



MEMORANDUM

Pima County Department of Environmental Quality

DATE: 1/2/15

TO: Bernie Cohn
Assistant Superintendent of Operations

FROM: Beth Gorman
Senior Program Manager

RE: Pima County DEQ Beryllium Monitoring Report 3rd Quarter 2014

Attached is the Pima County Department of Environmental Quality's (PDEQ) Air Monitoring Division Beryllium Monitoring Network Summary for the 3rd Quarter of 2014.

Highlights:

- 107 samples collected resulting in 41 valid and 66 invalid samples (38.32% data recovery). EPA requires monitoring data recovery at 75%.
- No beryllium values were detected over the Practical Quantitation Limit (PQL).
- The PQL was updated from 0.265 to 0.225 to reflect the lowest standard used in the analysis.
- PDEQ and SUSD staff are continuing to employ stringent monitoring protocols to ensure quality data is being collected properly to better protect public health.

For additional information on this report, please contact me at Pima County Department of Environmental Quality at (520) 724-7400.

Attachment

Cc: Ursula Kramer, Pima County Department of Environmental Quality Director
Richard Grimaldi, Pima County Department of Environmental Deputy Director



PIMA COUNTY

ENVIRONMENTAL QUALITY

Pima County

Department of Environmental Quality

Air Monitoring Division

Beryllium Monitoring Network Summary

3rd Quarter 2014

*Pima County Department of Environmental Quality
33 N. Stone Avenue, Suite 700
Tucson, Arizona 85701*

Summary

The Pima County Department of Environmental Quality has contracted with the Pima County Regional Wastewater Reclamation Department (RWRD) to perform analysis on filters sampled in the Beryllium Monitoring Network located in the Sunnyside Unified School District.

For the 3rd quarter of 2014 there was a total of 107 PM₁₀ samples collected resulting in 41 valid and 66 invalid samples; for a data recovery of 38.32%. Three samples were collected to be used as precision checks as recommended in *40 CFR, Part 58, Appendix A, Section 5.3.1*. All samples run for a 24-hour period as specified in *40 CFR, Part 50, Appendix B*.

There were a total of 41 samples analyzed for beryllium. Beryllium concentrations are reported as <0.225 ng/m³ PQL (Practical Quantitation Level). In the preamble to a November 13, 1985 rulemaking (50 FR 46906), the PQL was defined as “the lowest concentration of an analyte that can be reliably measured within specific limits of precision and accuracy during routine laboratory operating conditions.” The Agency has used the PQL to estimate or evaluate the minimum concentration at which most laboratories can be expected to reliably measure a specific chemical contaminant during day-to-day analysis.

The following pages display the sampling dates, sampling locations, PM₁₀ concentrations (µg/m³) calculated in standard conditions, PM₁₀ 24-hour NAAQS standard, precision measurements, beryllium analysis results, accompanying graphs and a brief explanation of all invalid samples for the 3rd quarter of 2014.

PM₁₀ /Beryllium Concentrations

Monthly Summary of PM₁₀/Beryllium Data

July 2014

Date	Location	Standard Concentration PM ₁₀ (µg/m ³)	24-hour NAAQS PM ₁₀ (µg/m ³)	Beryllium (ng/m ³)
07/01/14	Chaparral M.S.	30.4	150	<0.225
07/02/14	Transportation Bldg	INVALID	150	<0.225
07/03/14	Sunnyside H.S.	35.7	150	<0.225
07/04/14	Ocotillo #1	18.2	150	<0.225
07/04/14	Ocotillo #2	16.6	150	<0.225
07/05/14	Los Amigos	15.6	150	<0.225
07/06/14	Los Niños	19.4	150	<0.225
07/07/14	Chaparral M.S.	29.8	150	<0.225
07/08/14	Transportation Bldg	22.8	150	<0.225
07/09/14	Sunnyside H.S.	INVALID	INVALID	INVALID
07/10/14	Ocotillo #1	12.1	150	<0.225
07/10/14	Ocotillo #2	13.6	150	<0.225
07/11/14	Los Amigos	17.3	150	<0.225
07/12/14	Los Niños	11.4	150	<0.225
07/13/14	Chaparral M.S.	INVALID	INVALID	INVALID
07/14/14	Transportation Bldg.	INVALID	INVALID	INVALID
07/15/14	Sunnyside H.S.	INVALID	INVALID	INVALID
07/16/14	Ocotillo #1	INVALID	INVALID	INVALID
07/16/14	Ocotillo #2	INVALID	INVALID	INVALID
07/17/14	Los Amigos	INVALID	INVALID	INVALID
07/18/14	Los Niños	13.0	150	<0.225
07/19/14	Chaparral M.S.	INVALID	INVALID	INVALID
07/20/14	Transportation Bldg.	INVALID	INVALID	INVALID
07/21/14	Sunnyside H.S.	INVALID	INVALID	INVALID
07/22/14	Ocotillo #1	INVALID	INVALID	INVALID
07/22/14	Ocotillo #2	INVALID	INVALID	INVALID
07/23/14	Los Amigos	INVALID	INVALID	INVALID
07/24/14	Los Niños	INVALID	INVALID	INVALID
07/25/14	Chaparral M.S.	64.5	150	<0.225
07/26/14	Transportation Bldg.	56.9	150	<0.225
07/27/14	Sunnyside H.S.	INVALID	INVALID	INVALID
07/28/14	Ocotillo #1	INVALID	INVALID	INVALID
07/28/14	Ocotillo #2	INVALID	INVALID	INVALID
07/29/14	Los Amigos	INVALID	INVALID	INVALID
07/30/14	Los Ninos	INVALID	INVALID	INVALID
07/31/14	Chaparral M.S.	INVALID	INVALID	INVALID

