

SACRAMENTO METROPOLITAN
AIR QUALITY MANAGEMENT DISTRICT

CLIENT # S061
REPORT # 23-519

SUBMITTED BY:
CHESTER LabNet
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CHESTER LabNet

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Case Narrative

Date: October 9, 2023

General Information

Client: Sacramento Metropolitan Air Quality Management District
Client Number: S061
Report Number: 23-519
Sample Description: 47mm Teflon filters
Sample Numbers: 23-T2148, 23-T2176

Analysis

Analytes: Particulate Mass, XRF Metals (Na – Pb)
Analytical Protocols: Gravimetry (PM₁₀): 40 CFR 50 Appendix J (8/7/87 version)
X-Ray Fluorescence: EPA IO-3.3 (June 1999 version)
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.


Project Manager
Paul Duda

10/9/23
Date

Lab ID: 23-T2148
Filter ID: P7464153
Client ID: MiniVol SMAQMD 12
Site: 617Fern
Sample Date: 9/15/23
Filter Lot #: 7118468
Volume: 7.200 ± 0.360 m³
Deposit Area: 11.3 cm²
Size Fraction: PM10

Analyte	µg/filter		percent		µg/m ³	
Gravimetry						
Net Mass	136.	± 10.			18.89	± 1.680
XRF						
Na	1.789	± 0.3424	1.315	± 0.2697	0.2484	± 0.0491
Mg	0.9842	± 0.0780	0.7237	± 0.0782	0.1367	± 0.0128
Al	3.254	± 0.2011	2.393	± 0.2299	0.4520	± 0.0359
Si	9.252	± 0.4701	6.803	± 0.6080	1.2851	± 0.0916
P	0.1333	± 0.0158	0.0980	± 0.0137	0.0185	± 0.0024
S	2.243	± 0.1186	1.649	± 0.1494	0.3115	± 0.0227
Cl	0.2294	± 0.0384	0.1687	± 0.0309	0.0319	± 0.0056
K	1.097	± 0.0576	0.8068	± 0.0729	0.1524	± 0.0111
Ca	1.559	± 0.0791	1.147	± 0.1024	0.2166	± 0.0154
* Sc	0.0000	± 0.0124	0.0000	± 0.0091	0.0000	± 0.0017
Ti	0.3232	± 0.0192	0.2376	± 0.0225	0.0449	± 0.0035
* V	0.0000	± 0.0102	0.0000	± 0.0075	0.0000	± 0.0014
* Cr	0.0192	± 0.0090	0.0141	± 0.0067	0.0027	± 0.0013
Mn	0.0701	± 0.0102	0.0515	± 0.0084	0.0097	± 0.0015
Fe	3.248	± 0.1627	2.388	± 0.2125	0.4511	± 0.0319
* Co	0.0000	± 0.0090	0.0000	± 0.0066	0.0000	± 0.0013
* Ni	0.0056	± 0.0068	0.0042	± 0.0050	0.0008	± 0.0009
* Cu	0.0136	± 0.0102	0.0100	± 0.0075	0.0019	± 0.0014
Zn	0.0441	± 0.0079	0.0324	± 0.0063	0.0061	± 0.0011
* Ga	0.0000	± 0.0068	0.0000	± 0.0050	0.0000	± 0.0009
* As	0.0113	± 0.0102	0.0083	± 0.0075	0.0016	± 0.0014
* Se	0.0000	± 0.0056	0.0000	± 0.0042	0.0000	± 0.0008
* Br	0.0158	± 0.0079	0.0116	± 0.0059	0.0022	± 0.0011
* Rb	0.0045	± 0.0079	0.0033	± 0.0058	0.0006	± 0.0011
* Sr	0.0079	± 0.0079	0.0058	± 0.0058	0.0011	± 0.0011
* Y	0.0000	± 0.0158	0.0000	± 0.0116	0.0000	± 0.0022
* Zr	0.0158	± 0.0226	0.0116	± 0.0166	0.0022	± 0.0031
* Nb	0.0000	± 0.0316	0.0000	± 0.0233	0.0000	± 0.0044
* Mo	0.0000	± 0.0384	0.0000	± 0.0282	0.0000	± 0.0053
* Ag	0.0000	± 0.0316	0.0000	± 0.0233	0.0000	± 0.0044
* Cd	0.0181	± 0.0328	0.0133	± 0.0241	0.0025	± 0.0046
* In	0.0870	± 0.0429	0.0640	± 0.0319	0.0121	± 0.0060
* Sn	0.0588	± 0.0644	0.0432	± 0.0475	0.0082	± 0.0090
* Sb	0.0000	± 0.0712	0.0000	± 0.0523	0.0000	± 0.0099
* Cs	0.0000	± 0.0147	0.0000	± 0.0108	0.0000	± 0.0020
* Ba	0.0000	± 0.0215	0.0000	± 0.0158	0.0000	± 0.0030
* La	0.0000	± 0.0181	0.0000	± 0.0133	0.0000	± 0.0025
* Ce	0.0056	± 0.0147	0.0042	± 0.0108	0.0008	± 0.0020
* Sm	0.0000	± 0.0124	0.0000	± 0.0091	0.0000	± 0.0017
* Eu	0.0000	± 0.0237	0.0000	± 0.0174	0.0000	± 0.0033
* Tb	0.0000	± 0.0622	0.0000	± 0.0457	0.0000	± 0.0086
* Hf	0.0000	± 0.0102	0.0000	± 0.0075	0.0000	± 0.0014
* Ta	0.0000	± 0.0102	0.0000	± 0.0075	0.0000	± 0.0014
* W	0.0000	± 0.0079	0.0000	± 0.0058	0.0000	± 0.0011
* Ir	0.0000	± 0.0056	0.0000	± 0.0042	0.0000	± 0.0008
* Au	0.0000	± 0.0079	0.0000	± 0.0058	0.0000	± 0.0011
* Hg	0.0113	± 0.0124	0.0083	± 0.0092	0.0016	± 0.0017
* Pb	0.0000	± 0.0079	0.0000	± 0.0058	0.0000	± 0.0011

