

Special Monitoring Projects Report for 2017

Prepared by the Capital Area Council of Governments

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Executive Summary

This report provides details of special monitoring activities Capital Area Council of Governments (CAPCOG) supported in 2017 under Task 5.3 of its near-nonattainment grant funding from the state. For the purposes of this task, “special monitoring projects,” are differentiated from CAPCOG’s operation of ozone and meteorological equipment at eight continuous monitoring stations owned by CAPCOG under Task 5.1 of its near-nonattainment grant. CAPCOG contracted with St. Edwards University to launch a series of ozonesondes during the 2017 ozone season and provided support for the operation of CAMS 1605 on the St. Edwards University campus. This report documents these activities, as well as other activities conducted by St. Edwards during 2017 that were not directly paid for under this grant, but which this funding helped facilitate.

1 Overview of Ozonesonde Launches

During 2017, St. Edwards University conducted a total of 25 ozonesonde launches from Austin and attempted an additional 2 that were not successful. The following table summarizes the launch dates, ozone forecast for that day, and maximum ground-level 8-hour ozone concentration measured in the Austin-Round Rock Metropolitan Statistical Area (MSA) on that date.

Table 1-1. Summary of ozonesonde launches conducted in 2017

Attempt ID #	Successful	Date	Time (UTC)	Ozone Forecast (ppb)	Peak MDA MDA8 (ppb)	CAMS with Peak MDA8	Peak Hour for Peak MDA8 (UTC)
AT018	Yes	2/18/2017	19:10	<55	51	3	21
AT019	Yes	4/6/2017	20:59	55-70	59	690	22
AT020	Yes	4/7/2017	19:23	55-70	69	690	22
AT021	Yes	4/23/2017	20:08	<55	55	1604	21
AT022	Yes	4/24/2017	18:03	55-70	65	690	22
AT023	Yes	5/1/2017	21:12	55-70	68	3	22
AT024	Yes	5/2/2017	19:48	55-70	67	690	18
AT025	Yes	5/6/2017	21:00	71-85	73	690	22
AT026	Yes	5/7/2017	20:32	55-70	70	690 & 1604	23 & 19
AT027	Yes	5/13/2017	21:02	55-70	65	1604	20
AT028	Yes	5/24/2017	21:48	55-70	55	690	23
AT029	Yes	6/7/2017	23:31	55-70	74	1604	20
AT030	Yes	6/8/2017	20:07	55-70	75	690	18
AT031	Yes	6/9/2017	19:05	55-70	67	690	22
AT032	Yes	7/11/2017	18:33	<55	34	690	19
AT033	Yes	8/1/2017	20:19	55-70	72	614	22
AT034	Yes	8/21/2017	17:14	<55	43	1604	25
AT035	Yes	8/23/2017	16:37	55-70	54	1604	22
AT037	Yes	8/25/2017	16:56	<55	32	690	17
AT038	No	8/26/2017	11:47	<55	27	690	7
AT043	No	8/28/2017	0:05	<55	38	3	19

CAPCOG Special Monitoring Projects Report for 2017

Attempt ID #	Successful	Date	Time (UTC)	Ozone Forecast (ppb)	Peak MDA MDA8 (ppb)	CAMS with Peak MDA8	Peak Hour for Peak MDA8 (UTC)
AT045	Yes	8/31/2017	20:37	55-70	53	6602	21
AT046	Yes	9/13/2017	21:32	71-85	73	690	21
AT047	Yes	9/30/2017	18:00	55-70	62	3 & 1604	23 & 20
AT048	Yes	10/1/2017	19:47	71-85	64	1604	21
AT049	Yes	10/17/2017	22:02	55-70	52	614	22
AT051	Yes	10/26/2017	23:02	55-70	55	690	20

Of the attempts listed above, the 1st 14 attempts (AT018 – AT031) were all charged to CAPCOG’s local air quality planning grant, while the remaining 13 attempts were undertaken by St. Edward’s University using other funding. Due to the Governor’s veto of the local air quality planning grant for FY 2018-2019, CAPCOG issued a contract termination notice to St. Edward’s University on June 13, 2017. St. Edward’s University provided a final report at that time to Since the funding provided by CAPCOG helped pay for training that was used to support all of these launches, CAPCOG is presenting the data from all of these results.

