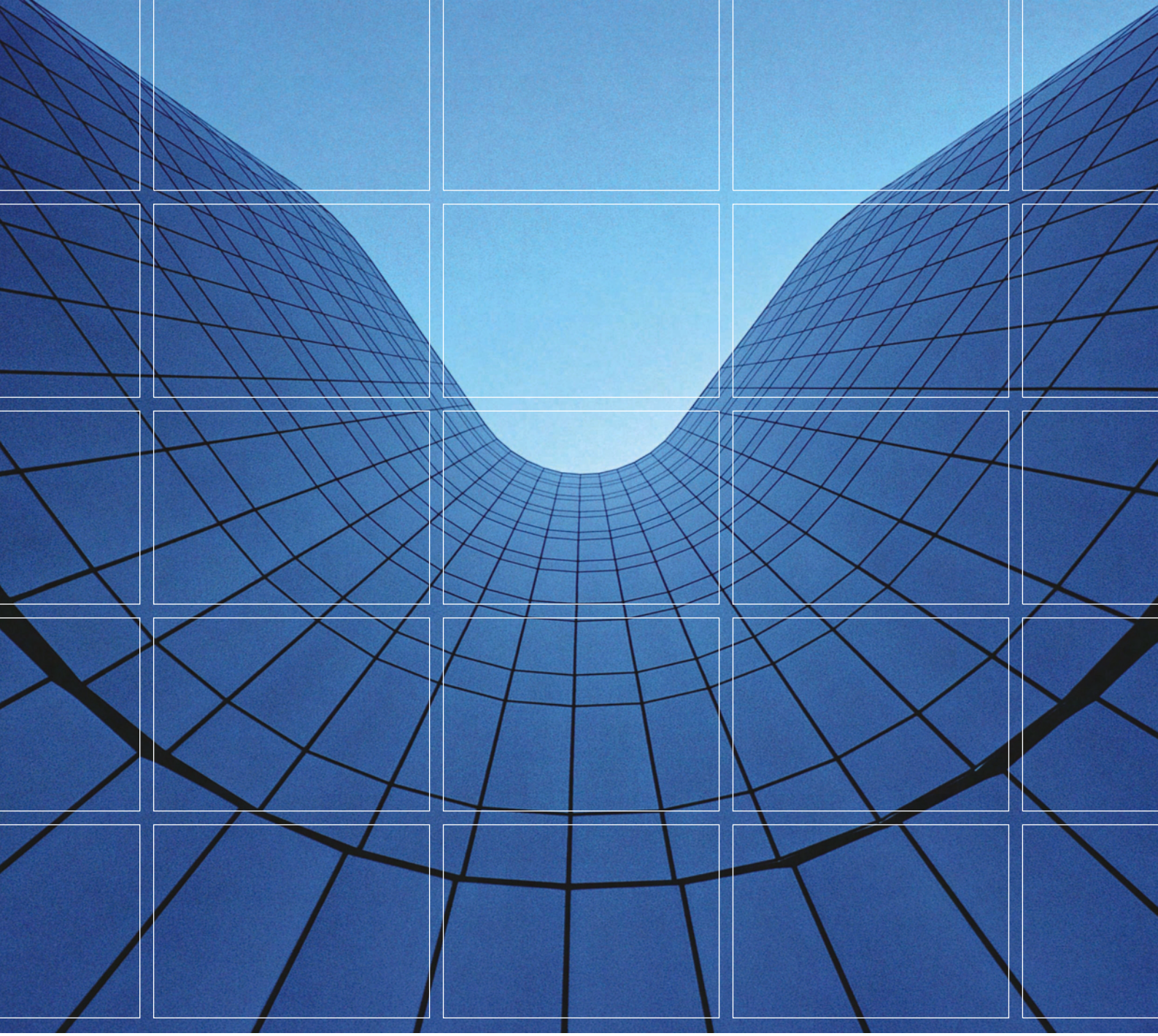

Gosnells Dust Study

Ambient Air Quality Monitoring

Final Report

For Department for Planning and Infrastructure
Government of Western Australia

July 2006

0042183

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FINAL REPORT

Department for Planning and Infrastructure,
Government of Western Australia

Gosnells Dust Study
Ambient Air Quality, Final Report

July 2006

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FINAL REPORT

Department for Planning and Infrastructure, Government of Western Australia

Gosnells Dust Study
Ambient Air Quality, Final Report

July 2006

Reference: 0042183RP1

For and on behalf of Environmental Resources Management Australia

Approved by: Michele Villa

Signed: 

Position: Managing Partner

Date: 26 July 2006

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EXECUTIVE SUMMARY

In 2001 the City of Gosnells (CoG) identified West Martin, an area close to Readymix Gosnells and Boral Quarries, as an area for urban development. The CoG commissioned an air quality assessment in 2002 (CoG, 2002) with the purpose of gaining information on the extent of the 'sphere of influence' of the two quarry operations in the area, and to enable regulatory bodies to assess the environmental and health impacts of developing the West Martin site into a sensitive land use.

Following on from the air quality assessment (CoG, 2002) carried out in February 2002, an ambient air monitoring programme was initiated in the vicinity of West Martin area. The aim of the programme was to quantify dust emissions (specifically particulate matter less than 10 microns in diameter – PM_{10}) from nearby particulate sources. The monitoring programme began in December 2004 and is currently still progressing. This report presents the results of the monitoring programme during the period December 2004 – June 2006.

Three ambient air monitoring stations were selected – a background station (Site 1 – located at a rural property), a neighbourhood station (Site 2 – located at an adjacent school) and a peak station (Site 3 – located at the Readymix western boundary). The peak station (Site 3) was not operational until January 2006 due to difficulties with power supply. The program used a continuous monitoring system for the assessment of PM_{10}, known as a Tapered Elemental Oscillating Microbalance (TEOM). Meteorological conditions (wind speed and wind direction, temperature at 2 and 10 metres and net radiation) were also measured using weather stations located at all three sites.

Table 1 shows the monthly peak hourly and daily PM_{10} concentrations measured by the TEOM's at Site 1 (Background), Site 2 (School) and Site 3 (Boundary).

Table 1 Monthly Hourly/Daily Peak PM_{10} Concentrations (µg/m³)

Month	Average Time	Site 1 (Background)	Site 2 (School)	Site 3 (Boundary)
December 2004	1 hour	240	190	-
	24 hour	48	51	-
January 2005	1 hour	1,500	1,200	-
	24 hour	240	190	-
February 2005	1 hour	1,200	230	-
	24 hour	40	55	-
March 2005	1 hour	370	330	-
	24 hour	31	49	-
April 2005	1 hour	120	270	-
	24 hour	42	42	-
May 2005	1 hour	100	220	-
	24 hour	21	36	-
June 2005	1 hour	49	530	-
	24 hour	16	55	-
July 2005	1 hour	57	130	-
	24 hour	29	31	-
August 2005	1 hour	120	67	-
	24 hour	16	19	-
September 2005	1 hour	740	102	-
	24 hour	24	24	-
October 2005	1 hour	630	180	-
	24 hour	29	47	-
November 2005	1 hour	170	360	-
	24 hour	31	57	-
December 2005	1 hour	100	410	-
	24 hour	28	27	-
January 2006	1 hour	140	250	-
	24 hour	31	70	-
February 2006	1 hour	250	410	540
	24 hour	22	59	110
March 2006	1 hour	87	620	630
	24 hour	26	39	120
April 2006	1 hour	160	300	930
	24 hour	21	56	150
May 2006	1 hour	420	610	790
	24 hour	34	71	150
June 2006	1 hour	230	320	740
	24 hour	49	75	61

1. Ambient Air Quality NEPM Standard 50 µg/m³ (24 hour average)

On the basis of the results presented in this report the following conclusions can be drawn:

- PM_{10} levels have been, and are currently being quantified to assess potential health risks to sensitive land uses in the study area and to assess contributions from local dust sources;

- meteorological parameters including wind speed, wind direction, temperature and net radiation have been quantified to gain an understanding of the processes which govern the dispersion and transport of PM_{10} emissions from nearby sources;

- data availability for the monitoring programme meets the requirements of National Environment Protection Council (Ambient Air Quality) Measure, Guideline Paper No. 5, May 2001, Data Collection and Handling;

- PM_{10} concentrations at Site 2 (School) and Site 3 (Boundary) are non-compliant with the NEPM standard of 50 ug/m^3 (24 hour average) being exceeded more than the goal of 5 times in one year; and

- existing background particulate sources influence PM_{10} concentrations measured at peak and neighbourhood monitoring stations.

1 INTRODUCTION

1.1 GENERAL

Environmental Resources Management Australia Pty Ltd (ERM) was commissioned by the Western Australia Government, Department for Planning and Infrastructure to undertake an ambient air monitoring programme in the area surrounding West Martin, Western Australia. The ambient air monitoring programme was undertaken to quantify dust emissions (particulate matter less than 10 microns - PM_{10}) from quarry operations and adjoining dust sources in the study area.

1.2 BACKGROUND

In 2001 the City of Gosnells (CoG) identified West Martin as an area for urban development. West Martin is currently a wedge of rural land that lies between the Canning River, Gosnells Road West and the Tonkin Highway. Historical land use in the West Martin area was based primarily on agriculture, which included commercial orchards, market gardens, and equestrian use.

According to the Western Australian Planning Commission (WAPC), and under the 'Basic Raw Material Policy, State Planning Policy No.2.4', the site has been identified as a 'Key Extraction Area' of regional significance which provides for a long term supply of basic raw materials.

The CoG commissioned an air quality assessment in 2002 (CoG, 2002) for two distinct purposes:

- to enable the WAPC to develop a clear definition of a buffer area around the existing quarries (Readymix and Boral) to determine subdivision applications within the 'hardrock quarries sphere of influence'; and

- to enable the Environment Protection Authority (EPA) to assess the environmental impact on the subdivision applications and the perceived health risk to potential residents.

In February 2002 Sinclair Knight Mertz (SKM) Consultants were commissioned by the CoG to assess if environmental conditions in the area were suitable for the proposed land use. To achieve this aim, SKM undertook an air quality assessment, to identify an appropriate buffer area, to avoid any residential development in the West Martin area being affected by unacceptable air quality impacts associated with quarrying activities that currently take place on the eastern side of the Tonkin Highway. The assessment was completed in August 2002, where the following recommendations were made:

- the outer boundary of any residential development in the West Martin area should not extend beyond the 24-hour PM_{10} dust level buffer standard; and

- a long-term PM_{10} dust level monitoring plan should be implemented, with scientific monitoring to take place in the area where the model predictions indicate that the highest levels of dust emissions are likely to occur.

It should be noted that there are many sources of dust in the West Martin precinct, including dust from existing quarry operations, wind blown dust from exposed areas such as unsurfaced roads, dry horse training areas, smoke from wood burning (domestic heat in winter), vehicle exhausts and pollens and moulds.

The SKM report was subsequently reviewed by, and in consultation with, the West Martin Consultation Group (WMCG). The WMCG was formed to provide a review and social consultation process that took into account the interests of all associated parties, including residents.

Currently the WMCG consisted of the following parties:

- Department of Planning and Infrastructure;

- Department of Environment and Conservation;

- City of Gosnells;

- Readymix; and

- Chamber of Commerce and Industry.

Following the release of the SKM report, it was considered that a more scientific approach be adopted to gain an accurate assessment of the potential dust impacts from the nearby quarries on the proposed West Martin urban development. The monitoring programme began in December 2004 and is currently still progressing. This report presents the results of the monitoring programme during the period December 2004 – June 2006.

Three ambient air monitoring stations were selected (as described in Chapter 4) – a background station (Site 1 – located at a rural property), a neighbourhood station (Site 2 – located at an adjacent school) and a peak station (Site 3 – located within the Readymix western boundary). The peak station (Site 3) was not operational until January 2006 due to difficulties with power supply. The program used a continuous monitoring system for the assessment of PM_{10}, known as a Tapered Elemental Oscillating Microbalance (TEOM). Meteorological conditions (wind speed and wind direction, temperature at 2 and 10 metres and net radiation) were also measured using weather stations located at all three sites.

1.3 REPORT STRUCTURE

The report is structured as follows:

Chapter 1 *Introduction*

Chapter 2 *Limitations & Exceptions*

Chapter 3 *Site Characterisation*

Chapter 4 *Monitoring Programme*

Chapter 5 *Air Quality Legislation and Assessment Guidelines*

Chapter 6 *Methodology*

Chapter 7 *Quality Assurance*

Chapter 8 *Results & Discussion*

Chapter 9 *Conclusions*

Appendix A *References*

Appendix B *Equipment Specifications*

Appendix CCalibration/Maintenance Records

Appendix D *Windroses*

Appendix E *Result Summary*

Appendix F *Exceedance Summary*

Appendix G *Photolog*

1.4 OBJECTIVES

The objectives of the ambient air quality monitoring programme were as follows:

- quantify PM_{10} concentrations to assess potential health risks to sensitive land uses in the study area;
- quantify meteorology parameters which govern the dispersion and transport of PM_{10} emissions from nearby sources; and
- provide collected data for inclusion into future computer models, which may be used to assess the acceptability of PM_{10} emissions on nearby sensitive land uses.

To contribute to achieving these objectives ERM were commissioned for the following Scope of Work.

1.5 SCOPE OF WORK

The scope of work included the following:

- commissioning and ongoing calibration of three TEOM instruments incorporating a PM_{10} inlet, at three locations;
- assembly and ongoing calibration of three weather stations incorporating wind speed, wind direction, delta temperature and net radiation;
- installation of remote access equipment and security at the three locations incorporating a GSM modem, which enabled remote access to the TEOMs;
- regular site visits to inspect, maintain and calibrate instrumentation;
- weekly reporting of results;
- submission of a six monthly report; and
- submission of a final report.

1.6 AMBIENT AIR QUALITY MONITORING PROGRAMME RATIONALE

Ambient air quality monitoring programmes investigating particulate impacts can be developed utilising numerous types of equipment and methodologies. The chosen equipment depends on the objectives of the monitoring programme and the required outcomes.

The nature of air quality impacts in the study area are such that particulate emissions vary over short time periods and with prevailing meteorological conditions. In order to fulfil the objectives of the ambient air quality monitoring programme, defensible, real time, continuous air quality data was considered the most appropriate monitoring mechanism. Therefore, a continuous direct mass method for the determination of PM_{10} utilising a Tapered Element Oscillating Microbalance (TEOM) was chosen. PM_{10} is measured in accordance with *AS 3580.9.8 – 2001 Methods for sampling and analysis of ambient air – Method 9.8: Determination of suspended particulate matter – PM_{10} continuous direct mass method using a tapered element oscillating microbalance analyser*.

The method uses a TEOM which is a true "gravimetric" instrument, which draws ambient air through a filter at a constant, flow rate, continuously weighing the filter and calculating near real-time (6 minute) mass concentrations.

Total Suspended Particulate (TSP) is a measure of all particles that are entrained in the atmosphere. Particles can have health and environmental impacts, as well as effects on amenity. Particulate matter also has the potential to affect visibility, represented as haze. Fine particulate matter adversely impacts visibility because it scatters and absorbs light.

Fine particulate matter, PM_{10} (particles less than 10 microns in diameter) and $PM_{2.5}$ (particles less than 2.5 microns in diameter), can reach the lower parts of the respiratory system and may have health as well as amenity impacts. Most PM_{10} particles are caused by combustion from motor vehicles, fire, industrial and extractive processes.

PM_{10} has been selected as an indicator of poor particulate air quality because of the potential health concerns related to this contaminant.

2 *LIMITATIONS AND EXCEPTIONS OF THIS REPORT*

The findings of this report are based on the Scope of Work outlined above. ERM performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental profession. No warranties, expressed or implied, are made.

This assessment is based on site inspection conducted by ERM personnel, sampling and analyses described in the report. All conclusions and recommendations made in the report are the professional opinions of the ERM personnel involved with the project and, while normal checking of the accuracy of data has been conducted, ERM assumes no responsibility or liability for errors in data obtained from regulatory agencies or any other external sources, nor from occurrences outside the scope of this project.

The information relating to the air quality conditions in this document is considered to be accurate at the date of issue. Conditions can vary across a particular site, which cannot be wholly defined by investigation. As a result, it is unlikely that the results and estimations presented in this report will represent the extremes of conditions within the site. Air quality conditions including contaminant concentrations can change in a limited period of time.

3 SITE CHARACTERISATION

3.1 SITE LOCATION

The study area is within the suburb of Martin, Western Australia, within the municipality of the CoG.

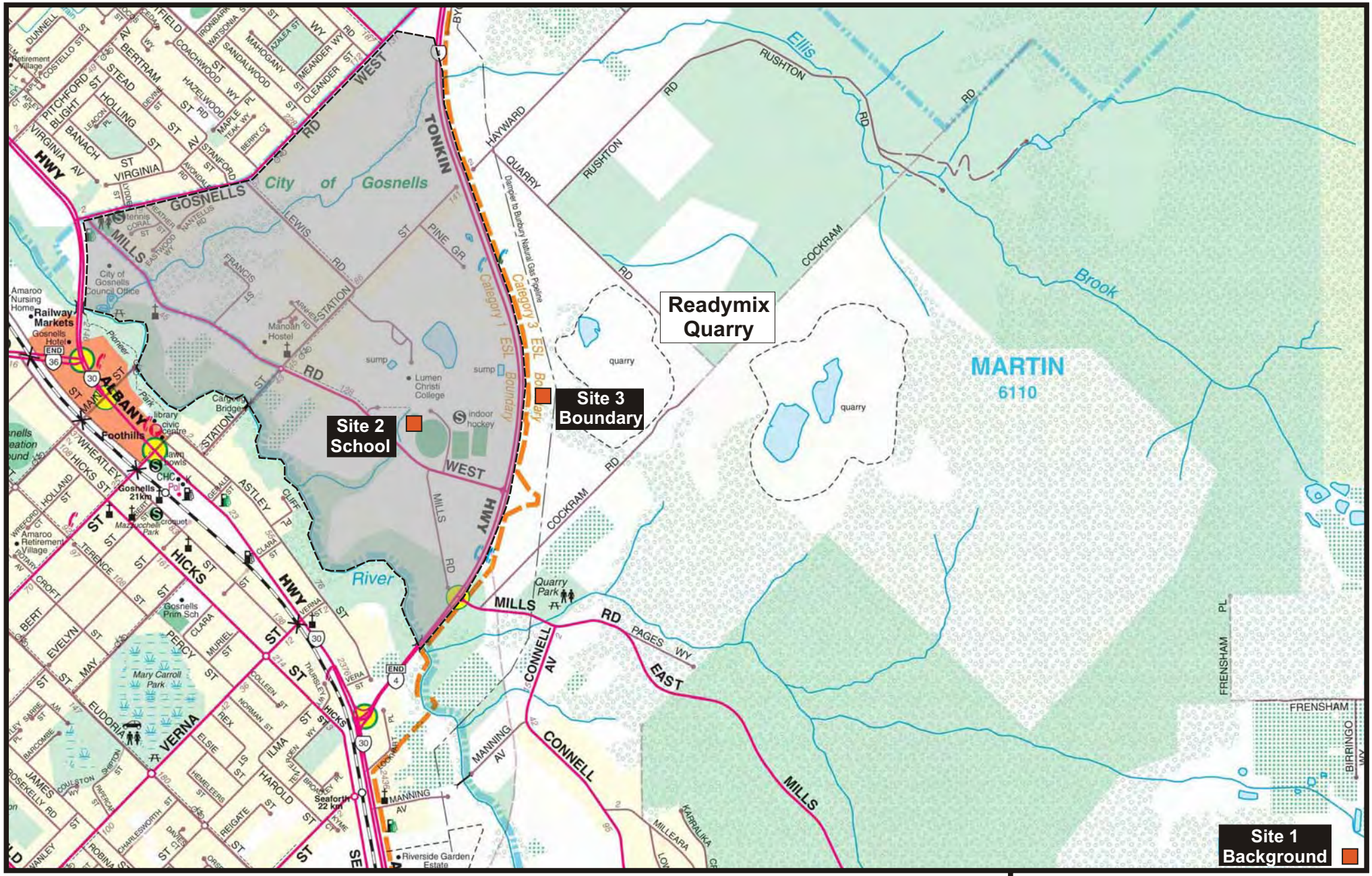
The West Martin Precinct proposed development site is located approximately 1 kilometre to the southwest of the Readymix quarry. The land is bounded by Station Street to the northwest and Mills Road West to the northeast and east, with the Gosnells City Centre 700 metres to the northwest.

A locality map and monitoring locations are presented in *Figure 3.1.*

3.2 SURROUNDING LAND USES

The Readymix quarry is predominantly surrounded by land zoned for rural use to the north and the east and residential areas to the west and the south. Directly to the west of the quarry runs the Tonkin Highway, adjacent to which is the Lumen Christi College. The surrounding land has generally been developed for rural pursuits such as orchards, equestrian properties and stock grazing. The Boral Hardrock quarry in Orange Grove is situated to the northwest of the Readymix quarry site.

The 214 hectares of the West Martin Precinct proposed development site is currently made up of rural lots, including an orchard and equestrian properties. Parts of the development site have already been reserved as Parks and Recreation areas. The Southern River Regional Parkland surrounds the site to the south and the west.



0042183 Figure 3.1 Monitoring Locations.cdr

Base map courtesy of StreetExpress 2004.

ERM

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West Martin Study Area

Figure 3.1

Locality Map and Ambient Air Monitoring Locations

Department for Planning and Infrastructure

4 MONITORING PROGRAMME

4.1 BACKGROUND STATION

A baseline air quality monitoring station was established in Gosnells, south east of the Readymix quarry (Site 1 Background). This station is located on the northern side of a rural property located at 581 Canning Mills Road, Gosnells. The monitoring station is located away from major unsealed roads in the middle of rural paddock areas. The monitoring station is considered suitable for air quality and meteorological monitoring. The purpose of the monitoring station is to measure PM_{10} contributions from sources in the West Martin study area and meteorological data for inclusion into a suitable dispersion model. The data provides information that can be used to determine representative background concentrations of PM_{10} and for dispersion model testing and validation purposes. The background monitoring station is particularly useful for assessing transportation of pollutants into the Gosnells region.

4.2 NEIGHBOURHOOD STATION

A neighbourhood air quality monitoring station was established at Lumen Christi College, 500 metres directly west of the Readymix Quarry (Site 2 School). This station was selected based on its representativeness of the wider uniform land use in the area west of the Readymix quarry. The purpose of the air quality monitoring station is to assess the air quality trends in the area as well as compliance with NEPM standards. The monitoring station is also positioned to assess the effects of major, non-localised pollutant sources. Data collected may also be used for dispersion model testing and validation.

4.3 PEAK STATION

A peak station was established on the west boundary of the Readymix quarry, adjacent the Tonkin Highway (Site 3 - Boundary). This station has not operated for the entire period of the monitoring programme due to the unavailability of power at this location. Power Proving Services (PPS) was commissioned by ERM in December 2005 to install temporary mains power to the peak site and supply this power for the duration of the monitoring project. The onsite works were conducted during December 2005 and January 2006 and data was available at the peak site from the 6th February 2006.

The purpose of the peak station was to collect data suitable for air quality compliance and source monitoring. More specifically, the purpose of this station is to assess an area where the highest PM_{10} concentrations are likely to occur resulting from major particulate matter sources in the area.

4.4 MONITORING PROGRAMME SUMMARY

A summary of the monitoring programme is presented in *Table 4.1*. This table indicates, for each of the monitoring stations described above, the parameters measured and the start dates.

Table 4.1 Monitoring Programme Summary

Air Quality Monitoring Station	Code	Start Date	End Date	PM_{10}	WS	WD	AT02	AT10	NRAD
Canning Mills Road (Background Station)	Site 1	4-12-04	Cont.	✓	✓	✓	✓	✓	
Lumen Christi College (Neighbourhood Station)	Site 2	4-12-04	Cont.	✓	✓	✓	✓	✓	✓
Western Readymix Boundary (Boundary Station)	Site 3	6-02-06	Cont	✓	✓	✓	✓	✓	

1. Cont. Monitoring is continuing
2. NA Not Operational
3. PM_{10} Particulate matter less than 10 microns (TEOM)
4. WS Wind Speed
5. WD Wind Direction
6. AT02 Air Temperature at 2 metres
7. AT10 Air Temperature at 10 metres
8. NRAD Net Radiation

5 AIR QUALITY LEGISLATION AND ASSESSMENT GUIDELINES

5.1 NATIONAL ENVIRONMENT PROTECTION (AMBIENT AIR QUALITY) MEASURE (NEPM)

In June 1998, the National Environment Protection Council set uniform standards and goals for ambient air quality across Australia. Standards were set for six pollutants - carbon monoxide, nitrogen dioxide, photochemical oxidants (as ozone), sulphur dioxide, lead and particles less than 10 microns (PM_{10}). The standards and goals outlined for the six pollutants outlined in the NEPM are listed below in *Table 5.1*.

The NEPM was varied in 2003 to include advisory reporting standards for fine particles less than 2.5 microns in diameter ($PM_{2.5}$The advisory reporting standards for $PM_{2.5}$ are 25 ug/m^3 (1 day average) and 8 ug/m^3 (annual average). During project inception, consultation with the Western Australia Department of Conservation and Environment (WA DEC)indicated that PM_{10} was an appropriate pollutant to monitor during this study.

Table 5.1 Standards and Goals

Pollutant	Averaging Period	Maximum Concentration	Goal within 10 years – maximum allowable exceedances
Carbon monoxide	8 hours	9.0 ppm	1 day a year
Nitrogen dioxide	I hour	0.12 ppm	1 day a year
	I year	0.03 ppm	none
Photochemical	1 hour	0.10 ppm	1 day a year
oxidants(as ozone)	4 hours	0.08 ppm	1 day a year
Sulfur dioxide	1 hour	0.20ppm	1 day a year
	1 day	0.08 ppm	1 day a year
	I year	0.02 ppm	none
Lead	1 year	0.50 ug/m^3	none
Particles as PM_{10}	1 day	50 ug/m^3	5 days a year

6 METHODOLOGY

6.1 SAMPLING PROTOCOL

The concentrations of pollutants in the atmosphere often fluctuate greatly over time. These fluctuations correspond to daily and seasonal patterns of emissions as well as the weather. For example, concentrations of pollutants emitted by motor vehicles vary according to the number of vehicles on the roads and, therefore, are much higher during peak periods. Concentrations of pollutants also vary significantly from place to place within an air shed and are affected by wind speeds and direction. To account for these fluctuations, air quality objectives, as well as measured concentrations in the atmosphere, are always expressed in terms of average concentrations over a given period of time. The choice of an appropriate averaging time depends primarily on the nature of the health and environmental impacts of the particular pollutant. For pollutants that have acute impacts over relatively short periods (eg. one hour), objectives are based on short averaging times because peak concentrations are important. For pollutants with long term health effects, a longer averaging time (eg. one year) is more appropriate because of the importance of managing long term exposure.

The following averaging periods are applicable to the on-going ambient air monitoring programme:

- PM_{10}: Continuous (assessment based on 6 minute average, with 24 hr averages compared against nominated standards); and
- meteorological Parameters: 6 minute average.

Continuous monitoring excludes periods for instrument calibrations/ maintenance.

6.2 SITE SELECTION

ERM selected nominated monitoring station sites in accordance with *AS 2922 – 1987 Ambient Air – Guide for the siting of sampling units* and *AS/NZS 2923 – 1987 Ambient Air – Guide for the measurement of horizontal wind for air quality applications*. ERM has submitted a siting assessment report (*ERM Report Reference 0016681RP1 Ambient Monitoring Program – Siting Assessment, dated April 2004*).

The Australian Standard contains recommended sampler inlet positioning criteria for a range of ambient air quality test methods. Relevant criteria are summarised below:

- height above ground level: 1 m – 15 m;

- minimum vertical distance from supporting structures: 1 m;
- minimum horizontal distance from supporting structures: 2 m;
- clear sky angle above sampling inlet: 120°;
- unrestricted airflow around sampling inlet: 360°;
- distance from trees: 20 m;
- no boiler or incinerator flues nearby;
- distance from roads (peak station): 5 m; and
- distance from roads (neighbourhood and background stations): 50 m.

The three locations have been confirmed as follows:

Site 1: Background Station, 581 Canning Mills Rd, Gosnells.

Site 2: Neighbourhood Station, Lumen Christi College, Gosnells;

Site 3: Peak Station, Readymix boundary adjacent to Tonkin Hwy, Gosnells;

(Refer to *Figure 3.1*)

6.3 PARTICULATE MATTER LESS THAN 10 MICRONS (PM_{10})

Measurements of PM_{10} have been conducted in accordance with *AS 3580.9.8 – 2001 Methods for sampling and analysis of ambient air – Method 9.8: Determination of suspended particulate matter – PM_{10} continuous direct mass method using a tapered element oscillating microbalance analyser*.

The TEOM instrument is a true "gravimetric" instrument and draws ambient air through a filter at a constant flow rate, continuously weighing the filter and calculating near real-time (6 minute) mass concentrations.

The ambient sample stream first passes through the PM_{10} inlet at a flow rate of 16.7 litres/minute. This inlet allows particles smaller than 10µm diameter to pass through. At the exit of the PM_{10} inlet, the 16.7 litres/minute flow is isokinetically split into a 3 litres/minute sample stream that is sent to the instrument's mass transducer and a 13.7 litres/minute exhaust stream. Inside the mass transducer, this sample air stream passes through a filter made of Teflon-coated borosilicate glass fiber. This filter is weighed every two seconds. The difference between the filters current weight and the filters initial weight gives the total mass of the collected particulate matter.

Next, the mass rate is calculated by taking the change in the total mass between the current reading and the immediately preceding one and expressing this as a mass rate in grams/second. Finally, the mass concentration in $\mu g/m^3$ is computed by dividing the mass rate by the flow rate corrected to standard temperature and pressure and expressed in cubic metres per second (m^3/sec), and then multiplying the result by 10^6 to convert from grams per cubic metre to micrograms per cubic metre ($\mu g/m^3$).

Internal temperatures in the instrument are controlled to minimise the effects of changing ambient conditions. The sample stream is preheated to 50°C before entering the mass transducer so that the sample filter always collects under conditions of very low (and therefore, relatively constant) humidity. All measurement and temperature functions of the instrument are controlled by a dedicated micro-controller.

6.4 METEOROLOGY

6.4.1 Wind Speed/Wind Direction

Meteorological conditions (wind speed and wind direction) were measured using a Met One Model 50.5 wind sensor located 10m above ground level. The sensor combines wind speed and direction measurements into a solid state wind sensor. The instrument is a standard of measurement; each sensor is tested in a traceable closed loop wind tunnel. Each sensor is provided with a written certification of calibration at 16 test points. *Appendix B* provides the equipment specifications.

6.4.2 Temperature

Temperature was measured at two heights: 2m and 10m using a temperature sensor for calculation of Delta-T. Temperature measurement includes fan forced aspiration (Met One 076B) and two Met One 062 temperature sensors. The Model 062 is highly accurate and is used in pairs for the measurement of differential temperature (Delta-T). Specifications for the temperature sensors are provided in *Appendix B*.

6.4.3 Net Radiation

Net radiation was measured at one location (Site 2 School) using a Middleton CN1-R Pyrradiometer. The Middleton CN1-R Pyrradiometer measures the total net radiation flux (solar, terrestrial and atmospheric) downward and upward through a horizontal surface. Performance specifications are detailed in *Appendix B*.

6.5 CALIBRATIONS

All monitoring equipment was calibrated at regular intervals as instrument bias and drift can be common features. Good data quality depends on adequate calibration of equipment. In the first instance, manufacturers' recommendations were adopted along with any specific requirements for the standard monitoring method used. The calibration and maintenance schedule for the TEOM's and the meteorological stations are detailed below.

Table 6.1 Summary of Calibrations and Maintenance

Calibration/Maintenance	Frequency
Flow controller software	Initial commissioning & annually
Analog input/output (board calibration)	Initial commissioning & annually
Flow controller hardware	Initial commissioning & annually
Amplifier board tuning	Initial commissioning & annually
Temperature & Pressure	Initial commissioning & annually
Mass transducer calibration verification	Initial commissioning & annually
Ambient temperature, pressure sensor calibration and CPU check	Initial commissioning & annually
Zero air noise	Initial commissioning & annually
Flow controller block maintenance	Initial commissioning & annually
Flow Audit	Initial commissioning & every 3 months
Leak Checks	Initial commissioning and every three months (as a minimum) and upon any maintenance requiring dismantling of flow system
Cleaning inlet heads, filters	Monthly
Clean inlet air system	6 months
Eight hour zero air test	Initial commissioning and annually
Replace flow controller components	Annually or as required
Site specific maintenance	Monthly

1. All work was conducted by NATA accredited equipment supplier, ECOTECH Pty Ltd

Calibration and maintenance data sheets are provided in *Appendix C*.

6.5.1 NATA Accreditation

Calibrations and maintenance was conducted by a NATA accredited equipment supplier and operator (ECOTECH Pty Ltd, NATA accreditation number 14184 Schedule 7.70.05). Where ECOTECH could not perform an item of works (i.e. wind tunnel testing) other NATA accredited companies were used.

7 QUALITY ASSURANCE

7.1 QUALITY MANAGEMENT SYSTEM

ERM's Quality Management System is well established, having been developed from its earliest implementation in 1987. The documented procedures are exclusive to ERM having been designed for specific application in planning and environmental studies, while conforming to the requirements of AS/ISO 9001. The adoption of the Total Quality Management approach to assignments has meant that the firm is able to produce work of a consistently high quality for the benefit of clients. A copy of ERM's QMS certificate is available on request.

7.2 DEPARTMENT OF CONSERVATION (DEC) APPROVAL

At the commencement of the monitoring program, the Western Australia DEC reviewed and approved a project specific Quality Control and Assurance report prepared by ERM (report reference *0023644 Gosnells Dust Study - Western Australia, Ambient Air Quality Monitoring Programme - Reporting & QA/QC Documentation, dated October 2004*).

7.3 DATA QUALITY AND PROCESSING

Data downloaded from the air monitoring instrumentation was subjected to rigorous quality procedures. Internal TEOM data logging capabilities were utilised for data storage at all monitoring stations. The TEOM's were fitted with GSM modems and data was downloaded by telemetry. Depending on the number of parameters collected at each site, the logger's memory filled between 7-9 days. Any new data collected after the logger's memory was full would overwrite the oldest data in the logger's memory. The monitoring stations were contacted once to twice a week, using mobile phone connections. New data stored by each logger since the last transmission was downloaded to a laptop computer and transferred to the ERM server for daily backup. After each download, a time series plot of all data was generated to determine whether any faults or breakdowns had occurred. Any instrument irregularities could then be identified and attended to immediately.

Data was controlled in a Microsoft Access database specifically designed for this project. The database was utilised for reporting of results and generation of charts. Therefore, double handling of data and the potential for transfer errors was minimised.

In accordance with the Australian Standard relating to the TEOM instrumentation, negative 6 minute average results were included in the dataset, unless the 1 hour average was also negative, where an investigation into the results was initiated and the results discarded where appropriate.

7.4 REVIEW

All ERM projects are subjected to a technical and final review. The Project Manager was responsible for the collation and reporting of the results. The Project Director reviewed the Project Manager's work and is accountable for the data and reports issued.

8 RESULTS & DISCUSSION

8.1 GENERAL

The Site 1 (Background), Site 2 (School) and Site 3 (Boundary) monitoring stations provide a measure of air quality in the West Martin area. The various parameters monitored at these stations are examined below, and assessed against the relevant NEPM standards, where appropriate. The data presented in this chapter is inclusive of the period 4 December 2004 to 30th June 2006 for Site 1 (Background) and Site 2 (School) and 6th February 2006 to 30th June 2006 for Site 3 (Boundary).

8.2 PM_{10} RESULTS ANALYSIS

8.2.1 Particulate Matter as PM_{10} Compliance Summary

Table 8.1 indicates that PM_{10} concentrations at Site 1 (Background) and Site 2 (School) were not in compliance with the NEPM standard of 50 ug/m^3 being exceeded less than the goal of 5 times in one year in 2005. *Table 8.2* shows that Site 2 (School) and Site 3 (Boundary) are not in compliance with the NEPM standard in 2006.

The NEPM standard was exceeded;

- once at Site 2 (School) during 2004, although only one month of data was collected in this period. A table has not been provided for 2004 due to the small amount of data;
- six times at Site 1 (Background) and ten times at Site 2 (School) during 2005; and
- seven times at Site 2 (School) and 18 times at Site 3 (Boundary) during the period January to June 2006 (six months).

A table presenting all exceedances recorded during the monitoring period, along with an analysis of meteorological conditions (wind speed, wind direction and temperature) is presented in *Appendix E*.

Table 8.1 2005 Compliance Summary for PM_{10}

Air Quality Monitoring Station	Data Availability (%)					Number of Exceedances	Performance against NEPM
	Q1	Q2	Q3	Q4	Annual		
Site 1 (Background)	95	96	94	96	95	6	NON COMPLIANT
Site 2 (School)	95	97	98	90	95	10	NON COMPLIANT
Site 3 (Boundary)	NA	NA	NA	NA	NA	NA	-

1. Ambient Air Quality NEPM Standard 50 µg/m³ (24 hour average)
2. Standard allows for exceedances 5 times in one year
3. Q - Quarter (i.e. three months)
4. NA Not Available

Table 8.2 2006 Compliance Summary for PM_{10}

Air Quality Monitoring Station	Data Availability (%)					Number of Exceedances	Performance against NEPM
	Q1	Q2	Q3	Q4	Annual		
Site 1 (Background)	96	97	NA	NA	97	0	To be determined at year end
Site 2 (School)	100	86	NA	NA	93	7	NON COMPLIANT
Site 3 (Boundary)	56	98	NA	NA	96	18	NON COMPLIANT

1. Ambient Air Quality NEPM Standard 50 µg/m³ (24 hour average)
2. Standard allows for exceedances 5 times in one year
3. Q - Quarter (i.e. three months)
4. Q3 and Q4 not yet complete
5. Annual data availability based on data collected to date in 2006
6. Site 3 (Boundary) commenced in February 2006
7. NA Not Available

Points relating to data reliability and availability were:

- the TEOM's (Tapered Element Oscillating Microbalance) underwent an extended zero for two days at the beginning of the monitoring programme in accordance with Australian Standard requirements;
- the TEOM's (Tapered Element Oscillating Microbalance) failed for numerous short periods (hours) due to power interruptions. Power availability in Perth, particularly during summer is known to be unreliable;
- a technical issue resulted in a loss of data from Site 2 (School) during the periods 1-7 November 2005, 27 April-3 May 2006 and 1-6 June 2006; and

- temperature data measured at 10 metres was lost from Site 3 (Boundary) during the period 16 March until 30 June 2006 as a result of a temperature sensor malfunction.

8.2.2 PM_{10} Summary Statistics

Histogram frequency charts are presented in *Appendix E* and provide an alternative way to look at the PM_{10} data from the three monitoring sites. The histograms graphically summarise the distribution of data recorded at each site over the monitoring period. It can be seen that the data is skewed towards the left in all three charts, indicating that there was a large frequency of data collected in the lower to mid concentration ranges. The distribution undergoes a noticeable shift to the right when Site 2 (School) and Site 3 (Boundary) is compared to Site 1 (Background). This illustrates the greater frequency of data recorded in the upper concentration ranges of the dataset at these two sites.

Table 8.3 presents a summary of the highest recorded 24 hour averages at each of the monitoring sites.

Table 8.3 Summary Statistics - 24 Hour Average PM_{10}

Air Quality Monitoring Station	Highest	
	µg/m³	Date
Site 1 (Background)	236	17 January 2005
Site 2 (School)	187	16 January 2005
Site 3 (Boundary)	154	22 May 2006

Presented in *Appendix E* is a chart which graphically outlines the 24 hour average concentrations recorded at all sites throughout the monitoring period. According to NEPM reporting guidelines[1], a minimum of 75% data availability is required within the 24 hour period for the 24 hour average to be valid. A 24 hour average which does not meet this guideline has still been reported for information purposes. Greater than 99% of the 24 average values met the guideline.

It can be seen that the three monitoring sites generally followed a similar pattern, with the highest 24 hour average concentrations recorded at Site 3 (Boundary). It can also be seen that regional background particulate levels significantly contributed to concentrations recorded at Site 2 (School), and to a lesser extent at Site 3 (Boundary). The high 24 hour averages at Site 1

[1] National Environment Protection Council (Ambient Air Quality) Measure, 2001, Guideline Paper No. 5, May 2001, Data Collection and Handling, NEPC.

(Background) and Site 2 (School) in January 2005 were recorded during a bushfire, and the influence of this event on particulate levels in the area can clearly be seen.

One of the benefits of using near real time TEOM instruments is that short term PM_{10} impacts can be analysed. *Table 8.4* shows the hourly and daily peak concentrations for each month of monitoring. The influence of the bushfires can be clearly observed in the month of January 2005.

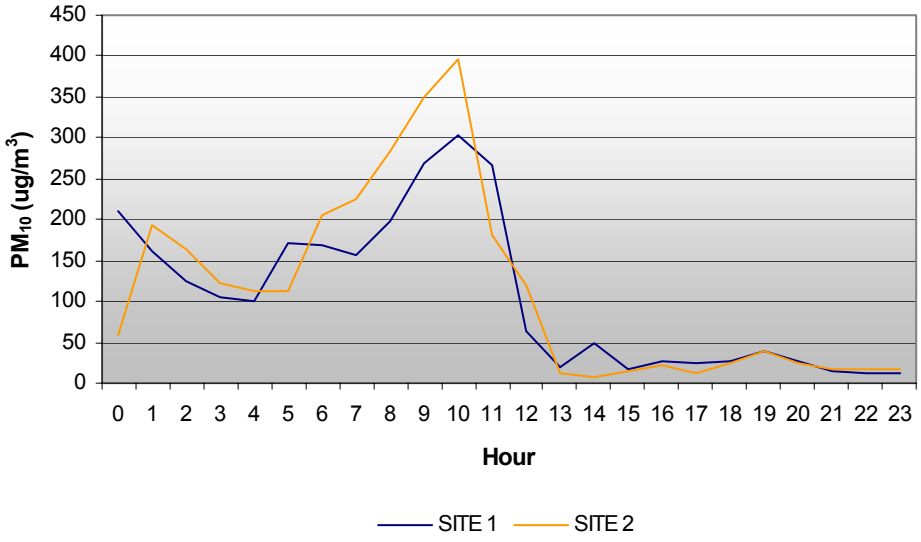
Table 8.4 Monthly Hourly/Daily Peak PM_{10} Concentrations ($\mu g/m^3$)

Month	Average Time	Site 1 (Background)	Site 2 (School)	Site 3 (Boundary)
December 2004	1 hour	240	190	-
	24 hour	48	51	-
January 2005	1 hour	1,500	1,200	-
	24 hour	240	190	-
February 2005	1 hour	1,200	230	-
	24 hour	40	55	-
March 2005	1 hour	370	330	-
	24 hour	31	49	-
April 2005	1 hour	120	270	-
	24 hour	42	42	-
May 2005	1 hour	100	220	-
	24 hour	21	36	-
June 2005	1 hour	49	530	-
	24 hour	16	55	-
July 2005	1 hour	57	130	-
	24 hour	29	31	-
August 2005	1 hour	120	67	-
	24 hour	16	19	-
September 2005	1 hour	740	102	-
	24 hour	24	24	-
October 2005	1 hour	630	180	-
	24 hour	29	47	-
November 2005	1 hour	170	360	-
	24 hour	31	57	-
December 2005	1 hour	100	410	-
	24 hour	28	27	-
January 2006	1 hour	140	250	-
	24 hour	31	70	-
February 2006	1 hour	250	410	540
	24 hour	22	59	110
March 2006	1 hour	87	620	630
	24 hour	26	39	120
April 2006	1 hour	160	300	930
	24 hour	21	56	150
May 2006	1 hour	420	610	790
	24 hour	34	71	150
June 2006	1 hour	230	320	740
	24 hour	49	75	61

1. Ambient Air Quality NEPM Standard 50 $\mu g/m^3$ (24 hour average)

The bushfire events in January 2005 have been further examined in *Figure 8.1*, which presents the recorded one hour averages at Site 1 (Background) and Site 2 (School) on the 20th January 2005.

Figure 8.1 1 Hour PM_{10} Concentrations – 20 January 2005



A photolog is presented in *Appendix G*, which outlines some of the local particulate sources and also provides a visual representation of the air quality during the bushfire period.

8.3 METEOROLOGY RESULTS ANALYSIS

For each hour of the day over the monitoring period (December 2004 – June 2006) the average wind speed at 10 metres has been determined and graphed in *Figure 8.2*. This is an efficient way to examine the surface winds in the region and the variability between sites. It can be seen that both Site 1 (Background) and Site 2 (School) exhibit very similar wind speeds throughout the morning but differ quite dramatically during the afternoon. Lower wind speeds were experienced throughout the day at Site 3 (Boundary).

Figure 8.2 ***Wind Speed by Hour of the Day***

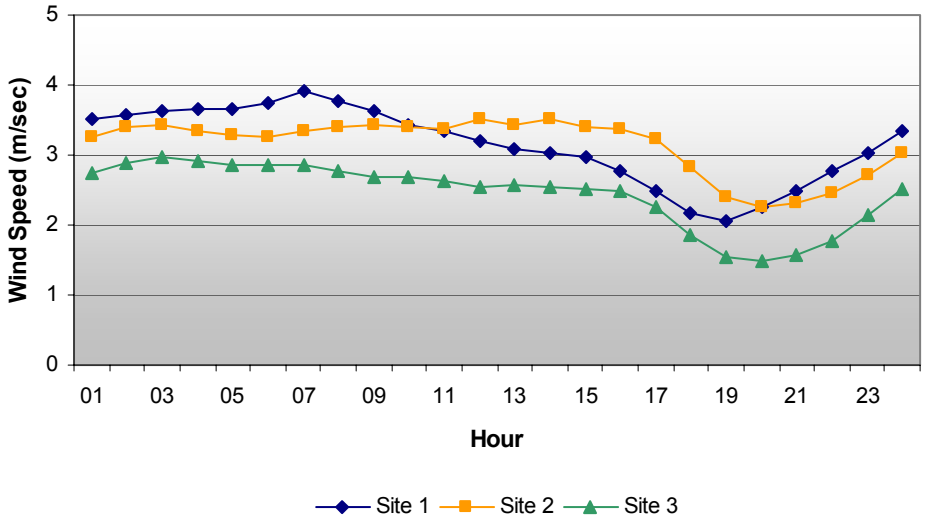
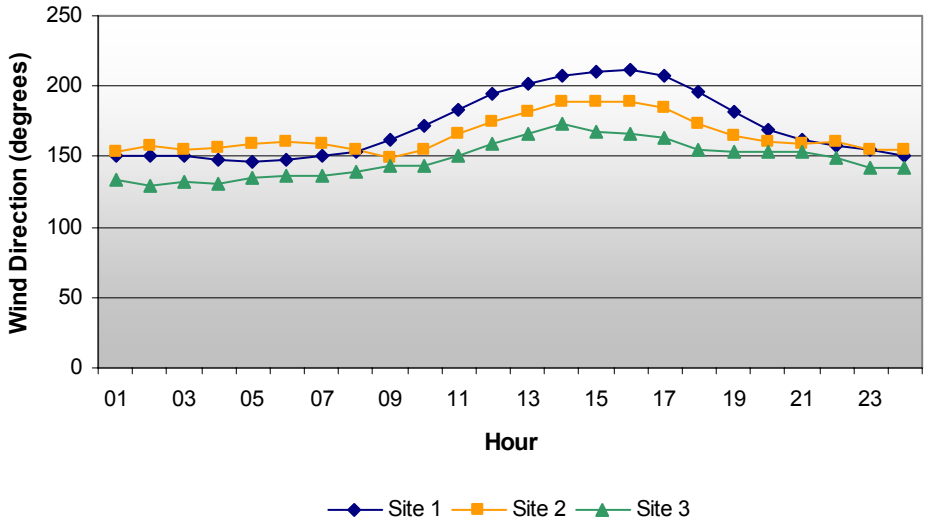


Figure 8.3 presents wind direction by hour of the day for all three monitoring sites. The predominant wind regime consists of south-southeast in the morning, then shifting through the southerly quadrants in the afternoon to a south-southwesterly at 3 pm, and heading back towards the south-southeast at 8 pm. This type of day constitutes by far the majority of days recorded during the monitoring period. In addition, it can be seen that both Site 1 (Background) and Site 2 (School) exhibited very similar wind patterns throughout the morning but differed quite dramatically during the afternoon.

Figure 8.3 ***Wind Direction by Hour of the Day***



An annual and seasonal analysis of wind direction and wind speed is provided as windroses in *Appendix D*. These windroses have been prepared for Site 1 (Background) to provide an illustration of seasonal wind patterns during the period December 2004 – December 2005.

The following has been observed from the windroses:

- on an annual basis, winds were predominantly from the east-southeast, with a smaller contribution from the south-east;

- during the summer months, winds were predominantly from the east-southeast, with a slightly larger contribution from the southeast. There were limited calm periods in the summer months, with a calm wind frequency of just 0.9%;

- during the autumn months, winds exhibited a similar pattern to those experienced in summer, with a higher percentage of winds blowing from the east-southeast. A smaller contribution of winds began to blow from the east direction during this season. There was a very small percentage of calms, at 0.7%;

- during winter, winds were still predominantly from the south eastern quadrant, however there were also contributions from the east, and northwest directions. The average wind speed reduced from the preceding seasons and there was a greater percentage of calm periods; and

- during spring, the majority of winds were from the east-southeast, with a significant contribution from the southeast and northwest.

