



**Pima County**  
**Department of Environmental Quality**  
**Air Monitoring Division**  
**(REVISED)**  
**Beryllium Monitoring Network Summary**  
**2nd Quarter 2008**



*Pima County Department of Environmental Quality  
150 West Congress St., 1st Floor  
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. The Pima County RWRD will analyze all filters collected from June 1, 2008 and forward. The Pima County RWRD received a Letter of Certification and Training from the Arizona Department of Health Services on February 11, 2009, which certifies the laboratory to perform analysis of the air filters using EPA Method IO-3.5.

At the current time, there is a 5 month back-log on samples that need to be analyzed. PDEQs intent is to have the most current month's samples, along with one month of back-log samples analyzed every month.

For the 2<sup>nd</sup> quarter of 2008 there was a total of 101 samples collected resulting in 96 valid and 5 invalid samples; for a data recovery of 95.0%. Thirteen 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 101 (including 3 field blanks) samples analyzed for beryllium. Beryllium concentrations are reported as  $<0.001 \mu\text{g}/\text{m}^3$  MDL (Minimum Detectable Limit) for the first two months, and  $<0.265 \text{ ng}/\text{m}^3$  PQL (Practical Quantitation Level) for the third month. This is due to Schneider Laboratories performing the analysis for April and May of 2008, and the Pima County RWRD performing the analysis for the month of June 2008. The limit of  $0.265 \text{ ng}/\text{m}^3$  air reported by RWRD is nearly four times better than  $0.001 \mu\text{g}/\text{m}^3$  air which was being reported by Schneider. The PQL describes what can be reliably measured, while the MDL describes what can be reliably detected.

The MDL, as defined in *40 CFR Part 136, Appendix B*, is the minimum concentration of a substance that can be reported with 99% confidence that the analyte concentration is greater than zero. The regulatory significance of the MDL is that EPA uses the MDL to determine when a contaminant is deemed to be detected and it can be used to calculate a PQL for that contaminant.

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,  $\text{PM}_{10}$  concentrations ( $\mu\text{g}/\text{m}^3$ ) calculated in standard conditions,  $\text{PM}_{10}$  24-hour NAAQS standard, precision measurements, and Beryllium analysis results, accompanying graphs and a brief explanation of all invalid samples for the 2<sup>nd</sup> quarter of 2008.

## PM<sub>10</sub> /Beryllium Concentrations

### Monthly Summary of PM<sub>10</sub>/Beryllium Data

April – 2008

Date	Location	Standard Concentration PM <sub>10</sub> (µg/m <sup>3</sup> )	Beryllium (µg/m <sup>3</sup> )
04/01/08	Los Amigos	33.0	<0.001
04/02/08	Los Niños	28.4	<0.001
04/03/08	Chaparral M.S.	28.6	<0.001
04/04/08	Transportation Bldg	26.3	<0.001
04/05/08	Sunnyside H.S.	28.2	<0.001
04/06/08	Ocotillo #1	14.5	<0.001
04/06/08	Ocotillo #2	16.3	<0.001
04/07/08	Los Amigos	33.2	<0.001
04/08/08	Los Niños	21.8	<0.001
04/09/08	Chaparral M.S.	30.0	<0.001
04/10/08	Transportation Bldg	29.7	<0.001
04/11/08	Sunnyside H.S.	25.7	<0.001
04/12/08	Ocotillo #1	17.5	<0.001
04/12/08	Ocotillo #2	16.8	<0.001
04/13/08	Los Amigos	42.9	<0.001
04/14/08	Los Niños	19.6	<0.001
04/15/08	Chaparral M.S.	29.9	<0.001
04/16/08	Transportation Bldg	35.6	<0.001
04/17/08	Sunnyside H.S.	26.9	<0.001
04/18/08	Ocotillo #1	32.5	<0.001
04/18/08	Ocotillo #2	35.8	<0.001
04/19/08	Los Amigos	43.2	<0.001
04/20/08	Los Niños	19.4	<0.001
04/21/08	Chaparral M.S.	33.5	<0.001
04/22/08	Transportation Bldg	40.3	<0.001
04/23/08	Sunnyside H.S.	37.1	<0.001
04/24/08	Ocotillo #1	INVALID	<0.001
04/24/08	Ocotillo #2	INVALID	<0.001
04/25/08	Los Amigos	41.8	<0.001
04/26/08	Los Niños	33.4	<0.001
04/27/08	Chaparral M.S.	58.6	<0.001
04/28/08	Transportation Bldg	53.6	<0.001
04/29/08	Sunnyside H.S.	36.1	<0.001
04/30/08	Ocotillo #1	37.6	<0.001
04/30/08	Ocotillo #2	39.0	<0.001

Samples running on 04/24/08 invalid due to no post flow rate annotated by SUSD on chart recorder, resulting in PDEQ not being able to calculate an average flow rate.

One field blank provided for each month of samples

NAAQS = National Ambient Air Quality Standard (which is 150 µg/m<sup>3</sup> for PM<sub>10</sub>).

