SACRAMENTO METROPOLITAN
AIR QUALITY MANAGEMENT DISTRICT

CLIENT # S061
REPORT # 23-518

SUBMITTED BY:
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Case Narrative

Date: November 16, 2023

General Information

Client:	Sacramento Metropolitan Air Quality Management District
Client Number:	S061
Report Number:	23-518
Sample Description:	47mm Teflon filters, 47mm pre-fired quartz filters
Sample Numbers:	23-T2179 – 23-T2181, 23-T2354, 23-T2375, 23-U438 – 23-U442

Analysis

Analytes:	Particulate Mass, XRF Metals (Na – Pb), Cl, NO_3, SO_4, NH_4, K, Organic Carbon, Elemental Carbon
Analytical Protocols:	Gravimetry (PM_{10}): 40 CFR 50 Appendix J (8/7/87 version) X-Ray Fluorescence: EPA IO-3.3 (June 1999 version) Anions - EPA 300.0 (revision 2.1) Cations - ASTM D6919-17 OC/EC: Modified IMPROVE-A (revision 1, 1/25/16)
Analytical Notes:	No problems were encountered during the analyses. Results have **not** been blank corrected.
QA/QC Review:	All the data have been reviewed by the analysts performing the analyses and the project manager. All the quality control and sample-specific information in this package is complete and meets or exceeds t. minimum requirements for acceptability.
Comments:	If you have any questions or concerns regarding this analysis, please feel free to contact the project manager.
Disclaimer:	This report shall not be reproduced, except in full, without the written approval of the laboratory. The results only represent that of the samples as received into the laboratory.

Paul Duda 11/16/23

Project Manager Date
Paul Duda

Lab ID: 23-T2179
Filter ID: P7464185
Client ID: Canister SMAQMD 01_03
Site: 617Fern
Sample Date: 9/15/23
Filter Lot #: 7118468
Volume: 9.700 ± 0.485 m³
Deposit Area: 11.3 cm²
Size Fraction: PM2.5

Analyte	µg/filter			percent			µg/m³		
Gravimetry									
Net Mass	53.	±	10.				5.464	±	1.067
XRF									
* Na	0.5266	±	0.3096	0.9935	±	0.6135	0.0543	±	0.0320
* Mg	0.0000	±	0.0588	0.0000	±	0.1109	0.0000	±	0.0061
* Al	0.1582	±	0.0791	0.2985	±	0.1595	0.0163	±	0.0082
Si	0.5763	±	0.0328	1.087	±	0.2143	0.0594	±	0.0045
* P	0.0079	±	0.0136	0.0149	±	0.0257	0.0008	±	0.0014
S	2.253	±	0.1186	4.251	±	0.8328	0.2323	±	0.0169
* Cl	0.0237	±	0.0362	0.0448	±	0.0687	0.0024	±	0.0037
K	0.2271	±	0.0192	0.4285	±	0.0886	0.0234	±	0.0023
Ca	0.1040	±	0.0147	0.1962	±	0.0462	0.0107	±	0.0016
* Sc	0.0000	±	0.0113	0.0000	±	0.0213	0.0000	±	0.0012
* Ti	0.0203	±	0.0090	0.0384	±	0.0185	0.0021	±	0.0009
* V	0.0000	±	0.0102	0.0000	±	0.0192	0.0000	±	0.0010
* Cr	0.0113	±	0.0090	0.0213	±	0.0175	0.0012	±	0.0009
* Mn	0.0056	±	0.0090	0.0107	±	0.0172	0.0006	±	0.0009
Fe	0.2000	±	0.0136	0.3774	±	0.0757	0.0206	±	0.0017
* Co	0.0000	±	0.0079	0.0000	±	0.0149	0.0000	±	0.0008
* Ni	0.0000	±	0.0068	0.0000	±	0.0128	0.0000	±	0.0007
* Cu	0.0000	±	0.0102	0.0000	±	0.0192	0.0000	±	0.0010
* Zn	0.0124	±	0.0079	0.0235	±	0.0156	0.0013	±	0.0008
* Ga	0.0000	±	0.0068	0.0000	±	0.0128	0.0000	±	0.0007
* As	0.0000	±	0.0102	0.0000	±	0.0192	0.0000	±	0.0010
* Se	0.0056	±	0.0056	0.0107	±	0.0108	0.0006	±	0.0006
* Br	0.0136	±	0.0079	0.0256	±	0.0157	0.0014	±	0.0008
* Rb	0.0000	±	0.0079	0.0000	±	0.0149	0.0000	±	0.0008
* Sr	0.0068	±	0.0079	0.0128	±	0.0151	0.0007	±	0.0008
* Y	0.0000	±	0.0158	0.0000	±	0.0298	0.0000	±	0.0016
* Zr	0.0011	±	0.0226	0.0021	±	0.0426	0.0001	±	0.0023
* Nb	0.0000	±	0.0316	0.0000	±	0.0597	0.0000	±	0.0033
* Mo	0.0000	±	0.0384	0.0000	±	0.0725	0.0000	±	0.0040
* Ag	0.0452	±	0.0316	0.0853	±	0.0618	0.0047	±	0.0033
* Cd	0.0000	±	0.0328	0.0000	±	0.0618	0.0000	±	0.0034
* In	0.0667	±	0.0429	0.1258	±	0.0844	0.0069	±	0.0044
* Sn	0.0000	±	0.0644	0.0000	±	0.1215	0.0000	±	0.0066
* Sb	0.0407	±	0.0712	0.0768	±	0.1351	0.0042	±	0.0073
* Cs	0.0000	±	0.0147	0.0000	±	0.0277	0.0000	±	0.0015
* Ba	0.0000	±	0.0158	0.0000	±	0.0298	0.0000	±	0.0016
* La	0.0000	±	0.0158	0.0000	±	0.0298	0.0000	±	0.0016
* Ce	0.0000	±	0.0136	0.0000	±	0.0256	0.0000	±	0.0014
* Sm	0.0000	±	0.0113	0.0000	±	0.0213	0.0000	±	0.0012
* Eu	0.0000	±	0.0237	0.0000	±	0.0448	0.0000	±	0.0024
* Tb	0.0000	±	0.0203	0.0000	±	0.0384	0.0000	±	0.0021
* Hf	0.0000	±	0.0102	0.0000	±	0.0192	0.0000	±	0.0010
* Ta	0.0000	±	0.0102	0.0000	±	0.0192	0.0000	±	0.0010
* W	0.0034	±	0.0079	0.0064	±	0.0150	0.0003	±	0.0008
* Ir	0.0000	±	0.0056	0.0000	±	0.0107	0.0000	±	0.0006
* Au	0.0000	±	0.0079	0.0000	±	0.0149	0.0000	±	0.0008
* Hg	0.0056	±	0.0124	0.0107	±	0.0235	0.0006	±	0.0013
* Pb	0.0000	±	0.0079	0.0000	±	0.0149	0.0000	±	0.0008

Lab ID: 23-T2179
Client ID: Canister SMAQMD 01_03

Analyte	µg/filter		percent		µg/m³	
IC	Conc.	DL	Conc.	DL	Conc.	DL
Cl	0.130	0.100	0.2453	0.1887	0.013	0.010
NO3	0.540	0.100	1.019	0.1887	0.056	0.010
SO4	4.560	0.200	8.604	0.3774	0.470	0.021
Na	0.560	0.100	1.057	0.1887	0.058	0.010
NH4	1.930	0.100	3.642	0.1887	0.199	0.010
K	0.130	0.100	0.2453	0.1887	0.013	0.010

* - XRF Concentration is less than three times the uncertainty

Client: S061 - SMAQMD
Report Number: 23-518

Lab ID: 23-T2180
Filter ID: P7464186
Client ID: Canister SMAQMD 02_03
Site: 617Fern
Sample Date: 9/21/23
Filter Lot #: 7118468
Volume: 9.690 ± 0.484 m³
Deposit Area: 11.3 cm²
Size Fraction: PM2.5

