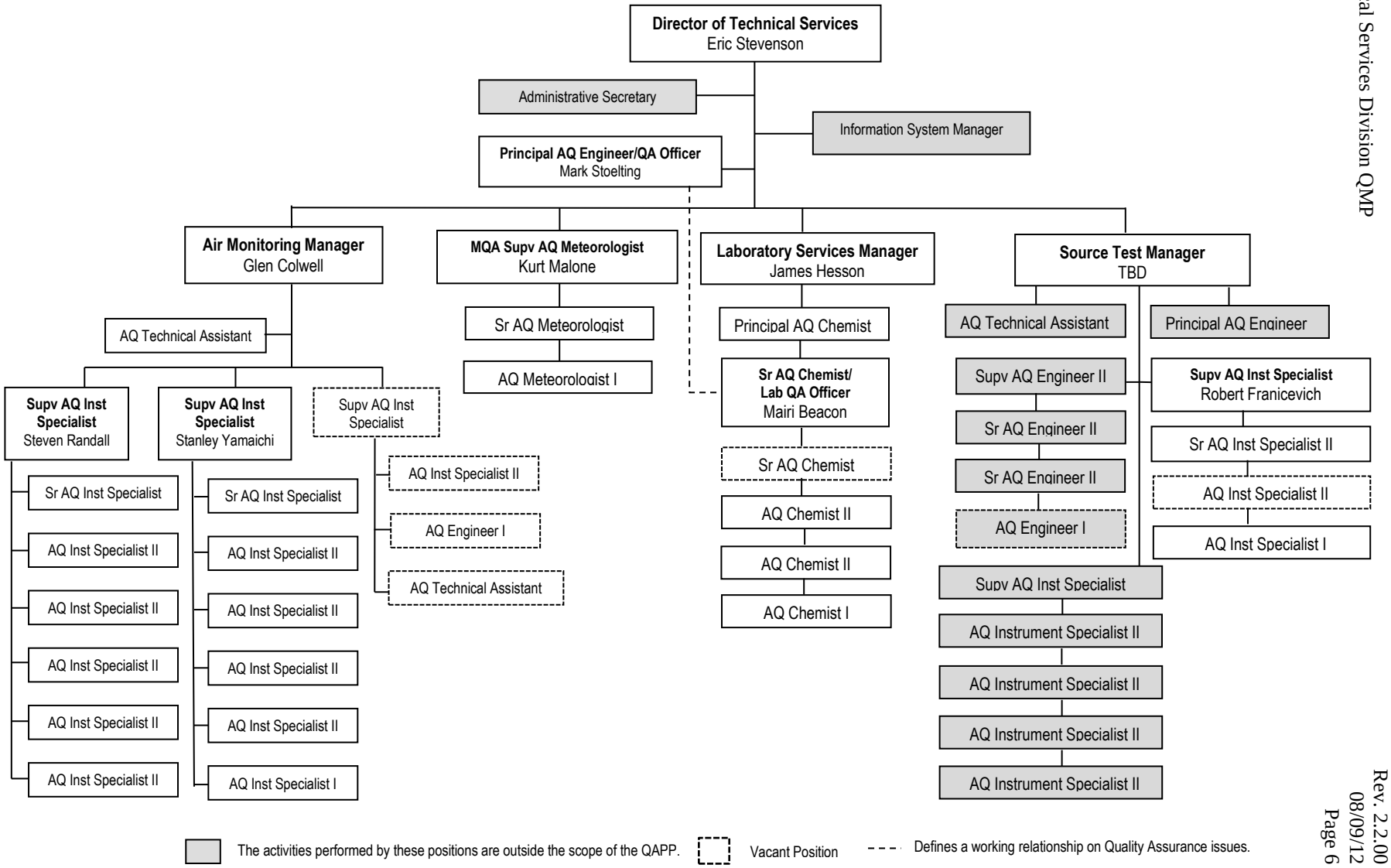

Figure 2-2. Technical Services Division organizational chart

2.3 Administrative Responsibilities

Administrative staff refers to Division employees directly or indirectly responsible for one or more of the Division monitoring programs/projects. Administrative staff exercise authority over at least one lower tier of supervisory staff or supervise staff time on a project related basis. The Technical Services Division Director, Air Monitoring Manager, Laboratory Services Manager, Source Test Manager, and the Quality Assurance Officer are all included in this group and play a role in the Division Quality System, as described below:

Division Director – This senior manager employee oversees the development, revision, and implementation of the Technical Services Division QMP and QAPP. With the assistance of the section managers and QA Officer, the Director ensures that the requirements of these plans are fulfilled in the most cost effective manner possible without hindering attainment of the stated Quality Assurance objectives. The Division Director prioritizes the training and continuing educational needs of staff and develops funding proposals to accommodate these needs, as necessary.

Air Monitoring Section Manager – This management employee is responsible for the Air Monitoring Program, which includes ambient air quality monitoring network operation, maintenance, and quality control. Data produced by instrumentation in the monitoring network shall undergo the first level of review by Section staff under the manager's direction. As part of this process, section staff is responsible for reviewing quality control information and applying data corrections. This person is responsible for maintaining a current set of Standard Operating Procedures to guide network operations, train new staff, and maintain network data quality. The Air Monitoring Manager must approve all QMP and QAPP changes, and has signature approval authority over all Air Monitoring SOPs.

Laboratory Services Section Manager – This management employee is responsible for the Air District's Laboratory Program, which includes operation, maintenance, and quality control. Data produced by laboratory instrumentation undergo the first level of review by Section staff under the manager's direction. As part of this process, section staff is responsible for reviewing quality control information and applying corrections. This person is responsible for maintaining a current set of Standard Operating Procedures to guide laboratory operations, train new staff, and maintain data quality. The Laboratory Services Manager must approve all QMP and QAPP changes, and has signature approval authority over all Laboratory SOPs.

Meteorology and Quality Assurance (MQA) Meteorology Supervisor - This supervising employee reports to the Division Director, and is responsible for the Air District's Level II ambient data review and submission to AQS. The supervisor is responsible preparing for and drafting the annual data certification letter to EPA for regulatory data. This position, in coordination with the Air Monitoring and Lab

Managers, and QA Officer must develop, review and approve all Data Management SOPs.

Source Test Section Manager - The Source Test Manager is responsible for overseeing the Performance Evaluation Group that audits Air Monitoring operations to independently determine if District, ARB, and EPA measurement quality objectives are met. The **PE group supervisor** reports to the Source Test manager and is responsible for maintaining a current set of Standard Operating Procedures for instrument performance evaluations, flow checks, system audits, instrument maintenance, and maintaining measurement standards. The PE group supervisor must review and approve all Performance Evaluation SOPs.

Quality Assurance Officer (QAO) – This non-management employee is responsible for maintaining the Technical Division Quality System. The QA Officer reports directly to the Division Director. The QA Officer or employees working under the QA Officer's direction:

- Maintains the Quality System Documents including reviews, approvals, updates, publishing, and change notifications to the QMP, QAPP, and SOPs
- Has signature approval authority over the QMP, QAPP, and non-laboratory SOPs
- Reviews data quality with program managers and technical staff to determine whether data quality objectives for ongoing programs are being met, or makes recommendations to Division management on changes needed
- Participates in the project planning process to insure that data quality objectives are defined and the project plan produces data meeting plan objectives
- Manages periodic internal assessments evaluating data management and quality as requested by senior management
- Reviews Laboratory procedures and data quality in consultation with the Laboratory Quality Assurance Officer
- Administers the Division Data Management System that manages all Division ambient data, including data review documentation, data edits, station and instrument logs, and automated QC
- Reviews all Air Monitoring Quality Control data for compliance with the EPA Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Quality Monitoring Program
- Creates and reviews quarterly and yearly AQS reports for management that summarize data completeness and quality statistics

Quality Assurance Officer for the Laboratory – This non-management employee is responsible for maintaining the Technical Division Quality System for the Laboratory and reports to the Laboratory Manager but may make recommendations directly to the Division Director on Quality System issues. The Laboratory QA officer:

- Maintains the Laboratory Quality System Documents including reviews, approvals, and updates to Laboratory SOPs
- Has signature approval authority over laboratory SOPs
- Manages periodic internal assessments evaluating laboratory data management and quality as requested by senior management

2.4 QUALITY ASSURANCE

Quality assurance is a general term for the procedures used to ensure that a particular measurement meets the quality requirements for its intended use. In addition to performing tests to determine bias and precision, additional quality indicators (such as sensitivity, representativeness, completeness, timeliness, documentation quality, and sample custody control) are also evaluated. Quality assurance procedures fall under two categories:

• Quality Control - procedures built into the daily sampling and analysis methodologies to ensure data quality, and

• Quality Assessment - which refers to periodic outside evaluations of data quality?

