

COMPREHENSIVE VALIDATION PACKAGE

ATL Applications

INVENTORY SHEET

WORK ORDER # 0909127A

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Completed by:

V. Belitsky
(Signature)

Vera Belitsky/ Document Control
(Print Name & Title)

09/22/09
(Date)

WORK ORDER #: 0909127A

Work Order Summary

CLIENT:	Mr. Taeko Minegishi Environmental Health & Engineering, Inc. 117 Fourth Avenue Needham, MA 02494	BILL TO:	Accounts Payable Environmental Health & Engineering, Inc. 117 Fourth Avenue Needham, MA 02494
PHONE:	800-825-5343	P.O. #	16512
FAX:	781-247-4305	PROJECT #	16512
DATE RECEIVED:	09/04/2009	CONTACT:	Ausha Scott
DATE COMPLETED:	09/18/2009		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>
01A	100788	ATL Applications
02A	100789	ATL Applications
03A	100790	ATL Applications
03AA	100790 Lab Duplicate	ATL Applications
04A	100791	ATL Applications
05A	100792	ATL Applications
06A	100793	ATL Applications
07A	102422	ATL Applications
08A	102423	ATL Applications
09A	102424	ATL Applications
10A	102425	ATL Applications
11A	102426	ATL Applications
12A	102427	ATL Applications
13A	102492	ATL Applications
14A	102493	ATL Applications
15A	102494	ATL Applications
15AA	102494 Lab Duplicate	ATL Applications

Continued on next page

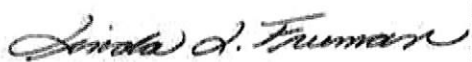
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<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>
16A	102495	ATL Applications
17A	Method Blank	ATL Applications
17B	Method Blank	ATL Applications
18A	CCV	ATL Applications

CERTIFIED BY:



Laboratory Director

DATE: 09/18/09

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

**LABORATORY NARRATIVE
Nitrogen Dioxide by Radiello 166
Environmental Health & Engineering, Inc.
Workorder# 0909127A**

Sixteen Radiello 166 (NO₂) samples were received on September 04, 2009. The procedure involves extraction of nitrite from reaction of NO₂ with triethanolamine. Absorbance of nitrite is then measured at 537 nm using a spectrophotometer. Results are reported in uG and uG/m³.

Sampling rate of 141 mL/min was provided by the manufacturer.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Results were calculated based on 25 deg C without temperature correction. The actual exposure time was used to calculate sample concentrations and reporting limits.

An exposure time of 21600 minutes was used for the QC samples.

All media used for the sampling were supplied by the client. Blank subtraction was not performed on the sample results since the media used for Method Blanks may be from a different lot than the media used for the samples.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicate as follows:

- B - Compound present in laboratory blank greater than reporting limit.
- J - Estimated value.
- E - Exceeds instrument calibration range.
- S - Saturated peak.
- Q - Exceeds quality control limits.
- U - Compound analyzed for but not detected above the detection limit.
- M - Reported value may be biased due to apparent matrix interferences.
- N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

- a-File was requantified
- b-File was quantified by a second column and detector
- r1-File was requantified for the purpose of reissue

Sample Results and Raw Data

AIR TOXICS LTD.

ATL Application # 61 for RAD 166 (Nitrogen Dioxide)