Analyte	µg/filter			percent			µg/m³		
Gravimetry									
Net Mass	191.	±	10.				19.71	±	1.426
XRF									
Na	4.674	±	0.4204	2.447	±	0.2547	0.4823	±	0.0496
Mg	0.5503	±	0.0667	0.2881	±	0.0380	0.0568	±	0.0074
Al	0.4328	±	0.0870	0.2266	±	0.0471	0.0447	±	0.0093
Si	1.123	±	0.0599	0.5881	±	0.0439	0.1159	±	0.0085
* P	0.0170	±	0.0136	0.0089	±	0.0071	0.0017	±	0.0014
S	2.898	±	0.1514	1.518	±	0.1122	0.2991	±	0.0216
Cl	2.137	±	0.1130	1.119	±	0.0833	0.2205	±	0.0160
K	0.7797	±	0.0418	0.4082	±	0.0306	0.0805	±	0.0059
Ca	0.4057	±	0.0249	0.2124	±	0.0171	0.0419	±	0.0033
* Sc	0.0000	±	0.0124	0.0000	±	0.0065	0.0000	±	0.0013
Ti	0.0305	±	0.0102	0.0160	±	0.0054	0.0031	±	0.0011
* V	0.0000	±	0.0102	0.0000	±	0.0053	0.0000	±	0.0010
* Cr	0.0000	±	0.0090	0.0000	±	0.0047	0.0000	±	0.0009
* Mn	0.0102	±	0.0090	0.0053	±	0.0047	0.0010	±	0.0009
Fe	0.4531	±	0.0237	0.2372	±	0.0176	0.0468	±	0.0034
* Co	0.0011	±	0.0079	0.0006	±	0.0041	0.0001	±	0.0008
* Ni	0.0000	±	0.0068	0.0000	±	0.0035	0.0000	±	0.0007
* Cu	0.0023	±	0.0102	0.0012	±	0.0053	0.0002	±	0.0010
Zn	0.0305	±	0.0079	0.0160	±	0.0042	0.0031	±	0.0008
* Ga	0.0034	±	0.0068	0.0018	±	0.0036	0.0003	±	0.0007
* As	0.0034	±	0.0102	0.0018	±	0.0053	0.0003	±	0.0010
* Se	0.0034	±	0.0056	0.0018	±	0.0030	0.0003	±	0.0006
Br	0.0588	±	0.0090	0.0308	±	0.0050	0.0061	±	0.0010
* Rb	0.0011	±	0.0079	0.0006	±	0.0041	0.0001	±	0.0008
* Sr	0.0079	±	0.0079	0.0041	±	0.0041	0.0008	±	0.0008
* Y	0.0000	±	0.0158	0.0000	±	0.0083	0.0000	±	0.0016
* Zr	0.0000	±	0.0226	0.0000	±	0.0118	0.0000	±	0.0023
* Nb	0.0045	±	0.0316	0.0024	±	0.0166	0.0005	±	0.0033
* Mo	0.0000	±	0.0384	0.0000	±	0.0201	0.0000	±	0.0040
* Ag	0.0000	±	0.0316	0.0000	±	0.0166	0.0000	±	0.0033
* Cd	0.0000	±	0.0328	0.0000	±	0.0172	0.0000	±	0.0034
* In	0.1096	±	0.0429	0.0574	±	0.0227	0.0113	±	0.0045
* Sn	0.1831	±	0.0644	0.0958	±	0.0341	0.0189	±	0.0067
* Sb	0.0972	±	0.0712	0.0509	±	0.0374	0.0100	±	0.0074
* Cs	0.0000	±	0.0147	0.0000	±	0.0077	0.0000	±	0.0015
* Ba	0.0000	±	0.0158	0.0000	±	0.0083	0.0000	±	0.0016
* La	0.0000	±	0.0170	0.0000	±	0.0089	0.0000	±	0.0017
* Ce	0.0000	±	0.0136	0.0000	±	0.0071	0.0000	±	0.0014
* Sm	0.0000	±	0.0113	0.0000	±	0.0059	0.0000	±	0.0012
* Eu	0.0000	±	0.0237	0.0000	±	0.0124	0.0000	±	0.0024
* Tb	0.0000	±	0.0271	0.0000	±	0.0142	0.0000	±	0.0028
* Hf	0.0023	±	0.0102	0.0012	±	0.0053	0.0002	±	0.0010
* Ta	0.0000	±	0.0102	0.0000	±	0.0053	0.0000	±	0.0010
* W	0.0000	±	0.0068	0.0000	±	0.0035	0.0000	±	0.0007
* Ir	0.0000	±	0.0056	0.0000	±	0.0030	0.0000	±	0.0006
* Au	0.0000	±	0.0079	0.0000	±	0.0041	0.0000	±	0.0008
* Hg	0.0011	±	0.0124	0.0006	±	0.0065	0.0001	±	0.0013
* Pb	0.0023	±	0.0079	0.0012	±	0.0041	0.0002	±	0.0008

Lab ID: 23-T2180
Client ID: Canister SMAQMD 02_03

Analyte	µg/filter		percent		µg/m³	
IC	Conc.	DL	Conc.	DL	Conc.	DL
Cl	2.300	0.100	1.204	0.0524	0.237	0.010
NO3	5.120	0.100	2.681	0.0524	0.528	0.010
SO4	6.870	0.200	3.597	0.1047	0.709	0.021
Na	4.730	0.100	2.476	0.0524	0.488	0.010
NH4	2.740	0.100	1.435	0.0524	0.283	0.010
K	0.590	0.100	0.3089	0.0524	0.061	0.010

* - XRF Concentration is less than three times the uncertainty

Client: S061 - SMAQMD
Report Number: 23-518

Lab ID: 23-T2181
Filter ID: P7464187
Client ID: Canister SMAQMD 03_02
Site: 617Fern
Sample Date: 9/27/23
Filter Lot #: 7118468
Volume: 9.704 ± 0.485 m³
Deposit Area: 11.3 cm²
Size Fraction: PM2.5