The measurement of temperature at 2 and 10 metres, as well as net radiation has been conducted for the purposes of developing a sophisticated processed meteorological data file for future dispersion modelling. This information will be used for the determination of stability class and atmospheric mixing height. For general reference, average daily temperatures have been included in the result summary in *Appendix E*.

9 *CONCLUSIONS*

On the basis of the results and discussion described above, the following conclusions are presented:

- PM_{10} levels have been, and are currently being quantified to assess potential health risks to sensitive land uses in the study area and to assess contributions from local dust sources;

- meteorological parameters including wind speed, wind direction, temperature and net radiation have been quantified to gain an understanding of the processes which govern the dispersion and transport of PM_{10} emissions from nearby sources;

- data availability for the monitoring programme meets the requirements of National Environment Protection Council (Ambient Air Quality) Measure, Guideline Paper No. 5, May 2001, Data Collection and Handling;

- PM_{10} concentrations at Site 2 (School) and Site 3 (Boundary) are non-compliant with the NEPM standard of 50 ug/m^3 being exceeded more than the goal of 5 times in one year; and

- existing background particulate sources influence PM_{10} concentrations measured at peak and neighbourhood monitoring stations.

Appendix A

References

AS 2922 – 1987, "*Ambient Air – Guide for the siting of sampling units*".

AS 2923 – 1987, "*Ambient Air – Guide for Measurement of Horizontal Wind for Air Quality Applications*".

AS 3580.9.8 – 2001, "*Methods for sampling and analysis of ambient air – Method 9.8: Determination of suspended particulate matter – PM_{10} continuous direct mass method using a tapered element oscillating microbalance analyser*".

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Appendix B

Equipment Specifications

TEOM® Series 1400a Ambient Particulate Monitor

Real-Time, True Mass Measurement of Suspended Particulate Matter as PM-10, PM-2.5, PM-1 and TSP

Analyze • Detect • Measure • Control™

Thermo ELECTRON CORPORATION

Most Advanced Technology

The TEOM Series 1400a Ambient Particulate Monitor is the choice of air pollution monitoring networks worldwide to measure particulate mass concentrations continuously. The system has become the de facto standard for particulate mass concentration measurements in areas such as Canada, Hong Kong, the United Kingdom and France due to its high data quality, reliability and unparalleled support.

The instrument incorporates the patented *tapered element oscillating microbalance*, a microweighing technology that provides true mass measurements. Using a choice of sample inlets, the hardware can easily be configured to measure PM-10, PM-2.5, PM-1 or TSP concentrations. This microprocessor-based unit easily accommodates all siting requirements and provides internal data storage, and advanced analog and serial data input/output capabilities.

For special applications, alternate configurations are available as the Sample Equilibration System (SES) and Series 8500 Filter Dynamics Measurement System (FDMS™ Unit).

Regulatory Aprovals

The TEOM Series 1400a monitor has received the following major regulatory recognitions:

- USEPA PM-10 equivalency approval EQPM-1090-079.
- PM-2.5 measurements within the context of a USEPA correlated acceptable continuous monitor (40 CFR 58).
- European Union guidelines for the continuous monitoring of PM-10.
- German EPA approval as an equivalent TSP and PM-10 monitor.
- Australian Standard 3580.9.8-2001, and approvals in Japan, Korea and Taiwan.

Filter-Based Mass Measurement

Filter-based, direct mass measurements are considered the standard technique for determining particulate mass concentration. TEOM instruments from Thermo Electron Corporation are the only filter-based systems with real-time data output and real-time mass measurement capability. The exchangeable filter in the Series 1400a monitor can also be used to determine heavy metal concentrations using atomic absorption (AA) and inductively coupled plasma (ICP).

Unique Principle of Operation

The Series 1400a monitor incorporates an inertial balance that directly measures the mass collected on an exchangeable filter cartridge by monitoring the corresponding frequency changes of a tapered element. The sample flow passes through the filter, where particulate matter collects, and then continues through the hollow tapered element on its way to an active volumetric flow control system and vacuum pump.

The TEOM mass transducer does not require recalibration because it is specially designed and constructed from non-fatiguing materials. Its mass calibration may be verified, however, using an optional Mass Calibration Verification Kit that contains a filter of known mass. Active volumetric flow control is maintained by mass flow controllers whose set points are constantly adjusted in accordance with the measured ambient temperature and pressure.

Both the mass and flow rate measurements are verifiable using NIST-traceable standards.

Application Range

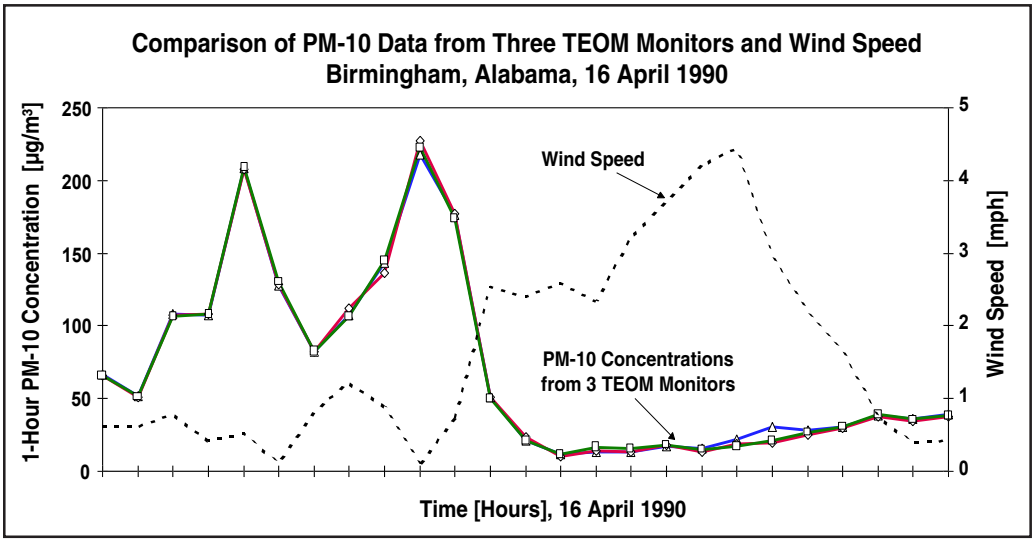
The TEOM Series 1400a monitor is used to monitor ambient air quality in the following major applications:

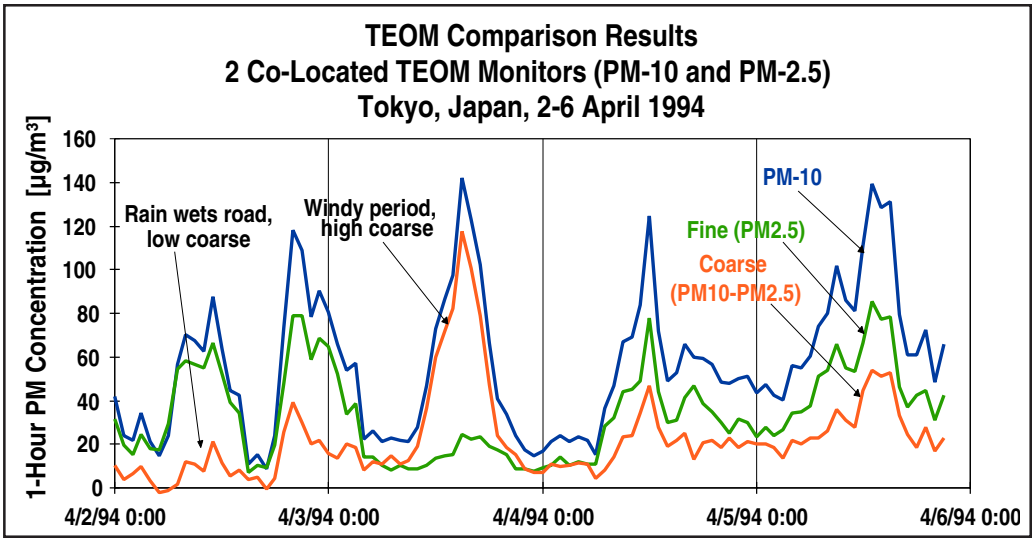
- Air quality monitoring networks, including background sites.
- Special studies and super sites for PM-10, PM-2.5 and PM-1 characterization.
- Routine input for air quality index or pollutant standards index.
- In and around industrial and material handling facilities.
- Remediation projects (Superfund, hazardous waste).
- Indoor air, exposure chamber, and industrial hygiene measurements.

Unsurpassed Short-Term Precision

One-hour average mass concentration data from two co-located TEOM monitors demonstrate the instrument's unsurpassed precision. The Series 1400a monitor meets the stringent one-hour performance acceptance criteria established by the California Air Resources Board.

The instrument's data quality also permits different particle size fractions such as PM-10 and PM-2.5 to be compared with each other at short averaging times. With this resolution, one can see the relationship between different PM measures changes with meteorology, regional or local conditions. This can provide vital information in the study of human health effects. Other applications of time-sensitive data include source identification and control, short-term compliance monitoring, emergency response, forensic investigations, and numerical modeling.

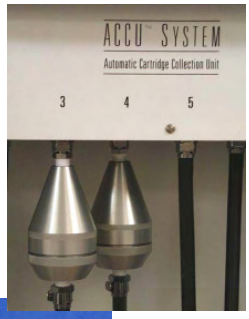




ACCU™ System

With the optional Automatic Cartridge Collection Unit added to the Series 1400a system, users can add manual PM sampling to the automated mass concentration results generated by the continuous monitor. The ACCU System attaches to the bypass flow line of the TEOM monitor, and permits users to sample ambient PM and gases with a choice of collection methods for subsequent analysis.

The system's eight internal flow channels can be fitted with a variety of filter holders, filter packs, or PUF (polyurethane foam) samplers. A new filter holder for X-ray fluorescence (XRF) analysis makes use of the molded FRM-style 47 mm filter cassettes available from Thermo. The user specifies the conditions under which each of the ACCU System's flow channels is operated, including time of day, particulate concentration, meteorological data and/or other inputs from external sources.



Complete Outdoor Enclosure

The optional Complete Outdoor Enclosure allows the TEOM monitor to be installed at locations at which a permanent shelter is not available. The housing provides the proper weather-proof environment to ensure long-term performance. It provides not only heating for cold climates, but also active air conditioning for instrument operation in summer heat.

Quality Assurance

A mumber of tools provide users with the ability to perform in-field audits of the TEOM monitor's mass measurement and active volumetric flow control system. Under software support, users can use the single pre-weighed filter contained in the Mass Calibration Verification Kit to confirm the mass calibration of the instrument. The Streamline™ Flow Transfer Standard is an orifice-based device that provides high-quality flow rate measurements even under challenging environmental conditions.

Thermo ELECTRON CORPORATION

Environmental Instruments Division
Air Quality Instruments
rp Products

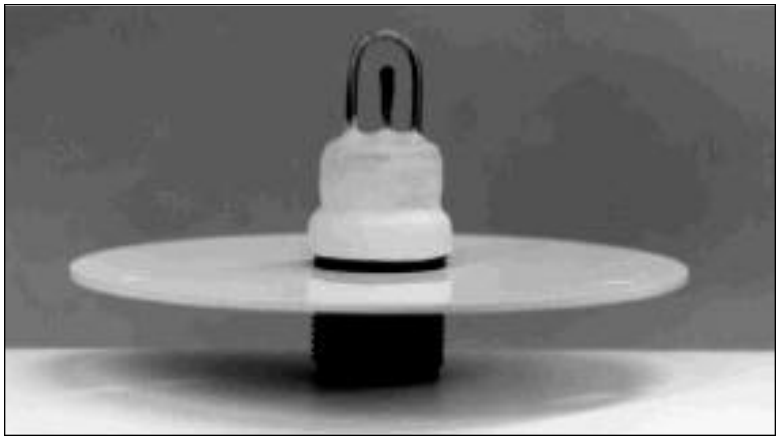
26 Tech Valley Drive, East Greenbush, NY 12061, USA
Phone (518)452-0065 • Fax (518)452-0067
www.thermo.com/air

Air Temperature Sensors

060
062
064

Met One Instruments' Temperature Sensors are precision, extended range thermistor devices that are used for the accurate measurement of ambient air temperature. They are particularly well suited for field applications, as they exhibit a very high resistance sensitivity. Problems associated with line lead length, noisy environments, and poor connections are virtually eliminated. Sensors may be interchanged without requiring system recalibration. Difference among these sensors are associated with packaging and accuracy, allowing for the precise solution to sensor selection.

Model 060A, Model 062



Model 060A, Model 062

Features

- Rapid response time
- Calibration traceable to NIST
- Interchangeable without recalibration
- High resistance values to minimize signal line resistance
- 'Free air' suspension of thermistor bead
- Several ranges available

Operation

The solid state multi-element thermistor produces a relatively large resistance change per degree of temperature change, allowing the use of normal signal voltages without self-heating of the sensor. When used with signal conditioning modules, the resultant output is a precise analog voltage.

Construction

The thermistor has a speed of response of 10 seconds in still air. In order to insure this response time, the thermistor bead is supported in free air and protected by the sensor body. In addition to providing minimum response time, this mounting configuration prohibits the sensor from measuring the strain that may be caused by potting compounds.

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http://www.metone.com • metone@metone.com

Specifications

Common Specifications

Sensing Element:	Multi-stage solid state thermistor, highly linearized
Time Constant:	Less than 10 seconds in still air
Self-Heating:	None

Model 060A

The Model 060A-2 is designed for general purpose measurements of ambient air temperature.

Housing:	3/8 in (9.5 mm) OD x 6 in (152.4 mm)
Range:	-50°C to +50°C (Other ranges available to meet special requirements)
Accuracy:	±0.1°C throughout range, PSD compliant
Cable:	1 ft pigtails (for use with 076 or 077 Radiation Shield) Additional length may be supplied, specify length

Model 062

The Model 062 is a highly accurate version of the Model 060A-2. It is used in pairs for the measurement of differential temperature (ΔT), or singly for highly critical ambient temperature measurement.

Housing:	3/8 in (9.5 mm) OD x 6 in (152.4 mm)		
Range:	-50°C to +50°C		
Accuracy:	±0.05°C, PSD Compliant		
Linearity Deviation:	For a system range of:	Max. error per degree of differential temperature:	Max. error over range:
	-5°F to +5°F	.02°F	.05°F
	-5°C to +5°C	.02°C	.05°C
	-5°F to +10°F	.02°F	.1°F
	-5°C to +10°C	.02°C	.1°C
	-10°F to +20°F	.02°F	.2°F
Cable:	1 ft pigtails (for use with 076 or 077 Radiation Shield) Additional length may be supplied, specify length		

Model 064

The Model 064 utilizes the same sensing network as the Model 060, but is configured to mount directly to the Model 073B or o75B Radiation Shield. The sensor is supplied with a screw-type connector which allows the direct connection of the signal cable. Thermistor bead is protected by a stainless steel bumper.

Housing:	Mounting plate, white epoxy finished aluminum, 4” diameter, with screw connector for sensor cable. Thermistor bead is protected by a stainless steel bumper.	
Range:	064-1	-30°C to +50°C
	064-2	-50°C to +50°C
	Other ranges available to meet special requirements	
Accuracy:	064-1	±0.15°C
	064-2	±0.1°C, PSD compliant
Cable:	PN 1958-xx (xx=length in ft)	

Fan Aspirated Radiation Shield

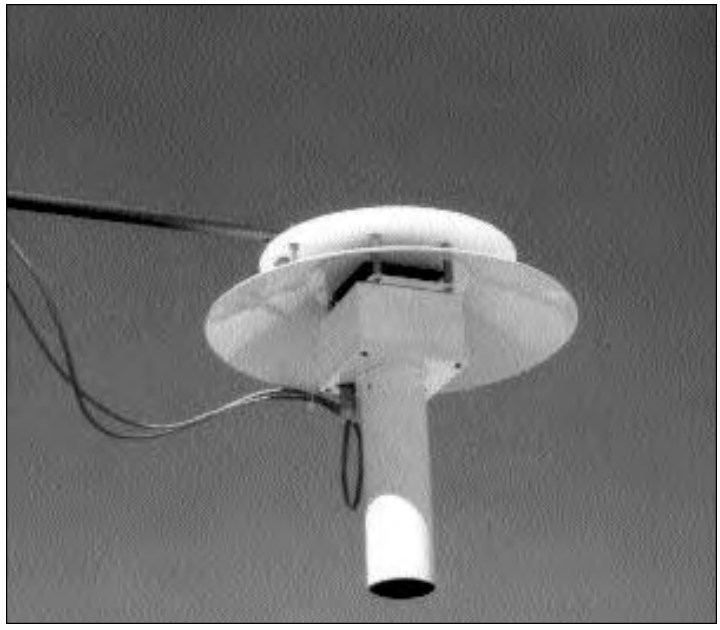
076B

Radiation Shields are an important component of accurate air temperature and humidity measurements. The function of the radiation shield is to protect the sensor from direct and indirect radiant energy, which could cause unknown and uncontrolled errors. The Met One Instruments Model 076B is suitable for the most stringent applications.

Features

- Errors reduced to < 0.05°F
- Accommodate several sensors for Delta T measurements
- Radiation errors independent of outside emissivity
- Low-conductive interconnects
- DC or AC power operation
- Gloss white finish
- Corrosion resistant materials throughout
- Easy mounting and tower servicing

The Model 076B Fan Aspirated Radiation Shield virtually eliminates errors caused by solar or terrestrial radiation, as well as secondary errors caused by convective heat transfer from the outer shield surfaces. It is designed to continuously sample ambient air for high accuracy temperature, differential temperature, relative humidity and dewpoint measurements. Actual test results showed errors of less than 0.05°F (Test Report available).



Model 076B fan Aspirated Radiation Shield

The Model 076B is designed for easy maintenance and sensor calibration. The lower section, containing the sensors, can be easily removed from the shield/fan assembly. Individual sensors, connected to the system through a sealed junction box, are easily replaced, serviced, or calibrated from ground level.

Operation

Air is drawn into the bottom of the sensor housing through two concentric ports. High velocity air through the outer port scrubs the outer surfaces and is exhausted. The inner port draws in the air sample, enabling a true gas temperature measurement to be made. This air flow system prevents convective heat transfer to the sampling stream.

Construction

The shield is constructed of aluminum and other corrosion-resistant materials. All outer surfaces have been painted with high-gloss epoxy enamel for maximum reflectivity. All interconnecting materials have been selected to minimize conductive heat transfer. The combination of air flow, symmetrical shield design, and surface finish provides a shield that virtually eliminates all errors caused by radiation.

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http://www.metone.com • metone@metone.com

Specifications

Operating Characteristics

Aspiration:	Electric Fan	
Flow Rate:	1000 CFM Scrubbing	
	500 CFM Sample	
Temperature Range:	Standard	-50°C to +85°C
	Optional	-50°C to +100°C
Power Required:	115 VAC	20 watts
	12 VDC	250 mA
	220 VAC	18 watts

Physical Characteristics

Material:	Aluminum
Finish:	White Epoxy
Dimensions:	20 in (51 cm) h x 20 in (51 cm) diam.
Weight, less sensor(s):	9.3 lbs (4.2 kg)

Sensors

Maximum Number:	4
Models:	060/062/066/083
Maximum Diameter:	.75 in (1.9 cm)
Maximum Length:	10 in (25 cm)
Transducer Sensing Zone:	8 in (20 cm)

Mounting

Shield mounts to 3/4 in. IPS horizontal pipe

Ordering Information

Model 076B-1:	115 VAC
Model 076B-4:	12 VDC
Model 076B-11:	220 VAC

Order model number corresponding to voltage requirement.
Consult factory for installations requiring dew point measurements utilizing the Model 078 sensor.

Cable:	Signal	PN 2144-xx (xx = length in ft)
	Power	PN 1954-xx (AC)
		PN 2423-xx (DC)

(Diag)

Solid State Wind Sensor

50.5

The Model 50.5 Solid State Wind Sensor is the newest addition to the 50 series product line. This sensor series has offered high quality performance for the last two decades.

Features

- No moving parts
- Digital and Analog outputs
- Time-proven design
- Sensor emulation
- 16-point wind tunnel calibration

With hundreds of units installed worldwide, no other sensor technology has the history of time proven field performance comparable to the Solid State Series 50.5 Sensor.

Operation

Existing systems may be upgraded to the Series 50.5 using the built-in sensor emulator. Data emulation allows for the direct connection to existing data loggers and systems without costly changes to associated electronics. Data output is field set to user requirements and includes the emulation of many common types of wind sensors.

An optional external heating unit extends the lower operating temperature of the sensor and permits continuous operation during heavy ice and snow.

The Model 50.5 Solid State Wind Sensor

The instrument is a standard of measurement, each sensor is tested in our NIST traceable closed loop wind tunnel. Each sensor is provided with a written certification of calibration at 16 test points.

The 50.5 is a continuation of the development work started with NOAA, on sonic wind sensors 25 years ago. The 50.5 design contains the same wind distortion algorithm and factoring that has been proven and accepted in applications around the world.

Met One Instruments, Inc.

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Distribution & Service: 3206 Main Street, Suite 106, Rowlett, TX 75088, Phone (972) 412-4747, Fax (972) 412-4716
http://www.metone.com • metone@metone.com

Specifications

Wind Speed

Range:	0 - 50 m/sec
Accuracy:	±0.15 m/sec ≤ 5 m/sec or ±2 % ≥ 5 m/sec
Resolution:	0.1 m/sec

Wind Direction

Range:	0 - 360°
Accuracy:	±3°
Resolution:	1°

Operation

Sampling Rate:	3 per second
Data Output Rate:	1 per second
Sonic Frequency:	200 kHz

Output Signals

Wind Speed Voltage:	0 - 1, 2.5, 5 VDC (selectable)
Wind Direction Voltage:	0 - 1, 2.5, 5 VDC (2.5 VDC Standard)
Digital:	RS-232, SDI-12, RS-422, RS-485 (specified at time of purchase)

Power Requirement

Sensor:	9 - 18 VDC @ 10 mA at12 VDC
External Heater:	24 VDC or 24 VAC @ 50 watts

Environmental

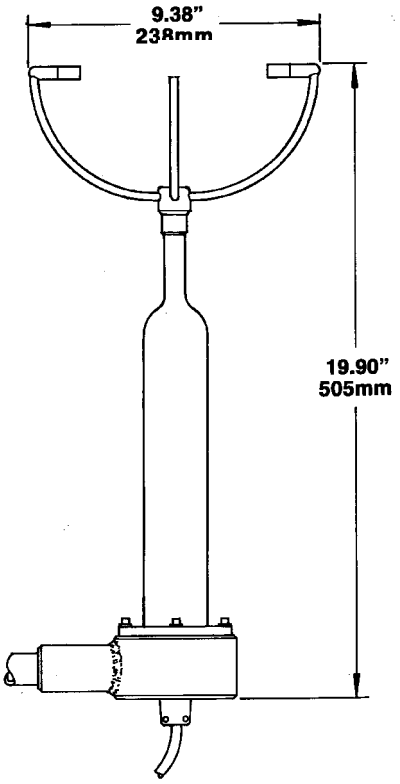
Maximum Operating Range:	0 - 85 m/sec
Operating Temperature:	-30°C to +55°C
Extended Temperature Range:	-50°C to +55° C with external heater

Physical

Weight:	5.5 lbs (2.5 kg)
Dimensions:	19.29 in (490 mm) high 8.85 in (255 mm) wide

Options

Signal Cable:	PN 3155 -10 meters
External Heater with Control Box	50.5H
External Heater 24 VAC Source	50.5PS (120 or 240 VAC)

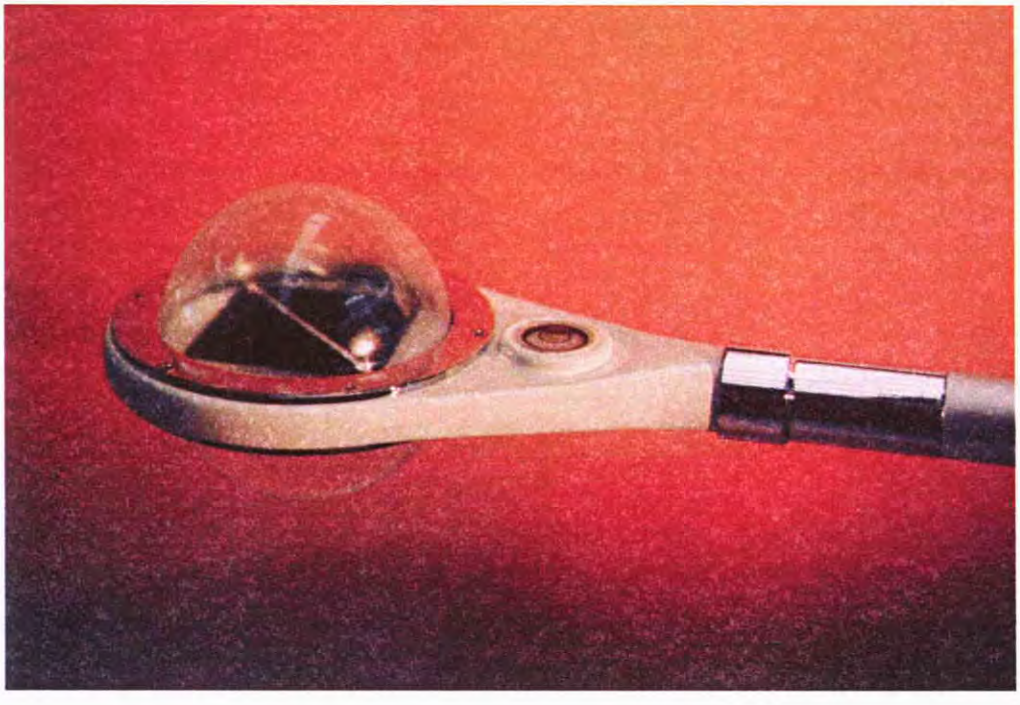


SCAN : 0259

MIDDLETON SOLAR
16 WILSON AVENUE BRUNSWICK VICTORIA 3056 AUSTRALIA

CN1-R NET PYRRADIOMETER

For Balance Measurement of Solar & Reflected Radiation



The Middleton CN1-R Net Pyrradiometer measures the net total radiation flux (solar, terrestrial, and atmospheric) downward and upward through a horizontal surface. It is suitable for solar energy studies in agriculture and meteorology.

Performance Specification

Response time	15s (1/e); 45s (95%)
Non-stability (per year)	+2%, -1.0%
Non-linearity	±1%
Cosine response (at 80° inclination)	-4%
upwards and downwards sensitivity variation	<3%
shortwave and longwave sensitivity variation	<5%
Temperature coefficient	-0.05%/°C

MATCHED SHORTWAVE AND LONGWAVE SENSITIVITY

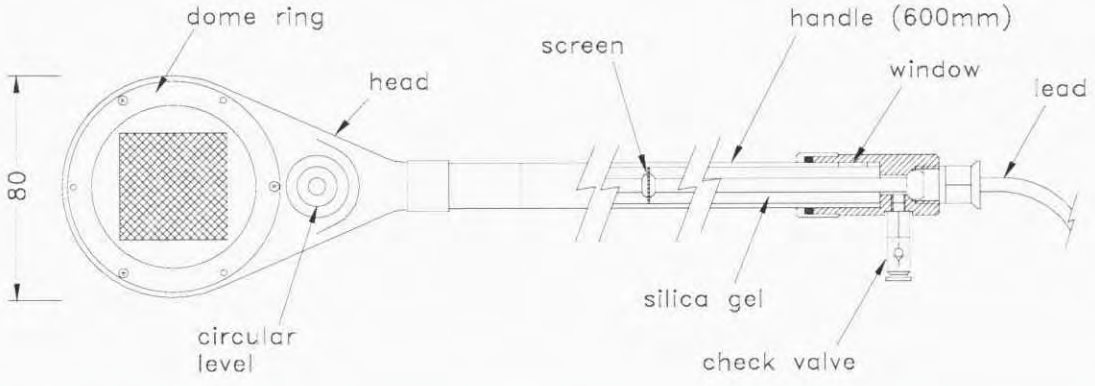
Weatherproof and durable.

Matched upward and downward response.

Fully sealed construction for low-maintenance.

Protective polythene domes have minimal selective absorbency.

Middleton Solar CN1-R Net Pyrradiometer Detailed Specification



Thermopile sensor has flat spectral response.
Diagonal white lines on the sensor selectively reflect shortwave radiation (the lines are transparent to longwave) and thus balance the spectral response.
Semi-rigid polythene domes protect the sensors from air temperature fluctuations.
Domes inflated by blowing into a check valve in the handle and remain inflated indefinitely.
The handle contains silica gel to prevent internal condensation (the desiccant can be inspected through a window in the handle).
User's Guide and Calibration Certificate included.

General Specification

Viewing angle	4π steradians
Sensitivity	25μV/W.m^{-2} (typical)
Spectral range	0.3 to 60μm
Impedance	70-80Ω
Operating temperature	-35 to +60°C
Transmissivity of dome (average)	81%
Sensor thermopile	38x38mm; 250 junction copper-constantan
Output lead	2m, 2 core
Shipping size & weight	95dia x 880mm; 1Kg
desiccant	Orange silica gel, non-toxic (in handle)
Construction: head	cast epoxy resin; integral vent to handle
ferrule	chrome plated brass
handle	anodised aluminium
dome (semi-rigid)	0.4mm polythene film

The CN1-R can be used in conjunction with the Middleton Solar EQ16/E Pyrano-albedometer for applications requiring separation of the shortwave component (0.3 to 3μm) from the total net radiation signal.

Optional accessories are a Signal Amplifier with three gain selections, a hand-operated Dome Inflator, and an Unidirectional Adapter.

Available from:

Appendix C

Calibration / Maintenance Records

2004-12-02 Background Comm Temp cal D5865-1.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2004-12-02 Background Comm Temp D5865-2 cal.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2004-12-02 School commisioning temp cal D6804-1.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2004-12-02 School commisioning temp cal D6804-2.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2004-12-03 Background Comm Analogue.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2004-12-03 Background Comm filter.pdf	14 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2004-12-03 Background Comm Teom.pdf	21 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2004-12-03 School TEOM commisioning Filter.pdf	14 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2004-12-03 School TEOM commisioning Teom.pdf	22 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-01-07 Background 1M.pdf	11 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-01-07 School 1M.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-01-17 Background 1M.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-01-17 School 1M.pdf	11 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-02-01 Background 1M Filter.pdf	14 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-02-01 Background 1M Flow & Leak.pdf	24 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-02-01 School 1M.pdf	14 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-03-03 Background 3M Filter.pdf	10 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-03-03 Background 3M post flow & Leak.pdf	25 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-03-03 Background 3M.pdf	24 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-03-03 School 3M Filter.pdf	10 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-03-03 School 3M post flow & leak.pdf	20 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-03-03 School 3M.pdf	24 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-04-04 Background 1M Filter.pdf	10 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-04-04 School 1M.pdf	14 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-05-05 Background 1M.pdf	14 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-05-05 School 1M Post flow & Leak.pdf	24 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-05-05 School 1M.pdf	14 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-06-02 Background 6M Filter.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-06-02 Background 6M.pdf	21 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-06-02 School 6M Filter.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-06-02 School 6M.pdf	21 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-07-07 Background 1M Filter.pdf	10 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-07-07 Background 1M Post Flow & Leak.pdf	24 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-07-07 School 1M.pdf	14 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
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2005-09-16 Background 3M Filter.pdf	14 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-09-16 Background 3M Post Flow & Leak.pdf	24 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
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2005-09-16 School 3M Filter.pdf	14 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-09-16 School 3M Post Flow & Leak.pdf	22 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
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2005-10-03 School 1M.pdf	10 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-10-31 Background 1M.pdf	14 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-10-31 School 1M.pdf	10 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-11-25 Background workshop pre swap in 12M Amplifier.pdf	16 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-11-25 Background workshop pre swap in 12M Analogue.pdf	16 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-11-25 Background workshop pre swap in 12M Filter.pdf	11 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-11-25 Background workshop pre swap in 12M Hardware.pdf	25 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-12-29 School 12M Amplifier.pdf	16 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-12-29 School 12M Analogue.pdf	16 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
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2005-12-29 School 12M Post Flow & Leak.pdf	24 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
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2005-12-30 School 12M 50.pdf	11 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-12-30 School 12M post flow & leak flow issue.pdf	20 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-12-30 School 12M Solar Radiation.pdf	14 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-12-30 School 12M Temperature Cal 2 mtr post cal span.pdf.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-12-30 School 12M Temperature Cal 2 mtr pre cal span.pdf	11 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-12-30 School 12M Temperature Cal 10 mtr pre cal span.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2005-12-30 School 12M Temperature Cal 10 post cal span.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-01-05 Background 50.pdf	11 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-01-05 Background Software swap in annual cal Filter.pdf	11 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-01-05 Background Software swap in annual cal Post Flow & Leak....	24 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-01-05 Background Software swap in annual cal Teom.pdf	25 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
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2006-02-03 Boundary Commission Amplifier.pdf	16 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
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2006-02-03 Boundary Commission.pdf	25 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
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2006-02-15 School 1M.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-02-21 Boundary 50-5 ws-wd Annual.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-02-21 Boundary Temp Annual 2 mtr span.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-02-21 Boundary Temp Annual 2 mtr zero.pdf	14 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-02-21 Boundary Temp Annual 10 mtr span.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-02-21 Boundary Temp Annual 10 mtr zero.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-02-28 Background 1M.pdf	14 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
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2006-03-16 (97-0151 & 04-1145) Boundary swapout Cal swap in softw...	25 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-03-16 (97-0151 & 04-1145) Boundary swapout Cal swap out flo...	25 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-04-03 Background 3M Filter.pdf	11 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-04-03 Background 3M Post Flow & Leak.pdf	21 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-04-03 Background 3M.pdf	21 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-04-03 Boundary 3M Filter.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-04-03 Boundary 3M.pdf	17 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-04-03 School 3M Filter.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-04-03 School 3M.pdf	21 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-04-27 Background 1M.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-04-27 Boundary 1M.pdf	11 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-04-27 School 1M.pdf	15 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-05-01 Background Swap in Analog.pdf	11 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-05-01 Background Swap in Filter Change.pdf	11 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-05-01 Background Swap out Filter Change.pdf	11 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-05-01 Background Teom Swap in.pdf	18 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-05-01 Background Teom Swap out.pdf	21 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
2006-05-31 Background 1M.pdf	14 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
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2006-05-31 School 1M.pdf	14 KB	Adobe Acrobat Doc...	16/06/2006 11:43 AM
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ECOTECH

Quality Management System

Calibration Report

Ref: Ambient Temp. Calibration.xls Revision 1.1

Date: 21/1/02 Location S:\ecotech\iso\forms\calibrep\current\temp\

Temperature Probe Calibration

Customer	ERM
Instrument	Temp Sensor
Model	MetOne
ID No.	D5865-1

Calibration Performed by	Razvan Vlad
Date	2-Dec-04
Location	Gossnels
System/Job No.	N/A

Calibration Equipment

Calibrator Model	HD9215
ID/Serial No.	TE-137
Stated Accuracy (°C)	0.2

(HD9215 Probe Accuracy = 0.2 °C)

Displayed Instrument Parameters

Initial Data Logger Multiplier	-71.292
Initial Data Logger Offset	99.490

Calibration Results

Calibration Points	Calibrator Temperature Reading	Data Logger Temperature Reading	Difference
1	22.3	45	-22.7
2	22.3	45	-22.7
3	22.3	45	-22.7
4	22.3	45	-22.7
5	22.4	45	-22.6
6	22.4	45.1	-22.7
7	22.3	45	-22.7
8	22.4	45.1	-22.7
9	22.3	45.1	-22.8
10	22.3	45	-22.7
		Average (<2 °C)	**-22.7**
		Std. Dev (<0.1 °C)	**0.047**

Note: Do not fill in shaded cells

PASS/FAIL	PASS

Note: Change Multiplier/Offset only if average difference is less than stated calibration probe accuracy

Final Data Logger Multiplier	-7.129
Final Data Logger Offset	76.760

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Ambient Temp. Calibration.xls Revision 1.1

Date: 21/1/02 Location S:\ecotech\iso\forms\calibrep\current\temp\

Temperature Probe Calibration

Customer	ERM
Instrument	Temp Sensor
Model	MetOne
ID No.	D5865-2

Calibration Performed by	Razvan Vlad
Date	2-Dec-04
Location	Gossnels
System/Job No.	N/A

Calibration Equipment

Calibrator Model	HD9215
ID/Serial No.	TE-137
Stated Accuracy (°C)	0.2

(HD9215 Probe Accuracy = 0.2 °C)

Displayed Instrument Parameters

Initial Data Logger Multiplier	-71.330
Initial Data Logger Offset	101.760

Calibration Results

Calibration Points	Calibrator Temperature Reading	Data Logger Temperature Reading	Difference
1	22.3	47.4	-25.1
2	22.3	47.4	-25.1
3	22.3	47.4	-25.1
4	22.3	47.4	-25.1
5	22.4	47.5	-25.1
6	22.4	47.4	-25.0
7	22.3	47.5	-25.2
8	22.4	47.4	-25.0
9	22.3	47.4	-25.1
10	22.3	47.4	-25.1
		Average (<2 °C)	**-25.09**
		Std. Dev (<0.1 °C)	**0.057**

Note: Do not fill in shaded cells

PASS/FAIL	PASS

Note: Change Multiplier/Offset only if average difference is less than stated calibration probe accuracy

Final Data Logger Multiplier	-7.133
Final Data Logger Offset	76.680

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Ambient Temp. Calibration.xls Revision 1.1

Date: 21/1/02 Location S:\ecotech\iso\forms\calibrep\current\temp\

Temperature Probe Calibration

Customer	ERM
Instrument	Temp Sensor
Model	MetOne
ID No.	D6804-1

Calibration Performed by	Razvan Vlad
Date	2-Dec-04
Location	Gossnels
System/Job No.	N/A

Calibration Equipment

Calibrator Model	HD9215
ID/Serial No.	TE-137
Stated Accuracy (°C)	0.2

(HD9215 Probe Accuracy = 0.2 °C)

Displayed Instrument Parameters

Initial Data Logger Multiplier	-71.410
Initial Data Logger Offset	102.350

Calibration Results

Calibration Points	Calibrator Temperature Reading	Data Logger Temperature Reading	Difference
1	26.1	53.6	-27.5
2	26.1	53.5	-27.4
3	26.1	53.5	-27.4
4	26.1	53.6	-27.5
5	26.2	53.6	-27.4
6	26.1	53.5	-27.4
7	26.2	53.6	-27.4
8	26.2	53.6	-27.4
9	26.2	53.5	-27.3
10	26.2	53.5	-27.3
		Average (<2 °C)	**-27.4**
		Std. Dev (<0.1 °C)	**0.067**

Note: Do not fill in shaded cells

PASS/FAIL	PASS

Note: Change Multiplier/Offset only if average difference is less than stated calibration probe accuracy

Final Data Logger Multiplier	-7.141
Final Data Logger Offset	74.900

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Ambient Temp. Calibration.xls Revision 1.1

Date: 21/1/02 Location S:\ecotech\iso\forms\calibrep\current\temp\

Temperature Probe Calibration

Customer	ERM
Instrument	Temp Sensor
Model	MetOne
ID No.	D6804-2

Calibration Performed by	Razvan Vlad
Date	2-Dec-04
Location	Gossnels
System/Job No.	N/A

Calibration Equipment

Calibrator Model	HD9215
ID/Serial No.	TE-137
Stated Accuracy (°C)	0.2

(HD9215 Probe Accuracy = 0.2 °C)

Displayed Instrument Parameters

Initial Data Logger Multiplier	-71.426
Initial Data Logger Offset	102.150

Calibration Results

Calibration Points	Calibrator Temperature Reading	Data Logger Temperature Reading	Difference
1	26.1	53.2	-27.1
2	26.1	53.2	-27.1
3	26.1	53.2	-27.1
4	26.1	53.2	-27.1
5	26.2	53.2	-27.0
6	26.1	53.3	-27.2
7	26.2	53.3	-27.1
8	26.2	53.3	-27.1
9	26.2	53.3	-27.1
10	26.2	53.3	-27.1
		Average (<2 °C)	**-27.1**
		Std. Dev (<0.1 °C)	**0.047**

Note: Do not fill in shaded cells

PASS/FAIL	PASS

Note: Change Multiplier/Offset only if average difference is less than stated calibration probe accuracy

Final Data Logger Multiplier	-7.143
Final Data Logger Offset	75.100

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Analog Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Analog Calibration Data

Customer	DOE
Instrument	TEOM
Model	1400AB
ID No.	98-0248

Calibration Performed by	Rhys Evans
Date	3/12/2004
Location	Background / pond
System/Job No.	

Test Equipment

Analyser I.D	98-0248
Multimeter I.D	

Displayed Instrument Parameters

Analog OUTPUT

Disconnect ribbon cables P2,P3 & P4. Adjust A/O in Analog Calibration screen to 90%. Place +ve multimeter lead onto appropriate white output channel test point and -ve to ground test point

Analog OUTPUT channel	**0**	**1**	**2**	**3**	**4**	**5**
Measured Voltage	9.000	9.000	9.000	9.000	9.000	9.000
Adjusted (9.000V +-0.01)						

Analog OUTPUT definitions

Channel Number	**Description**
D/A 0	Main Flow Control
D/A 1	User output 1
D/A 2	User output 2
D/A 3	Bypass flow control
D/A 4	User output 3
D/A 5	Spare

Analog INPUT

Adjust A/1 for appropriate channel to 90% in Analog Calibration screen. Place jumper from 0 test point of analog output to red 0 test point of analog inputs. Place +ve multimeter lead onto appropriate white output test point, -ve to ground test

Analog INPUT channel	**0**	**1**	**2**	**3**	**4**	**5**
Measured Voltage	9.000	8.991	8.993	8.993	8.994	8.993
Adjusted (9.00V +-0.01)		9.000	9.000	9.000	9.000	9.000

Analog INPUT channel	**6**	**7**	**8**	**9**	**10**	**11**
Measured Voltage	8.993	8.997	Do not	8.991	Spare	Spare
Adjusted (9.00V +-0.01)	9.000		adjust		Channel	Channel

Analog INPUT definitions

Channel Number	**Description**
A/D 0	Main Flow Control
A/D 1	Case Thermistor
A/D 2	Air thermistor
A/D 3	Cap Thermistor
A/D 4	User Input
A/D 5	Line Voltage Monitor
A/D 6	Filter Loading
A/D 7	Bypass flow control
A/D 8	**Ambient temperature (Adjustment to this channel WILL change temp. output)**
A/D 9	Barometric Pressure
A/D 10 - 15	Spare

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	DOE
Instrument	TEOM
Model	1400AB
ID No.	98-0248

Calibration Performed by	Rhys Evans
Date	3/12/2004
Location	Background
System/Job No.	0

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.		

Inlet Head -Type	**PM10**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	39%	%
All Temps. 50.00 °C?	Yes	YES / NO
MAIN flow	3	l/min
AUX flow		l/min
Noise	0.062	
Replaced TEOM filter?	Yes	YES / NO
Cleaned Inlet Head?	Yes	YES / NO
Replaced Inlet Head? Y/N	In=	In=
	Out=	Out=
New Filter Loading	15%	%
Inspected in-line filter?	Yes	YES / NO
Replaced in-line filters?	No	YES / NO

Clean cabinet filter element	No

Date and time on TEOM correct and match logger

Cleaned flow block and replaced orifices (blocked after leak test)

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Customer	DOE
Instrument	TEOM
Model	1400AB
ID No.	98-0248

Calibration Performed by	Rhys Evans
Date	3/12/2004
Location	Background
System/Job No.	

Test Equipment

Flow Calibrator	TE-121
Temperature Probe/DVM	TE-197

Digital Barometer	TE-168

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.08	0.07	**PASS**
Auxiliary Flow (L/min)	0.04	-0.03	
% Filter loading with audit adaptor closed	185%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	3.00	**PASS**
Auxiliary	13.67	13.66	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	17.22	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	3.11	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **Yes**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	37
P-A/S setting (left column) atm	9	various

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow	0.990	0.980	3.028	3.004
Auxiliary Flow	1.000	1.000	13.640	13.640

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
PASS

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	Yes

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)	26	25.8	-0.20	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.003	**atm (R509)**
Ambient Pressure	0.975	991	0.978		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
0.07957	328.98123	250.08065	11788	11711	0.66%	**PASS**

Flow audit and leak check performed after calibrations but prior to K0 audit.
K0 audit performed by Razvan Vlad 4-12-2004

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	98-0464

Calibration Performed by	Razvan Vlad
Date	3/12/2004
Location	Gossnels
System/Job No.	N/A yet

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**26**	**35**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	N/A	%
All Temps. 50.00 °C?	YES	YES / NO
MAIN flow	3	l/min
AUX flow	13.73	l/min
Noise	0.035	
Replaced TEOM filter?	YES	YES / NO
Cleaned Inlet Head?	YES	YES / NO
Replaced Inlet Head? Y/N	In=	In=
	Out=	Out=
New Filter Loading	18	%
Inspected in-line filter?	YES	YES / NO
Replaced in-line filters?	NO	YES / NO

Clean cabinet filter element	YES

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	98-0464

Calibration Performed by	Razvan Vlad
Date	3/12/2004
Location	Gossnels
System/Job No.	N/A yet

Test Equipment

Flow Calibrator	TE43
Temperature Probe/DVM	TE-137

Digital Barometer	TE149

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.09	0.11	**PASS**
Auxiliary Flow (L/min)	0.24	0.26	
% Filter loading with audit adaptor closed	179%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	3.00	**PASS**
Auxiliary	13.67	13.73	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	16.72	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	3.00	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **N**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
FAIL

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	Y

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)	25.5	25.4	-0.10	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.000	**atm (R509)**
Ambient Pressure	1.002	1015	1.002		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	25
P-A/S setting (left column) atm	9	1.002

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**	0.5290	**Adjust R101 (0.5 +- 0.03 L/min)**	0.501	**PASS**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**	4.5050	**Adjust R105 (4.5 +- 0.03 L/min)**	4.505	**PASS**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)				2.999	**PASS**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**	2.903	**Adjust R201 (2.0 +- 0.2 L/min)**	1.998	**PASS**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**	19.250	**Adjust R205 (18.0 +- 0.2 L/min)**	18.09	**PASS**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)				13.65	**PASS**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
0.07957	317.64266	241.79377	11062	10927	1.24%	**PASS**

Technicians Signature	

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	DOE - pond site
Instrument	TEOM
Model	1400AB
ID No.	98-0248

Calibration Performed by	Razvan Vlad
Date	1/07/2005
Location	Gossnels
System/Job No.	N/A

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**25**	**28**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	32	%
All Temps. 50.00 °C?	YES	YES / NO
MAIN flow	3	l/min
AUX flow	13.61	l/min
Noise	0.052	
Replaced TEOM filter?	YES	YES / NO
Cleaned Inlet Head?	YES	YES / NO
Replaced Inlet Head? Y/N	In=	In=
	Out=	Out=
New Filter Loading	17	%
Inspected in-line filter?	YES	YES / NO
Replaced in-line filters?	NO	YES / NO

Clean cabinet filter element	YES

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	DOE - school site
Instrument	TEOM
Model	1400AB
ID No.	98-0464

Calibration Performed by	Razvan Vlad
Date	1/07/2005
Location	Gossnels
System/Job No.	N/A

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**N/A**	**N/A**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	41	%
All Temps. 50.00 °C?	YES	YES / NO
MAIN flow	3	l/min
AUX flow	13.64	l/min
Noise	0.031	
Replaced TEOM filter?	YES	YES / NO
Cleaned Inlet Head?	YES	YES / NO
Replaced Inlet Head? Y/N	In=	In=
	Out=	Out=
New Filter Loading	16	%
Inspected in-line filter?	YES	YES / NO
Replaced in-line filters?	NO	YES / NO

Clean cabinet filter element	YES

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	DOE - pond site
Instrument	TEOM
Model	1400AB
ID No.	98-0248

Calibration Performed by	Razvan Vlad
Date	17/1/2005
Location	Gossnels
System/Job No.	N/A

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**27**	**32**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	FX	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	139	%
All Temps. 50.00 °C?	YES	YES / NO
MAIN flow	1.05	l/min
AUX flow	13.43	l/min
Noise	0.073	
Replaced TEOM filter?	YES	YES / NO
Cleaned Inlet Head?	YES	YES / NO
Replaced Inlet Head? Y/N	In=	In=
	Out=	Out=
New Filter Loading	17	%
Inspected in-line filter?	YES	YES / NO
Replaced in-line filters?	NO	YES / NO

Clean cabinet filter element	YES

Note: The bypass MFC orifice was partially blocked and had to be replaced.
Leak check was fine and flows are OK.
The high filter load was caused by the nearby bush fire.

Technicians Signature	Date

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	DOE - school site
Instrument	TEOM
Model	1400AB
ID No.	98-0464

Calibration Performed by	Razvan Vlad
Date	17/1/2005
Location	Gossnels
System/Job No.	N/A

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**20**	**33**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	FX	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	114	%
All Temps. 50.00 °C?	YES	YES / NO
MAIN flow	2.63	l/min
AUX flow	13.66	l/min
Noise	0.066	
Replaced TEOM filter?	YES	YES / NO
Cleaned Inlet Head?	YES	YES / NO
Replaced Inlet Head? Y/N	In=	In=
	Out=	Out=
New Filter Loading	16	%
Inspected in-line filter?	YES	YES / NO
Replaced in-line filters?	NO	YES / NO

Clean cabinet filter element	NO

Note: The high filter load was caused by the nearby bush fire.

