Atmospheric Analysis & Consulting, Inc.

Client	: Sacramento Metropolitan AQMD
Client Project Name	: AB617
Client Project No.	: NA
AAC Project No.	: 231389 Rev 1
Reporting Date	: 04/16/2024

On July 14, 2023, Atmospheric Analysis & Consulting, Inc. received two (2) DNPH impregnated silica gel cartridges for Carbonyls analysis by EPA Method TO-11A. Upon receipt each sample was assigned a unique Laboratory ID number as follows:

This section provides the sample identification numbers.

Client Sample ID	AAC Sample ID
070523_617Fern	231389-46801
071123_617Fern	231389-46802

This analysis is accredited under the laboratory's ISO/IEC 17025:2017 accreditation issued by the ANSI National Accreditation Board. Refer to certificate and scope of accreditation AT-1908. Test results apply to the sample(s) as received. For detailed information pertaining to specific EPA, NCASI, ASTM and SCAQMD accreditations (Methods & Analytes), please visit our website at www.aaclab.com.

This section describes any issues encountered during receiving, preparation, and analysis by the laboratory.

I certify that this data is technically accurate, complete, and in compliance with the terms and conditions of the contract. These samples were received at a temperature of 4.4°C, which is above the method recommended temperature of 4.0°C. No other problems were encountered during receiving, preparation, and/or analysis of these samples.

The Technical Director or his/her designee, as verified by the following signature, has authorized release of the data contained in this hardcopy report.

If you have any questions or require further explanation of data results, please contact the undersigned.

Dr. Sucha Parmar, PhD
Technical Director

Amended Report 231389 Rev 1 supersedes Original Report 231389. The amended report was issued on 04/16/2024. Per client request, the laboratory results were reported in units of $\mu g/m^3$.

This report consists of 9 pages.

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This section shows the date the sample was received and the date the data was reported.

LABORATORY ANALYSIS REPORT
Analysis of Carbonyls by EPA Method TO-11A

Client	: Sacramento Metropolitan AQMD
Client Project Name	: AB617
AAC Project No.	: 231389 Rev 1
Analyst	: CH/EJ
Units	: ppbv

This section shows the project number assigned by the laboratory and the units the data is reported in on this page.

Sampling Date (s)	: 07/05-11/2023
Receiving Date	: 07/14/2023
Analysis Date	: 07/24/2023
Reporting Date	: 04/16/2024

Client ID	AAC Sample ID	Formaldehyde	Acetaldehyde	Acrolein	Acetone	Propionaldehyde	Crotonaldehyde	Methacrolein	MEK & Butyraldehyde	Benzaldehyde	Valeraldehyde	m-Tolualdehyde	Hexaldehyde
	SRL (ppbv)	0.022	0.015	0.012	0.011	0.011	0.009	0.009	0.009	0.006	0.008	0.005	0.006
070523_617Fern	231389-46801	2.55	0.68	0.015	0.47	0.105	<SRL	0.035	0.089	0.017	0.045	<SRL	0.042
071123_617Fern	231389-46802	2.34	0.65	0.014	1.00	0.088	<SRL	0.052	0.097	0.014	0.037	<SRL	0.031

<SRL-compound was analyzed for but not detected at or above the SRL (Sample Reporting Limit)

This row is the Sample Reporting Limit (SRL). Levels below the SRL are too low to be detected by the laboratory analytical method.

The results shown are the 24-hour concentration reported in the units provided above the table.

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LABORATORY ANALYSIS REPORT
Analysis of Carbonyls by EPA Method TO-11A

Client : Sacramento Metropolitan AQMD
Client Project Name : AB617
AAC Project No. : 231389 Rev 1
Analyst : CH/EJ
Units : µg/m³

This page of the report reports the same results from the previous page but in these units.

