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West Gate Tunnel Project

Ambient Air Quality Monitoring Validated Report

1st January 2018 – 31st January 2018

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Executive Summary

Ecotech Pty Ltd is an independent company, contracted by Transurban Limited (Principal) to undertake continuous ambient air quality monitoring (AAQM) at a network of sites in Yarraville, Victoria, Australia. Monitoring is being conducted to inform environmental compliance requirements of the West Gate Tunnel Project.

The West Gate Tunnel Project consists of five AAQM stations. Ecotech commissioned the stations as following:

- Station 1 on 19th July 2016.
- Station 2 on 26th August 2016.
- Station 4 on 3rd November 2016. BTEX sampling at Station 4 commenced on 21st November 2016.
- Station 5 on 17th January 2017.
- Station 3 on 25th January 2017.

This report presents the data for January 2018.

- The percentage of valid data capture for most of parameters at was above 85% for the reporting month.
- There was one recorded PM₁₀ readings over the exceedance limits at Station 4 during the reporting month. Refer to Table 16 for more details.
- There were three recorded PM₁₀ readings over the exceedance limits at Station 2, Station 4 and Station 5 during the year of 2017 according to the State Environment Protection Policy.
 Refer to Tables 14, 16 and 18 for more details.
- There was one recorded PM_{2.5} readings over the exceedance limits at Station 3 during the year of 2017. Refer to Table 15 for more details.



Introduction

Ecotech Pty Ltd was commissioned by Transurban Limited to provide monitoring and data reporting for the WGTP network ambient air quality monitoring stations, located as detailed in Table 1. Ecotech commenced data collection at the Station 1 on the 19th July 2016, at Station 2 on the 26th August 2016, and at Station 4 on the 3rd November 2016. BTEX sampling at Station 4 commenced on 21st of November 2016. Monitoring commenced at Station 5 and Station 3 on the 17th and 25th of January 2017 respectively.

This report presents the data for January 2018.

The data presented in this report:

- Describes air quality measurements;
- Compares monitoring results;
- Has been quality assured;
- Complies with NATA accreditation requirements, where applicable.

1.0 Monitoring and Data Collection

1.1. Siting Details

The WGTP network consists of five ambient air quality monitoring stations. The station's location and siting details are described below.

Table 1: network monitoring locations

Site Name	Street Address	Geographical Coordinates	Height Above Sea Level (m)	
Station 1	Barbara Beyer Reserve, 37°48'43.20"S		10m	
Station 1	2 Harris St, Yarraville	144°54'0.00"E	10111	
Station 2	51-53 Francis Street,	37°49'15.59"S	12m	
Station 2	Yarraville	144°53'38.41"E	12111	



Site Name	Street Address	Geographical Coordinates	Height Above Sea Level (m)	
Station 3	Railway Reserve,	37°48'50.40"S	17m	
Stations	Woods St, Yarraville	144°53'27.60"E	17111	
Station 4	Primula Ave, Brooklyn	37°49'27.28"S	23m	
Station 4	Primula Ave, Brooklyn	144°50'45.72"E	23111	
Station 5	Donald McLean	37°49'35.28"S	6 m	
	Reserve, Spotswood	144°52'55.25"E	6m	

Siting audits were conducted to assess for compliance with AS/NZS 3580.1.1:2007 "Methods for sampling and analysis of ambient air – guide to siting air monitoring equipment".

Siting audits performed at WGTP network as follows:

- Station 1 on 31st July 2017.
- Station 2 on 22nd September 2017.
- Station 3 on 4th January 2018.
- Station 4 on 1st November 2017.
- Station 5 on 8th January 2018.

The siting audits of these stations showed general compliance with the guidelines in AS/NZS 3580.1.1:2007. These stations are classified as peak stations according to AS/NZS 3580.1.1:2007. Please see details of any non-compliance in Section 1.3.1.

The meteorological monitoring siting audits were completed at WGTP network as follows:

- Station 1 on 31st July 2017.
- Station 2 on 22nd September 2017.
- Station 3 on 1st February 2018.
- Station 4 on 1st November 2017.
- Station 5 on 2nd February 2018.