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	DOE
Instrument	TEOM
Model	1400A
ID No.	98-0248

Calibration Performed by	Ashley Drummond
Date	1/02/2005
Location	DOE 3 Pond
System/Job No.	500283

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**28**	**35**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	54%	
All Temps. 50.00 °C?	YES	
MAIN flow	2.97	
AUX flow	13.36	
Noise	0.075	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In=	
	Out=	
New Filter Loading	17%	
Inspected in-line filter?	YES	
Replaced in-line filters?	YES	

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Customer	DOE
Instrument	TEOM
Model	1400A
ID No.	98-0248

Calibration Performed by	Ashley Drummond
Date	1/02/2005
Location	DOE 3 Pond
System/Job No.	500283

Test Equipment

Flow Calibrator	TE-121
Temperature Probe/DVM	n/a

Digital Barometer	n/a

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.07	0.06	**PASS**
Auxiliary Flow (L/min)	0.05	-0.03	
% Filter loading with audit adaptor closed	185%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
	3.00	2.99	**PASS**
	13.67	13.67	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	16.97	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	3.03	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **N**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
FAIL

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.000	**atm (R509)**
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	DOE
Instrument	TEOM
Model	1400A
ID No.	98-0464

Calibration Performed by	Ashley Drummond
Date	1/02/2005
Location	DOE 2 School
System/Job No.	500282

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**20**	**31**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	58%	
All Temps. 50.00 °C?	YES	
MAIN flow	2.99	
AUX flow	13.65	
Noise	0.062	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In=	
	Out=	
New Filter Loading	17%	
Inspected in-line filter?	YES	
Replaced in-line filters?	NO	

Clean cabinet filter element	NO

Technicians Signature	Date

Quality Management System
Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0
Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	DOE
Instrument	TEOM
Model	1400A
ID No.	98-0248

Calibration Performed by	Ashley Drummond
Date	3/03/2005
Location	DOE 3 Pond
System/Job No.	500283

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**18**	**33**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	26%	
All Temps. 50.00 °C?	YES	
MAIN flow	3	
AUX flow	13.54	
Noise	0.071	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In=	
	Out=	
New Filter Loading	17%	
Inspected in-line filter?	YES	
Replaced in-line filters?	NO	

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Flow & Leak check post Orifice clean and sample line replacement!

Customer	DOE
Instrument	TEOM
Model	1400A
ID No.	98-0248

Calibration Performed by	Ashley Drummond
Date	3/03/2005
Location	DOE 3 Pond
System/Job No.	500283

Test Equipment

Flow Calibrator	TE-121
Temperature Probe/DVM	n/a

Digital Barometer	n/a

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.09	0.08	**PASS**
Auxiliary Flow (L/min)	0.02	-0.04	
% Filter loading with audit adaptor closed	186%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	3.00	**PASS**
Auxiliary	13.67	13.67	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	17.24	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	3.10	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **N**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
FAIL

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (℃)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1℃ between -25 to 105℃

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.000	**atm (R509)**
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Customer	DOE
Instrument	TEOM
Model	1400A
ID No.	98-0248

Calibration Performed by	Ashley Drummond
Date	3/03/2005
Location	DOE 3 Pond
System/Job No.	500283

Test Equipment

Flow Calibrator	TE-121
Temperature Probe/DVM	n/a

Digital Barometer	n/a

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.09	0.07	**PASS**
Auxiliary Flow (L/min)	0.04	-0.02	
% Filter loading with audit adaptor closed	186%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	2.99	**PASS**
Auxiliary	13.67	13.50	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	16.92	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	3.06	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **N**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
FAIL

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (℃)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1℃ between -25 to 105℃

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.000	**atm (R509)**
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

Quality Management System
Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	DOE	**Calibration Performed by**	Ashley Drummond
Instrument	TEOM	**Date**	3/03/2005
Model	1400A	**Location**	DOE 2 School
ID No.	98-0464	**System/Job No.**	500282

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**20**	**32**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	29%	
All Temps. 50.00 °C?	YES	
MAIN flow	2.99	
AUX flow	13.66	
Noise	0.013	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In=	
	Out=	
New Filter Loading	16%	
Inspected in-line filter?	YES	
Replaced in-line filters?	NO	

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Flow & Leak check post Orifice clean and sample line replacement!

Customer	DOE
Instrument	TEOM
Model	1400A
ID No.	98-0248

Calibration Performed by	Ashley Drummond
Date	3/03/2005
Location	DOE 3 Pond
System/Job No.	500283

Test Equipment

Flow Calibrator	TE-121
Temperature Probe/DVM	n/a

Digital Barometer	n/a

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.09	0.08	**PASS**
Auxiliary Flow (L/min)	0.02	-0.04	
% Filter loading with audit adaptor closed	186%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	3.00	**PASS**
Auxiliary	13.67	13.67	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	17.24	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	3.10	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **N**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
FAIL

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (℃)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1℃ between -25 to 105℃

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.000	**atm (R509)**
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Customer	DOE
Instrument	TEOM
Model	1400A
ID No.	98-0464

Calibration Performed by	Ashley Drummond
Date	3/03/2005
Location	DOE 2 School
System/Job No.	500282

Test Equipment

Flow Calibrator	TE-121
Temperature Probe/DVM	TE-137

Digital Barometer	TE-168

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.08	0.11	**PASS**
Auxiliary Flow (L/min)	1.44	1.46	
% Filter loading with audit adaptor closed	175%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	2.97	**PASS**
Auxiliary	13.67	13.66	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	15.40	(16.67 +-1.0 L/min)	**FAIL**
Main flow (cap flow splitter)	3.00	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **Y**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	30.9
P-A/S setting (left column) atm	9	0.995

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow	1.000	0.985	3.064	3.006
Auxiliary Flow	1.000	1.060	12.700	13.670

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
PASS

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.000	**atm (R509)**
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

Quality Management System
Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	DOE
Instrument	TEOM
Model	1400A
ID No.	98-0248

Calibration Performed by	Ashley Drummond
Date	4/04/2005
Location	DOE 3 Pond
System/Job No.	500283

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**16**	**32**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	25%	
All Temps. 50.00 °C?	YES	
MAIN flow	2.99	
AUX flow	13.61	
Noise	0.043	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In=	
	Out=	
New Filter Loading	17%	
Inspected in-line filter?	YES	
Replaced in-line filters?	NO	

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	DOE
Instrument	TEOM
Model	1400A
ID No.	98-0464

Calibration Performed by	Ashley Drummond
Date	4/04/2005
Location	DOE 2 School
System/Job No.	500282

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**20**	**30**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	32%	
All Temps. 50.00 °C?	YES	
MAIN flow	3.04	
AUX flow	13.64	
Noise	0.064	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In= N/A	
	Out= N/A	
New Filter Loading	16%	
Inspected in-line filter?	YES	
Replaced in-line filters?	NO	

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0248

Calibration Performed by	Ashley Drummond
Date	5/05/2005
Location	Background
System/Job No.	500283

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**23**	**33**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	39%	
All Temps. 50.00 °C?	YES	
MAIN flow	3	
AUX flow	13.66	
Noise	0.08	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In=	
	Out=	
New Filter Loading	18%	
Inspected in-line filter?	YES	
Replaced in-line filters?	NO	

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Leak check post Aux DFU filter change

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0464

Calibration Performed by	Ashley Drummond
Date	5/05/2005
Location	School
System/Job No.	500282

Test Equipment

Flow Calibrator	n/a
Temperature Probe/DVM	n/a

Digital Barometer	n/a

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.09	0.10	**PASS**
Auxiliary Flow (L/min)	1.14	1.13	
% Filter loading with audit adaptor closed	173%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main			**PASS**
Auxiliary			

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow		(16.67 +-1.0 L/min)	**FAIL**
Main flow (cap flow splitter)		(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **N**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
PASS

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	mBar	Atm	0.000	atm (R509)
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**PASS**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**PASS**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0464

Calibration Performed by	Ashley Drummond
Date	5/05/2005
Location	School
System/Job No.	500282

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**20**	**30**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	47%	
All Temps. 50.00 °C?	YES	
MAIN flow	2.99	
AUX flow	13.65	
Noise	0.035	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In= N/A	
	Out= N/A	
New Filter Loading	18%	
Inspected in-line filter?	YES	
Replaced in-line filters?	YES	

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	98-0248

Calibration Performed by	Razvan Vlad
Date	6/02/2005
Location	Gossnells background
System/Job No.	500283

Test Equipment

Flow Calibrator	TE43
Temperature Probe/DVM	TE197

Digital Barometer	TE196

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.08	0.07	**PASS**
Auxiliary Flow (L/min)	0.04	-0.01	
% Filter loading with audit adaptor closed	182%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	3.00	**PASS**
Auxiliary	13.67	13.55	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	16.94	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	3.00	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **Y**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	18.6
P-A/S setting (left column) atm	9	0.972

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow	0.980	0.980	3.007	3.007
Auxiliary Flow	1.000	0.966	14.140	13.670

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
PASS

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (℃)	18.6	19.3	0.70	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1℃ between -25 to 105℃

	Displayed	Measured		Potentiometer for adj.	
	Atm.	mBar	Atm	0.004	atm (R509)
Ambient Pressure	0.968	985	0.972		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	98-0248

Calibration Performed by	Razvan Vlad
Date	6/02/2005
Location	Gossnells background
System/Job No.	500283

Test Equipment

Flow Calibrator	TE43
Temperature Probe/DVM	TE197

Digital Barometer	TE196

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.08	0.07	**PASS**
Auxiliary Flow (L/min)	0.04	-0.01	
% Filter loading with audit adaptor closed	182%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	3.00	**PASS**
Auxiliary	13.67	13.55	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	16.94	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	3.00	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly

Relevant? Y/N	Y

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	18.6
P-A/S setting (left column) atm	9	0.972

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow	0.980	0.980	3.007	3.007
Auxiliary Flow	1.000	0.966	14.140	13.670

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
PASS

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)	18.6	19.3	0.70	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.004	**atm (R509)**
Ambient Pressure	0.968	985	0.972		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	98-0464

Calibration Performed by	Razvan Vlad
Date	6/02/2005
Location	Gossnells School
System/Job No.	500282

Test Equipment

Flow Calibrator	TE43
Temperature Probe/DVM	TE197

Digital Barometer	TE196

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.09	0.11	**PASS**
Auxiliary Flow (L/min)	1.19	1.20	
% Filter loading with audit adaptor closed	173%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	2.98	**PASS**
Auxiliary	13.67	13.64	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	16.53	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	2.93	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **Y**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	19.5
P-A/S setting (left column) atm	9	0.997

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow	0.985	1.008	2.930	2.989
Auxiliary Flow	1.060	1.064	13.610	13.670

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
PASS

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (℃)	20.2	20.7	0.50	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1℃ between -25 to 105℃

	Displayed	Measured		Potentiometer for adj.	
	Atm.	mBar	Atm	0.001	atm (R509)
Ambient Pressure	0.997	1011	0.998		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	98-0464

Calibration Performed by	Razvan Vlad
Date	6/02/2005
Location	Gossnells School
System/Job No.	500282

Test Equipment

Flow Calibrator	TE43
Temperature Probe/DVM	TE197

Digital Barometer	TE196

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.09	0.11	**PASS**
Auxiliary Flow (L/min)	1.19	1.20	
% Filter loading with audit adaptor closed	173%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	2.98	**PASS**
Auxiliary	13.67	13.64	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	16.53	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	2.93	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly

Relevant? Y/N	Y

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	19.5
P-A/S setting (left column) atm	9	0.997

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow	0.985	1.008	2.930	2.989
Auxiliary Flow	1.060	1.064	13.610	13.670

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
PASS

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)	20.2	20.7	0.50	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.001	**atm (R509)**
Ambient Pressure	0.997	1011	0.998		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	

Quality Management System
Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0248

Calibration Performed by	Ashley Drummond
Date	7/07/2005
Location	Background
System/Job No.	500283

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**18**	**33**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	31%	
All Temps. 50.00 °C?	YES	
MAIN flow	3	
AUX flow	13.66	
Noise	0.063	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In=	
	Out=	
New Filter Loading	19%	
Inspected in-line filter?	YES	
Replaced in-line filters?	YES	

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Leak check only post DFU change

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0248

Calibration Performed by	Ashley Drummond
Date	7/07/2005
Location	Background
System/Job No.	500283

Test Equipment

Flow Calibrator	n/a
Temperature Probe/DVM	n/a

Digital Barometer	n/a

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.08	0.07	**PASS**
Auxiliary Flow (L/min)	0.03	-0.01	
% Filter loading with audit adaptor closed	179%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
			PASS

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow		(16.67 +-1.0 L/min)	**FAIL**
Main flow (cap flow splitter)		(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **N**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
PASS

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.000	**atm (R509)**
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**PASS**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**PASS**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0464

Calibration Performed by	Ashley Drummond
Date	7/07/2005
Location	School
System/Job No.	500282

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**19**	**30**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	52%	
All Temps. 50.00 °C?	YES	
MAIN flow	2.99	
AUX flow	13.66	
Noise	0.033	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In= N/A	
	Out= N/A	
New Filter Loading	17%	
Inspected in-line filter?	YES	
Replaced in-line filters?	NO	

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0248

Calibration Performed by	Ashley Drummond
Date	11/08/2005
Location	Background
System/Job No.	500283

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**18**	**33**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	31%	
All Temps. 50.00 °C?	YES	
MAIN flow	3.01	
AUX flow	13.53	
Noise	0.054	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In=	
	Out=	
New Filter Loading	18%	
Inspected in-line filter?	YES	
Replaced in-line filters?	NO	

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Customer		**Calibration Performed by**	
Instrument		**Date**	
Model		**Location**	
ID No.		**System/Job No.**	

Test Equipment

Flow Calibrator		**Digital Barometer**	
Temperature Probe/DVM			

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)			**FAIL**
Auxiliary Flow (L/min)			
% Filter loading with audit adaptor closed			

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
			PASS

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow		(16.67 +-1.0 L/min)	**FAIL**
Main flow (cap flow splitter)		(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly

Relevant? Y/N	N

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
PASS

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.000	**atm (R509)**
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**PASS**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**PASS**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

Quality Management System
Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0464

Calibration Performed by	Ashley Drummond
Date	1108/2005
Location	School
System/Job No.	500282

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**19**	**30**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	54%	
All Temps. 50.00 °C?	YES	
MAIN flow	3	
AUX flow	13.65	
Noise	0.036	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In= N/A	
	Out= N/A	
New Filter Loading	19%	
Inspected in-line filter?	YES	
Replaced in-line filters?	NO	

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0248

Calibration Performed by	Ashley Drummond
Date	16/09/2005
Location	Background
System/Job No.	500283

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**18**	**30**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	27%	
All Temps. 50.00 °C?	YES	
MAIN flow	3	
AUX flow	13.54	
Noise	0.064	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In=	
	Out=	
New Filter Loading	18%	
Inspected in-line filter?	YES	
Replaced in-line filters?	NO	

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Final leak check post Aux orifice change

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0248

Calibration Performed by	Ashley Drummond
Date	16/09/2005
Location	Background
System/Job No.	500283

Test Equipment

Flow Calibrator	n/a
Temperature Probe/DVM	n/a

Digital Barometer	n/a

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.07	0.07	**PASS**
Auxiliary Flow (L/min)	0.03	-0.01	
% Filter loading with audit adaptor closed	176%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main			**PASS**
Auxiliary			

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow		(16.67 +-1.0 L/min)	**FAIL**
Main flow (cap flow splitter)		(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly	**Relevant? Y/N**	**N**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
PASS

Ambient Temperature and Pressure Check- 12 monthly	**Relevant? Y/N**	**N**

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (℃)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1℃ between -25 to 105℃

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.000	**atm (R509)**
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**PASS**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**PASS**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0248

Calibration Performed by	Ashley Drummond
Date	16/09/2005
Location	Background
System/Job No.	500283

Test Equipment

Flow Calibrator	TE-121
Temperature Probe/DVM	n/a

Digital Barometer	n/a

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.07	0.07	**PASS**
Auxiliary Flow (L/min)	0.04	-0.01	
% Filter loading with audit adaptor closed	176%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	2.99	**PASS**
Auxiliary	13.67	13.54	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	16.40	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	3.04	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **N**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
FAIL

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (℃)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1℃ between -25 to 105℃

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.000	**atm (R509)**
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0464

Calibration Performed by	Ashley Drummond
Date	3/03/2005
Location	School
System/Job No.	500282

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**16**	**24**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	43%	
All Temps. 50.00 °C?	YES	
MAIN flow	2.99	
AUX flow	13.66	
Noise	0.034	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In=	
	Out=	
New Filter Loading	19%	
Inspected in-line filter?	YES	
Replaced in-line filters?	Yes	

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Post Leak chk Aux DFU change

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0464

Calibration Performed by	Ashley Drummond
Date	16/09/2005
Location	School
System/Job No.	500282

Test Equipment

Flow Calibrator	n/a
Temperature Probe/DVM	n/a

Digital Barometer	n/a

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.09	0.10	**PASS**
Auxiliary Flow (L/min)	1.02	1.04	
% Filter loading with audit adaptor closed	172%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main			**PASS**
Auxiliary			

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow		(16.67 +-1.0 L/min)	**FAIL**
Main flow (cap flow splitter)		(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **Y**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
PASS

Ambient Temperature and Pressure Check- 12 monthly | **Relevant? Y/N** | **N**

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.000	**atm (R509)**
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**PASS**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**PASS**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0248

Calibration Performed by	Ashley Drummond
Date	3/10/2005
Location	Background
System/Job No.	500283

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**17**	**31**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	27%	
All Temps. 50.00 °C?	YES	
MAIN flow	3.01	
AUX flow	13.64	
Noise	0.065	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In= NO	
	Out= NO	
New Filter Loading	17%	
Inspected in-line filter?	YES	
Replaced in-line filters?	NO	

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0248

Calibration Performed by	Ashley Drummond
Date	31/10/2005
Location	Background
System/Job No.	500283

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**17**	**31**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	31%	
All Temps. 50.00 °C?	YES	
MAIN flow	3	
AUX flow	13.61	
Noise	0.076	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In= NO	
	Out= NO	
New Filter Loading	18%	
Inspected in-line filter?	YES	
Replaced in-line filters?	NO	

Clean cabinet filter element	NO

Technicians Signature	Date

Quality Management System
Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0464

Calibration Performed by	Ashley Drummond
Date	31/10/2005
Location	School
System/Job No.	500282

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**17**	**25**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	47%	
All Temps. 50.00 °C?	YES	
MAIN flow	3.02	
AUX flow	13.65	
Noise	0.058	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In= N/A	
	Out= N/A	
New Filter Loading	17%	
Inspected in-line filter?	YES	
Replaced in-line filters?	NO	

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Amplifier Board Tuning Calibration Report.xls Revision 1.0

Date: 11/01/02 Location S:\ecotech\iso\forms\calibrep\working\

Teom Amplifier Board Tuning Calibration

Up to Hardware Calibration
for Swap in at DOE Background
as part of the Annual

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	02-0242

Calibration Performed by	Ashley Drummond
Date	25/11/2005
Location	Workshop
System/Job No.	n/a

Calibration Equipment

Calibrator Model	FLUKE 91
ID/Serial No.	TE-006

Calibrator Model	N/A
ID/Serial No.	N/A

Note: A multimeter with RMS capabilities can be substituted for the Oscilloscope.

Procedure

		Results (repeat until it passes)		
		1	**2**	**3**
1	**Ensure that a TEOM filter is installed in the mass transducer**	OK		
2	**Power up the instrument. The unit should be at approximately operating temperature before tuning.**	OK		
3	**Place the multimeter on TP0 (green) and GND (black). A signal of approximately -4.2 VDC should be present. There is no adjustment.**	-4.15		
4	**Place oscilloscope on TP0 (green) and GND (black). A smooth sine wave of approximately 0.5 V peak-to-peak (0.2 Vrms) should be present. If not, adjust R3 until the wave amplitude is correct.**	0.8		
5	**Place oscilloscope on TP1 (red) and GND (black). A sine wave of approximately 9 V peak-to-peak (3 Vrms) should be present. There is no adjustment.**	8.5		
6	**Place the oscilloscope probe on TP2 (orange) and GND (black). A sine wave of approximately 20 V peak-to-peak (7 Vrms) should be present. If not, adjust R6 until the wave amplitude is correct.**	20.2		
7	**Place oscilloscope probe on TP3 (yellow) and GND (black). A sine wave of 0.6 to 1.5 V peak-to-peak (0.2 to 0.8 Vrms) should be present. There is no adjustment.**	0.82		
8	**Place the multimeter on TP4 (blue) and GND (black). A -1.0 +-0.1 VDC signal should be present. If not, adjust R29 until the signal is correct.**	-1.024		
9	**Place the oscilloscope probe on TP5 (white) and GND (black). A 16 V peak-to-peak square wave (8 Vrms) should be present.**	15.7		
10	**Repeat the above procedure until the test points are within the specified values without further adjustment.**			
	PASS/FAIL	PASS	FAIL	FAIL

Note: Do not fill in shaded cells

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Analog Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Analog Calibration Data

Up to Hardware Calibration
for Swap in at DOE Background
as part of the Annual

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	02-0242

Calibration Performed by	Ashley Drummond
Date	25/11/2005
Location	Workshop
System/Job No.	n/a

Test Equipment

Analyser I.D	02-0242
Multimeter I.D	TE-189

Displayed Instrument Parameters

Analog OUTPUT

Disconnect ribbon cables P2,P3 & P4. Adjust A/O in Analog Calibration screen to 90%. Place +ve multimeter lead onto appropriate white output channel test point and -ve to ground test point

Analog OUTPUT channel	**0**	**1**	**2**	**3**	**4**	**5**
Measured Voltage	8.99	9	9	9	9	9
Adjusted (9.000V +-0.01)	9	9	9	9	9	9

Analog OUTPUT definitions

Channel Number	**Description**
D/A 0	Main Flow Control
D/A 1	User output 1
D/A 2	User output 2
D/A 3	Bypass flow control
D/A 4	User output 3
D/A 5	Spare

Analog INPUT

Adjust A/1 for appropriate channel to 90% in Analog Calibration screen. Place jumper from 0 test point of analog output to red 0 test point of analog inputs. Place +ve multimeter lead onto appropriate white output test point, -ve to ground test point

Analog INPUT channel	**0**	**1**	**2**	**3**	**4**	**5**
Measured Voltage	8.993	8.995	8.996	8.996	8.996	9.006
Adjusted (9.00V +-0.01)	9	9	9	9	9	9

Analog INPUT channel	**6**	**7**	**8**	**9**	**10**	**11**
Measured Voltage	8.995	8.995	Do not	8.995	Spare	Spare
Adjusted (9.00V +-0.01)	9	9	adjust	9	Channel	Channel

Analog INPUT definitions

Channel Number	**Description**
A/D 0	Main Flow Control
A/D 1	Case Thermistor
A/D 2	Air thermistor
A/D 3	Cap Thermistor
A/D 4	User Input
A/D 5	Line Voltage Monitor
A/D 6	Filter Loading
A/D 7	Bypass flow control
A/D 8	**Ambient temperature (Adjustment to this channel WILL change temp. output)**
A/D 9	Barometric Pressure
A/D 10 - 15	Spare

Technicians Signature	Date

Quality Management System
Calibration Report
Ref: Teom Filter Change Proforma.xls Revision 1.0
Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Up to Hardware Calibration
for Swap in at DOE Background
as part of the Annual

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	02-0242

Calibration Performed by	Ashley Drummond
Date	25/11/2005
Location	Workshop
System/Job No.	n/a

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.		

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	39	%
All Temps. 50.00 °C?	YES	YES / NO
MAIN flow	2.99	l/min
AUX flow	13.66	l/min
Noise	0.021	
Replaced TEOM filter?	NO	YES / NO
Cleaned Inlet Head?	NO	YES / NO
Replaced Inlet Head? Y/N	In=	In=
	Out=	Out=
New Filter Loading		%
Inspected in-line filter?	YES	YES / NO
Replaced in-line filters?	NO	YES / NO

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Up to Hardware Calibration
for Swap in at DOE Background
as part of the Annual

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	02-0242

Calibration Performed by	Ashley Drummond
Date	25/11/2005
Location	Workshop
System/Job No.	n/a

Test Equipment

Flow Calibrator	TE-121
Temperature Probe/DVM	TE137

Digital Barometer	TE-149

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.04	0.04	**PASS**
Auxiliary Flow (L/min)	0.00	-0.04	
% Filter loading with audit adaptor closed	178%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	2.99	**PASS**
Auxiliary	13.67	13.66	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	16.49	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	2.99	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **Y**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow	0.985			
Auxiliary Flow	0.990			

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
FAIL

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	Y

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (℃)	17.7	21.1	3.40	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1℃ between -25 to 105℃

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.003	**atm (R509)**
Ambient Pressure	1.003	1019	1.006		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	21.4
P-A/S setting (left column) atm	9	1.006

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**	0.5147	**Adjust R101 (0.5 +- 0.03 L/min)**	0.5015	**PASS**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**	4.4830	**Adjust R105 (4.5 +- 0.03 L/min)**	4.499	**PASS**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)				2.978	**PASS**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**	2.104	**Adjust R201 (2.0 +- 0.2 L/min)**	2.009	**PASS**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**	17.830	**Adjust R205 (18.0 +- 0.2 L/min)**	17.98	**PASS**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)				13.55	**PASS**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Amplifier Board Tuning Calibration Report.xls Revision 1.0

Date: 11/01/02 Location S:\ecotech\iso\forms\calibrep\working\

Teom Amplifier Board Tuning Calibration

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0464

Calibration Performed by	Ashley Drummond
Date	29/12/2005
Location	School
System/Job No.	500282

Calibration Equipment

Calibrator Model	FLUKE 91
ID/Serial No.	TE-006

Calibrator Model	N/A
ID/Serial No.	N/A

Note: A multimeter with RMS capabilities can be substituted for the Oscilloscope.

Procedure

		Results (repeat until it passes)		
		1	**2**	**3**
1	**Ensure that a TEOM filter is installed in the mass transducer**	OK	OK	
2	**Power up the instrument. The unit should be at approximately operating temperature before tuning.**	OK	OK	
3	**Place the multimeter on TP0 (green) and GND (black). A signal of approximately -4.2 VDC should be present. There is no adjustment.**	-4.18	-4.2	
4	**Place oscilloscope on TP0 (green) and GND (black). A smooth sine wave of approximately 0.5 V peak-to-peak (0.2 Vrms) should be present. If not, adjust R3 until the wave amplitude is correct.**	0.7	0.7	
5	**Place oscilloscope on TP1 (red) and GND (black). A sine wave of approximately 9 V peak-to-peak (3 Vrms) should be present. There is no adjustment.**	8.5	8	
6	**Place the oscilloscope probe on TP2 (orange) and GND (black). A sine wave of approximately 20 V peak-to-peak (7 Vrms) should be present. If not, adjust R6 until the wave amplitude is correct.**	22.5	20	
7	**Place oscilloscope probe on TP3 (yellow) and GND (black). A sine wave of 0.6 to 1.5 V peak-to-peak (0.2 to 0.8 Vrms) should be present. There is no adjustment.**	1	1	
8	**Place the multimeter on TP4 (blue) and GND (black). A -1.0 +-0.1 VDC signal should be present. If not, adjust R29 until the signal is correct.**	-0.876	-0.999	
9	**Place the oscilloscope probe on TP5 (white) and GND (black). A 16 V peak-to-peak square wave (8 Vrms) should be present.**	15	15	
10	**Repeat the above procedure until the test points are within the specified values without further adjustment.**			
	PASS/FAIL	FAIL	PASS	FAIL

Note: Do not fill in shaded cells

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Analog Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Analog Calibration Data

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0464

Calibration Performed by	Ashley Drummond
Date	29/12/2005
Location	School
System/Job No.	500282

Test Equipment

Analyser I.D	98-0464
Multimeter I.D	TE-189

Displayed Instrument Parameters

Analog OUTPUT

Disconnect ribbon cables P2,P3 & P4. Adjust A/O in Analog Calibration screen to 90%. Place +ve multimeter lead onto appropriate white output channel test point and -ve to ground test point

Analog OUTPUT channel	**0**	**1**	**2**	**3**	**4**	**5**
Measured Voltage	8.99	8.99	9	8.99	8.99	8.99
Adjusted (9.000V +-0.01)	9	9	9	9	9	9

Analog OUTPUT definitions

Channel Number	**Description**
D/A 0	Main Flow Control
D/A 1	User output 1
D/A 2	User output 2
D/A 3	Bypass flow control
D/A 4	User output 3
D/A 5	Spare

Analog INPUT

Adjust A/1 for appropriate channel to 90% in Analog Calibration screen. Place jumper from 0 test point of analog output to red 0 test point of analog inputs. Place +ve multimeter lead onto appropriate white output test point, -ve to ground test point

Analog INPUT channel	**0**	**1**	**2**	**3**	**4**	**5**
Measured Voltage	9	9.007	9.008	9.1	9.006	9.009
Adjusted (9.00V +-0.01)	9	9	9	9	9	9

Analog INPUT channel	**6**	**7**	**8**	**9**	**10**	**11**
Measured Voltage	9.008	9.008	Do not	9.007	Spare	Spare
Adjusted (9.00V +-0.01)	9	9	adjust	9	Channel	Channel

Analog INPUT definitions

Channel Number	**Description**
A/D 0	Main Flow Control
A/D 1	Case Thermistor
A/D 2	Air thermistor
A/D 3	Cap Thermistor
A/D 4	User Input
A/D 5	Line Voltage Monitor
A/D 6	Filter Loading
A/D 7	Bypass flow control
A/D 8	**Ambient temperature (Adjustment to this channel WILL change temp. output)**
A/D 9	Barometric Pressure
A/D 10 - 15	Spare

Technicians Signature	Date

Quality Management System
Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0464

Calibration Performed by	Ashley Drummond
Date	29/12/2005
Location	School
System/Job No.	500282

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**19**	**27**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	50	%
All Temps. 50.00 °C?	YES	YES / NO
MAIN flow	3.02	l/min
AUX flow	13.65	l/min
Noise	0.041	
Replaced TEOM filter?	YES	YES / NO
Cleaned Inlet Head?	YES	YES / NO
Replaced Inlet Head? Y/N	In= no	In=
	Out= no	Out=
New Filter Loading	18	%
Inspected in-line filter?	YES	YES / NO
Replaced in-line filters?	YES	YES / NO

Clean cabinet filter element	Yes

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Final Flow & Leak Check post annual calibration

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0464

Calibration Performed by	Ashley Drummo
Date	29/12/2005
Location	School
System/Job No.	500282

Test Equipment

Flow Calibrator	TE-40
Temperature Probe/DVM	n/a

Digital Barometer	n/a

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.06	0.08	**PASS**
Auxiliary Flow (L/min)	0.09	0.09	
% Filter loading with audit adaptor closed	169%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	3.04	**PASS**
Auxiliary	13.67	13.65	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	16.85	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	3.01	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly

Relevant? Y/N

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controlle calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
FAIL

Ambient Temperature and Pressure Check- 12 monthly

Relevant? Y/N

	Displayed	Measured	Potentiometer for ac	
Ambient Temperature (°C)			0.00	**(inpu**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for ac	
	Atm.	**mBar**	**Atm**	0.000	**atm (R50**
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Res
					#DIV/0!	**#DI**

Technicians Signature	Date

Quality Management System

Calibration Report

Ref: Ultrasonic WSWD Check.xls Revision 1.3

Date: 02/08/02 Location S:\ecotech\iso\forms\calibrep\current\

Ultrasonic WS/WD Onsite Check

Customer	ERM	**Calibration Performed by**	AD/PS
Instrument	Ultrasonic wind sensor	**Date**	30-Dec-05
Model	50.5	**Location**	School
ID No.	00-0403	**System/Job No.**	500282

6 Monthly wind sensor check

Original logger zero offset	**-4.021**	**Original logger span**	**-15.464**

Magnetic alignment before lowering mast	
Looking North / South / East / West (circle)	deg

Mast down (time)	10am / pm (circle)

Wind sensor array check	**Wind speed**	**Wind direction**	
	Logger (m/s)	**Logger (deg)**	**Expected (deg)**
Cover North / South array	49.7	178.1	180
Cover East / West array	49.7	86.5	90

wind direction reading shall be within+-8°, wind speed shall be within +-2.5m/s

Zero check (wind sensor covered)	
Reading from logger (m/s)	1.4 m/s*
Adjusted zero (if applicable)	n/a
Updated zero offset (if applicable)	**n/a**

*If greater than 0.22 m/s adjust logger offset

Mast up (time)	am / pm (circle)

Magnetic alignment after raising mast (if applicable)	
Looking North / South / East / West (circle)	358.5 deg

Solar noon alignment after raising mast (if applicable)			
Calculated time for solar noon	**14:00 pm**	**Alignment correct? (+-4deg)**	**YES**

Sensor ID transfer status (if applicable)			
In		**Out**	00-0403

Technicians Signature		**Date**	

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Post Software cal Flow & Leak check result

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0464

Calibration Performed by	AD/PS
Date	30/12/2005
Location	School
System/Job No.	500282

Test Equipment

Flow Calibrator	TE-40
Temperature Probe/DVM	n/a

Digital Barometer	n/a

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.06	0.07	**PASS**
Auxiliary Flow (L/min)	0.08	0.08	
% Filter loading with audit adaptor closed	167%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	3.01	**PASS**
Auxiliary	13.67	13.65	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	17.08	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	3.01	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **Y**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
FAIL

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (℃)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1℃ between -25 to 105℃

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.000	**atm (R509)**
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Solar Radiation Check.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\rad

Solar Radiation Sensor Operational Check

Customer	ERM
Instrument	Net Radiation sensor
Model	Middleton
ID No.	04-1143

Calibration Performed by	AD/PS
Date	30-Dec-05
Location	School
System/Job No.	500282

Calibration Results

	Test 1	Test 2	Test 3
Recorded Output with Black Cloth	1.24	-3.338	-2.475
Recorded Output with Light Source	541	291	274

Time of Operational Check	Start	Finish
	14:15	14:25

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Ambient Temp. Calibration.xls Revision 1.1

Date: 21/1/02 Location S:\ecotech\iso\forms\calibrep\current\temp\

Temperature Probe Calibration

Customer	ERM
Instrument	Temp Sensor (2 MTR)
Model	MetOne (Type 062MP)
ID No.	05-0167 (mp D6804 2 of 2)

Calibration Performed by	AD/PS
Date	30-Dec-05
Location	School
System/Job No.	500282

Calibration Equipment

Calibrator Model	HD9125
ID/Serial No.	TE-137
Stated Accuracy (°C)	0.2

(HD9215 Probe Accuracy = 0.2 °C)

Displayed Instrument Parameters

Initial Data Logger Multiplier	-7.167
Initial Data Logger Offset	106.060

Calibration Results

Calibration Points	Calibrator Temperature Reading	Data Logger Temperature Reading	Difference
1	21	20.911	0.1
2	21.1	20.896	0.2
3	21.1	20.877	0.2
4	21.2	20.944	0.3
5	21.2	21.017	0.2
6	21.3	21.084	0.2
7	21.3	21.217	0.1
8	21.4	21.28	0.1
9	21.4	21.309	0.1
10	21.5	21.379	0.1
		Average (<2 °C)	**0.1586**
		Std. Dev (<0.1 °C)	**0.065**

Note: Do not fill in shaded cells

PASS/FAIL	PASS

Note: Change Multiplier/Offset only if average difference is less than stated calibration probe accuracy

Final Data Logger Multiplier	-7.167
Final Data Logger Offset	106.060

Technicians Signature	Date

Quality Management System

Calibration Report

Ref: Ambient Temp. Calibration.xls Revision 1.1

Date: 21/1/02 Location S:\ecotech\iso\forms\calibrep\current\temp\

Temperature Probe Calibration

Customer	ERM
Instrument	Temp Sensor (2 MTR)
Model	MetOne (Type 062MP)
ID No.	05-0167 (mp D6804 2 of 2)

Calibration Performed by	AD/PS
Date	30-Dec-05
Location	School
System/Job No.	500282

Calibration Equipment

Calibrator Model	HD9125
ID/Serial No.	TE-137
Stated Accuracy (°C)	0.2

(HD9215 Probe Accuracy = 0.2 °C)

Displayed Instrument Parameters

Initial Data Logger Multiplier	-7.167
Initial Data Logger Offset	106.060

Calibration Results

Calibration Points	Calibrator Temperature Reading	Data Logger Temperature Reading	Difference
1	17.7	18.755	-1.1
2	17.7	18.796	-1.1
3	17.8	18.658	-0.9
4	18	18.974	-1.0
5	18.2	19.148	-0.9
6	18.2	19.311	-1.1
7	18.3	19.47	-1.2
8	18.4	19.601	-1.2
9	18.4	19.711	-1.3
10	18.4	19.81	-1.4
		Average (<2 ºC)	**-1.1134**
		Std. Dev (<0.1 ºC)	**0.168**

Note: Do not fill in shaded cells

PASS/FAIL	FAIL

Note: Change Multiplier/Offset only if average difference is less than stated calibration probe accuracy

Final Data Logger Multiplier	
Final Data Logger Offset	

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Ambient Temp. Calibration.xls Revision 1.1

Date: 21/1/02 Location S:\ecotech\iso\forms\calibrep\current\temp\

Temperature Probe Calibration

Customer	ERM
Instrument	Temp Sensor (10 MTR)
Model	MetOne (Type 062MP)
ID No.	05-0166 (mp D6804 1 of 2)

Calibration Performed by	AD/PS
Date	30-Dec-05
Location	School
System/Job No.	500282

Calibration Equipment

Calibrator Model	HD9125
ID/Serial No.	TE-137
Stated Accuracy (°C)	0.2

(HD9215 Probe Accuracy = 0.2 °C)

Displayed Instrument Parameters

Initial Data Logger Multiplier	-7.166
Initial Data Logger Offset	106.040

Calibration Results

Calibration Points	Calibrator Temperature Reading	Data Logger Temperature Reading	Difference
1	17.7	18.006	-0.3
2	17.7	18.045	-0.3
3	17.8	17.952	-0.2
4	18	18.053	-0.1
5	18.2	18.217	0.0
6	18.2	18.309	-0.1
7	18.3	18.402	-0.1
8	18.4	18.407	0.0
9	18.4	18.562	-0.2
10	18.4	18.615	-0.2
		Average (<2 °C)	**-0.1468**
		Std. Dev (<0.1 °C)	**0.115**

Note: Do not fill in shaded cells

PASS/FAIL	FAIL

Note: Change Multiplier/Offset only if average difference is less than stated calibration probe accuracy

Final Data Logger Multiplier	-7.166
Final Data Logger Offset	106.040

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Ambient Temp. Calibration.xls Revision 1.1

Date: 21/1/02 Location S:\ecotech\iso\forms\calibrep\current\temp\

Temperature Probe Calibration

Customer	ERM
Instrument	Temp Sensor (10 MTR)
Model	MetOne (Type 062MP)
ID No.	05-0166 (mp D6804 1 of 2)

Calibration Performed by	AD/PS
Date	30-Dec-05
Location	School
System/Job No.	500282

Calibration Equipment

Calibrator Model	HD9125
ID/Serial No.	TE-137
Stated Accuracy (°C)	0.2

(HD9215 Probe Accuracy = 0.2 °C)

Displayed Instrument Parameters

Initial Data Logger Multiplier	-7.166
Initial Data Logger Offset	106.040

Calibration Results

Calibration Points	Calibrator Temperature Reading	Data Logger Temperature Reading	Difference
1	21	21.226	-0.2
2	21.1	21.206	-0.1
3	21.1	21.181	-0.1
4	21.2	21.19	0.0
5	21.2	21.248	0.0
6	21.3	21.33	0.0
7	21.3	21.405	-0.1
8	21.4	21.452	-0.1
9	21.4	21.499	-0.1
10	21.5	21.596	-0.1
		Average (<2 °C)	**-0.0833**
		Std. Dev (<0.1 °C)	**0.063**

Note: Do not fill in shaded cells

PASS/FAIL	PASS

Note: Change Multiplier/Offset only if average difference is less than stated calibration probe accuracy

Final Data Logger Multiplier	-7.166
Final Data Logger Offset	106.040

Technicians Signature	Date

Quality Management System

Calibration Report

Ref: Ultrasonic WSWD Check.xls Revision 1.3

Date: 02/08/02 Location S:\ecotech\iso\forms\calibrep\current\

Ultrasonic WS/WD Onsite Check

Customer	ERM	**Calibration Performed by**	AD/RG
Instrument	Ultrasonic wind sensor	**Date**	5-Jan-06
Model	50.5	**Location**	Background
ID No.	00-0404	**System/Job No.**	500283

6 Monthly wind sensor check

Original logger zero offset	**-0.147**	**Original logger span**	**2.1**

Magnetic alignment before lowering mast	
Looking North / South / East / West (circle)	359 deg

Mast down (time)	13:35 pm (circle)

Wind sensor array check	**Wind speed**	**Wind direction**	
	Logger (m/s)	**Logger (deg)**	**Expected (deg)**
Cover North / South array	48.5	180	180
Cover East / West array	48.6	90	90

wind direction reading shall be within+-8°, wind speed shall be within +-2.5m/s

Zero check (wind sensor covered)	
Reading from logger (m/s)	1.4 m/s*
Adjusted zero (if applicable)	n/a
Updated zero offset (if applicable)	**n/a**

*If greater than 0.22 m/s adjust logger offset

Mast up (time)	16:15 pm (circle)

Magnetic alignment after raising mast (if applicable)	
Looking North / South / East / West (circle)	358.5 deg

Solar noon alignment after raising mast (if applicable)			
Calculated time for solar noon	**14:00 pm**	**Alignment correct? (+-4deg)**	**YES**

Sensor ID transfer status (if applicable)			
In		**Out**	

Technicians Signature		**Date**	

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Post Flow & Leak Check following Software Calibration

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	02-0242

Calibration Performed by	Ashley Drummond
Date	5/01/2006
Location	Background
System/Job No.	500283

Test Equipment

Flow Calibrator	TE-40
Temperature Probe/DVM	n/a

Digital Barometer	n/a

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.05	0.04	**PASS**
Auxiliary Flow (L/min)	-0.02	-0.06	
% Filter loading with audit adaptor closed	165%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	3.00	**PASS**
Auxiliary	13.67	13.67	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	16.85	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	3.02	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **N**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
FAIL

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (℃)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1℃ between -25 to 105℃

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.000	**atm (R509)**
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Swap in Software, Flow & Leak as part on the Annual

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	02-0242

Calibration Performed by	Ashley Drummond
Date	5/01/2006
Location	Background
System/Job No.	500283

Test Equipment

Flow Calibrator	TE-40
Temperature Probe/DVM	TE137

Digital Barometer	TE-149

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.06	0.05	**PASS**
Auxiliary Flow (L/min)	0.03	-0.02	
% Filter loading with audit adaptor closed	165%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	3.00	**PASS**
Auxiliary	13.67	13.67	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	17.81	(16.67 +-1.0 L/min)	**FAIL**
Main flow (cap flow splitter)	3.20	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **Y**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	33.4
P-A/S setting (left column) atm	9	0.971

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow	1.000	0.960	3.157	3.006
Auxiliary Flow	1.000	0.955	14.390	13.690

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
PASS

Ambient Temperature and Pressure Check- 12 monthly

Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.971	**atm (R509)**
Ambient Pressure		984	0.971		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
0.11455	342.27822	243.24087	13693	13768	0.54%	**PASS**

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Swap out Flow & Leak check only. No annual completed on this Teom

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0248

Calibration Performed by	Ashley Drummond
Date	5/01/2006
Location	Background
System/Job No.	500283

Test Equipment

Flow Calibrator	TE-40
Temperature Probe/DVM	n/a

Digital Barometer	n/a

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.16	0.15	**PASS**
Auxiliary Flow (L/min)	0.17	0.14	
% Filter loading with audit adaptor closed	173%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	2.99	**PASS**
Auxiliary	13.67	13.63	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	15.66	(16.67 +-1.0 L/min)	**FAIL**
Main flow (cap flow splitter)	2.85	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **N**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
FAIL

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (℃)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1℃ between -25 to 105℃

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.000	**atm (R509)**
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Ambient Temp. Calibration.xls Revision 1.1

Date: 21/1/02 Location S:\ecotech\iso\forms\calibrep\current\temp\

Temperature Probe Calibration

Customer	ERM
Instrument	Temp Sensor (2 MTR)
Model	MetOne (Type 062MP)
ID No.	05-0169 (mp D5865 2 of 2)

Calibration Performed by	AD/RG
Date	5-Jan-06
Location	Background
System/Job No.	500283

Calibration Equipment

Calibrator Model	HD9125
ID/Serial No.	TE-137
Stated Accuracy (°C)	0.2

(HD9215 Probe Accuracy = 0.2 °C)

Displayed Instrument Parameters

Initial Data Logger Multiplier	-7.150
Initial Data Logger Offset	105.930

Calibration Results

Calibration Points	Calibrator Temperature Reading	Data Logger Temperature Reading	Difference
1	3.2	3.1	0.1
2	3.1	3	0.1
3	3.2	3	0.2
4	3.2	3.1	0.1
5	32.1	31.8	0.3
6	32	31.7	0.3
7	32	31.7	0.3
8	32	31.7	0.3
9	32	31.7	0.3
10	31.9	31.7	0.2
		Average (<2 ºC)	**0.22**
		Std. Dev (<0.1 ºC)	**0.092**

Note: Do not fill in shaded cells

PASS/FAIL	PASS

Note: Change Multiplier/Offset only if average difference is less than stated calibration probe accuracy

Final Data Logger Multiplier	-7.150
Final Data Logger Offset	105.500

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Ambient Temp. Calibration.xls Revision 1.1

Date: 21/1/02 Location S:\ecotech\iso\forms\calibrep\current\temp\

Temperature Probe Calibration

Customer	ERM
Instrument	Temp Sensor (2 MTR)
Model	MetOne (Type 062MP)
ID No.	05-0169 (mp D5865 2 of 2)

Calibration Performed by	AD/RG
Date	5-Jan-06
Location	Background
System/Job No.	500283

Calibration Equipment

Calibrator Model	HD9125
ID/Serial No.	TE-137
Stated Accuracy (°C)	0.2

(HD9215 Probe Accuracy = 0.2 °C)

Displayed Instrument Parameters

Initial Data Logger Multiplier	-7.150
Initial Data Logger Offset	105.930

Calibration Results

Calibration Points	Calibrator Temperature Reading	Data Logger Temperature Reading	Difference
1	1.2	0	1.2
2	1.1	-0.1	1.2
3	1	-0.4	1.4
4	1	-0.1	1.1
5	39.3	38.3	1.0
6	39.2	38.3	0.9
7	39.1	38.1	1.0
8	38.9	37.6	1.3
9	38.8	37.7	1.1
10	38.7	37.6	1.1
		Average (<2 ºC)	**1.13**
		Std. Dev (<0.1 ºC)	**0.149**

Note: Do not fill in shaded cells

PASS/FAIL	FAIL

Note: Change Multiplier/Offset only if average difference is less than stated calibration probe accuracy

Final Data Logger Multiplier	-7.150
Final Data Logger Offset	105.930

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Ambient Temp. Calibration.xls Revision 1.1

Date: 21/1/02 Location S:\ecotech\iso\forms\calibrep\current\temp\

Temperature Probe Calibration

Customer	ERM
Instrument	Temp Sensor (10 MTR)
Model	MetOne (Type 062MP)
ID No.	05-0168 (mp D5865 1 of 2)

Calibration Performed by	AD/RG
Date	5-Jan-06
Location	Background
System/Job No.	500283

Calibration Equipment

Calibrator Model	HD9125
ID/Serial No.	TE-137
Stated Accuracy (°C)	0.2

(HD9215 Probe Accuracy = 0.2 °C)

Displayed Instrument Parameters

Initial Data Logger Multiplier	-7.146
Initial Data Logger Offset	105.930

Calibration Results

Calibration Points	Calibrator Temperature Reading	Data Logger Temperature Reading	Difference
1	1	0.9	0.1
2	1	0.9	0.1
3	0.9	0.6	0.3
4	0.9	0.7	0.2
5	0.9	0.7	0.2
6	38.4	38.7	-0.3
7	38.5	38.8	-0.3
8	38.3	38.5	-0.2
9	38.2	38.5	-0.3
10	38.6	38.8	-0.2
		Average (<2 ºC)	**-0.04**
		Std. Dev (<0.1 ºC)	**0.241**

Note: Do not fill in shaded cells

PASS/FAIL	FAIL

Note: Change Multiplier/Offset only if average difference is less than stated calibration probe accuracy

Final Data Logger Multiplier	-7.146
Final Data Logger Offset	105.930

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Amplifier Board Tuning Calibration Report.xls Revision 1.0

Date: 11/01/02 Location S:\ecotech\iso\forms\calibrep\working\

Teom Amplifier Board Tuning Calibration

Installation Calibration
Amplifier Tuning completed in Workshop!

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	98-0420 CU & 04-1145 Sensor

Calibration Performed by	Ashley Drummond
Date	3/02/2006
Location	Workshop
System/Job No.	500281

Calibration Equipment

Calibrator Model	FLUKE 91
ID/Serial No.	TE-006

Calibrator Model	N/A
ID/Serial No.	N/A

Note: A multimeter with RMS capabilities can be substituted for the Oscilloscope.