Samples running on 7/2, 7/15 and 7/23 invalid due to sampler under-run (<23hrs) caused by improper set-up.

Samples running on 7/9, 7/14, and 7/30 invalid due to sampler over-run (>25hrs) caused by improper set-up.

Sample running on 7/13 invalid due to flow being less than 36 CFM.

Samples running on 7/16, 7/17, 7/19, 7/20, 7/21, 7/22 and 7/24 invalid due to samplers not running caused by improper set-up.

Samples running on 7/27, 7/29 and 7/31 invalid due to double exposure caused by filters not being changed.

Samples running on 7/28 invalid due to samplers running on wrong day.

NAAQS = National Ambient Air Quality Standard for PM₁₀

PM₁₀ /Beryllium Concentrations (continued)

Monthly Summary of PM₁₀/Beryllium Data

August 2014

Date	Location	Standard Concentration PM₁₀ (µg/m³)	24-hour NAAQS PM₁₀ (µg/m³)	Beryllium (ng/m³)
08/01/14	Transportation Bldg	12.6	150	<0.225
08/02/14	Sunnyside H.S.	INVALID	INVALID	INVALID
08/03/14	Ocotillo #1	INVALID	INVALID	INVALID
08/03/14	Ocotillo #2	INVALID	INVALID	INVALID
08/04/14	Los Amigos	INVALID	INVALID	INVALID
08/05/14	Los Niños	INVALID	INVALID	INVALID
08/06/14	Chaparral M.S.	INVALID	INVALID	INVALID
08/07/14	Transportation Bldg	26.3	150	<0.225
08/08/14	Sunnyside H.S.	24.0	150	<0.225
08/09/14	Ocotillo #1	29.0	150	<0.225
08/09/14	Ocotillo #2	30.3	150	<0.225
08/10/14	Los Amigos	INVALID	INVALID	INVALID
08/11/14	Los Niños	11.7	150	<0.225
08/12/14	Chaparral M.S.	INVALID	INVALID	INVALID
08/13/14	Transportation Bldg	9.9	150	<0.225
08/14/14	Sunnyside H.S.	16.7	150	<0.225
08/15/14	Ocotillo #1	INVALID	INVALID	INVALID
08/15/14	Ocotillo #2	INVALID	INVALID	INVALID
08/16/14	Los Amigos	INVALID	INVALID	INVALID
08/17/14	Los Niños	18.1	150	<0.225
08/18/14	Chaparral M.S.	INVALID	INVALID	INVALID
08/19/14	Transportation Bldg.	INVALID	INVALID	INVALID
08/20/14	Sunnyside H.S.	INVALID	INVALID	INVALID
08/21/14	Ocotillo #1	INVALID	INVALID	INVALID
08/21/14	Ocotillo #2	INVALID	INVALID	INVALID
08/22/14	Los Amigos	INVALID	INVALID	INVALID
08/23/14	Los Niños	INVALID	INVALID	INVALID
08/24/14	Chaparral M.S.	INVALID	INVALID	INVALID
08/25/14	Transportation Bldg.	INVALID	INVALID	INVALID
08/26/14	Sunnyside H.S.	INVALID	INVALID	INVALID
08/27/14	Ocotillo #1	INVALID	INVALID	INVALID
08/27/14	Ocotillo #2	INVALID	INVALID	INVALID
08/28/14	Los Amigos	INVALID	INVALID	INVALID
08/29/14	Los Niños	16.7	150	<0.225
08/30/14	Chaparral M.S.	INVALID	INVALID	INVALID
08/31/14	Transportation Bldg.	INVALID	INVALID	INVALID

Samples running on 8/2, 8/3, 8/4, 8/5, 8/6, 8/12, 8/21, 8/22, 8/23, 8/24, 8/25 and 8/30 invalid due to samplers not running caused by improper set-up.