Spectrophotometer

Field	Lab	Collection Date	Analysis Date	Dilution Factor	Reporting Limit (ug)	Reporting Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Sample I.D.	Sample I.D.							
100788	0909127A-01A	9/1/2009	9/8/2009	1.00	0.32	0.20	3.1	1.9
100789	0909127A-02A	9/1/2009	9/8/2009	1.00	0.32	0.20	3.3	2.0
100790	0909127A-03A	9/1/2009	9/8/2009	1.00	0.32	0.20	4.7	2.9
100790 Lab Duplicate	0909127A-03AA	9/1/2009	9/8/2009	1.00	0.32	0.20	4.9	3.0
100791	0909127A-04A	9/1/2009	9/8/2009	1.00	0.33	0.20	3.0	1.8
100792	0909127A-05A	9/1/2009	9/8/2009	1.00	0.32	0.20	1.6	0.96
100793	0909127A-06A	NA	9/8/2009	1.00	0.32	0.20	ND	ND
102422	0909127A-07A	9/1/2009	9/8/2009	1.00	0.32	0.22	3.4	2.3
102423	0909127A-08A	9/1/2009	9/8/2009	1.00	0.32	0.22	1.4	0.91
102424	0909127A-09A	9/1/2009	9/8/2009	1.00	0.32	0.22	3.7	2.4
102425	0909127A-10A	9/1/2009	9/8/2009	1.00	0.32	0.22	2.2	1.4
102426	0909127A-11A	9/1/2009	9/8/2009	1.00	0.32	0.22	0.76	0.50
102427	0909127A-12A	NA	9/8/2009	1.00	0.32	0.20	ND	ND
102492	0909127A-13A	9/1/2009	9/8/2009	1.00	0.32	0.23	0.87	0.62
102493	0909127A-14A	9/1/2009	9/8/2009	1.00	0.32	0.23	0.65	0.46
102494	0909127A-15A	9/1/2009	9/8/2009	1.00	0.32	0.23	5.0	3.6
102494 Lab Duplicate	0909127A-15AA	9/1/2009	9/8/2009	1.00	0.32	0.23	4.7	3.4
102495	0909127A-16A	9/1/2009	9/8/2009	1.00	0.32	0.23	0.43	0.31
Method Blank	0909127A-17A	NA	9/8/2009	1.00	0.32	0.20	ND	ND
Method Blank	0909127A-17B	NA	9/8/2009	1.00	0.32	0.20	ND	ND
CCV	0909127A-18A	NA	9/8/2009	1.00	0.32	0.20	%Rec 101	

COMMENTS: 1. NA=Not Applicable
 2. ND=Not Detected
 3. Exposure time of 21600 minutes was assumed for the QC samples.
 4. Background subtraction not performed.

Dioxide Radiello Calculation Worksheet

Workorder #: **050991277A**

1000ng/1ug

Sampling Rate (ng/(ppb*min)) 0.141 Typically 0.96 for NO2

Sampling T (deg C) 25 Typically 25

Volume (ml) 5 Typically 5 for NO2

Date of Analysis: 9/8/2009

(Abs-y-axis)/DF Conc (ug) in full 5 ml of Conc (ug) x 1000 ppb x mw Low Point/DF
Slope 0.5ml 24.45 ml aliquot

Corrected Q 0.141 35 into account temp

LabSampleID	Client	Date of Collection	Abs	Duration (min)	DF	Conc (ug) (for 0.5ml Aliquot)	Conc (ug) in full 5 ml of sample	Conc (ppb)	Conc (ug/m3)	RI(ug) for 0.5 ml aliquot
01A	100788	9/17/2009	0.099	21600	1.00	0.312062974	3.120629737	1.025	1.928	0.033
02A	100789	9/17/2009	0.104	21600	1.00	0.330212201	3.302122005	1.084	2.040	0.033
03A	100790	9/17/2009	0.142	21600	1.00	0.468146325	4.681463247	1.537	2.892	0.033
03AA	100791	9/17/2009	0.149	21600	1.00	0.493552742	4.935527423	1.621	3.049	0.033
04A	100792	9/17/2009	0.085	21600	1.00	0.297543392	2.975433922	0.977	1.838	0.033
05A	100793	9/17/2009	0.065	21600	1.00	0.155979623	1.559796227	0.512	0.964	0.033
06A	100794	9/17/2009	0.041	21600	1.00	0.007363419	0.073634191	-0.024	-0.064	0.033
07A	100795	9/17/2009	0.108	20160	1.00	0.344731582	3.44731582	1.213	2.282	0.033
08A	100796	9/17/2009	0.051	20160	1.00	0.137830396	1.378303958	0.485	0.912	0.033
09A	100797	9/17/2009	0.114	20160	1.00	0.366510654	3.665106542	1.289	2.426	0.033
10A	100798	9/17/2009	0.073	20160	1.00	0.217686994	2.17686994	0.766	1.441	0.033
11A	100799	9/17/2009	0.034	20160	1.00	0.076123024	0.761230245	0.268	0.504	0.033
12A	100800	9/17/2009	0.010	21600	1.00	-0.010993264	-0.109932645	-0.036	-0.068	0.033
13A	100801	9/17/2009	0.037	18720	1.00	0.087012561	0.870125606	0.330	0.620	0.033
14A	100802	9/17/2009	0.031	18720	1.00	0.065233488	0.652334883	0.247	0.485	0.033
15A	100803	9/17/2009	0.151	18720	1.00	0.500814933	5.00814933	1.897	3.570	0.033
15AA	100804	9/17/2009	0.143	18720	1.00	0.47177617	4.7177617	1.787	3.363	0.033
16A	100805	9/17/2009	0.025	18720	1.00	0.043454416	0.434544161	0.165	0.300	0.033
17A	Method Blank	NA	0.010	21600	1.00	-0.047291718	-0.472917182	#DIV/0!	#DIV/0!	0.033
17B	Method Blank	NA	0.014	21600	1.00	-0.047291718	-0.472917182	#DIV/0!	#DIV/0!	0.033
18A	CCV	NA	0.915	21600	1.00	-0.047291718	-0.472917182	#DIV/0!	#DIV/0!	0.033
						0.003526117	0.03526117	-0.036	0.068	0.033
						0.003526117	0.03526117	0.012	0.022	0.033
						3.274016797	32.74016797	10.750	20.225	0.033