Sampling Date (s) : 07/05-11/2023
Receiving Date : 07/14/2023
Analysis Date : 07/24/2023
Reporting Date : 04/16/2024

Client ID	AAC Sample ID	Formaldehyde	Acetaldehyde	Acrolein	Acetone	Propionaldehyde	Crotonaldehyde	Methacrolein	MEK & Butyraldehyde	Benzaldehyde	Valeraldehyde	m-Tolualdehyde	Hexaldehyde
	SRL (ppbv)	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026
070523_617Fern	231389-46801	3.13	1.23	0.034	1.12	0.249	<SRL	0.100	0.262	0.073	0.159	<SRL	0.173
071123_617Fern	231389-46802	2.87	1.17	0.031	2.37	0.208	<SRL	0.149	0.286	0.062	0.131	<SRL	0.126

<SRL-compound was analyzed for but not detected at or above the SRL (Sample Reporting Limit)

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Quality Control/Quality Assurance Report

EPA TO-11A

HPLC Calibration Verification of the 07/19/2023 Calibration

Analysis Date : 07/24/2023
Analyst : CH
Instrument ID : HPLC 1200

Opening CCV

Standard Concentration (ug/mL)	*Formaldehyde (ug/mL)*	*Acetaldehyde (ug/mL)*	*Acrolein (ug/mL)*	*Acetone (ug/mL)*	*Propionaldehyde (ug/mL)*	*Crotonaldehyde (ug/mL)*	*Methacrolein (ug/mL)*	*MEK & Butyraldehyde (ug/mL)*	*Benzaldehyde (ug/mL)*	*Valeraldehyde (ug/mL)*	*m-Tolualdehyde (ug/mL)*	*Hexaldehyde (ug/mL)*
2.50	2.51	2.49	2.48	2.48	2.50	2.48	2.48	4.97	2.48	2.48	2.47	2.45
Accuracy (%)*	100	99.6	99.2	99.2	100	99.2	99.2	99.4	99.2	99.2	98.8	98.0

Continuing CCV

Standard Concentration (ug/mL)	*Formaldehyde (ug/mL)*	*Acetaldehyde (ug/mL)*	*Acrolein (ug/mL)*	*Acetone (ug/mL)*	*Propionaldehyde (ug/mL)*	*Crotonaldehyde (ug/mL)*	*Methacrolein (ug/mL)*	*MEK & Butyraldehyde (ug/mL)*	*Benzaldehyde (ug/mL)*	*Valeraldehyde (ug/mL)*	*m-Tolualdehyde (ug/mL)*	*Hexaldehyde (ug/mL)*
2.50	2.50	2.52	2.52	2.51	2.52	2.51	2.52	5.02	2.50	2.53	2.50	2.52
Accuracy (%)*	100	101	101	100	101	100	101	100	100	101	100	101
Standard Concentration (ug/mL)	*Formaldehyde (ug/mL)*	*Acetaldehyde (ug/mL)*	*Acrolein (ug/mL)*	*Acetone (ug/mL)*	*Propionaldehyde (ug/mL)*	*Crotonaldehyde (ug/mL)*	*Methacrolein (ug/mL)*	*MEK & Butyraldehyde (ug/mL)*	*Benzaldehyde (ug/mL)*	*Valeraldehyde (ug/mL)*	*m-Tolualdehyde (ug/mL)*	*Hexaldehyde (ug/mL)*
2.50	2.36	2.38	2.38	2.37	2.38	2.37	2.39	4.73	2.36	2.37	2.36	2.34
Accuracy (%)*	94.4	95.2	95.2	94.8	95.2	94.8	95.6	94.6	94.4	94.8	94.4	93.6

Second Source

Standard Concentration (ug/mL)	*Formaldehyde (ug/mL)*	*Acetaldehyde (ug/mL)*	*Acrolein (ug/mL)*	*Acetone (ug/mL)*	*Propionaldehyde (ug/mL)*	*Crotonaldehyde (ug/mL)*	*Methacrolein (ug/mL)*	*MEK & Butyraldehyde (ug/mL)*	*Benzaldehyde (ug/mL)*	*Valeraldehyde (ug/mL)*	*m-Tolualdehyde (ug/mL)*	*Hexaldehyde (ug/mL)*
5.00	4.74	4.72	4.72	4.78	4.83	4.73	4.85	9.43	4.61	4.73	4.72	4.76
Accuracy (%)**	94.8	94.4	94.4	95.6	96.6	94.6	97.0	94.3	92.2	94.6	94.4	95.2

*Must be 100 ± 10%
**Second Source must be 85 - 115 %

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Quality Control/Quality Assurance Report

