

STATE OF CALIFORNIA
AIR RESOURCES BOARD

AIR MONITORING QUALITY ASSURANCE

VOLUME V

AUDIT PROCEDURES MANUAL
FOR
AIR QUALITY MONITORING

APPENDIX AE

SITE SURVEY PROGRAM
FOR
AMBIENT AIR MONITORING STATIONS

MONITORING AND LABORATORY DIVISION

AUGUST 2007

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VOLUME V

AUDIT PROCEDURES MANUAL
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AIR QUALITY MONITORING

APPENDIX AE.1

SITE SURVEY PROGRAM
FOR
AMBIENT AIR MONITORING STATIONS

MONITORING AND LABORATORY DIVISION

AUGUST 2007

AE.1.0 INTRODUCTION

To generate accurate and representative data, air monitoring stations are required to meet regulatory siting requirements and conditions. A detailed analysis of siting conditions allows a determination of whether the data from ambient air monitoring stations meets the United States Environmental Protection Agency's (U.S. EPA) and Air Resources Board's (ARB) siting criteria. These data are collected during the site surveys conducted at each site.

Site surveys consist of field review and verification of siting conditions. These data are entered, confirmed or updated in the ARB Site Survey Report (Figure AE.1.2.1) as part of the performance audit program.

AE.1.0.1 BACKGROUND

The general assumption is that stations meet the siting criteria at the time they initiated operation. Subsequent non-conformance with site requirements results from changing regulations and changes in surrounding conditions or land use. The siting requirements of the ARB's Quality Assurance (QA) Manual Volume II; (U.S. EPA's) 40 CFR 58, Appendix E; U.S. EPA's Quality Assurance Handbook Volume IV; U.S. EPA's Prevention of Significant Deterioration (PSD); and U.S. EPA's Photochemical Assessment Monitoring Stations (PAMS) guidelines, contain the specific siting criteria to ensure the collection of accurate and representative data.

Some of U.S. EPA's siting criteria are stated as "must meet" and some are stated as "should meet" According to 40 CFR 58, Appendix E, the "must meet" requirements are necessary for data to meet "data-for-record" requirements. Any exception from the "must meet" requirements must be formally approved through the Appendix E waiver provision (Section 11). The "should meet" criteria establish a goal for data consistency.

AE.1.0.2 SITING CRITERIA

The siting criteria for each pollutant vary depending on the pollutant's properties and the requirements addressed in the guideline documents. In the accompanying tables (Tables AE.1.0.1 - AE.1.0.13), the impact and effect on data is briefly described. The impact has been determined by how that parameter effects the measurement. Likewise, the effect has

been determined by how the parameter effects the representativeness (e.g., accurately monitoring an air mass, but the air mass monitored may not be the one desired) and accuracy (e.g., the monitors are not properly sampling the air mass). U.S. EPA status (must/should) is also listed. The sources of the pertinent rules are listed under the "Rule" heading. A rule from the U.S. EPA's 40 CFR 58, Appendix E, is abbreviated as "E Rule-Number", (i.e., a criterion found in the U.S. EPA's 40 CFR 58, Appendix E, Section 8.1 is abbreviated as E8.1). A siting criterion found in the ARB's QA Manual, U.S. EPA's QA Handbook Volume IV, U.S. EPA's PSD, and PAMS guidelines are abbreviated as QA II, Volume IV, PSD, and PAMS, respectively. The final column of the tables describes whether an Air Quality Data Action (AQDA) request or warning should be issued.

In Table AE.1.0.1, the various particulate matter sampler types, PM_{2.5}, PM₁₀ (SSI), dichot, TEOM, BAM, AISI, and nephelometer are grouped together since they are all different ways of measuring the same pollutant. Similarly, lead and TSP are grouped in Table AE.1.0.2 since lead is analyzed on the TSP fraction.

Tables AE.1.0.3 through AE.1.0.6 address ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), and sulfur dioxide (SO₂) siting criteria, respectively.

Table AE.1.0.7 addresses the siting criteria for hydrogen sulfide (H₂S) monitoring. Siting criteria for SO₂ were used for H₂S monitoring as a compromise since no criteria exists specifically for H₂S monitoring. Since there are no specific siting criteria for H₂S monitoring, a warning is appropriate for most siting discrepancies, except those effecting accuracy.

