

Data Validation

One States Approach



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National Air Monitoring Conference
Las Vegas, NV
November 6-9, 2006



Presentation Overview

Data Validation from Monitoring Perspective

- Data Validation is a Task, One of Many
- Not QA - Separate Quality Assurance Section
- Large Network (75+ Sites)
- Data Keeps Coming And Coming

Touch on Continuous Data

Focus on PM_{2.5} Data



"Core" Continuous Monitoring

CO NO₂ O₃ SO₂
(& TEOM PM_{2.5}, Met, Precip)

- First: Examples How-Not-To
 - Stuck in the 70's
- New System Phasing In
 - Graphical




```

51 - DFT Display - Pool - BlueZone Mainframe Display
File Edit Session Options Transfer View Macro Script Help
[Icons] [Icons]
Connections: DFT Display - Pool [Icons] [Icons]
Air Monitoring System
09/28/2006 A.1.1.1.1.1 CAM SAMPLE VERIFY 13:18:41

SELECTION => SEARCH VALUE =>

SAMPLE DATE 09/27/2006 STATION 140118 BUFFALO

  PARM  OUTPUT  #READ  #UNVER  #MISS  #FLAG  HIGHEST  AVG/TOT  UNITS
- SO2    FF0      24      0        0        0      0.0187   0.0048   PPM
- CO     AF0      24      0        0        0      0.4489   0.2551   PPM
- NO2    CN0      24      0        0        0      0.0333   0.0166   PPM
- NO     CM0      24      0        0        0      0.0881   0.0213   PPM
- NOX    CA0      24      0        0        0      0.1132   0.0378   PPM
- PM2.5 XT0      24      0        0        0      22.4915  15.5957  UG/M3
- TMASS ZT0      24      0        0        0      637.0840 0.0000   NONE
- %FILT UT0      24      0        0        0      42.5538  0.0000   NONE
- AWS    AS0      24      0        0        0      12.1732   6.9899   MPH
- AWD    AD0      24      0        0        0      247.4220 184.8092  DEG
- RWS    RS0      24      0        0        0      11.7705   0.0000   MPH
- RWD    RD0      24      0        0        0      250.7020 0.0000   DEG

MESSAGE=> PLACE ANY CHARACTER NEXT TO SELECTION AND PRESS ENTER
01/HELP      02/CLR SCR  03/CANCEL  04/        05/        06/SEL ALL
07/          08/PGDOWN  09/        10/        11/        12/VERIFY
  