EPA TO-11A

Laboratory Control Spike Analysis

Analysis Date : 07/24/2023 Analyst : CH Instrument ID : HPLC 1200

Laboratory Control Spike

Analytes	*Formaldehyde (ug/mL)*	*Acetaldehyde (ug/mL)*	*Acrolein (ug/mL)*	*Acetone (ug/mL)*	*Propionaldehyde (ug/mL)*	*Crotonaldehyde (ug/mL)*	*Methacrolein (ug/mL)*	*MEK & Butyraldehyde (ug/mL)*	*Benzaldehyde (ug/mL)*	*Valeraldehyde (ug/mL)*	*m-Tolualdehyde (ug/mL)*	*Hexaldehyde (ug/mL)*
Sample Concentration (ug/mL)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Spike Concentration (ug/mL)	0.750	0.750	0.750	0.750	0.750	0.750	0.750	1.50	0.750	0.750	0.750	0.750
Spiked Sample Concentration (ug/mL)	0.707	0.641	0.695	0.534	0.669	0.693	0.761	1.23	0.688	0.675	0.684	0.669
Duplicate Spiked Sample Concentration (ug/mL)	0.685	0.656	0.740	0.545	0.678	0.691	0.763	1.21	0.679	0.708	0.695	0.665
Spike Recovery (%)*	94.3	85.5	92.7	71.2	89.2	92.4	101	82.0	91.7	90.0	91.2	89.2
Duplicate Spike Recovery (%)*	91.3	87.5	98.7	72.7	90.4	92.1	102	80.7	90.5	94.4	92.7	88.7
RPD**	3.2	2.3	6.3	2.0	1.3	0.3	0.3	1.6	1.3	4.8	1.6	0.6

*Must be 100 ± 30%

** Must be ≤ 25%

Quality Control/Quality Assurance Report

EPA TO-11A

Matrix Spike Analysis

Analysis Date : 07/24/2023 Analyst : CH Instrument ID : HPLC 1200

Sample ID 231389-46802

Analytes	*Formaldehyde (ug/mL)*	*Acetaldehyde (ug/mL)*	*Acrolein (ug/mL)*	*Acetone (ug/mL)*	*Propionaldehyde (ug/mL)*	*Crotonaldehyde (ug/mL)*	*Methacrolein (ug/mL)*	*MEK & Butyraldehyde (ug/mL)*	*Benzaldehyde (ug/mL)*	*Valeraldehyde (ug/mL)*	*m-Tolualdehyde (ug/mL)*	*Hexaldehyde (ug/mL)*
Sample Concentration (ug/mL)	1.38	0.555	0.015	1.17	0.100	0.008	0.071	0.147	0.035	0.061	0.005	0.059
Spike Concentration (ug/mL)	1.25	1.25	1.25	1.25	1.25	1.25	1.25	2.50	1.25	1.25	1.25	1.25
Spiked Sample Concentration (ug/mL)	2.63	1.78	1.28	2.39	1.35	1.27	1.49	2.40	1.28	1.29	1.23	1.28
Duplicate Spiked Sample Concentration (ug/mL)	2.67	1.80	1.29	2.40	1.35	1.27	1.48	2.42	1.28	1.38	1.26	1.29
Spike Recovery (%)*	100	98.0	101	97.6	100	101	113	90.1	99.6	98.3	98.0	97.7
Dulicate Spike Recovery (%)*	103	99.6	102	98.4	100	101	113	90.9	99.6	105	100	98.5
RPD**	1.5	1.1	0.8	0.4	0.0	0.0	0.7	0.8	0.0	6.7	2.4	0.8

*Must be 100± 25%

** Must be ≤ 25%

Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report
EPA TO-11A
Duplicate Analysis