The probe material, residence time, in-line filter, and station temperature effect the accuracy of the data collected; therefore, an AQDA will be issued for violations. Siting criteria for total hydrocarbons (THC), methane (CH₄), and non-methane hydrocarbons (NMHC) are based on PAMS guidelines and 40 CFR 58, Appendix E requirements. They are also included with PAMS in Table AE.1.0.8. Criteria for toxics (gaseous; XonTech 910, 910A), Table AE.1.0.9, and toxics (particulate XonTech 920), Table AE.1.0.10, are based on requirements from the ARB QA Manuals.

Meteorological monitoring (temperature, relative humidity, wind speed, wind direction, and solar radiation (Tables AE.1.0.11- AE.1.0.13) siting

criteria are based on PAMS siting conditions specified in the U.S. EPA QA Handbook Volume IV, and the ARB QA Manual. Many of these criteria are also the same as listed in the U.S. EPA's PSD guidelines. A table was not generated for barometric pressure since it is relatively immune to siting conditions, and no siting specifications are listed by the U.S. EPA.

AIR MONITORING SITING CRITERIA

TABLE AE.1.0.1 Parameter: PM2.5, PM10 (SSI), Dichot, TEOM, BAM, AISI, Nephelometer

Item	Impact	Effect	U.S. EPA Status	Rule	Action
Ground Cover	Possible contamination	Representativeness	Should	E8.1	Warning***
Height	Spatial regime sampled	Representativeness	Must	E8.1	AQDA
Spacing Between Samplers	Spatial regime/interference	Accuracy	Must	A3.3	AQDA
Boom Length					
Boom Position					
Boom Orientation					
Radiation Shield					
Obstacles	Spatial regime/airflow	Representativeness	Must	E8.2	AQDA
Tree Dripline	Destructive interference	Accuracy	Should/Must*	E8.2	AQDA
Wall, Parapets, Etc.	Spatial regime/airflow	Representativeness	Must	E8.2	AQDA
Air Flow Arc	Spatial regime/airflow	Representativeness	Must	E8.2	AQDA
Local Sources	Possible contamination	Representativeness	Should	E8.2	Warning***
Flues	Possible contamination	Representativeness	Should	E8.2	Warning***
Traffic	Spatial scale**	Representativeness	Must	E8.3	AQDA
Probe Material					
Probe Residence Time					
Inline Filter					
Station Temperature					

*Should be 20 meters from general dripline of trees, must be 10 meters from dripline if the tree is considered to be an obstacle.

**Acceptable distance from traffic is related to volume of traffic and scale of monitoring (See Figure 2; 40 CFR 58, Appendix

***All warnings are verbal at this time.

Rule E#.# - Rule found in 40 CFR 58, Appendix E, Section #.#.

All blank spaces on table are not applicable.

AIR MONITORING SITING CRITERIA (cont'd.)

TABLE AE.1.0.2 Parameter: Lead, TSP

Item	Impact	Effect	U.S. EPA Status	Rule	Action
Ground Cover	Possible contamination	Representativeness	Should	E7.1	Warning***
Height	Spatial regime sampled	Representativeness	Must	E7.1	AQDA
Spacing Between Samplers	Spatial regime/interference	Accuracy	Must	A3.3	AQDA
Boom Length					
Boom Position					
Boom Orientation					
Radiation Shield					
Obstacles	Spatial regime/airflow	Representativeness	Must	E7.2	AQDA
Tree Dripline	Destructive interference	Accuracy	Should/Must*	E7.4	AQDA
Wall, Parapets, Etc.	Spatial regime/airflow	Representativeness	Must	E7.2	AQDA
Air Flow Arc	Spatial regime/airflow	Representativeness	Must	E7.2	AQDA
Local Sources	Possible contamination	Representativeness	Should	E7.2	Warning***
Flues	Possible contamination	Representativeness	Should	E7.2	Warning***
Traffic	Spatial scale**	Representativeness	Must	E7.3	AQDA
Probe Material					
Probe Residence Time					
Inline Filter					
Station Temperature					

*Micro and middle scale category (a) sites - Must be no trees between source and sampler. Neighborhood scale category (b) sites – Should be 20 meters from general dripline and must be at least 10 meters from trees that act as obstructions.