```



```

51 - DFT Display - Pool - BlueZone Mainframe Display
File Edit Session Options Transfer View Macro Script Help
Connections: DFT Display - Pool
Air PA1 PA2 PA3 Recal PF01 PF02 PF03 PF04 PF05 PF06 PF07 PF08 PF12 SpRq

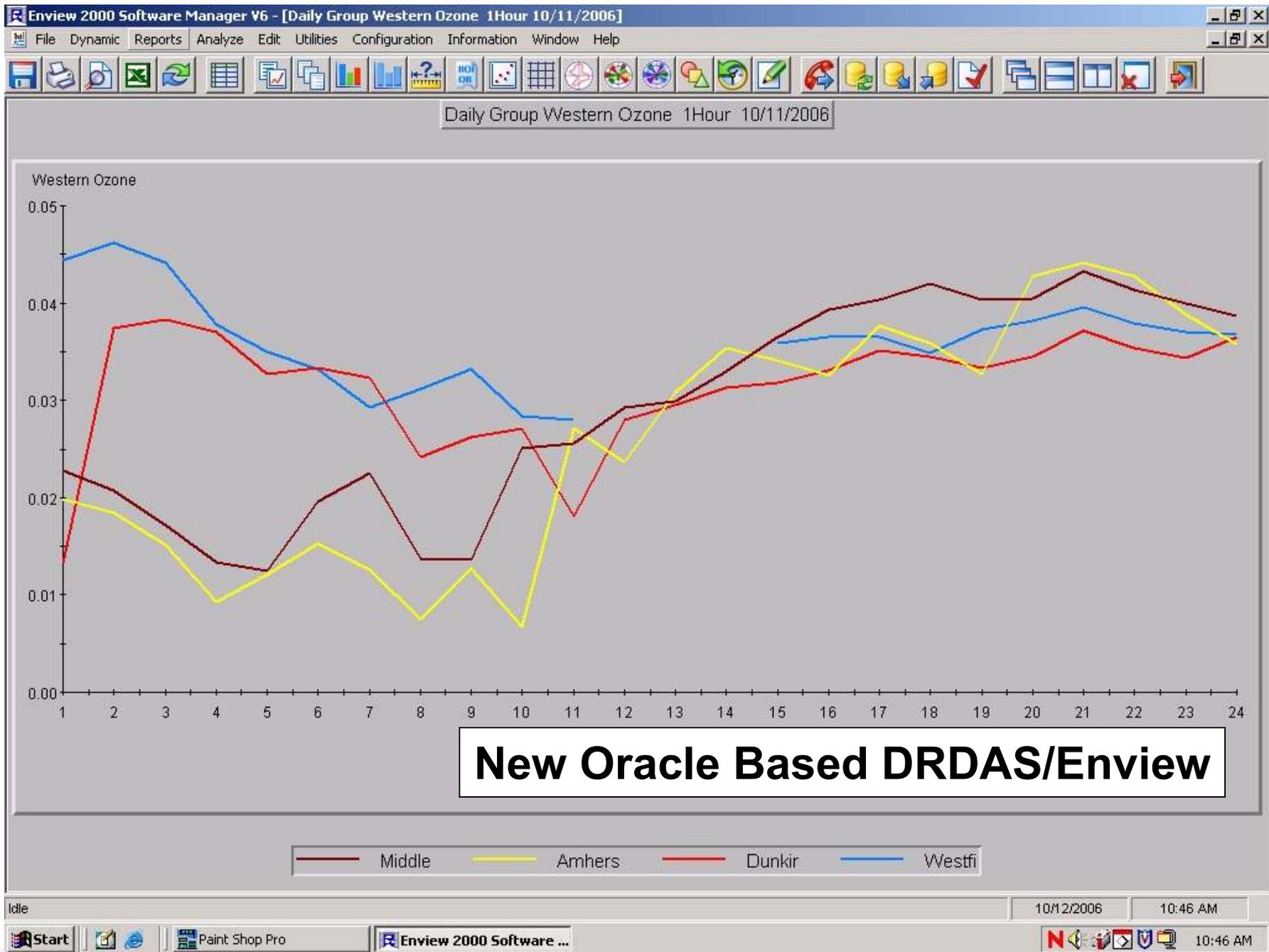
Air Monitoring System
09/28/2006 A.1.1.1.1.1 CAM READING EDIT 13:21:40

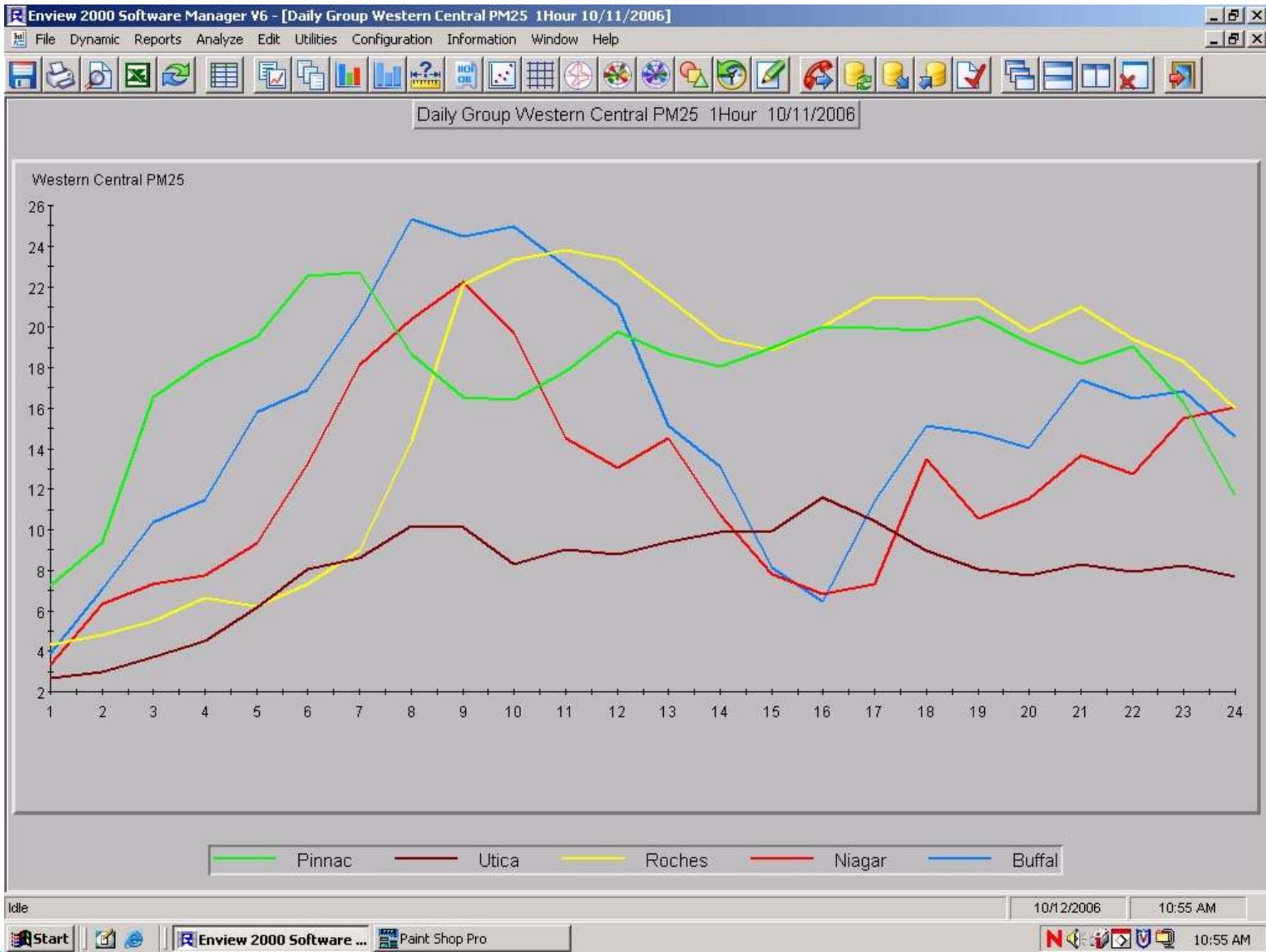
SELECTION => SEARCH VALUE =>
STATION 140118 BUFFALO SAMPLE DATE 09/27/2006
PARAMETER NO NITRIC OXIDE UNITS PPM
OUTPUT ID CM0 DAILY AVG/TOT 0.021 PF9 MISSING CODE _____
C TIME STAT READING MISS CODE VER C TIME STAT READING MISS CODE VER
_ 0100 U 0.053 _____ _ 1300 U 0.007 _____
_ 0200 U 0.040 _____ _ 1400 U 0.006 _____
_ 0300 U 0.060 _____ _ 1500 U 0.008 _____
_ 0400 U 0.088 _____ _ 1600 U 0.006 _____
_ 0500 U 0.078 _____ _ 1700 U 0.006 _____
_ 0600 U 0.027 _____ _ 1800 U 0.003 _____
_ 0700 U 0.010 _____ _ 1900 U 0.003 _____
_ 0800 U 0.057 _____ _ 2000 U 0.003 _____
_ 0900 U 0.022 _____ _ 2100 U 0.004 _____
_ 1000 U 0.012 _____ _ 2200 U 0.002 _____
_ 1100 U 0.008 _____ _ 2300 U 0.002 _____
_ 1200 U 0.007 _____ _ 2400 U 0.001 _____

MESSAGE=> SELECT READINGS AND PRESS A PFKEY OR ENTER.
01/HELP 02/CLR SCR 03/CANCEL 04/PREVIOUS 05/NEXT 06/SEL ALL
07/ 08/ 09/RECALC 10/ 11/UNVERIFY 12/VERIFY