Procedure

		Results (repeat until it passes)		
		1	**2**	**3**
1	**Ensure that a TEOM filter is installed in the mass transducer**	OK	OK	
2	**Power up the instrument. The unit should be at approximately operating temperature before tuning.**	OK	OK	
3	**Place the multimeter on TP0 (green) and GND (black). A signal of approximately -4.2 VDC should be present. There is no adjustment.**	-4.32	-4.3	
4	**Place oscilloscope on TP0 (green) and GND (black). A smooth sine wave of approximately 0.5 V peak-to-peak (0.2 Vrms) should be present. If not, adjust R3 until the wave amplitude is correct.**	0.5	0.5	
5	**Place oscilloscope on TP1 (red) and GND (black). A sine wave of approximately 9 V peak-to-peak (3 Vrms) should be present. There is no adjustment.**	8.5	8.5	
6	**Place the oscilloscope probe on TP2 (orange) and GND (black). A sine wave of approximately 20 V peak-to-peak (7 Vrms) should be present. If not, adjust R6 until the wave amplitude is correct.**	20.3	20	
7	**Place oscilloscope probe on TP3 (yellow) and GND (black). A sine wave of 0.6 to 1.5 V peak-to-peak (0.2 to 0.8 Vrms) should be present. There is no adjustment.**	0.71	0.74	
8	**Place the multimeter on TP4 (blue) and GND (black). A -1.0 +-0.1 VDC signal should be present. If not, adjust R29 until the signal is correct.**	-0.986	-1.002	
9	**Place the oscilloscope probe on TP5 (white) and GND (black). A 16 V peak-to-peak square wave (8 Vrms) should be present.**	15.2	15	
10	**Repeat the above procedure until the test points are within the specified values without further adjustment.**			
	PASS/FAIL	PASS	PASS	FAIL

Note: Do not fill in shaded cells

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Analog Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Analog Calibration Data

Installation Calibration
Analogue Cal complted in Workshop!

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	98-0420 CU & 04-1145 Sensor

Calibration Performed by	Ashley Drummond
Date	3/02/2006
Location	Workshop
System/Job No.	500281

Test Equipment

Analyser I.D	98-0420 CU & 04-1145 Sensor
Multimeter I.D	TE-189

Displayed Instrument Parameters

Analog OUTPUT

Disconnect ribbon cables P2,P3 & P4. Adjust A/O in Analog Calibration screen to 90%. Place +ve multimeter lead onto appropriate white output channel test point and -ve to ground test point

Analog OUTPUT channel	**0**	**1**	**2**	**3**	**4**	**5**
Measured Voltage	9	9	9	9	9	8.99
Adjusted (9.000V +-0.01)	9	9	9	9	9	9

Analog OUTPUT definitions

Channel Number	**Description**
D/A 0	Main Flow Control
D/A 1	User output 1
D/A 2	User output 2
D/A 3	Bypass flow control
D/A 4	User output 3
D/A 5	Spare

Analog INPUT

Adjust A/1 for appropriate channel to 90% in Analog Calibration screen. Place jumper from 0 test point of analog output to red 0 test point of analog inputs. Place +ve multimeter lead onto appropriate white output test point, -ve to ground test point

Analog INPUT channel	**0**	**1**	**2**	**3**	**4**	**5**
Measured Voltage	9.002	9.002	9.002	9.002	9.003	8.998
Adjusted (9.00V +-0.01)	9	9	9	9	9	9

Analog INPUT channel	**6**	**7**	**8**	**9**	**10**	**11**
Measured Voltage	9	9.003	Do not	9.002	Spare	Spare
Adjusted (9.00V +-0.01)	9	9	adjust	9	Channel	Channel

Analog INPUT definitions

Channel Number	**Description**
A/D 0	Main Flow Control
A/D 1	Case Thermistor
A/D 2	Air thermistor
A/D 3	Cap Thermistor
A/D 4	User Input
A/D 5	Line Voltage Monitor
A/D 6	Filter Loading
A/D 7	Bypass flow control
A/D 8	**Ambient temperature (Adjustment to this channel WILL change temp. output)**
A/D 9	Barometric Pressure
A/D 10 - 15	Spare

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Installation Calibration

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	98-0420 CU & 04-1145 Sensor

Calibration Performed by	Ashley Drummond
Date	3/02/2006
Location	Boundary
System/Job No.	500281

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**22**	**35**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	39	%
All Temps. 50.00 °C?	YES	YES / NO
MAIN flow	2.99	l/min
AUX flow	13.66	l/min
Noise	0.052	
Replaced TEOM filter?	YES	YES / NO
Cleaned Inlet Head?	YES	YES / NO
Replaced Inlet Head? Y/N	In=	In=
	Out=	Out=
New Filter Loading	16	%
Inspected in-line filter?	YES	YES / NO
Replaced in-line filters?	NO	YES / NO

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Installation Calibration
Hardware calibration completed in workshop!
Leak check was final post software

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	98-0420 CU & 04-1145 Sensor

Calibration Performed by	Ashley Drummond
Date	3/02/2006
Location	Workshop/Boundary
System/Job No.	500281

Test Equipment

Flow Calibrator	TE-40
Temperature Probe/DVM	TE-136

Digital Barometer	TE-196

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.19	0.18	**PASS**
Auxiliary Flow (L/min)	0.08	0.08	
% Filter loading with audit adaptor closed	180%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	3.00	**PASS**
Auxiliary	13.67	13.60	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	16.50	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	2.94	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **Y**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	36.7
P-A/S setting (left column) atm	9	1.001

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow	0.991	0.995	3.048	3.010
Auxiliary Flow	1.002	0.952	14.420	13.670

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
PASS

Ambient Temperature and Pressure Check- 12 monthly

Relevant? Y/N	Y

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)	36.5	36.1	-0.40	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	-0.003	**atm (R509)**
Ambient Pressure	1.004	1014	1.001		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	28.7
P-A/S setting (left column) atm	9	1.001

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**	0.4124	**Adjust R101 (0.5 +- 0.03 L/min)**	0.5078	**PASS**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**	4.3500	**Adjust R105 (4.5 +- 0.03 L/min)**	4.492	**PASS**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)				2.986	**PASS**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**	1.612	**Adjust R201 (2.0 +- 0.2 L/min)**	2.033	**PASS**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**	18.070	**Adjust R205 (18.0 +- 0.2 L/min)**	17.98	**PASS**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)				13.49	**PASS**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
0.11171	339.25573	242.5363	13441	13521	0.59%	**PASS**

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Post Swap in check

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	97-0151 CU & 04-1145 Sensor

Calibration Performed by	Ashley Drummond
Date	10/02/2006
Location	Boundary
System/Job No.	500281

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**20**	**35**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	18	%
All Temps. 50.00 °C?	YES	YES / NO
MAIN flow	2.99	l/min
AUX flow	13.64	l/min
Noise	0.091	
Replaced TEOM filter?	NO	YES / NO
Cleaned Inlet Head?	NO	YES / NO
Replaced Inlet Head? Y/N	In=	In=
	Out=	Out=
New Filter Loading	n/a	%
Inspected in-line filter?	NO	YES / NO
Replaced in-line filters?	NO	YES / NO

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Pre Swap out check

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	98-0420 CU & 04-1145 Sensor

Calibration Performed by	Ashley Drummond
Date	10/02/2006
Location	Boundary
System/Job No.	500281

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**20**	**35**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	17	%
All Temps. 50.00 °C?	YES	YES / NO
MAIN flow	3	l/min
AUX flow	13.65	l/min
Noise	0.06	
Replaced TEOM filter?	NO	YES / NO
Cleaned Inlet Head?	NO	YES / NO
Replaced Inlet Head? Y/N	In=	In=
	Out=	Out=
New Filter Loading	N/A	%
Inspected in-line filter?	NO	YES / NO
Replaced in-line filters?	NO	YES / NO

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Swap in Software, Flow Audit & Leak Check post install

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	97-0151 CU & 04-1145 Sensor

Calibration Performed by	Ashley Drummond
Date	10/02/2006
Location	Boundary
System/Job No.	500281

Test Equipment

Flow Calibrator	TE-40
Temperature Probe/DVM	TE-137

Digital Barometer	TE-196

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.02	0.10	**PASS**
Auxiliary Flow (L/min)	0.02	0.08	
% Filter loading with audit adaptor closed	179%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	2.99	**PASS**
Auxiliary	13.67	13.63	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	16.72	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	3.01	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **Y**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	38.1
P-A/S setting (left column) atm	9	1

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow	0.950	0.965	2.965	2.996
Auxiliary Flow	0.980	0.995	13.500	13.670

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
PASS

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (℃)	38.5	38.3	-0.20	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1℃ between -25 to 105℃

	Displayed	Measured		Potentiometer for adj.	
	Atm.	mBar	Atm	0.000	atm (R509)
Ambient Pressure	1	1013	1.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Swap out flow Audit & Leak check!

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	98-0420 CU & 04-1145 Sensor

Calibration Performed by	Ashley Drummond
Date	10/02/2006
Location	Boundary
System/Job No.	500281

Test Equipment

Flow Calibrator	TE-40
Temperature Probe/DVM	n/a

Digital Barometer	n/a

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.33	0.30	**PASS**
Auxiliary Flow (L/min)	0.09	0.08	
% Filter loading with audit adaptor closed	182%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	2.99	**PASS**
Auxiliary	13.67	13.64	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	16.02	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	2.76	(1.00 or 3.00 +- 0.2 L/min)	**FAIL**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly

Relevant? Y/N	N

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
FAIL

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (℃)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1℃ between -25 to 105℃

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.000	**atm (R509)**
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM/DOE
Instrument	TEOM
Model	1400ab
ID No.	02-0242

Calibration Performed by	Ruben Greeff
Date	15/02/06
Location	Background
System/Job No.	500283

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**23**	**32**

Inlet Head -Type	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	30%	%
All Temps. 50.00 °C?	YES	YES / NO
MAIN flow	3	l/min
AUX flow	13.67	l/min
Noise	0.044	
Replaced TEOM filter?	YES	YES / NO
Cleaned Inlet Head?	YES	YES / NO
Replaced Inlet Head? Y/N	In=	In=
	Out=	Out=
New Filter Loading	15%	%
Inspected in-line filter?	YES	YES / NO
Replaced in-line filters?	No	YES / NO

Clean cabinet filter element	YES

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM/DOE
Instrument	TEOM
Model	1400ab
ID No.	98-0464

Calibration Performed by	Ruben Greeff
Date	15/02/06
Location	DOE2 school
System/Job No.	500282

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**20**	**24**

Inlet Head -Type	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	39%	%
All Temps. 50.00 °C?	YES	YES / NO
MAIN flow	3.01	l/min
AUX flow	13.64	l/min
Noise	0.036	
Replaced TEOM filter?	YES	YES / NO
Cleaned Inlet Head?	YES	YES / NO
Replaced Inlet Head? Y/N	In=	In=
	Out=	Out=
New Filter Loading	20	%
Inspected in-line filter?	YES	YES / NO
Replaced in-line filters?	No	YES / NO

Clean cabinet filter element	YES

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Ultrasonic WSWD Check.xls Revision 1.3

Date: 02/08/02 Location S:\ecotech\iso\forms\calibrep\current\

Ultrasonic WS/WD Onsite Check

Customer	ERM	**Calibration Performed by**	AD/SN
Instrument	Ultrasonic wind sensor	**Date**	21-Feb-06
Model	50.5	**Location**	Boundary
ID No.	00-0597	**System/Job No.**	500281

6 Monthly wind sensor check

Original logger zero offset	**0**	**Original logger span**	**1**

Magnetic alignment before lowering mast	
Looking North / South / East / West (circle)	358.5 deg

Mast down (time)	10:50 am / pm (circle)

Wind sensor array check	**Wind speed**	**Wind direction**	
	Logger (m/s)	**Logger (deg)**	**Expected (deg)**
Cover North / South array	48.25	166.8	180
Cover East / West array	48.269	83.477	90

wind direction reading shall be within+-8°, wind speed shall be within +-2.5m/s

Zero check (wind sensor covered)	
Reading from logger (m/s)	0.06 m/s*
Adjusted zero (if applicable)	n/a
Updated zero offset (if applicable)	**n/a**

*If greater than 0.22 m/s adjust logger offset

Mast up (time)	13:15 am / pm (circle)

Magnetic alignment after raising mast (if applicable)	
Looking North / South / East / West (circle)	358.5 deg

Solar noon alignment after raising mast (if applicable)			
Calculated time for solar noon		**Alignment correct? (+-4deg)**	**YES**

Sensor ID transfer status (if applicable)			
In		**Out**	

Technicians Signature		**Date**	

ECOTECH

Quality Management System

Calibration Report

Ref: Ambient Temp. Calibration.xls Revision 1.1

Date: 21/1/02 Location S:\ecotech\iso\forms\calibrep\current\temp\

Temperature Probe Calibration

Customer	ERM
Instrument	Temp Sensor (2 MTR)
Model	MetOne (Type 062MP)
ID No.	05-0171 (mp D5864 2 of 2)

Calibration Performed by	AD/SN
Date	21-Feb-06
Location	Boundary
System/Job No.	500281

Calibration Equipment

Calibrator Model	HD9125
ID/Serial No.	TE-137
Stated Accuracy (°C)	0.2

(HD9215 Probe Accuracy = 0.2 °C)

Displayed Instrument Parameters

Initial Data Logger Multiplier	-7.340
Initial Data Logger Offset	117.960

Calibration Results

Calibration Points	Calibrator Temperature Reading	Data Logger Temperature Reading	Difference
1	33.657	33	0.7
2	33.639	33	0.6
3	33.649	33	0.6
4	33.669	33	0.7
5	33.619	33	0.6
6	34.012	33.1	0.9
7	33.719	33.1	0.6
8	33.669	33.1	0.6
9	33.712	33.1	0.6
10	33.699	33.1	0.6
		Average (<2 ºC)	**0.6544**
		Std. Dev (<0.1 ºC)	**0.095**

Note: Do not fill in shaded cells

PASS/FAIL	PASS

Note: Change Multiplier/Offset only if average difference is less than stated calibration probe accuracy

Final Data Logger Multiplier	-7.340
Final Data Logger Offset	117.960

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Ambient Temp. Calibration.xls Revision 1.1

Date: 21/1/02 Location S:\ecotech\iso\forms\calibrep\current\temp\

Temperature Probe Calibration

Customer	ERM
Instrument	Temp Sensor (2 MTR)
Model	MetOne (Type 062MP)
ID No.	05-0171 (mp D5864 2 of 2)

Calibration Performed by	AD/SN
Date	21-Feb-06
Location	Boundary
System/Job No.	500281

Calibration Equipment

Calibrator Model	HD9125
ID/Serial No.	TE-137
Stated Accuracy (°C)	0.2

(HD9215 Probe Accuracy = 0.2 °C)

Displayed Instrument Parameters

Initial Data Logger Multiplier	-7.340
Initial Data Logger Offset	117.960

Calibration Results

Calibration Points	Calibrator Temperature Reading	Data Logger Temperature Reading	Difference
1	0.692	0.3	0.4
2	0.675	0.3	0.4
3	0.746	0.3	0.4
4	0.712	0.4	0.3
5	0.685	0.4	0.3
6	0.723	0.3	0.4
7	0.695	0.3	0.4
8	0.632	0.3	0.3
9	0.654	0.3	0.4
10	0.623	0.3	0.3
		Average (<2 ºC)	**0.3637**
		Std. Dev (<0.1 ºC)	**0.051**

Note: Do not fill in shaded cells

PASS/FAIL	PASS

Note: Change Multiplier/Offset only if average difference is less than stated calibration probe accuracy

Final Data Logger Multiplier	-7.340
Final Data Logger Offset	117.960

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Ambient Temp. Calibration.xls Revision 1.1

Date: 21/1/02 Location S:\ecotech\iso\forms\calibrep\current\temp\

Temperature Probe Calibration

Customer	ERM
Instrument	Temp Sensor (10 MTR)
Model	MetOne (Type 062MP)
ID No.	05-0170 (mp D5864 1 of 2)

Calibration Performed by	AD/SN
Date	21-Feb-06
Location	Boundary
System/Job No.	500281

Calibration Equipment

Calibrator Model	HD9125
ID/Serial No.	TE-137
Stated Accuracy (°C)	0.2

(HD9215 Probe Accuracy = 0.2 °C)

Displayed Instrument Parameters

Initial Data Logger Multiplier	-7.339
Initial Data Logger Offset	117.920

Calibration Results

Calibration Points	Calibrator Temperature Reading	Data Logger Temperature Reading	Difference
1	31.858	33	-1.1
2	31.863	33	-1.1
3	31.876	33	-1.1
4	31.898	33	-1.1
5	31.849	33	-1.2
6	32.243	33.1	-0.9
7	31.978	33.1	-1.1
8	31.946	33.1	-1.2
9	31.941	33.1	-1.2
10	31.943	33.1	-1.2
		Average (<2 ºC)	**-1.1105**
		Std. Dev (<0.1 ºC)	**0.091**

Note: Do not fill in shaded cells

PASS/FAIL	PASS

Note: Change Multiplier/Offset only if average difference is less than stated calibration probe accuracy

Final Data Logger Multiplier	-7.339
Final Data Logger Offset	117.920

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Ambient Temp. Calibration.xls Revision 1.1

Date: 21/1/02 Location S:\ecotech\iso\forms\calibrep\current\temp\

Temperature Probe Calibration

Customer	ERM
Instrument	Temp Sensor (10 MTR)
Model	MetOne (Type 062MP)
ID No.	05-0170 (mp D5864 1 of 2)

Calibration Performed by	AD/SN
Date	21-Feb-06
Location	Boundary
System/Job No.	500281

Calibration Equipment

Calibrator Model	HD9125
ID/Serial No.	TE-137
Stated Accuracy (°C)	0.2

(HD9215 Probe Accuracy = 0.2 °C)

Displayed Instrument Parameters

Initial Data Logger Multiplier	-7.339
Initial Data Logger Offset	117.920

Calibration Results

Calibration Points	Calibrator Temperature Reading	Data Logger Temperature Reading	Difference
1	-1.511	0.3	-1.8
2	-1.497	0.3	-1.8
3	-1.468	0.3	-1.8
4	-1.465	0.4	-1.9
5	-1.452	0.4	-1.9
6	-1.482	0.3	-1.8
7	-1.487	0.3	-1.8
8	-1.51	0.3	-1.8
9	-1.479	0.3	-1.8
10	-1.522	0.3	-1.8
		Average (<2 ºC)	**-1.8073**
		Std. Dev (<0.1 ºC)	**0.032**

Note: Do not fill in shaded cells

PASS/FAIL	PASS

Note: Change Multiplier/Offset only if average difference is less than stated calibration probe accuracy

Final Data Logger Multiplier	-7.340
Final Data Logger Offset	117.960

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0242

Calibration Performed by	AD/RG
Date	28/02/2006
Location	Background
System/Job No.	500283

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**23**	**29**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	17%	
All Temps. 50.00 °C?	YES	
MAIN flow	3	
AUX flow	13.67	
Noise	0.053	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In= NO	
	Out= NO	
New Filter Loading	14%	
Inspected in-line filter?	YES	
Replaced in-line filters?	NO	

Clean cabinet filter element	YES

Technicians Signature	Date

Quality Management System
Calibration Report
Ref: Teom Filter Change Proforma.xls Revision 1.0
Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	98-0420 CU & 04-1145 Sensor

Calibration Performed by	AD/RG
Date	28/02/2006
Location	Boundary
System/Job No.	500281

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**20**	**40**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	28	%
All Temps. 50.00 °C?	YES	YES / NO
MAIN flow	3	l/min
AUX flow	13.64	l/min
Noise	0.084	
Replaced TEOM filter?	YES	YES / NO
Cleaned Inlet Head?	YES	YES / NO
Replaced Inlet Head? Y/N	In=	In=
	Out=	Out=
New Filter Loading	13	%
Inspected in-line filter?	YES	YES / NO
Replaced in-line filters?	NO	YES / NO

Clean cabinet filter element	Yes

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0464

Calibration Performed by	AD/RG
Date	28/02/2006
Location	School
System/Job No.	500282

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**20**	**28**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	30%	
All Temps. 50.00 °C?	YES	
MAIN flow	2.98	
AUX flow	13.66	
Noise	0.024	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In= N/A	
	Out= N/A	
New Filter Loading	17%	
Inspected in-line filter?	YES	
Replaced in-line filters?	NO	

Clean cabinet filter element	YES

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Pre Swap out check of Control unit only

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	97-0151 CU & 04-1145 Sensor

Calibration Performed by	Ashley Drummond
Date	16/03/2006
Location	Boundary
System/Job No.	500281

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**20**	**36**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	22	%
All Temps. 50.00 °C?	YES	YES / NO
MAIN flow	2.91	l/min
AUX flow	13.65	l/min
Noise	0.038	
Replaced TEOM filter?	NO	YES / NO
Cleaned Inlet Head?	NO	YES / NO
Replaced Inlet Head? Y/N	In=	In=
	Out=	Out=
New Filter Loading	N/A	%
Inspected in-line filter?	NO	YES / NO
Replaced in-line filters?	NO	YES / NO

Clean cabinet filter element	NO

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Flow & Leak Chk following install & Software Calibration

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	04-1145

Calibration Performed by	Ashley Drummond
Date	16/03/2006
Location	Boundary
System/Job No.	500281

Test Equipment

Flow Calibrator	TE-40
Temperature Probe/DVM	n/a

Digital Barometer	n/a

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.24	0.23	**PASS**
Auxiliary Flow (L/min)	-0.09	0.02	
% Filter loading with audit adaptor closed	181%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	3.00	**PASS**
Auxiliary	13.67	13.63	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	16.69	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	2.97	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **N**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
FAIL

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.996	**atm (R509)**
Ambient Pressure		1009	0.996		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Swap in Software, Flow Audit & Leak Check post install

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	04-1145

Calibration Performed by	Ashley Drummond
Date	16/03/2006
Location	Boundary
System/Job No.	500281

Test Equipment

Flow Calibrator	TE-40
Temperature Probe/DVM	TE-137

Digital Barometer	TE-168

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.25	0.24	**PASS**
Auxiliary Flow (L/min)	1.16	1.06	
% Filter loading with audit adaptor closed	182%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	3.00	**PASS**
Auxiliary	13.67	13.66	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	14.73	(16.67 +-1.0 L/min)	**FAIL**
Main flow (cap flow splitter)	2.77	(1.00 or 3.00 +- 0.2 L/min)	**FAIL**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **Y**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	33.3
P-A/S setting (left column) atm	9	0.996

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow	0.998	1.060	2.770	2.999
Auxiliary Flow	0.980	1.050	10.650	13.690

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
PASS

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.996	**atm (R509)**
Ambient Pressure		1009	0.996		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Swap out flow Audit & Leak check!
for 97-0151 Teom Control Unit

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	97-0151 CU & 04-1145 Sensor

Calibration Performed by	Ashley Drummond
Date	16/03/2006
Location	Boundary
System/Job No.	500281

Test Equipment

Flow Calibrator	TE-40
Temperature Probe/DVM	n/a

Digital Barometer	n/a

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.02	0.10	**PASS**
Auxiliary Flow (L/min)	0.04	0.08	
% Filter loading with audit adaptor closed	178%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	2.95	**PASS**
Auxiliary	13.67	13.65	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	16.91	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	2.99	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **N**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
FAIL

Ambient Temperature and Pressure Check- 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (℃)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1℃ between -25 to 105℃

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.000	**atm (R509)**
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) ℃	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**FAIL**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**FAIL**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**FAIL**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					#DIV/0!	**#DIV/0!**

Technicians Signature	Date

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400ab - PM10
ID No.	02-0242

Calibration Performed by	Peter Stidwell
Date	3/04/2006
Location	Background
System/Job No.	500282

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**20**	**28**

Inlet Head -Type	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	29	%
All Temps. 50.00 °C?	50	YES / NO
MAIN flow	2.99 l/min	l/min
AUX flow	13.64l/min	l/min
Noise	pre=0.072	
Replaced TEOM filter?	NO	YES / NO
Cleaned Inlet Head?	YES	YES / NO
Replaced Inlet Head? Y/N	n/a	In=
	n/a	Out=
New Filter Loading		%
Inspected in-line filter?	YES	YES / NO
Replaced in-line filters?	NO	YES / NO

Clean cabinet filter element	n/a

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.1

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Customer	ERM
Instrument	TEOMab
Model	1400ab - PM10
ID No.	02-0242

Calibration Performed by	Peter Stidwell
Date	3/04/2006
Location	Background
System/Job No.	500283

Test Equipment

Flow Calibrator	TE-40 & TE-43
Temperature Probe/DVM	02-0242

Digital Barometer	02-0242

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.09	0.08	**PASS**
Auxiliary Flow (L/min)	0.43	0.41	
% Filter loading with audit adaptor closed	157%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	3.00	**PASS**
Auxiliary	13.67	13.66	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	16.41	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	2.90	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **Y**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	25.3
P-A/S setting (left column) atm	9	0.978

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow	0.960	0.960	2.948	2.948
Auxiliary Flow	1.000	0.910	15.150	13.660

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
PASS

Ambient Temperature and Pressure Adjust - 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.000	**atm (R509)**
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**N/A**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**N/A**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**N/A**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**N/A**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**N/A**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**N/A**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					N/A	**N/A**

Technicians Signature	

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.1

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Customer	ERM
Instrument	TEOMab
Model	1400ab - PM10
ID No.	02-0242

Calibration Performed by	Peter Stidwell
Date	3/04/2006
Location	Background
System/Job No.	500283

Test Equipment

Flow Calibrator	TE-40 & TE-43
Temperature Probe/DVM	02-0242

Digital Barometer	02-0242

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.08	0.08	**PASS**
Auxiliary Flow (L/min)	0.65	0.77	
% Filter loading with audit adaptor closed	158%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	3.00	**FAIL**
Auxiliary	13.67	10.60	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	13.24	(16.67 +-1.0 L/min)	**FAIL**
Main flow (cap flow splitter)	3.08	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly

Relevant? Y/N	Y

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	25.3
P-A/S setting (left column) atm	9	0.978

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow	0.960			
Auxiliary Flow	0.955		10.980	

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
FAIL

Ambient Temperature and Pressure Adjust - 12 monthly	Relevant? Y/N	Y

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	mBar	Atm	0.000	atm (R509)
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	25.3
P-A/S setting (left column) atm	9	978

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**N/A**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**N/A**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**N/A**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**	1.662	**Adjust R201 (2.0 +- 0.2 L/min)**	2.002	**PASS**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**	11.790	**Adjust R205 (18.0 +- 0.2 L/min)**	18.04	**PASS**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)				15.04	**FAIL**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					N/A	**N/A**

Technicians Signature	

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400ab - PM10
ID No.	04-1145

Calibration Performed by	Peter Stidwell
Date	3/04/2006
Location	Boundary
System/Job No.	500281

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**20**	**28**

Inlet Head -Type	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	29	%
All Temps. 50.00 °C?	50	YES / NO
MAIN flow	2.99 l/min	l/min
AUX flow	13.64l/min	l/min
Noise	pre=0.072	
Replaced TEOM filter?	NO	YES / NO
Cleaned Inlet Head?	YES	YES / NO
Replaced Inlet Head? Y/N	n/a	In=
	n/a	Out=
New Filter Loading	n/a	%
Inspected in-line filter?	YES	YES / NO
Replaced in-line filters?	NO	YES / NO

Clean cabinet filter element	n/a

Technicians Signature	

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.1

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Customer	ERM
Instrument	TEOM
Model	1400ab - PM10
ID No.	04-1145

Calibration Performed by	Peter Stidwell
Date	3/04/2006
Location	Boundary
System/Job No.	500281

Test Equipment

Flow Calibrator	TE-40 & TE-43
Temperature Probe/DVM	n/a

Digital Barometer	n/a

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.30	0.30	**PASS**
Auxiliary Flow (L/min)	0.37	0.48	
% Filter loading with audit adaptor closed	176%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	3.00	**PASS**
Auxiliary	13.67	13.66	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	17.71	(16.67 +-1.0 L/min)	**FAIL**
Main flow (cap flow splitter)	2.87	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly

Relevant? Y/N	N

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
N/A

Ambient Temperature and Pressure Adjust - 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	0.000	**atm (R509)**
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**N/A**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**N/A**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**N/A**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**N/A**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**N/A**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**N/A**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					N/A	**N/A**

Technicians Signature	

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOMab
Model	1400ab - PM10
ID No.	98-0464

Calibration Performed by	Peter Stidwell
Date	3/04/2006
Location	School
System/Job No.	500282

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**20**	**30**

Inlet Head -Type	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	35%	
All Temps. 50.00 °C?	50.01	
MAIN flow	2.99 l/min	
AUX flow	13.64l/min	
Noise	pre=0.062 post= 0.059	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	n/a	
	n/a	
New Filter Loading	20%	
Inspected in-line filter?	YES	
Replaced in-line filters?	NO	

Clean cabinet filter element	n/a

Technicians Signature	

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.1

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Customer	ERM
Instrument	TEOM
Model	1400ab - PM10
ID No.	98-0464

Calibration Performed by	Peter Stidwell
Date	3/04/2006
Location	School
System/Job No.	500282

Test Equipment

Flow Calibrator	TE-40 & TE-43
Temperature Probe/DVM	n/a

Digital Barometer	n/a

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.06	0.07	**PASS**
Auxiliary Flow (L/min)	0.11	0.11	
% Filter loading with audit adaptor closed	165%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	2.99	**PASS**
Auxiliary	13.67	13.64	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	16.93	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	3.08	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **N**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
N/A

Ambient Temperature and Pressure Adjust - 12 monthly	Relevant? Y/N	Y

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	mBar	Atm	0.000	atm (R509)
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**		**Adjust R101 (0.5 +- 0.03 L/min)**		**N/A**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**		**Adjust R105 (4.5 +- 0.03 L/min)**		**N/A**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**N/A**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**		**Adjust R201 (2.0 +- 0.2 L/min)**		**N/A**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**		**Adjust R205 (18.0 +- 0.2 L/min)**		**N/A**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**N/A**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					N/A	**N/A**

Technicians Signature	

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400ab-PM10
ID No.	02-0242

Calibration Performed by	ST / AD
Date	27/04/2006
Location	Background
System/Job No.	500283

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**22**	**31**

Inlet Head -Type	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	F	OK/ M / T / F / X (circle)
Mode	3	1 / 2 / 3/ 4 (circle)
Filter Loading	23	%
All Temps. 50.00 °C?	YES	YES / NO
MAIN flow	3	l/min
AUX flow	11.58	l/min
Noise	0.062	
Replaced TEOM filter?	NO	YES / NO
Cleaned Inlet Head?	NO	YES / NO
Replaced Inlet Head? Y/N	In=	In=
	Out=	Out=
New Filter Loading	%	%
Inspected in-line filter?	NO	YES / NO
Replaced in-line filters?	NO	YES / NO

Clean cabinet filter element	NO

Technicians Signature	Date

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400ab-PM10
ID No.	04-1145

Calibration Performed by	ST / AD
Date	27/04/2006
Location	Boundary
System/Job No.	500281

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**20**	**27**

Inlet Head -Type	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	39	%
All Temps. 50.00 °C?	YES	YES / NO
MAIN flow	3	l/min
AUX flow	13.67	l/min
Noise	0.072	
Replaced TEOM filter?	YES	YES / NO
Cleaned Inlet Head?	YES	YES / NO
Replaced Inlet Head? Y/N	In=	In=
	Out=	Out=
New Filter Loading	20	%
Inspected in-line filter?	YES	YES / NO
Replaced in-line filters?	NO	YES / NO

Clean cabinet filter element	YES

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400ab-PM10
ID No.	98-0464

Calibration Performed by	ST / AD
Date	27/04/2006
Location	School
System/Job No.	500282

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**20**	**26**

Inlet Head -Type	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	48	%
All Temps. 50.00 °C?	YES	YES / NO
MAIN flow	3	l/min
AUX flow	13.65	l/min
Noise	0.054	
Replaced TEOM filter?	YES	YES / NO
Cleaned Inlet Head?	YES	YES / NO
Replaced Inlet Head? Y/N	In=	In=
	Out=	Out=
New Filter Loading	19	%
Inspected in-line filter?	YES	YES / NO
Replaced in-line filters?	NO	YES / NO

Clean cabinet filter element	YES

Technicians Signature	Date

Quality Management System

Calibration Report

Ref: Teom Analog Calibration Data.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Analog Calibration Data

Customer	ERM
Instrument	TEOM
Model	1400ab - PM10
ID No.	98-0248

Calibration Performed by	Peter Stidwell
Date	1/05/2006
Location	Background
System/Job No.	500283

Test Equipment

Analyser I.D	
Multimeter I.D	TE-76

Displayed Instrument Parameters

Analog OUTPUT

Disconnect ribbon cables P2,P3 & P4. Adjust A/O in Analog Calibration screen to 90%. Place +ve multimeter lead onto appropriate white output channel test point and -ve to ground test point

Analog OUTPUT channel	**0**	**1**	**2**	**3**	**4**	**5**
Measured Voltage	9.011	9.008	9.003	9.01	9.11	9.01
Adjusted (9.000V +-0.01)	8.999	9.001	9	9	9.001	9

Analog OUTPUT definitions

Channel Number	**Description**
D/A 0	Main Flow Control
D/A 1	User output 1
D/A 2	User output 2
D/A 3	Bypass flow control
D/A 4	User output 3
D/A 5	Spare

Analog INPUT

Adjust A/1 for appropriate channel to 90% in Analog Calibration screen. Place jumper from 0 test point of analog output to red 0 test point of analog inputs. Place +ve multimeter lead onto appropriate white output test point, -ve to ground test

Analog INPUT channel	**0**	**1**	**2**	**3**	**4**	**5**
Measured Voltage	8.997	8.997	8.997	8.997	8.998	8.996
Adjusted (9.00V +-0.01)	9.001	9.001	9	90	9	9.001

Analog INPUT channel	**6**	**7**	**8**	**9**	**10**	**11**
Measured Voltage	8.997	8.991	Do not	8.996	Spare	Spare
Adjusted (9.00V +-0.01)	9	9	adjust	9.001	Channel	Channel

Analog INPUT definitions

Channel Number	**Description**
A/D 0	Main Flow Control
A/D 1	Case Thermistor
A/D 2	Air thermistor
A/D 3	Cap Thermistor
A/D 4	User Input
A/D 5	Line Voltage Monitor
A/D 6	Filter Loading
A/D 7	Bypass flow control
A/D 8	**Ambient temperature (Adjustment to this channel WILL change temp. output)**
A/D 9	Barometric Pressure
A/D 10 - 15	Spare

Technicians Signature	Date

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400ab - PM10
ID No.	98-0248

Calibration Performed by	Peter Stidwell
Date	1/05/2006
Location	Background
System/Job No.	500283

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**23**	**30**

Inlet Head -Type	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	25%	
All Temps. 50.00 °C?	Yes	
MAIN flow	2.99	
AUX flow	13.65l/min	
Noise		
Replaced TEOM filter?	Yes	
Cleaned Inlet Head?	Yes	
Replaced Inlet Head? Y/N	n/a	
	n/a	
New Filter Loading	20%	
Inspected in-line filter?	YES	
Replaced in-line filters?	NO	

Clean cabinet filter element	n/a

Technicians Signature	Date

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400ab - PM10
ID No.	02-0242

Calibration Performed by	Peter Stidwell
Date	1/05/2006
Location	Background
System/Job No.	500283

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**22**	**31**

Inlet Head -Type	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	F	
Mode	4	
Filter Loading	25	
All Temps. 50.00 °C?	50	
MAIN flow	3.00 l/min	
AUX flow	10.97l/min	
Noise	0.038	
Replaced TEOM filter?	No	
Cleaned Inlet Head?	No	
Replaced Inlet Head? Y/N	n/a	
	n/a	
New Filter Loading	n/a	
Inspected in-line filter?	No	
Replaced in-line filters?	No	

Clean cabinet filter element	n/a

Technicians Signature	Date

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.1

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Customer	ERM
Instrument	TEOM
Model	1400ab - PM10
ID No.	98-0248

Calibration Performed by	Peter Stidwell
Date	1/05/2006
Location	Background
System/Job No.	500283

Test Equipment

Flow Calibrator	TE-121
Temperature Probe/DVM	TE-137

Digital Barometer	TE-168

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.07	0.07	**PASS**
Auxiliary Flow (L/min)	0.18	0.12	
% Filter loading with audit adaptor closed	164%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	2.99	**PASS**
Auxiliary	13.67	13.65	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	16.43	(16.67 +-1.0 L/min)	**PASS**
Main flow (cap flow splitter)	2.97	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly | **Relevant? Y/N** | **Y**

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	24
P-A/S setting (left column) atm	9	0.979

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow	1.000	1.020	2.962	3.002
Auxiliary Flow	1.000	0.995	13.730	13.670

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
PASS

Ambient Temperature and Pressure Adjust - 12 monthly	Relevant? Y/N	Y

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)	29.4	31	1.60	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	**mBar**	**Atm**	-0.977	**atm (R509)**
Ambient Pressure	0.978	0.979	0.001		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	25
P-A/S setting (left column) atm	9	0.979

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**	0.5674	**Adjust R101 (0.5 +- 0.03 L/min)**	0.5005	**PASS**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**	4.7800	**Adjust R105 (4.5 +- 0.03 L/min)**	4.499	**PASS**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)				2.977	**PASS**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**	2.177	**Adjust R201 (2.0 +- 0.2 L/min)**	2.002	**PASS**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**	18.630	**Adjust R205 (18.0 +- 0.2 L/min)**	18.03	**PASS**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)				13.7	**PASS**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
0.11171	328.97924	229.76272	11513	11711	1.69%	**PASS**

Technicians Signature	

ECOTECH

Quality Management System

Calibration Report

Ref: 3,6,12 Monthly Teom Calibration Data.xls Revision 1.1

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Calibration Data

Customer	ERM
Instrument	TEOM
Model	1400ab - PM10
ID No.	02-0242

Calibration Performed by	Peter Stidwell
Date	1/05/2006
Location	Background
System/Job No.	500283

Test Equipment

Flow Calibrator	TE-121
Temperature Probe/DVM	TE-137

Digital Barometer	TE-168

Note: Do not fill in any shaded cells on this calibration sheet

Leak Check

	Pump on	Pump off	Leak Test Result
Main Flow (L/min)	0.08	0.07	**PASS**
Auxiliary Flow (L/min)	0.20	0.18	
% Filter loading with audit adaptor closed	157%		

Note:If % Filter loading is <140% the pump needs replacing

Note: If difference between pump on and pump off is >0.15 L/min then a leak is present

Flow Audit

MFC	Analyser set point*	Displayed Reading (L/min)	Result
Main	3.00	3.00	**FAIL**
Auxiliary	13.67	11.47	

*Analyser set point for Main is either 1.00 or 3.00 L/min, and Auxiliary is either 13.67 or 15.67 L/min

Note: Displayed readings must be with +-2% of analyser set point

	Measured Reading (L/min)	Tolerance	Result
Total Flow	14.83	(16.67 +-1.0 L/min)	**FAIL**
Main flow (cap flow splitter)	3.12	(1.00 or 3.00 +- 0.2 L/min)	**PASS**

Note: Displayed readings outside stated tolerances will require a flow controller calibration ***(software).***

Flow Controller Calibration (Software)- 6 monthly

Relevant? Y/N	Y

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

F-Adj setting (if adjustment needed)

	Fadj set point (pre-calibration)	Fadj set point (post calibration)*	Pre-calibration flow (L/min)	Post-calibration flow (L/min)**
Main Flow				
Auxiliary Flow				

If Adjusted Fadj set point (post cal.) is greater than +-10% from 1.000 set point, it will require a* ***hardware* *flow controller calibration*

***Adjusted measured flows must be within +-2% of analyser set point*

Result
N/A

Ambient Temperature and Pressure Adjust - 12 monthly	Relevant? Y/N	N

	Displayed	Measured	Potentiometer for adj.	
Ambient Temperature (°C)			0.00	**(input 8)**

Note: Analyser temperature sensor is accurate to +-1°C between -25 to 105°C

	Displayed	Measured		Potentiometer for adj.	
	Atm.	mBar	Atm	0.000	atm (R509)
Ambient Pressure			0.000		

Flow Controller Calibration (Hardware)- 12 Monthly

	Normal Operation Settings	Ambient settings during calibration
T-A/S setting (left column) °C	99	
P-A/S setting (left column) atm	9	

Post-Cal Reset T-A/S & P-A/S to normal operation settings

Reset Fadj MAIN & Fadj AUX to 1.000 Connect reference volumetric flow meter directly to SENSOR flow fitting.

					Result
Set MAIN flow to 0.5 L/min	**Average of 10 Readings=**	0.5192	**Adjust R101 (0.5 +- 0.03 L/min)**		**N/A**
Set MAIN flow to 4.5 L/min	**Average of 10 Readings=**	4.6450	**Adjust R105 (4.5 +- 0.03 L/min)**		**N/A**
Set MAIN flow to its operational rate (3.0 or 1.0 L/min and verify output (+- 0.3 L/min)					**N/A**

Connect reference volumetric flow meter directly to BYPASS flow fitting.

					Result
Set AUX flow to 2.0 L/min	**Average of 10 Readings=**	1.982	**Adjust R201 (2.0 +- 0.2 L/min)**		**N/A**
Set AUX flow to 18.0 L/min	**Average of 10 Readings=**	17.870	**Adjust R205 (18.0 +- 0.2 L/min)**		**N/A**
Set AUX flow to its operational rate (13.67 or 15.67 L/min) and verify output (+- 0.2 L/min)					**N/A**

Mass Transducer Calibration Verification- 12 Monthly

Audit Filter Weight g	TE Frequency without filter hz	TE frequency with Audit filter hz	Audi K_0	Actual K_0	% Difference	Result
					N/A	**N/A**

Technicians Signature	

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0248

Calibration Performed by	Ashley Drummond
Date	31/05/2006
Location	Background
System/Job No.	500283

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**17**	**31**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	17%	
All Temps. 50.00 °C?	YES	
MAIN flow	2.99	
AUX flow	13.65	
Noise	0.059	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In= NO	
	Out= NO	
New Filter Loading	18%	
Inspected in-line filter?	YES	
Replaced in-line filters?	NO	

Clean cabinet filter element	YES

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400AB
ID No.	04-1145

Calibration Performed by	AD/RG
Date	31/05/2006
Location	Boundary
System/Job No.	500281

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**20**	**28**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	OK/ M / T / F / X (circle)
Mode	4	1 / 2 / 3/ 4 (circle)
Filter Loading	76	%
All Temps. 50.00 °C?	YES	YES / NO
MAIN flow	3	l/min
AUX flow	13.66	l/min
Noise	0.047	
Replaced TEOM filter?	YES	YES / NO
Cleaned Inlet Head?	YES	YES / NO
Replaced Inlet Head? Y/N	In=	In=
	Out=	Out=
New Filter Loading	21%	%
Inspected in-line filter?	YES	YES / NO
Replaced in-line filters?	NO	YES / NO

Clean cabinet filter element	YES

Technicians Signature	Date

ECOTECH

Quality Management System

Calibration Report

Ref: Teom Filter Change Proforma.xls Revision 1.0

Date: 22/1/02 Location S:\ecotech\iso\forms\calibrep\current\

Teom Filter Change Proforma

Customer	ERM
Instrument	TEOM
Model	1400A
ID No.	98-0464

Calibration Performed by	Ashley Drummond
Date	31/05/2006
Location	School
System/Job No.	500282

Displayed Instrument Parameters

	Minimum °C	Maximum °C
Cabinet Temp.	**20**	**27**

Inlet Head -Type	**PM_{10}**	**TSP / PM_1 / $PM_{2.5}$ / PM_{10}**
Status	OK	
Mode	4	
Filter Loading	60%	
All Temps. 50.00 °C?	YES	
MAIN flow	3	
AUX flow	13.65	
Noise	0.03	
Replaced TEOM filter?	YES	
Cleaned Inlet Head?	YES	
Replaced Inlet Head? Y/N	In= N/A	
	Out= N/A	
New Filter Loading	18%	
Inspected in-line filter?	YES	
Replaced in-line filters?	NO	

Clean cabinet filter element	YES

Technicians Signature	Date

Appendix D

Windroses

Station ID: 11111
Year: 2004 2005
Date Range: Jan 1 - Dec 31
Time Range: 00:00 - 23:00

Run ID: Site 1 - Background

Frequency Distribution
(Normalized)

Wind Direction (Blowing From) / Wind Speed (m/s)

	0.5 - 2.1	2.1 - 3.6	3.6 - 5.7	5.7 - 8.8	8.8 - 11.1	>= 11.1	Total
N	0.013783	0.010451	0.003428	0.000263	0.000000	0.000000	**0.027924**
NNE	0.009041	0.006485	0.001182	0.000024	0.000000	0.000000	**0.016733**
NE	0.007035	0.006999	0.001768	0.000311	0.000000	0.000000	**0.016112**
ENE	0.007369	0.009854	0.005291	0.000072	0.000000	0.000000	**0.022586**
E	0.012601	0.021200	0.029620	0.012469	0.000203	0.000263	**0.076356**
ESE	0.036213	0.041098	0.086210	0.070504	0.011454	0.000729	**0.246208**
SE	0.090080	0.034087	0.016697	0.002269	0.000155	0.000060	**0.143349**
SSE	0.021594	0.004909	0.000203	0.000119	0.000179	0.000191	**0.027196**
S	0.019910	0.005793	0.001624	0.001350	0.000048	0.002783	**0.031508**
SSW	0.021857	0.010702	0.000370	0.000096	0.000000	0.000000	**0.033024**
SW	0.023004	0.018453	0.001159	0.000060	0.000024	0.000000	**0.042699**
WSW	0.024867	0.024079	0.002257	0.000012	0.000000	0.000000	**0.051215**
W	0.030910	0.034601	0.008755	0.000287	0.000000	0.000000	**0.074553**
WNW	0.027793	0.029179	0.010451	0.001039	0.000000	0.000012	**0.068473**
NW	0.020925	0.020687	0.011765	0.002293	0.000012	0.000000	**0.055682**
NNW	0.013974	0.019313	0.011538	0.002389	0.000024	0.000012	**0.047249**
Total	0.380957	0.297888	0.192318	0.093555	0.012099	0.004049	0.980866

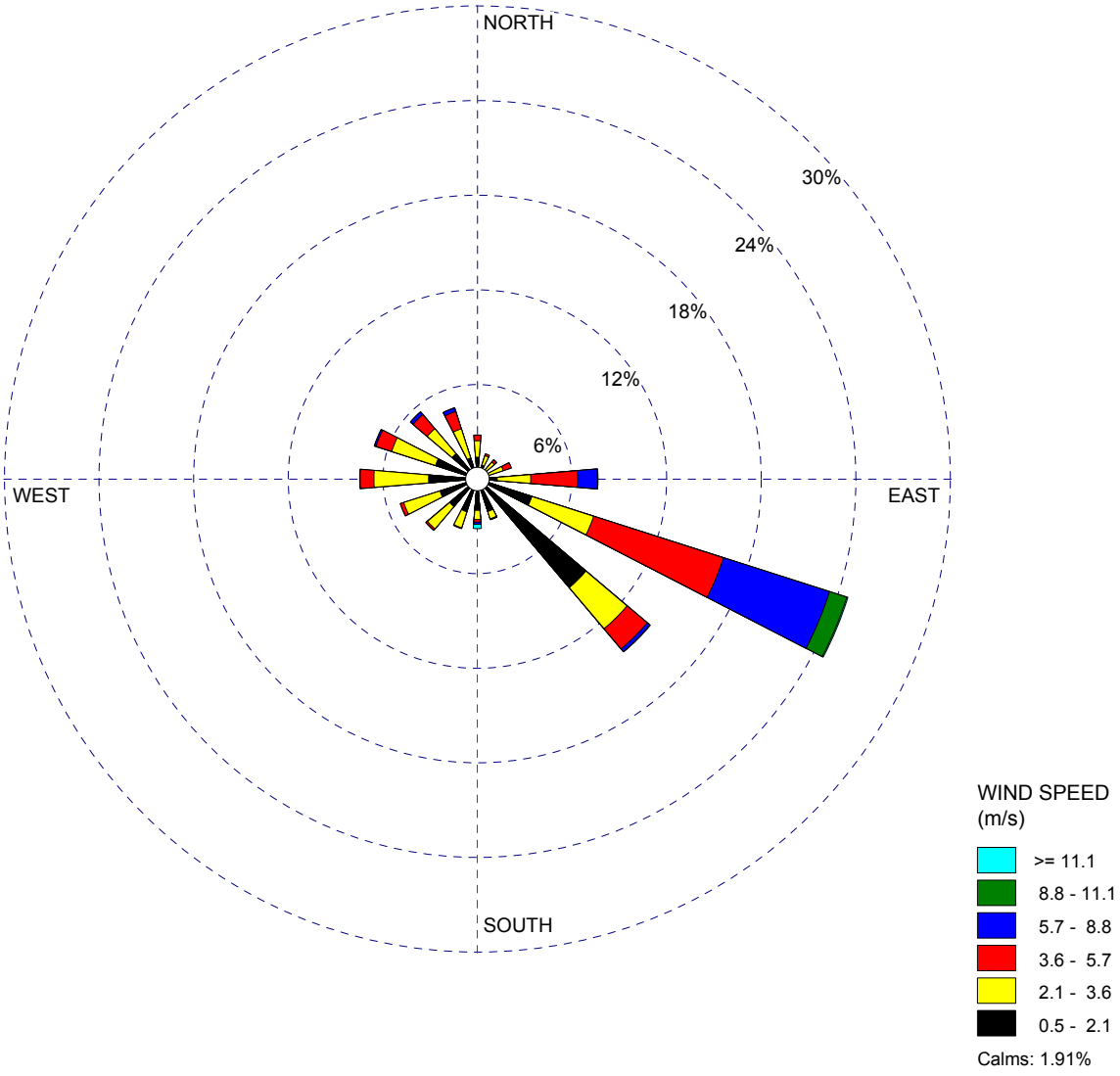
Frequency of Calm Winds: 1.91%
Average Wind Speed: 3.12 m/s

WIND ROSE PLOT:

Station #11111 - Site 1 - Background, WA

DISPLAY:

Wind Speed
Direction (blowing from)



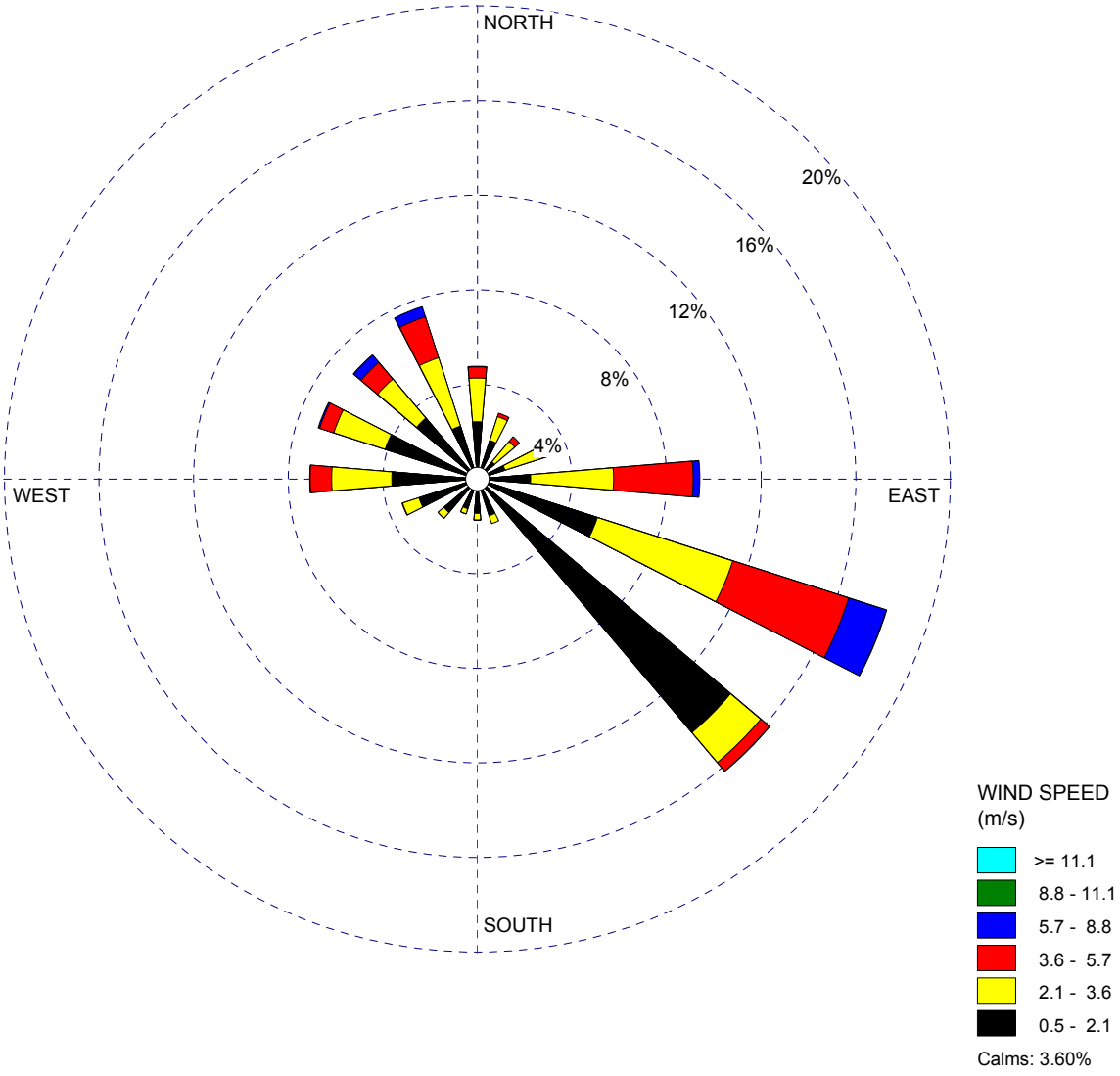
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
Annual	**2004-2005** **Jan 1 - Dec 31** **00:00 - 23:00**	**ERM Australia Pty Ltd**	
		MODELER: **Air Quality**	
	CALM WINDS: **1.91%**		
	AVG. WIND SPEED: **3.12 m/s**	DATE: **25/07/2006**	PROJECT NO.: **0042183**

WIND ROSE PLOT:

Station #11111 - Site 1 - Background, WA

DISPLAY:

Wind Speed
Direction (blowing from)



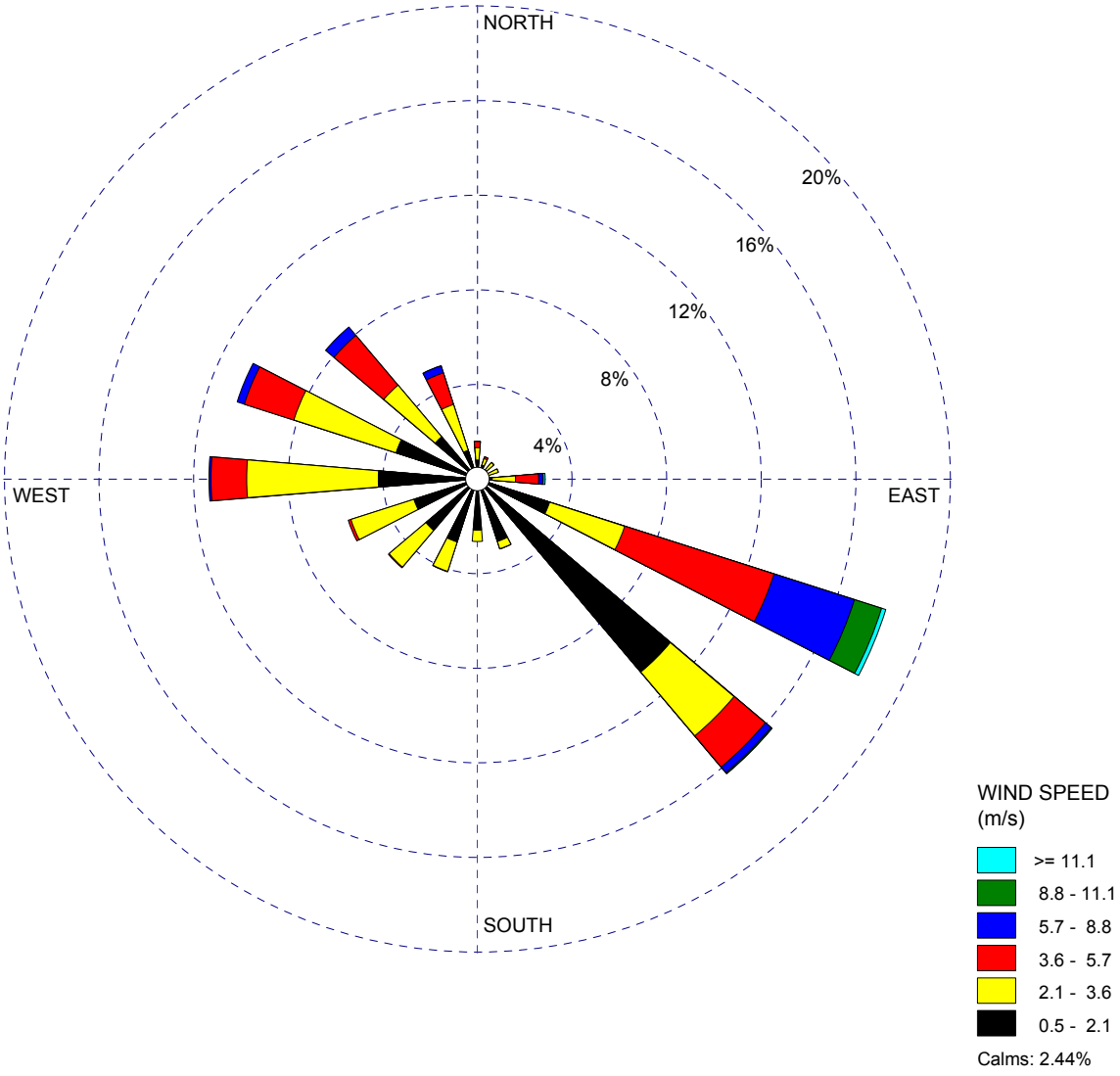
COMMENTS: Winter	DATA PERIOD: **2004-2005** **Jun 1 - Aug 31** **00:00 - 23:00**	COMPANY NAME: **ERM Australia Pty Ltd**	
		MODELER: **Air Quality**	
	CALM WINDS: **3.60%**		
	AVG. WIND SPEED: **2.33 m/s**	DATE: **25/07/2006**	PROJECT NO.: **0042183**

WIND ROSE PLOT:

Station #11111 - Site 1 - Background, WA

DISPLAY:

Wind Speed
Direction (blowing from)



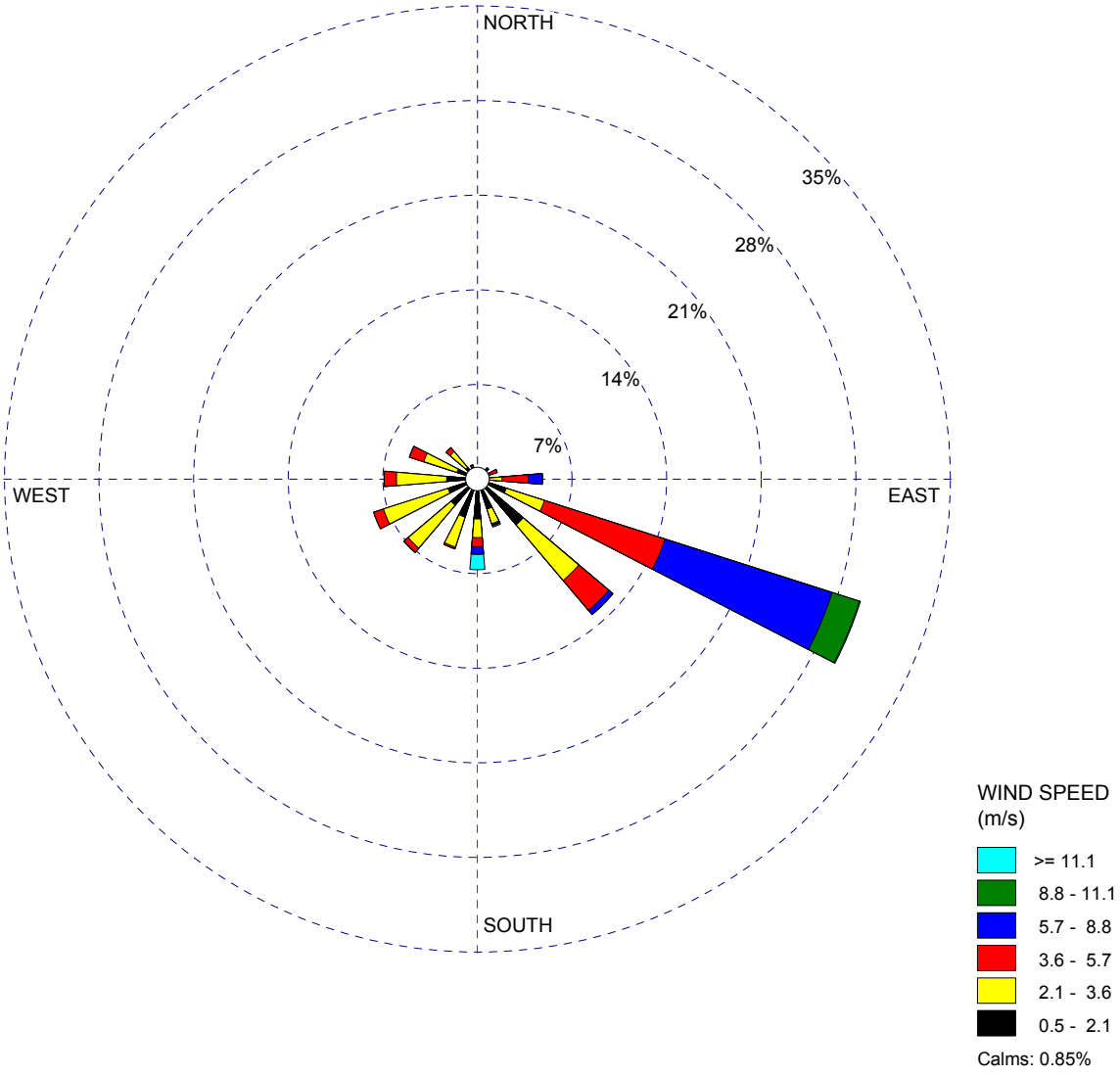
COMMENTS: Spring	DATA PERIOD: **2004-2005** **Sep 1 - Nov 30** **00:00 - 23:00**	COMPANY NAME: **ERM Australia Pty Ltd**	
		MODELER: **Air Quality**	
	CALM WINDS: **2.44%**		
	AVG. WIND SPEED: **2.79 m/s**	DATE: **25/07/2006**	PROJECT NO.: **0042183**

WIND ROSE PLOT:

Station #11111 - Site 1 - Background, WA

DISPLAY:

Wind Speed
Direction (blowing from)



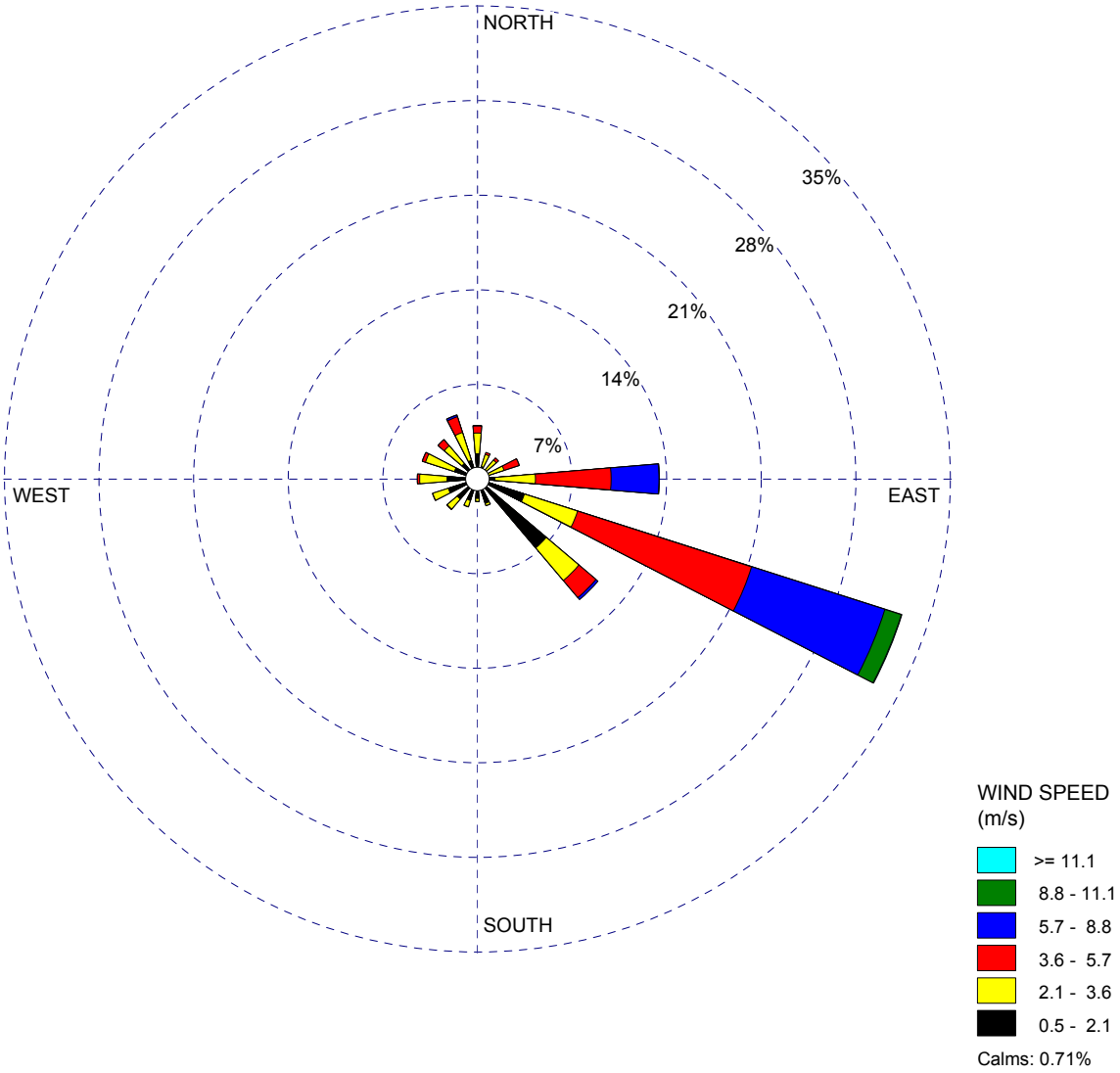
COMMENTS: Summer	DATA PERIOD: **2004-2005** **Check Date Range Report** **00:00 - 23:00**	COMPANY NAME: **ERM Australia Pty Ltd**	
		MODELER: **Air Quality**	
	CALM WINDS: **0.85%**		
	AVG. WIND SPEED: **3.94 m/s**	DATE: **25/07/2006**	PROJECT NO.: **0042183**

WIND ROSE PLOT:

Station #11111 - Site 1 - Background, WA

DISPLAY:

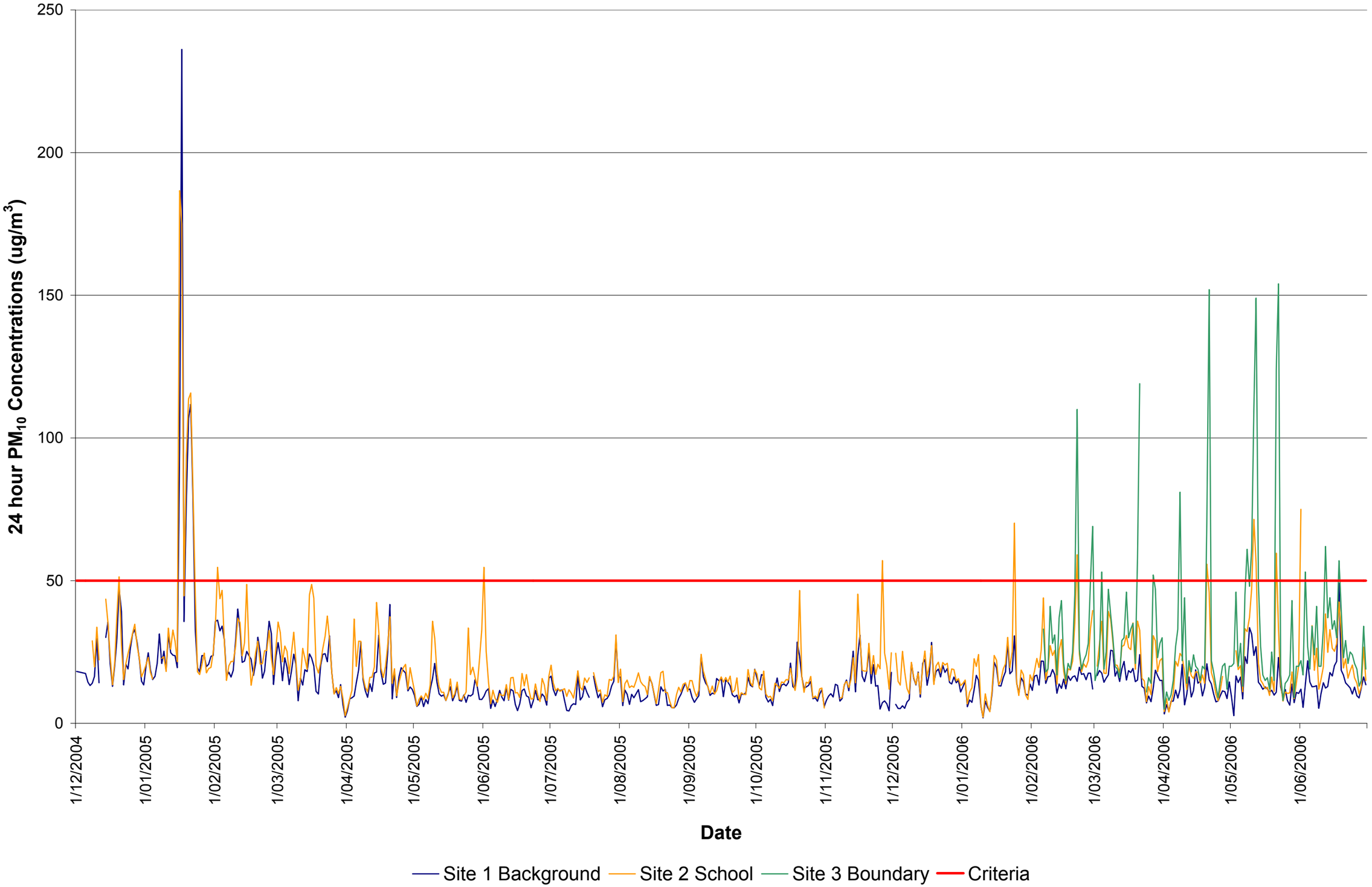
Wind Speed
Direction (blowing from)

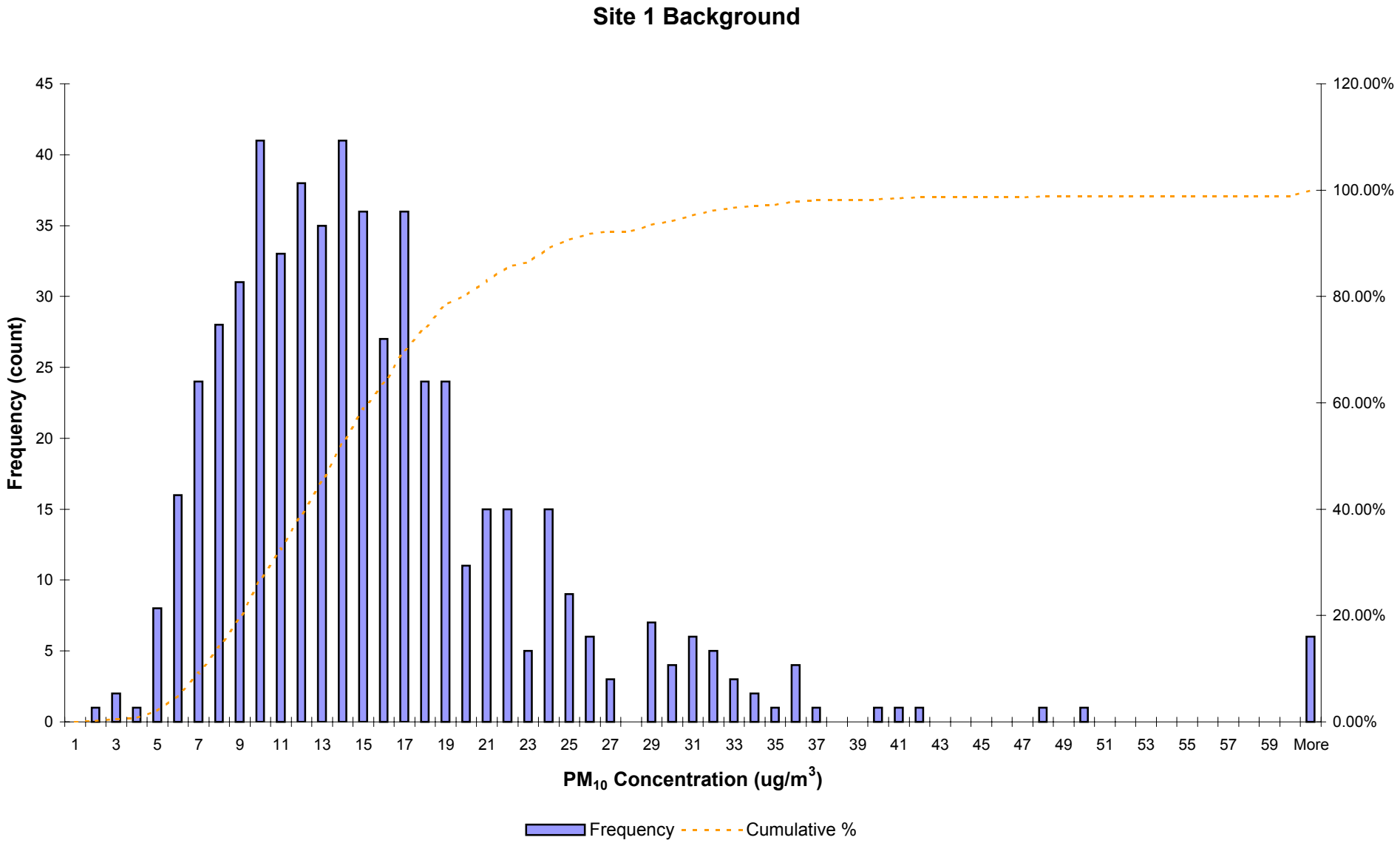


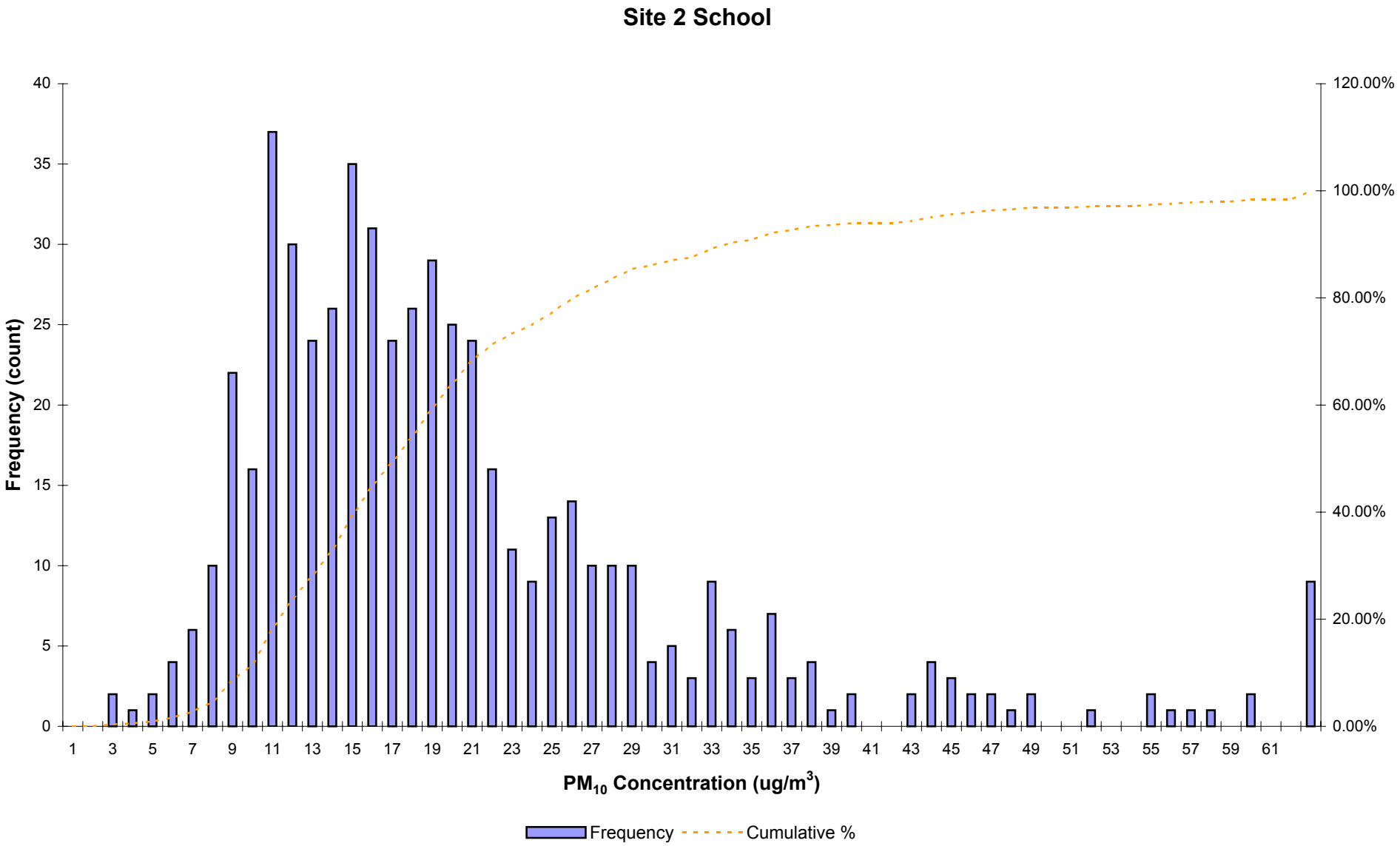
COMMENTS: Autumn	DATA PERIOD: **2004-2005** **Mar 1 - May 31** **00:00 - 23:00**	COMPANY NAME: **ERM Australia Pty Ltd**	
		MODELER: **Air Quality**	
	CALM WINDS: **0.71%**		
	AVG. WIND SPEED: **3.45 m/s**	DATE: **25/07/2006**	PROJECT NO.: **0042183**

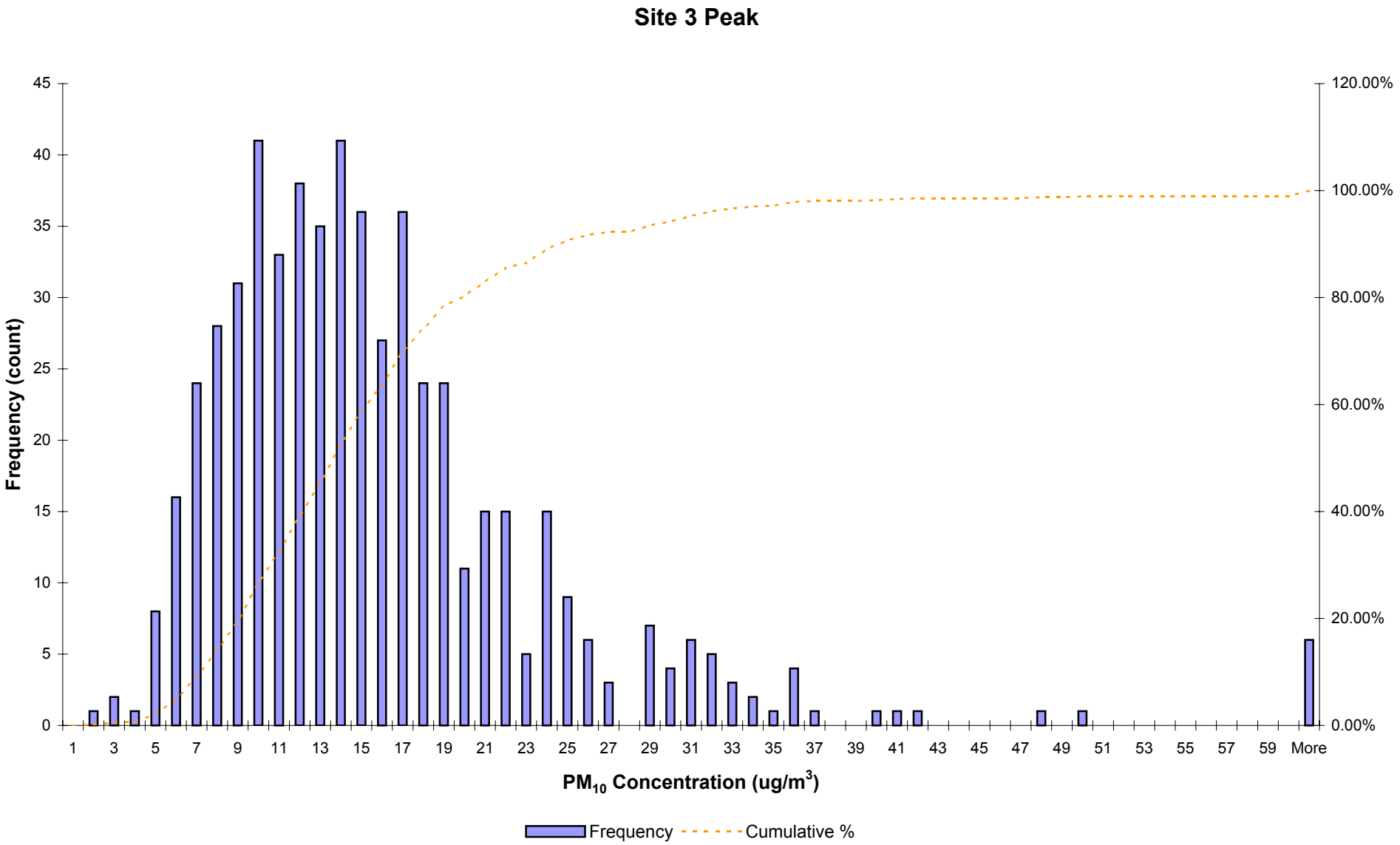
Appendix E

Result Summary


24 hour PM10 Concentrations (ug/m3)
250
200
150
100
50
0
1/12/2004
1/01/2005
1/02/2005
1/03/2005
1/04/2005
1/05/2005
1/06/2005
1/07/2005
1/08/2005
1/09/2005
1/10/2005
1/11/2005
1/12/2005
1/01/2006
1/02/2006
1/03/2006
1/04/2006
1/05/2006
1/06/2006
Date
Site 1 Background
Site 2 School
Site 3 Boundary
Criteria


Site 1 Background
Frequency (count)
45
40
35
30
25
20
15
10
5
0
120.00%
100.00%
80.00%
60.00%
40.00%
20.00%
0.00%
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 More
PM10 Concentration (ug/m3)
Frequency
Cumulative %


Site 2 School
Frequency (count)
0
5
10
15
20
25
30
35
40
1
3
5
7
9
11
13
15
17
19
21
23
25
27
29
31
33
35
37
39
41
43
45
47
49
51
53
55
57
59
61
0.00%
20.00%
40.00%
60.00%
80.00%
100.00%
120.00%
PM10 Concentration (ug/m3)
Frequency
Cumulative %


Site 3 Peak
Frequency (count)
0
5
10
15
20
25
30
35
40
45
120.00%
100.00%
80.00%
60.00%
40.00%
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59
More
PM10 Concentration (ug/m3)
Frequency
Cumulative %