Sample running on 8/10 invalid due to sampler over-run (>25hrs) caused by improper set-up.

Samples running on 8/15, 8/18, 8/19 and 8/27 invalid due to double exposure caused by filters not being changed.

Samples running on 8/16, 8/20 and 8/31 invalid due to no ending flow rate annotated.

Samples running on 8/26 and 8/28 invalid due to missing filters.

NAAQS = National Ambient Air Quality Standard for PM₁₀

PM₁₀ /Beryllium Concentrations (continued)

Monthly Summary of PM₁₀/Beryllium Data

September 2014

Date	Location	Standard Concentration PM₁₀ (µg/m³)	24-hour NAAQS PM₁₀ (µg/m³)	Beryllium (ng/m³)
09/01/14	Sunnyside H.S.	INVALID	INVALID	INVALID
09/02/14	Ocotillo #1	INVALID	INVALID	INVALID
09/02/14	Ocotillo #2	INVALID	INVALID	INVALID
09/03/14	Los Amigos	INVALID	INVALID	INVALID
09/04/14	Los Niños	8.6	150	<0.225
09/05/14	Chaparral M.S.	15.4	150	<0.225
09/06/14	Transportation Bldg.	16.6	150	<0.225
09/07/14	Sunnyside H.S.	INVALID	INVALID	INVALID
09/08/14	Ocotillo #1	6.0	150	<0.225
09/08/14	Ocotillo #2	INVALID	INVALID	INVALID
09/09/14	Los Amigos	11.6	150	<0.225
09/10/14	Los Niños	12.3	150	<0.225
09/11/14	Chaparral M.S.	14.8	150	<0.225
09/12/14	Transportation Bldg.	13.4	150	<0.225
09/13/14	Sunnyside H.S.	INVALID	INVALID	INVALID
09/14/14	Ocotillo #1	22.1	150	<0.225
09/14/14	Ocotillo #2	18.9	150	<0.225
09/15/14	Los Amigos	INVALID	INVALID	INVALID
09/16/14	Los Niños	7.9	150	<0.225
09/17/14	Chaparral M.S.	6.6	150	<0.225
09/18/14	Transportation Bldg.	INVALID	INVALID	INVALID
09/19/14	Sunnyside H.S.	12.1	150	<0.225
09/20/14	Ocotillo #1	INVALID	INVALID	INVALID
09/20/14	Ocotillo #2	INVALID	INVALID	INVALID
09/21/14	Los Amigos	INVALID	INVALID	INVALID
09/22/14	Los Niños	10.2	150	<0.225
09/23/14	Chaparral M.S.	15.4	150	<0.225
09/24/14	Transportation Bldg.	INVALID	INVALID	INVALID
09/25/14	Sunnyside H.S.	INVALID	INVALID	INVALID
09/26/14	Ocotillo #1	49.7	150	<0.225
09/26/14	Ocotillo #2	INVALID	INVALID	INVALID
09/27/14	Los Amigos	INVALID	INVALID	INVALID
09/28/14	Los Niños	INVALID	INVALID	INVALID
09/29/14	Chaparral M.S.	INVALID	INVALID	INVALID
09/30/14	Transportation Bldg.	INVALID	INVALID	INVALID

Sample running on 9/1 invalid due to no end time annotated.

Samples running on 9/2, 9/3 and 9/7 invalid due to samplers not running caused by improper set-up.

Samples running on 9/8 invalid due to double exposure caused by filters not being changed.

Sample running on 9/13 invalid due to flow being less than 36 CFM.

Samples running on 9/15 and 9/24 invalid due to sampler over-run (>25hrs) caused by improper set-up.

Samples running on 9/18, 9/20, 9/21, 9/25, 9/27 and 9/28 invalid due to sampler under-run (<23hrs) caused by improper set-up.

Sample running on 9/26 invalid due to ink from chart transferring onto filter compromising mass concentration calculation.

Sample running on 9/29 invalid due to part of filter missing compromising mass concentration calculation.

Sample running on 9/30 invalid due to no ending flow rate annotated.

