



AN ENVIRONMENTAL ANALYTICAL LABORATORY

COMPREHENSIVE VALIDATION PACKAGE

ATL Applications

INVENTORY SHEET

WORK ORDER # 0908631D

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Completed by:

Kara McKiernan

(Signature)

Kara McKiernan/ Document Control

(Print Name & Title)

09/21/09

(Date)

WORK ORDER #: 0908631D

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:	08/28/2009	CONTACT:	Ausha Scott
DATE COMPLETED:	09/17/2009		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>
49A	101421	ATL Applications
50A	101422	ATL Applications
51A	101761	ATL Applications
52A	101762	ATL Applications
53A	101763	ATL Applications
54A	101764	ATL Applications
55A	101765	ATL Applications
56A	101760	ATL Applications
57A	101487	ATL Applications
58A	101488	ATL Applications
59A	101489	ATL Applications
59AA	101489 Lab Duplicate	ATL Applications
60A	101490	ATL Applications
61A	101491	ATL Applications
62A	101492	ATL Applications
63A	Method Blank	ATL Applications
63B	Method Blank	ATL Applications

Continued on next page

WORK ORDER #: 0908631D

Work Order Summary

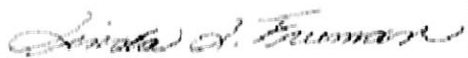
CLIENT:	Mr. Taeko Minegishi Environmental Health & Engineering, Inc. 117 Fourth Avenue Needham, MA 02494	BILL TO:	Accounts Payable Environmental Health & Engineering, Inc. 117 Fourth Avenue Needham, MA 02494
PHONE:	800-825-5343	P.O. #	16512
FAX:	781-247-4305	PROJECT #	16512
DATE RECEIVED:	08/28/2009	CONTACT:	Ausha Scott
DATE COMPLETED:	09/17/2009		

FRACTION #
64A

NAME
CCV

TEST
ATL Applications

CERTIFIED BY:



Laboratory Director

DATE: 09/17/09

This report shall not be reproduced, except in full, without the written approval of Air Toxics Ltd.

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# 0908631D**

Fourteen Radiello 166 (NO₂) samples were received on August 28, 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 18720 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	Analysis	Dilution	Reporting Limit	Reporting Limit	Amount	Amount
Sample I.D.	Sample I.D.	Date	Date	Factor	(ug)	(ug/m3)	(ug)	(ug/m3)
101421	0908631D-49A	NA	9/1/2009	1.00	0.32	0.23	0.56	0.40
101422	0908631D-50A	NA	9/1/2009	1.00	0.32	0.23	0.44	0.31
101761	0908631D-51A	8/27/2009	9/1/2009	1.00	0.32	0.23	5.4	3.8
101762	0908631D-52A	8/27/2009	9/1/2009	1.00	0.32	0.23	5.6	4.0
101763	0908631D-53A	8/27/2009	9/1/2009	1.00	0.32	0.23	9.4	6.7
101764	0908631D-54A	8/27/2009	9/1/2009	1.00	0.32	0.23	5.4	3.9
101765	0908631D-55A	8/27/2009	9/1/2009	1.00	0.32	0.23	5.1	3.7
101760	0908631D-56A	NA	9/1/2009	1.00	0.32	0.23	0.48	0.34
101487	0908631D-57A	8/26/2009	9/1/2009	1.00	0.32	0.25	2.1	1.6
101488	0908631D-58A	8/26/2009	9/1/2009	1.00	0.32	0.25	1.9	1.5
101489	0908631D-59A	8/26/2009	9/1/2009	1.00	0.32	0.25	19	14
101489 Lab Duplicate	0908631D-59AA	8/26/2009	9/1/2009	1.00	0.32	0.25	19	14
101490	0908631D-60A	8/26/2009	9/1/2009	1.00	0.32	0.25	2.1	1.6
101491	0908631D-61A	8/26/2009	9/1/2009	1.00	0.32	0.25	2.4	1.9
101492	0908631D-62A	NA	9/1/2009	1.00	0.32	0.23	0.56	0.40
Method Blank	0908631D-63A	NA	9/1/2009	1.00	0.32	0.23	0.48	0.34
Method Blank	0908631D-63B	NA	9/1/2009	1.00	0.32	0.23	0.52	0.37
CCV	0908631D-64A	NA	9/1/2009	1.00	0.32	0.23	%Rec 102	