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
04-Dec-04	18			*Wind Direction (%)*	0.4%	0.8%	15.4%	15.8%	60.8%	0.8%	1.7%	4.2%	19
				Wind Speed (m/s)	0.5	0.4	0.6	0.7	5.7	0.8	0.5	0.8	
05-Dec-04	17			*Wind Direction (%)*	0.0%	1.3%	26.7%	12.1%	58.3%	0.8%	0.8%	0.0%	19
				Wind Speed (m/s)	0.0	0.7	0.6	0.7	3.3	0.5	0.3	0.0	
06-Dec-04	14			*Wind Direction (%)*	1.3%	10.0%	1.3%	0.4%	17.5%	4.2%	13.3%	52.1%	20
				Wind Speed (m/s)	0.6	0.6	0.5	0.3	3.3	0.6	0.6	0.5	
07-Dec-04	13			*Wind Direction (%)*	0.0%	0.0%	12.7%	31.8%	53.6%	0.0%	0.7%	1.1%	22
				Wind Speed (m/s)	0.0	0.0	5.2	3.9	11.4	0.0	0.2	0.1	
08-Dec-04	14	29		*Wind Direction (%)*	2.1%	6.7%	23.3%	6.7%	61.3%	0.0%	0.0%	0.0%	23
				Wind Speed (m/s)	1.0	2.5	3.0	4.3	33.9	0.0	0.0	0.0	
09-Dec-04	16	20		*Wind Direction (%)*	0.0%	16.1%	24.8%	17.4%	28.7%	4.3%	8.3%	0.4%	24
				Wind Speed (m/s)	0.0	5.0	3.7	4.6	17.5	2.0	2.0	1.0	
10-Dec-04	30	34		*Wind Direction (%)*	4.4%	17.1%	5.2%	0.4%	12.4%	7.2%	40.6%	12.7%	22
				Wind Speed (m/s)	3.4	5.3	4.5	2.3	15.9	3.6	3.2	3.9	
11-Dec-04	14	22		*Wind Direction (%)*	0.0%	0.0%	0.0%	0.0%	23.3%	75.3%	1.4%	0.0%	19
				Wind Speed (m/s)	0.0	0.0	0.0	0.0	2.2	2.1	1.8	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
12-Dec-04				*Wind Direction (%)*									
				Wind Speed (m/s)									
13-Dec-04				*Wind Direction (%)*									
				Wind Speed (m/s)									
14-Dec-04	30	43		*Wind Direction (%)*	6.7%	10.9%	11.8%	12.6%	9.2%	16.0%	27.7%	5.0%	26
				Wind Speed (m/s)	2.3	2.9	1.9	1.7	1.9	2.4	1.7	1.8	
15-Dec-04	35	35		*Wind Direction (%)*	7.1%	1.7%	2.1%	7.5%	0.0%	0.0%	25.8%	55.8%	22
				Wind Speed (m/s)	1.7	0.9	1.1	1.8	0.0	0.0	2.4	2.5	
16-Dec-04	21	24		*Wind Direction (%)*	1.3%	0.4%	1.7%	5.4%	0.0%	1.3%	24.6%	65.4%	21
				Wind Speed (m/s)	0.6	0.6	0.8	0.9	0.0	0.7	3.0	3.4	
17-Dec-04	13	14		*Wind Direction (%)*	0.4%	0.4%	1.7%	6.3%	20.0%	20.8%	36.3%	14.2%	20
				Wind Speed (m/s)	0.9	0.8	0.7	1.1	1.6	2.2	3.0	2.0	
18-Dec-04	20	21		*Wind Direction (%)*	0.0%	0.0%	4.2%	62.1%	15.4%	12.1%	5.8%	0.4%	20
				Wind Speed (m/s)	0.0	0.0	3.1	3.4	2.1	3.0	3.1	1.6	
19-Dec-04	30	38		*Wind Direction (%)*	0.8%	3.3%	34.2%	50.4%	5.0%	5.0%	0.8%	0.4%	23
				Wind Speed (m/s)	1.5	2.6	6.2	6.0	1.6	2.3	2.8	1.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
20-Dec-04	48	51		*Wind Direction (%)*	2.9%	4.6%	11.7%	30.4%	0.8%	0.4%	41.3%	7.9%	23
				Wind Speed (m/s)	2.2	3.2	5.2	5.5	0.7	0.8	2.9	3.5	
21-Dec-04	39	27		*Wind Direction (%)*	0.0%	0.8%	6.3%	25.0%	5.8%	20.0%	33.8%	8.3%	21
				Wind Speed (m/s)	0.0	0.7	1.2	1.8	1.6	2.3	2.7	2.4	
22-Dec-04	13	15		*Wind Direction (%)*	0.0%	0.0%	0.0%	12.5%	27.1%	36.7%	23.8%	0.0%	20
				Wind Speed (m/s)	0.0	0.0	0.0	1.4	1.7	2.5	3.1	0.0	
23-Dec-04	21	21		*Wind Direction (%)*	0.4%	0.0%	7.5%	61.7%	12.9%	16.7%	0.8%	0.0%	20
				Wind Speed (m/s)	1.3	0.0	4.2	3.6	2.3	3.2	2.0	0.0	
24-Dec-04	19	24		*Wind Direction (%)*	0.0%	0.0%	18.6%	81.4%	0.0%	0.0%	0.0%	0.0%	20
				Wind Speed (m/s)	0.0	0.0	8.1	6.4	0.0	0.0	0.0	0.0	
25-Dec-04	26	28		*Wind Direction (%)*	0.4%	0.0%	27.9%	62.1%	3.8%	0.8%	2.1%	2.9%	23
				Wind Speed (m/s)	7.8	0.0	7.5	6.4	3.2	2.3	3.2	5.6	
26-Dec-04	31	32		*Wind Direction (%)*	0.0%	0.0%	34.2%	65.8%	0.0%	0.0%	0.0%	0.0%	24
				Wind Speed (m/s)	0.0	0.0	7.4	7.7	0.0	0.0	0.0	0.0	
27-Dec-04	33	35		*Wind Direction (%)*	1.3%	1.7%	71.3%	15.4%	0.0%	0.0%	1.7%	8.8%	24
				Wind Speed (m/s)	3.2	3.3	7.1	8.4	0.0	0.0	2.6	3.2	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
28-Dec-04	28	27		*Wind Direction (%)*	8.3%	5.4%	20.4%	23.3%	2.1%	2.9%	25.8%	11.7%	23
				Wind Speed (m/s)	5.3	4.6	4.2	2.0	0.9	1.2	3.3	4.6	
29-Dec-04	22	23		*Wind Direction (%)*	0.8%	0.4%	1.7%	20.4%	0.4%	28.8%	38.8%	8.8%	21
				Wind Speed (m/s)	0.9	0.7	1.3	1.4	0.8	2.3	2.7	2.2	
30-Dec-04	15	16		*Wind Direction (%)*	0.0%	0.0%	1.7%	31.7%	31.7%	31.3%	3.3%	0.4%	21
				Wind Speed (m/s)	0.0	0.0	2.1	2.6	1.8	2.6	2.0	1.9	
31-Dec-04	13	18		*Wind Direction (%)*	0.0%	0.4%	34.6%	60.4%	1.7%	2.9%	0.0%	0.0%	22
				Wind Speed (m/s)	0.0	2.0	6.8	4.9	1.7	1.8	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
01-Jan-05	20	21		*Wind Direction (%)*	2.9%	2.5%	19.6%	29.2%	2.9%	26.7%	11.3%	5.0%	23
				Wind Speed (m/s)	2.4	2.8	5.4	6.5	2.1	2.3	2.2	2.3	
02-Jan-05	25	23		*Wind Direction (%)*	0.0%	0.0%	0.0%	3.3%	16.7%	61.3%	18.8%	0.0%	21
				Wind Speed (m/s)	0.0	0.0	0.0	2.6	2.4	2.9	2.9	0.0	
03-Jan-05	19	18		*Wind Direction (%)*	0.0%	0.4%	5.0%	57.1%	11.3%	25.0%	1.3%	0.0%	20
				Wind Speed (m/s)	0.0	1.6	2.4	2.9	2.4	2.9	3.3	0.0	
04-Jan-05	15	16		*Wind Direction (%)*	0.0%	0.0%	2.3%	71.7%	4.0%	20.8%	1.2%	0.0%	20
				Wind Speed (m/s)	0.0	0.0	4.8	4.7	1.7	2.5	3.6	0.0	
05-Jan-05	17	21		*Wind Direction (%)*	2.9%	2.9%	31.7%	47.9%	3.8%	6.3%	3.8%	0.8%	21
				Wind Speed (m/s)	2.1	2.6	6.3	5.5	1.9	2.5	2.9	2.5	
06-Jan-05	21	29		*Wind Direction (%)*	0.8%	2.5%	19.6%	42.5%	10.0%	19.6%	4.6%	0.4%	23
				Wind Speed (m/s)	2.0	2.3	5.5	6.2	1.9	2.8	1.3	2.7	
07-Jan-05	31	28		*Wind Direction (%)*	4.8%	0.9%	1.3%	0.0%	1.7%	21.0%	46.3%	24.0%	21
				Wind Speed (m/s)	1.0	3.2	0.9	0.0	27.0	1.8	2.7	2.5	
08-Jan-05	21	23		*Wind Direction (%)*	1.3%	2.9%	16.7%	39.6%	4.6%	15.8%	15.8%	3.3%	23
				Wind Speed (m/s)	1.7	1.9	2.7	3.2	1.4	1.9	2.5	2.1	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
09-Jan-05	25	23		*Wind Direction (%)*	1.7%	3.8%	9.2%	22.9%	2.5%	25.4%	27.9%	6.7%	23
				Wind Speed (m/s)	2.0	1.3	1.8	2.1	1.4	2.3	2.7	2.5	
10-Jan-05	19	18		*Wind Direction (%)*	0.0%	0.0%	0.0%	7.5%	34.6%	40.0%	17.9%	0.0%	21
				Wind Speed (m/s)	0.0	0.0	0.0	2.3	1.6	2.4	2.8	0.0	
11-Jan-05	31	33		*Wind Direction (%)*	0.0%	0.0%	0.0%	15.0%	40.0%	38.8%	6.3%	0.0%	22
				Wind Speed (m/s)	0.0	0.0	0.0	1.6	1.9	2.6	2.6	0.0	
12-Jan-05	25	26		*Wind Direction (%)*	0.0%	0.4%	1.3%	47.1%	11.3%	29.2%	10.4%	0.4%	23
				Wind Speed (m/s)	0.0	0.9	3.7	3.3	1.4	2.5	2.7	2.4	
13-Jan-05	24	33		*Wind Direction (%)*	0.0%	0.0%	0.0%	44.2%	41.7%	12.1%	2.1%	0.0%	23
				Wind Speed (m/s)	0.0	0.0	0.0	3.4	2.3	2.6	3.2	0.0	
14-Jan-05	24	29		*Wind Direction (%)*	0.0%	0.0%	9.2%	82.5%	4.2%	4.2%	0.0%	0.0%	21
				Wind Speed (m/s)	0.0	0.0	5.0	4.2	1.7	1.6	0.0	0.0	
15-Jan-05	19	22		*Wind Direction (%)*	0.0%	0.0%	25.0%	75.0%	0.0%	0.0%	0.0%	0.0%	23
				Wind Speed (m/s)	0.0	0.0	6.1	5.6	0.0	0.0	0.0	0.0	
16-Jan-05	96	187		*Wind Direction (%)*	0.0%	0.0%	37.9%	62.1%	0.0%	0.0%	0.0%	0.0%	24
				Wind Speed (m/s)	0.0	0.0	5.1	6.0	0.0	0.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
17-Jan-05	236	175		*Wind Direction (%)*	2.1%	7.7%	41.5%	34.6%	4.3%	3.4%	4.7%	1.7%	29
				Wind Speed (m/s)	2.4	4.0	5.7	4.4	1.8	1.9	1.8	1.1	
18-Jan-05	36	45		*Wind Direction (%)*	0.0%	0.0%	0.4%	24.6%	17.1%	41.3%	15.8%	0.8%	24
				Wind Speed (m/s)	0.0	0.0	0.5	3.9	2.5	2.5	2.1	0.6	
19-Jan-05	78	94		*Wind Direction (%)*	0.0%	0.4%	17.6%	63.5%	2.6%	3.4%	10.7%	1.7%	21
				Wind Speed (m/s)	0.0	1.3	4.3	4.6	1.9	1.8	1.9	1.9	
20-Jan-05	107	114		*Wind Direction (%)*	0.0%	0.0%	19.2%	41.7%	8.8%	24.6%	5.8%	0.0%	24
				Wind Speed (m/s)	0.0	0.0	4.5	4.2	1.6	2.7	2.5	0.0	
21-Jan-05	112	116		*Wind Direction (%)*	0.4%	0.4%	5.8%	50.0%	8.3%	18.3%	15.0%	1.7%	24
				Wind Speed (m/s)	3.2	1.4	3.6	5.3	1.2	2.4	2.7	1.8	
22-Jan-05	79	83		*Wind Direction (%)*	0.0%	0.0%	5.4%	70.8%	3.8%	17.1%	2.9%	0.0%	27
				Wind Speed (m/s)	0.0	0.0	4.8	4.8	1.9	2.5	2.2	0.0	
23-Jan-05	33	45		*Wind Direction (%)*	2.5%	4.6%	28.8%	27.9%	0.8%	19.2%	14.2%	2.1%	29
				Wind Speed (m/s)	1.4	2.3	5.9	6.4	1.5	2.2	1.6	0.9	
24-Jan-05	20	18		*Wind Direction (%)*	0.4%	1.3%	0.8%	12.5%	22.1%	46.7%	13.8%	2.5%	26
				Wind Speed (m/s)	0.6	0.5	0.6	1.7	1.8	2.3	2.0	0.6	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
25-Jan-05	18	17		*Wind Direction (%)*	0.0%	0.8%	10.4%	56.3%	6.3%	20.8%	5.0%	0.4%	24
				Wind Speed (m/s)	0.0	1.3	3.6	3.6	1.7	3.1	3.3	1.2	
26-Jan-05	24	20		*Wind Direction (%)*	0.4%	0.4%	15.8%	46.7%	13.8%	16.7%	6.3%	0.0%	24
				Wind Speed (m/s)	2.1	2.1	5.8	5.7	1.4	2.6	2.4	0.0	
27-Jan-05	24	25		*Wind Direction (%)*	0.4%	0.4%	3.5%	60.9%	10.0%	21.3%	3.5%	0.0%	25
				Wind Speed (m/s)	1.6	1.4	3.4	3.6	2.0	3.0	3.7	0.0	
28-Jan-05	20	18		*Wind Direction (%)*	0.0%	0.4%	29.2%	47.1%	3.8%	12.5%	7.1%	0.0%	24
				Wind Speed (m/s)	0.0	2.1	5.4	3.7	1.3	2.5	2.6	0.0	
29-Jan-05	21	19		*Wind Direction (%)*	4.6%	6.4%	10.0%	44.3%	4.1%	22.8%	5.9%	1.8%	27
				Wind Speed (m/s)	2.4	2.4	3.7	4.0	1.6	2.6	3.1	1.7	
30-Jan-05	23	20		*Wind Direction (%)*	2.3%	4.1%	5.0%	42.3%	10.5%	22.7%	8.6%	4.5%	29
				Wind Speed (m/s)	2.0	2.1	3.8	5.5	1.2	2.5	2.6	2.3	
31-Jan-05	24	25		*Wind Direction (%)*	0.0%	0.0%	1.4%	48.6%	18.2%	29.1%	2.7%	0.0%	24
				Wind Speed (m/s)	0.0	0.0	4.5	3.0	1.8	3.1	3.5	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
01-Feb-05	36	34		*Wind Direction (%)*	0.0%	0.0%	26.5%	73.5%	0.0%	0.0%	0.0%	0.0%	21
				Wind Speed (m/s)	0.0	0.0	5.7	5.7	0.0	0.0	0.0	0.0	
02-Feb-05	36	55		*Wind Direction (%)*	0.0%	1.7%	73.3%	25.0%	0.0%	0.0%	0.0%	0.0%	23
				Wind Speed (m/s)	0.0	3.5	5.8	4.3	0.0	0.0	0.0	0.0	
03-Feb-05	32	44		*Wind Direction (%)*	1.3%	6.8%	53.6%	22.8%	3.8%	5.9%	3.4%	2.5%	29
				Wind Speed (m/s)	2.3	2.7	5.0	3.3	1.6	2.0	2.6	2.1	
04-Feb-05	34	47		*Wind Direction (%)*	2.5%	6.7%	13.8%	30.4%	0.0%	0.0%	10.0%	36.7%	29
				Wind Speed (m/s)	3.3	3.9	5.1	5.6	0.0	0.0	3.3	2.7	
05-Feb-05	29	29		*Wind Direction (%)*	0.0%	0.0%	0.0%	0.4%	0.4%	22.5%	63.3%	13.3%	22
				Wind Speed (m/s)	0.0	0.0	0.0	0.9	1.3	2.6	2.7	2.9	
06-Feb-05	16	15		*Wind Direction (%)*	0.0%	0.0%	0.4%	27.9%	28.8%	32.5%	10.0%	0.4%	20
				Wind Speed (m/s)	0.0	0.0	1.8	2.2	1.7	2.4	3.1	1.6	
07-Feb-05	18	20		*Wind Direction (%)*	0.0%	0.0%	4.3%	53.0%	19.6%	18.7%	4.3%	0.0%	20
				Wind Speed (m/s)	0.0	0.0	3.4	2.7	4.5	2.9	3.4	0.0	
08-Feb-05	16	22		*Wind Direction (%)*	0.0%	0.4%	5.4%	55.8%	6.7%	25.4%	6.3%	0.0%	21
				Wind Speed (m/s)	0.0	2.3	4.0	3.7	1.7	2.6	2.2	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
09-Feb-05	19	22		*Wind Direction (%)*	1.7%	3.3%	15.4%	45.8%	5.4%	21.7%	3.8%	2.9%	25
				Wind Speed (m/s)	2.0	2.6	4.7	4.1	1.8	2.7	2.5	2.5	
10-Feb-05	29	27		*Wind Direction (%)*	0.0%	0.0%	7.5%	87.1%	5.4%	0.0%	0.0%	0.0%	28
				Wind Speed (m/s)	0.0	0.0	6.1	5.0	2.9	0.0	0.0	0.0	
11-Feb-05	40	37		*Wind Direction (%)*	1.3%	0.4%	37.9%	39.6%	2.1%	0.4%	11.3%	7.1%	25
				Wind Speed (m/s)	0.5	1.3	6.5	6.4	1.9	0.5	2.1	2.5	
12-Feb-05	33	35		*Wind Direction (%)*	4.0%	2.2%	5.3%	32.0%	1.3%	9.3%	29.3%	16.4%	25
				Wind Speed (m/s)	1.7	1.7	3.2	5.1	0.6	1.7	2.0	2.3	
13-Feb-05	21	24		*Wind Direction (%)*	5.2%	5.2%	6.5%	30.9%	17.8%	13.9%	10.4%	10.0%	25
				Wind Speed (m/s)	1.3	0.8	1.9	3.0	1.8	2.3	1.7	1.6	
14-Feb-05	22	28		*Wind Direction (%)*	1.7%	9.6%	30.0%	57.9%	0.0%	0.0%	0.0%	0.8%	30
				Wind Speed (m/s)	2.8	3.0	5.4	5.1	0.0	0.0	0.0	1.0	
15-Feb-05	25	49		*Wind Direction (%)*	0.0%	0.0%	75.0%	25.0%	0.0%	0.0%	0.0%	0.0%	31
				Wind Speed (m/s)	0.0	0.0	8.5	8.9	0.0	0.0	0.0	0.0	
16-Feb-05	24	26		*Wind Direction (%)*	12.9%	1.7%	7.1%	0.0%	0.0%	0.4%	55.4%	22.5%	25
				Wind Speed (m/s)	3.0	2.3	7.3	0.0	0.0	2.7	2.9	3.1	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
17-Feb-05	22	13		*Wind Direction (%)*	0.0%	0.0%	0.0%	5.8%	24.4%	47.1%	22.7%	0.0%	20
				Wind Speed (m/s)	0.0	0.0	0.0	1.7	2.2	2.5	2.2	0.0	
18-Feb-05	17	18		*Wind Direction (%)*	0.8%	2.1%	15.8%	72.9%	0.8%	0.4%	5.0%	2.1%	19
				Wind Speed (m/s)	1.2	1.4	3.4	3.4	1.7	0.8	1.5	1.0	
19-Feb-05	21	25		*Wind Direction (%)*	4.7%	8.5%	32.9%	46.2%	3.8%	2.6%	0.0%	1.3%	23
				Wind Speed (m/s)	2.9	2.5	5.4	4.8	2.0	2.8	0.0	2.0	
20-Feb-05	30	29		*Wind Direction (%)*	9.6%	2.5%	21.3%	7.9%	5.8%	20.4%	19.6%	12.9%	24
				Wind Speed (m/s)	3.3	2.7	4.0	4.3	1.4	2.0	2.8	3.4	
21-Feb-05	25	21		*Wind Direction (%)*	2.2%	0.9%	4.3%	29.6%	10.0%	24.8%	22.2%	6.1%	19
				Wind Speed (m/s)	1.2	0.6	1.3	2.8	1.0	2.2	2.5	1.7	
22-Feb-05	16	21		*Wind Direction (%)*	0.4%	1.7%	6.7%	70.0%	4.6%	10.8%	5.0%	0.8%	18
				Wind Speed (m/s)	1.8	2.1	2.6	3.5	1.6	2.4	2.4	2.1	
23-Feb-05	18	25		*Wind Direction (%)*	2.5%	3.3%	20.4%	58.3%	5.4%	9.2%	0.0%	0.8%	19
				Wind Speed (m/s)	0.9	0.7	5.7	4.5	1.9	2.3	0.0	0.6	
24-Feb-05	27	26		*Wind Direction (%)*	0.0%	0.0%	9.1%	44.8%	3.9%	23.9%	15.2%	3.0%	23
				Wind Speed (m/s)	0.0	0.0	4.0	5.0	1.6	2.0	2.4	2.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
25-Feb-05	36	33		*Wind Direction (%)*	1.7%	1.7%	5.2%	43.2%	0.9%	6.1%	19.2%	21.8%	23
				Wind Speed (m/s)	1.5	1.5	1.7	4.1	1.3	1.5	2.2	2.4	
26-Feb-05	32	23		*Wind Direction (%)*	9.6%	2.5%	7.9%	15.4%	0.8%	4.6%	42.5%	16.7%	21
				Wind Speed (m/s)	1.7	1.7	1.4	1.3	0.9	1.0	2.0	2.3	
27-Feb-05	14	17		*Wind Direction (%)*	6.9%	1.3%	6.0%	11.2%	14.7%	12.1%	34.9%	12.9%	18
				Wind Speed (m/s)	0.9	0.4	0.6	0.9	1.5	2.1	2.6	1.9	
28-Feb-05	23	26		*Wind Direction (%)*	1.3%	0.4%	5.8%	57.9%	11.7%	20.8%	2.1%	0.0%	17
				Wind Speed (m/s)	1.9	1.8	2.7	3.2	1.7	2.5	2.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
01-Mar-05	28	36		*Wind Direction (%)*	0.0%	0.0%	55.4%	44.6%	0.0%	0.0%	0.0%	0.0%	20
				Wind Speed (m/s)	0.0	0.0	7.6	7.8	0.0	0.0	0.0	0.0	
02-Mar-05	23	32		*Wind Direction (%)*	0.0%	6.3%	69.2%	24.6%	0.0%	0.0%	0.0%	0.0%	22
				Wind Speed (m/s)	0.0	2.1	5.3	7.2	0.0	0.0	0.0	0.0	
03-Mar-05	15	22		*Wind Direction (%)*	2.2%	4.4%	42.7%	24.4%	4.4%	13.3%	7.1%	1.3%	23
				Wind Speed (m/s)	1.4	1.6	3.3	2.1	1.2	1.9	2.2	1.4	
04-Mar-05	23	27		*Wind Direction (%)*	2.1%	5.8%	56.3%	34.6%	0.4%	0.0%	0.4%	0.4%	23
				Wind Speed (m/s)	2.4	2.7	5.0	5.4	1.9	0.0	1.6	2.3	
05-Mar-05	20	25		*Wind Direction (%)*	0.0%	0.4%	61.6%	38.0%	0.0%	0.0%	0.0%	0.0%	19
				Wind Speed (m/s)	0.0	0.5	5.6	4.3	0.0	0.0	0.0	0.0	
06-Mar-05	14	17		*Wind Direction (%)*	3.3%	11.3%	50.0%	23.3%	3.3%	6.7%	1.3%	0.8%	23
				Wind Speed (m/s)	2.6	3.0	4.2	2.9	1.7	2.3	2.0	2.7	
07-Mar-05	18	24		*Wind Direction (%)*	7.1%	12.5%	36.7%	15.4%	0.8%	0.4%	20.8%	6.3%	24
				Wind Speed (m/s)	3.6	4.1	4.8	1.7	0.5	0.8	1.9	3.2	
08-Mar-05	24	32		*Wind Direction (%)*	0.4%	0.0%	3.8%	40.8%	5.4%	27.1%	17.5%	5.0%	21
				Wind Speed (m/s)	0.5	0.0	1.2	1.6	1.1	1.7	1.5	1.5	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
09-Mar-05	21	22		*Wind Direction (%)*	2.9%	2.5%	4.2%	12.5%	4.6%	3.8%	32.9%	36.7%	21
				Wind Speed (m/s)	0.7	0.5	0.9	1.2	0.6	0.8	2.0	2.3	
10-Mar-05	8	12		*Wind Direction (%)*	31.9%	6.0%	6.9%	6.0%	2.6%	0.9%	8.6%	37.1%	19
				Wind Speed (m/s)	1.0	0.7	0.6	0.7	0.5	1.1	2.8	3.0	
11-Mar-05	16	15		*Wind Direction (%)*	0.0%	1.5%	1.5%	64.2%	1.5%	4.5%	26.9%	0.0%	18
				Wind Speed (m/s)	0.0	0.4	1.1	1.8	0.5	2.4	1.9	0.0	
12-Mar-05	13	26		*Wind Direction (%)*	3.8%	3.0%	51.3%	24.4%	2.1%	9.0%	3.0%	3.4%	22
				Wind Speed (m/s)	1.7	2.7	5.5	3.4	1.6	2.1	1.9	1.7	
13-Mar-05	19	23		*Wind Direction (%)*	2.4%	0.5%	2.4%	44.2%	1.5%	7.3%	34.5%	7.3%	21
				Wind Speed (m/s)	0.7	0.7	1.2	2.5	1.4	2.4	2.4	1.7	
14-Mar-05	18	19		*Wind Direction (%)*	0.0%	0.0%	28.1%	71.9%	0.0%	0.0%	0.0%	0.0%	19
				Wind Speed (m/s)	0.0	0.0	5.9	6.8	0.0	0.0	0.0	0.0	
15-Mar-05	24	45		*Wind Direction (%)*	0.0%	0.0%	90.0%	10.0%	0.0%	0.0%	0.0%	0.0%	19
				Wind Speed (m/s)	0.0	0.0	8.3	8.3	0.0	0.0	0.0	0.0	
16-Mar-05	23	49		*Wind Direction (%)*	0.0%	6.3%	92.9%	0.8%	0.0%	0.0%	0.0%	0.0%	21
				Wind Speed (m/s)	0.0	4.0	6.9	8.9	0.0	0.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
17-Mar-05	20	44		*Wind Direction (%)*	2.5%	11.7%	54.2%	5.8%	0.4%	1.3%	5.4%	18.8%	25
				Wind Speed (m/s)	3.1	2.9	4.4	1.5	0.7	0.9	2.8	3.0	
18-Mar-05	11	20		*Wind Direction (%)*	12.5%	33.8%	22.1%	17.5%	1.7%	1.3%	2.1%	9.2%	24
				Wind Speed (m/s)	1.4	2.6	1.8	1.0	0.6	0.4	1.7	1.2	
19-Mar-05	10	18		*Wind Direction (%)*	2.9%	7.9%	37.5%	47.1%	0.0%	1.7%	1.3%	1.7%	26
				Wind Speed (m/s)	2.5	2.8	2.5	2.6	0.0	1.4	1.1	0.9	
20-Mar-05	20	21		*Wind Direction (%)*	5.8%	3.8%	12.5%	22.1%	2.9%	13.8%	25.8%	13.3%	26
				Wind Speed (m/s)	2.5	2.3	3.8	4.2	1.0	1.4	2.6	3.4	
21-Mar-05	24	26		*Wind Direction (%)*	0.9%	1.4%	5.9%	37.3%	9.1%	28.2%	12.3%	5.0%	25
				Wind Speed (m/s)	1.3	1.2	2.8	2.6	1.6	2.2	1.9	1.4	
22-Mar-05	24	31		*Wind Direction (%)*	7.5%	5.4%	13.3%	51.7%	2.1%	4.6%	9.2%	6.3%	27
				Wind Speed (m/s)	3.1	3.4	5.4	4.3	1.2	2.0	2.9	3.6	
23-Mar-05	22	38		*Wind Direction (%)*	12.9%	9.2%	33.8%	25.4%	0.8%	0.0%	5.0%	12.9%	28
				Wind Speed (m/s)	3.6	3.5	4.7	2.7	0.8	0.0	2.2	2.0	
24-Mar-05	31	29		*Wind Direction (%)*	12.1%	0.8%	2.1%	9.2%	1.7%	6.3%	32.5%	35.4%	21
				Wind Speed (m/s)	1.8	0.8	0.8	1.4	1.0	1.4	2.0	2.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
25-Mar-05	18	18		*Wind Direction (%)*	2.1%	1.3%	7.1%	14.6%	10.8%	37.1%	22.1%	5.0%	20
				Wind Speed (m/s)	0.6	0.5	1.0	1.2	1.2	2.0	1.9	0.8	
26-Mar-05	10	10		*Wind Direction (%)*	0.0%	0.4%	10.4%	87.1%	1.3%	0.4%	0.4%	0.0%	19
				Wind Speed (m/s)	0.0	0.8	5.4	5.0	1.5	1.8	1.4	0.0	
27-Mar-05	11	13		*Wind Direction (%)*	0.8%	2.5%	47.1%	44.2%	1.7%	1.3%	1.3%	1.3%	22
				Wind Speed (m/s)	1.5	1.5	4.6	3.7	1.5	2.3	1.5	1.1	
28-Mar-05	9	10		*Wind Direction (%)*	1.3%	1.7%	22.1%	27.9%	5.8%	12.5%	24.6%	4.2%	20
				Wind Speed (m/s)	1.4	1.4	2.9	2.2	1.0	1.4	2.0	1.8	
29-Mar-05	14	13		*Wind Direction (%)*	6.7%	1.3%	6.3%	31.3%	5.8%	22.1%	20.8%	5.8%	18
				Wind Speed (m/s)	1.8	1.6	0.9	1.5	1.3	1.5	2.4	1.9	
30-Mar-05	6	9		*Wind Direction (%)*	2.9%	1.7%	2.9%	31.3%	8.3%	16.3%	20.8%	15.8%	16
				Wind Speed (m/s)	1.1	0.7	1.2	1.3	1.0	1.3	1.8	2.0	
31-Mar-05	2	3		*Wind Direction (%)*	0.0%	0.0%	0.8%	71.7%	23.3%	4.2%	0.0%	0.0%	13
				Wind Speed (m/s)	0.0	0.0	3.8	4.0	2.3	2.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
01-Apr-05	4	5		*Wind Direction (%)*	0.0%	0.0%	0.0%	16.7%	16.7%	63.8%	2.9%	0.0%	10
				Wind Speed (m/s)	0.0	0.0	0.0	4.2	2.0	2.7	1.8	0.0	
02-Apr-05	9	9		*Wind Direction (%)*	0.0%	0.0%	2.5%	50.8%	13.3%	33.3%	0.0%	0.0%	13
				Wind Speed (m/s)	0.0	0.0	2.6	2.2	1.8	2.0	0.0	0.0	
03-Apr-05	9	12		*Wind Direction (%)*	0.0%	0.0%	65.4%	34.6%	0.0%	0.0%	0.0%	0.0%	15
				Wind Speed (m/s)	0.0	0.0	5.4	3.5	0.0	0.0	0.0	0.0	
04-Apr-05	10	37		*Wind Direction (%)*	0.0%	7.9%	70.4%	21.7%	0.0%	0.0%	0.0%	0.0%	19
				Wind Speed (m/s)	0.0	3.2	5.4	4.1	0.0	0.0	0.0	0.0	
05-Apr-05	14	20		*Wind Direction (%)*	2.5%	1.3%	35.4%	31.3%	0.4%	4.2%	12.9%	12.1%	22
				Wind Speed (m/s)	2.0	1.9	3.8	3.4	0.5	1.6	2.1	2.1	
06-Apr-05	19	29		*Wind Direction (%)*	1.3%	9.2%	43.3%	42.1%	2.1%	0.4%	1.3%	0.4%	22
				Wind Speed (m/s)	2.4	2.9	3.3	5.6	0.9	0.6	1.0	0.7	
07-Apr-05	28	29		*Wind Direction (%)*	8.3%	4.6%	15.0%	15.0%	6.7%	9.6%	27.1%	13.8%	19
				Wind Speed (m/s)	1.5	0.9	2.4	1.1	0.7	2.1	1.9	1.7	
08-Apr-05	15	16		*Wind Direction (%)*	0.4%	0.8%	2.9%	38.3%	22.9%	17.9%	15.4%	1.3%	14
				Wind Speed (m/s)	2.3	0.9	1.3	1.5	1.6	1.6	1.5	1.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
09-Apr-05	11	13		*Wind Direction (%)*	0.4%	0.0%	5.8%	58.8%	4.6%	8.3%	20.4%	1.7%	13
				Wind Speed (m/s)	0.3	0.0	2.5	2.0	1.2	2.0	2.6	1.9	
10-Apr-05	9	11		*Wind Direction (%)*	4.2%	8.3%	14.6%	50.0%	6.3%	9.2%	4.2%	3.3%	15
				Wind Speed (m/s)	2.0	2.1	2.4	2.1	1.4	2.4	1.8	1.9	
11-Apr-05	14	16		*Wind Direction (%)*	0.4%	2.9%	5.8%	56.7%	0.8%	1.7%	14.6%	17.1%	16
				Wind Speed (m/s)	2.9	1.6	1.9	3.4	10.4	1.0	1.8	2.1	
12-Apr-05	11	16		*Wind Direction (%)*	1.3%	0.0%	2.1%	33.3%	10.4%	2.9%	42.1%	7.9%	15
				Wind Speed (m/s)	0.5	0.0	13.6	1.4	4.4	1.7	3.1	2.2	
13-Apr-05	18	20		*Wind Direction (%)*	0.0%	0.0%	21.7%	78.3%	0.0%	0.0%	0.0%	0.0%	14
				Wind Speed (m/s)	0.0	0.0	5.3	3.5	0.0	0.0	0.0	0.0	
14-Apr-05	18	42		*Wind Direction (%)*	0.8%	2.9%	57.5%	28.3%	5.0%	4.6%	0.8%	0.0%	16
				Wind Speed (m/s)	1.7	2.7	5.9	2.6	1.1	1.5	1.1	0.0	
15-Apr-05	31	32		*Wind Direction (%)*	1.7%	1.3%	6.7%	65.8%	5.0%	5.8%	7.9%	5.8%	18
				Wind Speed (m/s)	1.8	1.1	1.7	3.5	1.2	1.3	1.7	1.8	
16-Apr-05	18	19		*Wind Direction (%)*	0.0%	0.0%	2.9%	30.0%	11.7%	12.5%	35.8%	7.1%	15
				Wind Speed (m/s)	0.0	0.0	0.6	1.3	1.1	1.6	2.2	1.4	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
17-Apr-05	14	16		*Wind Direction (%)*	2.1%	0.4%	13.8%	66.3%	4.6%	8.8%	2.1%	2.1%	13
				Wind Speed (m/s)	1.5	1.5	3.5	3.4	1.4	1.7	1.7	1.4	
18-Apr-05	14	20		*Wind Direction (%)*	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	9
				Wind Speed (m/s)	0.0	0.0	0.0	4.3	0.0	0.0	0.0	0.0	
19-Apr-05	25	27		*Wind Direction (%)*	3.0%	6.4%	15.3%	58.9%	4.7%	4.7%	4.2%	3.0%	18
				Wind Speed (m/s)	1.6	2.2	3.6	4.4	1.6	1.5	1.6	1.6	
20-Apr-05	42	37		*Wind Direction (%)*	1.3%	0.0%	1.3%	42.1%	4.6%	13.8%	31.7%	5.4%	18
				Wind Speed (m/s)	1.0	0.0	0.5	1.9	1.4	1.8	2.3	1.0	
21-Apr-05	9	14		*Wind Direction (%)*	9.2%	4.6%	21.3%	14.2%	5.0%	5.4%	20.0%	20.4%	19
				Wind Speed (m/s)	1.6	0.8	1.4	1.2	1.0	0.7	1.2	1.7	
22-Apr-05	18	19		*Wind Direction (%)*	5.8%	4.2%	22.9%	30.4%	2.5%	3.8%	17.1%	13.3%	18
				Wind Speed (m/s)	1.6	1.6	3.9	3.6	0.6	0.9	1.7	2.3	
23-Apr-05	9	10		*Wind Direction (%)*	0.8%	0.0%	0.4%	20.0%	2.9%	4.6%	30.4%	40.8%	17
				Wind Speed (m/s)	2.6	0.0	18.9	1.2	0.9	1.2	2.8	3.3	
24-Apr-05	16	14		*Wind Direction (%)*	0.4%	0.4%	5.8%	69.6%	15.4%	6.3%	1.7%	0.4%	15
				Wind Speed (m/s)	1.2	1.3	3.0	2.6	1.5	1.5	1.0	1.2	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
25-Apr-05	20	17		*Wind Direction (%)*	0.0%	0.4%	3.3%	57.9%	7.9%	12.5%	14.6%	3.3%	16
				Wind Speed (m/s)	0.0	0.6	3.2	4.0	1.4	1.9	1.7	1.9	
26-Apr-05	18	20		*Wind Direction (%)*	0.0%	0.0%	4.6%	47.5%	9.2%	12.1%	26.7%	0.0%	16
				Wind Speed (m/s)	0.0	0.0	2.2	3.1	1.1	2.0	1.8	0.0	
27-Apr-05	18	21		*Wind Direction (%)*	0.4%	0.4%	3.8%	58.3%	11.3%	20.4%	5.0%	0.4%	16
				Wind Speed (m/s)	0.4	1.0	1.4	2.3	1.5	1.7	1.6	0.4	
28-Apr-05	11	12		*Wind Direction (%)*	0.0%	0.0%	30.4%	69.6%	0.0%	0.0%	0.0%	0.0%	16
				Wind Speed (m/s)	0.0	0.0	6.3	5.4	0.0	0.0	0.0	0.0	
29-Apr-05	13	20		*Wind Direction (%)*	0.0%	0.0%	63.8%	36.3%	0.0%	0.0%	0.0%	0.0%	17
				Wind Speed (m/s)	0.0	0.0	7.2	7.2	0.0	0.0	0.0	0.0	
30-Apr-05	12	15		*Wind Direction (%)*	0.0%	0.0%	83.3%	16.7%	0.0%	0.0%	0.0%	0.0%	17
				Wind Speed (m/s)	0.0	0.0	5.8	6.4	0.0	0.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
01-May-05	10	11		*Wind Direction (%)*	19.2%	7.5%	37.9%	0.0%	0.0%	0.0%	6.7%	28.8%	21
				Wind Speed (m/s)	3.5	2.8	4.9	0.0	0.0	0.0	2.5	3.3	
02-May-05	6	6		*Wind Direction (%)*	45.4%	1.3%	0.8%	0.0%	0.0%	0.0%	3.8%	48.8%	19
				Wind Speed (m/s)	3.1	0.6	0.4	0.0	0.0	0.0	2.3	3.1	
03-May-05	7	8		*Wind Direction (%)*	25.0%	2.5%	3.3%	15.0%	5.0%	12.1%	32.9%	4.2%	18
				Wind Speed (m/s)	1.7	1.3	1.1	1.0	1.0	1.3	1.8	1.2	
04-May-05	9	10		*Wind Direction (%)*	4.3%	1.3%	3.9%	40.5%	22.4%	18.1%	6.0%	3.4%	16
				Wind Speed (m/s)	0.6	0.7	1.6	1.8	1.3	1.0	0.9	0.6	
05-May-05	6	8		*Wind Direction (%)*	0.0%	0.0%	45.1%	54.9%	0.0%	0.0%	0.0%	0.0%	14
				Wind Speed (m/s)	0.0	0.0	5.4	4.6	0.0	0.0	0.0	0.0	
06-May-05	8	11		*Wind Direction (%)*	0.0%	0.0%	69.3%	30.7%	0.0%	0.0%	0.0%	0.0%	16
				Wind Speed (m/s)	0.0	0.0	5.5	5.5	0.0	0.0	0.0	0.0	
07-May-05	7	9		*Wind Direction (%)*	0.0%	0.0%	71.5%	28.5%	0.0%	0.0%	0.0%	0.0%	17
				Wind Speed (m/s)	0.0	0.0	5.7	5.6	0.0	0.0	0.0	0.0	
08-May-05	12	14		*Wind Direction (%)*	0.0%	0.0%	72.5%	27.5%	0.0%	0.0%	0.0%	0.0%	20
				Wind Speed (m/s)	0.0	0.0	4.5	5.1	0.0	0.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
09-May-05	16	36		*Wind Direction (%)*	0.0%	2.5%	97.5%	0.0%	0.0%	0.0%	0.0%	0.0%	21
				Wind Speed (m/s)	0.0	3.1	5.3	0.0	0.0	0.0	0.0	0.0	
10-May-05	21	30		*Wind Direction (%)*	23.6%	24.0%	38.2%	3.1%	0.0%	0.4%	0.4%	10.2%	21
				Wind Speed (m/s)	2.5	2.8	4.0	0.9	0.0	0.4	0.4	2.4	
11-May-05	14	18		*Wind Direction (%)*	31.4%	6.3%	1.7%	0.8%	0.0%	0.0%	1.3%	58.6%	19
				Wind Speed (m/s)	2.6	2.0	1.4	1.3	0.0	0.0	1.4	3.0	
12-May-05	10	13		*Wind Direction (%)*	12.9%	1.7%	1.3%	9.2%	1.7%	1.3%	35.8%	36.3%	17
				Wind Speed (m/s)	1.4	0.6	0.7	1.0	0.6	0.9	2.4	2.1	
13-May-05	10	11		*Wind Direction (%)*	52.3%	6.7%	3.8%	0.0%	0.0%	0.8%	5.9%	30.5%	16
				Wind Speed (m/s)	2.1	1.5	0.8	0.0	0.0	1.5	2.6	2.6	
14-May-05	10	11		*Wind Direction (%)*	83.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.3%	18
				Wind Speed (m/s)	2.8	0.0	0.0	0.0	0.0	0.0	0.0	2.4	
15-May-05	8	8		*Wind Direction (%)*	42.5%	45.4%	9.2%	0.0%	0.0%	0.4%	0.0%	2.5%	18
				Wind Speed (m/s)	2.5	2.6	2.9	0.0	0.0	0.7	0.0	1.9	
16-May-05	10	10		*Wind Direction (%)*	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	20
				Wind Speed (m/s)	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
17-May-05	13	16		*Wind Direction (%)*	42.3%	16.1%	20.1%	10.7%	0.0%	0.0%	0.0%	10.7%	17
				Wind Speed (m/s)	3.0	1.8	1.4	1.4	0.0	0.0	0.0	3.4	
18-May-05	8	9		*Wind Direction (%)*	47.7%	14.2%	1.3%	0.0%	0.0%	0.0%	3.8%	33.1%	17
				Wind Speed (m/s)	2.9	1.5	1.7	0.0	0.0	0.0	3.0	4.3	
19-May-05	10	10		*Wind Direction (%)*	11.3%	0.0%	0.4%	1.3%	0.0%	1.7%	10.8%	74.6%	17
				Wind Speed (m/s)	1.2	0.0	0.6	0.5	0.0	1.0	1.9	2.8	
20-May-05	13	14		*Wind Direction (%)*	49.1%	3.0%	18.7%	11.7%	0.0%	0.0%	0.0%	17.4%	17
				Wind Speed (m/s)	2.5	1.1	2.6	2.1	0.0	0.0	0.0	2.9	
21-May-05	8	8		*Wind Direction (%)*	0.9%	3.6%	50.0%	39.5%	0.9%	0.5%	0.9%	3.6%	17
				Wind Speed (m/s)	1.8	2.6	3.9	4.1	0.8	0.7	2.0	1.8	
22-May-05	8	8		*Wind Direction (%)*	0.4%	1.7%	53.3%	27.1%	7.9%	6.3%	2.5%	0.8%	17
				Wind Speed (m/s)	1.7	1.3	3.8	3.6	0.9	1.2	1.4	1.5	
23-May-05	10	10		*Wind Direction (%)*	0.0%	0.0%	3.1%	82.1%	10.9%	3.9%	0.0%	0.0%	15
				Wind Speed (m/s)	0.0	0.0	4.0	3.0	1.4	1.1	0.0	0.0	
24-May-05	7	11		*Wind Direction (%)*	0.0%	0.0%	39.9%	60.1%	0.0%	0.0%	0.0%	0.0%	13
				Wind Speed (m/s)	0.0	0.0	5.9	4.5	0.0	0.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
25-May-05	10	33		*Wind Direction (%)*	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16
				Wind Speed (m/s)	0.0	0.0	6.5	0.0	0.0	0.0	0.0	0.0	
26-May-05	10	17		*Wind Direction (%)*	0.0%	0.0%	91.3%	8.8%	0.0%	0.0%	0.0%	0.0%	18
				Wind Speed (m/s)	0.0	0.0	5.5	5.1	0.0	0.0	0.0	0.0	
27-May-05	10	20		*Wind Direction (%)*	0.0%	3.1%	85.0%	11.9%	0.0%	0.0%	0.0%	0.0%	18
				Wind Speed (m/s)	0.0	3.0	4.7	4.5	0.0	0.0	0.0	0.0	
28-May-05	15	16		*Wind Direction (%)*	2.1%	20.0%	77.9%	0.0%	0.0%	0.0%	0.0%	0.0%	19
				Wind Speed (m/s)	1.8	2.4	3.2	0.0	0.0	0.0	0.0	0.0	
29-May-05	13	13		*Wind Direction (%)*	5.9%	19.5%	47.0%	26.3%	0.8%	0.4%	0.0%	0.0%	20
				Wind Speed (m/s)	2.6	2.1	3.2	2.9	1.0	1.3	0.0	0.0	
30-May-05	8	22		*Wind Direction (%)*	0.0%	5.8%	93.7%	0.4%	0.0%	0.0%	0.0%	0.0%	18
				Wind Speed (m/s)	0.0	3.3	4.3	5.0	0.0	0.0	0.0	0.0	
31-May-05	8	33		*Wind Direction (%)*	0.0%	0.0%	90.2%	9.8%	0.0%	0.0%	0.0%	0.0%	16
				Wind Speed (m/s)	0.0	0.0	5.2	4.2	0.0	0.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
01-Jun-05	9	55		*Wind Direction (%)*	0.0%	1.3%	98.7%	0.0%	0.0%	0.0%	0.0%	0.0%	16
				Wind Speed (m/s)	0.0	3.1	5.0	0.0	0.0	0.0	0.0	0.0	
02-Jun-05	11	25		*Wind Direction (%)*	24.5%	21.7%	47.2%	0.0%	0.0%	0.0%	0.0%	6.6%	16
				Wind Speed (m/s)	3.1	2.3	3.8	0.0	0.0	0.0	0.0	4.4	
03-Jun-05	12	14		*Wind Direction (%)*	48.3%	0.4%	2.1%	25.8%	0.0%	0.4%	2.5%	20.4%	16
				Wind Speed (m/s)	2.3	0.6	1.5	1.8	0.0	1.0	1.3	1.7	
04-Jun-05	5	7		*Wind Direction (%)*	0.0%	0.8%	35.8%	63.3%	0.0%	0.0%	0.0%	0.0%	15
				Wind Speed (m/s)	0.0	1.8	2.9	3.4	0.0	0.0	0.0	0.0	
05-Jun-05	8	12		*Wind Direction (%)*	9.6%	2.9%	18.3%	37.1%	5.4%	2.5%	13.8%	10.4%	15
				Wind Speed (m/s)	2.0	1.5	1.8	1.5	0.6	0.9	1.6	2.1	
06-Jun-05	6	9		*Wind Direction (%)*	29.2%	12.1%	29.2%	5.4%	0.0%	0.0%	0.0%	24.2%	14
				Wind Speed (m/s)	2.9	2.7	3.2	3.5	0.0	0.0	0.0	3.6	
07-Jun-05	9	7		*Wind Direction (%)*	27.1%	0.0%	0.0%	0.0%	0.0%	0.4%	31.3%	41.3%	13
				Wind Speed (m/s)	3.4	0.0	0.0	0.0	0.0	0.5	2.0	2.6	
08-Jun-05	12	10		*Wind Direction (%)*	13.3%	1.7%	2.9%	0.4%	0.0%	0.0%	12.1%	69.6%	14
				Wind Speed (m/s)	1.1	0.4	0.5	0.4	0.0	0.0	1.3	2.2	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
09-Jun-05	9	10		*Wind Direction (%)*	2.5%	0.8%	0.4%	1.7%	5.4%	7.9%	24.2%	57.1%	10
				Wind Speed (m/s)	0.6	0.4	0.1	0.5	1.1	1.5	2.4	2.0	
10-Jun-05	8	10		*Wind Direction (%)*	2.1%	1.3%	2.1%	17.2%	11.7%	5.9%	17.6%	42.3%	11
				Wind Speed (m/s)	0.7	0.8	0.7	1.0	1.5	1.4	2.3	2.3	
11-Jun-05	13	14		*Wind Direction (%)*	0.0%	0.0%	0.0%	0.0%	0.8%	23.3%	72.9%	2.9%	11
				Wind Speed (m/s)	0.0	0.0	0.0	0.0	1.1	2.0	2.1	1.6	
12-Jun-05	8	8		*Wind Direction (%)*	0.4%	0.4%	3.1%	30.8%	22.5%	17.6%	19.8%	5.3%	8
				Wind Speed (m/s)	0.6	0.3	0.6	1.1	1.2	1.7	1.6	1.0	
13-Jun-05	12	16		*Wind Direction (%)*	0.4%	0.0%	1.3%	62.5%	7.9%	18.3%	7.9%	1.7%	8
				Wind Speed (m/s)	0.2	0.0	0.6	1.2	1.4	1.5	1.3	0.9	
14-Jun-05	11	16		*Wind Direction (%)*	10.4%	2.6%	5.2%	44.8%	3.0%	4.8%	6.1%	23.0%	10
				Wind Speed (m/s)	1.4	0.7	0.4	0.9	0.4	1.1	1.5	1.3	
15-Jun-05	7	11		*Wind Direction (%)*	46.3%	9.2%	22.9%	7.9%	0.0%	0.0%	0.0%	13.8%	12
				Wind Speed (m/s)	2.3	1.0	2.2	1.0	0.0	0.0	0.0	2.9	
16-Jun-05	4	11		*Wind Direction (%)*	2.5%	26.3%	70.4%	0.0%	0.0%	0.0%	0.0%	0.8%	10
				Wind Speed (m/s)	2.1	2.8	3.4	0.0	0.0	0.0	0.0	2.7	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
17-Jun-05	7	9		*Wind Direction (%)*	27.9%	5.8%	7.5%	30.0%	4.6%	1.3%	5.0%	17.9%	10
				Wind Speed (m/s)	2.0	0.7	0.6	0.8	0.4	0.6	1.1	2.0	
18-Jun-05	12	17		*Wind Direction (%)*	4.6%	0.8%	0.8%	32.9%	31.3%	19.6%	5.4%	4.6%	11
				Wind Speed (m/s)	0.6	0.4	0.5	1.2	1.8	2.0	1.5	0.9	
19-Jun-05	12	13		*Wind Direction (%)*	1.7%	0.8%	0.4%	32.5%	31.7%	19.2%	5.8%	7.9%	10
				Wind Speed (m/s)	1.6	0.5	0.8	1.0	1.9	1.6	1.2	0.9	
20-Jun-05	10	17		*Wind Direction (%)*	0.4%	0.4%	1.3%	74.5%	18.0%	5.0%	0.0%	0.4%	9
				Wind Speed (m/s)	0.1	0.1	0.2	1.7	1.5	1.9	0.0	0.3	
21-Jun-05	9	12		*Wind Direction (%)*	0.0%	10.8%	36.3%	52.9%	0.0%	0.0%	0.0%	0.0%	10
				Wind Speed (m/s)	0.0	2.0	1.8	2.7	0.0	0.0	0.0	0.0	
22-Jun-05	5	9		*Wind Direction (%)*	7.5%	50.0%	35.8%	6.7%	0.0%	0.0%	0.0%	0.0%	12
				Wind Speed (m/s)	3.5	3.3	3.3	2.4	0.0	0.0	0.0	0.0	
23-Jun-05	8	9		*Wind Direction (%)*	28.3%	15.4%	0.4%	2.5%	2.1%	5.4%	26.7%	19.2%	11
				Wind Speed (m/s)	4.3	3.8	0.3	0.7	0.8	0.9	1.9	2.7	
24-Jun-05	12	14		*Wind Direction (%)*	8.8%	0.8%	4.2%	27.9%	4.2%	7.1%	27.5%	19.6%	11
				Wind Speed (m/s)	0.8	0.2	1.0	0.9	0.8	1.3	1.3	1.1	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
25-Jun-05	8	10		*Wind Direction (%)*	22.2%	12.1%	8.8%	30.5%	9.6%	1.7%	0.8%	14.2%	12
				Wind Speed (m/s)	1.9	1.1	1.0	1.7	2.0	1.2	1.9	2.2	
26-Jun-05	8	8		*Wind Direction (%)*	15.0%	10.0%	55.8%	14.2%	0.0%	0.0%	0.0%	5.0%	13
				Wind Speed (m/s)	2.4	2.4	2.1	1.9	0.0	0.0	0.0	2.2	
27-Jun-05	10	16		*Wind Direction (%)*	15.6%	10.1%	52.3%	17.7%	0.0%	0.0%	0.0%	4.2%	13
				Wind Speed (m/s)	2.2	2.7	2.9	2.6	0.0	0.0	0.0	2.9	
28-Jun-05	9	13		*Wind Direction (%)*	1.7%	17.9%	55.0%	25.4%	0.0%	0.0%	0.0%	0.0%	13
				Wind Speed (m/s)	3.4	3.0	3.0	3.6	0.0	0.0	0.0	0.0	
29-Jun-05	6	8		*Wind Direction (%)*	48.3%	29.6%	5.4%	0.0%	0.0%	0.0%	0.8%	15.8%	14
				Wind Speed (m/s)	3.3	2.5	2.7	0.0	0.0	0.0	2.0	3.3	
30-Jun-05	16	17		*Wind Direction (%)*	0.8%	0.0%	0.0%	27.1%	0.4%	16.7%	35.0%	20.0%	12
				Wind Speed (m/s)	0.4	0.0	0.0	1.4	0.7	2.2	2.0	1.1	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
01-Jul-05	17	20		*Wind Direction (%)*	1.7%	3.3%	11.3%	59.2%	1.3%	3.3%	12.5%	7.5%	11
				Wind Speed (m/s)	1.5	1.2	1.3	1.3	0.3	0.7	1.2	1.5	
02-Jul-05	12	14		*Wind Direction (%)*	26.3%	14.2%	42.5%	1.3%	0.0%	0.0%	0.0%	15.8%	12
				Wind Speed (m/s)	2.1	2.0	2.2	0.4	0.0	0.0	0.0	2.5	
03-Jul-05	10	11		*Wind Direction (%)*	18.3%	0.0%	0.0%	0.0%	0.0%	0.0%	17.5%	64.2%	14
				Wind Speed (m/s)	2.8	0.0	0.0	0.0	0.0	0.0	2.6	4.4	
04-Jul-05	12	12		*Wind Direction (%)*	0.4%	0.0%	0.0%	14.2%	5.9%	10.5%	61.5%	7.5%	11
				Wind Speed (m/s)	0.3	0.0	0.0	0.8	0.9	1.7	2.0	0.9	
05-Jul-05	11	11		*Wind Direction (%)*	0.8%	0.8%	8.8%	82.1%	5.4%	1.3%	0.0%	0.8%	9
				Wind Speed (m/s)	0.2	0.3	2.5	1.7	1.3	1.0	0.0	0.4	
06-Jul-05	12	12		*Wind Direction (%)*	0.0%	0.0%	22.1%	77.9%	0.0%	0.0%	0.0%	0.0%	7
				Wind Speed (m/s)	0.0	0.0	3.0	2.8	0.0	0.0	0.0	0.0	
07-Jul-05	8	12		*Wind Direction (%)*	0.0%	0.4%	49.6%	50.0%	0.0%	0.0%	0.0%	0.0%	8
				Wind Speed (m/s)	0.0	2.8	3.6	3.6	0.0	0.0	0.0	0.0	
08-Jul-05	4	9		*Wind Direction (%)*	0.0%	13.3%	67.5%	19.2%	0.0%	0.0%	0.0%	0.0%	9
				Wind Speed (m/s)	0.0	3.0	4.4	2.9	0.0	0.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
09-Jul-05	4	12		*Wind Direction (%)*	0.0%	2.5%	97.5%	0.0%	0.0%	0.0%	0.0%	0.0%	11
				Wind Speed (m/s)	0.0	3.3	4.5	0.0	0.0	0.0	0.0	0.0	
10-Jul-05	6	11		*Wind Direction (%)*	0.0%	0.0%	57.9%	42.1%	0.0%	0.0%	0.0%	0.0%	10
				Wind Speed (m/s)	0.0	0.0	4.5	3.7	0.0	0.0	0.0	0.0	
11-Jul-05	7	9		*Wind Direction (%)*	0.0%	6.7%	47.5%	45.8%	0.0%	0.0%	0.0%	0.0%	9
				Wind Speed (m/s)	0.0	2.1	2.6	4.1	0.0	0.0	0.0	0.0	
12-Jul-05	7	13		*Wind Direction (%)*	35.9%	17.7%	29.1%	7.7%	0.0%	0.0%	1.4%	8.2%	10
				Wind Speed (m/s)	2.6	2.2	2.0	2.3	0.0	0.0	1.6	2.6	
13-Jul-05	17	18		*Wind Direction (%)*	0.8%	0.0%	0.0%	0.0%	1.7%	10.0%	72.9%	14.6%	12
				Wind Speed (m/s)	3.5	0.0	0.0	0.0	1.1	1.4	3.0	1.8	
14-Jul-05	8	13		*Wind Direction (%)*	0.4%	0.4%	2.1%	27.5%	34.6%	14.2%	17.1%	3.8%	12
				Wind Speed (m/s)	0.4	0.8	0.4	1.0	1.5	1.2	1.2	1.4	
15-Jul-05	9	12		*Wind Direction (%)*	11.5%	2.6%	5.7%	34.8%	1.8%	11.9%	18.9%	12.8%	12
				Wind Speed (m/s)	0.9	0.3	0.9	1.6	0.5	1.1	1.2	1.2	
16-Jul-05	13	16		*Wind Direction (%)*	2.5%	0.4%	25.0%	53.8%	3.8%	4.2%	6.7%	3.8%	11
				Wind Speed (m/s)	1.2	1.1	2.8	2.7	1.3	0.8	1.1	1.6	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
17-Jul-05	11	14		*Wind Direction (%)*	2.1%	0.8%	5.8%	73.8%	0.4%	7.1%	6.7%	3.3%	10
				Wind Speed (m/s)	1.1	1.0	1.8	1.8	0.6	1.1	1.2	1.5	
18-Jul-05	9	16		*Wind Direction (%)*	16.3%	19.9%	25.5%	37.6%	0.7%	0.0%	0.0%	0.0%	11
				Wind Speed (m/s)	2.9	2.7	2.2	1.7	0.7	0.0	0.0	0.0	
19-Jul-05				*Wind Direction (%)*									
				Wind Speed (m/s)									
20-Jul-05	16	18		*Wind Direction (%)*	23.7%	2.3%	0.0%	0.0%	0.0%	0.0%	9.0%	65.0%	17
				Wind Speed (m/s)	3.5	2.3	0.0	0.0	0.0	0.0	4.2	6.1	
21-Jul-05	12	14		*Wind Direction (%)*	5.8%	1.3%	2.7%	13.7%	2.2%	6.2%	41.6%	26.5%	12
				Wind Speed (m/s)	1.1	0.6	0.7	0.7	0.6	1.2	2.4	2.0	
22-Jul-05	9	11		*Wind Direction (%)*	47.1%	3.1%	0.9%	3.1%	0.0%	0.0%	3.6%	42.2%	12
				Wind Speed (m/s)	1.8	1.2	0.7	0.7	0.0	0.0	1.6	2.5	
23-Jul-05	10	12		*Wind Direction (%)*	20.8%	6.7%	0.4%	0.4%	0.4%	1.7%	41.7%	27.9%	13
				Wind Speed (m/s)	1.1	0.6	0.4	0.3	0.3	0.9	2.5	1.1	
24-Jul-05	6	7		*Wind Direction (%)*	14.2%	1.3%	2.1%	7.5%	2.1%	2.5%	20.8%	49.6%	13
				Wind Speed (m/s)	0.9	0.5	0.5	0.5	0.4	0.6	1.3	1.5	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
25-Jul-05	8	10		*Wind Direction (%)*	6.3%	2.9%	5.0%	24.2%	2.5%	6.3%	18.8%	34.2%	14
				Wind Speed (m/s)	0.5	0.3	0.4	0.8	0.6	0.7	1.2	1.5	
26-Jul-05	9	9		*Wind Direction (%)*	4.2%	4.2%	24.2%	44.2%	0.8%	1.3%	5.0%	16.3%	13
				Wind Speed (m/s)	2.9	2.5	3.4	1.5	0.5	0.6	2.1	2.5	
27-Jul-05	10	15		*Wind Direction (%)*	12.5%	2.1%	2.1%	34.6%	0.0%	0.0%	7.5%	41.3%	14
				Wind Speed (m/s)	1.3	0.4	0.5	1.3	0.0	0.0	2.3	2.0	
28-Jul-05	13	15		*Wind Direction (%)*	1.3%	1.7%	5.0%	24.6%	9.6%	8.8%	34.2%	15.0%	14
				Wind Speed (m/s)	0.4	0.3	0.6	1.2	0.8	1.0	1.8	1.3	
29-Jul-05	15	16		*Wind Direction (%)*	8.8%	2.5%	2.9%	26.7%	2.9%	6.3%	29.2%	20.8%	13
				Wind Speed (m/s)	1.1	0.4	0.6	0.9	0.5	0.8	2.3	1.7	
30-Jul-05	29	31		*Wind Direction (%)*	1.7%	5.6%	12.9%	57.1%	9.0%	7.3%	4.7%	1.7%	12
				Wind Speed (m/s)	1.1	1.8	1.9	1.6	0.9	1.2	1.4	1.5	
31-Jul-05	16	14		*Wind Direction (%)*	6.7%	1.7%	38.8%	26.7%	0.0%	0.0%	7.5%	18.8%	12
				Wind Speed (m/s)	2.4	1.5	2.0	1.4	0.0	0.0	1.8	2.1	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
01-Aug-05	16	19		*Wind Direction (%)*	29.2%	5.4%	0.0%	11.3%	0.0%	4.2%	12.5%	37.5%	15
				Wind Speed (m/s)	2.3	1.0	0.0	0.6	0.0	1.3	2.0	6.1	
02-Aug-05	6	8		*Wind Direction (%)*	2.5%	3.8%	8.3%	16.3%	5.8%	19.2%	31.7%	12.5%	11
				Wind Speed (m/s)	0.3	0.3	0.6	1.0	1.1	1.4	2.0	1.4	
03-Aug-05	12	14		*Wind Direction (%)*	0.0%	0.0%	0.0%	64.8%	14.5%	20.3%	0.4%	0.0%	9
				Wind Speed (m/s)	0.0	0.0	0.0	1.1	1.6	1.7	0.3	0.0	
04-Aug-05	10	15		*Wind Direction (%)*	3.8%	9.7%	6.8%	51.1%	2.5%	2.1%	14.8%	9.3%	11
				Wind Speed (m/s)	2.0	1.7	1.2	1.3	0.5	1.4	1.8	2.1	
05-Aug-05	7	13		*Wind Direction (%)*	11.7%	5.2%	12.2%	42.6%	0.9%	0.4%	10.4%	16.5%	11
				Wind Speed (m/s)	2.0	1.0	0.9	1.1	0.6	0.8	1.4	2.4	
06-Aug-05	10	13		*Wind Direction (%)*	8.9%	2.1%	5.1%	45.1%	4.3%	3.0%	18.7%	12.8%	12
				Wind Speed (m/s)	1.0	0.6	0.4	1.1	0.4	0.9	1.3	1.2	
07-Aug-05	9	13		*Wind Direction (%)*	4.6%	4.2%	11.7%	56.7%	1.3%	9.2%	6.7%	5.8%	13
				Wind Speed (m/s)	1.9	1.6	1.8	1.6	0.5	1.2	1.2	1.8	
08-Aug-05	10	15		*Wind Direction (%)*	5.8%	4.2%	6.3%	52.5%	2.1%	4.2%	14.6%	10.4%	13
				Wind Speed (m/s)	1.7	1.7	1.3	1.4	0.5	1.2	1.8	1.9	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
09-Aug-05	12	18		*Wind Direction (%)*	8.4%	10.1%	28.3%	36.7%	2.5%	2.5%	0.4%	11.0%	13
				Wind Speed (m/s)	2.0	3.2	3.5	1.8	0.9	1.0	0.9	1.5	
10-Aug-05	8	15		*Wind Direction (%)*	0.9%	0.0%	19.7%	39.5%	4.4%	6.1%	25.9%	3.5%	12
				Wind Speed (m/s)	0.8	0.0	2.0	1.4	0.9	1.4	1.6	1.1	
11-Aug-05	8	14		*Wind Direction (%)*	11.5%	7.3%	18.8%	49.1%	0.0%	2.1%	2.1%	9.0%	12
				Wind Speed (m/s)	1.8	1.6	2.6	1.7	0.0	0.4	1.2	2.1	
12-Aug-05	9	13		*Wind Direction (%)*	16.3%	3.3%	31.3%	1.3%	0.0%	0.0%	21.3%	26.7%	13
				Wind Speed (m/s)	3.4	2.4	3.5	1.7	0.0	0.0	2.2	3.8	
13-Aug-05	9	10		*Wind Direction (%)*	5.8%	2.9%	1.3%	2.9%	0.0%	0.4%	36.3%	50.4%	11
				Wind Speed (m/s)	1.0	0.4	0.3	0.7	0.0	0.5	3.4	3.1	
14-Aug-05	16	16		*Wind Direction (%)*	2.9%	0.8%	3.3%	28.3%	7.5%	21.7%	32.9%	2.5%	10
				Wind Speed (m/s)	0.4	0.4	0.5	0.9	1.4	1.6	1.8	0.9	
15-Aug-05	14	14		*Wind Direction (%)*	55.5%	19.1%	7.2%	2.1%	0.4%	0.0%	0.0%	15.7%	12
				Wind Speed (m/s)	2.6	1.1	0.6	0.5	0.3	0.0	0.0	3.0	
16-Aug-05	10	11		*Wind Direction (%)*	33.2%	9.8%	0.0%	0.0%	1.6%	2.1%	40.4%	13.0%	10
				Wind Speed (m/s)	3.4	1.4	0.0	0.0	0.7	0.7	2.8	2.9	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
17-Aug-05	6	7		*Wind Direction (%)*	45.1%	5.4%	2.0%	8.8%	1.5%	2.5%	5.4%	29.4%	9
				Wind Speed (m/s)	2.8	1.8	1.5	1.0	0.7	2.3	2.0	2.9	
18-Aug-05	7	12		*Wind Direction (%)*	0.0%	0.0%	0.0%	26.7%	56.7%	10.0%	6.7%	0.0%	6
				Wind Speed (m/s)	0.0	0.0	0.0	1.5	1.5	1.7	0.6	0.0	
19-Aug-05	13	18		*Wind Direction (%)*	0.0%	0.0%	8.3%	44.6%	7.6%	19.7%	19.7%	0.0%	11
				Wind Speed (m/s)	0.0	0.0	3.2	1.8	1.3	1.7	1.7	0.0	
20-Aug-05	11	18		*Wind Direction (%)*	0.0%	0.8%	7.9%	59.2%	4.6%	17.5%	7.1%	2.9%	11
				Wind Speed (m/s)	0.0	0.9	1.2	1.3	1.5	1.6	1.7	1.6	
21-Aug-05	12	11		*Wind Direction (%)*	0.4%	4.2%	26.7%	68.8%	0.0%	0.0%	0.0%	0.0%	12
				Wind Speed (m/s)	1.1	2.3	2.6	2.7	0.0	0.0	0.0	0.0	
22-Aug-05	6	11		*Wind Direction (%)*	0.0%	0.0%	32.9%	67.1%	0.0%	0.0%	0.0%	0.0%	13
				Wind Speed (m/s)	0.0	0.0	5.3	4.8	0.0	0.0	0.0	0.0	
23-Aug-05	6	8		*Wind Direction (%)*	0.0%	0.0%	45.8%	54.2%	0.0%	0.0%	0.0%	0.0%	13
				Wind Speed (m/s)	0.0	0.0	7.1	5.9	0.0	0.0	0.0	0.0	
24-Aug-05	5	5		*Wind Direction (%)*	0.0%	0.0%	7.1%	92.9%	0.0%	0.0%	0.0%	0.0%	12
				Wind Speed (m/s)	0.0	0.0	5.6	5.2	0.0	0.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
25-Aug-05	5	6		*Wind Direction (%)*	0.0%	0.0%	6.7%	93.3%	0.0%	0.0%	0.0%	0.0%	13
				Wind Speed (m/s)	0.0	0.0	5.2	4.0	0.0	0.0	0.0	0.0	
26-Aug-05	6	10		*Wind Direction (%)*	1.7%	7.5%	31.7%	57.9%	0.0%	0.0%	0.4%	0.8%	12
				Wind Speed (m/s)	1.3	2.0	2.9	2.0	0.0	0.0	1.3	1.0	
27-Aug-05	9	13		*Wind Direction (%)*	16.3%	2.9%	19.6%	6.7%	0.8%	2.9%	7.9%	42.9%	13
				Wind Speed (m/s)	2.0	0.6	1.3	1.1	15.4	2.5	2.6	2.3	
28-Aug-05	10	11		*Wind Direction (%)*	2.9%	0.0%	2.1%	2.9%	0.4%	7.9%	40.8%	42.9%	13
				Wind Speed (m/s)	1.9	0.0	0.4	0.5	0.4	1.7	2.3	3.0	
29-Aug-05	12	14		*Wind Direction (%)*	1.3%	0.9%	2.1%	3.4%	2.1%	2.6%	83.3%	4.3%	12
				Wind Speed (m/s)	0.5	0.4	0.4	0.5	0.4	1.5	3.3	0.7	
30-Aug-05	14	14		*Wind Direction (%)*	0.0%	0.4%	7.0%	53.5%	21.9%	3.5%	13.2%	0.4%	10
				Wind Speed (m/s)	0.0	2.2	2.2	2.1	2.1	1.9	2.7	0.5	
31-Aug-05	12	11		*Wind Direction (%)*	2.1%	4.2%	11.3%	73.8%	7.5%	0.8%	0.0%	0.4%	9
				Wind Speed (m/s)	1.4	1.7	2.3	2.1	1.0	1.1	0.0	1.1	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
01-Sep-05	12	15		*Wind Direction (%)*	2.5%	5.4%	15.0%	47.1%	1.3%	5.8%	16.3%	6.7%	9
				Wind Speed (m/s)	1.2	1.8	2.3	2.1	0.6	1.7	1.6	1.6	
02-Sep-05	9	15		*Wind Direction (%)*	3.8%	2.5%	1.7%	50.4%	1.7%	4.6%	26.3%	9.2%	11
				Wind Speed (m/s)	1.1	1.1	0.3	1.5	0.5	1.0	2.0	1.9	
03-Sep-05	7	11		*Wind Direction (%)*	17.1%	1.3%	5.4%	33.3%	0.4%	0.0%	7.5%	35.0%	12
				Wind Speed (m/s)	1.6	0.4	0.4	1.6	0.1	0.0	3.1	2.7	
04-Sep-05	9	9		*Wind Direction (%)*	31.7%	0.8%	0.0%	0.0%	0.0%	0.0%	4.6%	62.9%	14
				Wind Speed (m/s)	2.5	1.1	0.0	0.0	0.0	0.0	4.3	3.3	
05-Sep-05	10	12		*Wind Direction (%)*	43.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	57.0%	15
				Wind Speed (m/s)	3.7	0.0	0.0	0.0	0.0	0.0	0.0	5.1	
06-Sep-05	24	24		*Wind Direction (%)*	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.5%	83.5%	14
				Wind Speed (m/s)	0.0	0.0	0.0	0.0	0.0	0.0	5.5	4.4	
07-Sep-05	16	18		*Wind Direction (%)*	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	51.3%	48.3%	13
				Wind Speed (m/s)	0.0	0.0	0.0	0.0	0.0	8.2	2.8	4.3	
08-Sep-05	14	16		*Wind Direction (%)*	0.4%	0.0%	0.0%	0.0%	0.0%	1.3%	54.1%	44.1%	11
				Wind Speed (m/s)	0.6	0.0	0.0	0.0	0.0	2.2	2.4	3.3	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
09-Sep-05	13	13		*Wind Direction (%)*	0.0%	0.0%	0.0%	22.1%	18.8%	38.8%	20.4%	0.0%	9
				Wind Speed (m/s)	0.0	0.0	0.0	1.7	2.1	2.1	1.7	0.0	
10-Sep-05	10	11		*Wind Direction (%)*	0.0%	0.8%	47.9%	51.3%	0.0%	0.0%	0.0%	0.0%	9
				Wind Speed (m/s)	0.0	3.2	4.1	3.1	0.0	0.0	0.0	0.0	
11-Sep-05	11	13		*Wind Direction (%)*	17.1%	13.8%	37.9%	7.5%	0.0%	0.0%	3.8%	20.0%	13
				Wind Speed (m/s)	2.2	2.4	3.9	1.2	0.0	0.0	3.1	2.4	
12-Sep-05	10	10		*Wind Direction (%)*	0.0%	0.0%	8.8%	32.1%	15.8%	11.7%	25.8%	5.8%	11
				Wind Speed (m/s)	0.0	0.0	30.1	0.9	1.5	2.0	1.9	1.6	
13-Sep-05	16	11		*Wind Direction (%)*	17.5%	2.1%	1.7%	17.1%	2.1%	1.7%	6.7%	51.3%	11
				Wind Speed (m/s)	2.4	1.0	0.7	1.5	0.7	2.2	2.7	4.0	
14-Sep-05	15	15		*Wind Direction (%)*	1.7%	1.3%	4.6%	57.9%	13.3%	16.7%	4.6%	0.0%	12
				Wind Speed (m/s)	1.4	1.2	2.5	1.9	1.6	1.7	1.8	0.0	
15-Sep-05	16	16		*Wind Direction (%)*	1.7%	0.8%	9.2%	65.8%	1.7%	7.5%	8.3%	5.0%	11
				Wind Speed (m/s)	1.0	1.3	2.3	2.3	1.1	1.5	2.3	2.0	
16-Sep-05	9	14		*Wind Direction (%)*	33.8%	8.3%	24.6%	9.6%	0.0%	0.0%	1.7%	22.1%	15
				Wind Speed (m/s)	4.0	3.5	3.4	2.9	0.0	0.0	3.0	3.5	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
17-Sep-05	15	16		*Wind Direction (%)*	2.1%	0.8%	0.8%	14.2%	2.1%	3.3%	57.7%	18.8%	13
				Wind Speed (m/s)	6.3	0.2	0.3	0.6	0.6	1.3	3.7	5.5	
18-Sep-05	14	15		*Wind Direction (%)*	8.8%	0.8%	4.6%	32.9%	3.3%	6.3%	18.8%	24.6%	12
				Wind Speed (m/s)	1.5	0.3	0.5	1.0	0.5	0.9	1.2	1.6	
19-Sep-05	13	17		*Wind Direction (%)*	13.8%	6.7%	29.2%	23.8%	0.4%	0.0%	10.0%	16.3%	15
				Wind Speed (m/s)	3.2	2.8	3.6	1.5	0.5	0.0	2.7	2.7	
20-Sep-05	10	11		*Wind Direction (%)*	17.1%	20.0%	0.0%	0.0%	0.0%	7.1%	22.9%	32.9%	14
				Wind Speed (m/s)	2.7	1.7	0.0	0.0	0.0	2.1	2.4	4.1	
21-Sep-05	9	12		*Wind Direction (%)*	0.4%	0.8%	4.2%	9.2%	21.7%	30.4%	30.4%	2.9%	12
				Wind Speed (m/s)	0.6	0.3	0.5	0.6	2.1	1.3	1.3	1.1	
22-Sep-05	10	16		*Wind Direction (%)*	12.1%	2.9%	5.0%	34.6%	4.6%	4.2%	15.4%	21.3%	13
				Wind Speed (m/s)	1.0	0.5	0.5	1.0	0.5	0.9	1.0	1.2	
23-Sep-05	7	8		*Wind Direction (%)*	0.0%	0.0%	10.4%	84.2%	2.5%	2.9%	0.0%	0.0%	13
				Wind Speed (m/s)	0.0	0.0	4.9	4.7	3.3	2.3	0.0	0.0	
24-Sep-05	10	11		*Wind Direction (%)*	0.0%	0.0%	2.9%	72.1%	11.7%	13.3%	0.0%	0.0%	12
				Wind Speed (m/s)	0.0	0.0	2.4	3.3	1.8	2.1	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
25-Sep-05	10	10		*Wind Direction (%)*	1.7%	3.0%	4.8%	60.9%	5.7%	7.0%	7.4%	9.6%	12
				Wind Speed (m/s)	1.9	1.2	1.9	2.6	1.2	1.7	2.3	1.9	
26-Sep-05	11	10		*Wind Direction (%)*	0.8%	2.1%	2.9%	35.8%	0.0%	0.8%	39.2%	18.3%	13
				Wind Speed (m/s)	1.2	1.8	1.4	3.9	0.0	2.5	2.4	1.8	
27-Sep-05	16	19		*Wind Direction (%)*	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	91.7%	6.3%	11
				Wind Speed (m/s)	0.0	0.0	0.0	0.0	0.0	1.9	3.3	1.6	
28-Sep-05	13	14		*Wind Direction (%)*	0.8%	0.0%	0.0%	0.0%	2.1%	13.8%	63.8%	19.6%	11
				Wind Speed (m/s)	0.6	0.0	0.0	0.0	1.3	1.5	2.1	1.4	
29-Sep-05	13	13		*Wind Direction (%)*	1.3%	0.0%	0.0%	0.0%	0.0%	1.3%	55.8%	41.7%	12
				Wind Speed (m/s)	0.7	0.0	0.0	0.0	0.0	2.3	2.4	1.7	
30-Sep-05	19	19		*Wind Direction (%)*	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	23.8%	75.7%	14
				Wind Speed (m/s)	2.6	0.0	0.0	0.0	0.0	0.0	4.3	4.7	

