**Past Trainings:** [**https://apps.cce.csus.edu/sites/arb/pqao/index.cfm?pid=1184**](https://apps.cce.csus.edu/sites/arb/pqao/index.cfm?pid=1184)

**Modules 1-3 and PQAO Training 2017**

**Keynote Addresses**

* Module 1 Keynote – Debbie Jordan
  + Purpose of air monitoring is to protect public health
  + Why good quality air monitoring data is important
  + Consequences of poor quality data
* Module 2 Keynote – Phillip Fine
  + Importance of QA/QC in “the big picture” (data quality, allocation of resources)
  + QA/QC in relation to sensors
* Module 3 Keynote – Alberto Ayala
  + Progress made in air monitoring over the years
  + Ozone attainment success, PM2.5 challenges
  + Future of air monitoring – tech advancements, near roadway monitoring
* PQAO Training 2017 – Amy Zimpfer
  + Air Quality Challenges in Region 9: The Importance of Accurate, Reliable Data
  + Reliable, accurate data are the foundation of the air quality management program
  + California monitoring network is unparalleled
  + Fundamental to key policy decisions to clean air

**Module 1**

**PQAO**

* Comparing Apples to Apples: Importance of a PQAO from EPA’s Perspective
  + High level perspective of PQAO from EPA
  + Why PQAO structure was put in place
  + Different types of PQAOs
* Getting to Know the Air Resources Board’s PQAO
  + Description of ARB’s PQAO structure
  + Challenges ARB’s PQAO faces
  + Benefits of the PQAO – shared resources
* PQAO from Mojave Desert Air Quality Management District’s Perspective
  + Benefits of the PQAO structure for Districts
  + District responsibilities as part of PQAO

**Key Documents**

* Introduction to QA Laws, Regulations, and Key Documents
  + Overview of all documents used by PQAO
* Key QA Documents
  + More detail on key documents used by EPA, ARB, and Districts
    - QA Handbooks (EPA)
    - QMP, QAPPs, SOPs, R&Rs, ANP (ARB)
    - District QMP/QAPPs/SOPs, addendums
* Tour of ARB’s QA Web Page
  + Document repository
  + Resources for site operators
  + Contact information

**Network Design**

* Monitoring Goals
  + Minimum monitoring requirements
  + How data are used (regulatory and non-regulatory)
  + Consequences of poor quality data (PM example)
* Network Design: Networking the Networks
  + Overview of air monitoring networks
  + How networks connect/overlap with one another
  + Sharing resources within networks
* Monitoring Requirements and You
  + Monitoring network design objectives
  + Network requirements
  + Network design considerations (i.e. future development trends, research)
* Annual Network Plans
  + History of ANP
  + Content of ANP
  + Current ANP process
* Air Monitoring Annual Network Plan: A District’s Perspective
  + Scope of ANP
  + Process for completing ANP on District end
  + 5 years network assessment
* What to do When Making Changes to Your Network
  + Types of network changes (i.e. shut downs, relocations)
  + Notification process

**Station Operations**

* Consequences of Not Following Proper Air Monitoring Station Operational Procedures
  + Lower data reliability/defensibility
  + Delays in decision making/regulations
  + Case studies – PM2.5 FEM BAM issue at S. Coast
* It All Starts With You!
  + Overview of data uses
  + Owens lake case study
* Station Set Up: Location, Location, Location and Much More
  + Site selection/siting requirements
  + Building a station
  + Station set-up/instrument selection
* Residence Time: It’s About Time!! (and Pressure)
  + Residence time criteria
  + How to calculate residence time
* Station Operations: It’s On You
  + Site operator review of data in office
  + Routine site checks/ operations/ maintenance (focus on PM)
  + Calibrations – gaseous and PM
* Importance of Good Station Operation Documentation from an End User Point of View
  + Importance of documentation
  + Types of documentation
  + Requirements for documentation
* Stations: The Good, the Bad and the Ugly
  + Most common issues at stations found in audits (siting, documentation)
  + Examples of good and bad stations

