**Critical Criteria – CO**

| **Requirement (CO)** | **Frequency** | **Acceptable Range** | **Review Comments** |
| --- | --- | --- | --- |

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| --- | --- | --- | --- |
| **Sampler/Monitor** | *NA* | *meets requirements listed in FRM/FEM designation* |  |
| **One-Point QC Check****Single analyzer** | *every 14 days* | *< ± 10.1% (percent difference)* |  |
| **Zero/Span Check** | *every 14 days* | *zero drift < ± 0.41 ppm (24-hr),**< ± 0.61 ppm (24hr-14 day).**Span drift < ± 10.1%* |  |

**Operational Criteria – CO**

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| **Requirement (CO)** | **Frequency** | **Acceptable Range** | **Review Comments** |
| **Shelter Temperature Range** | *daily**(hourly values)* | *20 to 30° C (hourly avg.)**or**per manufacturers specification if designated to a wider temp. range* |  |
| **Shelter Temperature Control** | *daily (hourly values)* | *< 2.1°C SD over 24 hours* |  |
| **Shelter Temperature Device Check** | *every 182 days and 2/calendar year* | *< ± 2.1° C of standard* |  |
| **Annual Performance Evaluation Single Analyzer (SLAMS/NCORE)** | *every site every 365 days and 1/calendar year* | *percent difference of audit levels 3-10 < ±15.1%, Audit levels 1 & 2 < ± 0.031 ppm difference or < ±15.1%* |  |
| **Annual Performance Evaluation Single Analyzer (PSD)** | *Quarterly* | *percent difference of audit levels 3-10 < ±15.1%, Audit levels 1 & 2 < ± 0.031 ppm difference or < ±15.1%* |  |
| **Federal Audit (NPAP)** **(SLAMS/NCORE)** | *20% of sites audited in a calendar year* | *audit levels 1 & 2 < ± 0.031 ppm difference, all other levels percent difference < ±15.1%* |  |
| **Verification / Calibration** | *upon receipt/adjustment/repair/ installation/relocation.**Every 182 days and 2/calendar year if manual biweekly zero/span**every 365 days and 1/calendar year if continuous daily zero/span checks* | *all points < ± 2.1% or ≤ ± 0.03 ppm difference of best-fit straight line, whichever is greater,**And Slope 1 ± .05* |  |
| **Gaseous Standards** | *all gas cylinders* | *NIST Traceable**(e.g. EPA Protocol Gas)* |  |
|  **Zero Air / Zero Air Check** | *every 365 days and 1/calendar year* | *< 0.1 ppm CO* |  |
| **Gas Dilution Systems** | *every 365 days and 1/calendar year or after failure of 1-point QC check or performance evaluation* | *accuracy < ± 2.1%* |  |
| **Detection (FEM/FRMs)** |  |  |  |
| **Noise** | *every 365 days and 1/calendar year* | *≤ 0.2 ppm (standard range)**≤ 0.1 ppm (lower range)* |  |
| **Lower detectable level** | *every 365 days and 1/calendar year* | *≤ 0.4 ppm (standard range)**≤ 0.2 ppm (lower range)* |  |

**SYSTEMATIC CRITERIA – CO**

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| **Requirement (CO)** | **Frequency** | **Acceptable Range** | **Review Comments** |
| **Standard Reporting Units** | *all data* | *Ppm (final units in AQS)* |  |
| **Rounding convention for data reported to AQS** | *all data* | *1 decimal place* |  |
| **Completeness (SLAMS/NCORE)** | *8-hour standard* | *75% of the hour**75% of hourly averages for the 8-hour period* |  |
| **Completeness (PSD)** | *1-hour standard**8-hour standard* | *75% of the hour**75% of hourly averages for the 8-hour period**Quarter – 80% of the complete days**Year – 4 consecutive quarters* |  |
| **Sample Residence Time Verification** | *every 365 days and 1/calendar year* | *≤ 20 seconds* |  |
| **Sample Probe, Inlet, Sampling train** | *all sites* | *Borosilicate glass,(e.g. Pyrex®) or Teflon® (FEP/TFE)* |  |
| **Pneumatic fittings** | *all tubing connections/valves* | *Teflon® (FEP/TFE), 316 stainless steel or brass* |  |
| **Gas Regulators** | *all gas cylinders* | *2-stage brass regulator* |  |
| **Data Acquisition Systems** | *digital or analog recording devices* | *collection of continuous data**(minimum of 1-minute values)* |  |
| **Siting** | *every 365 days and 1/calendar year* | *meets siting criteria or waiver documented (PSD per approved QAPP)* |  |
| **Precision (using 1-point QC Checks) (SLAMS/NCORE)** | *calculated annually and as appropriate for design value estimates* | *90% CL CV < 10.1%* |  |
| **Precision (using 1-point QC Checks) (PSD)** | *calculated quarterly* | *90% CL CV < 10.1%* |  |
| **Bias (using 1-point QC Checks) (SLAMS/NCORE)** | *calculated annually and as appropriate for design value estimates* | *95% CL < ±10.1%* |  |
| **Bias (using 1-point QC Checks) (PSD)** | *calculated quarterly* | *95% CL < ±10.1%* |  |
| **Technical Systems Audits****(SLAMS/NCORE)** | *1 / 3 years* | *Confirmation of adherence to FRM/FEM, SOPs, and QAPP or documented waiver* |  |
| **Technical Systems Audits****(PSD)** | *annually**(within 1 month of startup and annually thereafter)* | *Confirmation of adherence to FRM/FEM, SOPs, and QAPP or documented waiver* |  |
| **Annual PE Primary QA organization (PQAQ) Evaluation** | *1 / year* | *95% of audit percent difference fall within the 1-point QC check 95% probability intervals at PQAQ level of aggregation* |  |