```







Enview 2000 Software Manager V6 - [Edit Table Buffalo [10/11/2006 01:00 - 10/12/2006 00:00]]

File Dynamic Reports Analyze Edit Utilities Configuration Information Window Help

Station: Buffalo Station Report 60 Min

Date Time	S02 ppm	S_SO2	CO ppm	S_CO	NO ppm	S_NO	NO2 ppm	S_NO2	NOx ppm	S_NOx	PM25 ug/m3	S_PM25	#2.5 Mas mm	PM2.5 Ma	%CT_FILT	%PCT_FIL	ind speed mph	wind
10/11/2006 01:00	0.00048	OK	0.31239	OK	0.0039	OK	0.01364	OK	0.01711	OK	3.88793	OK	188.861	OK	28.15557	OK	5.32527	OK
10/11/2006 02:00	0.00043	OK	0.30631	OK	0.00283	OK	0.01772	OK	0.02011	OK	7.08619	OK	188.9436	OK	28.15067	OK	3.40802	OK
10/11/2006 03:00	0.00055	OK	0.3857	OK	0.01983	OK	0.02381	OK	0.04328	OK	10.38709	OK	190.3306	OK	28.28617	OK	2.61442	OK
10/11/2006 04:00	0.00074	OK	0.37134	OK	0.01683	OK	0.02665	OK	0.04309	OK	11.46675	OK	191.7256	OK	28.24714	OK	2.30947	OK
10/11/2006 05:00	0.00073	OK	0.38248	OK	0.0189	OK	0.02892	OK	0.04733	OK	15.8232	OK	193.7625	OK	28.15701	OK	3.54182	OK
10/11/2006 06:00	0.00061	OK	0.38913	OK	0.00404	OK	0.02644	OK	0.03002	OK	16.91264	OK	196.065	OK	28.22425	OK	2.24238	OK
10/11/2006 07:00	0.00074	OK	0.59161	OK	0.04003	OK	0.04025	OK	0.07985	OK	20.59999	OK	198.7912	OK	28.31802	OK	2.87971	OK
10/11/2006 08:00	0.00166	OK	0.74572	OK	0.08074	OK	0.04216	OK	0.12255	OK	25.3487	OK	202.5023	OK	28.37769	OK	2.76437	OK
10/11/2006 09:00	0.00232	OK	0.74881	OK	0.05783	OK	0.03899	OK	0.09642	OK	24.4718	OK	206.3509	OK	28.40047	OK	3.92547	OK
10/11/2006 10:00	0.00237	OK	0.57951	OK	0.02955	OK	0.03245	OK	0.06155	OK	24.9738	OK	210.2294	OK	28.45178	OK	6.17859	OK
10/11/2006 11:00	0.00257	OK	0.43324	OK	0.01772	OK	0.02615	OK	0.04337	OK	22.98539	OK	214.0104	OK	28.52843	OK	5.36111	OK
10/11/2006 12:00	0.0023	OK	0.46303	OK	0.02105	OK	0.02695	OK	0.0475	OK	21.04349	OK	217.1657	OK	28.57605	OK	4.97676	OK
10/11/2006 13:00	0.00137	OK	0.38371	OK	0.0094	OK	0.01606	OK	0.02491	OK	15.11897	OK	219.8086	OK	28.60264	OK	7.16668	OK
10/11/2006 14:00	0.00147	OK	0.36245	OK	0.00696	OK	0.0136	OK	0.01997	OK	13.09597	OK	221.6936	OK	28.58444	OK	9.00432	OK
10/11/2006 15:00	0.00121	OK	0.34564	OK	0.00634	OK	0.01291	OK	0.0187	OK	8.09789	OK	222.9955	OK	28.72279	OK	9.38806	OK
10/11/2006 16:00	0.00107	OK	0.38742	OK	0.00842	OK	0.0159	OK	0.0238	OK	6.45363	OK	224.0342	OK	28.7956	OK	10.28851	OK
10/11/2006 17:00	0.00114	OK	0.38932	OK	0.00622	OK	0.01493	OK	0.02067	OK	11.40062	OK	224.8213	OK	28.79794	OK	9.10589	OK
10/11/2006 18:00	0.00108	OK	0.41165	OK	0.0061	OK	0.01639	OK	0.02203	OK	15.13972	OK	226.887	OK	29.01436	OK	7.82868	OK
10/11/2006 19:00	0.00103	OK	0.3901	OK	0.00412	OK	0.01508	OK	0.01875	OK	14.7663	OK	229.0237	OK	29.08428	OK	7.36256	OK
10/11/2006 20:00	0.00113	OK	0.35833	OK	0.00358	OK	0.01156	OK	0.01462	OK	14.03082	OK	231.0079	OK	29.08879	OK	9.64423	OK
10/11/2006 21:00	0.00093	OK	0.35536	OK	0.0021	OK	0.00803	OK	0.0097	OK	17.36931	OK	233.4023	OK	29.20556	OK	9.80239	OK
10/11/2006 22:00	0.00052	OK	0.35333	OK	0.00249	OK	0.00927	OK	0.01134	OK	16.48394	OK	235.9021	OK	29.37294	OK	9.07675	OK
10/11/2006 23:00	0.00065	OK	0.3562	OK	0.00238	OK	0.00792	OK	0.00987	OK	16.8378	OK	238.2265	OK	29.28074	OK	9.34548	OK
10/11/2006 24:00	0.00082	OK	0.33157	OK	0.00174	OK	0.0066	OK	0.00784	OK	14.56262	OK	240.5351	OK	29.26349	OK	9.56614	OK