**Module 2**

**Quality Control**

* Where Did All This QC Stuff Come From Anyway
  + History of QC in PM2.5 program
  + Data Quality Objectives
  + Method Quality Objectives (PARCCS)
* Field QC and Log Books
  + Review of field QC for PM2.5 BAMs and Ozone
  + Examples of good/bad documentation
  + SLO’s electronic logbooks
* The Need for SOPs
  + Why having SOPs is important
  + SOP development
  + Exercise
* Life and Times of a PM2.5 Filter
  + PM2.5 mass program overview
  + Life of a filter – lab QC for PM2.5
  + Ways to improve filter handling

**Calibrations/Certification**

* Building a Bigger Better Zero Air Generator Certification Process
  + Need for zero air certification process
  + San Diego’s zero air certification procedure
* Field Calibrations
  + Types of calibrations
  + When/how to calibrate
  + Documenting calibrations
* Standards Laboratory
  + NIST traceability
  + ARB’s standards lab services

**Quality Assessment**

* Quality Assessment and Corrective Action
  + Purpose of quality assessment
  + Types of assessments
* TSAs – The Mother of All Audits
  + What is a TSA
  + Why TSAs are performed
  + TSA process
* Behind the Clipboard - Performance Evaluation
  + P.E. from a state perspective (scheduling, what is evaluated)
  + P.E. from a District perspective (how to prepare)
* Using a Corrective Action Process
  + Importance of having a corrective action process
  + ARB’s CAN process
  + Examples of when to use a CAN
* Air Quality Data Action
  + Criteria used to determine validity of P.E. data
  + Most common issues leading to AQDAs
  + How to resolve AQDAs

**Data Management**

* Data Management
  + Data acquisition
  + Data management systems used in CA
  + Data management system functions (automated tasks, data review)
* All Data Considered Valid
  + Defines data review, verification, and validation
  + EPA QA handbook, Appendix D – critical, operational, and systematic criteria
  + Overview of multi-level data review and AQS upload
* Data Validation Exercise
  + Data matrix- one month, hourly PM2.5
  + Validation level I
  + Validation level 2
  + Validation level 3
* Introduction to Databases
  + Real-time databases (AirNow, AQMIS)
  + Data for record (AQS, iADAM)
  + Misc. databases – QA air monitoring site information, CAMNAT
* Breakout sessions
  + CAMNAT
  + AirNow
  + iADAM & AQMIS
* AQS Summary
  + AQS metadata
  + AQS reports
  + Null codes, QA qualifier codes
* Data Certification Presentation A, Presentation B
  + Data submittal requirements
  + Certification reports
  + Why data certification is important (District perspective)
* Data Quality Report
  + Background on data quality report
  + Data quality results from 2013
  + Challenges with data quality for ARB’s PQAO
* Data Analysis for Regulatory Purposes
  + NAAQS
  + High-level data analyses performed (design values, trend analyses)
  + Design value calculation exercise

**Module 3**

**ARB Laboratory Programs**

* Laboratory Analyses: Beyond the Masses
  + ARB’s analytical services
  + Clients
  + Data quality and how data are used
* ARB Filter Handling Presentation/ Demonstration
  + PM 2.5 filter preparation – before the field
  + Filter handling in the field
  + Filters – after the field
* ARB Toxics/GHG Analyses
  + Overview of ARB’s toxic/GHG monitoring
  + Laboratory QC (canister cleaning, etc.)
  + Overview of analyses performed

**Emerging Technologies**

* Air Monitoring and New Technology
  + New technologies used by ARB – auto calibration systems, direct NO2 measurements, black carbon, etc.
* Air Quality Sensor Performance Evaluation
  + Overview of sensor performance study by South Coast

**Project Updates**

* Performance Evaluation of a Condensation Particle Counter
  + Study of near-roadway monitoring using three different CPC instruments at one site
  + Comparison of instrument performance
* Great Basin APCD - Lakebed Update
  + History of PM10 monitoring at Owen’s lake
  + Dust control methods – raspberry pi, sharp dust sensor
* ARB Emergency Response Monitoring
  + Overview of ARB’s OER program
  + Monitoring capabilities
  + Examples of emergency responses

**Database Demos**

* AQMIS/iADAM Demo
  + Overview of two ARB databases
* AQS Demo – U.S. EPA
  + Data certification using AQS and AMP 600
  + Registering and accessing AQS

