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INVOICE COVER LETTER

Friday, March 23, 2018

ATTN: Andrew Hoekzema
Director of Regional Services
Capital Area Council of Governments
6800 Burleson Road, Bldg. 310, Suite 165
Austin, TX 78744

RE: Contract #: Operation of Continuous Air Monitoring Stations 2018 / 2019
Invoice #: CAPCOG 18-007
Invoice Period of Service: 2/1/18 – 2/28/18
Total Invoice Amount: $13,063.47

This invoice is for services provided by Dios Dado Environmental Ltd. for operation and network maintenance of CAPCOG sites, as the terms set forth in the above referenced contract.

See the discussion and list of deliverables as follows:

1. Site activities are reported in attachment 1: CAPCOG activities log and log set.
2. O_3 equipment Beginning of Season 5-pt calibration checks completed and reported in attachment 2: CAPCOG 5 pt. calibration results.
3. New ozone instrument was installed at CAMS 1604 and is a Thermo 49i, s/n 1173250010, CAPCOG # 006733.
4. The Beginning of Season 2018 Inventory Report is attached as well.
5. Startup dates for each CAMS site are as follows:

C601	2/26/2018
C614	2/22/2018
C684	2/26/2018
C690	2/23/2018
C1603	2/27/2018
C1604	2/26/2018
C1675	2/22/2018
C6602	2/23/2018

Please remit payment to address above, respectfully,

Jim McCraw
Founding Partner
Dios Dado Environmental Ltd.

Attachment 1: CAPCOG Site Activities Log and Operators Log set.

February 2018 CAPCOG Activity Logs:

DATE	DESCRIPTON
02/05/2018	C601 – Performed monthly TEOM audit, performed PMIs 41-030, 41-030a and 41-030b
02/06/2018	Picking up equipment and performing recalibration of ozone generators at office
02/16/2018	Picking up equipment and performing recalibration of ozone generators at office
02/19/2018	C601 – O3 site startup activities
02/21/2018	C684 – Site startup activities
	C1604 – Site startup activities
02/22/2018	C1603 – Site startup activities
	C1675 – Site startup activities, 5 pt cal
	C614 – Site startup activities, 5 pt cal
02/23/2017	C6602– Site startup activities, 5 pt cal
	C690 – Site startup activities, 5 pt cal
02/26/2018	C601 – O3 site startup activities, 5 pt cal
	C684 – Site startup activities, 5 pt cal
	C1604 – Site startup activities, 5 pt cal
02/27/2018	C1603 – Site startup activities, 5 pt cal
	C1675 – Site startup activities

February 2018 CAPCOG Operator Logs:

Operator Logs for Fayette County C601

Date	Time (CST)	Operator	Visit Date	Log Entry
				02/01/2018 -- 03/01/2018 Fayette County C601 (48_149_0001)
Wed Feb 28, 2018	06:56:32	Ccarrasco	02/28/2018	Checked site status online
Tue Feb 27, 2018	07:15:55	Ccarrasco	02/27/2018	Checked site status online
Tue Feb 27, 2018	04:28:48			Automatic time sync
Mon Feb 26, 2018	09:38:59			Entered station to conduct 5 pt calibration on O3 instrument with transfer standard S/N 165-45140-273, cal date 02/16/18. Also performed UPS battery check (PMI-7-180). 400 set = 803.7 mv = 401.85 ppb 300 set = 604.15 mv = 302.075 ppb 200 set = 404.7 mv = 202.35 ppb 70 set = 142.3mv = 71.15 ppb 0 set = 3.25 mv = 1.625 ppb. Instrument passed cal. Placed in K code, ready for seasonal start. Departing site, all secure. L Thompson
Mon Feb 26, 2018	06:45:38	Ccarrasco	02/26/2018	Checked site status online
Sat Feb 24, 2018	04:28:51			Automatic time sync
Fri Feb 23, 2018	13:36:06			status ok, mode 4, % filter 33%, mass 7.1, noise .068, freq 253.48515, total mass 400.02, temps 50, main flow 2.99, aux flow 13.62, Ross Rother LCRA 2-23-18
Fri Feb 23, 2018	06:28:46	Ccarrasco	02/23/2018	Checked site status online
Thu Feb 22, 2018	06:54:19	Ccarrasco	02/22/2018	Checked site status online
Wed Feb 21, 2018	06:43:58	Ccarrasco	02/21/2018	Checked site status online
Tue Feb 20, 2018	06:46:50	Ccarrasco	02/20/2018	Checked site status online
Tue Feb 20, 2018	04:28:44			Automatic time sync
Mon Feb 19, 2018	11:40:33			Entered station to relace ambient sample line, change filters and get O3 unit started up for upcoming O3 season (PMI 4-360, 4-14). Will return to check/replace met sensors and am scheduling with LCRA tp perform PMI 41-180a (TEOM AC cleaning). Departing site, all secure. LT
Sat Feb 17, 2018	04:28:49			Automatic time sync
Fri Feb 16, 2018	07:48:51	Ccarrasco	02/16/2018	Checked site status online
Thu Feb 15, 2018	16:43:09			status ok, mode 4, % filter 31%, mass 8.9, noise .059, Freq 253.57249, total mass 250.73, case temp 50, air temp 50, cap temp 50, main flow 3.00, aux flow 15.63. RR LCRA 2/15/18
Thu Feb 15, 2018	07:15:59	Ccarrasco	02/15/2018	Checked site status online
Wed Feb 14, 2018	06:57:43	Ccarrasco	02/14/2018	Checked site status online
Tue Feb 13, 2018	06:46:10	Ccarrasco	02/13/2018	Checked site status online
Tue Feb 13, 2018	04:28:49			Automatic time sync
Mon Feb 12, 2018	07:16:46	Ccarrasco	02/12/2018	Checked site status online
Sat Feb 10, 2018	04:28:48			Automatic time sync
Fri Feb 09, 2018	13:48:08			ok ,4 ,fl 29 , mass 5.2 , noise 0.051 , freq 253.64498 , total mass 126.89 , case tem 50 , air temp 50 , cap temp 50 , main flow 3.00 , 13.62 [Ds[D1[D.[D [Dc[D auxflow 13.62 ERIC NAUMANN WITH LCRA 2/9/2018
Fri Feb 09, 2018	06:16:48	Ccarrasco	02/09/2018	Checked site status online
Thu Feb 08, 2018	07:53:46	Ccarrasco	02/08/2018	Checked site status online

Wed Feb 07, 2018	06:41:08	Ccarrasco	02/07/2018	Checked site status online
Tue Feb 06, 2018	07:31:35	Ccarrasco	02/06/2018	Checked site status online
Tue Feb 06, 2018	04:28:48			Automatic time sync
Mon Feb 05, 2018	11:51:05			Entered station to conduct monthly TEOM verification and PMIs. TEOM values pre audit: OK, 4, 44%, 7.3, 0.036, 253.17890, 50,50,50, 3.00, 13.64, tot mass 79.46. Performed TEOM PMI's 41-030,41-030a and b. TEOM passed verification, final values= OK, 4, 22%, -0.8, 0.040, 253.71955, 50, 50, 50, 3.00, 13.64, tot mass=-0.030(Changed filter). Placed instrument back in K code, and departed site, all secure. L Thompson
Mon Feb 05, 2018	06:29:17	Ccarrasco	02/05/2018	Checked site status online
Sat Feb 03, 2018	04:28:50			Automatic time sync
Fri Feb 02, 2018	11:42:07			ok , 4 , fl 41% , mass 3.1 , noise 0.044 , freq. 253.21607 , total mass 15.79 , case temp 50 , air temp 50 , cap temp 50 , main flow 3.00 , aux flow 13.63 . ERIC NAUMANN WITH LCRA 2-2-18 .
Fri Feb 02, 2018	07:23:45	Ccarrasco	02/02/2018	Checked site status online
Thu Feb 01, 2018	07:39:02	Ccarrasco	02/01/2018	Checked site status online

Operator Logs for Dripping Springs School C614

Date	Time (CST)	Operator	Visit Date	Log Entry
				02/01/2018 -- 03/01/2018 Dripping Springs School C614 (48_209_0614)
Wed Feb 28, 2018	06:57:35	Ccarrasco	02/28/2018	Could not check site status online
Thu Feb 22, 2018	12:35:13			Entered station to get equipment ready for start of season. Will conduct 5-pt calibration with Transfer standard sn 165-45140-273 cal date 2/16/2018. 400 set = 801.05mv = 400.525 ppb, 300 set = 601.25mv = 300.625 ppb, 200 set = 403.25mv = 201.625 ppb, 70 set = 142.0mv = 71.0 ppb, zero set = 2.9 mv = 1.45 ppb, Performed PMI 07-180 (UPS battery check),UPS working but was making a weird sound off and on, will check on getting a replacent UPS. Can't replace met sensors, they are on order and will be installed as soon as they are available. Also replacing ambient sample line,(PMI 04-360), cleaned AC filter (PMI 3-030), and installed a new filter (PMI 4-14) Ozone instrument passed cal, all equipment ready except new met sensors. Departing site all secure.L Thompson