Quality control (QC) includes all of the measures taken by managers and field, laboratory and data management personnel to achieve a predetermined level of data reliability. Quality control is applied from the planning and design stages of the monitoring effort, through the implementation stages, to the handling, storage and reporting of accumulated data.

Quality assessment (QA) refers to the collective efforts of management to ensure that field, laboratory and data management meet the objectives of the organization and are acquired and utilized in an efficient and scientifically defensible manner. Major QA functions include review and auditing of sample collection, sample analysis, and data handling procedures, and evaluating the effectiveness of implemented QC procedures.

EPA defines a primary quality assurance organization as a monitoring organization as a monitoring organizations, or a coordinated aggregation of such organization that is responsible for a set of stations that monitors the same pollutant and for which data quality assessments can logically be pooled. Each criteria pollutant sampler/monitor at a site in the State and Local Air Monitoring Station (SLAMS) network must be associated with one, and only one, Primary Quality Assurance Organization (PQAO).

The purpose of having the SLAMS network under one PQAO is so that measurement uncertainty among all stations in the organization can be expected to be reasonably homogeneous, as a result

of common factors. Common factors that should be considered by monitoring organizations in defining primary quality assurance organizations include:

(a) Operation by a common team of field operators according to a common set of procedures;

(b) Use of a common QAPP or standard operating procedures;

(c) Common calibration facilities and standards;

(d) Oversight by a common quality assurance organization; and

(e) Support by a common management, laboratory or headquarters.

The Air District meets all of these requirements and is, therefore, a PQAO and responsible for the quality of all air monitoring data.

2.4.1 Quality Assurance Policy

The Technical Services Division Ambient Air Quality Monitoring Program has the following policies which are in accordance with 40 CFR Part 58, Appendix A.

1. Air quality data will be collected in sufficient quantity and of sufficient quality to meet the monitoring objectives of:

    - providing air pollution data to the general public in a timely manner
    - supporting compliance with ambient air quality standards and emission strategy development
    - supporting air pollution research studies
    - activating emergency control procedures that prevent or alleviate air pollution episodes
    - observing pollution trends throughout the region, including non-urban areas

2. Each individual program will have a written and approved QAPP prior to the start of monitoring.

3. The QAPP will be revised as changes are made to individual programs. The entire QAPP will be reviewed and revised as needed every 5 years.

4. Quality assurance activities will be managed independently from data collection. These activities include performance evaluations and technical system audits.

5. Only EPA certified monitors will be used to measure criteria pollutants.

6. Only gaseous pollutant concentration standards traceable to either a National Institute of Standards or Technology Traceable Reference Material, or a NIST-certified Gas Manufacturer's Internal Standard will be used.

7. Flow rate measurements will be made by flow measuring instruments traceable to an authoritative volume or other applicable standard.

8. Precision tests will be conducted in accordance with 40 CFR Part 58 recommendations.

9. Measurement Quality Objectives (MQO) will be developed for each criteria pollutant that meets or exceeds those specified in 40 CFR Part 58 or the Quality Assurance Handbook Volume 2. Also, MQO will be developed for non-criteria pollutants.

10. Quality assurance reports will be reviewed quarterly for compliance with the Data Quality Objectives.

11. Changes to the monitoring program will be discussed in the Annual Network Plan and made available for public comment whenever possible.

12. Precision and performance evaluation data will be submitted quarterly to EPA. Data assessment evaluations for SLAMS sites will meet or exceed EPA requirements.

2.4.2 Quality Assurance Goal

The foremost goal of the TSD Quality Management System is to ensure that all environmental monitoring operations administered by the Division produce data that is of known and acceptable quality and that meets the informational needs and regulatory functions of the Air District in a scientifically defensible manner.

2.4.3 Quality Assurance Activities and Tools

Quality Assurance tools include activities within the TSD as well as assessments conducted by outside agencies. Internal tools include data quality assessments, performance audits, internal technical systems audits, management reviews, and contracted audits. While EPA and ARB do not play a role in routine operations at the Air District, they do provide periodic external assessments. These assessments include laboratory, performance, and technical systems audits. Reports from all quality assurance activities are provided to management for review and possible action. See Chapter 3 on Quality System Components and Chapter 10 on Assessment and Response for more details on Technical Division QA Activities, and external assessments.

2.5 FUNDING SOURCES

As an independent regional agency, the Air District typically receives proportionate operating revenues from the member counties it serves (30%), permit fees and penalties (40%), the Transportation Fund for Clean Air (15%), federal grants (5%), state and other grants (5%), and other sources (5%). Air District revenue levels and proportions vary from year to year as public agency budgets and priorities change. For example, the 2008 total estimated Air District budget was $67.5 million.

The Technical Services Division consumes about 13% of the total Air District budget, or about $9.1 million for our 2008 example. Within the Division budget, about 33% is for air monitoring, 11% is for the laboratory, 8% is for meteorology and data analysis, and 8% is for performance evaluation. The remaining 40% is allocated for other Division programs. All work is charged to a particular funding source depending on the task. For example, the Laboratory may analyze air samples for toxics, odors, refinery upsets, fires, fugitive emissions, as well as regulatory sampling for particulate matter concentrations. The analysis cost is charged to the supporting funding sources (grant, fund, general revenue, etc.) that pay for the particular activity. Similarly, quality assurance activities are charged against these same funding sources to ensure that data quality objectives are met.

3. QUALITY SYSTEM COMPONENT

3.1 QUALITY MANAGEMENT PLAN

The QMP is the overall document that explains the Quality System. It describes staff and management and their respective responsibilities, qualifications, and training, and it explains how the system is to function for producing quality data including project management responsibilities, data generation and acquisition, assessment and oversight, and data validation and usability. This QMP will be renewed every five years or when significant changes have been made to its program elements, whichever comes first.

3.2 QUALITY ASSURANCE PROJECT PLAN

Quality Assurance Project Plans (QAPPs) are project or program- specific plans that establish the method by which Quality Objectives will be met or exceeded. QAPPs are typically needed where significant data collection and analysis will be associated with a project or an entire program area. A QAPP dictates the minimum requirements for project management, data measurement, data acquisition, assessment, oversight, data validation and data usability. The QAPP should include the main elements listed in the document "*EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA/R-5)*" (March, 2001)). Additional guidance for writing the QAPP can be obtained from the EPA documents "*EPA Guidance for Quality Assurance Project Plans" (EPA QA/G-5)* (July 1998), and "*Region 1, EPA-New England Compendium of Quality Assurance Project Plan Requirements and Guidance*" (October 1999). Each monitoring project or program will go through the Data Quality Objective (DQO) process outlined in the document "*Guidance for the Data Quality Objectives Process (EPA QA/G-4)*" (August, 2000).

All managers are responsible for maintaining Quality Objectives for the area within their span of control. As such, commitment to and responsibility for the quality objectives and operations detailed in this QMP and any Quality Assurance Project Plan (QAPP) or Standard Operating Procedure (SOP) in place in the Technical Services Division begins with the Division Director and continues through the managers and staff.

The air monitoring programs performed by the Technical Services Division are listed below. Because many of the elements of the programs have the same or similar requirements, all programs were combined into a single integrated QAPP.