2 Operation and Maintenance of CAMS 1605

CAPCOG contracted with St. Edwards University to perform preventative maintenance of CAMS 1605, consistent with CAPCOG’s QAPP for Task 5.1. CAPCOG also contracted with Dios Dado Environment, Ltd. (DDE) to perform a 5-point calibrations at CAMS 1605 in April 2017 in order to ensure the quality of the data collected at the station. The CAMS 1605 data was used by St. Edwards staff to validate ground-level ozone measurements for their ozonesonde launches. CAMS 1605 collected valid 1-hour O₃ concentrations during each of the 25 successful launches conducted in 2017. The following table summarizes the number of hourly O₃ measurements recorded in the LEADS system and the number that were flagged as being fully validated in the LEADS system.

Table 2-1. Data on hourly O₃ concentrations recorded and validated at CAMS 1605

Month	Days	Total Possible Hours	Total Hours Recorded	%	Validated Hours
February	28	672	252	37.5%	0
March	31	744	733	98.5%	0
April	30	720	657	91.3%	657
May	31	744	627	84.3%	0
June	30	720	719	99.9%	719
July	31	744	744	100.0%	744
August	31	744	744	100.0%	0
September	30	720	720	100.0%	0
October	31	744	744	100.0%	0
Total	273	6552	5940	90.7%	2120

CAPCOG Special Monitoring Projects Report for 2017

The following table summarizes the results of the calibrations performed at CAMS 1605 on 4/19/2017.

Table 2-2. CAMS 1605 Calibration Check Results for 2017

Data Point	0 ppb	70 ppb	200 ppb	300 ppb	400 ppb
Result (ppb)	0.2	71.5	199.6	302.9	401.6
Deviation (ppb)	+0.2	+1.5	-0.4	+2.9	+1.6
Deviation (%)	n/a	+2.10%	-0.20%	+0.96%	+0.40%

The following list summarizes the number of entries in the operator logs for CAMS 1605 from 2/1/2017 – 10/31/2017