## PM<sub>10</sub> /Beryllium Concentrations (continued)

### Monthly Summary of PM<sub>10</sub>/Beryllium Data

May - 2008

Date	Location	Standard Concentration PM <sub>10</sub> (µg/m <sup>3</sup> )	Beryllium (µg/m <sup>3</sup> )
05/01/08	Los Amigos	50.4	<0.001
05/02/08	Los Niños	38.4	<0.001
05/03/08	Chaparral M.S.	26.4	<0.001
05/04/08	Transportation Bldg	21.6	<0.001
05/05/08	Sunnyside H.S.	33.4	<0.001
05/06/08	Ocotillo #1	27.2	<0.001
05/06/08	Ocotillo #2	28.1	<0.001
05/07/08	Los Amigos	31.0	<0.001
05/08/08	Los Niños	37.0	<0.001
05/09/08	Chaparral M.S.	51.6	<0.001
05/10/08	Transportation Bldg	42.5	<0.001
05/11/08	Sunnyside H.S.	37.4	<0.001
05/12/08	Ocotillo #1	36.1	<0.001
05/12/08	Ocotillo #2	37.9	<0.001
05/13/08	Los Amigos	49.4	<0.001
05/14/08	Los Niños	24.1	<0.001
05/15/08	Chaparral M.S.	28.2	<0.001
05/16/08	Transportation Bldg	40.6	<0.001
05/17/08	Sunnyside H.S.	18.1	<0.001
05/18/08	Ocotillo #1	19.6	<0.001
05/18/08	Ocotillo #2	23.1	<0.001
05/19/08	Los Amigos	31.6	<0.001
05/20/08	Los Niños	30.7	<0.001
05/21/08	Chaparral M.S.	INVALID	<0.001
05/22/08	Transportation Bldg	86.2	<0.001
05/23/08	Sunnyside H.S.	32.4	<0.001
05/24/08	Ocotillo #1	23.1	<0.001
05/24/08	Ocotillo #2	23.8	<0.001
05/25/08	Los Amigos	21.9	<0.001
05/26/08	Los Niños	12.9	<0.001
05/27/08	Chaparral M.S.	19.0	<0.001
05/28/08	Transportation Bldg	25.5	<0.001
05/29/08	Sunnyside H.S.	24.4	<0.001
05/30/08	Ocotillo #1	17.8	<0.001
05/30/08	Ocotillo #2	19.6	<0.001
05/31/08	Los Amigos	17.9	<0.001

Sample running on 05/21/08 invalid due to the sampler flow being out of specifications (flow range = 36-44 CFM).

One field blank provided for each month of samples

NAAQS = National Ambient Air Quality Standard (which is 150 µg/m<sup>3</sup> for PM<sub>10</sub>).

## PM<sub>10</sub> /Beryllium Concentrations (continued)

### Monthly Summary of PM<sub>10</sub>/Beryllium Data

June – 2008

Date	Location	Standard Concentration PM <sub>10</sub> (µg/m <sup>3</sup> )	Beryllium (ng/m <sup>3</sup> )
06/01/08	Los Niños	22.5	<0.265
06/02/08	Chaparral M.S.	29.6	<0.265
06/03/08	Transportation Bldg	31.6	<0.265
06/04/08	Sunnyside H.S.	44.0	<0.265
06/05/08	Ocotillo #1	30.6	<0.265
06/05/08	Ocotillo #2	31.7	<0.265
06/06/08	Los Amigos	28.0	<0.265
06/07/08	Los Niños	28.4	<0.265
06/08/08	Chaparral M.S.	INVALID	<0.265
06/09/08	Transportation Bldg	31.5	<0.265
06/10/08	Sunnyside H.S.	42.2	<0.265
06/11/08	Ocotillo #1	25.3	<0.265
06/11/08	Ocotillo #2	28.2	<0.265
06/12/08	Los Amigos	24.5	<0.265
06/13/08	Los Niños	28.8	<0.265
06/14/08	Chaparral M.S.	27.6	<0.265
06/15/08	Transportation Bldg	28.9	<0.265
06/16/08	Sunnyside H.S.	34.1	<0.265
06/17/08	Ocotillo #1	32.1	<0.265
06/17/08	Ocotillo #2	49.9	<0.265
06/18/08	Los Amigos	30.3	<0.265
06/19/08	Los Niños	36.0	<0.265
06/20/08	Chaparral M.S.	30.3	<0.265
06/21/08	Transportation Bldg	73.9	<0.265
06/22/08	Sunnyside H.S.	61.7	<0.265
06/23/08	Ocotillo #1	28.5	<0.265
06/23/08	Ocotillo #2	39.7	<0.265
06/24/08	Los Amigos	39.4	<0.265
06/25/08	Los Niños	30.3	<0.265
06/26/08	Chaparral M.S.	15.7	<0.265
06/27/08	Transportation Bldg	INVALID	<0.265
06/28/08	Sunnyside H.S.	21.0	<0.265
06/29/08	Ocotillo #1	36.8	<0.265
06/29/08	Ocotillo #2	40.7	<0.265
06/30/08	Los Amigos	21.7	<0.265

Sample running on 6/8/08 invalid due to a portion of the filter missing resulting in PDEQ not being able to calculate gross weight.

Sample running on 6/27/08 invalid due to a power failure.

One field blank provided for each month of samples

NAAQS = National Ambient Air Quality Standard (which is 150 µg/m<sup>3</sup> for PM<sub>10</sub>).

# SCHNEIDER LABORATORIES

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AIHA/ELLAP 100527, NVLAP 101150-0, NYELAP/NELAC 11413, CAELAP 2078, NC 593, SC 93003

## LABORATORY ANALYSIS REPORT

High-Volume Filter Beryllium Analysis by NIOSH 7102M

**ACCOUNT #:** 3690-08-6 **DATE COLLECTED:** 4/2/2008  
**CLIENT:** Pima County Procurement Department **DATE RECEIVED:** 5/13/2008  
**ADDRESS:** 150 West Congress, 1st Floor **DATE ANALYZED:** 6/9/2008  
Tucson, AZ 85701 **DATE REPORTED:** 6/9/2008  
**PROJECT NAME:** PDEQ Beryllium Study  
**JOB LOCATION:** Tucson, Arizona  
**PROJECT NO.:**  
**PO NO.:** 08051602 **Sample Type:** PM10

