

O₃ Ambient Monitoring Data Review Table

| Requirement (O ₃) | Frequency | Acceptable Range | Review Comments |
|--|---|---|-----------------|
| CRITICAL CRITERIA – Ozone | | | |
| Monitor | NA | <i>Meets requirements listed in FRM/FEM designation</i> | |
| One-Point QC Check Single analyzer | <i>Every 14 days</i> | <i>< ± 7.1% (percent difference) or < ± 1.5 ppb difference whichever is greater</i> | |
| Zero/Span Check | <i>Every 14 days</i> | <i>Zero drift (24-hr) < ± 3.1 ppb Zero drift (>24hr-14 day) < ± 5.1 ppb Span drift < ± 7.1%</i> | |
| OPERATIONAL CRITERIA – Ozone | | | |
| Shelter Temperature Range | <i>Daily (hourly values)</i> | <i>20 to 30° C (hourly avg.) or per manufacturers specification if designated to a wider temp. range</i> | |
| Shelter Temperature Control | <i>Daily (hourly values)</i> | <i>< 2.1° C SD over 24 hours</i> | |
| Shelter Temperature Device Check | <i>Every 182 days and 2/calendar year</i> | <i>< ± 2.1° C of standard</i> | |
| Annual Performance Evaluation Single Analyzer (SLAMS/NCORE) | <i>Every site every 365 days and 1/calendar year within period of monitor operation</i> | <i>Percent difference of audit levels 3-10 < ±15.1%, Audit levels 1 & 2 < ± 1.5 ppb difference or < ±15.1%</i> | |
| Annual Performance Evaluation Single Analyzer (PSD) | <i>Quarterly</i> | <i>Percent difference of audit levels 3-10 < ±15.1%, Audit levels 1 & 2 < ± 1.5 ppb difference or < ±15.1%</i> | |
| Federal Audit (NPAP) (SLAMS/NCORE) | <i>20% of sites audited in calendar year</i> | <i>Audit levels 1 & 2 < ± 1.5 ppb difference, all other levels percent difference < ±10.1%</i> | |
| Verification / Calibration | <i>Upon receipt/adjustment/repair/installation/moving</i> | <i>All points < ± 2.1% or ≤ ±1.5 ppb difference of best-fit</i> | |

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| | <i>and/or recalibration of higher level transfer standard Every 182 days and 2/calendar year if manual biweekly zero/span checks, or Every 365 days and 1/calendar year if continuous daily zero/span checks</i> | <i>straight line, whichever is greater, and Slope $1 \pm .05$</i> | |
| Zero Air / Zero Air Check | <i>Every 365 days and 1/calendar year</i> | <i>Concentration below LDL</i> | |
| Ozone Level 2 Standard | | | |
| <i>Certification/recertification to Standard Reference Photometer (Level 1)</i> | <i>Every 365 days and 1/calendar year</i> | <i>Single point difference $< \pm 3.1\%$</i> | |
| <i>Level 2 and greater transfer standard precision</i> | <i>Every 365 days and 1/calendar year</i> | <i>Standard Deviation less than 0.005 ppm or 3.0% whichever is greater</i> | |
| <i>(if recertified via a transfer standard)</i> | <i>Every 365 days and 1/calendar year</i> | <i>Regression slope = 1.00 ± 0.03 and two intercepts are 0 ± 3 ppb</i> | |
| Ozone Transfer standard (Level 3 and greater) | | | |
| Qualification | <i>Upon receipt of transfer standard</i> | <i>$< \pm 4.1\%$ or $< \pm 4$ ppb (whichever is greater)</i> | |
| Certification | <i>After qualification and upon receipt/adjustment/repair</i> | <i>RSD of six slopes $\leq 3.7\%$ Std. Dev. of 6 intercepts ≤ 1.5</i> | |
| Recertification to higher level standard | <i>Beginning and end of O₃ season or every 182 days and 2/calendar year whichever less</i> | <i>New slope = ± 0.05 of previous and RSD of six slopes $\leq 3.7\%$ Std. Dev. of 6 intercepts 1.5</i> | |
| Detection (FEM/FRMs) | | | |
| Noise | <i>Every 365 days and 1/calendar year</i> | <i>≤ 0.0025 ppm (standard range) ≤ 0.001 ppm (lower range)</i> | |
| Lower detectable level | <i>Every 365 days and 1/calendar year</i> | <i>≤ 0.005 ppm (standard range) ≤ 0.002 ppm (lower range)</i> | |
| SYSTEMATIC CRITERIA – O₃ | | | |
| Standard Reporting Units | <i>All data</i> | <i>ppm (final units in AQS)</i> | |
| Rounding convention for data reported to AQS | <i>All data</i> | <i>3 places after decimal with digits to right truncated</i> | |

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| Completeness (SLAMS/NCORE) | <i>3-year Comparison</i> | $\geq 90\%$ (avg.) daily max available in ozone season with min of 75% in any one year | |
| | <i>8-hour Average</i> | \geq if at least 6 of the hourly concentrations for the 8-hour period are available | |
| | <i>Valid Daily Max</i> | \geq if valid 8-hour averages are available for at least 13 of the 17 consecutive 8-hour periods starting from 7:00 a.m. to 11:00 p.m. | |
| Completeness (PSD) | <i>1-year</i> | $\geq 80\%$ of each year | |
| | <i>8-hour Average</i> | \geq if at least 6 of the hourly concentrations for the 8-hour period are available | |
| | <i>Valid Daily Max</i> | $\geq 75\%$ of the 24, 8-hour averages (18 of 24, 8-hour averages) | |
| Sample Residence Time Verification | <i>Every 365 days and 1/calendar year</i> | ≤ 20 seconds | |
| Sample Probe, Inlet, Sampling train | <i>All sites</i> | Borosilicate glass, (e.g. Pyrex®) or Teflon® (FEP/TFE) | |
| Data Acquisition Systems | <i>Digital or analog recording devices</i> | Collection of continuous data (minimum of 1-minute values) | |
| System Clock Verification | <i>1 / month</i> | $\leq \pm 1$ minute | |
| Siting | <i>Every 365 days and 1/calendar year</i> | Meeting siting criteria or waiver documented, (PSD per approved QAPP) | |
| EPA Standard Ozone Reference Photometer (SRP) Recertification (Level 1) | <i>Every 365 days and 1/calendar year</i> | Regression slope = 1.00 ± 0.01 and intercept < 0.003 ppm | |
| Precision (using 1-point QC Checks) (SLAMS/NCORE) | <i>Calculated annually and as appropriate for design value estimates</i> | 90% CL CV $< 7.1\%$ | |
| Precision (using 1-point QC Checks) (PSD) | <i>Calculated Quarterly</i> | 90% CL CV $< 7.1\%$ | |

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| Bias (using 1-point QC Checks) (SLAMS/NCore) | <i>Calculated annually and as appropriate for design value estimates</i> | 95% CL < ± 7.1% | |
| Bias (using 1-point QC Checks) (PSD) | <i>Calculated Quarterly</i> | 95% CL < ± 7.1% | |
| Technical Systems Audits (SLAMS/NCore) | <i>1 / 3 years</i> | <i>Confirmation of adherence to FRM/FEM, SOPs, and QAPP or documented waiver</i> | |
| Technical Systems Audits (PSD) | <i>Annually (within 1 month of startup and annually thereafter)</i> | <i>Confirmation of adherence to FRM/FEM, SOPs, and QAPP or documented waiver</i> | |
| Annual PE Primary QA Organization (PQAO) Evaluation | 1 / year | 95% of audit percent difference fall within the 1-point QC check 95% probability intervals at PQAO level of aggregation | |