**Acceptable distance from traffic is related to volume of traffic and scale of monitoring (see Figure 2; 40 CFR 58, Appendix E).

***All warnings are verbal at this time.

Rule E#.# - Rule found in 40 CFR 58, Appendix E, Section #.#.

All blank spaces on table are not applicable.

AIR MONITORING SITING CRITERIA (cont'd.)

TABLE AE.1.0.3 Parameter: O₃

Item	Impact	Effect	U.S. EPA Status	Rule	Action
Ground Cover					
Height	Spatial regime sampled	Representativeness	Must	E5.1	AQDA
Spacing Between Samplers					
Boom Length	Spatial regime/airflow	Representativeness	Must	E5.1	AQDA
Boom Position					
Boom Orientation					
Radiation Shield					
Obstacles	Spatial regime/airflow	Representativeness	Must	E5.2	AQDA
Tree Dripline	Destructive interference	Accuracy	Should/Must*	E5.4	AQDA
Wall, Parapets, Etc.					
Air Flow Arc	Spatial regime/airflow	Representativeness	Must	E5.2	AQDA
Local Sources	Destructive interferences (NO _x sources)	Representativeness	Should	E5.3	AQDA
Flues	(Considered local sources)				
Traffic	Destructive interference**	Accuracy	Should**	E5.3	AQDA
Probe Material	Destructive interference	Accuracy	Must	E9	AQDA
Probe Residence Time	Destructive interference	Accuracy	Must	E9 & QA II	AQDA
Inline Filter	Operation	Accuracy		QA II	AQDA
Station Temperature	Operation	Accuracy		QA II	AQDA

*Should be 20 meters from general dripline of trees, must be 10 meters from dripline in the direction of city center and along summer daytime wind direction.

**Acceptable distance from traffic is related to volume of traffic and scale of monitoring (See Figure 2; 40 CFR 58, Appendix E).

Rule E#.# - Rule found in 40 CFR 58, Appendix E, Section #.#.

All blank spaces on table are not applicable.

AIR MONITORING SITING CRITERIA (cont'd.)

TABLE AE.1.0.4 Parameter: CO

Item	Impact	Effect	U.S. EPA Status	Rule	Action
Ground Cover					
Height	Spatial regime sampled*	Representativeness	Must	E4.1	AQDA
Spacing Between Samplers					
Boom Length	Spatial regime/airflow	Representativeness	Must	E4.1	AQDA
Boom Position					
Boom Orientation					
Radiation Shield					
Obstacles	Spatial regime/airflow	Representativeness	Must	E4.2	AQDA
Tree Dripline	Spatial regime/airflow**	Representativeness	Should/Must**	E4.4	**
Wall, Parapets, Etc.					
Air Flow Arc	Spatial regime/airflow	Representativeness	Must	E4.2	AQDA
Local Sources					
Flues					
Traffic	Spatial scale***	Representativeness	Must	E4.3	AQDA
Probe Material	Destructive interference	Accuracy	Must	E9	AQDA
Probe Residence Time	Destructive interference	Accuracy	Must	E9 & QA II	AQDA
Inline Filter	Operation	Accuracy		QA II	AQDA
Station Temperature	Operation	Accuracy		QA II	AQDA

*Height of inlet depends on scale of monitoring (see 40 CFR 58 Appendix E, Section 4.0).

**Middle and Neighborhood scale - trees should not be between CO source and sampler - Warning.

- Must be at least 10 meters from trees that extend at least 5 meters above sampler and are in the direction of the road - AQDA.

Microscale - no trees should be located between the sampler and the road - Warning.

Rule #.# - Rule found in 40 CFR 58, Appendix E, Section #.#; QA II - Rule found in ARB QA Manual Volume II.

All blank spaces on table are not applicable.

***Acceptable distance from traffic related to volume of traffic and scale of monitoring (see Table1; 40 CFR 58, Appendix E).

AIR MONITORING SITING CRITERIA (cont'd.)