Analyte	µg/filter			percent			µg/m³		
Gravimetry									
Net Mass	44.	±	10.				4.534	±	1.055
XRF									
Na	2.602	±	0.3480	5.915	±	1.560	0.2682	±	0.0383
Mg	0.4983	±	0.0622	1.133	±	0.2936	0.0514	±	0.0069
Al	0.6396	±	0.0915	1.454	±	0.3904	0.0659	±	0.0100
Si	1.599	±	0.0825	3.634	±	0.8469	0.1648	±	0.0118
* P	0.0226	±	0.0136	0.0514	±	0.0330	0.0023	±	0.0014
S	1.679	±	0.0904	3.816	±	0.8913	0.1730	±	0.0127
Cl	1.355	±	0.0768	3.079	±	0.7213	0.1396	±	0.0106
K	0.3300	±	0.0226	0.7499	±	0.1780	0.0340	±	0.0029
Ca	0.4995	±	0.0282	1.135	±	0.2659	0.0515	±	0.0039
* Sc	0.0000	±	0.0124	0.0000	±	0.0282	0.0000	±	0.0013
Ti	0.0576	±	0.0102	0.1310	±	0.0377	0.0059	±	0.0011
* V	0.0000	±	0.0102	0.0000	±	0.0231	0.0000	±	0.0010
* Cr	0.0034	±	0.0090	0.0077	±	0.0206	0.0003	±	0.0009
* Mn	0.0068	±	0.0090	0.0154	±	0.0208	0.0007	±	0.0009
Fe	0.6746	±	0.0350	1.533	±	0.3574	0.0695	±	0.0050
* Co	0.0000	±	0.0079	0.0000	±	0.0180	0.0000	±	0.0008
* Ni	0.0045	±	0.0068	0.0103	±	0.0156	0.0005	±	0.0007
* Cu	0.0011	±	0.0102	0.0026	±	0.0231	0.0001	±	0.0010
Zn	0.0294	±	0.0079	0.0668	±	0.0235	0.0030	±	0.0008
* Ga	0.0000	±	0.0068	0.0000	±	0.0154	0.0000	±	0.0007
* As	0.0124	±	0.0102	0.0282	±	0.0240	0.0013	±	0.0010
* Se	0.0000	±	0.0056	0.0000	±	0.0128	0.0000	±	0.0006
* Br	0.0192	±	0.0079	0.0437	±	0.0205	0.0020	±	0.0008
* Rb	0.0000	±	0.0079	0.0000	±	0.0180	0.0000	±	0.0008
* Sr	0.0056	±	0.0079	0.0128	±	0.0182	0.0006	±	0.0008
* Y	0.0023	±	0.0158	0.0051	±	0.0360	0.0002	±	0.0016
* Zr	0.0136	±	0.0226	0.0308	±	0.0518	0.0014	±	0.0023
* Nb	0.0000	±	0.0316	0.0000	±	0.0719	0.0000	±	0.0033
* Mo	0.0000	±	0.0384	0.0000	±	0.0873	0.0000	±	0.0040
* Ag	0.0000	±	0.0316	0.0000	±	0.0719	0.0000	±	0.0033
* Cd	0.0000	±	0.0328	0.0000	±	0.0745	0.0000	±	0.0034
* In	0.0791	±	0.0429	0.1798	±	0.1058	0.0082	±	0.0044
* Sn	0.0000	±	0.0644	0.0000	±	0.1464	0.0000	±	0.0066
* Sb	0.0000	±	0.0712	0.0000	±	0.1618	0.0000	±	0.0073
* Cs	0.0000	±	0.0147	0.0000	±	0.0334	0.0000	±	0.0015
* Ba	0.0000	±	0.0170	0.0000	±	0.0385	0.0000	±	0.0017
* La	0.0000	±	0.0170	0.0000	±	0.0385	0.0000	±	0.0017
* Ce	0.0045	±	0.0136	0.0103	±	0.0309	0.0005	±	0.0014
* Sm	0.0000	±	0.0113	0.0000	±	0.0257	0.0000	±	0.0012
* Eu	0.0000	±	0.0237	0.0000	±	0.0539	0.0000	±	0.0024
* Tb	0.0000	±	0.0305	0.0000	±	0.0693	0.0000	±	0.0031
* Hf	0.0000	±	0.0102	0.0000	±	0.0231	0.0000	±	0.0010
* Ta	0.0000	±	0.0102	0.0000	±	0.0231	0.0000	±	0.0010
* W	0.0000	±	0.0068	0.0000	±	0.0154	0.0000	±	0.0007
* Ir	0.0102	±	0.0045	0.0231	±	0.0115	0.0010	±	0.0005
* Au	0.0000	±	0.0079	0.0000	±	0.0180	0.0000	±	0.0008
* Hg	0.0045	±	0.0124	0.0103	±	0.0283	0.0005	±	0.0013
* Pb	0.0011	±	0.0079	0.0026	±	0.0180	0.0001	±	0.0008

Lab ID: 23-T2181
Client ID: Canister SMAQMD 03_02

Analyte	µg/filter		percent		µg/m³	
IC	Conc.	DL	Conc.	DL	Conc.	DL
Cl	1.560	0.100	3.545	0.2273	0.161	0.010
NO3	4.480	0.100	10.18	0.2273	0.462	0.010
SO4	2.740	0.200	6.227	0.4545	0.282	0.021
Na	2.710	0.100	6.159	0.2273	0.279	0.010
NH4	0.740	0.100	1.682	0.2273	0.076	0.010
K	0.130	0.100	0.2955	0.2273	0.013	0.010

* - XRF Concentration is less than three times the uncertainty

Client: S061 - SMAQMD
Report Number: 23-518

Lab ID: 23-T2354
Filter ID: P7464410
Client ID: Canister SMAQMD 04_03
Site: 617Fern
Sample Date: 10/ 3/23
Filter Lot #: 7118468
Volume: 9.705 ± 0.485 m³
Deposit Area: 11.3 cm²
Size Fraction: PM2.5

Analyte	µg/filter			percent			µg/m³		
Gravimetry									
Net Mass	75.	±	10.				7.728	±	1.100
XRF									
Na	1.748	±	0.3345	2.331	±	0.5436	0.1801	±	0.0356
Mg	0.4091	±	0.0622	0.5454	±	0.1103	0.0421	±	0.0067
Al	1.173	±	0.1096	1.564	±	0.2546	0.1209	±	0.0128
Si	3.348	±	0.1695	4.464	±	0.6367	0.3450	±	0.0245
P	0.0599	±	0.0147	0.0799	±	0.0223	0.0062	±	0.0015
S	2.920	±	0.1514	3.893	±	0.5570	0.3009	±	0.0217
* Cl	0.0723	±	0.0373	0.0964	±	0.0514	0.0075	±	0.0039
K	0.8498	±	0.0452	1.133	±	0.1626	0.0876	±	0.0064
Ca	0.9695	±	0.0508	1.293	±	0.1852	0.0999	±	0.0072
* Sc	0.0000	±	0.0124	0.0000	±	0.0166	0.0000	±	0.0013
Ti	0.0836	±	0.0102	0.1115	±	0.0201	0.0086	±	0.0011
* V	0.0000	±	0.0102	0.0000	±	0.0136	0.0000	±	0.0010
* Cr	0.0226	±	0.0090	0.0301	±	0.0127	0.0023	±	0.0009
* Mn	0.0249	±	0.0090	0.0331	±	0.0128	0.0026	±	0.0009
Fe	1.397	±	0.0701	1.862	±	0.2653	0.1439	±	0.0102
* Co	0.0000	±	0.0079	0.0000	±	0.0105	0.0000	±	0.0008
* Ni	0.0000	±	0.0068	0.0000	±	0.0090	0.0000	±	0.0007
* Cu	0.0147	±	0.0102	0.0196	±	0.0138	0.0015	±	0.0011
Zn	0.0689	±	0.0090	0.0919	±	0.0172	0.0071	±	0.0010
* Ga	0.0000	±	0.0068	0.0000	±	0.0090	0.0000	±	0.0007
* As	0.0000	±	0.0102	0.0000	±	0.0136	0.0000	±	0.0010
* Se	0.0090	±	0.0056	0.0121	±	0.0077	0.0009	±	0.0006
Br	0.0362	±	0.0079	0.0482	±	0.0124	0.0037	±	0.0008
* Rb	0.0023	±	0.0079	0.0030	±	0.0106	0.0002	±	0.0008
* Sr	0.0023	±	0.0079	0.0030	±	0.0106	0.0002	±	0.0008
* Y	0.0045	±	0.0158	0.0060	±	0.0211	0.0005	±	0.0016
* Zr	0.0090	±	0.0226	0.0121	±	0.0302	0.0009	±	0.0023
* Nb	0.0056	±	0.0316	0.0075	±	0.0422	0.0006	±	0.0033
* Mo	0.0000	±	0.0384	0.0000	±	0.0512	0.0000	±	0.0040
* Ag	0.0000	±	0.0316	0.0000	±	0.0422	0.0000	±	0.0033
* Cd	0.0000	±	0.0328	0.0000	±	0.0437	0.0000	±	0.0034
* In	0.0000	±	0.0475	0.0000	±	0.0633	0.0000	±	0.0049
* Sn	0.1266	±	0.0644	0.1687	±	0.0888	0.0130	±	0.0067
* Sb	0.0000	±	0.0780	0.0000	±	0.1040	0.0000	±	0.0080
* Cs	0.0000	±	0.0147	0.0000	±	0.0196	0.0000	±	0.0015
Ba	0.0994	±	0.0181	0.1326	±	0.0299	0.0102	±	0.0019
* La	0.0237	±	0.0170	0.0316	±	0.0230	0.0024	±	0.0018
* Ce	0.0000	±	0.0136	0.0000	±	0.0181	0.0000	±	0.0014
* Sm	0.0000	±	0.0113	0.0000	±	0.0151	0.0000	±	0.0012
* Eu	0.0000	±	0.0237	0.0000	±	0.0316	0.0000	±	0.0024
* Tb	0.0000	±	0.0429	0.0000	±	0.0573	0.0000	±	0.0044
* Hf	0.0000	±	0.0113	0.0000	±	0.0151	0.0000	±	0.0012
* Ta	0.0000	±	0.0102	0.0000	±	0.0136	0.0000	±	0.0010
* W	0.0000	±	0.0079	0.0000	±	0.0105	0.0000	±	0.0008
* Ir	0.0000	±	0.0056	0.0000	±	0.0075	0.0000	±	0.0006
* Au	0.0000	±	0.0079	0.0000	±	0.0105	0.0000	±	0.0008
* Hg	0.0000	±	0.0124	0.0000	±	0.0166	0.0000	±	0.0013
* Pb	0.0158	±	0.0079	0.0211	±	0.0109	0.0016	±	0.0008