Nominated PM10 (24 hr) criteria is 50ug/m3

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Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
01-Oct-05	16	17		*Wind Direction (%)*	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.3%	88.8%	15
				Wind Speed (m/s)	0.0	0.0	0.0	0.0	0.0	0.0	2.9	3.6	
02-Oct-05	13	12		*Wind Direction (%)*	0.0%	0.0%	0.0%	22.9%	0.0%	3.8%	60.8%	12.5%	14
				Wind Speed (m/s)	0.0	0.0	0.0	1.5	0.0	2.0	2.7	2.7	
03-Oct-05	17	12		*Wind Direction (%)*	11.7%	5.8%	10.4%	20.0%	0.0%	0.0%	4.6%	47.5%	14
				Wind Speed (m/s)	3.3	2.3	2.1	1.5	0.0	0.0	3.0	3.9	
04-Oct-05	17	18		*Wind Direction (%)*	2.1%	0.0%	0.0%	15.0%	0.0%	1.3%	64.2%	17.5%	12
				Wind Speed (m/s)	0.4	0.0	0.0	1.1	0.0	3.0	2.8	4.0	
05-Oct-05	9	10		*Wind Direction (%)*	34.6%	31.3%	8.8%	7.1%	0.4%	0.4%	0.4%	17.1%	12
				Wind Speed (m/s)	2.6	1.8	1.4	0.7	0.2	0.3	0.3	3.0	
06-Oct-05	7	9		*Wind Direction (%)*	8.8%	1.3%	5.0%	50.8%	8.8%	5.0%	5.4%	15.0%	12
				Wind Speed (m/s)	1.5	0.9	1.3	2.1	1.7	1.6	1.3	1.8	
07-Oct-05	8	10		*Wind Direction (%)*	0.0%	0.4%	1.7%	39.6%	22.2%	23.0%	12.2%	0.9%	11
				Wind Speed (m/s)	0.0	0.2	0.8	1.3	1.5	1.8	2.4	1.4	
08-Oct-05	6	8		*Wind Direction (%)*	1.3%	0.8%	0.8%	40.4%	0.8%	4.6%	39.6%	11.7%	13
				Wind Speed (m/s)	0.4	0.3	0.6	1.7	1.4	1.2	1.9	1.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
09-Oct-05	12	14		*Wind Direction (%)*	0.0%	0.0%	0.0%	10.9%	18.7%	34.8%	27.0%	8.7%	11
				Wind Speed (m/s)	0.0	0.0	0.0	1.3	1.7	2.5	1.5	1.1	
10-Oct-05	16	13		*Wind Direction (%)*	0.0%	0.0%	3.5%	48.9%	27.7%	19.5%	0.4%	0.0%	10
				Wind Speed (m/s)	0.0	0.0	1.4	1.7	1.8	2.1	2.1	0.0	
11-Oct-05	11	12		*Wind Direction (%)*	1.7%	1.7%	5.4%	41.3%	2.1%	20.0%	16.7%	11.3%	11
				Wind Speed (m/s)	1.0	0.4	1.3	2.8	1.4	1.8	2.1	1.8	
12-Oct-05	13	15		*Wind Direction (%)*	0.4%	0.0%	0.0%	16.3%	34.6%	38.3%	9.6%	0.8%	12
				Wind Speed (m/s)	0.3	0.0	0.0	1.8	1.8	1.8	0.9	0.6	
13-Oct-05	14	14		*Wind Direction (%)*	0.8%	0.4%	10.0%	67.5%	12.5%	7.9%	0.4%	0.4%	11
				Wind Speed (m/s)	0.9	1.5	3.1	3.0	2.0	2.3	0.8	1.5	
14-Oct-05	13	15		*Wind Direction (%)*	1.3%	2.1%	15.0%	56.3%	14.2%	10.4%	0.8%	0.0%	13
				Wind Speed (m/s)	1.4	1.8	4.0	3.5	2.0	2.2	1.7	0.0	
15-Oct-05	14	15		*Wind Direction (%)*	5.0%	3.3%	14.6%	44.2%	10.4%	14.6%	2.9%	5.0%	16
				Wind Speed (m/s)	2.2	2.5	3.8	4.0	1.3	2.1	2.4	2.2	
16-Oct-05	21	19		*Wind Direction (%)*	0.0%	0.0%	0.0%	34.6%	9.6%	32.5%	22.9%	0.4%	14
				Wind Speed (m/s)	0.0	0.0	0.0	2.0	1.1	2.2	2.4	1.4	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
17-Oct-05	13	15		*Wind Direction (%)*	0.0%	0.0%	4.2%	70.8%	17.1%	6.7%	0.8%	0.4%	15
				Wind Speed (m/s)	0.0	0.0	3.3	2.9	1.0	1.7	3.0	2.8	
18-Oct-05	12	12		*Wind Direction (%)*	0.0%	0.4%	11.3%	55.0%	3.3%	8.8%	18.3%	2.9%	13
				Wind Speed (m/s)	0.0	1.3	3.2	3.0	1.0	1.5	2.6	2.6	
19-Oct-05	28	17		*Wind Direction (%)*	0.8%	1.7%	20.8%	37.1%	0.0%	2.1%	28.3%	9.2%	13
				Wind Speed (m/s)	2.0	0.8	3.8	3.6	0.0	1.3	1.9	2.4	
20-Oct-05	24	47		*Wind Direction (%)*	4.6%	6.3%	7.1%	31.3%	1.3%	0.8%	38.8%	10.0%	14
				Wind Speed (m/s)	1.3	1.6	2.6	3.2	0.5	1.1	2.4	2.1	
21-Oct-05	16	16		*Wind Direction (%)*	17.9%	1.3%	5.0%	4.6%	0.4%	0.0%	27.1%	43.8%	13
				Wind Speed (m/s)	2.3	0.6	0.5	0.8	0.2	0.0	2.9	3.2	
22-Oct-05	12	11		*Wind Direction (%)*	1.7%	0.4%	0.4%	16.7%	3.8%	7.1%	47.9%	22.1%	14
				Wind Speed (m/s)	0.4	0.4	0.3	1.1	0.4	1.5	2.2	1.6	
23-Oct-05	13	14		*Wind Direction (%)*	5.0%	6.3%	13.8%	52.9%	1.3%	9.6%	5.8%	5.4%	17
				Wind Speed (m/s)	2.3	2.5	2.6	2.6	1.5	1.7	2.0	2.1	
24-Oct-05	13	14		*Wind Direction (%)*	1.3%	2.9%	4.2%	0.4%	0.0%	0.0%	35.8%	55.4%	14
				Wind Speed (m/s)	1.1	0.7	1.1	1.3	0.0	0.0	2.8	3.7	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
25-Oct-05	15	16		*Wind Direction (%)*	0.8%	0.0%	0.4%	1.7%	2.1%	7.1%	82.5%	5.4%	12
				Wind Speed (m/s)	0.6	0.0	0.3	0.6	1.1	1.4	3.3	1.5	
26-Oct-05	9	9		*Wind Direction (%)*	4.2%	2.9%	4.6%	35.8%	6.3%	2.9%	21.3%	22.1%	12
				Wind Speed (m/s)	1.6	0.5	0.7	1.4	0.8	0.9	1.6	2.0	
27-Oct-05	9	10		*Wind Direction (%)*	5.4%	6.3%	13.8%	26.3%	3.8%	3.3%	25.4%	15.8%	14
				Wind Speed (m/s)	2.2	1.5	1.3	1.5	0.6	0.7	2.4	3.0	
28-Oct-05	8	9		*Wind Direction (%)*	0.4%	2.5%	5.4%	35.8%	6.7%	6.3%	40.0%	2.9%	14
				Wind Speed (m/s)	0.2	0.3	0.4	1.2	1.2	1.7	2.4	2.5	
29-Oct-05	10	12		*Wind Direction (%)*	6.7%	3.3%	5.4%	6.3%	0.4%	0.0%	11.3%	66.7%	15
				Wind Speed (m/s)	0.9	0.3	0.4	0.6	0.4	0.0	4.0	2.9	
30-Oct-05	12	12		*Wind Direction (%)*	2.1%	0.0%	0.4%	12.5%	1.7%	1.7%	27.9%	53.8%	13
				Wind Speed (m/s)	3.5	0.0	0.4	0.8	0.5	0.6	2.0	3.6	
31-Oct-05	6	5		*Wind Direction (%)*	1.3%	0.4%	2.1%	53.3%	17.5%	14.2%	7.9%	3.3%	12
				Wind Speed (m/s)	1.5	1.2	0.8	2.2	1.5	1.9	2.0	1.8	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
01-Nov-05	8			*Wind Direction (%)*	0.0%	0.8%	11.7%	51.3%	14.6%	17.9%	2.5%	1.3%	12
				Wind Speed (m/s)	0.0	1.9	3.3	3.6	1.6	2.4	2.2	1.9	
02-Nov-05	10			*Wind Direction (%)*	2.9%	7.9%	15.4%	45.0%	8.3%	12.5%	6.7%	1.3%	12
				Wind Speed (m/s)	1.9	2.6	3.5	3.3	1.5	1.9	1.7	1.4	
03-Nov-05	10			*Wind Direction (%)*	5.8%	0.8%	0.0%	25.0%	0.0%	3.3%	41.7%	23.3%	13
				Wind Speed (m/s)	1.3	0.3	0.0	1.5	0.0	1.4	2.6	2.2	
04-Nov-05	9			*Wind Direction (%)*	10.4%	0.8%	1.3%	0.0%	0.0%	0.4%	9.6%	77.5%	15
				Wind Speed (m/s)	1.1	0.3	0.3	0.0	0.0	0.3	3.5	2.8	
05-Nov-05	14			*Wind Direction (%)*	0.0%	0.0%	0.0%	15.9%	2.9%	25.1%	43.1%	13.0%	13
				Wind Speed (m/s)	0.0	0.0	0.0	1.2	0.6	2.5	2.6	3.3	
06-Nov-05	13			*Wind Direction (%)*	0.4%	0.4%	7.5%	49.2%	2.1%	15.4%	20.8%	4.2%	13
				Wind Speed (m/s)	1.7	1.1	1.9	1.4	1.5	1.7	2.3	2.2	
07-Nov-05	8	9		*Wind Direction (%)*	0.4%	0.8%	0.4%	27.1%	0.0%	0.4%	42.9%	27.9%	13
				Wind Speed (m/s)	0.5	0.4	0.4	1.2	0.0	1.2	2.6	2.1	
08-Nov-05	9	9		*Wind Direction (%)*	0.0%	0.0%	0.0%	37.5%	6.7%	18.3%	36.3%	1.3%	12
				Wind Speed (m/s)	0.0	0.0	0.0	1.3	1.6	2.0	2.6	1.7	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
09-Nov-05	13	14		*Wind Direction (%)*	1.7%	0.0%	0.8%	36.7%	19.2%	15.8%	19.6%	6.3%	13
				Wind Speed (m/s)	0.4	0.0	0.4	1.1	1.5	1.7	2.6	2.1	
10-Nov-05	15	15		*Wind Direction (%)*	2.5%	0.4%	2.1%	44.6%	2.9%	10.4%	25.0%	12.1%	13
				Wind Speed (m/s)	1.5	0.9	1.2	1.8	0.6	1.7	2.6	2.2	
11-Nov-05	11	13		*Wind Direction (%)*	0.0%	0.0%	0.4%	46.3%	10.8%	32.9%	9.6%	0.0%	15
				Wind Speed (m/s)	0.0	0.0	2.3	1.6	1.4	2.1	2.4	0.0	
12-Nov-05	18	15		*Wind Direction (%)*	2.6%	2.1%	11.1%	32.5%	11.1%	15.4%	20.5%	4.7%	15
				Wind Speed (m/s)	2.0	2.3	3.8	4.8	1.7	1.8	2.4	2.2	
13-Nov-05	25	23		*Wind Direction (%)*	0.0%	0.0%	0.0%	22.1%	26.7%	43.8%	7.5%	0.0%	15
				Wind Speed (m/s)	0.0	0.0	0.0	3.3	1.3	2.1	1.9	0.0	
14-Nov-05	11	14		*Wind Direction (%)*	0.0%	0.0%	41.3%	58.8%	0.0%	0.0%	0.0%	0.0%	16
				Wind Speed (m/s)	0.0	0.0	5.6	5.0	0.0	0.0	0.0	0.0	
15-Nov-05	24	45		*Wind Direction (%)*	3.8%	4.6%	15.8%	35.4%	5.0%	14.6%	15.8%	5.0%	20
				Wind Speed (m/s)	1.7	1.8	4.8	7.0	1.1	1.6	2.3	1.6	
16-Nov-05	31	30		*Wind Direction (%)*	4.6%	1.3%	3.3%	8.8%	13.8%	46.7%	17.1%	4.6%	17
				Wind Speed (m/s)	0.4	0.4	0.6	0.8	1.3	2.2	2.2	0.8	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
17-Nov-05	17	19		*Wind Direction (%)*	0.0%	0.0%	4.6%	57.5%	14.2%	22.9%	0.8%	0.0%	17
				Wind Speed (m/s)	0.0	0.0	2.5	3.2	1.2	1.9	2.6	0.0	
18-Nov-05	15	18		*Wind Direction (%)*	0.0%	0.4%	17.9%	61.7%	6.7%	13.3%	0.0%	0.0%	16
				Wind Speed (m/s)	0.0	3.1	4.8	4.1	1.5	2.6	0.0	0.0	
19-Nov-05	18	18		*Wind Direction (%)*	0.0%	0.4%	14.6%	66.7%	7.5%	10.4%	0.4%	0.0%	18
				Wind Speed (m/s)	0.0	1.9	3.9	4.0	1.7	2.0	2.4	0.0	
20-Nov-05	26	28		*Wind Direction (%)*	0.0%	0.0%	0.8%	48.3%	5.8%	21.7%	17.9%	5.4%	19
				Wind Speed (m/s)	0.0	0.0	4.8	5.6	1.3	2.3	2.1	1.7	
21-Nov-05	14	17		*Wind Direction (%)*	0.0%	0.0%	17.1%	82.9%	0.0%	0.0%	0.0%	0.0%	18
				Wind Speed (m/s)	0.0	0.0	5.2	7.1	0.0	0.0	0.0	0.0	
22-Nov-05	21	24		*Wind Direction (%)*	0.0%	0.8%	2.9%	62.5%	5.8%	22.1%	5.0%	0.8%	18
				Wind Speed (m/s)	0.0	1.3	3.7	7.1	1.3	2.3	1.8	1.4	
23-Nov-05	13	17		*Wind Direction (%)*	0.0%	0.0%	9.6%	76.7%	8.8%	3.8%	0.8%	0.4%	20
				Wind Speed (m/s)	0.0	0.0	3.2	4.9	1.5	1.5	2.2	1.0	
24-Nov-05	13	21		*Wind Direction (%)*	0.0%	0.8%	3.3%	46.3%	11.3%	26.3%	11.7%	0.4%	19
				Wind Speed (m/s)	0.0	1.0	1.9	4.3	1.5	2.3	2.7	1.6	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
25-Nov-05	5	19		*Wind Direction (%)*	0.0%	0.0%	19.2%	80.8%	0.0%	0.0%	0.0%	0.0%	17
				Wind Speed (m/s)	0.0	0.0	4.4	5.3	0.0	0.0	0.0	0.0	
26-Nov-05	7	57		*Wind Direction (%)*	0.0%	0.5%	56.4%	43.2%	0.0%	0.0%	0.0%	0.0%	16
				Wind Speed (m/s)	0.0	2.8	8.8	9.1	0.0	0.0	0.0	0.0	
27-Nov-05	8	25		*Wind Direction (%)*	4.2%	0.8%	47.9%	16.3%	0.0%	0.0%	3.8%	27.1%	18
				Wind Speed (m/s)	2.0	2.3	6.4	5.3	0.0	0.0	2.2	2.5	
28-Nov-05	7	20		*Wind Direction (%)*	1.3%	0.0%	0.0%	0.0%	0.0%	0.9%	73.6%	24.2%	15
				Wind Speed (m/s)	2.5	0.0	0.0	0.0	0.0	0.9	2.4	2.5	
29-Nov-05	4	12		*Wind Direction (%)*	0.0%	0.0%	0.0%	5.0%	28.8%	42.1%	24.2%	0.0%	13
				Wind Speed (m/s)	0.0	0.0	0.0	0.9	1.6	2.2	2.3	0.0	
30-Nov-05	18	25		*Wind Direction (%)*	0.0%	0.0%	0.0%	84.9%	15.1%	0.0%	0.0%	0.0%	9
				Wind Speed (m/s)	0.0	0.0	0.0	2.0	1.4	0.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
01-Dec-05				*Wind Direction (%)*									
				Wind Speed (m/s)									
02-Dec-05	7	25		*Wind Direction (%)*	8.1%	6.8%	2.5%	0.0%	0.0%	13.0%	62.7%	6.8%	19
				Wind Speed (m/s)	3.2	2.7	2.8	0.0	0.0	3.1	2.8	2.7	
03-Dec-05	5	15		*Wind Direction (%)*	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	75.4%	24.6%	15
				Wind Speed (m/s)	0.0	0.0	0.0	0.0	0.0	0.0	3.0	2.0	
04-Dec-05	5	13		*Wind Direction (%)*	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	42.1%	57.9%	15
				Wind Speed (m/s)	0.0	0.0	0.0	0.0	0.0	0.0	3.1	3.7	
05-Dec-05	6	25		*Wind Direction (%)*	0.0%	0.0%	0.0%	0.4%	0.0%	3.3%	96.3%	0.0%	13
				Wind Speed (m/s)	0.0	0.0	0.0	0.4	0.0	1.7	3.3	0.0	
06-Dec-05	5	18		*Wind Direction (%)*	0.8%	0.4%	1.3%	2.5%	5.0%	30.4%	58.8%	0.8%	11
				Wind Speed (m/s)	0.4	0.4	0.3	0.4	0.7	1.7	2.0	0.5	
07-Dec-05	7	12		*Wind Direction (%)*	0.4%	0.4%	2.1%	27.1%	15.8%	34.2%	17.9%	2.1%	13
				Wind Speed (m/s)	0.4	0.3	1.2	1.1	0.9	1.7	2.1	1.0	
08-Dec-05	8	10		*Wind Direction (%)*	0.0%	0.0%	0.0%	10.0%	21.3%	19.6%	48.3%	0.8%	14
				Wind Speed (m/s)	0.0	0.0	0.0	0.6	1.1	1.6	2.2	0.7	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
09-Dec-05	21	21		*Wind Direction (%)*	0.4%	0.0%	3.3%	31.3%	11.3%	27.5%	22.1%	4.2%	14
				Wind Speed (m/s)	0.3	0.0	0.8	1.2	0.9	1.6	2.4	2.2	
10-Dec-05	16	16		*Wind Direction (%)*	0.0%	0.0%	7.1%	21.7%	5.0%	3.3%	47.1%	15.8%	14
				Wind Speed (m/s)	0.0	0.0	1.0	1.1	1.3	1.5	2.9	2.8	
11-Dec-05	13	14		*Wind Direction (%)*	0.0%	0.0%	0.0%	0.0%	0.0%	10.4%	77.9%	11.7%	13
				Wind Speed (m/s)	0.0	0.0	0.0	0.0	0.0	1.6	2.9	2.5	
12-Dec-05	18	18		*Wind Direction (%)*	0.8%	0.0%	1.3%	16.3%	4.2%	10.4%	60.4%	6.7%	13
				Wind Speed (m/s)	0.4	0.0	0.7	0.7	0.5	1.3	2.2	2.0	
13-Dec-05	9	10		*Wind Direction (%)*	8.8%	3.6%	6.6%	19.0%	2.2%	5.8%	16.8%	37.2%	14
				Wind Speed (m/s)	1.1	0.3	0.4	0.8	0.3	0.9	2.4	1.6	
14-Dec-05	21	20		*Wind Direction (%)*	0.0%	0.0%	0.0%	0.0%	2.1%	16.1%	77.6%	4.2%	13
				Wind Speed (m/s)	0.0	0.0	0.0	0.0	1.6	1.3	2.4	1.1	
15-Dec-05	22	25		*Wind Direction (%)*	0.0%	0.0%	1.7%	27.1%	24.2%	17.5%	27.1%	2.5%	13
				Wind Speed (m/s)	0.0	0.0	2.6	1.6	1.4	2.0	2.7	2.6	
16-Dec-05	13	16		*Wind Direction (%)*	0.4%	0.4%	2.1%	33.8%	9.2%	24.2%	20.4%	9.6%	15
				Wind Speed (m/s)	1.8	0.3	0.6	1.1	1.1	1.7	1.8	1.8	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
17-Dec-05	17	20		*Wind Direction (%)*	1.3%	2.1%	21.3%	43.8%	2.1%	19.6%	5.8%	4.2%	21
				Wind Speed (m/s)	2.0	1.3	3.2	3.5	1.4	2.1	2.4	1.8	
18-Dec-05	28	27		*Wind Direction (%)*	1.7%	2.1%	2.9%	42.9%	3.8%	26.3%	12.9%	7.5%	24
				Wind Speed (m/s)	0.7	0.6	0.7	2.7	3.6	2.3	1.9	1.4	
19-Dec-05	14	14		*Wind Direction (%)*	2.1%	0.4%	3.3%	5.8%	0.0%	0.0%	42.9%	45.4%	17
				Wind Speed (m/s)	1.1	0.3	1.3	2.0	0.0	0.0	3.0	3.0	
20-Dec-05	18	20		*Wind Direction (%)*	0.4%	0.8%	0.0%	9.6%	2.5%	7.5%	63.3%	15.8%	16
				Wind Speed (m/s)	0.3	0.4	0.0	1.3	0.8	1.5	2.8	1.5	
21-Dec-05	19	21		*Wind Direction (%)*	0.0%	0.0%	1.7%	46.3%	10.8%	17.9%	21.3%	2.1%	14
				Wind Speed (m/s)	0.0	0.0	1.9	1.8	1.3	1.9	2.6	2.1	
22-Dec-05	16	18		*Wind Direction (%)*	0.0%	0.0%	0.4%	24.6%	1.3%	0.0%	39.6%	34.2%	14
				Wind Speed (m/s)	0.0	0.0	0.7	1.1	0.5	0.0	3.2	3.8	
23-Dec-05	20	21		*Wind Direction (%)*	0.0%	0.0%	0.0%	4.6%	15.8%	42.5%	37.1%	0.0%	13
				Wind Speed (m/s)	0.0	0.0	0.0	1.3	1.6	2.4	2.2	0.0	
24-Dec-05	18	20		*Wind Direction (%)*	1.3%	2.1%	5.0%	50.0%	12.1%	20.0%	7.5%	2.1%	15
				Wind Speed (m/s)	1.9	2.0	2.5	2.6	1.1	2.4	2.9	2.1	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
25-Dec-05	19	21		*Wind Direction (%)*	0.8%	0.8%	4.6%	34.2%	4.2%	28.8%	21.7%	5.0%	19
				Wind Speed (m/s)	1.5	1.2	3.7	4.8	1.2	2.1	2.1	1.8	
26-Dec-05	14	15		*Wind Direction (%)*	2.1%	0.0%	1.7%	4.2%	7.1%	32.1%	46.7%	6.3%	16
				Wind Speed (m/s)	0.5	0.0	0.4	1.0	1.1	2.2	2.5	0.7	
27-Dec-05	14	19		*Wind Direction (%)*	0.0%	0.0%	0.0%	17.5%	8.8%	29.2%	41.7%	2.9%	15
				Wind Speed (m/s)	0.0	0.0	0.0	0.8	1.0	2.0	2.1	1.7	
28-Dec-05	16	19		*Wind Direction (%)*	1.7%	2.1%	2.1%	17.1%	5.8%	23.8%	34.2%	13.3%	16
				Wind Speed (m/s)	0.8	0.3	0.4	0.5	0.5	1.3	2.3	1.8	
29-Dec-05	14	15		*Wind Direction (%)*	0.4%	0.0%	0.8%	0.0%	8.8%	62.5%	27.5%	0.0%	18
				Wind Speed (m/s)	0.3	0.0	0.4	0.0	1.1	1.8	2.2	0.0	
30-Dec-05	15	16		*Wind Direction (%)*	0.0%	0.0%	0.4%	8.8%	27.1%	47.5%	16.3%	0.0%	16
				Wind Speed (m/s)	0.0	0.0	36.7	1.1	1.5	2.4	3.1	0.0	
31-Dec-05	11	13		*Wind Direction (%)*	0.0%	0.0%	0.8%	60.8%	36.3%	2.1%	0.0%	0.0%	15
				Wind Speed (m/s)	0.0	0.0	3.8	2.7	1.9	1.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
01-Jan-06	13	14		*Wind Direction (%)*	0.0%	0.0%	16.7%	83.3%	0.0%	0.0%	0.0%	0.0%	17
				Wind Speed (m/s)	0.0	0.0	5.0	4.1	0.0	0.0	0.0	0.0	
02-Jan-06	15	15		*Wind Direction (%)*	0.0%	0.8%	41.7%	57.5%	0.0%	0.0%	0.0%	0.0%	19
				Wind Speed (m/s)	0.0	0.5	5.1	4.9	0.0	0.0	0.0	0.0	
03-Jan-06	6	7		*Wind Direction (%)*	0.0%	0.0%	38.8%	60.8%	0.4%	0.0%	0.0%	0.0%	16
				Wind Speed (m/s)	0.0	0.0	5.1	4.7	1.8	0.0	0.0	0.0	
04-Jan-06	8	11		*Wind Direction (%)*	1.3%	1.3%	14.2%	57.1%	4.2%	15.0%	5.8%	1.3%	21
				Wind Speed (m/s)	2.0	1.3	4.2	4.9	1.1	1.7	2.3	1.5	
05-Jan-06	7	12		*Wind Direction (%)*	0.0%	0.0%	18.1%	81.9%	0.0%	0.0%	0.0%	0.0%	22
				Wind Speed (m/s)	0.0	0.0	5.0	5.5	0.0	0.0	0.0	0.0	
06-Jan-06	12	23		*Wind Direction (%)*	4.6%	3.8%	35.4%	35.8%	1.7%	12.5%	2.9%	3.3%	25
				Wind Speed (m/s)	1.9	1.9	5.4	5.5	0.6	1.8	2.0	1.7	
07-Jan-06	17	20		*Wind Direction (%)*	4.2%	2.5%	32.1%	8.3%	2.1%	10.4%	20.8%	19.6%	28
				Wind Speed (m/s)	2.2	1.9	2.8	2.6	1.6	2.0	2.3	2.0	
08-Jan-06	15	24		*Wind Direction (%)*	0.0%	0.0%	8.8%	17.1%	2.5%	32.5%	34.2%	5.0%	21
				Wind Speed (m/s)	0.0	0.0	1.8	3.1	1.8	1.8	1.7	1.2	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
09-Jan-06	6	6		*Wind Direction (%)*	0.0%	0.6%	18.1%	73.7%	3.5%	1.8%	2.3%	0.0%	19
				Wind Speed (m/s)	0.0	0.8	4.7	4.9	2.0	2.1	2.2	0.0	
10-Jan-06	2	2		*Wind Direction (%)*	0.0%	0.0%	37.2%	61.8%	1.0%	0.0%	0.0%	0.0%	21
				Wind Speed (m/s)	0.0	0.0	4.4	4.1	8.1	0.0	0.0	0.0	
11-Jan-06	8	10		*Wind Direction (%)*	0.0%	2.1%	57.1%	40.8%	0.0%	0.0%	0.0%	0.0%	22
				Wind Speed (m/s)	0.0	1.6	4.7	5.5	0.0	0.0	0.0	0.0	
12-Jan-06	6	6		*Wind Direction (%)*	0.0%	0.0%	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	18
				Wind Speed (m/s)	0.0	0.0	7.8	7.8	0.0	0.0	0.0	0.0	
13-Jan-06	4	4		*Wind Direction (%)*	0.0%	0.0%	23.8%	76.3%	0.0%	0.0%	0.0%	0.0%	17
				Wind Speed (m/s)	0.0	0.0	6.8	5.3	0.0	0.0	0.0	0.0	
14-Jan-06	10	11		*Wind Direction (%)*	0.0%	0.0%	9.6%	86.7%	3.8%	0.0%	0.0%	0.0%	20
				Wind Speed (m/s)	0.0	0.0	5.5	4.0	0.8	0.0	0.0	0.0	
15-Jan-06	21	24		*Wind Direction (%)*	0.4%	2.9%	18.8%	40.8%	0.8%	7.1%	26.7%	2.5%	21
				Wind Speed (m/s)	1.6	1.7	4.5	5.2	1.4	2.1	2.1	1.0	
16-Jan-06	19	22		*Wind Direction (%)*	1.7%	2.9%	13.3%	69.2%	2.9%	5.4%	4.2%	0.4%	23
				Wind Speed (m/s)	1.4	1.7	2.7	5.0	3.9	1.9	2.0	1.3	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
17-Jan-06	13	13		*Wind Direction (%)*	2.5%	0.4%	8.3%	40.0%	0.4%	11.7%	29.6%	7.1%	21
				Wind Speed (m/s)	1.7	0.8	3.2	5.6	0.9	1.8	2.0	2.4	
18-Jan-06	13	15		*Wind Direction (%)*	0.0%	0.0%	0.0%	0.0%	6.3%	34.6%	59.2%	0.0%	20
				Wind Speed (m/s)	0.0	0.0	0.0	0.0	1.4	2.1	2.0	0.0	
19-Jan-06	16	19		*Wind Direction (%)*	0.4%	1.3%	12.9%	46.3%	10.0%	11.7%	15.4%	2.1%	20
				Wind Speed (m/s)	0.3	0.3	2.3	3.2	0.8	1.8	2.1	0.4	
20-Jan-06	18	21		*Wind Direction (%)*	0.0%	2.1%	11.3%	47.5%	6.3%	26.7%	6.3%	0.0%	23
				Wind Speed (m/s)	0.0	1.4	3.9	5.5	1.5	2.0	2.3	0.0	
21-Jan-06	28	30		*Wind Direction (%)*	0.8%	1.3%	0.8%	16.3%	23.8%	50.8%	4.2%	2.1%	19
				Wind Speed (m/s)	0.6	0.5	0.5	3.7	1.9	2.5	1.9	0.5	
22-Jan-06	17	20		*Wind Direction (%)*	0.0%	0.0%	10.0%	90.0%	0.0%	0.0%	0.0%	0.0%	19
				Wind Speed (m/s)	0.0	0.0	4.5	4.6	0.0	0.0	0.0	0.0	
23-Jan-06	18	25		*Wind Direction (%)*	0.0%	0.0%	50.8%	49.2%	0.0%	0.0%	0.0%	0.0%	24
				Wind Speed (m/s)	0.0	0.0	6.0	6.5	0.0	0.0	0.0	0.0	
24-Jan-06	31	70		*Wind Direction (%)*	0.0%	0.0%	44.6%	31.7%	14.2%	9.2%	0.4%	0.0%	23
				Wind Speed (m/s)	0.0	0.0	6.7	4.2	2.2	2.3	2.9	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
25-Jan-06	14	14		*Wind Direction (%)*	0.4%	0.8%	20.8%	9.2%	6.7%	19.6%	20.0%	22.5%	22
				Wind Speed (m/s)	0.5	1.1	4.0	4.5	1.9	1.7	2.4	1.9	
26-Jan-06	11	10		*Wind Direction (%)*	0.0%	0.4%	28.3%	71.3%	0.0%	0.0%	0.0%	0.0%	19
				Wind Speed (m/s)	0.0	4.0	4.5	4.1	0.0	0.0	0.0	0.0	
27-Jan-06	16	19		*Wind Direction (%)*	0.0%	0.0%	21.7%	54.6%	5.4%	12.5%	5.4%	0.4%	18
				Wind Speed (m/s)	0.0	0.0	4.4	4.5	5.1	1.9	1.9	0.8	
28-Jan-06	15	17		*Wind Direction (%)*	0.8%	0.4%	5.8%	67.5%	6.3%	13.8%	5.0%	0.4%	19
				Wind Speed (m/s)	1.5	1.5	3.6	5.4	2.1	2.6	3.0	2.2	
29-Jan-06	10	10		*Wind Direction (%)*	0.0%	0.0%	1.7%	98.3%	0.0%	0.0%	0.0%	0.0%	16
				Wind Speed (m/s)	0.0	0.0	6.7	5.7	0.0	0.0	0.0	0.0	
30-Jan-06	10	8		*Wind Direction (%)*	0.0%	0.0%	17.5%	82.1%	0.4%	0.0%	0.0%	0.0%	17
				Wind Speed (m/s)	0.0	0.0	8.0	6.6	15.6	0.0	0.0	0.0	
31-Jan-06	14	17		*Wind Direction (%)*	0.0%	0.0%	13.8%	58.8%	6.7%	12.1%	7.5%	1.3%	17
				Wind Speed (m/s)	0.0	0.0	3.3	3.2	1.4	2.1	3.1	2.2	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
01-Feb-06	12	15		*Wind Direction (%)*	1.3%	2.5%	27.9%	24.6%	11.7%	22.5%	9.2%	0.4%	18
				Wind Speed (m/s)	1.7	1.4	4.3	3.3	1.7	2.5	2.8	2.3	
02-Feb-06	17	18		*Wind Direction (%)*	1.3%	0.8%	2.5%	44.6%	5.0%	17.1%	18.8%	10.0%	20
				Wind Speed (m/s)	1.2	1.3	1.6	3.6	1.0	2.1	2.5	2.0	
03-Feb-06	17	23		*Wind Direction (%)*	0.4%	0.8%	16.7%	52.9%	5.4%	13.3%	10.4%	0.0%	23
				Wind Speed (m/s)	2.0	1.4	4.6	4.4	1.0	2.3	3.0	0.0	
04-Feb-06	13	20		*Wind Direction (%)*	2.1%	2.1%	24.6%	48.8%	5.4%	10.8%	3.3%	2.9%	25
				Wind Speed (m/s)	1.4	2.0	4.3	4.4	1.4	2.2	2.6	1.8	
05-Feb-06	22	26		*Wind Direction (%)*	1.3%	0.4%	4.2%	51.3%	8.8%	21.7%	10.0%	2.5%	26
				Wind Speed (m/s)	0.9	0.8	5.6	4.3	2.3	2.4	2.8	1.5	
06-Feb-06	22	44	33	*Wind Direction (%)*	0.8%	2.5%	61.9%	31.8%	0.0%	0.0%	1.7%	1.3%	23
				Wind Speed (m/s)	1.2	2.6	6.9	5.7	0.0	0.0	1.8	1.4	
07-Feb-06	14	15	18	*Wind Direction (%)*	4.2%	4.2%	6.3%	16.3%	11.3%	24.2%	26.7%	7.1%	22
				Wind Speed (m/s)	1.0	0.8	2.3	3.8	1.4	2.5	2.3	1.3	
08-Feb-06	16	19	19	*Wind Direction (%)*	0.0%	0.4%	10.8%	71.7%	6.7%	7.1%	2.9%	0.4%	18
				Wind Speed (m/s)	0.0	0.4	3.3	2.9	1.4	1.3	1.2	0.9	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
09-Feb-06	16	27	41	*Wind Direction (%)*	0.0%	0.4%	54.2%	45.4%	0.0%	0.0%	0.0%	0.0%	20
				Wind Speed (m/s)	0.0	3.4	5.8	5.4	0.0	0.0	0.0	0.0	
10-Feb-06	19	24	28	*Wind Direction (%)*	1.7%	2.5%	18.8%	64.2%	3.3%	7.1%	1.3%	1.3%	23
				Wind Speed (m/s)	1.9	2.0	2.8	4.7	1.3	1.6	1.9	1.1	
11-Feb-06	17	26	31	*Wind Direction (%)*	4.6%	2.5%	20.4%	36.3%	8.3%	19.2%	5.4%	3.3%	25
				Wind Speed (m/s)	1.5	1.6	4.3	6.3	2.0	2.0	1.9	1.8	
12-Feb-06	11	14	17	*Wind Direction (%)*	0.4%	2.9%	63.3%	32.9%	0.0%	0.4%	0.0%	0.0%	25
				Wind Speed (m/s)	1.1	2.6	3.8	4.8	0.0	1.0	0.0	0.0	
13-Feb-06	14	26	37	*Wind Direction (%)*	2.5%	2.5%	23.8%	51.3%	5.0%	10.8%	2.1%	2.1%	25
				Wind Speed (m/s)	2.5	2.4	4.7	4.5	1.4	2.3	2.4	1.2	
14-Feb-06	12	29	43	*Wind Direction (%)*	5.0%	8.8%	15.0%	37.9%	0.0%	1.7%	18.3%	13.3%	28
				Wind Speed (m/s)	2.8	2.6	3.4	2.8	0.0	0.9	2.5	3.1	
15-Feb-06	15	18	21	*Wind Direction (%)*	1.3%	0.4%	0.4%	0.0%	0.0%	0.0%	47.9%	50.0%	18
				Wind Speed (m/s)	0.7	0.6	0.6	0.0	0.0	0.0	2.7	2.3	
16-Feb-06	12	14	15	*Wind Direction (%)*	0.0%	0.4%	2.5%	17.1%	7.5%	19.2%	44.2%	9.2%	16
				Wind Speed (m/s)	0.0	0.2	0.6	1.0	1.6	1.1	1.3	1.2	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
17-Feb-06	17	19	21	*Wind Direction (%)*	1.3%	1.7%	4.2%	35.4%	10.4%	18.8%	17.1%	11.3%	18
				Wind Speed (m/s)	1.6	1.5	1.9	3.4	1.4	2.0	2.3	2.2	
18-Feb-06	15	19	19	*Wind Direction (%)*	0.0%	0.0%	4.6%	77.5%	9.6%	7.5%	0.8%	0.0%	19
				Wind Speed (m/s)	0.0	0.0	3.2	2.7	1.9	2.5	2.3	0.0	
19-Feb-06	16	22	25	*Wind Direction (%)*	0.0%	0.0%	43.3%	56.7%	0.0%	0.0%	0.0%	0.0%	20
				Wind Speed (m/s)	0.0	0.0	5.9	4.4	0.0	0.0	0.0	0.0	
20-Feb-06	17	35	45	*Wind Direction (%)*	0.0%	0.0%	14.3%	85.7%	0.0%	0.0%	0.0%	0.0%	17
				Wind Speed (m/s)	0.0	0.0	7.3	7.7	0.0	0.0	0.0	0.0	
21-Feb-06	15	59	110	*Wind Direction (%)*	1.6%	18.0%	74.1%	1.6%	0.0%	0.0%	1.6%	3.2%	27
				Wind Speed (m/s)	4.3	3.9	4.7	3.0	0.0	0.0	3.3	4.7	
22-Feb-06	20	24	26	*Wind Direction (%)*	5.8%	6.3%	3.3%	20.4%	2.9%	4.2%	27.9%	29.2%	24
				Wind Speed (m/s)	1.1	1.7	2.5	1.3	0.6	0.9	1.9	1.9	
23-Feb-06	17	18	19	*Wind Direction (%)*	0.0%	0.0%	0.4%	12.1%	17.5%	41.7%	25.8%	2.5%	19
				Wind Speed (m/s)	0.0	0.0	0.6	2.0	1.6	2.0	1.9	1.4	
24-Feb-06	17	21	22	*Wind Direction (%)*	1.3%	3.3%	20.4%	50.4%	1.7%	6.7%	14.6%	1.7%	18
				Wind Speed (m/s)	1.5	1.6	3.5	4.3	1.5	1.8	2.3	1.5	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
25-Feb-06	15	20	24	*Wind Direction (%)*	0.0%	0.0%	24.6%	75.0%	0.4%	0.0%	0.0%	0.0%	21
				Wind Speed (m/s)	0.0	0.0	5.0	4.8	2.0	0.0	0.0	0.0	
26-Feb-06	18	22	28	*Wind Direction (%)*	1.3%	0.4%	35.8%	53.3%	4.2%	2.9%	0.4%	1.7%	24
				Wind Speed (m/s)	2.0	2.2	4.8	5.2	1.4	1.1	0.6	1.5	
27-Feb-06	18	33	50	*Wind Direction (%)*	2.9%	6.7%	52.9%	23.3%	2.1%	8.8%	2.9%	0.4%	27
				Wind Speed (m/s)	2.3	2.8	4.1	2.2	1.8	2.0	2.7	1.4	
28-Feb-06	12	39	69	*Wind Direction (%)*	0.0%	6.4%	45.6%	48.0%	0.0%	0.0%	0.0%	0.0%	24
				Wind Speed (m/s)	0.0	3.4	3.9	4.1	0.0	0.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
01-Mar-06			15	*Wind Direction (%)*									
				Wind Speed (m/s)									
02-Mar-06	17	20	18	*Wind Direction (%)*	0.0%	0.0%	0.5%	16.8%	2.7%	4.3%	50.3%	25.4%	19
				Wind Speed (m/s)	0.0	0.0	0.5	1.1	0.5	1.6	2.3	2.9	
03-Mar-06	19	28	23	*Wind Direction (%)*	3.3%	4.6%	6.7%	55.4%	3.8%	12.1%	6.7%	7.5%	22
				Wind Speed (m/s)	2.2	2.1	2.2	3.4	1.3	2.1	2.2	2.2	
04-Mar-06	18	36	53	*Wind Direction (%)*	0.0%	7.1%	67.9%	25.0%	0.0%	0.0%	0.0%	0.0%	27
				Wind Speed (m/s)	0.0	3.2	4.0	3.4	0.0	0.0	0.0	0.0	
05-Mar-06	14	18	19	*Wind Direction (%)*	0.0%	1.7%	54.6%	43.8%	0.0%	0.0%	0.0%	0.0%	29
				Wind Speed (m/s)	0.0	2.8	4.2	4.2	0.0	0.0	0.0	0.0	
06-Mar-06	16	17	25	*Wind Direction (%)*	0.0%	0.4%	61.7%	37.9%	0.0%	0.0%	0.0%	0.0%	25
				Wind Speed (m/s)	0.0	2.7	5.6	5.4	0.0	0.0	0.0	0.0	