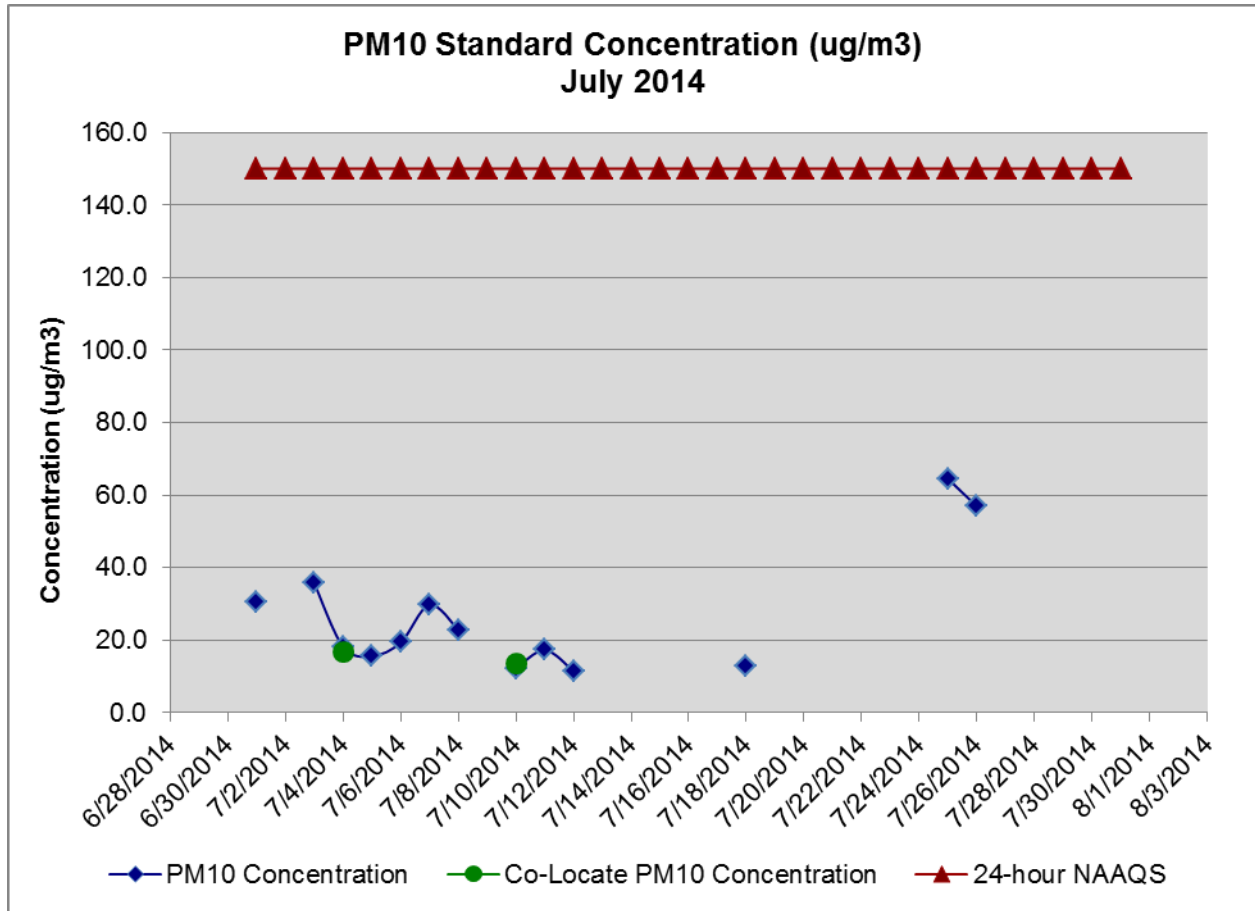
NAAQS = National Ambient Air Quality Standard for PM₁₀