Lab ID: 23-T2354
Client ID: Canister SMAQMD 04_03

Analyte	µg/filter		percent		µg/m³	
IC	Conc.	DL	Conc.	DL	Conc.	DL
Cl	0.150	0.100	0.2000	0.1333	0.015	0.010
NO3	3.830	0.100	5.107	0.1333	0.395	0.010
SO4	6.520	0.200	8.693	0.2667	0.672	0.021
Na	1.620	0.100	2.160	0.1333	0.167	0.010
NH4	2.330	0.100	3.107	0.1333	0.240	0.010
K	0.460	0.100	0.6133	0.1333	0.047	0.010

* - XRF Concentration is less than three times the uncertainty

Client: S061 - SMAQMD
Report Number: 23-518

Lab ID: 23-T2375
Filter ID: P7464431
Client ID: Canister SMAQMD 07_03
Site: 617Fern
Sample Date: 10/ 9/23
Filter Lot #: 7118468
Volume: 9.707 ± 0.485 m³
Deposit Area: 11.3 cm²
Size Fraction: PM2.5

Analyte	µg/filter			percent			µg/m³		
Gravimetry									
Net Mass	39.	±	10.				4.018	±	1.050
XRF									
Na	1.330	±	0.3175	3.410	±	1.195	0.1370	±	0.0334
Mg	0.2000	±	0.0576	0.5128	±	0.1978	0.0206	±	0.0060
* Al	0.1978	±	0.0802	0.5071	±	0.2434	0.0204	±	0.0083
Si	0.3593	±	0.0249	0.9214	±	0.2447	0.0370	±	0.0032
* P	0.0045	±	0.0136	0.0116	±	0.0349	0.0005	±	0.0014
S	2.374	±	0.1243	6.088	±	1.593	0.2446	±	0.0177
* Cl	0.0576	±	0.0373	0.1478	±	0.1028	0.0059	±	0.0039
K	0.1051	±	0.0158	0.2695	±	0.0801	0.0108	±	0.0017
Ca	0.1367	±	0.0158	0.3506	±	0.0986	0.0141	±	0.0018
* Sc	0.0000	±	0.0113	0.0000	±	0.0290	0.0000	±	0.0012
* Ti	0.0181	±	0.0090	0.0464	±	0.0260	0.0019	±	0.0009
* V	0.0000	±	0.0102	0.0000	±	0.0261	0.0000	±	0.0010
* Cr	0.0249	±	0.0090	0.0637	±	0.0284	0.0026	±	0.0009
* Mn	0.0068	±	0.0090	0.0174	±	0.0236	0.0007	±	0.0009
Fe	0.1718	±	0.0124	0.4404	±	0.1173	0.0177	±	0.0016
* Co	0.0000	±	0.0079	0.0000	±	0.0203	0.0000	±	0.0008
* Ni	0.0000	±	0.0068	0.0000	±	0.0174	0.0000	±	0.0007
* Cu	0.0000	±	0.0102	0.0000	±	0.0261	0.0000	±	0.0010
* Zn	0.0102	±	0.0079	0.0261	±	0.0214	0.0010	±	0.0008
* Ga	0.0000	±	0.0068	0.0000	±	0.0174	0.0000	±	0.0007
* As	0.0000	±	0.0102	0.0000	±	0.0261	0.0000	±	0.0010
* Se	0.0023	±	0.0056	0.0058	±	0.0146	0.0002	±	0.0006
* Br	0.0090	±	0.0079	0.0232	±	0.0211	0.0009	±	0.0008
* Rb	0.0011	±	0.0079	0.0029	±	0.0203	0.0001	±	0.0008
* Sr	0.0000	±	0.0079	0.0000	±	0.0203	0.0000	±	0.0008
* Y	0.0023	±	0.0158	0.0058	±	0.0406	0.0002	±	0.0016
* Zr	0.0000	±	0.0226	0.0000	±	0.0579	0.0000	±	0.0023
* Nb	0.0056	±	0.0316	0.0145	±	0.0812	0.0006	±	0.0033
* Mo	0.0000	±	0.0384	0.0000	±	0.0985	0.0000	±	0.0040
* Ag	0.0056	±	0.0316	0.0145	±	0.0812	0.0006	±	0.0033
* Cd	0.0000	±	0.0328	0.0000	±	0.0840	0.0000	±	0.0034
* In	0.0260	±	0.0429	0.0666	±	0.1114	0.0027	±	0.0044
* Sn	0.1153	±	0.0644	0.2955	±	0.1817	0.0119	±	0.0067
* Sb	0.0000	±	0.0780	0.0000	±	0.1999	0.0000	±	0.0080
* Cs	0.0000	±	0.0147	0.0000	±	0.0377	0.0000	±	0.0015
* Ba	0.0000	±	0.0158	0.0000	±	0.0406	0.0000	±	0.0016
* La	0.0000	±	0.0158	0.0000	±	0.0406	0.0000	±	0.0016
* Ce	0.0000	±	0.0136	0.0000	±	0.0348	0.0000	±	0.0014
* Sm	0.0000	±	0.0113	0.0000	±	0.0290	0.0000	±	0.0012
* Eu	0.0000	±	0.0237	0.0000	±	0.0608	0.0000	±	0.0024
* Tb	0.0000	±	0.0203	0.0000	±	0.0522	0.0000	±	0.0021
* Hf	0.0000	±	0.0102	0.0000	±	0.0261	0.0000	±	0.0010
* Ta	0.0000	±	0.0102	0.0000	±	0.0261	0.0000	±	0.0010
* W	0.0000	±	0.0068	0.0000	±	0.0174	0.0000	±	0.0007
* Ir	0.0090	±	0.0045	0.0232	±	0.0130	0.0009	±	0.0005
* Au	0.0000	±	0.0079	0.0000	±	0.0203	0.0000	±	0.0008
* Hg	0.0000	±	0.0124	0.0000	±	0.0319	0.0000	±	0.0013
* Pb	0.0000	±	0.0079	0.0000	±	0.0203	0.0000	±	0.0008

Lab ID: 23-T2375
Client ID: Canister SMAQMD 07_03

Analyte	µg/filter		percent		µg/m³	
IC	Conc.	DL	Conc.	DL	Conc.	DL
Cl	0.330	0.100	0.8462	0.2564	0.034	0.010
NO3	2.630	0.100	6.744	0.2564	0.271	0.010
SO4	4.370	0.200	11.21	0.5128	0.450	0.021
Na	1.290	0.100	3.308	0.2564	0.133	0.010
NH4	1.600	0.100	4.103	0.2564	0.165	0.010
K	0.120	0.100	0.3077	0.2564	0.012	0.010

* - XRF Concentration is less than three times the uncertainty

Lab ID: 23-U438
Client ID: Canister SMAQMD 05_03
Site: 617Fern
Sample Date: 9/15/23
Volume: 9.698 +- 0.485 m³
Deposit Area: 13.90 cm²
Size Fraction: PM2.5