COMMENTS: 1. NA=Not Applicable

2. ND=Not Detected

3. Exposure time of 18720 minutes was assumed for the QC samples.

4. Background subtraction not performed.

Dioxide Radiello Calculation Worksheet

Workorder #: 0908631D

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: 9/1/2009

(Abs-Y-int)(DF

Slope

Conc(ug)5 (ml)

0.5ml

Conc (ug) x 1000

Q x Duration

ppbx nmw
24.45

Corrected Q	0.141	es into account temp	Abs	Duration (min)	DF	Conc (ug) (for 0.5ml Aliquot)	Conc (ug) in full 5 ml of sample	Conc (ppb)	Conc (ug/m3)
LabSampleID	Client	Date of Collection							
49A	101421	NA	0.029	18720	1.00	0.055754359	0.557543589	0.211	0.397
50A	101422	NA	0.026	18720	1.00	0.043786577	0.437865768	0.166	0.312
51A	101761	8/27/2009	0.150	18720	1.00	0.538454905	5.384549053	2.040	3.838
52A	101762	8/27/2009	0.155	18720	1.00	0.558401209	5.584012088	2.116	3.980
53A	101763	8/27/2009	0.251	18720	1.00	0.941370237	9.413702373	3.566	6.710
54A	101764	8/27/2009	0.151	18720	1.00	0.542444166	5.42444166	2.055	3.865
55A	101765	8/27/2009	0.144	18720	1.00	0.514519341	5.14519341	1.949	3.667
56A	101760	NA	0.027	18720	1.00	0.04775837	0.47758375	0.181	0.341
57A	101487	8/26/2009	0.068	17280	1.00	0.211335527	2.113355267	0.867	1.632
58A	101488	8/26/2009	0.063	17280	1.00	0.191389223	1.913892232	0.786	1.478
59A	101489	8/26/2009	0.484	17280	1.00	1.870867984	18.70867984	7.679	14.446
59AA	101489 Lab Duplicate					1.870867984	18.70867984	7.679	14.446
60A	101490	8/26/2009	0.068	17280	1.00	0.211335527	2.113355267	0.867	1.632
61A	101491	8/26/2009	0.076	17280	1.00	0.243249612	2.432496125	0.998	1.878
62A	101492	NA	0.029	18720	1.00	0.055754359	0.557543589	0.211	0.397
					1.00	-0.059934202	-0.599342018	#DIV/0!	#DIV/0!
					1.00	-0.059934202	-0.599342018	#DIV/0!	#DIV/0!
					1.00	-0.059934202	-0.599342018	#DIV/0!	#DIV/0!
					1.00	-0.059934202	-0.599342018	#DIV/0!	#DIV/0!
					1.00	-0.059934202	-0.599342018	#DIV/0!	#DIV/0!
					1.00	-0.059934202	-0.599342018	#DIV/0!	#DIV/0!
					1.00	0.04775837	0.47758375	0.181	0.341
					1.00	0.051765098	0.517650982	0.196	0.369
63A	Method Blank	NA	0.027	18720	1.00				
63B	Method Blank	NA	0.028	18720	1.00				
64A	CCV	NA	0.849	18720	1.00	3.326948144	33.26948144	12.604	23.714

QC Duration

18720

CCV Spike Amt ug
per 0.5 ml

3.25

1000ng/1ug

Low PointDF $\frac{RL(\mu g) \times 1000}{RL(\mu g) \times 1000}$ $\frac{RL(\mu g) \times 1000}{Q \times Duration}$ ppbx mw 24.45