- Criteria Gases (O_3, CO, NO_2, and SO_2)
- Non-Criteria Gases (H_2S, CH_4/NMOC, toxics, NO, NOx)
- Criteria PM (PM_{10}, $PM_{2.5}$, PM_{coarse}, Lead)

- Non-Criteria PM (TSP Metals (CARB), PM_{10} Ions, PM_{10} EC/OC, Continuous $PM_{2.5}$ (Non-FEM BAM), aethalometer, SASS ($PM_{2.5}$ Speciation))
- NCORE (Trace level CO and SO2, NOy)
- PAMS (Hydrocarbon speciation)
- NATTS (Toxics (including PAH), PM_{10} Metals)
- Chemical Speciation Network (SASS ($PM_{2.5}$ Speciation))
- Meteorology (Wind Speed, wind direction, temperature, RH, solar radiation, rainfall, atmospheric pressure)

Any new program which is developed will be subject to the QAPP development process specified in section 8.2 of this QMP.

3.3 STANDARD OPERATING PROCEDURES

The Technical Services Division uses SOPs to ensure that certain kinds of regularly performed activities, such as sampling techniques, operational procedures, laboratory analyses, data review, or quality assurance procedures, are conducted uniformly and appropriately given the needs of a task. Written SOPs help to ensure standardization of work for a program. SOPs are required with a QAPP for every program to allow the TSD management to verify that acceptable procedures are being used. SOPs submitted with the QAPP must be followed when performing data collection and analysis and will be used when auditing equipment and data. All program managers or group leaders are responsible for developing, documenting, and implementing standard procedures (SOPs) for appropriate routine, standardized, special or critical operations.

The TSD uses SOP 001, *Quality Document Changes*, to guide staff and management in standardizing the SOPs. This document is included in the TSD QAPP in Appendix A. The SOP explains the process for creating or making changes to the TSD's Quality System documentation including the Management Plan (QMP), the Quality Assurance Program Plan (QAPP), and Standard Operating Procedures (SOP). It includes the document format requirements, the management positions responsible for content, the review and approval requirements, and the recordkeeping, notification, and publishing requirements.

SOPs are revised whenever procedural changes are made to a program. Regardless of any updates, all SOPs are reviewed annually by TSD management and the Quality Assurance Officer. After revisions, the SOP must be approved by the project manager (normally the Air Monitoring Section Manager, or the Laboratory Section Manager) and the Quality Assurance Officer; and a new revision number and approval date is applied.

4. PERSONNEL QUALIFICATIONS AND TRAINING

4.1 QUALIFICATIONS

The knowledge, skills, and abilities of staff, supervisors, and managers involved in the production of ambient air monitoring data directly influence the quality of that data. The job class descriptions for all Air District employees involved in the collection, handling, analysis, performance auditing, assessment, management, and reporting of ambient air monitoring data specify the qualifications required to ensure candidates are selected that have the education, knowledge, skills, and abilities required to perform their duties. **Appendix A** is a list of job descriptions including the following journey level, senior, principal, supervisor, and management positions:

- Air Quality Technical Assistant (AQTA)
- Air Quality Instrument Specialist I/II (AQIS)
- Senior Air Quality Instrument Specialist (Senior AQIS)
- Supervising Air Quality Instrument Specialist (Supervising AQIS)
- Air Monitoring Manager (AM Mgr)
- Air Quality Laboratory Technician I/II (AQLT)
- Air Quality Chemist I/II (AQC)
- Senior Air Quality Chemist (Senior AQC)
- Principal Air Quality Chemist (Principal AQC)
- Laboratory Services Manager (Lab Mgr)
- Air Quality Meteorologist I/II (AQM)
- Senior Air Quality Meteorologist (Senior AQM)
- Supervising Air Quality Meteorologist (Supervising AQM)
- Principal Air Quality Engineer
- Quality Assurance Officer (QAO)
- Director of Technical Services

4.2 AIR MONITORING SECTION

New AQTA and AQIS employees in the Air Monitoring Section are trained by experienced Supervising AQIS and Senior AQIS staff in all aspects of ambient air monitoring, including standard operating procedures, equipment troubleshooting, diagnosis, maintenance and repair, quality control and quality assurance requirements, field data review, documentation, and safety. Training also includes the Air Pollution Technology Institute (APTI) Course 435 Atmospheric Sampling, ARB Air Monitoring Technical Advisory Committee (AMTAC) meetings, monitoring equipment training by manufacturers and ARB, and EPA and Air and Waste Management Association (AWMA) or other conferences focusing on air monitoring activities.

4.3 LABORATORY SECTION

New AQLT and AQC employees in the Laboratory section are trained by experienced Senior AQC and Principal AQC staff and the Lab Manager in all aspects of laboratory analysis of air monitoring samples including laboratory analytical methods, standard operating procedures, equipment maintenance, quality control and quality assurance requirements, data review, documentation, and safety. Training also includes laboratory equipment training by manufactures and ARB, ARB AMTAC meetings, and EPA and AWMA or other conferences on laboratory analyses.

4.4 PERFORMANCE EVALUATION GROUP IN THE SOURCE TEST SECTION

New AQTA and AQIS employees in the Performance Evaluation Group in the Source Test Section are trained by experienced Senior AQIS and Supervising AQIS staff in all aspects of performance audits, including standard operating procedures, equipment maintenance and certification, and recertification requirements for audit standards, documentation, and safety. Training also includes APTI Course 435, audit equipment training by manufacturers and ARB, ARB AMTAC meetings, and EPA and AWMA or other QA conferences.

4.5 METEOROLOGY AND QUALITY ASSURANCE GROUP

New AQM and AQIS employees in the Meteorology and Quality Assurance Group are trained by experienced Senior AQM, Supervising AQM, and the Quality Assurance Officer in all aspects of data assessment, management, and reporting, including standard operating procedures, data acquisition, data management, data reporting, data quality and data completeness objectives, and documentation. Training also includes ARB AMTAC meetings, EPA AQS conferences, APTI Course SI-409 on Basic Air Pollution Meteorology, and EPA, AWMA or other Quality Assurance conferences.

4.6 TRAINING

Supervisors and managers assess staff training requirements and the Division Director assesses manager training requirements as part of each employee's required annual performance evaluation. New or enhanced training as well as retraining requirements are noted, tracked, and documented in the annual performance evaluation. Managers include appropriate funds for training in their program budgets. The AM, Source Test, and Lab managers, and MQA supervisor have overall responsibility for carrying out staff training policies. The Division Director has the responsibility for training managers and reviewing training policies developed by managers and supervisors.

The Air District also provides reimbursement for job related continuing education courses and related materials, including required books, supplies, and lab fees. Staffs are encouraged to take job-related courses. Managers and supervisors provide assistance on the selection of appropriate courses and arrange work schedules to facilitate staff attending such courses.

4.7 EMPLOYEE PERFORMANCE REVIEWS

Responsibility for applicable quality assurance activities is included in the annual employee performance reviews as a specific objective for staff at the journey, senior, supervisory, and manager level. Managers and supervisors conduct annual performance reviews of each employee, including comparison of the employee's performance against the standard performance objectives and an assessment of any training needs. If deficiencies are noted, a performance improvement plan is developed and progress is tracked by the manager or supervisor.

5. PROCUREMENT OF ITEMS AND SERVICES

In the Technical Services Division procurement includes criteria, non-criteria, and toxic pollutant monitoring equipment; laboratory analytical instruments; performance auditing equipment; meteorological monitoring equipment; spare parts; consumables; supplies; computer hardware and software; and service contracts for laboratory instruments. Within the Division, equipment needs are determined by the Air Monitoring Manager, Laboratory Manager, Source Test Manager, Quality Assurance Officer and Supervising Air Quality Meteorologist based on a variety of programmatic requirements. They evaluate, prioritize, and make decisions on items for proposed procurement in accordance with the need for the equipment, supplies and services, the program budget, and grant requirements. Managers and supervisors are also responsible for developing relevant specifications and ensuring that equipment purchased meets all of the applicable regulatory requirements, grant requirements, codes, standards, procedures, methods, and other criteria.

All purchases are subject to the Purchasing Procedures in Chapter 4, Division II of the Air District's Administrative Code [Bay Area Air Quality Management District Administrative Code]. These procedures include a purchasing agent, specifications, contract limitations, contracts with minority and women's business enterprises, purchase requests, and contracts.