Idle 10/12/2006 10:58 AM

Start Enview 2000 Software ... Paint Shop Pro 10:58 AM





Station: Buffalo **Report Type:** Mean
Date: 10/11/2006 **Time Base:** 1 Hour

Time	SO2 ppm	CO ppm	NO ppm	NO2 ppm	NOx ppm	PM25 ug/m3	M2.5 Mas mm	PCT_FILT %	Wind speed mph	WD Deg	RS mph	RD Deg	Sigma Deg	precipitatio in	TEMP Deg F	RH %	BP in HG	I-temp C°	TEOMA ug/m3	PM10 ug
01:00	0.000	0.3	0.004	0.014	0.017	3.89	189	28	5	71	5	69	14	0	54.9	84	29.20	26.8	3.90	
02:00	0.000	0.3	0.003	0.018	0.020	7.09	189	28	3	87	3	82	25	0	55.6	86	29.18	26.8	7.10	
03:00	0.001	0.4	0.020	0.024	0.043	10.39	190	28	3	147	1	62	31	0	55.3	96	29.16	26.8	10.40	1
04:00	0.001	0.4	0.017	0.027	0.043	11.47	192	28	2	117	1	75	63	0	55.9	100	29.14	26.8	11.48	1
05:00	0.001	0.4	0.019	0.029	0.047	15.82	194	28	4	106	3	106	17	0	57.5	100	29.09	26.8	15.84	1
06:00	0.001	0.4	0.004	0.026	0.030	16.91	196	28	2	177	0	76	52	0	58.1	100	29.07	26.9	16.93	1
07:00	0.001	0.6	0.040	0.040	0.080	20.60	199	28	3	109	2	64	36	0	58.2	100	29.06	26.9	20.62	2
08:00	0.002	0.7	0.081	0.042	0.123	25.35	203	28	3	204	2	234	41	0	59.1	100	29.06	26.7	25.37	2
09:00	0.002	0.7	0.058	0.039	0.096	24.47	206	28	4	143	4	134	17	0	60.6	100	29.04	26.7	24.49	2
10:00	0.002	0.6	0.030	0.032	0.062	24.97	210	28	6	211	4	226	31	0	61.3	98	29.05	26.7	24.99	2
11:00	0.003	0.4	0.018	0.026	0.043	22.99	214	29	5	196	5	198	16	0	61.7	99	29.06	26.7	23.00	2
12:00	0.002	0.5	0.021	0.027	0.047	21.04	217	29	5	157	5	156	13	0	62.2	100	29.03	26.6	21.06	2
13:00	0.001	0.4	0.009	0.016	0.025	15.12	220	29	7	167	7	166	16	0	63.2	97	29.00	26.6	15.14	1
14:00	0.001	0.4	0.007	0.014	0.020	13.10	222	29	9	168	9	168	14	0	64.8	90	28.97	26.6	13.11	1
15:00	0.001	0.3	0.006	0.013	0.019	8.10	223	29	9	174	9	174	13	0	64.5	87	28.95	26.6	8.11	
16:00	0.001	0.4	0.008	0.016	0.024	6.45	224	29	10	162	10	162	13	0	63.8	88	28.91	26.6	6.47	
17:00	0.001	0.4	0.006	0.015	0.021	11.40	225	29	9	169	9	169	14	0	64.1	86	28.90	26.6	11.42	1
18:00	0.001	0.4	0.006	0.016	0.022	15.14	227	29	8	176	8	175	14	0	62.5	91	28.89	26.6	15.16	1
19:00	0.001	0.4	0.004	0.015	0.019	14.77	229	29	7	165	7	164	13	0	61.7	94	28.87	26.6	14.78	1
20:00	0.001	0.4	0.004	0.012	0.015	14.03	231	29	10	162	9	162	14	0	62.4	88	28.85	26.7	14.05	1
21:00	0.001	0.4	0.002	0.008	0.010	17.37	233	29	10	169	10	168	15	0	62.3	88	28.83	26.6	17.39	1
22:00	0.001	0.4	0.002	0.009	0.011	16.48	236	29	9	162	9	161	13	0	60.7	96	28.80	26.7	16.50	1
23:00	0.001	0.4	0.002	0.008	0.010	16.84	238	29	9	172	9	172	13	0	61.8	94	28.77	26.7	16.85	1
24:00	0.001	0.3	0.002	0.007	0.008	14.56	241	29	10	174	9	174	15	0	63.0	89	28.75	26.7	14.61	1
Min	0.000	0.3	0.002	0.007	0.008	3.89	189	28	2	71	0	62	13	0	54.9	84	28.75	26.6	3.90	3
Time	02:00	02:00	24:00	24:00	24:00	01:00	01:00	02:00	06:00	01:00	06:00	03:00	16:00	01:00	01:00	01:00	24:00	16:00	01:00	01:00
Max	0.003	0.7	0.081	0.042	0.123	25.35	241	29	10	211	10	234	63	0	64.8	100	29.20	26.9	25.37	26
Time	11:00	09:00	08:00	08:00	08:00	08:00	24:00	22:00	16:00	10:00	16:00	08:00	04:00	04:00	14:00	05:00	01:00	07:00	08:00	06
AVG	0.001	0.4	0.016	0.021	0.036	15.35	214	29	6	156	6	146	22	1	60.6	94	28.98	26.7	15.37	15
Num	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Data[%]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
STD	0.001	0.119	0.019	0.010	0.029	5.770	16.72	0.392	2.822	34.07	3.143	49.42	13.48	0.056	3.004	5.534	0.129	0.096	5.769	6