QC Duration 21600

CCV Spike Amt ug per 0.5 ml 3.25

10000ng/1ug

RL (ug) x 1000
Q x Duration

ppbx mw
24.45

Calibration Data

Calibration Date
9/8/2009 Linear Regression

0.5 ml
Aliquot of Cal
STD

ug/ml of NO2	ug of NO2	absorbance
0	0	0
0.065	0.0325	0.019
0.325	0.1625	0.056
1.3	0.65	0.192
6.5	3.25	0.918
13	6.5	1.799

Slope
Y-int
R2

0.137
0.000000
0.999999

RL (ug) in full 5 ml of sample	RL (ppb)	RL (ug/m3)	Result (ug)	Result (ug/m3)	%Rec
0.325	0.1	0.201	3.120629737	1.927739503	
0.325	0.1	0.201	3.302122005	2.039854635	
0.325	0.1	0.201	4.681463247	2.891929641	
0.325	0.1	0.201	4.93552423	3.048890826	
0.325	0.1	0.201	2.975435922	1.838047397	
0.325	0.1	0.201	1.539796227	0.963549366	
0.325	0.1	0.201	ND	ND	
0.325	0.1	0.215	3.44731582	2.281657223	
0.325	0.1	0.215	1.378303958	0.912250964	
0.325	0.1	0.215	3.665106542	2.42580525	
0.325	0.1	0.215	2.17686994	1.440793731	
0.325	0.1	0.215	0.761230245	0.503831554	
0.325	0.1	0.201	ND	ND	
0.325	0.1	0.232	0.870125606	0.620205996	
0.325	0.1	0.232	0.652334883	0.464969659	
0.325	0.1	0.232	5.00814933	3.569696399	
0.325	0.1	0.232	4.7177617	3.362714616	
0.325	0.1	0.232	0.434544161	0.309733322	
0.325	0.1	#DNV/01	ND	#DNV/01	
0.325	0.1	#DNV/01	ND	#DNV/01	
0.325	0.1	#DNV/01	ND	#DNV/01	
0.325	0.1	#DNV/01	ND	#DNV/01	
0.325	0.1	#DNV/01	ND	#DNV/01	
0.325	0.1	#DNV/01	ND	#DNV/01	
0.325	0.1	0.201	ND	ND	
0.325	0.1	0.201	32.74016797	20.22492909	%Rec 101

QC Results and Raw Data

Spectrophotometer Logbook

@Air Toxics Ltd.