5.1 PURCHASING AGENT

The purchasing agent negotiates to obtain the best price obtainable on all goods and services required by the Air District.

5.2 SPECIFICATIONS

Where written specifications are prepared and submitted for public bidding, the specifications must include all criteria to be considered by the Air District in selecting a successful bidder. For criteria and NATTS toxic pollutant monitoring, the Air District only purchases EPA certified Reference Method sampling equipment or equivalent, Approved Regional Method equipment, or EPA recommended and approved monitoring, sampling, and analytical equipment and supplies. For other types of monitoring, the Air District only purchases California Approved Sampler monitoring, sampling, and analytical equipment and supplies, or equipment evaluated and adopted by the ARB. For meteorological equipment, the Air District only purchases equipment that meets the accuracy and response characteristics recommended by EPA in the Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV: Meteorological Measurements.

5.3 CONTRACT LIMITATIONS

The Chief Executive Officer executes all Air District contracts for the purchase of supplies, materials, and services. Prior to execution, the Air District has different Board approval procedures depending on contract dollar amounts and defined in the Air District Administrative Code. At the highest level, contracts are signed by the chairperson of the Air District Board of Directors or the executive officer as directed by a resolution of the Board of Directors. Mid-level contracts are reported to the Board of Directors as a consent item. Lower-level contracts may be executed without Board involvement.

5.4 CONTRACTS WITH MINORITY AND WOMEN'S BUSINESS ENTERPRISES

The policy of the Board of Directors is to take affirmative action as necessary to ensure that Minority and Women's Business Enterprises are provided the maximum practical opportunity to compete for and participate in all contracts for the purchase of services, materials, or supplies.

5.5 PURCHASE REQUESTS

Purchase requests for supplies, equipment, and/or services must be completed and submitted to the Business Manager in the Administrative Services Division prior to any order being given to a vendor. Purchase requests exceeding the remaining balance of unexpended funds within the budget for each line item in a program budget must be accompanied by an approval for a transfer of funds sufficient to cover the amount of the purchase request. The approval document must indicate the line item for the source and destination of the transfer of funds.

5.6 CONTRACTS

The purchasing policy provides for formal bids, informal bids, telephone bids, monopoly/sole source bids, prior bid/last price, and letter quotation depending on the goods or services to be purchased, the value, and the circumstances. Requests for consulting services must include a statement of the work; a statement of the qualifications of persons necessary to perform the required work; and an assessment of the resources, capital equipment, and supplies required to carry out the work. Bid solicitation is required for all contracts for goods and services valued above a threshold level specified in the Air District Administrative Code and must include instructions to bidders, proposal submittal requirements, draft contract, and a list of potential bidders. Bid awards are based on an evaluation of bids and recommendation to the Executive Officer by staff requesting the goods or services.

With the exception of composition analyses of $PM_{2.5}$, PM_{10} and PUF/XAD filter samples, the Air District does not contract with or have extramural agreements with third parties for the collection, handling, analysis, performance auditing, assessment, management, and reporting of ambient air monitoring data. For composition analyses of $PM_{2.5}$, PM_{10} and PUF/XAD filter samples, the Air District only uses laboratories approved and/or used by EPA.

5.7 ACCEPTANCE TESTING

Equipment delivered by a vendor for use under the Division's Quality Plan must undergo an acceptance test according to the acceptance test SOPs. For EPA-certified Reference Method or Equivalent equipment, acceptance testing is conducted to ensure that EPA quality requirements are met. If the equipment fails to meet the performance specifications in the purchase agreement, the vendor must repair or upgrade the equipment until the test is passed. After the acceptance test is passed, the responsible division manager will authorize payment.

EPA requires that all certified air quality monitoring equipment display a certification tag on the front panel. This tag, affixed by the vendor, informs the purchaser and user of the equipment that it meets the EPA quality and documentation requirements for use in regulatory ambient air quality monitoring.

6. DOCUMENTS AND RECORDS

The storage and retention of documents and records are subject to the Air District Records Retention Policy. In general, documents and records produced by each Division in the course of its work are stored and controlled by that Division. Similarly, documents and records produced by each section in the course of its work are stored and controlled by that section.

The primary documents that specify the quality requirements for air quality data produced by the Air District are the QMP (this document), the QAPP, SOPs, and Air District policies. The Quality Assurance Officer reviews and approves the QMP, QAPP, and all SOPs with the exception of Laboratory SOPs which are reviewed and approved by the Laboratory Quality Assurance Officer. The Director of Technical Services has final approval authority for the QMP and QAPP. The Air Monitoring Manager (AM Mgr), the Laboratory Manager (Lab Mgr), the Performance Evaluation Group Supervisor, and the Meteorology Group Supervisor have final approval authority for the content in their respective SOPs. The procedure for QMP, QAPP, and SOP approvals is documented in "Admin SOP 001 Quality System Document Changes" included in the QAPP.

SOPs and SOP revisions are proposed, reviewed, and approved by supervisors and project managers in their respective areas of responsibility according to the Quality Document Administration SOP. After manager approval, the Quality Assurance Officer must also approve an SOP before incorporating it into the official QAPP. Data management SOPs that assess data quality must be approved by all managers providing that data. New or revised SOPs are uniquely identified with a version number and approval date. Senior, principal, and supervisory staff and managers are responsible for ensuring that documents and records accurately reflect completed work under any SOP.

All Technical Division staff has network access to the current versions of the QMP, QAPP, and SOPs which are stored in the Quality System Docs folder on an Air District file server. The file server is backed up daily. Staff are discouraged from printing paper copies of these documents to avoid wasting paper, and are encouraged to access the electronic version to ensure that they have the latest version. The Quality Assurance Officer maintains an e-mail distribution list of all staff members who require access to these documents. When any of these documents is revised, an e-mail is sent to the distribution list that specifies the revised document, briefly summarizes the revision, and instructs staff who printed a paper copy of the old document to recycle it. Adobe Acrobat .PDF "read-only" versions of each document are posted on the Air District web site, and third parties can request that their e-mail addresses be added to the distribution list. Older quality system document revisions are maintained in read only PDF format in a designated archive subdirectory on the file server and are available for reference if needed. A revision history is maintained by the Quality Assurance Officer.

As part of the Quality System Docs, the QAO also maintains subfolders for Performance Evaluations and Policy Directives and Notices. Performance Evaluations include internal and external Performance Audits of Technical Division measurements, ODAMNs, Technical System

Audits, AQS data quality reports, and other indicators and reports of data quality over the last five years. Policy Directives and Notices include administrative directives from management to staff, corrective actions taken by management to remedy problems associated with the Quality System or Division operations, and notices from the QAO regarding changes to the Quality System.

All air quality data, related air quality precision and accuracy data, and meteorological data produced by the Air District are stored in databases on file servers that are backed up daily. After data quality control reviews are completed, these data are loaded into AQS. Division data management policy and procedures comply with Air District requirements and EPA Directives 2160 and 2100 (U.S. Environmental Protection Agency, 2007) concerning vital data records management, public access, etc. Some aspects of the EPA Directives are not under direct Division control, but instead are managed by Air District staff with broader responsibilities.

Table 6-1 lists the retention period and disposition for documents and records related to the collection, handling, analysis, auditing, assessment, management, and reporting of ambient air monitoring data.

Table 6-1. Document and record retentions.