Precision of Duplicate Pairs – PM10

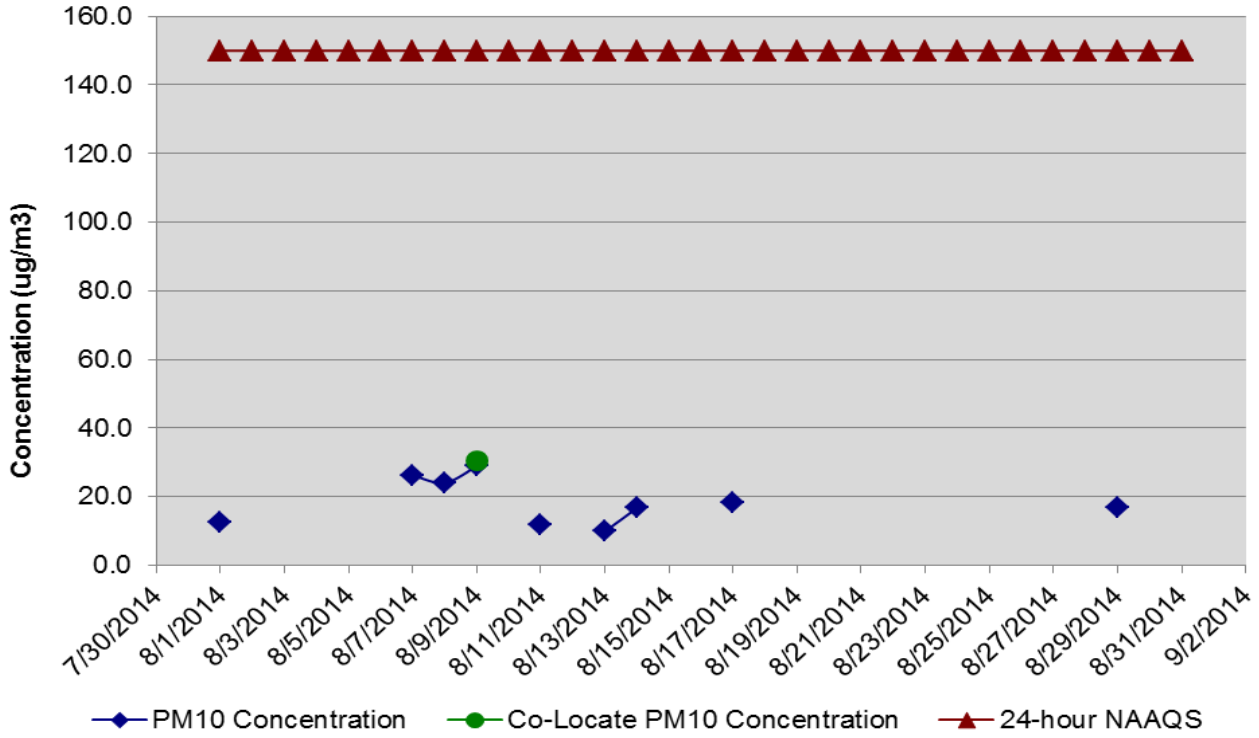
At low concentrations, agreement between the measurements of collocated samplers, expressed as relative percent difference, may be relatively poor. For this reason, collocated measurement pairs are selected for use in the precision and bias calculations only when both measurement pairs are equal to or above $15\mu\text{g}/\text{m}^3$ (40CFR58, Appendix A, Section 4c).

Sample Date	Primary Sampler Number	Measured PM ₁₀ ($\mu\text{g}/\text{m}^3$)	Duplicate Sampler Number	Measured PM ₁₀ ($\mu\text{g}/\text{m}^3$)	Difference ($\mu\text{g}/\text{m}^3$)	Percent Difference %
7/4/14	1	18.2	2	16.6	-1.4	-9.20
8/9/14	1	29.0	2	30.3	1.3	4.38
9/14/14	1	22.1	2	18.9	-3.2	-15.61