SLI Sample No.	Client Sample No.	Filter Type	Filter Sample Date	Sample Location	Flow Rate (L/min)	Sample Volume (m <sup>3</sup> )	Total Beryllium (µg)*	Beryllium Conc (µg/m <sup>3</sup> )
29736081	Q4113677	PM10	4/1/08	Los Amigos Elementary	1119.34	1,518.75	<0.20	<0.001
29736131	Q4113676	PM10	4/2/08	Los Niños Elementary	1165.82	1,581.81	< 0.20	< 0.001
29736132	Q4113675	PM10	4/3/08	Chaparral Middle School	1128.28	1,491.26	< 0.20	< 0.001
29736133	Q4113674	PM10	4/4/08	Transportation Building	1142.52	1,550.19	< 0.20	< 0.001
29736134	Q4113673	PM10	4/5/08	Sunnyside High School	1066.38	1,395.98	< 0.20	< 0.001
29736135	Q4113672	PM10	4/6/08	Ocotillo Elementary #1	1140.49	1,493.00	< 0.20	< 0.001
29736136	Q4113671	PM10	4/6/08	Ocotillo Elementary #2	1166.70	1,527.31	< 0.20	< 0.001
29736137	Q4113670	PM10	4/7/08	Los Amigos Elementary	1125.93	1,473.94	< 0.20	< 0.001
29736082	Q4113668	PM10	4/8/08	Los Niños Elementary	1170.97	1,532.89	< 0.20	< 0.001
29736138	Q4113667	PM10	4/9/08	Chaparral Middle School	1186.50	1,568.22	< 0.20	< 0.001
29736139	Q4113666	PM10	4/10/08	Transportation Building	1172.70	1,591.15	< 0.20	< 0.001
29736140	Q4113665	PM10	4/11/08	Sunnyside High School	1122.47	1,469.41	< 0.20	< 0.001
29736141	Q4113664	PM10	4/12/08	Ocotillo Elementary #1	1140.49	1,493.00	< 0.20	< 0.001
29736142	Q4113663	PM10	4/12/08	Ocotillo Elementary #2	1164.14	1,523.96	< 0.20	< 0.001
29736143	Q4113662	PM10	4/13/08	Los Amigos Elementary	1113.17	1,457.23	< 0.20	< 0.001
29736144	Q4113661	PM10	4/14/08	Los Niños Elementary	1131.78	1,481.59	< 0.20	< 0.001
29736083	Q4113660	PM10	4/15/08	Chaparral Middle School	1172.14	1,549.24	< 0.20	< 0.001
29736145	Q4113659	PM10	4/16/08	Transportation Building	1133.11	1,483.33	< 0.20	< 0.001
29736146	Q4113658	PM10	4/17/08	Sunnyside High School	1094.68	1,433.03	< 0.20	< 0.001

**Total Number of Pages in Report: 2**

Results relate only to samples as received by the laboratory

SLI Sample No.	Client Sample No.	Filter Type	Filter Sample Date	Sample Location	Flow Rate (m <sup>3</sup> /min)	Sample Volume (m <sup>3</sup> )	Total Beryllium (µg)*	Beryllium Conc (µg/m <sup>3</sup> )
29736147	Q4113657	PM10	4/18/08	Ocotillo Elementary #1	1071.36	1,402.49	< 0.20	< 0.001
29736148	Q4113656	PM10	4/18/08	Ocotillo Elementary #2	1097.94	1,437.29	< 0.20	< 0.001
29736149	Q4113655	PM10	4/19/08	Los Amigos Elementary	1087.19	1,423.22	<0.20	<0.001
29736150	Q4113654	PM10	4/20/08	Los Niños Elementary	1131.78	1,481.59	<0.20	<0.001
29736151	Q4113653	PM10	4/21/08	Chaparral Middle School	1116.70	1,515.14	<0.20	<0.001
29736084	Q4113652	PM10	4/22/08	Transportation Building	1079.82	1,413.57	<0.20	<0.001
29736152	Q4113651	PM10	4/23/08	Sunnyside High School	1066.38	1,395.98	<0.20	<0.001
29736153	Q4113648	PM10	4/25/08	Los Amigos Elementary	1073.96	1,405.90	<0.20	<0.001
29736154	Q4113647	PM10	4/26/08	Los Niños Elementary	1183.69	1,549.55	<0.20	<0.001
29736155	Q4113646	PM10	4/27/08	Chaparral Middle School	1128.28	1,491.26	<0.20	<0.001
29736156	Q4113645	PM10	4/28/08	Transportation Building	1120.04	1,466.22	<0.20	<0.001
29736085	Q4113644	PM10	4/29/08	Sunnyside High School	1094.68	1,433.03	<0.20	<0.001
29736157	Q4113643	PM10	4/30/08	Ocotillo Elementary #1	1166.79	1,527.43	<0.20	<0.001
29736158	Q4113642	PM10	4/30/08	Ocotillo Elementary #2	1151.23	1,507.06	<0.20	<0.001

Analysis Run ID: 41743



Reviewed By **James P. Anderson, Metals Supervisor**

**Analyst: M. TODD GIBSON**

**Total Number of Pages in Report: 2 Reviewed By**

Results relate only to samples as received by the laboratory. Visit [www.slabin.com](http://www.slabin.com) for current certifications.

*Minimum Reporting Limit: 0.2 µg Total Beryllium. Volume is based on client-supplied information. 24h TWA assumes zero concentration for time not sampled. Results are not blank-corrected unless noted by analyst. Quality control data is available from the laboratory upon request. \*Data precision justifies 2 significant figures. <sup>1</sup>All testing is performed in strict accordance with Schneider Laboratories, Inc. standard operating procedures. Unusual sample conditions, if any, are described.*

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## LABORATORY ANALYSIS REPORT

High-Volume Filter Beryllium Analysis by NIOSH 7102M

**ACCOUNT #:** 3690-08-7 **DATE COLLECTED:** 5/1/2008  
**CLIENT:** Pima County Procurement Department **DATE RECEIVED:** 6/11/2008  
**ADDRESS:** 150 West Congress **DATE ANALYZED:** 7/10/2008  
Tucson, AZ 85701 **DATE REPORTED:** 7/14/2008  
**PROJECT NAME:** PDEQ Beryllium Study  
**JOB LOCATION:** Tucson, AZ