Record Type	Retention Period	Disposition/Notes
Air Monitoring		
Ambient Air Monitoring Data – Strip Charts	5 yrs.	Delete
Ambient Air Monitoring Data – Data Logger Data	Permanent	None
Ground Level Monitoring Data	Permanent	None
Ground Level Monitoring Audit Reports	Permanent	None
Calibration Records	5 yrs.	Delete
Equipment Location Forms	3 yrs.	Delete
Instrument Log Books	Life of equipment + 5 yrs.	Delete
$PM_{2.5}$ Filters	3 yrs.	Delete
PM_{10} Filters and Envelopes	5 yrs.	Delete
QA/QC Records	3 yrs.	Delete
Station Log Books	5 yrs.	Delete
Work Orders and Repair Orders	3 yrs.	Delete
Equipment Documentation and QA/QC		
Quality Assurance Analysis Reports	Life of equipment + 3 yrs.	Delete
Additional Records Required by National Voluntary Laboratory Accreditation Program	Life of equipment + 3 yrs.	Delete
Audit Records	Life of equipment + 3 yrs.	Delete
Blind Sample Analysis Reports	Life of equipment + 3 yrs.	Delete
Interlab Analysis Reports	Life of equipment + 3 yrs.	Delete
Maintenance and Calibration Reports	Life of equipment + 3 yrs.	Delete
Manuals and Maintenance Records	Life of equipment	Delete
Proficiency Test	Life of equipment + 3 yrs.	Delete
Quality Assurance Manual	Superseded by revision + 7 yrs.	Delete
Quality Control Charts and Data	Life of equipment + 3 yrs.	Delete

Requisitions and Purchase Orders	Life + 3 yrs.	Delete
Laboratory		
Calibration Records	5 yrs.	Delete
Chain of Custodies for Samples	Permanent	None
Laboratory Approval Program Files	Life + 2 yrs.	Delete 2 years after closure of facility
Laboratory Notebooks	Permanent	None
Laboratory QA/QC Records	5 yrs.	Delete
Raw Data from Laboratory Instrumentation	Permanent	None
Laboratory Final Results	Permanent	None
Methods of Analysis	Permanent	None
Non-asbestos Samples Submitted for Analysis	Until Analysis Completed	Delete
Asbestos Samples Submitted for Analysis	5 yrs.	Delete
Standard Operating Procedures	Permanent	None
Meteorology		
Forecasts	Permanent	None
Meteorological Monitoring Data	Permanent	None
Meteorological Reports	1 yr.	Delete

7. COMPUTER HARDWARE AND SOFTWARE

7.1 SOFTWARE

The Information Services (IS) group and Technical Services Division's Information Technology Manager (IT Manager) provides support for the Air District's enterprise systems, including the financial system, production system, web site, and the development and implementation of business applications for the new production system to meet business needs. The IS group also purchases and maintains a suite of standard office software tools that are maintained Air District-wide. Policies and procedures for purchasing, evaluating, installing, using, maintaining, controlling, and documenting computer software are managed within the Information Services Group and are outside the scope of this document.

New software specific to Division needs and work tasks is identified by Division staff or management, and purchased directly by the Division after management approvals. Software that requires network support of some sort would be approved by the IS group prior to purchase and installation. For more complex software, management may approve professional, off-site training classes. After installation and testing on a trial work task, the software is evaluated for efficiency and productivity. If the software successfully completes the work task in a cost/time efficient manner determined by management, SOPs are created or modified to document procedures on how to consistently use the new software. All new computer tools are used in accordance with Air District computer policies that are EPA Directive 2100 and 2160 compliant (U.S. Environmental Protection Agency, 2007).

7.2 HARDWARE

The Administrative Services Division provides the computer and telecommunications infrastructure, including the selection, purchase, installation, operation, maintenance, and repair of new software systems, networks, network servers, telephone systems, voicemail systems, firewalls, personal and notebook computers, workstations, file and database servers, operating systems, and application software as required to meet business needs. Remote monitoring sites are connected to the Air District office through the Internet using Virtual Private Network encryption or through secure routers permanently connected to the Air District office network.

The purchase, installation, evaluation, and procedure documentation for new hardware generally follows the same process as new software. Because computer hardware generally requires IT group support for integration into the Air District Local Area Network, most Air District computer hardware is purchased and maintained under Information Services procedures outside the scope of this document. Any hardware purchased directly by the Technical Services Division must be approved by Division management. Purchased hardware also must comply with Information Services specifications and policies that are EPA Directive 2100 and 2106 compliant (U.S. Environmental Protection Agency, 2007).

7.3 LABORATORY SECTION

The Laboratory Section currently uses dedicated computers and proprietary software associated with each instrument to acquire, store, and manage analytical data. The gas chromatograph (GC) and the gas chromatograph/mass spectrometer (GC/MS) are used to analyze ambient samples for gaseous toxic compounds. The high pressure liquid chromatograph (HPLC) is used to analyze ambient air samples for carbonyl compounds. A data management system acquires, stores, manages, and reports analytical data from the GC, GC/MS, and HPLC to meet the requirements of the Air District's National Air Toxics Trend System Grant. The Ion Chromatograph (IC) is used to analyze filter samples for anions and cations. Microsoft Office software is often used for reporting laboratory data and writing reports. Microsoft Access and related application software are used to input filter mass and sample volume data, to calculate PM concentrations, and to manage and report data for submission to EPA's AQS. The X-ray Fluorescence (XRF) instrument is used to analyze filter media for metals. A data management system acquires, stores, manages, and reports analytical data to meet Air District special study needs.

7.4 AIR MONITORING DATA ACQUISITION, MANAGEMENT, AND REPORTING

The Air Monitoring Program currently uses custom data acquisition software on generic PC hardware to acquire, and report continuous air monitoring data to a Data Management System (DMS) at the District Office. At meteorological monitoring sites, Campbell Scientific, Inc. hardware is used. The system includes data loggers installed at air monitoring and meteorological sites, modems, telephone lines, data acquisition software, files, and software to produce air monitoring data reports that meet AQS requirements. The Air District applied for and received several grants from Region IX and EPA National Environmental Information Exchange Network (NEIEN) to develop the new DMS. DMS is available for other public agency use at no cost. PC-based Data Acquisition Systems (DAS) are capable of collecting serial one-minute data from a very wide range of air quality instruments. Collected data includes instrument metadata used for real-time quality control checks. All air quality and meteorological data are collected in a central Data Management System (DMS) database using "push" data transfers from the DAS and Campbell Scientific equipment through the Internet or any other form of communications available at the monitoring site. After importing air quality and meteorological data, the DMS executes a set of programmable data quality control checks every hour to filter out suspect and invalid data. Data passing all QC checks are automatically sent to EPA's AIRNow system and posted on the Air District web page.

The DMS also provides a robust multi-user database with tools for further data review and analysis by Air District staff on a state-of-the-art server. The DMS reports final air monitoring data and related precision data to EPA's AQS database within 90 days of the end of each month.

8 PLANNING

8.1 THE ELEMENTS OF SYSTEMATIC PLANNING

The purpose of ambient air monitoring in the Bay Area by the Air District is to collect data of known and documented quality that will meet five basic objectives:

- provide air pollution data to the general public in a timely manner.
- support compliance with ambient air quality standards and emission strategy development.
- support air pollution research studies.
- activate emergency control procedures that prevent or alleviate air pollution episodes.
- observe pollution trends throughout the region, including non-urban areas.

Before embarking on the collection of air quality data, systematic planning is necessary. Technical Services Division staff use the elements of systematic planning from Chapter 3 *EPA Quality Manual for Environmental Programs, EPA Manual 5360 A1* (U.S. EPA, 2000c), which are listed below.

- Identification and involvement of the project manager, sponsoring organization and responsible official, project personnel, stakeholders, scientific experts, etc. (e.g., all customers and suppliers).
- Description of the project goal, objectives, and study questions and issues.
- Identification of project schedule, resources (including budget), milestones, and any applicable requirements (e.g., regulatory requirements, contractual requirements).
- Identification of the type of data needed and how the data will be used to support the project's objectives.
- Determination of the quantity of data needed and specification of performance criteria for measuring quality.
- Description of how and where the data will be obtained (including existing data) and identification of any constraints on data collection.
- Specification of needed QA and quality control (QC) activities to assess the quality performance criteria (e.g., QC samples for field and laboratory, audits, technical assessments, performance evaluations, etc.).

- Description of how the acquired data will be analyzed (either in the field or the laboratory), evaluated (i.e., QA review/verification/validation), and assessed against its intended use and the quality performance criteria.

The Director of Technical Services is responsible for identifying the need for any new monitoring programs and for validating continued operation of all existing programs in support of the five basic Air District objectives. The Director identifies the sponsoring organizations and officials, the program stakeholders, scientific experts, and data customers, etc., for new programs and specifies the program goals, objectives, and study questions and issues. The Director selects a Program Manager to design a Quality Assurance Project Plan that meets the program goals and objectives.