Log Book #: 1873

Work Order: 0909127A

Method: Rad 166

Date: 9/8/09

Wavelength: 537 nm

Analyst: Mike Skidmore

Prep. Notes:

Standard ID	Concentration	ABS
1858-24-0.065	0.065 $\mu\text{g}/\text{mL}$	0.019
↓	↓	↓
0.325	0.325	0.056
1.3	1.3	0.192
6.5	6.5	0.918
13	13	1.799

r = 0.9999
 m = 0.2755
 b = 0.01303

Fraction	Dilution	ABS	Sample ID	Sample Volume
01A	1.00	0.099	100788	5.0 mL
02A		0.104	100789	
03A		0.142	100790	
03AA		0.149	100790	
04A		0.095	100791	
05A		0.056	100792	
06A		0.011	100793	
07A		0.108	102422	
08A		0.051	102423	
09A		0.114	102424	
10A		0.073	102425	
11A		0.034	102426	
12A		0.010	102427	
13A		0.037	102492	
14A		0.031	102493	
15A		0.131	102494	
15AA		0.143	102494	
16A		0.025	102495	
Blk		0.010	N/A	
Blk		0.014	↓	
CCV/LCS		0.915	↓	

Notes: CCV/LCS @ 6.5 $\mu\text{g}/\text{mL}$
Blank Cartridges: Lot # 09150

Spectrophotometer Standard Preparation Log

@Air Toxics Ltd. Log Book #: 1858

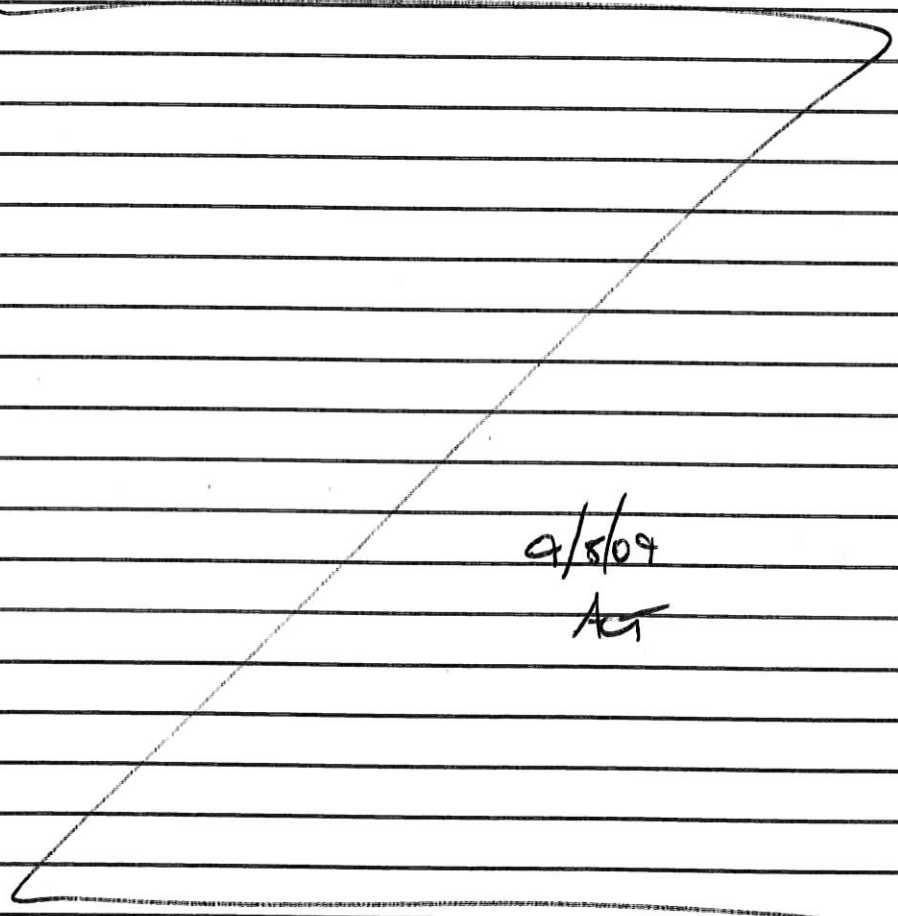
Standard ID: 1858-34
Project: Calibration Solution Rad 166
Analyst: A. Toyama
Preparation Date: 9/8/09
Expiration Date: 9/8/09

Solvent: DI H₂O
Solvent Lot #: NA

Procedure/Comments: Dissolve 5mg Sodium Nitrite, 97% (Located ER2D) in 250ml DI H₂O to yield 13 µg/L or 13 µg/mL From this solution, dilute to make:

6.5 µg/mL (315:630) 1.3 µg/mL (130:650) 0.325 µg/mL (150:600) and 0.065 µg/mL (100:500) - all in 1 ml from conc. just made.