Idle 10/12/2006 10:59 AM



Continuous Quality Assurance

Data Validation is NOT Quality Assurance

Follow EPA Rules:

- Weekly Instrument Checks
- 6 Precision Point per Quarter (*Minimum*)
- 1 Audit per Quarter
- Independent Audits (*Separate QA Section*)
- Annual Calibration
- Entry of Data into AIRS



PM_{2.5} Validation Overview

FRM: Started Mid-1999 With 40 Sites (8 Collocated)

Developed program before EPA offered help.

Automated as much as possible

Same basic program today with 25 sites

Speciation: Validation Developed In Late-2001

Again, developed before EPA's tools (SVDAT)

Basic concept - compare with other sites and FRM values.

Minimal Data Analysis *(NY has separate Air Research Bureau)*

(Programs freely available)



FRM Validation

Filters - Contract with RTI

RTI handles laboratory validation and QA

Filters pre-weighed, mailed to NY, sent to sites, sampled, collected, mailed to RTI, post-weighed.

Field Data

Sampler data (R&P 2025) downloaded with palms, emailed in.

Program 1 (Visual Basic) brings data directly into MS Access Database.

Program 2 processes data: checks for duplicate records, moves data from input table to field table, validates field parameters.

Office staff check for field sheet match, timely pickup, impactor change.

Program 3 combines lab data, finishes validation, writes Site-Date Summary Table.

Program 4 creates AIRS data for submission...





PM 2.5 Field Data Sheet: Return this sheet to above address

Site Name and Number NIOGARA FALLS CAM 310225

Operator S. WHITE

Filter#	Cassette#	Use By Date	Sample Date
#1	4105405	RP028511	05/18/06 <u>4-29-06</u>
#2	4105406	RP008699	05/18/06 <u>5-2-06</u>
#3	4105407	RP004808	05/18/06 <u>5-3-06</u>
#4	<u>PRIMARY</u>		05/18/06 <u>1-1</u>

BATCH 447 FOR 04/29/06-05/02/06 Blank: Yes No

Date Filter #1 Removed From Sampler: 5-3-06 Less Than 177 Hr:

Date Filter #2 Removed From Sampler: 5-3-06 Less Than 177 Hr:

Date Filter #3 Removed From Sampler: _____ Less Than 177 Hr: _____

Dates of Last Two Impactor Clean & Replace: 4-10-06 | 4-21-06

Date of Last Instrument Data Download: 4-21-06

Sampler Flags, Status Conditions or Power Outages: _____

Notes: _____

If cassette #3 contains a filter, it is to be run as a blank. Enter the filter and cassette # into the sampler's filter list screen after the other two and check the blank "Y". The empty cassette should be programmed as 999999 for the filter and cassette number and should be programmed as blank "Y". Make sure that when you leave; the sampler is in Wait Mode, the start time for the first filter is correct and it is at the top of the supply magazine (not in the sampling position).

Field Data Sheet sent to field that is returned to NYSDEC.

There is a separate 'Chain of Custody' form returned with sampled filters to RTI.

Access form used by office staff to verify field sheet and electronic data match.

PM 2.5 Field Data Sheet Verification:

Close Form - Return to Main Menu

Site Name: Magazine Number:

Site ID:

	Filter Number	Cassette #	UseByDate	Sample Date	(Expected)	Actual	Field Sheet Match	Verification Status
# 1	<input type="text" value="P4108284"/>	<input type="text" value="RP034506"/>	<input type="text" value="##/##/##"/>	<input type="text" value="3/18/2006"/>	<input type="text" value="3/18/2006"/>	<input type="text" value="3/18/2006"/>	<input type="text" value="TRUE"/> <input type="button" value="Filtr 1 Match"/>	<input type="text"/>
# 2	<input type="text" value="P4108285"/>	<input type="text" value="RP035139"/>	<input type="text" value="##/##/##"/>	<input type="text" value="3/21/2006"/>	<input type="text" value="3/21/2006"/>	<input type="text" value="3/21/2006"/>	<input type="text" value="TRUE"/> <input type="button" value="Filtr 2 Match"/>	<input type="text"/>
			<input type="button" value="Blank Filter: Yes"/>					
# 3								

Date Filter #1 Removed From Sampler (Before/On):

Date Filter #2 Removed From Sampler (Before/On):

Date of Last Impactor Clean / Replace: Filter #1 Filter #2

Previous Change:

Filter #1 Current Instrument Sample Flags: <input type="text" value="None"/>	Filter #2 Current Instrument Sample Flags: <input type="text" value="None"/>
---	---

SmyCode Fltr One:

SmyCode Fltr Two:

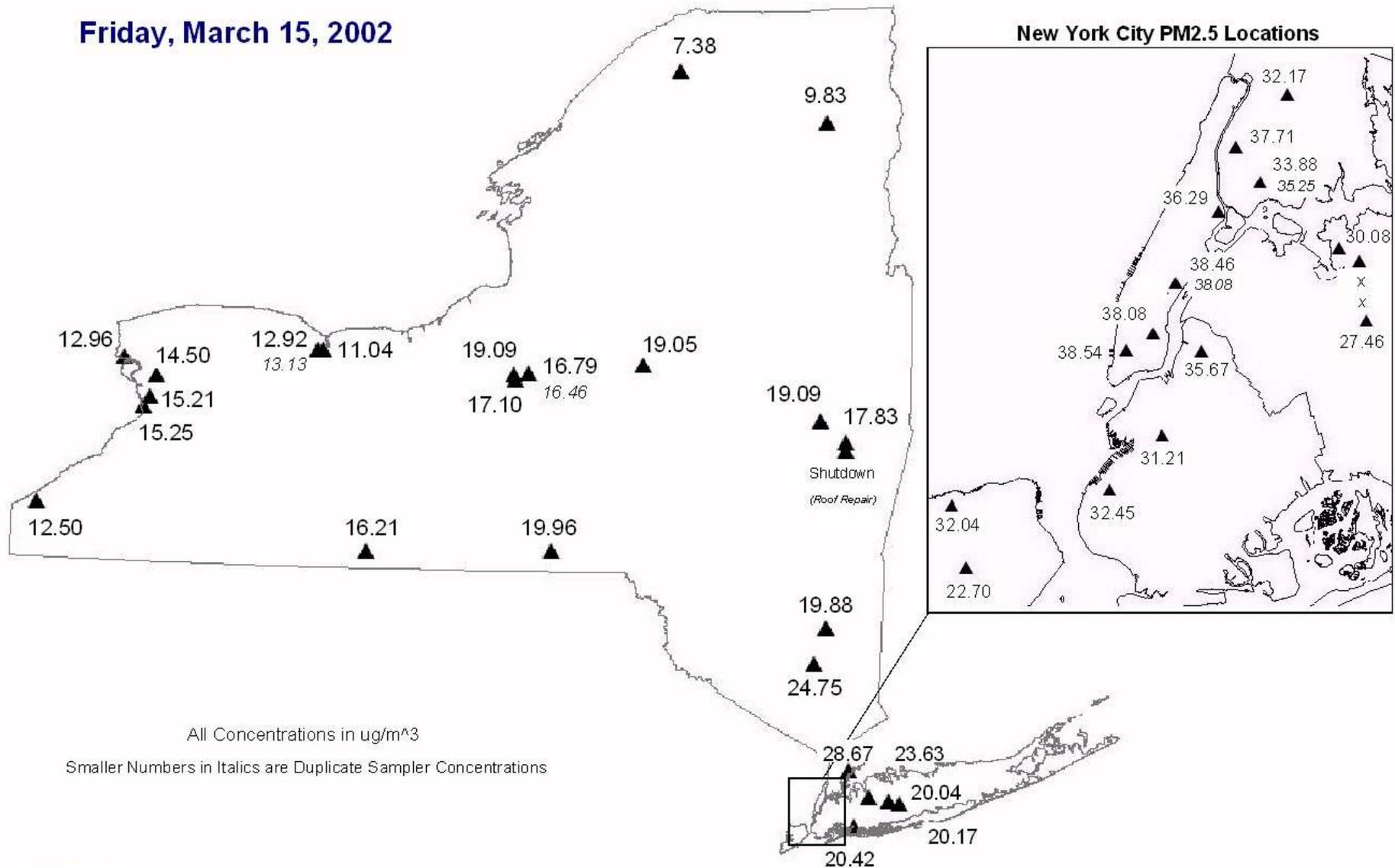
x filter exchange fail. Blank ran on 3/23 not 3/22.



03/15/2002

Friday, March 15, 2002

New York City PM2.5 Locations



03/15/2002

03/15/2002

Speciation Validation

National Contract with RTI

Review of RTI Spreadsheet every month.

Overcome Data Overload & Validate

RTI provides 108 Rows by 46 Columns of Data per sample

Step 1 - Run program to get one database row per sample

Step 2 - Get data into a database and convert to concentrations

Step 3 - Enter collocated FRM data

Step 4 - Compare all speciation samples on same day

Step 5 - Examine key components of each sample

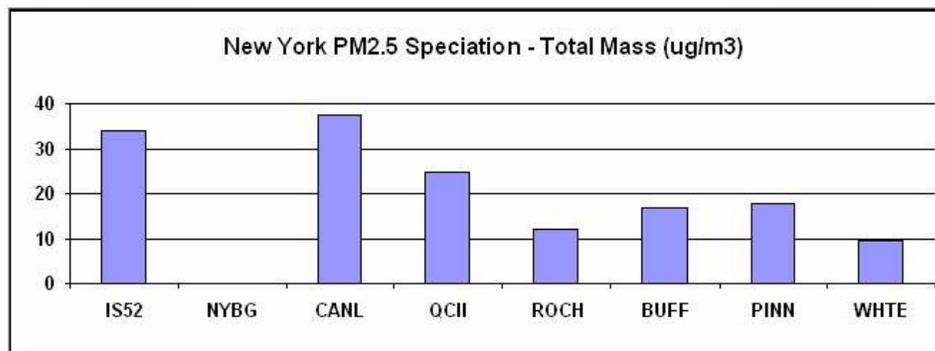
Step 6 - Submit AIRS Data Change Form to DOPO



PM2.5 Speciation Sampling - Data Validation Summary Report

Sample Date: 1/11/2006

Batch Number:



	IS 52	NYBG	Canal St.	QC 2	Rochester	Buffalo	Pinnacle	Whiteface
Total Mass Conc	33.93		37.50	24.61	12.22	16.76	17.64	9.52
FRM Mass Conc	31.75		35.08	24.83	16.61	14.13	16.00	11.13
(Collocated FRM)	33.46	x	x	x	x	x	x	x
Ttl Carb + Ions	25.75	0.00	32.36	17.07	15.83	14.45	15.81	8.09
Total Carbon	6.86		12.38	0.93	4.19	5.28	3.28	2.31
Organic	4.50		8.31	0.76	3.52	4.27	2.72	2.08
Elemental	2.36		4.07	0.17	0.67	1.01	0.56	0.23
Ionic Sulfate	7.89		8.06	6.55	5.02	4.46	5.50	3.93
(Elem Sulfur) x3	7.32		6.99	5.97	3.36	4.95	5.31	3.99
Percent Diff	7.2%	#Error	13.3%	8.9%	33.1%	-11.0%	3.5%	-1.5%
Sulfate	7.89		8.06	6.55	5.02	4.46	5.50	3.93
Nitrate	5.77		6.61	4.99	3.56	2.23	3.71	0.45
Ammonium	5.00		5.07	4.26	2.86	2.21	3.10	1.28
Potassium	0.05		0.07	0.05	0.06	0.06	0.07	0.04
Sodium	0.18		0.17	0.29	0.14	0.21	0.15	0.08

Sample Date: 1/11/2006

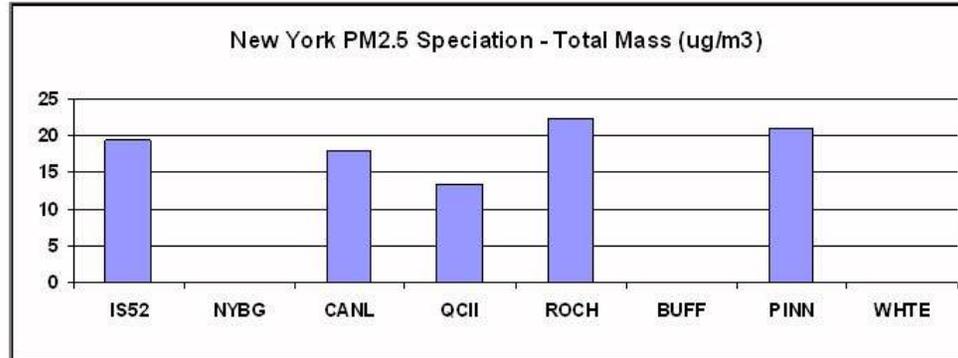
Batch Number:



PM2.5 Speciation Sampling - Data Validation Summary Report

Sample Date: 7/28/2006

Batch Number: 80



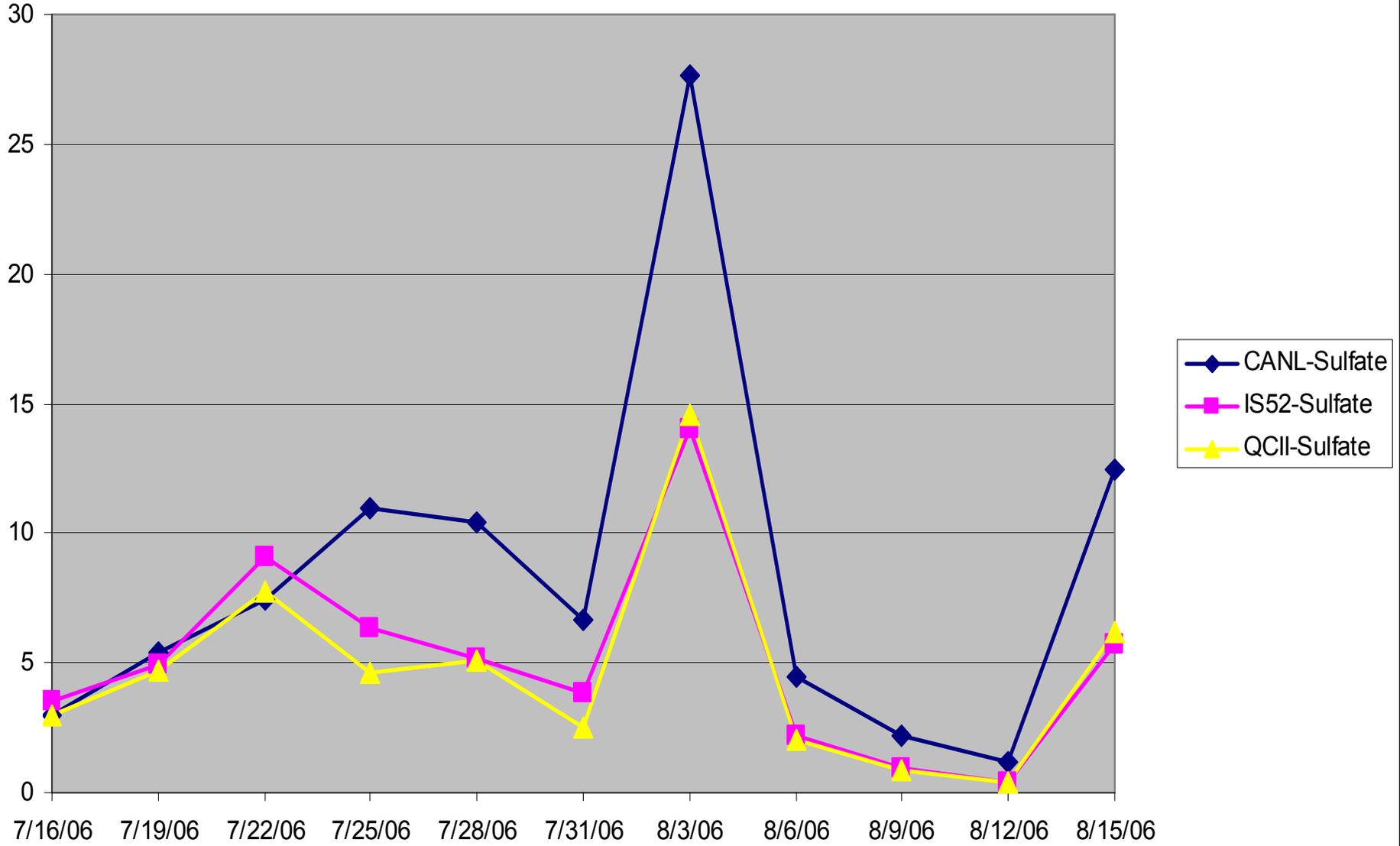
	<u>IS 52</u>	<u>NYBG</u>	<u>Canal St.</u>	<u>QC 2</u>	<u>Rochester</u>	<u>Buffalo</u>	<u>Pinnacle</u>	<u>Whiteface</u>
Total Mass Conc	18.16		20.28	17.35	10.30	11.81	13.17	12.35
FRM Mass Conc	17.00		17.96	16.46	11.17	11.38	12.47	12.75
<i>(Collocated FRM)</i>	16.71	x	x	x	x	x	x	x
Tl Carb + Ions	15.67	0.00	24.18	13.72	10.63	10.83	10.79	10.76
Total Carbon	7.64		7.29	5.92	3.93	3.55	3.34	3.72
Organic	5.77		5.55	5.08	3.58	3.04	3.22	3.60
Elemental	1.87		1.74	0.84	0.35	0.51	0.12	0.12
Ionic Sulfate	5.18		10.41	5.10	4.80	4.87	5.70	5.45
(Elem Sulfur) x3	4.86		5.31	5.79	4.29	4.95	6.00	6.30
Percent Diff	6.2%	#Error	49.0%	-13.5%	10.6%	-1.6%	-5.3%	-15.6%
Sulfate	5.18		10.41	5.10	4.80	4.87	5.70	5.45
Nitrate	0.89		2.01	0.66	0.36	0.57	0.14	0.10
Ammonium	1.81		4.23	1.75	1.45	1.73	1.41	1.39
Potassium	0.00		0.00	0.00	0.00	0.01	0.00	0.00
Sodium	0.15		0.24	0.29	0.09	0.10	0.20	0.10
	IS 52	NYBG	Canal St.	QC 2	Rochester	Buffalo	Pinnacle	Whiteface