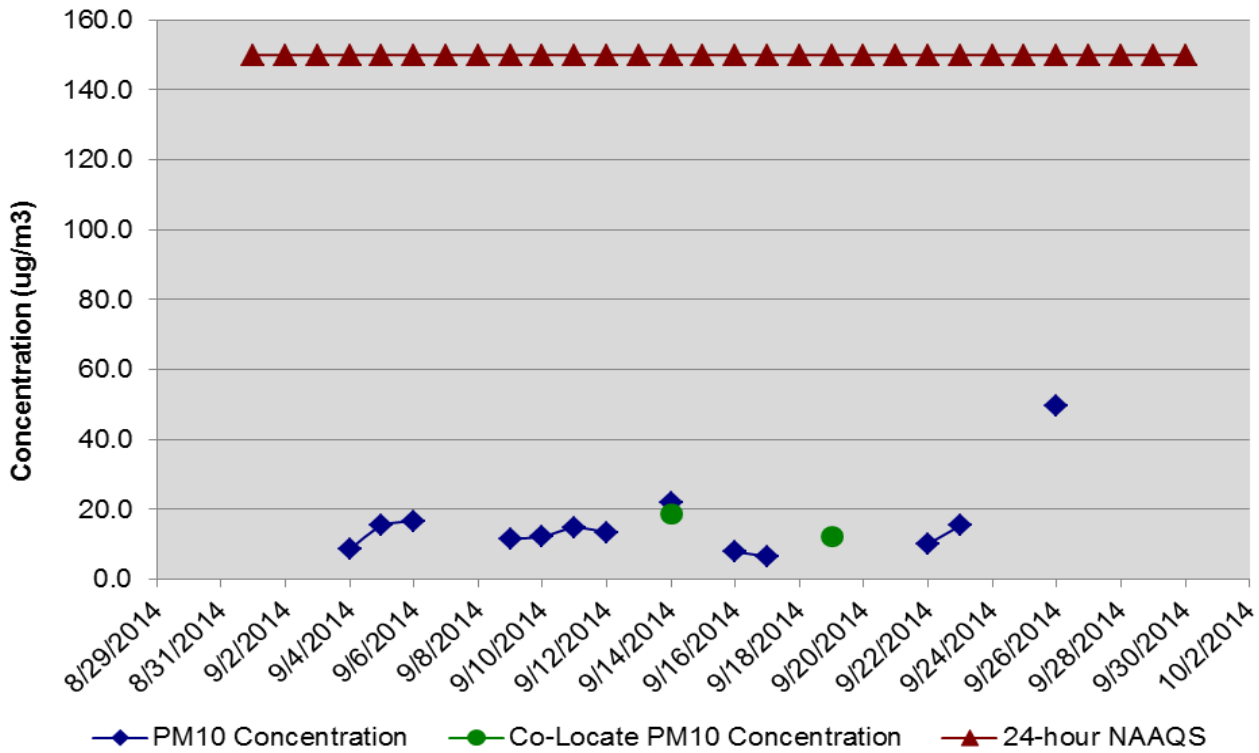
PM₁₀ Concentration Charts



**PM10 Standard Concentration (ug/m3)
August 2014**



**PM10 Standard Concentration (ug/m3)
September 2014**



Audit Results

Audits were performed on all of the samplers for the 3rd quarter of 2014. If the audit flow rate percent difference is $\leq \pm 10\%$, the sampler calibration is accepted. Differences exceeding $\pm 10\%$ require sampler recalibration. Differences exceeding $\pm 15\%$ will result in invalidation of all data subsequent to the last calibration or valid flow check. The following pages display the audit results for each sampling location.

AUDIT SPREADSHEET FOR PARTICULATES

Month	Ts	Ps
Jan	288.8	693.9
Feb	292.4	693.2
Mar	296.0	692.8
Apr	298.9	692.9
May	300.6	692.9
Jun	300.3	693.4
Jul	297.6	694.0
Aug	293.8	694.5
Sep	290.1	694.9
Oct	287.2	695.3
Nov	285.8	695.2
Dec	286.5	694.7

Sampler: Chaparral M.S. **Ts =** 290.1
Audit Date: 09/30/14 **Ps =** 694.9
Motor: 1424 **Temp c =** 22.20
Ta = 295.2
Pa = 693.0
Orifice Calibration Relationship
m= 1.24282 b= 0.00758

Plate No.	Orifice dH2O	Qa Orifice	Sampler dPex	Sampler dPext
18	3.69	35.4	2.03	0.93
13	3.17	32.8	1.71	0.85
10	2.64	29.9	1.48	0.79
7	1.77	24.5	1.08	0.68
5	1.19	20.0	0.79	0.58

Orifice dH2O 2.492
 Sample dPex 1.4
 Orifice Qa(m3/m) 0.82291
 Sample Qa dPex 28.9688

Audit flow rate % diff: 5.66 %

Orifice		
dH2O	Qa (CFM)	Qa (M3/m)
2.492	29.05	0.82

Sampler w/Orifice		
dPex	Qa (CFM)	Qa (M3/m)
1.42	30.70	0.87

Sampler Audit Relationship		
m =	0.022	
b =	0.133	
r =	0.997	
	pm10	tsp
Set Point (cfm)	40.8	51.0
Set Point (H2O)	2.5	3.8

AUDIT SPREADSHEET FOR PARTICULATES

Month	Ts	Ps
Jan	288.8	693.9
Feb	292.4	693.2
Mar	296.0	692.8
Apr	298.9	692.9
May	300.6	692.9
Jun	300.3	693.4
Jul	297.6	694.0
Aug	293.8	694.5
Sep	290.1	694.9
Oct	287.2	695.3
Nov	285.8	695.2
Dec	286.5	694.7

Sampler: Sunnyside H.S. **Ts =** 290.1
Audit Date: 09/30/14 **Ps =** 694.9
Motor: 1418 **Temp c =** 22.20
Ta = 295.2
Pa = 693.0
Orifice Calibration Relationship
m= 1.24282 b= 0.00758

Plate No.	Orifice dH2O	Qa Orifice	Sampler dPex	Sampler dPext
18	4.02	37.0	2.33	1.00
13	3.28	33.9	1.98	0.92
10	2.82	30.9	1.73	0.86
7	1.91	25.4	1.20	0.71
5	1.24	20.4	0.81	0.59