TABLE AE.1.0.5 Parameter: NO₂

Item	Impact	Effect	U.S. EPA Status	Rule	Action
Ground Cover					
Height	Spatial regime sampled	Representativeness	Must	E6.1	AQDA
Spacing Between Samplers					
Boom Length	Spatial regime/airflow	Representativeness	Must	E6.1	AQDA
Boom Position					
Boom Orientation					
Radiation Shield					
Obstacles	Destructive interference	Accuracy	Must	E6.2	AQDA
Tree Dripline	Destructive interference	Accuracy	Should/Must*	E6.4	AQDA
Wall, Parapets, Etc.					
Air Flow Arc	Spatial regime/airflow	Representativeness	Must	E6.2	AQDA
Local Sources					
Flues					
Traffic	Spatial scale**	Representativeness	Must	E6.3	AQDA
Probe Material	Destructive interference	Accuracy	Must	E9	AQDA
Probe Residence Time	Destructive interference	Accuracy	Must	E9 & QA II	AQDA
Inline Filter	Operation	Accuracy		QA II	AQDA
Station Temperature	Operation	Accuracy		QA II	AQDA

*Should be 20 meters from general dripline. For individual trees that protrude above the height of the probe by 5 meters or more, the sampler must be at least 10 meters from the dripline.

**Acceptable distance from traffic related to volume of traffic and scale of monitoring (see Table 3; 40 CFR 58, Appendix E).

Rule E#.# - Rule found in 40 CFR 58, Appendix E, Section #.#; QA II - Rule found in ARB QA Manual Volume II.

All blank spaces on table are not applicable.

AIR MONITORING SITING CRITERIA (cont'd.)

TABLE AE.1.0.6 Parameter: SO₂

Item	Impact	Effect	U.S. EPA Status	Rule	Action
Ground Cover	Possible contamination	Representativeness	Must	E3.1	AQDA
Height	Spatial regime sampled	Representativeness	Must	E3.1	AQDA
Spacing Between Samplers					
Boom Length	Spatial regime/airflow	Representativeness	Must	E3.1	AQDA
Boom Position					
Boom Orientation	Spatial regime/airflow	Representativeness	Should	E3.1	Warning**
Radiation Shield					
Obstacles	Spatial regime/airflow	Representativeness	Must	E3.2	AQDA
Tree Dripline	Destructive interference	Accuracy	Should/Must*	E3.3	AQDA
Wall, Parapets, Etc.	Spatial regime/airflow	Representativeness	Must	E3.2	AQDA
Air Flow Arc	Spatial regime/airflow	Representativeness	Must	E3.2	AQDA
Local Sources	Possible contamination	Representativeness	Should	E3.2	Warning**
Flues	Possible contamination	Representativeness	Should	E3.2	Warning**
Traffic					
Probe Material	Destructive interference	Accuracy	Must	E9	AQDA
Probe Residence Time	Destructive interference	Accuracy	Must	E9 & QA II	AQDA
Inline Filter	Operation	Accuracy		QA II	AQDA
Station Temperature	Operation	Accuracy		QA II	AQDA

*Should be 20 meters from general dripline of trees, must be 10 meters from dripline if tree is considered to be an obstacle.

**All warnings are verbal at this time.

Rule E#.# - Rule found in 40 CFR 58, Appendix E, Section #.#; QA II - Rule found in ARB QA Manual Volume II.

All blank spaces on table are not applicable.

AIR MONITORING SITING CRITERIA (cont'd.)

TABLE AE.1.0.7 Parameter: H₂S

Item	Impact	Effect	U.S. EPA Status	Rule	Action
Ground Cover	Possible contamination	Representativeness			Warning*
Height	Spatial regime sampled	Representativeness			Warning*
Spacing Between Samplers					
Boom Length	Spatial regime/airflow	Representativeness			Warning*
Boom Position					
Boom Orientation	Spatial regime/airflow	Representativeness			Warning*
Radiation Shield					
Obstacles	Spatial regime/airflow	Representativeness			Warning*
Tree Dripline	Destructive interference	Accuracy			AQDA
Wall, Parapets, Etc.	Spatial regime/airflow	Representativeness			Warning*
Air Flow Arc	Spatial regime/airflow	Representativeness			Warning*
Local Sources	Possible contamination	Representativeness			Warning*
Flues	Possible contamination	Representativeness			Warning*
Traffic					
Probe Material	Destructive interference	Accuracy		E9 & QA II	AQDA
Probe Residence Time	Destructive interference	Accuracy		E9 & QA II	AQDA
Inline Filter	Operation	Accuracy		QA II	AQDA
Station Temperature	Operation	Accuracy		QA II	AQDA

*All warnings are verbal at this time.