Analyte	µg/filter			µg/m³		
OC	44.06	±	3.614	4.544	±	0.4365
EC	1.112	±	1.390	0.1147	±	0.1434
TC	45.18	±	5.004	4.658	±	0.5661
Organic Carbon Fractions						
OC1	0.4170			0.0430		
OC2	8.618			0.8886		
OC3	16.68			1.720		
OC4	8.062			0.8313		
PC	10.29			1.061		
Elemental Carbon Fractions						
EC1	4.726			0.4873		
EC2	4.865			0.5016		
EC3	1.946			0.2007		

Lab ID: 23-U439
Client ID: Canister SMAQMD 06_02
Site: 617Fern
Sample Date: 9/21/23
Volume: 9.689 +- 0.484 m³
Deposit Area: 13.90 cm²
Size Fraction: PM2.5

Analyte	µg/filter			µg/m³		
OC	113.1	±	7.089	11.68	±	0.9357
EC	7.506	±	1.807	0.7747	±	0.1905
TC	120.7	±	8.757	12.45	±	1.097
Organic Carbon Fractions						
OC1	0.9730			0.1004		
OC2	17.51			1.808		
OC3	49.34			5.093		
OC4	23.21			2.396		
PC	22.10			2.281		
Elemental Carbon Fractions						
EC1	19.18			1.980		
EC2	9.174			0.9468		
EC3	1.251			0.1291		

OC: Organic Carbon EC: Elemental Carbon PC: Pyrolyzed Carbon TC: Total Carbon

OC = OC1 + OC2 + OC3 + OC4 + PC EC = EC1 + EC2 + EC3 - PC TC = OC + EC

Lab ID: 23-U440
Client ID: Canister SMAQMD 13_02
Site: 617Fern
Sample Date: 9/27/23
Volume: 9.698 +- 0.485 m³
Deposit Area: 11.30 cm²
Size Fraction: PM2.5

Analyte	µg/filter			µg/m³		
OC	26.33	±	2.486	2.715	±	0.2901
EC	0.0000	±	1.130	0.0000	±	0.1165
TC	26.33	±	3.616	2.715	±	0.3968
Organic Carbon Fractions						
OC1	0.2260			0.0233		
OC2	6.554			0.6758		
OC3	10.17			1.049		
OC4	4.181			0.4311		
PC	5.198			0.5360		
Elemental Carbon Fractions						
EC1	1.695			0.1748		
EC2	2.486			0.2563		
EC3	1.130			0.1165		

Lab ID: 23-U441
Client ID: Canister SMAQMD 11_03
Site: 617Fern
Sample Date: 10/ 3/23
Volume: 9.699 +- 0.485 m³
Deposit Area: 11.30 cm²
Size Fraction: PM2.5

Analyte	µg/filter			µg/m³		
OC	43.84	±	3.277	4.520	±	0.4065
EC	3.729	±	1.356	0.3845	±	0.1411
TC	47.46	±	4.633	4.893	±	0.5367
Organic Carbon Fractions						
OC1	0.6780			0.0699		
OC2	11.53			1.188		
OC3	14.92			1.538		
OC4	7.232			0.7456		
PC	9.605			0.9903		
Elemental Carbon Fractions						
EC1	5.876			0.6058		
EC2	5.198			0.5359		
EC3	2.147			0.2214		

OC: Organic Carbon EC: Elemental Carbon PC: Pyrolyzed Carbon TC: Total Carbon

OC = OC1 + OC2 + OC3 + OC4 + PC EC = EC1 + EC2 + EC3 - PC TC = OC + EC

Lab ID: 23-U442
Client ID: Canister SMAQMD 12_03
Site: 617Fern
Sample Date: 10/ 9/23
Volume: 9.709 +- 0.485 m³
Deposit Area: 11.30 cm²
Size Fraction: PM2.5

Analyte	µg/filter			µg/m³		
OC	17.29	±	2.034	1.781	±	0.2276
EC	1.017	±	1.130	0.1047	±	0.1165
TC	18.19	±	3.164	1.874	±	0.3391

Organic Carbon Fractions

OC1	0.3390	0.0349
OC2	3.729	0.3841
OC3	6.893	0.7100
OC4	2.938	0.3026
PC	3.277	0.3375

Elemental Carbon Fractions

EC1	1.695	0.1746
EC2	2.034	0.2095
EC3	0.5650	0.0582

OC: Organic Carbon EC: Elemental Carbon PC: Pyrolyzed Carbon TC: Total Carbon

OC = OC1 + OC2 + OC3 + OC4 + PC EC = EC1 + EC2 + EC3 - PC TC = OC + EC

CHESTER LabNet

Quant'X 1020 **XRF Analytical Quality Assurance Report**

Client: Sacramento Metro AQMD
Report: 23-518
Analysis Period: October 5 through 24, 2023
Number of Samples: 5

1. Precision Data

Micromatter Multi-elemental Quality Control Standard: 34103

QC Standard Results

Analyte	n	micrograms per square centimeter			c.v.	%E
		Calib.	Meas.	S.D.		
Si	2	7.03	6.95	0.03	0.44	-1.08
Ti	2	10.22	10.14	0.03	0.31	-0.83
Fe	2	10.59	10.52	0.04	0.35	-0.62
Se	2	5.26	5.23	0.00	0.04	-0.65
Cd	2	6.47	6.45	0.06	0.99	-0.35
Pb	2	12.61	12.49	0.04	0.32	-0.98

2. Accuracy Data

NIST Standard Reference Materials: SRM 2783

Analyte/ SRM	n	Certified Value(µg/cm²)	Measured Value (µg/cm²)			% Rec.
			High	Low	Average	
K 2783	4	0.5301	0.5166	0.4679	0.5043 +/- 0.0210	95.1
Ca 2783	4	1.3253	1.1795	1.1702	1.1746 +/- 0.0036	88.6
Ti 2783	4	0.1496	0.1500	0.1483	0.1490 +/- 0.0006	99.6
Fe 2783	4	2.6606	2.6401	2.6149	2.6252 +/- 0.0098	98.7
Cu 2783	4	0.0406	0.0412	0.0395	0.0404 +/- 0.0007	99.5
Zn 2783	4	0.1797	0.2288	0.2269	0.2278 +/- 0.0009	126.8
Pb 2783	4	0.0318	0.0359	0.0342	0.0348 +/- 0.0007	109.6

3. Addendum

Micromatter Certified Reference Materials

CRM	Analytes	Certified Value(µg/cm²)	Measured Value(µg/cm²)	% Rec.
39149	Cr	53.7	54.2	100.9
39150	Cu	49.4	48.5	98.3
39151	Zn, Te	49.8	51.7	103.8
39152	Ga, As	50.9	49.9	98.1
39153	Se, Cd	47.1	47.0	99.8
39154	Pb	47.9	50.8	106.0

NIST: National Institute of Standards and Technology
% Rec: Percent Recovery = (Experimental/Given) x 100
n: Number of Observations
S.D.: Standard Deviation
c.v.: Coefficient of Variation = (S.D./Measured) x 100
% E: Percent Error = [(Measured-Calibrated)/Calibrated] x 100