Orifice dH2O 2.674
 Sample dPex 1.6
 Orifice Qa(m3/m) 0.85265
 Sample Qa dPex 30.0503

Audit flow rate % diff: 5.33 %

Orifice		
dH2O	Qa (CFM)	Qa (M3/m)
2.674	30.10	0.85

Sampler w/Orifice		
dPex	Qa (CFM)	Qa (M3/m)
1.61	31.71	0.90

Sampler Audit Relationship		
m =	0.025	
b =	0.086	
r =	0.999	
	pm10	tsp
Set Point (cfm)	40.8	51.0
Set Point (H2O)	2.8	4.3

AUDIT SPREADSHEET FOR PARTICULATES

Month	Ts	Ps
Jan	288.8	693.9
Feb	292.4	693.2
Mar	296.0	692.8
Apr	298.9	692.9
May	300.6	692.9
Jun	300.3	693.4
Jul	297.6	694.0
Aug	293.8	694.5
Sep	290.1	694.9
Oct	287.2	695.3
Nov	285.8	695.2
Dec	286.5	694.7

Sampler: Los Amigos **Ts =** 290.1
Audit Date: 09/30/14 **Ps =** 694.9
Motor: 1419 **Temp c =** 24.44
 Ta = 297.4
 Pa = 693.0
Orifice Calibration Relationship
m= 1.24282 b= 0.0758

Plate No.	Orifice dH20	Qa Orifice	Sampler dPex	Sampler dPext
18	3.73	35.7	1.67	0.85
13	3.16	32.9	1.36	0.76
10	2.65	30.1	1.06	0.67
7	1.79	24.7	0.60	0.51
5	1.18	20.0	0.34	0.38

Orifice dH2O 2.502
 Sample dPex 1.0
 Orifice Qa(m3/m) 0.82771
 Sample Qa dPex 29.4189

Orifice		
dH2O	Qa (CFM)	Qa (M3/m)
2.502	29.22	0.83

Sampler w/Orifice		
dPex	Qa (CFM)	Qa (M3/m)
1.01	30.50	0.86

Sampler Audit Relationship		
m =	0.030	
b =	-0.221	
r =	0.999	
	pm10	tsp
Set Point (cfm)	41.1	51.4
Set Point (H20)	2.4	4.0

Audit flow rate % diff: 4.36 %

AUDIT SPREADSHEET FOR PARTICULATES

Month	Ts	Ps
Jan	288.8	693.9
Feb	292.4	693.2
Mar	296.0	692.8
Apr	298.9	692.9
May	300.6	692.9
Jun	300.3	693.4
Jul	297.6	694.0
Aug	293.8	694.5
Sep	290.1	694.9
Oct	287.2	695.3
Nov	285.8	695.2
Dec	286.5	694.7

Sampler: Los Niños **Ts =** 290.1
Audit Date: 09/30/14 **Ps =** 694.9
Motor: 1421 **Temp c =** 26.10
 Ta = 299.1
 Pa = 692.0
Orifice Calibration Relationship
m= 1.24282 b= 0.00758

Plate No.	Orifice dH20	Qa Orifice	Sampler dPex	Sampler dPext
18	3.40	34.2	1.42	0.78
13	2.92	31.7	1.18	0.71
10	2.47	29.1	0.91	0.63
7	1.71	24.2	0.57	0.50
5	1.12	19.6	0.26	0.34

Orifice dH2O 2.324
 Sample dPex 0.9
 Orifice Qa(m3/m) 0.80033
 Sample Qa dPex 28.4682

Orifice		
dH2O	Qa (CFM)	Qa (M3/m)
2.324	28.25	0.80

Sampler w/Orifice		
dPex	Qa (CFM)	Qa (M3/m)
0.87	29.46	0.83

Sampler Audit Relationship		
m =	0.030	
b =	-0.249	
r =	0.998	
	pm10	tsp
Set Point (cfm)	41.4	51.8
Set Point (H20)	2.3	4.0

Audit flow rate % diff: 4.24 %

AUDIT SPREADSHEET FOR PARTICULATES

Month	Ts	Ps
Jan	288.8	693.9
Feb	292.4	693.2
Mar	296.0	692.8
Apr	298.9	692.9
May	300.6	692.9
Jun	300.3	693.4
Jul	297.6	694.0
Aug	293.8	694.5
Sep	290.1	694.9
Oct	287.2	695.3
Nov	285.8	695.2
Dec	286.5	694.7