Rule E#.# - Rule found in 40 CFR 58, Appendix E, Section #.#; QA II - Rule found in ARB QA Manual Volume II.

All blank spaces on table are not applicable.

AIR MONITORING SITING CRITERIA (cont'd.)

TABLE AE.1.0.8 Parameter: CH₄, THC, NMHC, PAMS

Item	Impact	Effect	U.S. EPA Status	Rule	Action
Ground Cover					
Height	Spatial regime sampled	Representativeness	Must	E10.1 & PAMS	AQDA
Spacing Between Samplers					
Boom Length	Spatial regime/airflow	Representativeness	Must	E10.1 & PAMS	AQDA
Boom Position					
Boom Orientation	Spatial regime/airflow	Representativeness	Must	E10.2 & PAMS	AQDA
Radiation Shield					
Obstacles	Spatial regime/airflow	Representativeness	Must	E10.2 & PAMS	AQDA
Tree Dripline	Destructive interference	Accuracy	Should/Must*	E10.4 & PAMS	AQDA
Wall, Parapets, Etc.					
Air Flow Arc	Spatial regime/airflow	Representativeness	Must	E10.2 & PAMS	AQDA
Local Sources	Contamination/Interference	Representativeness	Must	E10.3 & PAMS	AQDA
Flues	(Considered obstacles)				
Traffic	Contamination/Interference**	Representativeness	Must	E10.3 & PAMS	AQDA
Probe Material	Destructive interference	Accuracy		E9 & QA II	AQDA
Probe Residence Time	Destructive interference	Accuracy		E9 & QA II	AQDA
Inline Filter	Operation	Accuracy		QA II	AQDA
Station Temperature	Operation	Accuracy		QA II	AQDA

*Should be 20 meters from general dripline of trees, must be 10 meters from dripline in direction of urban core or other areas of maximum ozone precursors in the direction of the predominant winds.

**Acceptable distance from traffic is related to the volume of traffic and scale of monitoring (see Table 2.2; PAMS).

Rule PAMS - Rule found in Photochemical Assessment Monitoring Stations Guidelines, Section 2.3.3;

QA II – Rule found in QA Manual Volume II.

Rule E#.# - Rule found in 40 CFR 58, Appendix E, Section #.#.

All blank spaces on table are not applicable.

AIR MONITORING SITING CRITERIA (cont'd.)

TABLE AE.1.0.9 Parameter: Toxics (gaseous; XonTech 910, 910A)

Item	Impact	Effect	U.S. EPA Status	Rule	Action
Ground Cover					
Height	Spatial regime sampled	Representativeness		QA II	Warning*
Spacing Between Samplers					
Boom Length					
Boom Position					
Boom Orientation					
Radiation Shield					
Obstacles	Interference/Contamination	Accuracy		QA II	AQDA
Tree Dripline	(Considered obstacles)	Accuracy		QA II	AQDA
Wall, Parapets, Etc.	Spatial regime sampled	Representativeness		QA II	Warning*
Air Flow Arc	Spatial regime sampled	Representativeness		QA II	Warning*
Local Sources	Possible contamination	Representativeness		QA II	Warning*
Flues	Possible contamination	Representativeness		QA II	Warning*
Traffic	Possible contamination	Representativeness		QA II	Warning*
Probe Material	Interference	Accuracy		QA II	AQDA
Probe Residence Time	Interference	Accuracy		QA II	AQDA
Inline Filter	Operation	Operation		QA II	Warning*
Station Temperature	Operation	Accuracy		QA II	AQDA

*All warnings are verbal at this time.

QA II – Rule found in ARB QA Manual Volume II.

All blank spaces on table are not applicable.

AIR MONITORING SITING CRITERIA (cont'd.)