* - XRF Concentration is less than three times the uncertainty

Lab ID: 23-T2176
Filter ID: P7464182
Client ID: MiniVol SMAQMD 13
Site: 617Fern
Sample Date: 9/21/23
Filter Lot #: 7118468
Volume: 7.200 ± 0.360 m³
Deposit Area: 11.3 cm²
Size Fraction: PM10

Analyte	µg/filter		percent		µg/m ³	
Gravimetry						
Net Mass	376. ± 10.				52.22	± 2.958
XRF						
Na	15.14	± 0.9808	4.027	± 0.2820	2.1031	± 0.1721
Mg	3.363	± 0.1955	0.8944	± 0.0572	0.4671	± 0.0358
Al	6.053	± 0.3526	1.610	± 0.1031	0.8408	± 0.0645
Si	17.03	± 0.8904	4.529	± 0.2657	2.3652	± 0.1711
P	0.1401	± 0.0170	0.0373	± 0.0046	0.0195	± 0.0025
S	4.410	± 0.2316	1.173	± 0.0691	0.6126	± 0.0444
Cl	19.09	± 0.9695	5.076	± 0.2911	2.6508	± 0.1889
K	2.533	± 0.1288	0.6738	± 0.0387	0.3519	± 0.0251
Ca	3.826	± 0.1932	1.018	± 0.0581	0.5314	± 0.0378
* Sc	0.0000	± 0.0136	0.0000	± 0.0036	0.0000	± 0.0019
Ti	0.5300	± 0.0282	0.1409	± 0.0084	0.0736	± 0.0054
* V	0.0136	± 0.0102	0.0036	± 0.0027	0.0019	± 0.0014
* Cr	0.0113	± 0.0090	0.0030	± 0.0024	0.0016	± 0.0013
Mn	0.1198	± 0.0113	0.0319	± 0.0031	0.0166	± 0.0018
Fe	5.861	± 0.2927	1.559	± 0.0882	0.8141	± 0.0575
* Co	0.0011	± 0.0124	0.0003	± 0.0033	0.0002	± 0.0017
* Ni	0.0090	± 0.0068	0.0024	± 0.0018	0.0013	± 0.0009
Cu	0.0305	± 0.0102	0.0081	± 0.0027	0.0042	± 0.0014
Zn	0.0825	± 0.0090	0.0219	± 0.0025	0.0115	± 0.0014
* Ga	0.0045	± 0.0068	0.0012	± 0.0018	0.0006	± 0.0009
* As	0.0023	± 0.0102	0.0006	± 0.0027	0.0003	± 0.0014
* Se	0.0045	± 0.0056	0.0012	± 0.0015	0.0006	± 0.0008
Br	0.0904	± 0.0090	0.0240	± 0.0025	0.0126	± 0.0014
* Rb	0.0124	± 0.0079	0.0033	± 0.0021	0.0017	± 0.0011
Sr	0.0452	± 0.0090	0.0120	± 0.0024	0.0063	± 0.0013
* Y	0.0068	± 0.0158	0.0018	± 0.0042	0.0009	± 0.0022
* Zr	0.0170	± 0.0226	0.0045	± 0.0060	0.0024	± 0.0031
* Nb	0.0034	± 0.0316	0.0009	± 0.0084	0.0005	± 0.0044
* Mo	0.0000	± 0.0384	0.0000	± 0.0102	0.0000	± 0.0053
* Ag	0.0000	± 0.0316	0.0000	± 0.0084	0.0000	± 0.0044
* Cd	0.0000	± 0.0328	0.0000	± 0.0087	0.0000	± 0.0046
* In	0.0316	± 0.0429	0.0084	± 0.0114	0.0044	± 0.0060
* Sn	0.0000	± 0.0644	0.0000	± 0.0171	0.0000	± 0.0089
* Sb	0.1006	± 0.0723	0.0267	± 0.0192	0.0140	± 0.0101
* Cs	0.0000	± 0.0158	0.0000	± 0.0042	0.0000	± 0.0022
* Ba	0.0000	± 0.0249	0.0000	± 0.0066	0.0000	± 0.0035
* La	0.0000	± 0.0192	0.0000	± 0.0051	0.0000	± 0.0027
* Ce	0.0000	± 0.0147	0.0000	± 0.0039	0.0000	± 0.0020
* Sm	0.0000	± 0.0124	0.0000	± 0.0033	0.0000	± 0.0017
* Eu	0.0000	± 0.0271	0.0000	± 0.0072	0.0000	± 0.0038
* Tb	0.0000	± 0.0836	0.0000	± 0.0222	0.0000	± 0.0116
* Hf	0.0000	± 0.0113	0.0000	± 0.0030	0.0000	± 0.0016
* Ta	0.0000	± 0.0102	0.0000	± 0.0027	0.0000	± 0.0014
* W	0.0000	± 0.0079	0.0000	± 0.0021	0.0000	± 0.0011
* Ir	0.0079	± 0.0056	0.0021	± 0.0015	0.0011	± 0.0008
* Au	0.0000	± 0.0079	0.0000	± 0.0021	0.0000	± 0.0011
* Hg	0.0136	± 0.0124	0.0036	± 0.0033	0.0019	± 0.0017
* Pb	0.0000	± 0.0079	0.0000	± 0.0021	0.0000	± 0.0011