**PROJECT NO.:**

**PO NO.:** B504685 Rev. No: 000

**Sample Type:** PM10

SLI Sample No.	Client Sample No.	Filter Type	Filter Sample Date	Sample Location	Flow Rate (L/min)	Sample Volume (m <sup>3</sup> )	Total Beryllium (µg)*	Beryllium Conc. (µg/m <sup>3</sup> )
29772269	Q4113641	PM10	5/1/08	Los Amigos Elementary	1087.20	1,423.22	<0.20	<0.001
29772270	Q4113640	PM10	5/2/08	Los Niños Elementary	1145.00	1,498.92	<0.20	<0.001
29772271	Q4113639	PM10	5/3/08	Chaparral Middle School	1113.40	1,471.58	<0.20	<0.001
29772272	Q4113638	PM10	5/4/08	Transportation Building	1120.00	1,466.22	<0.20	<0.001
29772273	Q4113637	PM10	5/5/08	Sunnyside High School	1094.70	1,433.03	<0.20	<0.001
29772320	Q4113635	PM10	5/6/08	Ocotillo Elementary #1	1140.50	1,493.00	<0.20	<0.001
29772274	Q4113634	PM10	5/6/08	Ocotillo Elementary #2	1151.20	1,507.06	<0.20	<0.001
29772275	Q4113633	PM10	5/7/08	Los Amigos Elementary	1100.30	1,440.33	<0.20	<0.001
29772276	Q4113632	PM10	5/8/08	Los Niños Elementary	1145.00	1,498.92	<0.20	<0.001
29772277	Q4113631	PM10	5/9/08	Chaparral Middle School	1172.10	1,549.24	<0.20	<0.001
29772278	Q4113630	PM10	5/10/08	Transportation Building	1106.80	1,448.90	<0.20	<0.001
29772279	Q4113629	PM10	5/11/08	Sunnyside High School	1122.50	1,469.41	<0.20	<0.001
29772280	Q4113628	PM10	5/12/08	Ocotillo Elementary #1	1217.40	1,593.66	<0.20	<0.001
29772281	Q4113627	PM10	5/12/08	Ocotillo Elementary #2	1202.00	1,573.49	<0.20	<0.001
29772321	Q4113626	PM10	5/13/08	Los Amigos Elementary	1163.50	1,522.91	<0.20	<0.001
29772282	Q4113625	PM10	5/14/08	Los Niños Elementary	1171.00	1,532.89	<0.20	<0.001
29772283	Q4113624	PM10	5/15/08	Chaparral Middle School	1157.60	1,530.08	<0.20	<0.001
29772284	Q4113623	PM10	5/16/08	Transportation Building	1193.40	1,431.35	<0.20	<0.001
29772285	Q4113622	PM10	5/17/08	Sunnyside High School	1080.60	1,414.59	<0.20	<0.001

**Total Number of Pages in Report: 2**

Results relate only to samples as received by the laboratory.





Pima County Regional Wastewater Reclamation Department  
Compliance and Regulatory Affairs Office  
7101 N. Casa Grande Highway

Sample Location	Sample ID	Parameter	Sample Date	Analysis Method	Analysis Date		Analysis Value	Units	PQL	Data Qualifier(s)
Los Ninos Elementary	2008100870	Beryllium	6/1/08	IO-3.5	12/16/08	<	0.265	ng/m <sup>3</sup>	0.265	1,2
Chaparral M.S.	2008110794	Beryllium	6/2/08	IO-3.5	12/16/08	<	0.265	ng/m <sup>3</sup>	0.265	1,2
Transportation Bldg.	2008110795	Beryllium	6/3/08	IO-3.5	12/16/08	<	0.265	ng/m <sup>3</sup>	0.265	1
Sunnyside H.S.	2008110796	Beryllium	6/4/08	IO-3.5	12/16/08	<	0.265	ng/m <sup>3</sup>	0.265	1
Ocotillo Elementary #1	2008110797	Beryllium	6/5/08	IO-3.5	12/16/08	<	0.265	ng/m <sup>3</sup>	0.265	1
Ocotillo Elementary #2	2008110798	Beryllium	6/5/08	IO-3.5	1/6/09	<	0.265	ng/m <sup>3</sup>	0.265	3,4
Los Amigos Elementary	2008110799	Beryllium	6/6/08	IO-3.5	1/16/09	<	0.265	ng/m <sup>3</sup>	0.265	3,4
Los Ninos Elementary	2008110803	Beryllium	6/7/08	IO-3.5	1/16/09	<	0.265	ng/m <sup>3</sup>	0.265	3,4
Transportation Bldg.	2008110804	Beryllium	6/9/08	IO-3.5	1/16/09	<	0.265	ng/m <sup>3</sup>	0.265	3,4
Sunnyside H.S.	2008110805	Beryllium	6/10/08	IO-3.5	1/16/09	<	0.265	ng/m <sup>3</sup>	0.265	3,4
Ocotillo Elementary #1	2008110806	Beryllium	6/11/08	IO-3.5	1/16/06	<	0.265	ng/m <sup>3</sup>	0.265	3,4
Ocotillo Elementary #2	2008110807	Beryllium	6/11/08	IO-3.5	1/16/09	<	0.265	ng/m <sup>3</sup>	0.265	3,4
Los Amigos Elementary	2008110808	Beryllium	6/12/08	IO-3.5	1/16/09	<	0.265	ng/m <sup>3</sup>	0.265	3
Los Ninos Elementary	2008110809	Beryllium	6/13/08	IO-3.5	1/16/09	<	0.265	ng/m <sup>3</sup>	0.265	3,4
Chaparral M.S.	2008110810	Beryllium	6/14/08	IO-3.5	1/16/09	<	0.265	ng/m <sup>3</sup>	0.265	3,4
Transportation Bldg.	2008110811	Beryllium	6/15/08	IO-3.5	1/16/09	<	0.265	ng/m <sup>3</sup>	0.265	1,4
Sunnyside H.S.	2008110812	Beryllium	6/16/08	IO-3.5	1/15/09	<	0.265	ng/m <sup>3</sup>	0.265	1,5
Ocotillo Elementary #1	2008110813	Beryllium	6/17/08	IO-3.5	1/15/09	<	0.265	ng/m <sup>3</sup>	0.265	1,5
Ocotillo Elementary #2	2008110814	Beryllium	6/17/08	IO-3.5	1/15/09	<	0.265	ng/m <sup>3</sup>	0.265	1,5
Los Amigos Elementary	2008110815	Beryllium	6/18/08	IO-3.5	1/15/09	<	0.265	ng/m <sup>3</sup>	0.265	1,5
Los Ninos Elementary	2008110816	Beryllium	6/19/08	IO-3.5	1/15/09	<	0.265	ng/m <sup>3</sup>	0.265	1,5
Chaparral M.S.	2008110817	Beryllium	6/20/08	IO-3.5	1/15/09	<	0.265	ng/m <sup>3</sup>	0.265	1,5
Transportation Bldg.	2008110818	Beryllium	6/21/08	IO-3.5	1/15/09	<	0.265	ng/m <sup>3</sup>	0.265	1,5
Sunnyside H.S.	2008110819	Beryllium	6/22/08	IO-3.5	1/15/09	<	0.265	ng/m <sup>3</sup>	0.265	1,5
Ocotillo Elementary #1	2008110820	Beryllium	6/23/08	IO-3.5	1/15/09	<	0.265	ng/m <sup>3</sup>	0.265	1,5
Ocotillo Elementary #2	2008110821	Beryllium	6/23/08	IO-3.5	1/15/09	<	0.265	ng/m <sup>3</sup>	0.265	1,5
Los Amigos Elementary	2008110822	Beryllium	6/24/08	IO-3.5	1/15/09	<	0.265	ng/m <sup>3</sup>	0.265	1,5
Los Ninos Elementary	2008110823	Beryllium	6/25/08	IO-3.5	1/15/09	<	0.265	ng/m <sup>3</sup>	0.265	1,5
Chaparral M.S.	2008110824	Beryllium	6/26/08	IO-3.5	2/19/09	<	0.265	ng/m <sup>3</sup>	0.265	
Sunnyside H.S.	2008110825	Beryllium	6/28/08	IO-3.5	2/19/09	<	0.265	ng/m <sup>3</sup>	0.265	
Ocotillo Elementary #1	2008110826	Beryllium	6/29/08	IO-3.5	2/19/09	<	0.265	ng/m <sup>3</sup>	0.265	
Ocotillo Elementary #2	2008110827	Beryllium	6/29/08	IO-3.5	2/19/09	<	0.265	ng/m <sup>3</sup>	0.265	
Los Amigos Elementary	2008110828	Beryllium	6/30/08	IO-3.5	2/19/09	<	0.265	ng/m <sup>3</sup>	0.265	