TABLE AE.1.0.10 Parameter: Toxics (particulate XonTech 920)

Item	Impact	Effect	U.S. EPA Status	Rule	Action
Ground Cover	Possible contamination	Representativeness		QA II	Warning*
Height	Spatial regime sampled	Representativeness		QA II	Warning*
Spacing Between Samplers	Spatial regime and interference	Accuracy		QA II	AQDA
Boom Length					
Boom Position					
Boom Orientation					
Radiation Shield					
Obstacles	Spatial regime /airflow	Representativeness		QA II	Warning*
Tree Dripline	Destructive interference	Accuracy		QA II	AQDA
Wall, Parapets, Etc.	Spatial regime/airflow	Representativeness		QA II	Warning*
Air Flow Arc	Spatial regime/airflow	Representativeness		QA II	Warning*
Local Sources	Possible contamination	Representativeness		QA II	Warning*
Flues	Possible contamination	Representativeness		QA II	Warning*
Traffic	Possible contamination	Representativeness		QA II	Warning*
Probe Material					
Probe Residence Time					
Inline Filter					
Station Temperature					

*All warnings are verbal at this time.

QA II – Rule found in ARB QA Manual Volume II.

All blank spaces on table are not applicable.

AIR MONITORING SITING CRITERIA (cont'd.)

TABLE AE.1.0.11 Parameter: Temperature and Relative Humidity

Item	Impact	Effect	U.S. EPA Status	Rule	Action
Ground Cover	Interference	Accuracy	Must	Vol. IV, QA II	AQDA
Height	Spatial regime sampled	Representativeness	Should	Vol. IV, QA II	Warning*
Spacing Between Samplers					
Boom Length	Interference	Accuracy	Must	Vol. IV, QA II	AQDA
Boom Position	Interference	Accuracy	Should	Vol. IV, QA II	AQDA
Boom Orientation	Interference	Accuracy	Should	Vol. IV, QA II	AQDA
Radiation Shield	Interference	Accuracy	Should	Vol. IV, QA II	AQDA
Obstacles	Spatial regime sampled	Representativeness	Should	Vol. IV, QA II	Warning*
Tree Dripline	(Considered obstacles)				
Wall, Parapets, Etc.	(Considered obstacles)				
Air Flow Arc	(Considered obstacles)				
Local Sources	Interference	Representativeness		Vol. IV, QA II	Warning*
Flues	Interference	Representativeness		Vol. IV, QA II	Warning*
Traffic					
Probe Material					
Probe Residence Time					
Inline Filter					
Station Temperature					

* All warnings are verbal at this time.

QA II – Rule found in ARB QA Manual Volume II.

Vol. IV – Rule found in the U.S. EPA Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV.

All blank spaces on table are not applicable.

AIR MONITORING SITING CRITERIA (cont'd.)

TABLE AE.1.0.12 Parameter: Wind Speed and Direction

Item	Impact	Effect	U.S. EPA Status	Rule	Action
Ground Cover	*				
Height	Spatial regime sampled	Representativeness	Should	PSD, Vol. IV, QA II	Warning**
Spacing Between Samplers					
Boom Length	Interference	Accuracy	Should	PSD, Vol. IV, QA II	AQDA
Boom Position	Interference	Accuracy	Should	PSD, Vol. IV, QA II	AQDA
Boom Orientation	Interference	Accuracy	Should	PSD, Vol. IV, QA II	AQDA
Radiation Shield					AQDA
Obstacles	Interference	Accuracy	Should	PSD, Vol. IV, QA II	AQDA
Tree Dripline	(Considered obstacles)				
Wall, Parapets, Etc.	(Considered obstacles)				
Air Flow Arc	Interference	Accuracy	Should	QA II	AQDA
Local Sources					
Flues					
Traffic					
Probe Material					
Probe Residence Time					
Inline Filter					
Station Temperature					

*Avoid complex terrain.

**All warnings are verbal at this time.

PSD - Rule found in the U.S. EPA Ambient Monitoring Guidelines for Prevention of Significant Deterioration.

Vol. IV -Rule found in the U.S. EPA Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV.

QA II -Rule found in the ARB QA Manual Volume II.

All blank spaces on table are not applicable.

AIR MONITORING SITING CRITERIA (cont'd.)