07-Mar-06	17	39	47	*Wind Direction (%)*	1.7%	5.0%	38.3%	26.3%	1.3%	4.2%	17.5%	5.8%	25
				Wind Speed (m/s)	2.5	2.5	4.9	3.7	0.5	1.3	2.2	2.2	
08-Mar-06	26	36	38	*Wind Direction (%)*	0.4%	1.3%	8.3%	44.6%	7.5%	9.6%	25.0%	3.3%	26
				Wind Speed (m/s)	0.6	0.5	1.8	1.8	0.8	2.0	2.2	2.4	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
09-Mar-06	25	28	30	*Wind Direction (%)*	4.2%	1.3%	15.8%	27.9%	5.8%	10.4%	24.6%	10.0%	24
				Wind Speed (m/s)	1.6	1.0	3.1	2.4	0.9	1.6	2.1	2.6	
10-Mar-06	17	20	20	*Wind Direction (%)*	0.8%	0.4%	3.8%	24.2%	0.8%	2.5%	54.2%	13.3%	21
				Wind Speed (m/s)	0.4	0.3	0.8	1.1	1.0	1.3	2.3	2.3	
11-Mar-06	18	20	19	*Wind Direction (%)*	0.0%	0.0%	1.7%	20.1%	26.8%	42.3%	9.2%	0.0%	18
				Wind Speed (m/s)	0.0	0.0	1.6	1.7	1.4	2.1	2.2	0.0	
12-Mar-06	15	18	16	*Wind Direction (%)*	0.0%	0.0%	9.2%	73.8%	8.8%	7.1%	1.3%	0.0%	17
				Wind Speed (m/s)	0.0	0.0	2.7	3.1	1.7	2.2	2.2	0.0	
13-Mar-06	19	27	29	*Wind Direction (%)*	1.3%	2.9%	33.8%	44.6%	9.2%	5.4%	1.7%	1.3%	20
				Wind Speed (m/s)	2.2	2.1	5.7	4.7	1.8	2.0	1.2	1.7	
14-Mar-06	22	27	30	*Wind Direction (%)*	0.0%	0.0%	6.3%	80.4%	10.4%	2.5%	0.4%	0.0%	23
				Wind Speed (m/s)	0.0	0.0	4.4	3.9	2.2	2.3	1.7	0.0	
15-Mar-06	15	31	46	*Wind Direction (%)*	0.0%	0.4%	48.3%	51.3%	0.0%	0.0%	0.0%	0.0%	21
				Wind Speed (m/s)	0.0	3.0	6.2	5.8	0.0	0.0	0.0	0.0	
16-Mar-06	18	27	30	*Wind Direction (%)*	1.3%	4.6%	38.8%	43.3%	5.8%	5.4%	0.8%	0.0%	21
				Wind Speed (m/s)	1.5	1.8	5.0	5.0	1.3	1.6	2.3	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
17-Mar-06	18	26	33	*Wind Direction (%)*	0.8%	7.9%	17.1%	56.3%	6.7%	8.8%	2.1%	0.4%	22
				Wind Speed (m/s)	1.6	2.3	3.4	4.1	1.7	2.2	2.3	2.2	
18-Mar-06	19	35	35	*Wind Direction (%)*	0.8%	5.8%	15.4%	55.0%	7.9%	12.9%	0.4%	1.7%	23
				Wind Speed (m/s)	1.4	1.7	3.1	4.4	1.4	2.3	1.2	1.3	
19-Mar-06	15	19	21	*Wind Direction (%)*	0.0%	2.1%	50.4%	47.5%	0.0%	0.0%	0.0%	0.0%	23
				Wind Speed (m/s)	0.0	3.1	4.6	5.3	0.0	0.0	0.0	0.0	
20-Mar-06	15	36	58	*Wind Direction (%)*	2.1%	6.7%	28.8%	43.3%	2.1%	4.6%	7.1%	5.4%	25
				Wind Speed (m/s)	2.4	3.1	4.6	3.5	1.1	1.4	1.8	2.2	
21-Mar-06	24	33	119	*Wind Direction (%)*	8.4%	3.3%	30.1%	5.4%	0.4%	11.3%	33.9%	7.1%	26
				Wind Speed (m/s)	3.1	3.1	3.9	4.2	0.8	1.1	2.0	3.0	
22-Mar-06	13	16		*Wind Direction (%)*	0.0%	0.0%	0.0%	0.0%	2.1%	47.5%	47.9%	2.5%	17
				Wind Speed (m/s)	0.0	0.0	0.0	0.0	1.8	1.8	2.3	2.3	
23-Mar-06	12	15		*Wind Direction (%)*	0.4%	0.0%	2.5%	12.1%	12.5%	22.9%	48.8%	0.8%	14
				Wind Speed (m/s)	0.3	0.0	0.4	0.6	0.9	1.7	2.6	0.4	
24-Mar-06	7	8	11	*Wind Direction (%)*	0.0%	0.0%	0.0%	17.1%	22.9%	40.0%	19.6%	0.4%	15
				Wind Speed (m/s)	0.0	0.0	0.0	1.2	1.6	1.6	1.5	0.5	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
25-Mar-06	10	13	16	*Wind Direction (%)*	0.0%	0.0%	1.3%	54.6%	17.1%	23.3%	3.3%	0.4%	15
				Wind Speed (m/s)	0.0	0.0	2.3	2.2	1.6	2.1	2.3	1.3	
26-Mar-06	8	10	14	*Wind Direction (%)*	0.0%	0.0%	43.3%	56.7%	0.0%	0.0%	0.0%	0.0%	15
				Wind Speed (m/s)	0.0	0.0	4.2	4.4	0.0	0.0	0.0	0.0	
27-Mar-06	12	31	53	*Wind Direction (%)*	2.9%	5.0%	45.0%	41.7%	3.8%	1.3%	0.4%	0.0%	19
				Wind Speed (m/s)	1.9	2.5	4.4	4.6	1.5	1.8	2.0	0.0	
28-Mar-06	19	29	47	*Wind Direction (%)*	2.5%	5.4%	22.9%	39.2%	11.7%	13.3%	2.9%	2.1%	22
				Wind Speed (m/s)	1.5	1.3	2.8	5.3	2.0	2.5	2.2	1.7	
29-Mar-06	17	18	23	*Wind Direction (%)*	0.0%	0.0%	30.4%	69.6%	0.0%	0.0%	0.0%	0.0%	20
				Wind Speed (m/s)	0.0	0.0	6.6	7.0	0.0	0.0	0.0	0.0	
30-Mar-06	15	22	28	*Wind Direction (%)*	0.0%	0.0%	30.0%	70.0%	0.0%	0.0%	0.0%	0.0%	20
				Wind Speed (m/s)	0.0	0.0	4.2	5.1	0.0	0.0	0.0	0.0	
31-Mar-06	15	23	30	*Wind Direction (%)*	0.0%	0.0%	65.8%	34.2%	0.0%	0.0%	0.0%	0.0%	17
				Wind Speed (m/s)	0.0	0.0	6.3	6.8	0.0	0.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
01-Apr-06	3	4	5	*Wind Direction (%)*	0.0%	0.0%	12.1%	84.6%	3.3%	0.0%	0.0%	0.0%	14
				Wind Speed (m/s)	0.0	0.0	6.7	4.8	1.4	0.0	0.0	0.0	
02-Apr-06	7	9	11	*Wind Direction (%)*	0.4%	0.0%	0.0%	43.8%	27.5%	15.4%	10.4%	2.5%	17
				Wind Speed (m/s)	0.8	0.0	0.0	2.4	1.6	1.6	1.8	0.7	
03-Apr-06	4	4	8	*Wind Direction (%)*	0.0%	0.0%	9.2%	89.2%	1.7%	0.0%	0.0%	0.0%	15
				Wind Speed (m/s)	0.0	0.0	2.7	2.9	2.6	0.0	0.0	0.0	
04-Apr-06	8	7	10	*Wind Direction (%)*	0.0%	0.0%	17.9%	81.7%	0.4%	0.0%	0.0%	0.0%	14
				Wind Speed (m/s)	0.0	0.0	3.8	3.0	1.7	0.0	0.0	0.0	
05-Apr-06	8	11	15	*Wind Direction (%)*	0.0%	0.0%	42.5%	57.5%	0.0%	0.0%	0.0%	0.0%	15
				Wind Speed (m/s)	0.0	0.0	5.5	3.8	0.0	0.0	0.0	0.0	
06-Apr-06	12	22	27	*Wind Direction (%)*	0.0%	0.4%	68.3%	31.3%	0.0%	0.0%	0.0%	0.0%	16
				Wind Speed (m/s)	0.0	4.5	6.4	4.6	0.0	0.0	0.0	0.0	
07-Apr-06	9	20	33	*Wind Direction (%)*	0.0%	1.7%	57.9%	40.4%	0.0%	0.0%	0.0%	0.0%	17
				Wind Speed (m/s)	0.0	3.8	4.7	4.3	0.0	0.0	0.0	0.0	
08-Apr-06	12	25	81	*Wind Direction (%)*	6.3%	4.2%	41.7%	20.8%	4.2%	5.8%	8.3%	8.8%	20
				Wind Speed (m/s)	1.7	1.8	4.1	1.3	0.7	1.3	2.1	2.2	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
09-Apr-06	21	23	22	*Wind Direction (%)*	1.7%	0.4%	0.4%	13.3%	10.0%	35.8%	31.3%	7.1%	17
				Wind Speed (m/s)	0.4	0.6	0.9	1.4	1.5	2.3	2.0	0.9	
10-Apr-06	6	18	44	*Wind Direction (%)*	0.0%	0.0%	0.0%	88.5%	1.3%	6.4%	3.8%	0.0%	10
				Wind Speed (m/s)	0.0	0.0	0.0	1.5	0.2	0.8	0.9	0.0	
11-Apr-06	10	12	14	*Wind Direction (%)*	0.0%	1.3%	5.8%	53.8%	10.8%	19.6%	7.9%	0.8%	15
				Wind Speed (m/s)	0.0	0.9	1.9	1.9	1.2	1.4	1.2	0.9	
12-Apr-06	16	20	22	*Wind Direction (%)*	0.4%	0.8%	5.4%	61.3%	8.3%	15.0%	4.2%	4.6%	14
				Wind Speed (m/s)	0.7	1.1	1.3	3.4	1.2	1.9	2.0	2.1	
13-Apr-06	9	17	18	*Wind Direction (%)*	0.4%	0.4%	10.0%	74.2%	10.4%	4.6%	0.0%	0.0%	14
				Wind Speed (m/s)	0.6	0.9	2.6	2.3	1.3	1.5	0.0	0.0	
14-Apr-06	11	16	24	*Wind Direction (%)*	0.0%	0.8%	52.9%	46.3%	0.0%	0.0%	0.0%	0.0%	16
				Wind Speed (m/s)	0.0	2.5	5.6	3.9	0.0	0.0	0.0	0.0	
15-Apr-06	19	18	20	*Wind Direction (%)*	1.7%	6.3%	9.6%	56.3%	5.4%	12.1%	6.7%	2.1%	19
				Wind Speed (m/s)	1.1	2.0	3.0	3.3	0.8	1.9	2.1	1.5	
16-Apr-06	14	18	19	*Wind Direction (%)*	0.0%	0.0%	0.0%	38.3%	19.6%	40.0%	2.1%	0.0%	14
				Wind Speed (m/s)	0.0	0.0	0.0	1.9	1.8	2.0	1.6	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
17-Apr-06	15	14	15	*Wind Direction (%)*	0.0%	0.0%	2.1%	67.5%	14.6%	14.6%	1.3%	0.0%	11
				Wind Speed (m/s)	0.0	0.0	2.6	1.9	1.8	1.8	2.2	0.0	
18-Apr-06	10	17	20	*Wind Direction (%)*	0.4%	0.0%	1.7%	49.6%	15.4%	22.9%	8.8%	1.3%	12
				Wind Speed (m/s)	0.7	0.0	1.4	1.1	1.2	1.7	1.8	1.5	
19-Apr-06	13	14	19	*Wind Direction (%)*	0.0%	0.0%	38.8%	61.3%	0.0%	0.0%	0.0%	0.0%	14
				Wind Speed (m/s)	0.0	0.0	4.0	3.4	0.0	0.0	0.0	0.0	
20-Apr-06	21	56	70	*Wind Direction (%)*	0.0%	0.0%	60.8%	39.2%	0.0%	0.0%	0.0%	0.0%	16
				Wind Speed (m/s)	0.0	0.0	5.0	5.7	0.0	0.0	0.0	0.0	
21-Apr-06	15	46	152	*Wind Direction (%)*	15.4%	15.4%	31.7%	2.1%	1.3%	2.1%	10.0%	22.1%	20
				Wind Speed (m/s)	3.9	3.3	4.7	0.8	0.4	0.4	1.6	3.1	
22-Apr-06	14	18	22	*Wind Direction (%)*	2.1%	0.4%	1.7%	10.4%	23.3%	18.8%	37.5%	5.8%	15
				Wind Speed (m/s)	0.9	0.2	0.3	0.7	1.7	1.6	1.8	1.7	
23-Apr-06	10	15	18	*Wind Direction (%)*	2.5%	0.4%	2.5%	35.4%	4.2%	8.3%	39.6%	7.1%	15
				Wind Speed (m/s)	0.4	0.4	0.6	0.7	1.0	1.6	1.7	0.7	
24-Apr-06	8	10	13	*Wind Direction (%)*	2.5%	1.7%	4.2%	27.5%	5.4%	5.8%	27.5%	25.4%	15
				Wind Speed (m/s)	0.8	0.6	0.7	0.9	0.5	0.9	1.7	1.3	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
25-Apr-06	8	8	9	*Wind Direction (%)*	16.3%	3.8%	1.3%	5.8%	9.2%	16.7%	25.4%	21.7%	14
				Wind Speed (m/s)	1.6	1.1	0.7	0.9	1.3	1.5	1.3	2.7	
26-Apr-06	10	12	15	*Wind Direction (%)*	0.0%	0.0%	3.1%	62.8%	6.6%	15.9%	10.6%	0.9%	11
				Wind Speed (m/s)	0.0	0.0	1.2	1.4	1.3	1.4	1.4	0.9	
27-Apr-06	11	16	20	*Wind Direction (%)*	0.0%	0.4%	7.5%	65.8%	8.3%	11.7%	5.0%	1.3%	11
				Wind Speed (m/s)	0.0	1.2	2.8	2.4	1.1	1.3	1.7	1.3	
28-Apr-06	11		21	*Wind Direction (%)*	3.3%	4.2%	8.8%	51.7%	5.8%	11.3%	11.3%	3.8%	13
				Wind Speed (m/s)	1.3	1.0	1.4	1.4	0.7	1.1	1.1	1.2	
29-Apr-06	9		12	*Wind Direction (%)*	1.3%	0.4%	23.3%	45.4%	8.8%	10.0%	7.9%	2.9%	13
				Wind Speed (m/s)	1.2	1.1	3.7	2.9	0.9	1.3	1.8	1.4	
30-Apr-06	14		20	*Wind Direction (%)*	2.1%	0.8%	1.7%	57.9%	2.1%	0.8%	15.0%	19.6%	14
				Wind Speed (m/s)	2.2	1.3	1.0	2.3	0.7	0.7	1.7	2.3	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
01-May-06	9		20	*Wind Direction (%)*	0.0%	0.0%	0.0%	81.1%	13.4%	5.5%	0.0%	0.0%	13
				Wind Speed (m/s)	0.0	0.0	0.0	2.6	1.2	1.1	0.0	0.0	
02-May-06	3		21	*Wind Direction (%)*	0.0%	0.8%	4.6%	69.6%	10.0%	12.9%	2.1%	0.0%	13
				Wind Speed (m/s)	0.0	1.0	2.2	2.3	1.3	1.4	1.3	0.0	
03-May-06	17	25	46	*Wind Direction (%)*	0.4%	5.4%	20.4%	57.1%	5.0%	9.6%	2.1%	0.0%	14
				Wind Speed (m/s)	1.3	1.9	2.9	3.2	1.0	1.8	1.7	0.0	
04-May-06	14	19	20	*Wind Direction (%)*	0.4%	0.0%	2.1%	62.5%	5.0%	17.5%	11.7%	0.8%	13
				Wind Speed (m/s)	0.2	0.0	1.6	2.1	1.1	1.6	2.1	2.3	
05-May-06	16	20	28	*Wind Direction (%)*	2.1%	2.5%	5.0%	35.0%	1.7%	4.2%	28.3%	21.3%	14
				Wind Speed (m/s)	1.7	1.3	1.7	1.5	0.5	0.7	1.3	1.8	
06-May-06	9	11	13	*Wind Direction (%)*	0.0%	0.4%	0.8%	19.6%	12.9%	37.9%	22.1%	6.3%	15
				Wind Speed (m/s)	0.0	0.1	0.5	3.0	1.2	1.4	1.0	0.7	
07-May-06	23	33	45	*Wind Direction (%)*	0.0%	1.7%	36.7%	61.7%	0.0%	0.0%	0.0%	0.0%	13
				Wind Speed (m/s)	0.0	1.8	4.0	3.4	0.0	0.0	0.0	0.0	
08-May-06	21	32	61	*Wind Direction (%)*	0.0%	0.0%	44.7%	40.0%	2.7%	12.0%	0.7%	0.0%	13
				Wind Speed (m/s)	0.0	0.0	3.2	1.5	1.1	1.4	1.5	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
09-May-06	34	37	48	*Wind Direction (%)*	0.8%	2.9%	19.2%	73.8%	2.1%	0.8%	0.0%	0.4%	15
				Wind Speed (m/s)	1.8	1.6	2.8	3.5	0.6	0.4	0.0	0.6	
10-May-06	31	47	61	*Wind Direction (%)*	3.8%	2.5%	18.8%	56.9%	5.0%	2.9%	5.0%	5.0%	17
				Wind Speed (m/s)	1.4	1.3	3.0	3.5	0.8	1.1	1.2	1.4	
11-May-06	24	71	110	*Wind Direction (%)*	5.4%	15.8%	43.3%	35.4%	0.0%	0.0%	0.0%	0.0%	19
				Wind Speed (m/s)	3.1	2.7	3.4	3.5	0.0	0.0	0.0	0.0	
12-May-06	27	56	149	*Wind Direction (%)*	5.0%	21.8%	65.7%	7.5%	0.0%	0.0%	0.0%	0.0%	20
				Wind Speed (m/s)	3.0	3.0	3.4	2.6	0.0	0.0	0.0	0.0	
13-May-06	14	21	49	*Wind Direction (%)*	5.0%	11.3%	72.5%	8.8%	1.3%	0.8%	0.0%	0.4%	19
				Wind Speed (m/s)	2.7	2.8	3.2	1.8	0.9	0.8	0.0	2.6	
14-May-06	13	15	27	*Wind Direction (%)*	30.8%	13.3%	37.5%	3.8%	0.4%	0.0%	0.4%	13.8%	20
				Wind Speed (m/s)	3.0	3.2	3.1	0.8	0.3	0.0	2.0	2.2	
15-May-06	12	14	17	*Wind Direction (%)*	28.8%	0.0%	0.0%	24.2%	2.5%	7.5%	16.3%	20.8%	17
				Wind Speed (m/s)	2.8	0.0	0.0	1.5	0.6	1.6	1.7	3.1	
16-May-06	13	12	15	*Wind Direction (%)*	0.4%	1.7%	10.8%	74.6%	7.9%	4.2%	0.4%	0.0%	15
				Wind Speed (m/s)	1.0	0.7	2.3	3.6	0.9	1.3	1.3	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
17-May-06	12	13	16	*Wind Direction (%)*	0.0%	0.0%	16.3%	83.8%	0.0%	0.0%	0.0%	0.0%	16
				Wind Speed (m/s)	0.0	0.0	4.2	4.5	0.0	0.0	0.0	0.0	
18-May-06	11	10	12	*Wind Direction (%)*	0.0%	0.0%	3.8%	95.4%	0.8%	0.0%	0.0%	0.0%	14
				Wind Speed (m/s)	0.0	0.0	4.0	3.8	2.0	0.0	0.0	0.0	
19-May-06	12	16	25	*Wind Direction (%)*	0.0%	0.0%	47.1%	52.9%	0.0%	0.0%	0.0%	0.0%	13
				Wind Speed (m/s)	0.0	0.0	4.7	4.0	0.0	0.0	0.0	0.0	
20-May-06	10	11	15	*Wind Direction (%)*	0.0%	0.4%	66.5%	33.1%	0.0%	0.0%	0.0%	0.0%	14
				Wind Speed (m/s)	0.0	3.6	4.5	3.9	0.0	0.0	0.0	0.0	
21-May-06	11	60	124	*Wind Direction (%)*	0.8%	17.5%	75.0%	6.7%	0.0%	0.0%	0.0%	0.0%	16
				Wind Speed (m/s)	3.0	3.3	4.8	2.5	0.0	0.0	0.0	0.0	
22-May-06	23	33	154	*Wind Direction (%)*	17.6%	36.0%	37.2%	0.0%	0.0%	0.0%	0.0%	9.2%	19
				Wind Speed (m/s)	2.3	2.8	4.0	0.0	0.0	0.0	0.0	2.8	
23-May-06	13	14	17	*Wind Direction (%)*	14.2%	0.0%	0.0%	12.1%	13.8%	20.0%	11.3%	28.8%	16
				Wind Speed (m/s)	2.8	0.0	0.0	1.4	1.2	1.4	1.7	3.1	
24-May-06	9	8	8	*Wind Direction (%)*	0.0%	0.4%	10.9%	88.3%	0.0%	0.4%	0.0%	0.0%	10
				Wind Speed (m/s)	0.0	0.4	3.6	3.5	0.0	0.5	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
25-May-06	12	11	14	*Wind Direction (%)*	0.0%	0.4%	30.0%	69.6%	0.0%	0.0%	0.0%	0.0%	9
				Wind Speed (m/s)	0.0	3.0	3.7	3.6	0.0	0.0	0.0	0.0	
26-May-06	8	11	15	*Wind Direction (%)*	0.0%	1.3%	62.5%	36.3%	0.0%	0.0%	0.0%	0.0%	11
				Wind Speed (m/s)	0.0	3.4	4.3	2.6	0.0	0.0	0.0	0.0	
27-May-06	6	11	17	*Wind Direction (%)*	0.0%	6.3%	81.3%	12.5%	0.0%	0.0%	0.0%	0.0%	14
				Wind Speed (m/s)	0.0	3.6	4.6	4.5	0.0	0.0	0.0	0.0	
28-May-06	14	18	43	*Wind Direction (%)*	21.3%	17.9%	41.3%	14.2%	0.4%	0.4%	1.3%	3.3%	15
				Wind Speed (m/s)	2.4	3.1	4.4	0.9	0.2	0.3	1.7	1.1	
29-May-06	7	9	9	*Wind Direction (%)*	0.8%	0.4%	0.0%	26.7%	25.0%	17.5%	23.8%	5.8%	12
				Wind Speed (m/s)	0.6	0.4	0.0	1.2	1.7	1.9	2.4	0.7	
30-May-06	11	14	20	*Wind Direction (%)*	5.0%	0.8%	2.5%	60.4%	3.8%	5.0%	10.8%	11.7%	10
				Wind Speed (m/s)	1.2	0.6	0.6	1.2	0.8	1.4	1.9	1.6	
31-May-06	10	20	20	*Wind Direction (%)*	0.0%	0.0%	12.9%	87.1%	0.0%	0.0%	0.0%	0.0%	10
				Wind Speed (m/s)	0.0	0.0	2.7	2.3	0.0	0.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
01-Jun-06	12	75	22	*Wind Direction (%)*	0.0%	2.9%	41.0%	56.1%	0.0%	0.0%	0.0%	0.0%	11
				Wind Speed (m/s)	0.0	2.9	3.8	2.6	0.0	0.0	0.0	0.0	
02-Jun-06	6		17	*Wind Direction (%)*	0.0%	1.3%	80.8%	17.9%	0.0%	0.0%	0.0%	0.0%	12
				Wind Speed (m/s)	0.0	2.9	4.1	4.4	0.0	0.0	0.0	0.0	
03-Jun-06	13		53	*Wind Direction (%)*	0.0%	0.8%	69.5%	29.7%	0.0%	0.0%	0.0%	0.0%	12
				Wind Speed (m/s)	0.0	3.1	4.2	3.9	0.0	0.0	0.0	0.0	
04-Jun-06	22		27	*Wind Direction (%)*	0.8%	6.3%	55.0%	37.9%	0.0%	0.0%	0.0%	0.0%	12
				Wind Speed (m/s)	2.3	2.2	3.7	2.6	0.0	0.0	0.0	0.0	
05-Jun-06	15		19	*Wind Direction (%)*	5.4%	12.5%	40.8%	38.8%	0.0%	0.4%	0.4%	1.7%	15
				Wind Speed (m/s)	2.1	2.3	3.1	3.4	0.0	0.9	1.4	1.8	
06-Jun-06	13	34	34	*Wind Direction (%)*	17.1%	13.8%	12.9%	26.3%	0.4%	0.8%	10.8%	17.9%	15
				Wind Speed (m/s)	3.2	1.9	3.4	1.9	0.8	0.5	1.9	2.7	
07-Jun-06	13	19	24	*Wind Direction (%)*	0.0%	0.0%	18.8%	80.4%	0.0%	0.4%	0.4%	0.0%	12
				Wind Speed (m/s)	0.0	0.0	3.7	3.8	0.0	0.4	1.1	0.0	
08-Jun-06	13	26	41	*Wind Direction (%)*	0.0%	0.0%	36.3%	63.8%	0.0%	0.0%	0.0%	0.0%	10
				Wind Speed (m/s)	0.0	0.0	5.0	4.0	0.0	0.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
09-Jun-06	5	12	20	*Wind Direction (%)*	0.0%	0.0%	73.3%	26.7%	0.0%	0.0%	0.0%	0.0%	10
				Wind Speed (m/s)	0.0	0.0	4.5	4.2	0.0	0.0	0.0	0.0	
10-Jun-06	10	15	20	*Wind Direction (%)*	0.8%	8.4%	73.2%	17.2%	0.0%	0.0%	0.4%	0.0%	10
				Wind Speed (m/s)	2.5	2.8	3.6	2.4	0.0	0.0	0.5	0.0	
11-Jun-06	14	20	33	*Wind Direction (%)*	7.1%	20.0%	53.8%	19.2%	0.0%	0.0%	0.0%	0.0%	11
				Wind Speed (m/s)	3.2	2.9	3.8	2.5	0.0	0.0	0.0	0.0	
12-Jun-06	12	38	62	*Wind Direction (%)*	14.3%	18.1%	28.6%	20.6%	0.0%	0.0%	0.4%	18.1%	12
				Wind Speed (m/s)	3.8	2.7	2.9	1.6	0.0	0.0	1.4	2.8	
13-Jun-06	13	25	37	*Wind Direction (%)*	18.8%	34.2%	32.9%	12.5%	0.0%	0.0%	0.0%	1.7%	14
				Wind Speed (m/s)	3.2	2.4	2.7	2.5	0.0	0.0	0.0	2.8	
14-Jun-06	18	33	44	*Wind Direction (%)*	0.0%	0.0%	45.8%	54.2%	0.0%	0.0%	0.0%	0.0%	13
				Wind Speed (m/s)	0.0	0.0	4.0	4.2	0.0	0.0	0.0	0.0	
15-Jun-06	17	26	33	*Wind Direction (%)*	0.0%	0.0%	32.5%	67.5%	0.0%	0.0%	0.0%	0.0%	11
				Wind Speed (m/s)	0.0	0.0	4.0	4.5	0.0	0.0	0.0	0.0	
16-Jun-06	20	25	36	*Wind Direction (%)*	0.0%	1.3%	29.2%	69.6%	0.0%	0.0%	0.0%	0.0%	10
				Wind Speed (m/s)	0.0	3.2	3.5	3.8	0.0	0.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
17-Jun-06	22	28	30	*Wind Direction (%)*	0.4%	0.0%	13.3%	56.7%	2.5%	13.3%	6.3%	7.5%	11
				Wind Speed (m/s)	1.0	0.0	2.6	2.5	1.0	1.5	1.7	1.7	
18-Jun-06	49	43	57	*Wind Direction (%)*	5.0%	3.3%	15.0%	56.3%	0.4%	5.0%	2.9%	12.1%	12
				Wind Speed (m/s)	2.7	2.4	2.5	2.0	0.5	1.0	2.0	2.5	
19-Jun-06	19	32	40	*Wind Direction (%)*	27.5%	7.9%	8.3%	0.0%	0.0%	0.0%	18.8%	37.5%	14
				Wind Speed (m/s)	2.3	1.4	2.5	0.0	0.0	0.0	2.9	3.8	
20-Jun-06	17	19	23	*Wind Direction (%)*	0.0%	0.0%	0.0%	10.0%	5.8%	9.2%	65.8%	9.2%	13
				Wind Speed (m/s)	0.0	0.0	0.0	0.9	0.7	0.9	2.5	1.6	
21-Jun-06	14	23	29	*Wind Direction (%)*	0.0%	1.3%	7.9%	63.3%	8.8%	13.3%	5.0%	0.4%	12
				Wind Speed (m/s)	0.0	0.6	1.0	1.2	1.5	1.5	1.6	1.9	
22-Jun-06	13	16	21	*Wind Direction (%)*	0.0%	1.3%	35.0%	63.8%	0.0%	0.0%	0.0%	0.0%	12
				Wind Speed (m/s)	0.0	3.1	3.0	2.5	0.0	0.0	0.0	0.0	
23-Jun-06	12	18	25	*Wind Direction (%)*	0.0%	0.0%	28.8%	71.3%	0.0%	0.0%	0.0%	0.0%	11
				Wind Speed (m/s)	0.0	0.0	3.3	3.9	0.0	0.0	0.0	0.0	
24-Jun-06	10	20	24	*Wind Direction (%)*	0.0%	2.5%	44.2%	53.3%	0.0%	0.0%	0.0%	0.0%	12
				Wind Speed (m/s)	0.0	2.4	3.9	4.0	0.0	0.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Ambient Air Quality Results

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
25-Jun-06	13	16	21	*Wind Direction (%)*	18.8%	17.1%	16.7%	12.5%	2.1%	0.4%	6.7%	25.8%	14
				Wind Speed (m/s)	2.7	2.1	2.7	0.9	0.5	0.6	1.4	2.5	
26-Jun-06	10	14	19	*Wind Direction (%)*	1.7%	3.8%	24.6%	49.6%	4.2%	5.8%	5.8%	4.6%	12
				Wind Speed (m/s)	0.6	1.2	1.7	1.8	0.9	0.9	1.2	0.8	
27-Jun-06	9	10	13	*Wind Direction (%)*	24.3%	9.6%	0.0%	0.0%	0.0%	3.8%	28.0%	34.3%	13
				Wind Speed (m/s)	2.6	1.6	0.0	0.0	0.0	1.5	2.2	3.9	
28-Jun-06	12	13	15	*Wind Direction (%)*	0.0%	0.0%	0.0%	38.8%	36.3%	18.8%	6.3%	0.0%	10
				Wind Speed (m/s)	0.0	0.0	0.0	1.6	1.7	1.9	0.9	0.0	
29-Jun-06	16	27	34	*Wind Direction (%)*	20.0%	9.8%	10.7%	38.7%	0.0%	0.0%	2.7%	18.2%	11
				Wind Speed (m/s)	1.6	1.2	1.1	1.5	0.0	0.0	0.7	1.4	
30-Jun-06	13	15	19	*Wind Direction (%)*	23.3%	0.0%	0.0%	0.0%	0.4%	0.0%	17.5%	58.8%	13
				Wind Speed (m/s)	3.4	0.0	0.0	0.0	0.5	0.0	3.1	2.9	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Appendix F

Exceedance Summary

Air Quality NEPM Criteria Exceedance Summary

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
20-Dec-04	48	51		*Wind Direction (%)*	2.9%	4.6%	11.7%	30.4%	0.8%	0.4%	41.3%	7.9%	23
				Wind Speed (m/s)	2.2	3.2	5.2	5.5	0.7	0.8	2.9	3.5	
16-Jan-05	96	187		*Wind Direction (%)*	0.0%	0.0%	37.9%	62.1%	0.0%	0.0%	0.0%	0.0%	24
				Wind Speed (m/s)	0.0	0.0	5.1	6.0	0.0	0.0	0.0	0.0	
17-Jan-05	236	175		*Wind Direction (%)*	2.1%	7.7%	41.5%	34.6%	4.3%	3.4%	4.7%	1.7%	29
				Wind Speed (m/s)	2.4	4.0	5.7	4.4	1.8	1.9	1.8	1.1	
19-Jan-05	78	94		*Wind Direction (%)*	0.0%	0.4%	17.6%	63.5%	2.6%	3.4%	10.7%	1.7%	21
				Wind Speed (m/s)	0.0	1.3	4.3	4.6	1.9	1.8	1.9	1.9	
20-Jan-05	107	114		*Wind Direction (%)*	0.0%	0.0%	19.2%	41.7%	8.8%	24.6%	5.8%	0.0%	24
				Wind Speed (m/s)	0.0	0.0	4.5	4.2	1.6	2.7	2.5	0.0	
21-Jan-05	112	116		*Wind Direction (%)*	0.4%	0.4%	5.8%	50.0%	8.3%	18.3%	15.0%	1.7%	24
				Wind Speed (m/s)	3.2	1.4	3.6	5.3	1.2	2.4	2.7	1.8	
22-Jan-05	79	83		*Wind Direction (%)*	0.0%	0.0%	5.4%	70.8%	3.8%	17.1%	2.9%	0.0%	27
				Wind Speed (m/s)	0.0	0.0	4.8	4.8	1.9	2.5	2.2	0.0	
02-Feb-05	36	55		*Wind Direction (%)*	0.0%	1.7%	73.3%	25.0%	0.0%	0.0%	0.0%	0.0%	23
				Wind Speed (m/s)	0.0	3.5	5.8	4.3	0.0	0.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Air Quality NEPM Criteria Exceedance Summary

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
01-Jun-05	9	55		*Wind Direction (%)*	0.0%	1.3%	98.7%	0.0%	0.0%	0.0%	0.0%	0.0%	16
				Wind Speed (m/s)	0.0	3.1	5.0	0.0	0.0	0.0	0.0	0.0	
26-Nov-05	7	57		*Wind Direction (%)*	0.0%	0.5%	56.4%	43.2%	0.0%	0.0%	0.0%	0.0%	16
				Wind Speed (m/s)	0.0	2.8	8.8	9.1	0.0	0.0	0.0	0.0	
24-Jan-06	31	70		*Wind Direction (%)*	0.0%	0.0%	44.6%	31.7%	14.2%	9.2%	0.4%	0.0%	23
				Wind Speed (m/s)	0.0	0.0	6.7	4.2	2.2	2.3	2.9	0.0	
21-Feb-06	15	59	110	*Wind Direction (%)*	1.6%	18.0%	74.1%	1.6%	0.0%	0.0%	1.6%	3.2%	27
				Wind Speed (m/s)	4.3	3.9	4.7	3.0	0.0	0.0	3.3	4.7	
28-Feb-06	12	39	66	*Wind Direction (%)*	0.0%	6.4%	45.6%	48.0%	0.0%	0.0%	0.0%	0.0%	24
				Wind Speed (m/s)	0.0	3.4	3.9	4.1	0.0	0.0	0.0	0.0	
04-Mar-06	18	36	53	*Wind Direction (%)*	0.0%	7.1%	67.9%	25.0%	0.0%	0.0%	0.0%	0.0%	27
				Wind Speed (m/s)	0.0	3.2	4.0	3.4	0.0	0.0	0.0	0.0	
20-Mar-06	15	36	58	*Wind Direction (%)*	2.1%	6.7%	28.8%	43.3%	2.1%	4.6%	7.1%	5.4%	25
				Wind Speed (m/s)	2.4	3.1	4.6	3.5	1.1	1.4	1.8	2.2	
21-Mar-06	24	33	119	*Wind Direction (%)*	8.4%	3.3%	30.1%	5.4%	0.4%	11.3%	33.9%	7.1%	26
				Wind Speed (m/s)	3.1	3.1	3.9	4.2	0.8	1.1	2.0	3.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Air Quality NEPM Criteria Exceedance Summary

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
27-Mar-06	12	31	52	*Wind Direction (%)*	2.9%	5.0%	45.0%	41.7%	3.8%	1.3%	0.4%	0.0%	19
				Wind Speed (m/s)	1.9	2.5	4.4	4.6	1.5	1.8	2.0	0.0	
08-Apr-06	12	25	81	*Wind Direction (%)*	6.3%	4.2%	41.7%	20.8%	4.2%	5.8%	8.3%	8.8%	20
				Wind Speed (m/s)	1.7	1.8	4.1	1.3	0.7	1.3	2.1	2.2	
20-Apr-06	21	56	70	*Wind Direction (%)*	0.0%	0.0%	60.8%	39.2%	0.0%	0.0%	0.0%	0.0%	16
				Wind Speed (m/s)	0.0	0.0	5.0	5.7	0.0	0.0	0.0	0.0	
21-Apr-06	15	46	151	*Wind Direction (%)*	15.4%	15.4%	31.7%	2.1%	1.3%	2.1%	10.0%	22.1%	20
				Wind Speed (m/s)	3.9	3.3	4.7	0.8	0.4	0.4	1.6	3.1	
08-May-06	21	32	61	*Wind Direction (%)*	0.0%	0.0%	44.7%	40.0%	2.7%	12.0%	0.7%	0.0%	13
				Wind Speed (m/s)	0.0	0.0	3.2	1.5	1.1	1.4	1.5	0.0	
10-May-06	31	47	61	*Wind Direction (%)*	3.8%	2.5%	18.8%	56.9%	5.0%	2.9%	5.0%	5.0%	17
				Wind Speed (m/s)	1.4	1.3	3.0	3.5	0.8	1.1	1.2	1.4	
11-May-06	24	71	109	*Wind Direction (%)*	5.4%	15.8%	43.3%	35.4%	0.0%	0.0%	0.0%	0.0%	19
				Wind Speed (m/s)	3.1	2.7	3.4	3.5	0.0	0.0	0.0	0.0	
12-May-06	27	56	148	*Wind Direction (%)*	5.0%	21.8%	65.7%	7.5%	0.0%	0.0%	0.0%	0.0%	20
				Wind Speed (m/s)	3.0	3.0	3.4	2.6	0.0	0.0	0.0	0.0	

Nominated PM10 (24 hr) criteria is 50ug/m3

Checked and Approved By:_____

Air Quality NEPM Criteria Exceedance Summary

Date	Site 1 Background PM10 (24 hr) (ug/m3)	Site 2 School PM10 (24 hr) (ug/m3)	Site 3 Boundary PM10 (24 hr) (ug/m3)		Wind Sector N	NE	E	SE	S	SW	W	NW	Temperature (°C)
21-May-06	11	60	124	*Wind Direction (%)*	0.8%	17.5%	75.0%	6.7%	0.0%	0.0%	0.0%	0.0%	16
				Wind Speed (m/s)	3.0	3.3	4.8	2.5	0.0	0.0	0.0	0.0	
22-May-06	23	33	154	*Wind Direction (%)*	17.6%	36.0%	37.2%	0.0%	0.0%	0.0%	0.0%	9.2%	19
				Wind Speed (m/s)	2.3	2.8	4.0	0.0	0.0	0.0	0.0	2.8	
01-Jun-06	12	75	22	*Wind Direction (%)*	0.0%	2.9%	41.0%	56.1%	0.0%	0.0%	0.0%	0.0%	11
				Wind Speed (m/s)	0.0	2.9	3.8	2.6	0.0	0.0	0.0	0.0	
03-Jun-06	13		53	*Wind Direction (%)*	0.0%	0.8%	69.5%	29.7%	0.0%	0.0%	0.0%	0.0%	12
				Wind Speed (m/s)	0.0	3.1	4.2	3.9	0.0	0.0	0.0	0.0	
12-Jun-06	12	38	61	*Wind Direction (%)*	14.3%	18.1%	28.6%	20.6%	0.0%	0.0%	0.4%	18.1%	12
				Wind Speed (m/s)	3.8	2.7	2.9	1.6	0.0	0.0	1.4	2.8	
18-Jun-06	49	43	57	*Wind Direction (%)*	5.0%	3.3%	15.0%	56.3%	0.4%	5.0%	2.9%	12.1%	12
				Wind Speed (m/s)	2.7	2.4	2.5	2.0	0.5	1.0	2.0	2.5	

Nominated PM10 (24 hr) criteria is 50ug/m3

Appendix G

Photolog

Photo 1 View from Readymix Hardrock Quarry looking westduring the January 2005 bushfires

Photo 2 View from the intersection of Tonkin Highway and Mills Road looking north at vehicle generated dust

Photo 3 Vehicle generated dust along the Tonkin Highway

Photo 4 The unsurfaced roadside along the Tonkin Highway has the potential to contribute dust to the atmosphere during high wind events

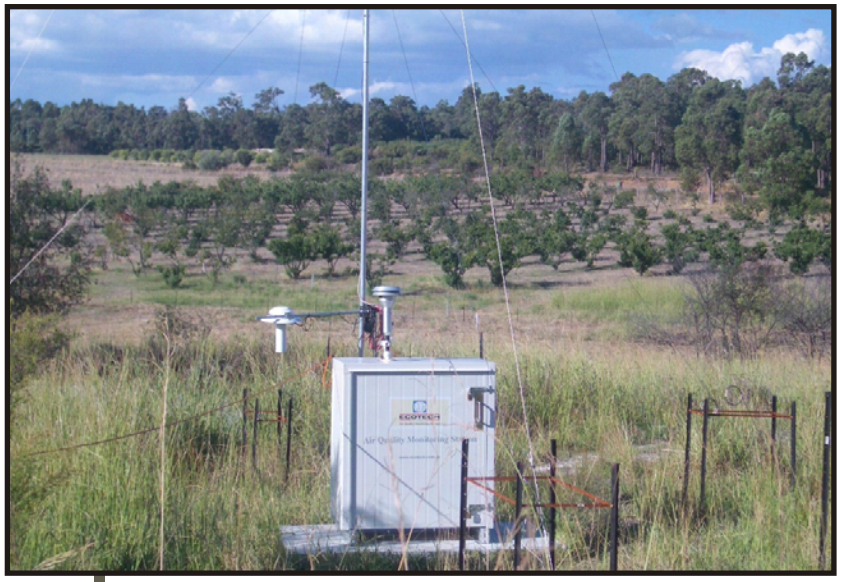

Photo 5 Site 1 Background - 581 Canning Mills Road, Martin

Photo 6 Site 2 School - Sports Oval, Lumen Christi College, Gosnells

Photo 7 Site 3 Peak - West Boundary of Readymix adjacent Tonkin Highway

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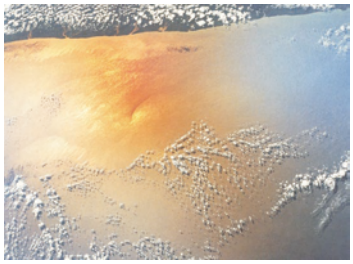

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