<sup>1</sup> See case narrative

<sup>2</sup> Target analyte detected in method blank at or above method reporting limit. Concentration found in sample.

<sup>3</sup> Target analyte detected in method blank at or above the method reporting limits.

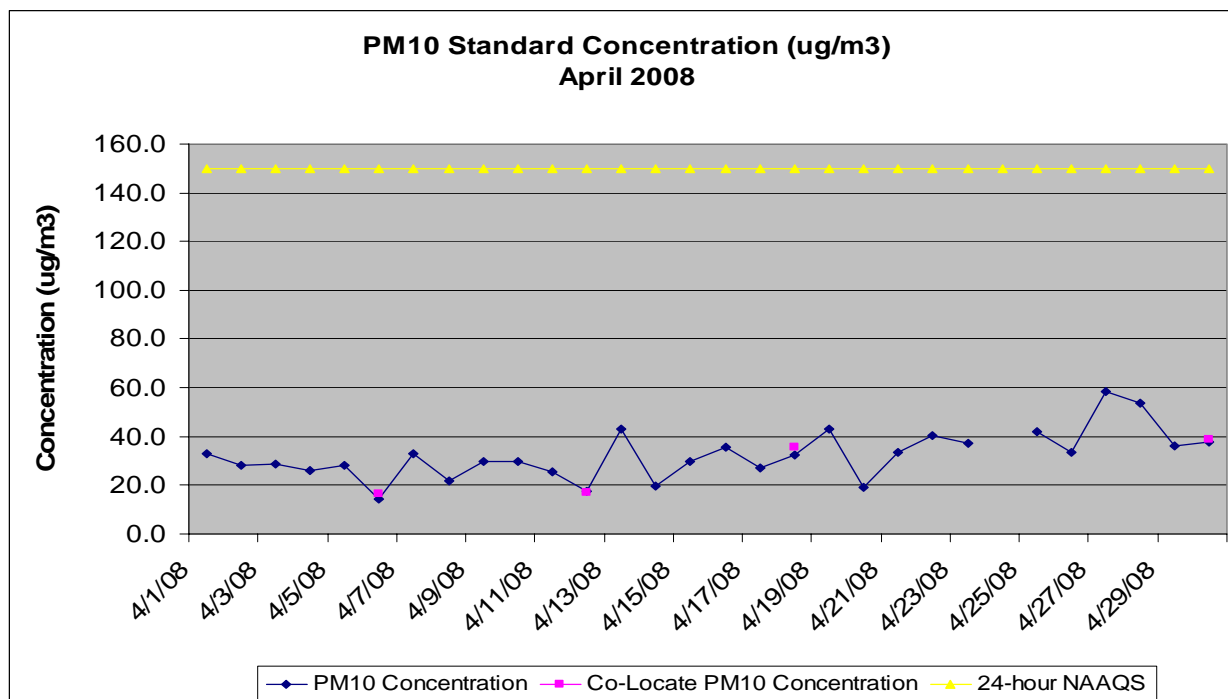
<sup>4</sup> The associated blank spike recovery was below method acceptance limits.

<sup>5</sup> The associated blank spike recovery was above laboratory acceptance limits.