To each of these calibration levels, transfer 0.5 ml to vial and add 5ml of sulphaniamide, cap tightly, stir and wait 5 minutes. Then add 1 ml of NEDA solution, stir and wait 10 minutes. Measure absorbance at 537 nm.



9/8/09
AT

Spectrophotometer Standard Preparation Log

@Air Toxics Ltd. Log Book #: 1858

Standard ID: 1858-34
Project: Calibration Solution Rad 106
Analyst: A. Toyama
Preparation Date: 9/8/09
Expiration Date: 9/8/09

Solvent: DI H₂O
Solvent Lot #: NA

Procedure/Comments: Dissolve 5mg Sodium Nitrite, 97% (Located ER2D)
in 250ml DI H₂O to yield 13 μ g/L or 13 μ g/ml From this
solution, dilute to make:

<u>6.5 μg/ml</u>	<u>1.3 μg/ml</u>	<u>0.325 μg/ml</u>	<u>and 0.065 μg/ml</u>	
<u>(315:630)</u>	<u>(130:650)</u>	<u>(150:600)</u>	<u>(100:500)</u>	<u>- all in 1 from conc. just made.</u>

To each of these calibration levels, transfer 0.5 ml to vial
and add 5ml of sulphanilamide, cap tightly, stir and wait
5 minutes. Then add 1 ml of NEDA solution, stir and wait
10 minutes. Measure absorbance at 537 nm.

9/8/09
AT

Shipping/ Receiving Documents

**180 Blue Ravine Road, Suite B
Folsom, CA 95630**

**Phone (916) 985-1000 FAX (916) 985-1020
Hours 8:00 A.M. to 6:00 P.M. Pacific**

COMPANY: Environmental Health & Engineering, Inc.
ATTENTION: Mr. Taeko Minegishi
FAX #: 781-247-4305
FROM: Sample Receiving
Workorder #: 0909127A
of pages (Including Cover): 4

9/22/2009

Thank you for selecting Air Toxics Ltd. We have received your samples and have found discrepancies. In order to expedite analysis and reporting, please review the attached information for accuracy. Corrections can be faxed to **Ausha Scott at 916-985-1020.** ATL will proceed with the analysis as specified on the Chain of Custody and Sample Login page.

In accordance with your company's contract, this account is required to have a PO that is fully executed by both parties which also covers the cost of the workorder before any data can be released. Please ensure that you have given all appropriate information to our Project Manager so that there will be no delay in reporting of the data you are requesting.

Your prompt response is appreciated.

FROM: Environmental Health and Engineering, Inc.
117 Fourth Avenue
Needham, MA 02494-2725

0909187

TO: AIR TOXICS

Please send invoices to ATTN: Accounts Payable
Please send reports to ATTN: Data Coordinator

In all correspondence regarding this matter, please refer to EH&E Project # 16512

The cost of this analysis will be covered by EH&E Purchase Order # 16512

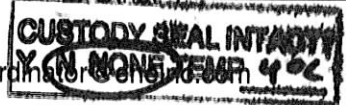
For EH & E Data Coordinator - URGENT DATA

SAMPLE ID	SAMPLE TYPE	ANALYTICAL METHOD/NUMBER	START	OTHER: Time/Date/Vol.	STOP							
100788	AIR PASSIVE	SO ₂ NO ₂ HF ANALYSIS	8/17/09	9/1/09								
100789												
100790												
100791												
100792												
100793												
102422						8/18/09	9/1/09					
102423												
102424												
102425												
102426												
102427												
102492											8/19/09	9/1/09
102493												
102494												
102495												

01A
02A
03A
04A
05A
06A
07A
08A
1972
1974
2893
13A
14A
15A
16A

Special Instructions:

- Standard turn around time
- Rush by _____ date/time
- Fax results 781-247-4305
- RETURN SAMPLES
- Electronic transfer - datacoordinator@eh&e.com
- Additional report recipient mfragala@eh&e.com
- Other _____



Each signatory please return one copy of this form to the above address

Relinquished by: [Signature] of Environmental Health & Engineering, Inc. Date: 9/3/09
 Received by: [Signature] of (company name) [Signature] Date: 9/3/09
 Relinquished by: _____ of (company name) _____ Date: _____
 Received by: _____ of (company name) _____ Date: _____
 Relinquished by: _____ of (company name) _____ Date: _____
 Received by: _____ of (company name) _____ Date: _____
 Lab Data
 Received by: _____ of Environmental Health & Engineering, Inc. Date: _____