QUANT'X 1020 REPLICATE REPORT

7.87

Original ID: 23T2180

Replicate ID: RT2180

Element	Original ug/cm2			Replicate ug/cm2			Difference ug/cm2			RPD		
Na	0.4136	+-	0.0372	0.4297	+-	0.0378	-0.0160	+-	0.0531	+ -3.8	+-	12.6
Mg	0.0487	+-	0.0059	0.0540	+-	0.0061	-0.0053	+-	0.0085	+ -10.3	+-	16.5
Al	0.0383	+-	0.0077	0.0403	+-	0.0078	-0.0020	+-	0.0110	+ -5.2	+-	27.9
Si	0.0994	+-	0.0053	0.1018	+-	0.0054	-0.0024	+-	0.0075	+ -2.4	+-	7.5
P	0.0015	+-	0.0012	0.0016	+-	0.0012	0.0000	+-	0.0018			
S	0.2565	+-	0.0134	0.2585	+-	0.0135	-0.0021	+-	0.0190	+ -0.8	+-	7.4
Cl	0.1891	+-	0.0100	0.1917	+-	0.0101	-0.0026	+-	0.0143	+ -1.4	+-	7.5
K	0.0690	+-	0.0037	0.0685	+-	0.0037	0.0005	+-	0.0052	+ 0.7	+-	7.6
Ca	0.0359	+-	0.0022	0.0345	+-	0.0021	0.0014	+-	0.0031	+ 4.1	+-	8.7
Sc	0.0000	+-	0.0011	0.0000	+-	0.0011	0.0000	+-	0.0015			
Ti	0.0027	+-	0.0009	0.0031	+-	0.0009	-0.0003	+-	0.0012	+ -10.7	+-	42.0
V	0.0000	+-	0.0009	0.0000	+-	0.0009	0.0000	+-	0.0012			
Cr	0.0000	+-	0.0008	0.0008	+-	0.0008	-0.0008	+-	0.0011			
Mn	0.0009	+-	0.0008	0.0008	+-	0.0008	0.0001	+-	0.0011			
Fe	0.0401	+-	0.0021	0.0397	+-	0.0021	0.0004	+-	0.0030	+ 0.9	+-	7.5
Co	0.0001	+-	0.0007	0.0000	+-	0.0007	0.0001	+-	0.0009			
Ni	0.0000	+-	0.0006	0.0002	+-	0.0006	-0.0002	+-	0.0009			
Cu	0.0002	+-	0.0009	0.0000	+-	0.0009	0.0002	+-	0.0013			
Zn	0.0027	+-	0.0007	0.0025	+-	0.0007	0.0002	+-	0.0010	+ 7.8	+-	39.9
Ga	0.0003	+-	0.0006	0.0005	+-	0.0006	-0.0002	+-	0.0009			
As	0.0003	+-	0.0009	0.0004	+-	0.0009	-0.0001	+-	0.0013			
Se	0.0003	+-	0.0005	0.0001	+-	0.0005	0.0002	+-	0.0007			
Br	0.0052	+-	0.0008	0.0050	+-	0.0008	0.0002	+-	0.0011	+ 4.1	+-	20.9
Rb	0.0001	+-	0.0007	0.0000	+-	0.0007	0.0001	+-	0.0010			
Sr	0.0007	+-	0.0007	0.0003	+-	0.0007	0.0004	+-	0.0010			
Y	0.0000	+-	0.0014	0.0004	+-	0.0014	-0.0004	+-	0.0020			
Zr	0.0000	+-	0.0020	0.0000	+-	0.0020	0.0000	+-	0.0029			
Nb	0.0004	+-	0.0028	0.0000	+-	0.0028	0.0004	+-	0.0039			
Mo	0.0000	+-	0.0034	0.0000	+-	0.0034	0.0000	+-	0.0048			
Ag	0.0000	+-	0.0028	0.0000	+-	0.0028	0.0000	+-	0.0039			
Cd	0.0000	+-	0.0029	0.0021	+-	0.0029	-0.0021	+-	0.0041			
In	0.0097	+-	0.0038	0.0074	+-	0.0038	0.0023	+-	0.0053			
Sn	0.0162	+-	0.0057	0.0082	+-	0.0057	0.0080	+-	0.0081			
Sb	0.0086	+-	0.0063	0.0000	+-	0.0063	0.0086	+-	0.0089			
Cs	0.0000	+-	0.0013	0.0000	+-	0.0013	0.0000	+-	0.0019			
Ba	0.0000	+-	0.0014	0.0000	+-	0.0015	0.0000	+-	0.0020			
La	0.0000	+-	0.0015	0.0000	+-	0.0015	0.0000	+-	0.0021			
Ce	0.0000	+-	0.0012	0.0000	+-	0.0012	0.0000	+-	0.0016			
Sm	0.0000	+-	0.0010	0.0000	+-	0.0010	0.0000	+-	0.0015			
Eu	0.0000	+-	0.0021	0.0000	+-	0.0021	0.0000	+-	0.0030			
Tb	0.0000	+-	0.0024	0.0000	+-	0.0024	0.0000	+-	0.0034			
Hf	0.0002	+-	0.0009	0.0000	+-	0.0009	0.0002	+-	0.0012			
Ta	0.0000	+-	0.0009	0.0000	+-	0.0009	0.0000	+-	0.0012			
W	0.0000	+-	0.0006	0.0002	+-	0.0007	-0.0002	+-	0.0009			
Ir	0.0000	+-	0.0005	0.0000	+-	0.0005	0.0000	+-	0.0008			
Au	0.0000	+-	0.0007	0.0000	+-	0.0007	0.0000	+-	0.0010			
Hg	0.0001	+-	0.0011	0.0002	+-	0.0011	-0.0001	+-	0.0016			
Pb	0.0002	+-	0.0007	0.0007	+-	0.0007	-0.0004	+-	0.0010			

RPD: Relative Percent Difference (X1-X2)/[(X1+X2)/2]*100. RPD is calculated when original value is greater than three times its uncertainty.

QA/QC Report

Client Name: SMAQMD
Project Number: S061
Analytical Technique: Ion Chromatography
Instrument: Thermo ICS-5000
Sample Description: 47mm Teflon
Report Number: 23-518

Blank Data

Analyte	Sample ID	Measured Conc. mg/L	DL Conc. mg/L
Cl	ICB	< DL	0.010
Cl	Meth_Blk	< DL	0.010
Cl	CCB	< DL	0.010
Cl	CCB	< DL	0.010
NO3	ICB	< DL	0.030
NO3	Meth_Blk	< DL	0.030
NO3	CCB	< DL	0.030
NO3	CCB	< DL	0.030
SO4	ICB	< DL	0.020
SO4	Meth_Blk	< DL	0.020
SO4	CCB	< DL	0.020
SO4	CCB	< DL	0.020
Na	ICB	< DL	0.020
Na	Meth_Blk	< DL	0.020
Na	CCB	< DL	0.020
Na	CCB	< DL	0.020
NH4	ICB	< DL	0.010
NH4	Meth_Blk	< DL	0.010
NH4	CCB	< DL	0.010
NH4	CCB	< DL	0.010
K	ICB	< DL	0.010
K	Meth_Blk	< DL	0.010
K	CCB	< DL	0.010
K	CCB	< DL	0.010

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
*: Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

Calibration QC

Analyte	Sample ID	Standard Conc. mg/L	Measured Conc. mg/L	Percent Recovery
Cl	ICV	0.500	0.499	99.8
Cl	LL-LCS	0.030	0.029	96.7
Cl	CCV	0.500	0.494	98.8
Cl	CCV	0.500	0.499	99.8
NO3	ICV	0.500	0.511	102.2

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

QA/QC Report

Client Name: SMAQMD
Project Number: S061
Analytical Technique: Ion Chromatography
Instrument: Thermo ICS-5000
Sample Description: 47mm Teflon
Report Number: 23-518

Calibration QC (continued)

Analyte	Sample ID	Standard Conc. mg/L	Measured Conc. mg/L	Percent Recovery
NO3	LL-LCS	0.100	0.113	113.0
NO3	CCV	0.500	0.507	101.4
NO3	CCV	0.500	0.504	100.8
SO4	ICV	0.500	0.515	103.0
SO4	LL-LCS	0.060	0.060	100.0
SO4	CCV	0.500	0.508	101.6
SO4	CCV	0.500	0.506	101.2
Na	ICV	0.500	0.488	97.6
Na	LL-LCS	0.040	0.040	100.0
Na	CCV	0.500	0.501	100.2
Na	CCV	0.500	0.494	98.8
NH4	ICV	0.500	0.520	104.0
NH4	LL-LCS	0.030	0.032	106.7
NH4	CCV	0.500	0.530	106.0
NH4	CCV	0.500	0.529	105.8
K	ICV	0.500	0.501	100.2
K	LL-LCS	0.030	0.022	73.3
K	CCV	0.500	0.516	103.2
K	CCV	0.500	0.513	102.6