* - XRF Concentration is less than three times the uncertainty

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Quant'X 1020 XRF Analytical Quality Assurance Report

Client: Sacramento Metro AQMD

Report: 23-519

Analysis Period: October 5, 2023

Number of Samples: 2

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	1	7.03	6.99	na	na	-0.62
Ti	1	10.22	10.14	na	na	-0.83
Fe	1	10.59	10.57	na	na	-0.13
Se	1	5.26	5.25	na	na	-0.16
Cd	1	6.47	6.38	na	na	-1.35
Pb	1	12.61	12.51	na	na	-0.80

2. Accuracy Data

NIST Standard Reference Materials: SRM 2783

Analyte/ SRM	n	Certified Value($\mu\text{g}/\text{cm}^2$)	Measured Value ($\mu\text{g}/\text{cm}^2$)			% 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($\mu\text{g}/\text{cm}^2$)	Measured Value($\mu\text{g}/\text{cm}^2$)	% 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 = $(\text{Experimental}/\text{Given}) \times 100$

n: Number of Observations

S.D.: Standard Deviation

c.v.: Coefficient of Variation = $(S.D./\text{Measured}) \times 100$

% E: Percent Error = $[(\text{Measured}-\text{Calibrated})/\text{Calibrated}] \times 100$

QUANT'X 1020 REPLICATE REPORT

4.98

 Original ID: 23T2176
 Replicate ID: RT2176

Element	Original ug/cm ²			Replicate ug/cm ²			Difference ug/cm ²			RPD					
	Value	U	Value	U	Value	U	Value	U	Value	U	Value	U			
Na	1.3403	+/-	0.0868		1.3614	+/-	0.0876		-0.0211	+/-	0.1234	+	-1.6	+/-	9.1
Mg	0.2976	+/-	0.0173		0.2781	+/-	0.0163		0.0195	+/-	0.0238	+	6.8	+/-	8.3
Al	0.5357	+/-	0.0312		0.5191	+/-	0.0304		0.0166	+/-	0.0436	+	3.1	+/-	8.3
Si	1.5071	+/-	0.0788		1.4835	+/-	0.0776		0.0236	+/-	0.1106	+	1.6	+/-	7.4
P	0.0124	+/-	0.0015		0.0155	+/-	0.0016		-0.0031	+/-	0.0022	0	-22.0	+/-	15.8
S	0.3903	+/-	0.0205		0.3950	+/-	0.0208		-0.0047	+/-	0.0292	+	-1.2	+/-	7.4
Cl	1.6892	+/-	0.0858		1.7143	+/-	0.0871		-0.0251	+/-	0.1223	+	-1.5	+/-	7.2
K	0.2242	+/-	0.0114		0.2274	+/-	0.0116		-0.0032	+/-	0.0163	+	-1.4	+/-	7.2
Ca	0.3386	+/-	0.0171		0.3360	+/-	0.0170		0.0026	+/-	0.0241	+	0.8	+/-	7.2
Sc	0.0000	+/-	0.0012		0.0000	+/-	0.0012		0.0000	+/-	0.0017				
Ti	0.0469	+/-	0.0025		0.0470	+/-	0.0025		-0.0001	+/-	0.0035	+	-0.2	+/-	7.5
V	0.0012	+/-	0.0009		0.0013	+/-	0.0009		-0.0001	+/-	0.0013				
Cr	0.0010	+/-	0.0008		0.0028	+/-	0.0009		-0.0018	+/-	0.0012				