WORK ORDER #: 0909127A

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DATE COMPLETED:	09/18/2009		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>
01A	100788	ATL Applications
02A	100789	ATL Applications
03A	100790	ATL Applications
03AA	100790 Lab Duplicate	ATL Applications
04A	100791	ATL Applications
05A	100792	ATL Applications
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15AA	102494 Lab Duplicate	ATL Applications
16A	102495	ATL Applications

Continued on next page

WORK ORDER #: 0909127A

Work Order Summary

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Environmental Health & Engineering,
Inc.
117 Fourth Avenue
Needham, MA 02494

BILL TO: Accounts Payable
Environmental Health & Engineering,
Inc.
117 Fourth Avenue
Needham, MA 02494

PHONE: 800-825-5343 **P.O. #** 16512

FAX: 781-247-4305 **PROJECT #** 16512

DATE RECEIVED: 09/04/2009 **CONTACT:** Ausha Scott

DATE COMPLETED: 09/18/2009

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>
17A	Method Blank	ATL Applications
17B	Method Blank	ATL Applications
18A	CCV	ATL Applications

CERTIFIED BY:

Sandra J. Freeman

Laboratory Director

DATE: 09/18/09

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
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Other Records



Method : ATL Application #61 NO2-Radiello 166

CAS Number	Compound	Rpt. Limit (ug)
10102-44-0	Nitrogen Dioxide	1.0

DATA REVIEW CHECKLIST

Work Order #:

0909127A

- Analysis/Reporting vs. Project Profile/SOP requirements checked (i.e. 100% Dups, J-Flag to MDL, etc)
- The final report has the correct reporting list, special units, and header info.
- Lab Narrative is correct (proper method & description/Receiving & Analytical notes correct)
- Sample Discrepancy Report (SDR) is completed

- Corrective Action issued - # _____
- Unusual circumstances have been documented in the notes section below

LUMEN validation report present and initialed

CIRCLE (YES / NO)

- Lab Blank, CCV, LCS and DUP met QC criteria
 - Hold time is met for all samples
 - Appropriate data qualifier flags are applied
 - Manual integrations for samples and QC are properly documented
 - Samples analyzed within the project or method specific clock
 - Retention times have been verified
 - Appropriate ICAL(s) included
 - At least one result per sample is verified against the target quant sheets/raw data
- Dilution factor correctly calculated (sample load volume, syringe and bag dilutions, can pressurization(s))
 - Correct amount of sample analyzed (i.e. sample not over-diluted)
 - Spectra verified - documentation of spectral defense included (Section 5A of eCVP pkg)
 - TICs resemble reference spectra
 - TICs between duplicate samples are consistent
 - Checked samples for trends (i.e. Influent vs. Effluent, Field Dups, Field/Trip Blank, etc.)
 - Data for multiple analyses of sample(s) has been evaluated for comparability of results
 - Special units for all samples in the final report are correctly calculated
 - Manually entered results checked (i.e. TPH/NMOC)
 - Chain of Custody verified for any special comments (i.e. different compounds/RLs, action levels)
 - Chain of Custody scanned correctly
 - Verify sample id's vs. chain of custody
 - Date MDL(s) performed per instrument(s)
 - Samples pressurized w/ appropriate gas (N₂ or He) Other (i.e. Tedlar bag, cartridge, sorbent)
 - Final pressure consistent with canister size (6L vs. 1L)
 - Verify receipt pressures
 - Verify canister ID #'s
 - Final invoice amount correct (adjusted for TAT, Penalties, Re-issue Charges etc.)
 - MDL date(s) present for all instruments utilized
 - Client LUMEN report reviewed for accuracy and completeness

Notes: (to include: noting samples with QA/QC problems, Blanks with positive hits, narratives, etc.)

A/R: dup 03A, 15A

M/Q:

A ₁ /A ₂ (Analytical Review/Date)	R/T (Reporting Review/Date)	M (Management Review/Date)	Q (QA Review/Date)
A ₁ : _____	R: by 9/16/09	_____ 9/18/09	_____
A ₂ : _____	T: _____		