The assigned Program Manager is responsible for developing a Project Plan that meets the goals and objectives established by the Director, or to modify an existing Project Plan to address plan changes identified by the Director. The Plan includes a project schedule, resources needed (budget, staff, equipment, etc.), milestones, and applicable regulatory and contractual requirements. The Plan identifies the type, quantity, quality, and origin of data needed and how it will be used to support the program objectives. Any constraints on data collection such as location, local sampling conditions, proximity to sources, monitoring objective, spatial scale, etc., are included in the Plan.

Project Plan data quality may be specified in several different ways and must include procedures to evaluate quality to insure plan objectives are met. For some criteria pollutant data collected to determine attainment of National Ambient Air Quality Standards, EPA provides Data Quality Objectives and quality assessment guidelines to determine Measurement Quality Objectives and the corresponding Standard Operating Procedures. Other Plans may have only Measurement Quality Objectives based on a manufacturer's instrument specifications, the highest data quality available within the Division's resources. Data quality objectives must also include data collection constraints.

In consultation with the Quality Assurance Officers and other appropriate Technical Services Division staff, the Program Manager must include a Quality Assurance element in the Project Plan to assess the quality of data collected and demonstrate that performance objectives are met. Quality Control activities may include, but are not limited to, single point precision checks, collocated samplers, flow and leak checks, laboratory blanks, technical assessments, and performance evaluations. The Plan must also include a description of how the data will be reviewed, verified, validated, and if possible, assessed against its intended use.

Completed Quality Assurance Project Plans are submitted by the Program Manager to the Director for review, revision as required, and the Director's final approval. The Program Manager is then responsible for executing the Program according to the approved Plan, and the Director is responsible for providing the necessary staff, budget, and other Division resources required in the Plan.

8.2 DEVELOPING, REVIEWING, APPROVING, IMPLEMENTING, AND REVISING A QAPP

If a particular project does not adequately fit into a previously developed Air District QAPP as determined by the Program Manager and confirmed by the Director of Technical Services, the Program Manager will produce a project specific QAPP. The Program Manager identifies all activities to be covered in the project specific QAPP and ensures that the guidance and methodologies will produce data of sufficient quality to meet identified project goals. Any deviation, addition, or omission from applicable portions of any QAPP are to be reviewed by appropriate parties, noted, and explained in written documents maintained with the QAPP. The Program Manager has content approval authority for the project specific QAPP, with input and review by the QA Officer and other Technical Services Division staff, where appropriate, and final approval by the Director of Technical Services. The Program Manager shall establish a project folder on a network drive (with suitable file restrictions) where all Program-specific documents will be maintained.

The Program Manager is responsible for integrating the new QAPP content into the unified QAPP maintained by the Division. After final review and approval of the amended QAPP by the Managers, the QA Officer will assign new revision numbers to the affected document sections and publish the new version as outlined in Admin SOP 001. The new QAPP takes effect upon notification of staff and any other parties included in the Quality System Notification List.

8.3 EVALUATING AND QUALIFYING COLLECTED DATA FOR NEW USE

The Program Manager also works with interested parties to determine if the obtained data are of sufficient quality to be utilized for other purposes outside of the original scope. The Program Manager's recommendations are noted in the project folder. The Director of Technical Services determines if the data meet all appropriate quality control/quality assurance requirements of the QAPP and whether it is appropriate to use the data for other purposes.

The Air District uses both air quality and meteorological data collected by third parties, providing that the TSD has approved the monitoring site, monitoring equipment, quality control procedures, and data quality objectives and has either reviewed external audits or conducted performance audits demonstrating that quality control procedures have been implemented and data quality objectives have been met.

9.0 IMPLEMENTATION OF WORK PRACTICES

The Air District uses Standard Operating Procedures to ensure that the work performed in the collection, handling, analysis, performance auditing, assessment, management, and reporting of ambient air monitoring data produces data that meet the quality and completeness objectives.

Depending on the nature of the work performed, a manager or a supervisor, principal, or senior level employee is responsible for ensuring that the work is performed as described in the QAPP, SOPs, or policies. Managers and supervisors establish standard performance objectives for staff working in the same functional area: air monitoring field operations; laboratory analysis; performance audits; or data assessment, management, and reporting. Managers and supervisors conduct annual performance reviews of each employee, including comparison of the employee's performance against the standard performance objectives and an assessment of any training needs. If deficiencies are noted, a performance improvement plan is developed and progress is tracked by the manager or supervisor.

Managers and/or supervisors, principals, or senior level staff determine the need for SOPs based on data quality objectives, data completeness objectives, or other operational requirements. Depending on the specific activity, senior, principal, or supervisory level staff may identify, propose, draft, revise, or review SOPs. Project managers have authority to approve new or revised SOPs and to establish policies for their use subject to QA approvals. Chapter 6, Documents and Records, describes the release, revision, and implementation of SOPs, as well as the removal of obsolete documentation and verification that changes are made.

10.0 ASSESSMENT AND RESPONSE

Quality Assessment functions include review and approval of program planning documents, auditing of sample collection, sample analysis, and data handling procedures, and evaluating the effectiveness of implemented Quality Control (QC) procedures. Quality Assessment (QA) takes two forms. Internal QA is conducted or arranged within the Division as directed by senior management. External QA is provided by ARB and EPA. By California state law, ARB must provide oversight/audit services to all local air monitoring districts through annual performance and laboratory audits as well as program review audits on a less frequent basis. As part of grant funding and regulatory requirements, EPA provides similar oversight/audit services. The following is a list of internal and external assessment tools utilized by the Air District:

Internal

- Data quality assessments – as requested by Senior Management
- Performance Evaluations – semiannual
- Flow rate audits – semiannual
- Internal technical system audits – 3 to 5 years, or as staff resources permit
- Meteorological performance audit by MQA staff – annually
- Meteorological performance audit by contractor – annually
- Management reviews

External

- Toxics performance audits by ARB – annual
- Toxics comparison audits by ARB – annual
- Performance audits by ARB – annual
- Program review audits by ARB – 7 to 10 yrs.
- Technical systems audits by EPA – 3 yrs.
- PEP audit by EPA – annual
- NATTS Performance audit for carbonyl analysis on the HPLC – semiannual
- NATTS Performance audit for toxic analysis by GC/MS – quarterly
- Technical systems audit for NATTS Program by EPA headquarters – annual

10.1 DATA QUALITY ASSESSMENTS

Internal data quality assessments may be conducted by the Quality Assurance Officer at the request of senior management. These assessments may include data management and review procedures, completeness, quality control/review procedures, and statistical evaluations. Assessment reports will be prepared and submitted to the Division Director with recommendations.

At the request of senior management, independent data assessments are also conducted by a statistician in the Air District's Planning Division. These assessments are usually conducted using final pollutant data that have gone through the normal, complete data review process and been submitted to AQS. If irregularities are discovered, MQA staff are notified and causes or explanations for the data irregularities are identified. As a result of the findings, data may be invalidated, adjusted, or confirmed through this process. Corrective actions by Air Monitoring staff may be required if data were invalidated or adjusted. If a systemic problem is identified, recommendations for Quality System changes are submitted to the Division Director.

10.2 REVIEW OF EPA AQS REPORTS

The EPA maintains several standard AQS reports that provide data quality summary information. The AMP430 Completeness Report shows the percentage of valid data by month for all pollutants and other aerometric data submitted to AQS. The AMP246 and AMP247 Precision and Accuracy Reports list all submitted one-point QC checks and performance evaluations, including those conducted by outside agencies, and provide a quick review for problems associated with a particular monitor or site. The AMP255 Quality Indicator Summary Report currently provides statistical information on all criteria pollutants for individual Air District sites and the entire network. This report also includes comparable statistics from other air monitoring agencies that provide another form of performance evaluation. Statistical information for non-criteria pollutant data will be reviewed as the scope of the AMP255 Report is expanded.