TABLE AE.1.0.13 Parameter: Solar Radiation

Item	Impact	Effect	U.S. EPA Status	Rule	Action
Ground Cover					
Height					
Spacing Between Samplers					
Boom Length					
Boom Position					
Boom Orientation					
Radiation Shield					
Obstacles	Interference	Representativeness	Should	Vol. IV, QA II	Warning**
Tree Dripline					
Wall, Parapets, Etc.	(Considered obstacles)				
Air Flow Arc					
Local Sources*	Interference	Representativeness	Should	Vol. IV, QA II	Warning**
Flues					
Traffic					
Probe Material					
Probe Residence Time					
Inline Filter					
Station Temperature					

*Light colored walls, reflective surfaces, lights.

**All warnings are verbal at this time.

Vol. IV – Rule found in U.S. EPA Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV.

QA II – Rule found in the ARB QA Manual Volume II.

All blank spaces on table are not applicable.

AE.1.1 WAIVER OPTIONS

A waiver of 40 CFR 58, Appendix E criteria may be requested from U.S. EPA, Region IX by ARB; however, U.S. EPA will not lightly grant waivers. Requests for a waiver must be very well documented. They must emphasize why the criteria cannot be met and demonstrate that the data are representative of monitoring objectives. Cost benefits, historical trends, etc., can be weighed as factors, but cannot be the sole reason for the waiver.

U.S. EPA evaluates each request, taking into account the effect the deviation will have on the data, especially to the pollutants of primary concern at a monitoring site. For example, if a siting factor for particulate matter is not met, but the primary purpose of the site is to monitor SO₂ concentrations, U.S. EPA will be more amenable to a waiver of the particulate matter siting criterion. U.S. EPA will also consider the impact of wind direction on pollutant concentrations when considering a waiver. A site must be free of impairments in the windward direction of pollutant sources.

U.S. EPA tends to be more lenient about approving a waiver if a pollutant concentration is consistently well above or well below the ambient air quality standards. After a site is issued a waiver, the waiver will be reevaluated if the concentrations begin to be close to the standard and could be a factor in attainment/non-attainment designations.

AE.1.2 IMPLEMENTATION

QAS carefully considers whether to accept non-representative data or to delete data. An AQDA is issued for not meeting "must meet" criteria and a warning for not meeting "should meet" criteria. Any siting conditions adversely influencing the accuracy of the data will result in an AQDA. If a siting factor only impacts representativeness, it results in a warning, rather than an AQDA, unless it is a U.S. EPA "must meet" item. The attached tables delineate the site survey items, their potential impact and effect, whether it is a U.S. EPA "must meet" or "should meet" item, and whether noncompliance results in an AQDA or a warning.

QAS issues AQDAs or warnings to correct all siting deficiencies; however, QAS does not want to disrupt monitoring projects unnecessarily in order to correct minor siting criteria. Any corrective action taken should be coordinated with the appropriate air monitoring section. If the corrective action entails relocation or reclassification of the station, it should be coordinated with ARB's Planning and Technical Support Division. Copies of the Site Survey are forwarded to the air monitoring sections.

AE.1.2.1 SITE REPORTS

The siting information for each site is entered directly into the audit program and printed out as part of the audit report. During each site visit the criteria are reviewed and updated as necessary. The information is evaluated and discussed with the site operator. If necessary, an AQDA or warning is issued. If information is added or amended to the site report, the items entered are noted under action items.

AE.1.2.2 SITE REVIEWS

A site review consists of field review and verification of siting conditions. These data are entered, confirmed, or updated in the ARB Site Survey Report (Figure AE.1.2.1) as part of the performance audit program. If there is no site survey in the computer database, the site review will entail collecting and entering all information and measurements about a site. If a partial site survey is available (for example, data entered from the site report), the site review will entail review and confirmation of existing data, and augmentation with the remaining required data. Any discrepancies in the information from the site reports will be noted in the "Action Items" section of the Site Survey Report. Such discrepancies will be investigated to establish the correct information. If necessary, the site operator will be requested to submit an amended site report.

If there is a complete site survey, the information and measurements will be reviewed and confirmed for continued accuracy. Any changes or discrepancies will be noted on the Site Survey Report in the "Action Items" section. Discrepancies will be evaluated and an AQDA or warning issued, if necessary.

AE.1.2.3 AQDA/WARNING ISSUANCE

If necessary, AQDAs and warnings are issued for deficiencies.. If a siting criteria deficiency is found, the deficiency will be discussed with the site operator and the operator will be informed whether the deficiency is an AQDA or warning item.. Warning items are only verbal. Data will not be accepted from a new station that does not meet siting criteria.