Operator Logs for CAPCOG McKinney Roughs C684

Date	Time (CST)	Operator	Visit Date	Log Entry
				02/01/2018 -- 03/01/2018 CAPCOG McKinney Roughs C684 (48_021_0684)
Wed Feb 28, 2018	10:58:22	leadsadmin	02/28/2018	Monitor shutdown date cleared for: Ozone == 44201_1 Wind Speed == 61101_1 Resultant Wind Speed == 61103_1 Resultant Wind Direction == 61104_1 Maximum Wind Gust == 61105_1 Standard Deviation of Horizontal Wind Direction == 61106_1 Outdoor Temperature == 62101_1 Dew Point Temperature == 62103_1 Internal Station Temperature == 62107_1 Relative Humidity == 62201_1
Wed Feb 28, 2018	10:54:27			Automatic time sync
Wed Feb 28, 2018	06:57:54	Ccarrasco	02/28/2018	Could not check site status online
Tue Feb 27, 2018	04:43:39			Automatic time sync
Mon Feb 26, 2018	12:24:09			Entered station to get equipment ready for upcoming seasonal station start up, conducted 5-pt calibration with Transfer standard sn 165-45140-273 cal date 2/16/2018. 400 set = 801.1mv = 400.55 ppb, 300 set = 601.05mv = 300.525 ppb, 200 set = 402.55mv = 201.275 ppb, 70 set = 140.95mv = 70.475 ppb, zero set = 0.2 mv = 0.1 ppb, 5 point cal passed. UPS battery check completed(PMI 07-180). Will be getting equipment scheduled for next week to change sample line and check met gear. Instruments in K code. Departed station all secure.L Thompson
Wed Feb 21, 2018	13:16:32			Entered station to power up equipment for upcoming seasonal station start up. Performed PMI 4-14 (Filter change) and am coordinating with facility staff to schedule time for getting a ladder or lift to change sample line and check/replace met gear. Departing site, all secure. LT

Operator Logs for CAPCOG Lake Georgetown C690

Date	Time (CST)	Operator	Visit Date	Log Entry
				02/01/2018 -- 03/01/2018 CAPCOG Lake Georgetown C690 (48_491_0690)
Wed Feb 28, 2018	13:16:17	leadsadmin	02/28/2018	Monitor shutdown date cleared for: Ozone == 44201_1 Wind Speed == 61101_1 Resultant Wind Speed == 61103_1 Resultant Wind Direction == 61104_1 Maximum Wind Gust == 61105_1 Standard Deviation of Horizontal Wind Direction == 61106_1 Outdoor Temperature == 62101_1 Dew Point Temperature == 62103_1 Internal Station Temperature == 62107_1 Relative Humidity == 62201_1
Wed Feb 28, 2018	11:02:38			Automatic time sync
Wed Feb 28, 2018	06:58:11	Ccarrasco	02/28/2018	Could not check site status online
Fri Feb 23, 2018	11:38:43			Entered station to begin site start up activites. Will conduct 5-pt calibration with Transfer standard sn 165-45140-273 cal date 2/16/2018. Performed PMIs 4-14 (Filter change),07-180 (UPS battery check). Also replaced ambient sample line.(PMI 04-360) and cleaned AC filter (PMI 3-030). Still need to put tower back in place, that will happen 2-28-18, and will check met sensors at that time. 400 set = 806.25mv = 403.125 ppb, 300 set = 604.45mv = 302.225 ppb, 200 set = 404.55mv = 202.275 ppb, 70 set = 144.5mv = 72.25 ppb, zero set = 4.85mv = 2.425 ppb, Ozone instrument passed cal, is in K code and ready to go. Will return next week to put tower up and complete start up activities. Departing site all secure.L Thompson