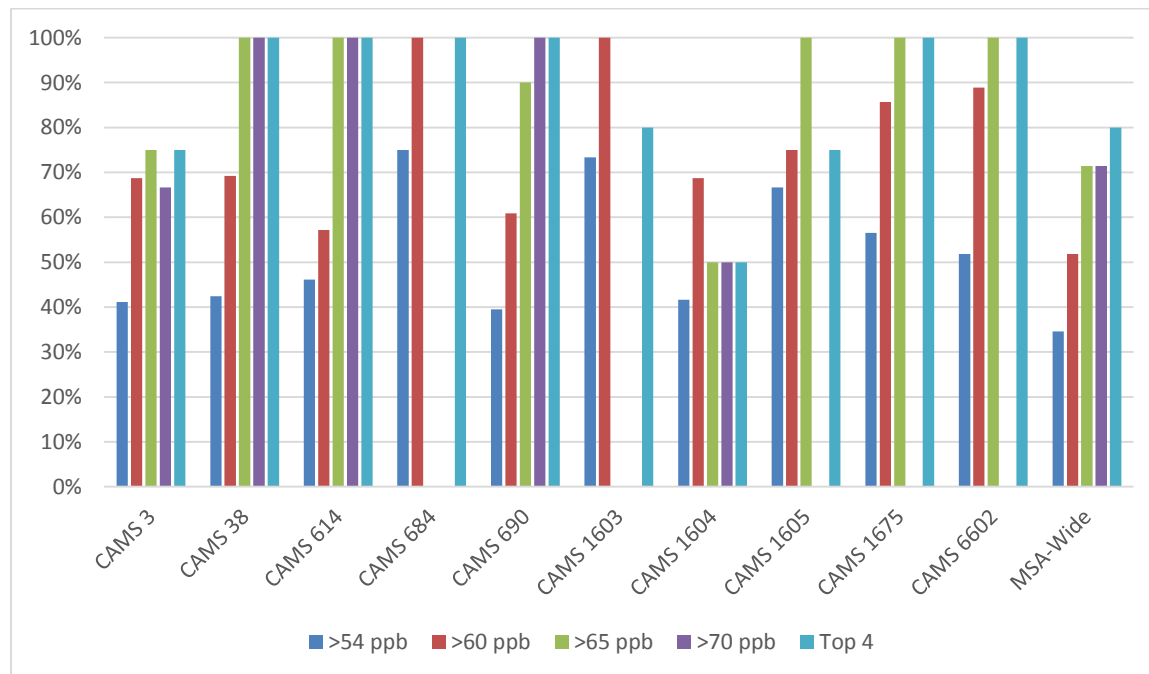
- February: 31 entries
 - Checked site status: 18
 - Automatic time sync: 4
 - Change particulate filter: 2
 - Check roof, water precipitation unit, change particulate filter: 1
 - Change from p-code to k-code, not on low readings on lamp B: 1
 - Check of TECO alarms for lamp B reading and water temp., change particulate filter: 1
 - Open up TECO to check why lamp B reading low: 1
 - Could not check site status: 3
- March: 31 entries
 - Check site status: 23
 - Automatic time sync: 5
 - Changed particulate filter: 1
 - Shutdown range entry: 1
 - Changed particulate filter, measured voltage to fan, check out absorption cells: 1
- April: 29
 - Check status online: 19
 - Automatic time sync: 4
 - Change particulate filter: 2
 - Calibration and site check: 1
 - Meeting note: 1
 - Interaction with TCEQ: 1
 - Modem/battery problem: 1
- May: 24 entries
 - Check status online: 17
 - Automatic time sync: 1
 - Change particulate filter: 1
 - Could not check status online: 5
- June: 22 entries
 - Check status online: 17
 - Automatic time sync: 5

- July: 19 entries
 - Check status online: 12
 - Automated time sync: 6
 - Station check: 1
- August: 27 entries
 - Checked status online: 21
 - Automated time sync: 2
 - Changed particulate filter: 3 (appears to be only two actual changes – two entries were only minutes apart)
 - Could not check status online: 1
- September: 22 entries
 - Checked status online: 18
 - Automatic time sync: 2
 - Could not check site status online: 2

3 Analysis of Availability of Launch Data During 2017 Ozone Season

The following figures shows the percentage of days with MDA8 O₃ levels that exceeded a given threshold with launch data available.

Figure 3-1. Percentage of High MDA8 O₃ Days with Launch Data



As the figure shows, launch data are available for half to all of the days with MDA8 O₃ >60 ppb and the top 4 days at each monitoring station and region-wide. For six of the ten stations, launch data are available for 100% of the days when MDA8 O₃ levels were among the top 4 for the monitor for the year.

4 Summary of 2016-2017 Launch Data Availability for Regulatory Stations

Launch data are available for four of the eight days that that impact O₃ NAAQS compliance at CAMS 3 for 2016 and 2017, and for five of the eight days at CAMS 38. Since both of these monitor's 2015-2017 design values are attaining the 2015 Ozone NAAQS, these data would only be useful for any exceptional events analysis for the Austin-Round Rock MSA for its 2016-2018 design values or its 2017-2019 design values. For CAMS 3, launch data are available for 33% of the days that would impact the 2016-2018 design value and 25% of the days that would impact the 2017-2019 design value. For CAMS 38, launch data are available for 42% of the days that would impact the 2016-2018 design value, and 33% of the days that would impact the 2017-2019 design value.

5 Supplemental Deliverables Submitted

Along with this report, CAPCOG is also submitting each of the monthly reports submitted by St. Edwards university in 2017. Data from each flight are posted on St. Edwards University's website at <http://ir.stedwards.edu/natural-sciences/ozone?set=3506687>.