Analysis Date : 07/24/2023
Analyst : CH

Instrument ID : HPLC 1200

Analyte	*Formaldehyde (ug/mL)*	*Acetaldehyde (ug/mL)*	*Acrolein (ug/mL)*	*Acetone (ug/mL)*	*Propionaldehyde (ug/mL)*	*Crotonaldehyde (ug/mL)*	*Methacrolein (ug/mL)*	*MEK & Butyraldehyde (ug/mL)*	*Benzaldehyde (ug/mL)*	*Valeraldehyde (ug/mL)*	*m-Tolualdehyde (ug/mL)*	*Hexaldehyde (ug/mL)*
Sample ID	231389-46801											
Sample Concentration (ug/mL)	3.07	1.19	0.033	1.19	0.242	<SRL	0.099	0.277	0.081	0.152	<SRL	0.165
Duplicate Sample Concentration (ug/mL)	3.09	1.20	0.033	1.19	0.240	<SRL	0.093	0.280	0.082	0.180	<SRL	0.168
RPD**	0.7	0.2	0.6	0.1	0.5	NA	6.1	1.0	1.0	16.7	NA	1.6
Sample ID	231392-46812											
Sample Concentration (ug/mL)	2.51	0.783	0.046	0.765	0.155	0.039	0.236	0.202	0.076	0.107	<SRL	0.127
Duplicate Sample Concentration (ug/mL)	2.52	0.783	0.048	0.762	0.156	0.041	0.234	0.211	0.079	0.109	<SRL	0.128
RPD**	0.4	0.0	4.7	0.5	0.5	4.7	0.6	4.5	3.8	1.7	NA	0.3

ND = Not Detected
NA=Not Applicable
** Must be <20%

Quality Control/Quality Assurance Report

EPA TO-11A

System and Method Blank Analysis

Analysis Date : 07/24/2023
Analyst : CH

Instrument ID : HPLC 1200

Analyte	*Formaldehyde (ug/mL)*	*Acetaldehyde (ug/mL)*	*Acrolein (ug/mL)*	*Acetone (ug/mL)*	*Propionaldehyde (ug/mL)*	*Crotonaldehyde (ug/mL)*	*Methacrolein (ug/mL)*	*MEK & Butyraldehyde (ug/mL)*	*Benzaldehyde (ug/mL)*	*Valeraldehyde (ug/mL)*	*m-Tolualdehyde (ug/mL)*	*Hexaldehyde (ug/mL)*
Opening Acetonitrile Blank	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Method Blank 07/18/2023	<RL	<RL	<RL	0.120	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Continuing Acetonitrile Blank	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Closing Acetonitrile Blank	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Reporting Limit	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.050	0.025	0.025	0.025	0.025

RL= Reporting Limit
<RL=less than the Reporting Limit

231389

TO-11 DNPH Cartridge Data Sheet

ATMOSPHERIC ANALYSIS & CONSULTING, INC. ♦ 1534 Eastman Avenue, Suite A ♦ Ventura, California 93003 ♦ Phone (805) 650-1642 ♦ Fax (805) 650-1644

CHAIN-OF-CUSTODY RECORD

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 2020-00000084	

Turn Around Time Requested

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

Reason for Invalidation or Comment

(1) Sampling Duration out of range (<150 mins or > 210 mins)
(2) Sampling flow rate out of limit
(3) Sampling equipment malfunction
(4) Damage sampling media
(5) Scheduled but not collected
(6) Power failure
(7) Construction Nearby
(8) Farm Operation Nearby
(9) Fire Nearby
(10) Rain
(11) Wind-blow sand/dust
(12) Other (specify)

	Sample Date	Field Sample ID	Site	Time Interval	Sample Type	Avg Flow (lpm)	Invalid Sample?	
4680	7/5/2023	070523_617Fern	617Fern	00:00-24:00	**DPNH Cartridge**	1.02	☐ No ☑ Yes	
4680	7/11/2023	071123_617Fern	617Fern	00:00-24:00	**DPNH Cartridge**	1.00	☐ No ☑ Yes	
			617Fern				☐ No ☐ Yes	
			617Fern				☐ No ☐ Yes	
			617Fern				☐ No ☐ Yes	
			617Fern				☐ No ☐ Yes	

Do the samples pose any potential hazards? ☑ Yes ☐ No
If yes please explain: Active Formaldehyde

Are samples for compliance? ☐ Yes ☑ No

Special Instructions/QC Requirements & Comments:

Relinquished by: C. Rico	Date/Time: 07/13/23 08:30	Received By:	7/14/23 0959
Relinquished by:	Date/Time:	Received By:	

Laboratory Receipt Comments:

Fx 4.4° C T14