Site Survey Report

Siting Information

Site Name: New Site	Audit Date: 2007-01-26	ARB Number: 33333	AIRS Number: None
Address:	Latitude: ° ' "	Longitude: ° ' "	Elevation (m):
	Auditors: Don Fitzell	Site Technician:	Site Phone:
Operating Agency:		Site Report: Yes	Site Photos: No

General Siting Conditions

Station Temperature Controlled: Yes Recorded: Yes Inside Temp: 0 Degrees Celsius	Traffic Description: Distance: 0 meters Count (Veh/Day): 0	Topography Site: Region:	Predominant Wind Direction: Arc Air Flow (Deg): 0 Degrees
		QA Manual Approved: Yes Agency:	Probe Clean: No
			Manifold Clean: No
Meteorology Located With Instruments: Yes Shadowing: Yes Boom Orientation (Deg): Temp(Motor/Natural): Motor	Non-vehicular Local Sources Description: Distance: 0 meters Direction:	Urbanization:	Cleaning Schedule: Autocalibrator Type:
		Ground Cover:	Site Survey Complete: No
		Logbook Up To Date: No	

Action Items

Comments

Site Survey Report (Cont.)

Monitor Type	Carbon Monoxide	Sulfur Dioxide	Nitrogen Dioxide	Ozone
Manufacturer/Model				
Serial Number	Not Available	Not Available	Not Available	Not Available
POC				
Data For Record?	No	No	No	No
Purpose				
Objective				
Scale	-	-	-	-
Height Above Ground				
Height Above Platform				
Sampler Spacing				
Current Manual Available?	No	No	No	No
Instrument Log Up-to-date?	No	No	No	No
In-line Filter Change Date	Not Available	Not Available	Not Available	Not Available
Cal. Gas Cert. Date	Not Available	Not Available	Not Available	Not Available
Calibration Current?	No	No	No	No
Calibration Date	Not Available	Not Available	Not Available	Not Available
Cal. Equipment Cert. Date	Not Available	Not Available	Not Available	Not Available
Obstacle Description	None	None	None	None
Distance to Obstacle	-	-	-	-
Height Above Inlet	-	-	-	-
Distance to Walls, etc.	-	-	-	-
Distance to Dripline	-	-	-	-
Dominant Influence				
Residence Time (sec)				

Monitor Type	Wind Direction	Horizontal Wind Speed
Manufacturer/Model	QUALIMETRICS 2020	MET ONE 014
Serial Number	Not Available	Not Available
POC		
Data For Record?	No	No
Purpose		
Objective		
Scale		
Height Above Ground		
Height Above Platform		
Sampler Spacing		
Current Manual Available?	No	No
Instrument Log Up-to-date?	No	No
In-line Filter Change Date		
Cal. Gas Cert. Date		
Calibration Current?	No	No
Calibration Date	Not Available	Not Available
Cal. Equipment Cert. Date		Not Available
Obstacle Description	None	None
Distance to Obstacle	-	-
Height Above Inlet	-	-
Distance to Walls, etc.		
Distance to Dripline		
Dominant Influence		
Residence Time (sec)		

Figure AE.1.2.1
 ARB Site Survey Report (cont.)

AE.1.2.4 AQDA RESOLUTION

The action necessary to resolve a siting criteria AQDA can be as simple as trimming trees, raising the inlet height, or increasing the probe flow rate; or as extensive as complete renovation or relocation of the monitoring station. In many cases, an amended site report is required.

An amended site report serves as documentation of corrective action taken to resolve a siting criteria AQDA. As with all information from site reports, the amended site report data needs to be checked by site review during the next audit or reaudit.

QAS has not been deleting data for siting deficiencies unless the accuracy of the data is affected. In some cases, such as in separation distance from traffic, the station operator may opt to change the category or scale description of the station to meet the requirements. Whether this is allowed under the State Implementation Plan (SIP) or other monitoring plans must be determined by the agency operating the site before requesting the change. Alternately, a waiver could be applied for under 40 CFR 58, Appendix E, Section 11.

AE.1.2.5 WARNING RESOLUTION

Warnings are issued for items that do not significantly effect data quality; therefore, they are considered recommendations that will improve data quality, but no further action is taken.