Calibration Data Calibration Date 9/1/2009 Linear Regression

0.5 mL Aliquot of Cal STD

RL(ug) for 0.5 mL aliquot	RL (ug) in full 5 mL of sample	RL (ppb)	RL (ug/m3)	Result (ug)	Result (ug/m3)	%Rec	ug/ml of NO2	ug of NO2	absorbance	Slope Y-int R2
0.0325	0.325	0.1	0.232	0.557543589	0.397404552		0	0	0	0.250673012
0.0325	0.325	0.1	0.232	0.437865768	0.312100888		0.065	0.0325	0.017	0.015023887
0.0325	0.325	0.1	0.232	5.384549053	3.83798567		0.325	0.1625	0.051	0.999826518
0.0325	0.325	0.1	0.232	5.584012088	3.980158443		1.3	0.65	0.182	
0.0325	0.325	0.1	0.232	9.413702373	6.709875694		6.5	3.25	0.844	
0.0325	0.325	0.1	0.232	5.42444166	3.866420225		13	6.5	1.637	
0.0325	0.325	0.1	0.232	5.14519341	3.667378342					
0.0325	0.325	0.1	0.232	0.477758375	0.340535443					
0.0325	0.325	0.1	0.251	2.113355267	1.631881534					
0.0325	0.325	0.1	0.251	1.913892232	1.477861029					
0.0325	0.325	0.1	0.251	18.70867984	14.44638751					
0.0325	0.325	0.1	0.251	18.70867984	14.44638751					
0.0325	0.325	0.1	0.251	2.113355267	1.631881534					
0.0325	0.325	0.1	0.251	2.432496125	1.878314341					
0.0325	0.325	0.1	0.232	0.557543589	0.397404552					
0.0325	0.325	#DNV/01	#DNV/01	ND	#DNV/01					
0.0325	0.325	#DNV/01	#DNV/01	ND	#DNV/01					
0.0325	0.325	#DNV/01	#DNV/01	ND	#DNV/01					
0.0325	0.325	#DNV/01	#DNV/01	ND	#DNV/01					
0.0325	0.325	#DNV/01	#DNV/01	ND	#DNV/01					
0.0325	0.325	#DNV/01	#DNV/01	ND	#DNV/01					
0.0325	0.325	0.1	0.232	0.477758375	0.340535443					
0.0325	0.325	0.1	0.232	0.517650982	0.368969998	%Rec				
0.0325	0.325	0.1	0.232	33.26948144	23.7137394					
0.0325	0.325	0.1	0.232			102				

QC Results and Raw Data

Spectrophotometer Logbook

@Air Toxics Ltd.

Log Book #: 1564Work Order: 0008631DDate: 9/1/09Method: Rad 166Analyst: A. ToyamaWavelength: 537 nm

Prep. Notes:

Standard ID	Concentration	ABS
1558	0.005	0.017
26	0.005	0.051
0.5	0.325	0.192
2.0	1.3	0.844
10	6.5	1.637
20	13	

$$r = 0.9998$$

$$m = 0.0815$$

$$b = 0.0150$$

Fraction	Dilution	ABS	Sample ID	Sample Volume
49A	1.00	0.029	101421	5.0 mL
50A		0.026	422	
51A		0.150	761	
52A		0.155	762	
53A		0.151	763	
54A		0.151	764	
55A		0.144	765	
56A		0.027	760	
57A		0.068	487	
58A		0.063	488	
59A		0.084	489	
60A		0.068	490	
61A		0.076	491	
62A		0.029	492	
59AA		0.084	489	

Notes: Blank Cartridges: Lot 09150
 CCV/LCS prepared at 10⁻⁴ mL
 6.5
 9/1/09
 AT

Spectrophotometer Logbook

@Air Toxics Ltd.

Log Book #: 1564Work Order: 0908631D

Cont. from page 45

Date: _____ Method: _____
Analyst: _____ Wavelength: _____
Prep. Notes: _____

9/1/09
ACT

Standard ID

Concentration

ABS

r = _____
m = _____
b = _____

Fraction

Dilution

ABS

Sample
IDSample
Volume

B1K

9/1/09 ACT 1.00

0.027

NA

50 mL

B1K

ACT

0.028

↓

↓

CGV/LCS

0.849

↓

↓

9/1/09
ACT

Notes: _____

Spectrophotometer Standard Preparation Log

@Air Toxics Ltd. Log Book #: 1858

Standard ID: 1858-26

Project: Calibration Solution Rad 1660

Analyst: A. Toyama

Preparation Date: 9/1/09

Expiration Date: 9/1/09

Solvent: DI H₂O

Solvent Lot #: NA

Procedure/Comments: Dissolve 5mg Sodium Nitrite, 97% (located ER2D) in 250 mL DI H₂O to yield ~~20 μ g/L~~ or ~~20 μ g/mL~~ ^{9/3/09} From this solution, dilute to make 13 μ g/L or 13 μ g/mL

6.5 μ g/mL 1.3 μ g/mL 0.325 μ g/mL 0.065 μ g/mL

~~10 μ g/mL~~, ~~3.0 μ g/mL~~, ~~0.5 μ g/mL~~ and ~~0.1 μ g/mL~~ ^{9/3/09} Act

(~~315:650~~ ^{315:650} ~~135:635~~ ^{135:635} ~~150:600~~ ^{150:600} ~~100:500~~ ^{100:500}) all in mL from conc. just in

To each of these calibration levels, transfer 0.5 mL to vial and add 5 mL 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.