Operator Logs for Gorzycki Middle School C1603

Date	Time (CST)	Operator	Visit Date	Log Entry
				02/01/2018 -- 03/01/2018 Gorzycki Middle School C1603 (48_453_1603)
Wed Feb 28, 2018	13:10:53	leadsadmin	02/28/2018	Monitor shutdown date cleared for: Ozone == 44201_1 Wind Speed == 61101_1 Resultant Wind Speed == 61103_1 Resultant Wind Direction == 61104_1 Maximum Wind Gust == 61105_1 Standard Deviation of Horizontal Wind Direction == 61106_1 Outdoor Temperature == 62101_1 Internal Station Temperature == 62107_1 Relative Humidity == 62201_1
Wed Feb 28, 2018	11:05:13			Automatic time sync
Wed Feb 28, 2018	06:59:32	Ccarrasco	02/28/2018	Could not check site status online
Tue Feb 27, 2018	12:24:09			Entered station to get equipment ready for upcoming seasonal station start up, Christiane Alepuz from CAPCOG onsite to observe some start up activities. Weather still an issue, will not be able to complete met sensor check, will replace sample line from filter to instrument now and replace remaining sample line and check met at soonest opportunity after weather clears. Will conduct 5-pt calibration with Transfer standard sn 165-45140-273 cal date 2/16/2018. 400 set = 806.1mv = 403.05 ppb, 300 set = 603.85mv = 301.925 ppb, 200 set = 403.25mv = 201.625 ppb, 70 set = 141.55mv = 70.775 ppb, zero set = 1.95 mv = 0.975 ppb, 5 point cal passed. Sample line partially replaced (PMI 04-360), placed instruments in K code. Departed station all secure.L Thompson
Thu Feb 22, 2018	10:08:09			Entered station to begin seasonal start up activities. Turned on instrument, performed PMI 4-14 (filter change) and PMI 07-180 (UPS check). Sample line change and met gear check will be completed when I return to run 5 point cal and finish site start up activities. Departing site, all secure. L Thompson

Operator Logs for Lockhart C1604

Date	Time (CST)	Operator	Visit Date	Log Entry
				02/01/2018 -- 03/01/2018 Lockhart C1604 (48_055_1604)
Wed Feb 28, 2018	13:59:41	leadsadmin	02/28/2018	Monitor shutdown date cleared for: Ozone == 44201_1 Wind Speed == 61101_1 Resultant Wind Speed == 61103_1 Resultant Wind Direction == 61104_1 Maximum Wind Gust == 61105_1 Standard Deviation of Horizontal Wind Direction == 61106_1 Outdoor Temperature == 62101_1 Dew Point Temperature == 62103_1 Internal Station Temperature == 62107_1 Relative Humidity == 62201_1
Wed Feb 28, 2018	11:05:59			Automatic time sync
Wed Feb 28, 2018	06:59:15	Ccarrasco	02/28/2018	Could not check site status online
Mon Feb 26, 2018	15:17:21			Entered station to get remaining equipment ready for upcoming seasonal station start up, conducted 5-pt calibration with Transfer standard sn 165-45140-273 cal date 2/16/2018. 400 set = 803.25mv = 401.625 ppb, 300 set = 601.2mv = 300.6 ppb, 200 set = 401.2mv = 200.6 ppb, 70 set = 141.55mv = 70.775 ppb, zero set = 0.2 mv = 0.1 ppb, 5 point cal passed. Checked met gear, changed out sensor nose-cone. Instruments in K code.Departed station all secure.L Thompson
Wed Feb 21, 2018	12:13:19			Entered station to install a new O3 instrument and get site ready for upcoming seasonal startup. New ozone instrument is a Thermo 49i, s/n 1173250010, CAPCOG # 006733. Ozone instrument turned on, filter changed (PMI 4-14), datalogger turned on. Sample line replaced (PMI 04-360),UPS battery check (PMI 07-180) Departed station all secure.L Thompson

Operator Logs for CAPCOG San Marcos Staples Road C1675

Date	Time (CST)	Operator	Visit Date	Log Entry
				02/01/2018 -- 03/01/2018 CAPCOG San Marcos Staples Road C1675 (48_209_1675)
Wed Feb 28, 2018	11:20:53	leadsadmin	02/28/2018	Monitor shutdown date cleared for: Ozone == 44201_1 Wind Speed == 61101_1 Resultant Wind Speed == 61103_1 Resultant Wind Direction == 61104_1 Maximum Wind Gust == 61105_1 Standard Deviation of Horizontal Wind Direction == 61106_1 Outdoor Temperature == 62101_1 Dew Point Temperature == 62103_1 Internal Station Temperature == 62107_1 Relative Humidity == 62201_1
Wed Feb 28, 2018	06:58:29	Ccarrasco	02/28/2018	Could not check site status online
Tue Feb 27, 2018	14:02:54			Entered station to complete start up activities, weather still preventing rooftop activity, but will replace sample line from filter to instrument until remaining line can be replaced. Will check met sensors at that time as well. Placed instruments in K code and departed site, all secure. L Thompson
Thu Feb 22, 2018	15:22:10			Entered station to get equipment ready for station startup. Due to inclement weather, sample line replacement (PMI 04-360), and met gear check and maintenance will have to be performed on next site visit. Performed UPS battery check (PMI 07-180) and UPS indicates it needs a replacement battery. Will conduct 5 point calibration with Transfer standard sn 165-45140-273 cal date 2/16/2018. 400 set = 803.05mv = 401.525 ppb, 300 set = 600.9mv = 300.45 ppb, 200 set = 405.85mv = 202.925 ppb, 70 set = 140.25mv = 70.125 ppb. zero set = 1.2mv = 0.6 ppb. Instrument passed cal. Placed instrument in K code. Will return to complete PMIs, departed site, all secure. L Thompson