**Vendors**

* Thermo – Gas
* Thermo – Particulate
* Teledyne/API – Gas
* Teledyne/API – Particulate
* Met One – Particulate
* American Ecotech – Gas/Particulate/Data Management
* Alicat – Calibration
* 2B Technologies – Portable monitors
* BGI Mesa Labs – Calibration
* Sabio – Calibration
* TSI Particle Counters
* Tisch – Particulate
* Agilaire – Data Management
* Picarro – GHG
* LGR – GHG

**Parking Lot Demos**

* Through-the-probe Audits
* Air Monitoring Trailer (Thermo)

**PQAO Training 2017**

**PQAO**

* PQAO Updates and Webpage Tour (General Session)
  + Overview/refresher of what a PQAO is
  + Regulation updates

**Network Design**

* Network Design and Changes (Breakout Session)
  + Overview of networks
  + Monitoring goals
  + Network requirements
  + Network changes
  + Shutdown or Relocate? group exercise

**Station Operations**

* Station Operations Overview (General Session)
  + Broad overview of data, quality system, fundamentals, skillset, communication, documentation, and troubleshooting
* Station Operations: Discussion Q&A (Breakout Session)
  + Open forum format

**Quality Control**

* Station Documentation and QC (Breakout Session)
  + Importance of QC
  + Elements of QC
  + Types of documentation (QC sheets, calibration sheet, logbooks, etc.)
  + Electronic documentation and advantages of a database system

**Calibrations/Certification**

* Verifying Zero Air Sources (General Session)
  + Importance of zero air certification and verification
* Zero Air Generator Certification: Demo (Breakout Session)
* Field Calibrations: Introduction (General Session)
  + Introduction and big picture
    - Types of calibration
    - When/how to calibrate
    - Documenting calibrations
* Field Calibrations: Demo (Breakout Session)

**Quality Assessment**

* Corrective Action: South Coast AQMD’s Process (General Session)
* Performance Evaluations (General Session)
  + Overview of types of PEs
  + How to prepare
  + Common issues
* Technical System Audits (General Session)
  + Recap of TSAs
  + How to prepare for an audit
  + Most common issues and corrective actions
  + Lessons learned by EPA and CARB auditors

**Data Management**

* Data Validation (General Session)
  + What it is and importance of data validation
  + Overview of levels 1, 2, 3
  + Validation to certification pathways
* Data Certification (General Session)
  + What it is and importance of data certification
  + What is expected of districts/CARB
* Data Validation and Certification Exercise (Breakout Session)

**ARB Laboratory Programs**

* PM2.5 Filter Handling from a Lab and Field Perspective (Breakout Session)
  + Guiding documents, critical criteria, and sample handling from both perspectives

**Emerging Technologies**

* Emerging Technologies: Monitoring for Tomorrow (General Session)
  + BAM 1022
  + Carbon-SASS
  + BC 1050
  + Neighborhood PM2.5 Monitor
  + Speciated PM10 SASS

**Project Updates**

* South Coast Sensor Lab (Breakout Session)
* Salton Sea Air Monitoring Project (Breakout Session)
* Refinery Project (Breakout Session)
* CA Baseline Ozone Transport Study (Breakout Session)
* Community Toxics Woodsmoke (Breakout Session)
* Ambient Pesticide Monitoring (Breakout Session)
* Aliso Canyon (General Session)

**Databases**

* AQMIS and iADAM (Breakout Session)
* AQS (Breakout Session)
  + AQS metadata
  + AQS reports
  + Null codes, QA qualifier codes
* STI: AirNow (Breakout Session)

**Vendors**

* Agilaire (AirVision)
* Alicat Scientific
* American EcoTech
* APIS\*
* BGI/Mesa Labs
* Met One
* Purple Air\*
* RM Young (Cancelled)
* Sabio
* STI\*
* Teledyne/API
* Thermo

**Parking Lot Demos**

* Thermo

**Other**

* Q&A Session (General Session)
  + Opportunity to ask questions to U.S. EPA, CARB, and South Coast AQMD
* Data from an End User Perspective (General Session)
  + How data generated affects an air quality planner for Butte County AQMD
* STI: Sensor Studies