## Precision of Duplicate Pairs – PM10

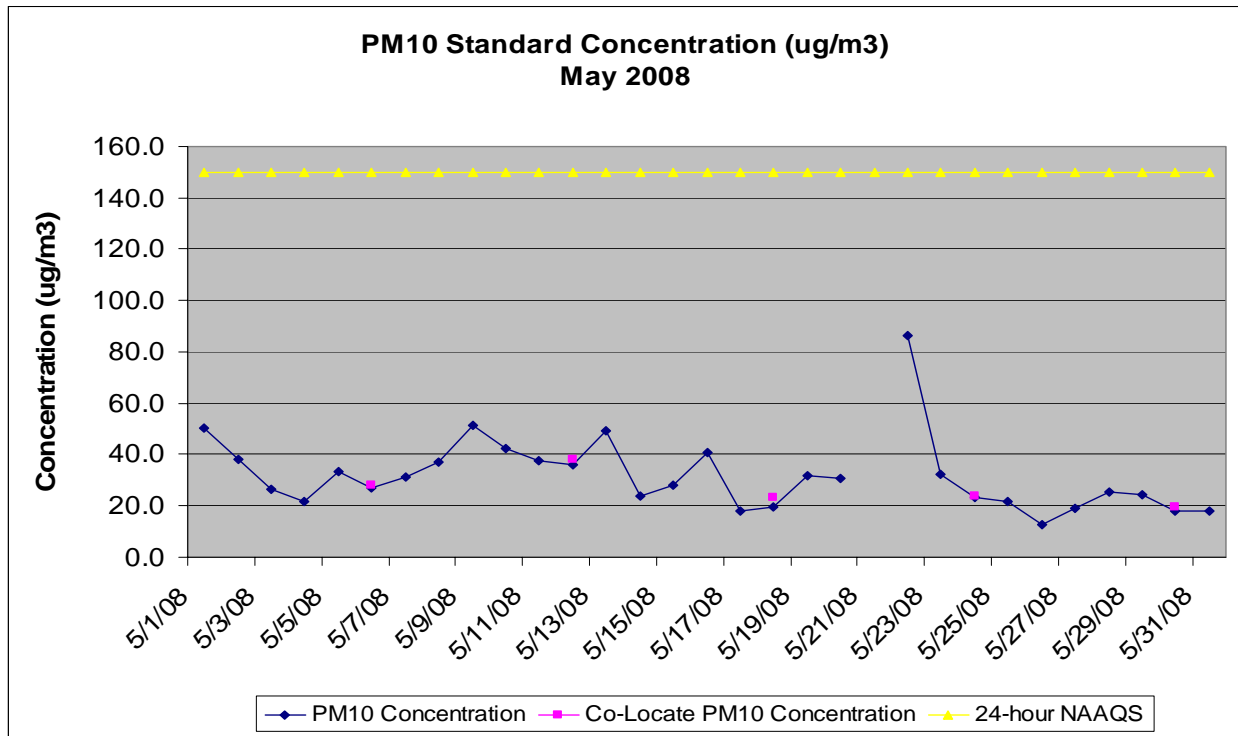
At low concentrations, agreement between the measurements of collocated samplers, expressed as relative percent difference, may be relatively poor. For this reason, collocated measurement pairs are selected for use in the precision and bias calculations only when both measurement pairs are equal to or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

Sample Date	Primary Sampler Number	Measured PM <sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )	Duplicate Sampler Number	Measured PM <sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )	Difference ( $\mu\text{g}/\text{m}^3$ )	Percent Difference %
4/12/08	1	17.5	2	16.8	0.7	-4.08
4/18/08	1	32.5	2	35.8	3.3	9.66
4/30/08	1	37.6	2	39.0	1.4	2.66
5/6/08	1	27.2	2	28.1	0.9	3.25
5/12/08	1	36.1	2	37.9	1.8	4.86
5/18/08	1	19.6	2	23.1	3.5	16.39
5/24/08	1	23.1	2	23.8	0.7	2.99
5/30/08	1	17.8	2	19.6	1.8	9.63
6/5/08	1	30.6	2	31.7	1.1	3.53
6/11/08	1	25.3	2	28.2	2.9	10.84
6/17/08	1	32.1	2	49.9	17.8	43.41
6/23/08	1	28.5	2	39.7	11.2	32.84
6/29/08	1	36.8	2	40.7	3.9	10.06