AQS reports are reviewed quarterly by the Supervising AQM, the Air Monitoring Manager, the Lab Manager, the PE Group Supervisor and the Quality Assurance Officer to ensure that data quality objectives are met. When the data completeness or data quality objectives are not met, the Air Monitoring or Laboratory Manager determine the cause and notify the Quality Assurance Officer and the Division Director. At the end of the first quarter of the year, the Supervising AQM, the Air Monitoring Manager, the Source Test Manager, the Quality Assurance Officer and the Lab Manager brief the Division Direction on the data completeness and data quality for the previous year prior to Data Certification by the Air Pollution Control Officer.

10.3 INTERNAL AUDITS

Two types of internal audits are performed on the Air District's quality system, performance evaluations and technical systems audits.

Performance evaluations assess the accuracy of ambient particulate samplers, gaseous pollutant analyzers, and laboratory instruments. These audits are performed by the Performance Evaluation Group Supervisor and staff who submit their findings and recommendations to the Source Test Manager and Quality Assurance Officer. If the difference between the audit reference standards and the indicated values of the equipment being audited exceed the tolerances established as policy in the QAPP, the PE group issues an Operations Data Action Monitoring Notification (ODAMN) indicating the need for investigation of the audit discrepancy. The Air Monitoring and/or Laboratory Section, in cooperation with the

Performance Evaluation group, must investigate the cause of the discrepancy and take corrective action if necessary. Depending on the results of the investigation, data collected while the discrepancy existed may require correction (if possible) or invalidation by the MQA section. The results of the investigation and any action taken are documented on the ODAMN form which remains on file as a record of the problem, the corrective action, the resulting data adjustments, and the timetable for these events.

Meteorological performance audits are performed twice a year, during the spring and fall months, if possible. The spring performance audit is conducted by Air District meteorologists from the Technical Services Division and the Planning Division. For the fall audit, MQA hires an outside contractor. The audit findings and recommendations are submitted to the Quality Assurance Officer for review, and corrective action taken where needed. Data from sensors that fail the audit are reviewed and edited or invalidated by MQA staff and the Planning Division meteorologist.

A technical systems audit is an on-site inspection and review of a monitoring organization's entire program, including sample collection, sample analysis, data processing, staff, procedures, facilities, and documentation to assure compliance with ARB and EPA air quality monitoring, quality assurance, siting, and data reporting regulations. The Performance Evaluation Supervisor and staff conduct a technical systems audit of the Air District's Air Monitoring Program every three to five years as staff resources permit and submits the audit report to the Quality Assurance Officer, the Air Monitoring Manager, the Lab Manager, the Source Test Manager and the Division Director.

10.4 EXTERNAL AUDITS

The Air District's quality system is audited by both the ARB and the EPA. ARB conducts performance evaluations annually at one quarter of the Air District monitoring sites. ARB's audit program is certified by EPA and these performance evaluations fulfill the federal NPAP requirement. ARB conducts an annual performance audit and comparison audit of the Laboratory for gaseous toxic compounds and an annual audit of the PM_{10} and $PM_{2.5}$ filter weighing lab and documentation. ARB conducts local agency program review audits, including the Air Monitoring Program every 7 to 10 years. EPA conducts annual performance evaluations at Air District monitoring sites as part of the Performance Evaluation Program (PEP) for $PM_{2.5}$. EPA also conducts technical systems audits (TSAs) every 3 years. As part of the NATTS program EPA conducts semiannual performance audits for carbonyl analysis by HPLC, and quarterly performance audits for toxic analysis by GC/MS. EPA also performance a periodic TSA for the NATTS program. Audit results are sent to the Quality Assurance Officer, Air Monitoring Manager, Laboratory Manager, the Source Test Manager and Division Director.

Any audit findings that require corrective action are addressed as described under the Management Review and Response subchapter below.

10.5 ASSESSMENT STAFF

Performance evaluation and internal technical systems audits are performed by the Performance Evaluation Supervisor and staff. The job class descriptions for staff selected for performance evaluations, and technical systems audits specify the education, knowledge, skills, and abilities required to perform their duties (Appendix A). Staff receive extensive training from senior and supervisory level staff and managers. Staff also attend Air Pollution Training Institute classes, vendor training, college classes under the Air District tuition reimbursement program, and ARB Air Monitoring Technical Advisory Committee meetings. Supervisors and managers develop standard performance objectives for assessment of staff and evaluate their performance against the objectives annually. Managers and staff are evaluated annually on their implementation of and adherence to QMP, QAPP, SOPs, and policies.

Performance Evaluation staff have no direct responsibility for collecting, handling, analyzing, managing, or reporting ambient air monitoring data. Performance Evaluation staff have the authority to act independently and to access programs, managers and supervisors, and related data and documentation to identify problems, recommend solutions and verify the implementation and effectiveness of solutions. Performance Evaluation staff maintain a completely independent set of measurement equipment and standards from those used by the Air Monitoring Program and Laboratory and are funded through a separate program budget.

Other assessment activities are typically performed by staff outside of the Air Monitoring Programs, by staff from other District Divisions, or by outside consultants or oversight agencies. The individuals involved will vary depending on the activity, personnel availability, cost, etc. For example, on a yearly basis the meteorology monitoring program arranges to have knowledgeable staff from within the District conduct performance evaluations at all metrological monitoring sites. Similarly, an outside consultant is retained annually to conduct similar evaluations at many of the same sites. The personnel retained for these evaluations vary from year to year. Similarly, ARB staff conducting Air Monitoring performance evaluations audits will vary from audit to audit. The Technical Services Division occasionally requests that a statistician from another Division conduct statistical assessments of data provided from a monitoring program.

10.6 MANAGEMENT REVIEW AND RESPONSE

Assessment staff document all work performed by preparing reports, which are reviewed by supervisors and managers. If quality problems are identified by data assessment, internal audits, or external audits or reviews that require corrective action, the Quality Assurance Officer notifies the responsible program manager. The responsible program manager develops and implements a corrective action plan. The corrective action plan identifies the root causes, determines if the problem is unique, and recommends a revision to an existing SOP or a new SOP as appropriate. The Division Director and responsible program manager ensure that corrective action is taken as soon as possible, and the Quality Assurance Officer verifies the implementation and effectiveness of any corrective action taken.

10.7 ASSESSMENT DISPUTES

Internal Assessment and Recommendations

All assessment information and recommendations are sent to the appropriate managers by the Quality Assurance Officer. In cases where the assessment findings or recommendations are disputed or any other disputes arise among the Air Monitoring, Laboratory, Source Test or Meteorology and Quality Assessment Sections, disputes are resolved at the lowest level of the organization as follows:

- Journey level staff involved in the dispute meet and discuss the disputed findings or recommendations and attempt to resolve the dispute at that level;
- If the dispute cannot be resolved by Journey level staff, the dispute is escalated to Senior level staff in a further attempt to reach a resolution;
- If the dispute cannot be resolved by Senior level staff, the dispute is escalated to Supervisory level staff in a further attempt to reach a resolution;
- If the dispute cannot be resolved by Supervisory level staff, the dispute is escalated to Manager and Quality Assurance Officer level staff in a further attempt to reach a resolution;
- If the dispute cannot be resolved by Manager level staff, the dispute is escalated to the Division Director. The managers of the sections involved in the dispute present their information and arguments to the Director of Technical Services Division and the Director makes the final determination.

External Assessment and Recommendations

In cases where external assessments conducted by or recommendations made by ARB, EPA, or any other third party are disputed, Technical Service Division senior, supervisory, and manager level staff involved in the dispute meet with the appropriate staff from CARB, EPA, or other third party to discuss and attempt to resolve the disputed findings. In some cases where there is an interagency dispute the Division Director may be involved in dispute resolution. For external assessments, ARB, EPA, or another third party ultimately make the final determination in resolving a dispute.

11.0 QUALITY IMPROVEMENT

Quality improvement is an ongoing, continuous process by which an organization identifies areas that require corrective action or provides opportunities for improvement. As part of the process, this QMP, the associated QAPP, and all SOPs are all "living" documents subject to constant review and change as improvements are made.

The Air Monitoring Manager, Laboratory Manager, Source Test Manager and Quality Assurance Officer as well as supervisory, principal, and senior level staff in the respective program areas are responsible for identifying, planning, implementing, and evaluating the effectiveness of quality improvements.