Mn	0.0106	+/-	0.0010		0.0122	+/-	0.0010		-0.0016	+/-	0.0014	0	-14.2	+/-	12.1
Fe	0.5187	+/-	0.0259		0.5140	+/-	0.0257		0.0047	+/-	0.0365	+	0.9	+/-	7.1
Co	0.0001	+/-	0.0011		0.0000	+/-	0.0011		0.0001	+/-	0.0015				
Ni	0.0008	+/-	0.0006		0.0008	+/-	0.0006		0.0000	+/-	0.0009				
Cu	0.0027	+/-	0.0009		0.0026	+/-	0.0009		0.0001	+/-	0.0013				
Zn	0.0073	+/-	0.0008		0.0066	+/-	0.0008		0.0007	+/-	0.0011	+	9.6	+/-	16.1
Ga	0.0004	+/-	0.0006		0.0002	+/-	0.0006		0.0002	+/-	0.0009				
As	0.0002	+/-	0.0009		0.0000	+/-	0.0009		0.0002	+/-	0.0013				
Se	0.0004	+/-	0.0005		0.0004	+/-	0.0005		0.0000	+/-	0.0007				
Br	0.0080	+/-	0.0008		0.0081	+/-	0.0008		-0.0001	+/-	0.0012	+	-0.6	+/-	14.4
Rb	0.0011	+/-	0.0007		0.0012	+/-	0.0007		0.0000	+/-	0.0010				
Sr	0.0040	+/-	0.0008		0.0040	+/-	0.0008		0.0000	+/-	0.0011	+	0.2	+/-	27.0
Y	0.0006	+/-	0.0014		0.0000	+/-	0.0014		0.0006	+/-	0.0020				
Zr	0.0015	+/-	0.0020		0.0019	+/-	0.0020		-0.0004	+/-	0.0029				
Nb	0.0003	+/-	0.0028		0.0000	+/-	0.0028		0.0003	+/-	0.0039				
Mo	0.0000	+/-	0.0034		0.0026	+/-	0.0034		-0.0026	+/-	0.0048				
Ag	0.0000	+/-	0.0028		0.0000	+/-	0.0028		0.0000	+/-	0.0039				
Cd	0.0000	+/-	0.0029		0.0000	+/-	0.0029		0.0000	+/-	0.0041				
In	0.0028	+/-	0.0038		0.0000	+/-	0.0042		0.0028	+/-	0.0056				
Sn	0.0000	+/-	0.0057		0.0092	+/-	0.0057		-0.0092	+/-	0.0080				
Sb	0.0089	+/-	0.0064		0.0000	+/-	0.0069		0.0089	+/-	0.0095				
Cs	0.0000	+/-	0.0014		0.0000	+/-	0.0014		0.0000	+/-	0.0020				
Ba	0.0000	+/-	0.0022		0.0000	+/-	0.0022		0.0000	+/-	0.0032				
La	0.0000	+/-	0.0017		0.0000	+/-	0.0017		0.0000	+/-	0.0025				
Ce	0.0000	+/-	0.0013		0.0007	+/-	0.0013		-0.0007	+/-	0.0019				
Sm	0.0000	+/-	0.0011		0.0000	+/-	0.0011		0.0000	+/-	0.0016				
Eu	0.0000	+/-	0.0024		0.0000	+/-	0.0024		0.0000	+/-	0.0034				
Tb	0.0000	+/-	0.0074		0.0000	+/-	0.0073		0.0000	+/-	0.0103				
Hf	0.0000	+/-	0.0010		0.0000	+/-	0.0010		0.0000	+/-	0.0015				
Ta	0.0000	+/-	0.0009		0.0000	+/-	0.0010		0.0000	+/-	0.0013				
W	0.0000	+/-	0.0007		0.0003	+/-	0.0008		-0.0003	+/-	0.0011				
Ir	0.0007	+/-	0.0005		0.0000	+/-	0.0005		0.0007	+/-	0.0008				
Au	0.0000	+/-	0.0007		0.0000	+/-	0.0007		0.0000	+/-	0.0010				
Hg	0.0012	+/-	0.0011		0.0022	+/-	0.0011		-0.0010	+/-	0.0016				
Pb	0.0000	+/-	0.0007		0.0010	+/-	0.0007		-0.0010	+/-	0.0010				