5/31/09

Act

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 #: 0908631D
of pages (Including Cover): 4

9/21/2009

Thank you for selecting Air Toxics Ltd. We have received your samples and have found no 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.

DATE: 27 Aug 09

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

0908631

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.	STOR
101421	AIR/PASSIVE	NO ₂ SO ₂ HF ANALYSIS	8/13/09	φ	
101422			1	φ	
101761			8/14/09	8/27/09	
101762				1	
101763				1	
101764				1	
101765				1	
101760				φ	
101487			8/14/09	8/26/09	
101488				1	
101489				1	
101490				1	
101491				1	
101492				φ	

Special Instructions:

☒ Standard turn around time

☐ Rush by _____ date/time

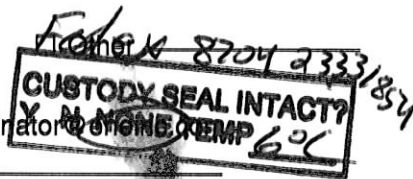
☐ Fax results 781-247-4305

☐ RETURN SAMPLES

☒ Additional report recipient

☒ Electronic transfer - datacoordinator@eh&e.com

mfragula@eh&e.com



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

Relinquished by: [Signature] of Environmental Health & Engineering, Inc. Date: 8/27/09

Received by: _____ of (company name) _____ Date: _____

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: _____

Page 4 of 4

SAMPLE RECEIPT SUMMARY

WORKORDER 0908631D

Client

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

Phone

800-825-5343

Fax

781-247-4305

Date Promised: 09/09/09 11:59 pm

Date Completed: 9/17/09

Date Received: 8/28/09

PO#: 16512

Project#: 16512

Total \$: \$ 630.00

Sales Rep: TL

Logged By: MW

<u>Fraction</u>	<u>Sample #</u>	<u>Analysis</u>	<u>Collected</u>	<u>Amount\$</u>
49A	101421	ATL Applications	NA	\$40.00
50A	101422	ATL Applications	NA	\$40.00
51A	101761	ATL Applications	8/27/2009	\$40.00
52A	101762	ATL Applications	8/27/2009	\$40.00
53A	101763	ATL Applications	8/27/2009	\$40.00
54A	101764	ATL Applications	8/27/2009	\$40.00
55A	101765	ATL Applications	8/27/2009	\$40.00
56A	101760	ATL Applications	NA	\$40.00
57A	101487	ATL Applications	8/26/2009	\$40.00
58A	101488	ATL Applications	8/26/2009	\$40.00
59A	101489	ATL Applications	8/26/2009	\$40.00
59AA	101489 Lab Duplicate	ATL Applications	8/26/2009	\$0.00
60A	101490	ATL Applications	8/26/2009	\$40.00
61A	101491	ATL Applications	8/26/2009	\$40.00
62A	101492	ATL Applications	NA	\$40.00
63A	Method Blank	ATL Applications	NA	\$0.00
63B	Method Blank	ATL Applications	NA	\$0.00
64A	CCV	ATL Applications	NA	\$0.00

Misc. Charges eCVP (14) @ \$5.00 each.

\$70.00

Note: Samples received after 3 P.M. PST are considered to be received on the following work day.
Atlas Project Name/Profile#: CPSC Indoor Air Monitoring/13297

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

Analysis Code: Other GC

TERMS:

Reporting Method: ATL Application #61 NO2-Radiello 166

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

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 #:

0908631D

A₁ A₂ R T M Q☒ ☐ ☐ ☐ ☒ ☐

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)☐ ☐ ☐ ☐ ☐ ☐

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. 59A

M/Q:

A₁/A₂

R/T

M

Q

(Analytical Review/Date)

(Reporting Review/Date)

(Management Review/Date)

(QA Review/Date)

A₁: 4/9/11/05

R:

RR 9/17/09

A₂:

T:

Note (1): Please check all the appropriate boxes. Indicate "NA" for any statement that does not apply.

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Note (2): Management reviewer and reporting reviewer must be separate individuals.