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

Replicate Data

Analyte	Sample ID	Sample Conc. mg/L	Replicate Conc. mg/L	RPD
Cl	23-T2179	0.013	0.013	0.00 *
Cl	23-T2376	0.016	0.014	13.3 *
NO3	23-T2179	0.054	0.050	7.69
NO3	23-T2376	0.236	0.235	0.42
SO4	23-T2179	0.456	0.453	0.66
SO4	23-T2376	0.606	0.614	1.31
Na	23-T2181	0.271	0.269	0.74
Na	23-T2563	0.162	0.162	0.00
NH4	23-T2181	0.074	0.074	0.00

RPD = {(sample-replicate)/[(sample+replicate)/2]}x100
N/C: RPD is not calculated when sample or replicate is below detection limit
Replicate Limit: 20% RPD
*: per EPA CLP protocol, control limits do not apply if sample and/or replicate concentration is less than 5x the detection limit

QA/QC Report

Client Name: SMAQMD
Project Number: S061
Analytical Technique: Ion Chromatography
Instrument: Thermo ICS-5000
Sample Description: 47mm Teflon
Report Number: 23-518

Replicate Data (continued)

Analyte	Sample ID	Sample Conc. mg/L	Replicate Conc. mg/L	RPD
NH4	23-T2563	0.206	0.207	0.48
K	23-T2181	0.013	0.014	7.41 *
K	23-T2563	0.014	0.014	0.00 *

RPD = {(sample-replicate)/[(sample+replicate)/2]}x100
N/C: RPD is not calculated when sample or replicate is below detection limit
Replicate Limit: 20% RPD
*: per EPA CLP protocol, control limits do not apply if sample and/or replicate concentration is less than 5x the detection limit

Laboratory Control Sample/Matrix Post Spike Analysis

Analyte	Sample ID	Sample Conc. mg/L	Spike Conc. mg/L	Spike Amount mg/L	Percent Recovery
Cl	LCS	< 0.01	0.487	0.500	97.4
Cl	LCS-Duplicate	< 0.01	0.495	0.500	99.0
Cl	23-T2180	0.230	0.737	0.500	101.
Cl	23-T2563	0.023	0.532	0.500	102.
NO3	LCS	< 0.03	0.517	0.500	103.
NO3	LCS-Duplicate	< 0.03	0.520	0.500	104.
NO3	23-T2180	0.512	1.01	0.500	100.
NO3	23-T2563	0.350	0.868	0.500	104.
SO4	LCS	< 0.02	0.543	0.500	109.
SO4	LCS-Duplicate	< 0.02	0.525	0.500	105.
SO4	23-T2180	0.687	1.15	0.500	92.4
SO4	23-T2563	0.599	1.08	0.500	95.8
Na	LCS	< 0.02	0.499	0.500	99.8
Na	LCS-Duplicate	< 0.02	0.502	0.500	100.
Na	23-T2354	0.162	0.692	0.500	106.
Na	23-T2564	0.081	0.609	0.500	106.
NH4	LCS	< 0.01	0.516	0.500	103.
NH4	LCS-Duplicate	< 0.01	0.529	0.500	106.
NH4	23-T2354	0.233	0.766	0.500	107.
NH4	23-T2564	0.145	0.686	0.500	108.
K	LCS	< 0.01	0.500	0.500	100.
K	LCS-Duplicate	< 0.01	0.507	0.500	101.
K	23-T2354	0.046	0.588	0.500	108.
K	23-T2564	0.022	0.563	0.500	108.

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

QA/QC Report

Client Name: SMAQMD
Project Number: S061
Analytical Technique: Ion Chromatography
Instrument: Thermo ICS-5000
Sample Description: 47mm Teflon
Report Number: 23-518

LCS Duplicate Data

Analyte	Sample ID	Original Conc. mg/L	Replicate Conc. mg/L	RPD
Cl	LCS-Duplicate	0.487	0.495	1.63
NO3	LCS-Duplicate	0.517	0.520	0.58
SO4	LCS-Duplicate	0.543	0.525	3.37
Na	LCS-Duplicate	0.499	0.502	0.60
NH4	LCS-Duplicate	0.516	0.529	2.49
K	LCS-Duplicate	0.500	0.507	1.39

RPD = {(sample-duplicate)/[(sample+duplicate)/2]}x100 Duplicate Limit: 20% RPD

QA/QC Report

Client Name: Sacromento Metro
Project Number: S061
Analytical Technique: IMPROVE_A
Sample Description: 47mm Quartz
Report Number: 23-518

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Calibration QC

OC/EC Split*

Split ID: 11Q1121 Date run	Average %OC of 20 data points	%OC Measured	Control Limits
11/9/2023	67.61	68.91%	60.85 - 74.37%
11/9/2023	67.61	70.38%	60.85 - 74.37%

**Note: the Split is composed of a "real world" 8"x10"sample (406 cm^2 deposit area) that the laboratory has visually inspected for homogeneity of deposit. The laboratory attempts to characterize the %OC by analyzing twenty 1.5 cm^2 sample aliquots. A split may be outside of the "control limits" if the sample is not completely homogenous, but still be considered "passing" as long as the result is not significantly off from those limits.*

Sucrose Standard

Date run	Sucrose Std. Conc. µg/cm²	Measured Conc. µg/cm²	Percent Recovery
11/9/2023	28.07	27.59	98.3

Sucrose Standard Control Limits: 90 - 110% recovery

Blank Data

Date run	Analyte	Measured Conc. µg/cm²	MDL µg/cm²
11/9/2023	OC	<MDL	0.2
	EC	<MDL	0.2
11/9/2023	OC	<MDL	0.2
	EC	<MDL	0.2

Duplicate Data

Sample ID	Analyte	Sample Conc. µg/cm²	Duplicate Conc. µg/cm²	RPD
23U 439	OC	8.14	8.20	0.7
	EC	0.54	0.47	13.9
	TC	8.68	8.67	0.1

Duplicate Control Limits: ± 20% RPD
RPD = [(sample - duplicate)/(sample + duplicate)/2] x 100
Control limits do not apply where result <5x Detection Limit

CHESTER LabNet

12242 SW Garden Place ♦ Tigard, OR 97223 ♦ (503) 624-2183 ♦ www.chesterlab.net ♦ cln@chesterlab.net

CHAIN-OF-CUSTODY RECORD

For use by Lab:
Report #: 23-518

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CLIENT INFORMATION

Company Name: Sacramento Metropolitan AQMD

Contact: Levi Ford | Email: lford@airquality.org

Cell: 916-307-0505 | Office: 279-207-1122

Report To: Levi Ford
777 12th Street
Sacramento CA, 95814

Billing Address: 777 12th Street
Sacramento CA, 95814

Project Name: AB617

Contract 2022-00000024-A

Turn Around Time Requested
- [x] Standard
- [ ] Rush (Specify)_____

LabNet ID	Field Sample ID	Site	Sample Date	Volume (m^3)	Particle Size (mm)	Gravimetry	XRF	IC	ICP	OC/EC				Sample Specific Notes:
23-T2179	Canister SMAQMD 01_03	617Fern	09/15/23	9.700	2.5	X	X	X						
23-T2180	Canister SMAQMD 02_03	617Fern	09/21/23	9.690	2.5	X	X	X						
23-U438	Canister SMAQMD 05_03	617Fern	09/15/23	9.698	2.5					X				
23-U439	Canister SMAQMD 06_02	617Fern	09/21/23	9.689	2.5					X				

Do the samples pose any potential hazards? [ ] Yes [x] No
If yes please explain:

Are samples for compliance? [ ] Yes [x] No

Special Instructions/QC Requirements & Comments:

Sample Load: G. Rico	Date/Time: 9/13/23 12:00	Sample Removal: G. Rico	Date/Time: 9/25/23 12:00
Relinquished by: G. Rico	Date/Time: 09/27/23 10:30	Received By: [signature]	Date/Time: 9/28/23 10:15 3.3°C

Laboratory Receipt Comments:

SMAQMD SASS Air Sampler Data Record Sheet

Site Name: 617 Fern **Sampling Date: 09/15/23**

	Channel	**1**	**2**
Filter and Run Time	Lab Net ID	23-T2179	23-U438
	Field ID	Canister SMAQMD 01_03	Canister SMAQMD 05_03
	Sample Date	9/15/2023	9/15/2023
	Start Date/Time	9/15/2023 0:00	9/15/2023 0:00
	End Date/Time	9/16/2023 0:00	9/16/2023 0:00
	Retrieval Date/Time	9/19/2023 12:00	9/19/2023 12:00
	Run Time (hrs)	24.00	24.00
Event Information	Sample Volume (m3)	9.700	9.698
	Avg CV (%)	0.9	0.9
	Avg. Flow (l/min)	6.73	6.73
	Avg Ambient T (°C)	23.4	23.4
	Max Ambient T (°C)	29.7	29.7
	Min Ambient T (°C)	14.7	14.7
	Avg Filter T (°C)	25.5	25.5
	Max Filter T (°C)	31.4	31.4
	Min Filter T (°C)	15.7	15.7
	Avg. BP (mmHg)	759.0	759.0
	Max BP (mm Hg)	761.0	761.0
	Min BP (mmHg)	757.0	757.0

SMAQMD SASS Air Sampler Data Record Sheet

Site Name: 617 Fern **Sampling Date: 09/21/23**

	Channel	**1**	**2**
Filter and Run Time	Lab Net ID	23-T2180	23-U439
	Field ID	Canister SMAQMD 02_03	Canister SMAQMD 06_02
	Sample Date	9/21/2023	9/21/2023
	Start Date/Time	9/21/2023 0:00	9/21/2023 0:00
	End Date/Time	9/22/2023 0:00	9/22/2023 0:00
	Retrieval Date/Time	9/25/2023 12:00	9/25/2023 12:00
	Run Time (hrs)	24.00	24.00
Event Information	Sample Volume (m3)	9.690	9.689
	Avg CV (%)	0.9	0.9
	Avg. Flow (l/min)	6.73	6.72
	Avg Ambient T (°C)	18.8	18.8
	Max Ambient T (°C)	25.4	25.4
	Min Ambient T (°C)	12.9	12.9
	Avg Filter T (°C)	19.6	19.6
	Max Filter T (°C)	28.2	28.2
	Min Filter T (°C)	13.7	13.7
	Avg. BP (mmHg)	758.0	758.0
	Max BP (mm Hg)	760.0	760.0
	Min BP (mmHg)	755.0	755.0

23-518 ~~552~~

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CHAIN-OF-CUSTODY RECORD

For use by Lab:
Report #:

Page_1_of _1_COCs

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Sacramento CA, 95814

Billing Address: 777 12th Street
Sacramento CA, 95814

Project Name: AB617

Contract 2022-00000024-A

Turn Around Time Requested

- [x] Standard
- [ ] Rush (Specify)

LabNet ID	Field Sample ID	Site	Sample Date	Volume (m^3)	Particle Size (mm)	Gravimetry	XRF	IC	ICP	OC/EC				Sample Specific Notes:
23-T2181	Canister SMAQMD 03_02	617Fern	09/27/23	9.704	2.5	X	X	X						
23-T2354	Canister SMAQMD 04_03	617Fern	10/03/23	9.705	2.5	X	X	X						
23-T2375	Canister SMAQMD 07_03	617Fern	10/09/23	9.707	2.5	X	X	X						
23-U440	Canister SMAQMD 13_02	617Fern	09/27/23	9.698	2.5					X				
23-U441	Canister SMAQMD 11_03	617Fern	10/03/23	9.699	2.5					X				
23-U442	Canister SMAQMD 12_03	617Fern	10/09/23	9.709	2.5					X				

Do the samples pose any potential hazards? [ ] Yes [x] No
If yes please explain:

Are samples for compliance? [ ] Yes [x] No

Special Instructions/QC Requirements & Comments:

Sample Load: G.Rico	Date/Time: 9/25/23 13:00	Sample Removal: G.Rico	Date/Time: 10/10/23 12:00
Relinquished by: G.Rico	Date/Time: 10/17/23 10:00	Received By: [signature]	Date/Time: 10/18/23 11:25 2.4°C

Laboratory Receipt Comments:

SMAQMD SASS Air Sampler Data Record Sheet

Site Name: 617 Fern **Sampling Date: 09/27/23**

	Channel	**1**	**2**
Filter and Run Time	Lab Net ID	23-T2181	23-U440
	Field ID	Canister SMAQMD 03_02	Canister SMAQMD 13_02
	Sample Date	9/27/2023	9/27/2023
	Start Date/Time	9/27/2023 0:00	9/27/2023 0:00
	End Date/Time	9/28/2023 0:00	9/28/2023 0:00
	Retrieval Date/Time	9/28/2023 12:00	9/28/2023 12:00
	Run Time (hrs)	24.00	24.00
Event Information	Sample Volume (m3)	9.704	9.698
	Avg CV (%)	0.9	0.8
	Avg. Flow (l/min)	6.74	6.73
	Avg Ambient T (°C)	20.1	20.1
	Max Ambient T (°C)	28.2	28.2
	Min Ambient T (°C)	12.9	12.9
	Avg Filter T (°C)	20.4	20.4
	Max Filter T (°C)	29.7	29.7
	Min Filter T (°C)	13.2	13.2
	Avg. BP (mmHg)	762.0	762.0
	Max BP (mm Hg)	764.0	764.0
	Min BP (mmHg)	759.0	759.0

SMAQMD SASS Air Sampler Data Record Sheet

Site Name: 617 Fern **Sampling Date: 10/03/2023**

	Channel	**1**	**2**
Filter and Run Time	Lab Net ID	23-T2354	23-U441
	Field ID	Canister SMAQMD 04_03	Canister SMAQMD 11_03
	Sample Date	10/3/2023	10/3/2023
	Start Date/Time	10/3/2023 0:00	10/3/2023 0:00
	End Date/Time	10/4/2023 0:00	10/4/2023 0:00
	Retrieval Date/Time	10/5/2023 12:00	10/5/2023 12:00
	Run Time (hrs)	24.00	24.00
Event Information	Sample Volume (m3)	9.705	9.699
	Avg CV (%)	0.7	0.8
	Avg. Flow (l/min)	6.74	6.73
	Avg Ambient T (°C)	20.1	20.1
	Max Ambient T (°C)	26.9	26.9
	Min Ambient T (°C)	12.6	12.6
	Avg Filter T (°C)	20.9	20.8
	Max Filter T (°C)	29.3	29.3
	Min Filter T (°C)	13.2	13.2
	Avg. BP (mmHg)	760.0	760.0
	Max BP (mm Hg)	762.0	762.0
	Min BP (mmHg)	759.0	759.0

SMAQMD SASS Air Sampler Data Record Sheet

Site Name: 617 Fern **Sampling Date: 10/09/2023**

	Channel	**1**	**2**
Filter and Run Time	Lab Net ID	23-T2375	23-U442
	Field ID	Canister SMAQMD 07_03	Canister SMAQMD 12_03
	Sample Date	10/9/2023	10/9/2023
	Start Date/Time	10/9/2023 0:00	10/9/2023 0:00
	End Date/Time	10/10/2023 0:00	10/10/2023 0:00
	Retrieval Date/Time	10/10/2023 12:00	10/10/2023 12:00
	Run Time (hrs)	24.00	24.00
Event Information	Sample Volume (m3)	9.707	9.709
	Avg CV (%)	0.7	0.7
	Avg. Flow (l/min)	6.74	6.74
	Avg Ambient T (°C)	19.7	19.7
	Max Ambient T (°C)	21.4	21.4
	Min Ambient T (°C)	14.7	14.7
	Avg Filter T (°C)	18.6	18.6
	Max Filter T (°C)	22.4	22.4
	Min Filter T (°C)	13.6	13.6
	Avg. BP (mmHg)	757.0	757.0
	Max BP (mm Hg)	759.0	759.0
	Min BP (mmHg)	756.0	756.0

RAW DATA

Available upon request