Sampler: Ocotillo #1 **Ts =** 290.1
Audit Date: 09/30/14 **Ps =** 694.9
Motor: 1420 **Temp c =** 22.20
 Ta = 295.2
 Pa = 693.0
Orifice Calibration Relationship
m= 1.24282 b= 0.00758

Plate No.	Orifice dH2O	Qa Orifice	Sampler dPex	Sampler dPext
18	3.78	35.7	1.59	0.82
13	3.12	32.5	1.24	0.73
10	2.62	29.8	0.96	0.64
7	1.80	24.7	0.57	0.49
5	1.19	20.0	0.26	0.33

Orifice dH2O 2.502
 Sample dPex 0.9
 Orifice Qa(m3/m) 0.82457
 Sample Qa dPex 29.3636

Audit flow rate % diff: 4.32 %

Orifice		
dH2O	Qa (CFM)	Qa (M3/m)
2.502	29.11	0.82

Sampler w/Orifice		
dPex	Qa(CFM)	Qa(M3/m)
0.92	30.37	0.86

Sampler Audit Relationship		
m =	0.031	
b =	-0.276	
r =	0.999	
	pm10	tsp
Set Point (cfm)	40.8	51.0
Set Point (H2O)	2.3	3.9

AUDIT SPREADSHEET FOR PARTICULATES

Month	Ts	Ps
Jan	288.8	693.9
Feb	292.4	693.2
Mar	296.0	692.8
Apr	298.9	692.9
May	300.6	692.9
Jun	300.3	693.4
Jul	297.6	694.0
Aug	293.8	694.5
Sep	290.1	694.9
Oct	287.2	695.3
Nov	285.8	695.2
Dec	286.5	694.7

Sampler: Ocotillo #2 **Ts =** 290.1
Audit Date: 09/30/14 **Ps =** 694.9
Motor: 1425 **Temp c =** 24.44
 Ta = 297.4
 Pa = 693.0
Orifice Calibration Relationship
m= 1.24282 b= 0.00758

Plate No.	Orifice dH2O	Qa Orifice	Sampler dPex	Sampler dPext
18	4.98	41.3	1.82	0.88
13	4.16	37.7	1.56	0.82
10	3.49	34.6	1.31	0.75
7	2.26	27.8	0.84	0.60
5	1.52	22.7	0.56	0.49

Orifice dH2O 3.282
 Sample dPex 1.2
 Orifice Qa(m3/m) 0.94888
 Sample Qa dPex 33.5036

Audit flow rate % diff: 4.96 %

Orifice		
dH2O	Qa (CFM)	Qa (M3/m)
3.282	33.50	0.95

Sampler w/Orifice		
dPex	Qa (CFM)	Qa (M3/m)
1.22	35.17	1.00

Sampler Audit Relationship		
m =	0.021	
b =	0.007	
r =	0.999	
	pm10	tsp
Set Point (cfm)	41.1	51.4
Set Point (H2O)	1.8	2.8

AUDIT SPREADSHEET FOR PARTICULATES

Month	Ts	Ps
Jan	288.8	693.9
Feb	292.4	693.2
Mar	296.0	692.8
Apr	298.9	692.9
May	300.6	692.9
Jun	300.3	693.4
Jul	297.6	694.0
Aug	293.8	694.5
Sep	290.1	694.9
Oct	287.2	695.3
Nov	285.8	695.2
Dec	286.5	694.7

Sampler: Transportation **Ts =** 287.2
Audit Date: 10/02/14 **Ps =** 695.3
Motor: 1422 **Temp c =** 23.33
 Ta = 296.3
 Pa = 696.0
Orifice Calibration Relationship
m= 1.24282 b= 0.00758

Plate No.	Orifice dH2O	Qa Orifice	Sampler dPex	Sampler dPext
18	3.61	35.0	1.59	0.82
13	3.14	32.6	1.33	0.75
10	2.57	29.5	1.04	0.67
7	1.76	24.4	0.68	0.54
5	1.13	19.5	0.37	0.40

Orifice dH2O 2.442
 Sample dPex 1.0
 Orifice Qa(m3/m) 0.81434
 Sample Qa dPex 28.8687

Audit flow rate % diff: 4.54 %

Orifice		
dH2O	Qa (CFM)	Qa (M3/m)
2.442	28.75	0.81

Sampler w/Orifice		
dPex	Qa (CFM)	Qa (M3/m)
1.00	30.06	0.85

Sampler Audit Relationship		
m =	0.027	
b =	-0.129	
r =	0.999	
	pm10	tsp
Set Point (cfm)	41.2	51.5
Set Point (H2O)	2.3	3.8