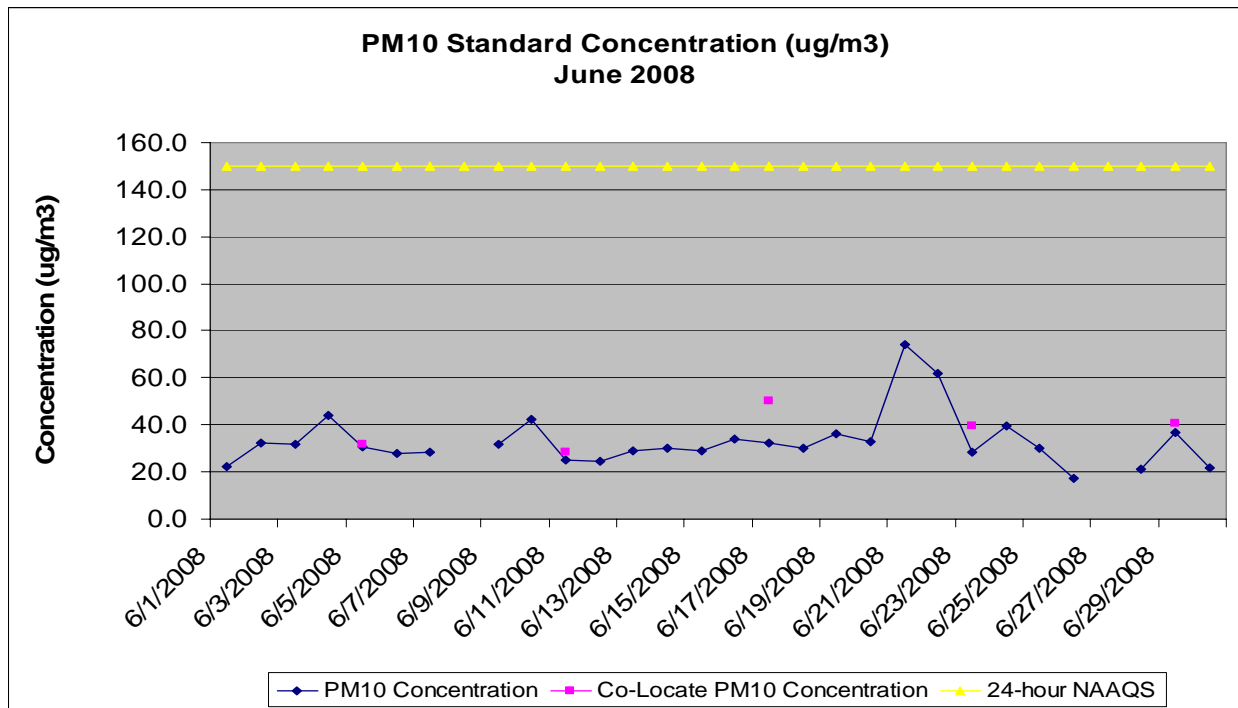


Sample's running on 4/24/08 invalid due to no post flow rate annotated by SUSD on chart recorder, resulting in PDEQ not being able to calculate an average flow rate.

NAAQS = National Ambient Air Quality Standards for PM<sub>10</sub>



Sample Running on 5/21/08 invalid due to the sampler flow being out of specifications (flow range = 36-44 CFM).  
 NAAQS = National Ambient Air Quality Standards for PM<sub>10</sub>



Sample running on 6/7/08 invalid due to the corner of the filter missing resulting in an incorrect post representative weight.

Sample running on 6/27/08 invalid due to a power failure.

NAAQS = National Ambient Air Quality Standards for PM<sub>10</sub>

## Audit Results

Audits were performed on all of the samplers with the audit flow rate percent difference being at or below 5% for all samplers. 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
June	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 =** 300.3  
**Audit Date:** 06/17/08    **Ps =** 693.4  
**Motor:** 1424    **Temp c =** 39.44  
**Temp f:** 103.0    **Ta =** 312.4  
**Press:** 27.356    **Pa =** 694.8  
**Altim:** 30.030    **Orifice Calibration Relationship**  
**m= 1.31700    b= -0.05774**

Plate No.	Orifice dH20	Qa Orifice	Sampler dPex	Sampler dPext
18	2.98	32.6	1.60	0.85
13	2.56	30.3	1.42	0.80
10	2.13	27.8	1.21	0.74
7	1.44	23.1	0.87	0.63
5	0.97	19.3	0.62	0.53

Orifice dH2O 2.016  
 Sample dPex 1.14  
 Orifice Qa(m3/m) 0.766786  
 Sample Qa dPex 27.00868

Audit flow rate % diff: 4.91 %

Orifice		
dH2O	Qa(CFM)	Qa(M3/m)
2.016	27.07	0.77

Sampler w/Orifice		
dPex	Qa(CFM)	Qa(M3/m)
1.14	28.40	0.80

Sampler Audit Relationship		
<b>m =</b>	0.024	
<b>b =</b>	0.066	
<b>r =</b>	1.000	
	<b>pm10</b>	<b>tsp</b>
<b>Set Point (cfm)</b>	41.5	51.9
<b>Set Point (H20)</b>	2.5	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
June	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 =** 300.3  
**Audit Date:** 06/17/08    **Ps =** 693.4  
**Motor:** 1418    **Temp c =** 41.11  
**Temp f:** 106.0    **Ta =** 314.1  
**Press:** 27.337    **Pa =** 694.4  
**Altim:** 30.010    **Orifice Calibration Relationship**  
**m= 1.31700    b= -0.05774**

Plate No.	Orifice dH20	Qa Orifice	Sampler dPex	Sampler dPext
18	2.77	31.6	1.72	0.88
13	2.42	29.6	1.47	0.82
10	2.10	27.7	1.32	0.77
7	1.43	23.1	0.93	0.65
5	0.94	19.0	0.69	0.56

Orifice dH2O 1.932  
 Sample dPex 1.23  
 Orifice Qa(m3/m) 0.75369  
 Sample Qa dPex 26.55592

Audit flow rate % diff: 4.88 %

Orifice		
dH2O	Qa(CFM)	Qa(M3/m)
1.932	26.61	0.75

Sampler w/Orifice		
dPex	Qa(CFM)	Qa(M3/m)
1.23	27.91	0.79

Sampler Audit Relationship		
<b>m =</b>	0.026	
<b>b =</b>	0.065	
<b>r =</b>	0.996	
	<b>pm10</b>	<b>tsp</b>
<b>Set Point (cfm)</b>	41.8	52.2
<b>Set Point (H20)</b>	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
June	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 =** 300.3  
**Audit Date:** 06/17/08      **Ps =** 693.4  
**Motor:** 1419      **Temp c =** 41.11  
**Temp f:** 106.0      **Ta =** 314.1  
**Press:** 27.337      **Pa =** 694.4  
**Altim:** 30.010      **Orifice Calibration Relationship**  
    **m= 1.31700      b= -0.05774**

Plate No.	Orifice dH2O	Qa Orifice	Sampler dPex	Sampler dPext
18	2.74	31.4	1.18	0.73
13	2.34	29.1	0.96	0.66
10	1.98	26.9	0.79	0.60
7	1.40	22.9	0.48	0.47
5	0.95	19.1	0.26	0.34

Orifice dH2O      1.882  
 Sample dPex      0.73  
 Orifice Qa(m3/m)      0.744445  
 Sample Qa dPex      26.42989