Sample Date: 7/28/2006

Batch Number: 80



Canal Street, I.S.52, & Queens College Sulfate



Teflon		Quartz		Nylon	
NullCode	<input type="text"/>	NullCode	<input type="text"/>	Cation NC	<input type="text"/>
Flag	<input type="text"/>	Flag	DST:.....	Anion NC	<input type="text"/>
		Invid	_:FALSE;FALSE;FALSE;FALSE	Flag	DST:.....
				Invid	_:FALSE;FALSE;FALSE;FALSE
Total Carb & Ions					
14.46					
Ttl Mass	16.76	Total	5.28	Sulfate	4.459
FRM	14.13	Organic	4.274	Nitrate	2.231
FRM Collected	<input type="text"/>	Elemental	1.009	Ammonium	2.212
		Peak 1 OC	0.985	Potassium	0.065
		Peak 2 OC	0.796	Sodium	0.214
		Peak 3 OC	0.913		
		Peak 4 OC	1.580		
		PtotCarbon	0.000		

ElemNullC	<input type="text"/>	Calcium	0.047	Chlorine	0.000	Flags: Event, Shipping, Flow, ModDsmby, Analysis Invalids: Event, Channel, Medium, Analysis, Overall
Flag	DST:.....	Mercury	0.000	Potassium	0.081	
Invid	_:FALSE;FALSE;FALSE;FALSE	Silicon	0.062	Sulfur	1.653	

Potassium	
Ion	0.065
Elem	0.081
Diff	-0.016
%Diff	-25.3%

Sodium	
Ion	0.214
Elem	0.000
Diff	0.214
%Diff	100.0%

Sulfur - Sulfate	
Ion	4.459
Elem ³	4.958
Diff	-0.500
%Diff	-11.2%

Total Mass	
FRM	14.13
Total	16.76
Diff	2.63
%Diff	18.6%
Clctd	<input type="text"/>

Location

AIRS Code

POC Code

Field Samp COC

Sample Information		Configuration	
Sched Date	01/11/06	Sample Type	ROUTINE
Start Date	01/11/06	Measure Type	FIELD
Report Date	03/14/06	Delivery Batch ID	74
Min Temp	1, 1, 1	Delivery Order Num	13
Avg Temp	6.8, 6.8, 6.8	(Elem) (Carb) (Ion)	RetrievalDate
Max Temp	15, 15, 15	Teflon Quartz Nylon	RetrievalTime
Min BP	738, 738, 738	Avg Flow	16.7 10.0 10.0
Avg BP	743, 743, 743	TotalVol	24.05 14.39 14.39
Max BP	749, 749, 749	Filter ID	I6052I I6053J I6054K
			DeltaTFlag



Speciation Validation

Maintain Spreadsheet With Verified Data

Send One File to End Users

with: Concentrations, Blank Data, Uncertainty, Site Data
Constant Format

Makes Data more usable, more valuable



NY PM_{2.5} Quality Assurance Overview

FRM - R&P 2025's

Site operators perform monthly audits and maintenance checks.
Central Office staff perform quarterly audits.
Independent Quality Assurance Section performs annual audits.
EPA Performance Evaluation Program (PEP) samples.

TEOM - R&P 1400's

Site operators perform weekly checksheets and monthly audits.
Central Office staff perform quarterly audits.
Independent Quality Assurance Section performs annual audits.

Speciation - R&P 2300's

Site operators perform monthly audits.
Central Office staff perform quarterly audits.
Independent Quality Assurance Section performs annual audits.



Suggestions

RTI: Please keep spreadsheet constant
Give notice when format changes

EPA: Have validation tools ready for any new programs
Simplicity - Validation is a TASK
Ask what users need and want

????? – What would you like to see...

My email: pmsierze@gw.dec.state.ny.us