RPD: Relative Percent Difference $(X_1 - X_2) / [(X_1 + X_2)/2] * 100$. RPD is calculated when original value is greater than three times its uncertainty.

CHESTER LabNet

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CHAIN-OF-CUSTODY RECORD

CLIENT INFORMATION	
Company Name: Sacramento Metropolitan AQMD	Email: lford@airquality.org
Contact: Levi Ford	Office: 279-207-1122
Cell: 916-307-0505	
Report To: Levi Ford	Billing Address: 777 12th Street Sacramento CA, 95814
777 12th Street	
Sacramento CA, 95814	

Project Name: AB617

Contract 2023-00000004-A

LabNet ID	Field Sample ID	Site	Sample Date	Volume (m³)	Particle Size (mm)	Gravimetry	XRF	IC	ICP	OC/EC	Sample Specific Notes:
23-T2148	Minivol SMAQMD 12	617/Fern	09/15/23	—	10	x	x	x	x		
23-T2176	Minivol SMAQMD 13	617/Fern	09/21/23	—	10	x	x	x	x		

Do the samples pose any potential hazards?

If yes please explain:

Are samples for compliance?

Yes No

Special Instructions/QC Requirements & Comments:

Relinquished by:

G. Rico

Date/Time/Temp:
9/28/23 10:36

Received By:

Hank

Date/Time/Temp:
9/28/23 10:36

Laboratory Receipt Comments:

For use by Lab:
Report #: 23-514

SMAQMD MiniVol Air Sampler Data Record Sheet

Site Name: 617 Fern	Sampling Date: 09/15/2023
Filter ID Number: 23-T2148	Sampler ID: 7968
Sampler Battery ID: 201224003661	Field Tech: G.Rico

Pre-Sampling Information:

Sample Start Date: 09/15/2023	Sample Start Time: 00:00
Elapsed Time (Start): 1917.1	Barometric Pressure: 755 mmHg
Flow Rate: 5.0 LPM	Ambient Temperature: 25 °C
Leak Check: PASS / FAIL	

Observations/Comments:

Post-Sampling Information

Sample End Date: 09/16/2023	Sample End Time: 00:00
Elapsed Time (End): 1941.1	Barometric Pressure: 755 mmHg
Flow Rate: 5.0 LPM	Ambient Temperature: 25 °C
Leak Check: PASS / FAIL	

Observations/Comments:

Chain of Custody

ACTION	DATE	TIME	INITIALS
Sample Load	9/13/23	12:10	G.R.
Sample Removal	9/19/23	12:00	G.R.
Sample in Freezer	9/19/23	14:00	G.R.

SMAQMD MiniVol Air Sampler Data Record Sheet

Site Name: 617 Fern	Sampling Date: 09/21/2023
Filter ID Number: 23-T2176	Sampler ID: 7968
Sampler Battery ID: 201224003661	Field Tech: G.Rico

Pre-Sampling Information:

Sample Start Date: 09/21/2023	Sample Start Time: 00:00
Elapsed Time (Start): 1941.1	Barometric Pressure: 755 mmHg
Flow Rate: 5.0 LPM	Ambient Temperature: 25 °C
Leak Check: PASS / FAIL	

Observations/Comments:

Post-Sampling Information

Sample End Date: 9/22/2023	Sample End Time: 00:00
Elapsed Time (End): 1965.1	Barometric Pressure: 756 mmHg
Flow Rate: 5.0 LPM	Ambient Temperature: 23 °C
Leak Check: PASS / FAIL	

Observations/Comments:

Chain of Custody

ACTION	DATE	TIME	INITIALS
Sample Load	9/19/23	14:00	G.R.
Sample Removal	9/25/23	12:00	G.R.
Sample in Freezer	9/25/23	14:00	G.R.

RAW DATA

Available upon request