Audit flow rate % diff: 3.79 %

Orifice		
dH2O	Qa(CFM)	Qa(M3/m)
1.882	26.28	0.74

Sampler w/Orifice		
dPex	Qa(CFM)	Qa(M3/m)
0.73	27.28	0.77

Sampler Audit Relationship		
<b>m =</b>	0.032	
<b>b =</b>	-0.257	
<b>r =</b>	0.999	
	<b>pm10</b>	<b>tsp</b>
<b>Set Point (cfm)</b>	41.8	52.2
<b>Set Point (H2O)</b>	2.5	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
June	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 =** 300.3  
**Audit Date:** 06/17/08      **Ps =** 693.4  
**Motor:** 1421      **Temp c =** 39.44  
**Temp f:** 103.0      **Ta =** 312.4  
**Press:** 27.356      **Pa =** 694.8  
**Altim:** 30.030      **Orifice Calibration Relationship**  
    **m= 1.3700      b= -0.05774**

Plate No.	Orifice dH2O	Qa Orifice	Sampler dPex	Sampler dPext
18	2.26	28.6	0.90	0.64
13	1.98	26.8	0.73	0.57
10	1.68	24.9	0.58	0.51
7	1.22	21.4	0.37	0.41
5	0.80	17.6	0.20	0.30

Orifice dH2O      1.588  
 Sample dPex      0.56  
 Orifice Qa(m3/m)      0.685472  
 Sample Qa dPex      24.33796

Audit flow rate % diff: 3.73 %

Orifice		
dH2O	Qa(CFM)	Qa(M3/m)
1.588	24.20	0.69

Sampler w/Orifice		
dPex	Qa(CFM)	Qa(M3/m)
0.56	25.11	0.71

Sampler Audit Relationship		
<b>m =</b>	0.030	
<b>b =</b>	-0.241	
<b>r =</b>	0.998	
	<b>pm10</b>	<b>tsp</b>
<b>Set Point (cfm)</b>	41.5	51.9
<b>Set Point (H2O)</b>	2.3	4.0

**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
June	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 =** 300.3  
**Audit Date:** 06/24/08      **Ps =** 693.4  
**Motor:** 1420      **Temp c =** 36.11  
**Temp f:** 97.0      **Ta =** 309.1  
**Press:** 27.337      **Pa =** 694.4  
**Altim:** 30.010      **Orifice Calibration Relationship**  
    **m= 1.31700      b= -0.05774**

Plate No.	Orifice dH2O	Qa Orifice	Sampler dPex	Sampler dPext
18	2.68	30.8	1.05	0.68
13	2.28	28.6	0.86	0.62
10	1.92	26.3	0.67	0.55
7	1.34	22.3	0.40	0.42
5	0.91	18.6	0.19	0.29

Orifice dH2O                      1.826  
 Sample dPex                        0.63  
 Orifice Qa(m3/m)                0.728428  
 Sample Qa dPex                 25.91144

Audit flow rate % diff: 3.79 %

Orifice		
dH2O	Qa(CFM)	Qa(M3/m)
1.826	25.71	0.73

Sampler w/Orifice		
dPex	Qa(CFM)	Qa(M3/m)
0.63	26.70	0.76

Sampler Audit Relationship		
<b>m =</b>	0.032	
<b>b =</b>	-0.299	
<b>r =</b>	0.999	
	<b>pm10</b>	<b>tsp</b>
<b>Set Point (cfm)</b>	41.1	51.4
<b>Set Point (H2O)</b>	2.3	4.1

**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
June	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 =** 300.3  
**Audit Date:** 06/24/08      **Ps =** 693.4  
**Motor:** 1417      **Temp c =** 36.11  
**Temp f:** 97.0      **Ta =** 309.1  
**Press:** 27.337      **Pa =** 694.4  
**Altim:** 30.010      **Orifice Calibration Relationship**  
    **m= 1.31700      b= -0.05774**

Plate No.	Orifice dH2O	Qa Orifice	Sampler dPex	Sampler dPext
18	5.57	30.2	1.09	0.70
13	2.23	28.3	0.93	0.64
10	1.89	26.1	0.77	0.59
7	1.33	22.2	0.51	0.48
5	0.89	18.4	0.31	0.37

Orifice dH2O                      1.782  
 Sample dPex                        0.72  
 Orifice Qa(m3/m)                0.72013  
 Sample Qa dPex                 25.49027

Audit flow rate % diff: 4.08 %

Orifice		
dH2O	Qa(CFM)	Qa(M3/m)
1.782	25.42	0.72

Sampler w/Orifice		
dPex	Qa(CFM)	Qa(M3/m)
0.72	26.47	0.75

Sampler Audit Relationship		
<b>m =</b>	0.028	
<b>b =</b>	-0.135	
<b>r =</b>	1.000	
	<b>pm10</b>	<b>tsp</b>
<b>Set Point (cfm)</b>	41.1	51.4
<b>Set Point (H2O)</b>	2.2	3.7

**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
June	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 =** 300.3  
**Audit Date:** 06/17/08      **Ps =** 693.4  
**Motor:** 1422      **Temp c =** 41.11  
**Temp f:** 106.0      **Ta =** 314.1  
**Press:** 27.337      **Pa =** 694.4  
**Altim:** 30.010      **Orifice Calibration Relationship**  
    **m= 1.31700      b= -0.05774**

Plate No.	Orifice dH2O	Qa Orifice	Sampler dPex	Sampler dPext
18	2.08	27.6	0.91	0.64
13	1.79	25.7	0.72	0.57
10	1.48	23.5	0.62	0.53
7	1.07	20.2	0.46	0.46
5	0.70	16.6	0.28	0.36

Orifice dH2O                      1.424  
 Sample dPex                        0.60  
 Orifice Qa(m3/m)                0.653262  
 Sample Qa dPex                 23.08253

Audit flow rate % diff: 4.27 %

Orifice		
dH2O	Qa(CFM)	Qa(M3/m)
1.424	23.06	0.65

Sampler w/Orifice		
dPex	Qa(CFM)	Qa(M3/m)
0.60	24.05	0.68

Sampler Audit Relationship		
<b>m =</b>	0.025	
<b>b =</b>	-0.058	
<b>r =</b>	0.992	
	pm10	tsp
<b>Set Point (cfm)</b>	41.8	52.2
<b>Set Point (H2O)</b>	2.2	3.5