Operator Logs for CAPCOG Hutto College Street C6602

Date	Time (CST)	Operator	Visit Date	Log Entry
				02/01/2018 -- 03/01/2018 CAPCOG Hutto College Street C6602 (48_491_6602)
Wed Feb 28, 2018	14:04:23	leadsadmin	02/28/2018	Monitor shutdown date cleared for: Ozone == 44201_1 Wind Speed == 61101_1 Resultant Wind Speed == 61103_1 Resultant Wind Direction == 61104_1 Maximum Wind Gust == 61105_1 Standard Deviation of Horizontal Wind Direction == 61106_1 Outdoor Temperature == 62101_1 Dew Point Temperature == 62103_1 Internal Station Temperature == 62107_1 Relative Humidity == 62201_1
Wed Feb 28, 2018	11:09:16			Automatic time sync
Wed Feb 28, 2018	06:58:54	Ccarrasco	02/28/2018	Could not check site status online
Fri Feb 23, 2018	14:46:26			Entered station to begin seasonal startup activities, conduct 5-pt calibration with Transfer standard sn 165-45140-273 cal date 02/16/2018. 400 set = 802.6mv = 401.3 ppb, 300 set = 603.95mv = 301.975 ppb, 200 set = 404.0mv = 202.0 ppb, 70 set = 142.4mv = 71.2 ppb, zero set = 2.25 mv = 1.125 ppb 5 point cal passed. Met gear checked, no issues found. Sample line replaced (PMI 04-360), UPS battery check (PMI 07-180). Filter change (PMI 4-14) performed. AC filter cleaned (PMI 3-030). Placed instruments in k-code and departed site, all secure. L Thompson

Attachment 2: CAPCOG Beginning of Season 5-pt calibration results.

CAPCOG February 2018 – 5 point calibration results																
5pt. Monthly Calibrations **Site**	**Calibration Date**	**0 ppb check**	**% out**	**DQO met**	**70 ppb check**	**% out**	**DQO met**	**200 ppb check**	**% out**	**DQO met**	**300 ppb check**	**% out**	**DQO met**	**400 ppb check**	**% out**	**DQO met**
C601	2/26/2018	1.6	0.3	yes	71.2	1.7	yes	202.4	1.2	yes	302.1	0.7	yes	401.9	0.5	yes
C614	2/22/2018	1.5	0.3	yes	71.0	1.4	yes	201.6	0.8	yes	300.6	0.2	yes	400.5	0.1	yes
C684	2/26/2018	0.1	0.0	yes	70.5	0.7	yes	201.3	0.6	yes	300.5	0.2	yes	400.6	0.1	yes
C690	2/23/2018	2.4	0.5	yes	72.3	3.1	yes	202.3	1.1	yes	302.2	0.7	yes	403.1	0.8	yes
C1603	2/27/2018	1.0	0.2	yes	70.8	1.1	yes	201.6	0.8	yes	301.9	0.6	yes	403.1	0.8	yes
C1604	2/26/2018	0.1	0.0	yes	70.8	1.1	yes	200.6	0.3	yes	300.6	0.2	yes	401.6	0.4	yes
C1675	2/22/2018	0.6	0.1	yes	70.1	0.1	yes	202.0	1.0	yes	300.5	0.2	yes	401.5	0.4	yes
C6602	2/23/2018	1.1	0.2	yes	71.2	1.7	yes	202.0	1.0	yes	302.0	0.7	yes	401.3	0.3	yes

This table shows the percentage of error of the machine from the known source.
<3% outstanding; <5% excellent; <7% good; >7% DQO not met.

In many cases we are able to maintain < 1% error for the most accurate data possible. None of the data was more than 5% out, and that is due to normal machine linearity imperfections.