There are many tools and techniques, described elsewhere in this document, that are designed to prevent and/or promptly identify conditions that require corrective action, in particular developing, maintaining, and revising high quality standard operating procedures. A few examples include:

- automated quality control checks for gaseous analyzers;
- frequent flow rate checks for PM samplers;
- frequent performance evaluations;
- monthly $PM_{2.5}$ filters with invalid flag report;
- monthly ozone zero, span, calibration, and evaluation report;
- blanks, standards, controls, and replicates lab analysis; and
- internal systems audits.

When activities that require corrective action are identified, senior, principal, and supervisory level staff and managers make it a priority to determine the cause and the extent of the problem. Corrective action is taken as soon as possible, and the problem and corrective action taken are documented as appropriate in the air monitoring station log book, air monitoring instrument log book, or laboratory instrument log book. Depending on the nature of the problem, the manager, supervisor, principal, or senior level staff responsible for the area in which corrective action was required is responsible for tracking the corrective action.

Manager, supervisory, principal, and senior level staff are responsible for ensuring that staff at all levels identify, report, and develop recommendations for activities that require corrective action or provide opportunities for improvement, and report them to the appropriate manager, supervisor, principal, or senior level staff.

Manager, supervisory, principal, and senior level staff are also responsible for ensuring that staff at all levels communicate with both internal and external data users and external data suppliers to identify problems as well as opportunities for improvement and to develop and propose solutions.

12.0 REFERENCES

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BAY AREA AIR QUALITY MANAGEMENT DISTRICT QUALITY MANAGEMENT PLAN

APPENDIX A

JOB DESCRIPTIONS FOR POSITIONS IN THE TECHNICAL SERVICES DIVISION

OVERVIEW

The Air District Human Resources Division maintains a current list of Job Descriptions for the entire agency. This Appendix contains positions that uniquely apply to duties assigned under the Technical Services Division's Quality Management and Quality Assurance Project Plans

Air District Job Descriptions

For Job Descriptions maintained by the Air District Human Resources Division, see the Air District web page at http://www.baaqmd.gov/Divisions/Human-Resources/Employment/Job-Descriptions.aspx.

QUALITY ASSURANCE OFFICER

DEFINITION

This Air District Job Classification has not been approved by the Air District Management Human Resources Department or Senior Management. This description illustrates the duties such a Job would include and, until approved, will be assigned to other staff by the Division Director.

Under the direction of the Division Director, the Quality Assurance Officer reviews and maintains the QMP and QAPP as specified in the EPA-approved versions of these documents. The Officer participates in periodic reviews of the QMP and QAPP, including SOPs, and may make recommendations for improvements. The Officer participates in Technical Service Audits conducted by EPA and responds to audit deficiencies as directed by the Division Director.

DISTINGUISHING CHARACTERISTICS

This single position class manages the QMP and QAPP documents for the Technical Services Division. The Officer must have knowledge of Quality Assurance methods and procedures used in Ambient Air Monitoring and laboratory analysis.

EXAMPLES OF DUTIES (Illustrative Only)

- Identifies QMP and QAPP deficiencies and informs the Division Management when changes are necessary.
- Notifies all QMP and QAPP/SOP users when changes and updates are made to the documents.
- Identifies areas where more Quality Assurance efforts are needed and makes recommendations to Division Management.

QUALIFICATIONS

Knowledge of

- QMP and QAPP documents and EPA Quality Plan requirements.
- Ambient Air Quality and Meteorological monitoring procedures; Laboratory analysis procedures.
- Division data management, analysis, and review procedures.
- Data quality and reporting requirements for AQS.
- Applicable federal, state, local, and District laws and regulations.

Skill in

- Analyzing procedures and identifying omissions and discrepancies.
- Preparing clear and concise reports, correspondence, and other written materials.

- Establishing and maintaining effective working relationships with those contacted in the course of developing better and more robust Quality Assurance Procedures.
- Implementing quality assurance and data verification programs.

Other Requirements

- Must possess a valid California driver's license.
- Education and Experience
- The QA Officer must hold a bachelor degree from an accredited college or university with major course work in engineering, physics, chemistry, or a closely related major. At least three years of experience in Quality Assurance or related work are required.

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PRINCIPAL AIR QUALITY ENGINEER

DEFINITION

Under direction, performs the most complex and highly specialized level of assigned air quality engineering activities and may supervise staff of a project basis or lead project teams; performs related work as assigned.

DISTINGUISHING CHARACTERISTICS

This class provides highly specialized professional air quality engineering services in support of the District's goals and objectives. Incumbents are responsible for complex and sensitive engineering activities for the District, and provide project leadership for developing programs. This class is distinguished from Supervising Air Quality Engineer in that the latter supervises assigned staff on a continuing basis and conducts performance appraisals.

EXAMPLES OF DUTIES (Illustrative Only)

- Provide lead direction and work review to professional, technical and support staff, prioritizes and follows up on work assignments to ensure timely completion.
- Researches and develops new and revised rules and procedures for regulation of air quality; determines emissions and potential emission reductions and cost of controls; establishes control level and technology; writes proposed regulation; prepares technical assessment reports and conducts workshops; makes public presentations.
- Participate and supervise staff's review of permit application and recommends permit issuance or denial.
- Recommends and implements regulatory changes and systems development to comply with the Federal permitting program.
- Participate in the preparation of the goals and objectives of the assigned section.
- Participate in the preparation of the budget of the assigned section.
- Represent the District in meeting with the public, industry and other agencies.
- Participate and review staff's handling of Hearing Board matters involving variances, Order of Abatement and public nuisances.
- Review and participate in toxic screening and assessments, development of emission factors complex facilities.
- Develop, participate and review field engineering compliance audits, source testing and sampling, analysis of the results and preparation of reports; observes and audits private contractor tests.

- Provide lead direction, review and participate in the study of accidental releases as complex facilities, rule effectiveness and hazardous material storage, transportation and handling.

- Provide lead direction, review and participate in community assistance program, hazardous incident investigations, and Technical Review Group.

- Conduct technical seminars for industry and other agencies.

- Coordinates the District's response to public and industry inquiries regarding regulation interpretation, permit preparation, various compliance measures and emission calculation methods in person, by telephone and in writing.

- Testifies as expert witness before the Hearing Board.

- Education and Experience:

- A typical way to obtain the knowledge and skills is:

- Equivalent to graduation from a four-year college or university with major course work in environmental, chemical, mechanical or petroleum engineering or a closely related field and four years of air quality environmental engineering experience.

QUALIFICATIONS

Knowledge of:

- Principles and practices of employee supervision, including selection, planning, training, work evaluation and discipline.

- Engineering principles and practices.\

- Air pollution analyses techniques and control methodologies and equipment.

- Applicable District rules and regulations and state and federal laws.

- Air pollution control equipment and processes.

- Principles and practices of computer science including programming and data base structures.

- Industrial chemical processes and equipment.

- Skill in:

- Assigning, supervising, reviewing and evaluating the work for professional, technical and support staff.

- Selecting and motivating staff and providing for their training and professional development.
- Applying sound engineering principles and techniques in a variety of air quality engineering matters.
- Computing complex engineering calculations quickly and accurately.
- Performing detailed analysis of designs, specifications and plans.
- Climb high structures, work in high temperatures and noise levels, and lift heavy test equipment.
- Prepare and operate sampling instruments, effectively judge test conditions, and maintain test accuracy and safe working practices.
- Conducting a variety of air quality engineering studies.
- Establishing and maintaining effective working relationships with those contacted in the course of the work.
- Preparing clear and concise reports, correspondence and other written materials.
- Exercising sound independent judgment.
- Communicating effectively, both orally and in writing.
- Other Requirements:
- Meets qualification for the Position of Technical Division Quality Assurance Officer, a duty assigned by the Technical Division Director
- Must possess a valid California's driver's license.
- Must possess a valid California Professional Engineering license

Or

- Equivalent to a Master's Degree from an accredited college or university with major course work in environmental, chemical, mechanical or petroleum engineering or a closely related field and four years of air quality environmental engineering experience.