Figure 1: Monitoring Station Locations

1.2. Monitored Parameters

Table 2 below details the parameters monitored and the instruments used at WGTP monitoring stations. Appendix 1 defines any abbreviated parameter names used throughout the report.

Sampling of all parameters is continuous, with the exception of BTEX. BTEX sampling is typically conducted by Ecotech on a one in six-day cycle at Station 4. BTEX samples are collected from 12:30 AM to 11:30 PM on the sampling day.

For meteorological sensors, the elevation given in the table on the next page is the height above ground level at the monitoring station.

Table 2: Parameters measured at the WGTP monitoring stations

Station	Parameter Measured	Instrument and Measurement Technique
Stations 1, 2, 3, 4 &	PM ₁₀	Rupprecht & Patashnick / Thermo – TEOM (Tapered Element Oscillating Microbalance)
3	PM _{2.5}	Met One BAM 1020 – Beta ray attenuation



Station	Parameter Measured	Instrument and Measurement Technique
	Wind Speed (horizontal, elevation 10m)	Vaisala WS425 – ultrasonic
	Wind Direction (elevation 10m)	Vaisala WS425 – ultrasonic
Station 4	Benzene, Toluene, Ethyl benzene, Xylene (BTEX)	Collected In Specially-Prepared Canisters And Analysed By Gas Chromatography/Mass Spectrometry (GC/MS)
	NO, NO ₂ , NO _x	Ecotech EC9841 – gas phase chemiluminescence
	СО	Ecotech EC9830 – NDIR gas filter correlation infrared photometry

1.3. Data Collection Methods

Table 3 below shows the methods used for data collection. Any deviations from the stated methods are detailed in sections 1.3.1. and 1.3.3.

Table 3: Methods

Parameter Measured	Data Collection Methods Used	Description of Method
NO, NO ₂ , NO _x	AS/NZS 3580.5.1- 2011	Methods for sampling and analysis of ambient air. Method 5.1: Determination of oxides of nitrogen – chemiluminescence method
	Ecotech Laboratory Manual	In-house method 6.1 Oxides of nitrogen by chemiluminescence
СО	AS/NZS 3580.7.1- 2011	Methods for sampling and analysis of ambient air. Method 7.1: Determination of carbon monoxide - direct reading instrumental method
	Ecotech Laboratory Manual	In-house method 6.3 Carbon monoxide by gas filter correlation spectrophotometry



Parameter Measured	Data Collection Methods Used	Description of Method
BTEX (Sampling only)	US EPA TO-15	Method TO-15 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air Second Edition. Compendium Method TO-15 Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analysed By Gas Chromatography/Mass Spectrometry (GC/MS)
	Ecotech Laboratory Manual	In-house method 6.9 Volatile organic compounds in air collected in specially prepared canisters and analysed by gas chromatography/mass spectrometry
PM ₁₀ (TEOM)	AS/NZ 3580.9.8- 2008	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.
	Ecotech Laboratory Manual	In-house method 7.3- Particulates - PM _{2.5} , PM ₁₀ by TEOM
PM _{2.5} (BAM 1020)	AS/NZS 3580.9.12 - 2013	Methods of sampling and analysis of ambient air. Method 9.12: Determination of suspended particulate matter – PM _{2.5} beta attenuation monitors
PIVI _{2.5} (BAIVI 1020)	Ecotech Laboratory Manual	In-house method 7.5 – Measurement of PM ₁₀ , PM _{2.5} and TSP using Beta Attenuation Monitor.
Vector Wind Speed (Horizontal)	AS/NZS 3580.14 2014	Methods for sampling and analysis of ambient air. Method 14: Meteorological monitoring for ambient air quality monitoring applications
	Ecotech Laboratory Manual	In-house method 8.1 Wind speed (Horizontal) by anemometer
Vector Wind Direction	AS/NZS 3580.14 2014	Methods for sampling and analysis of ambient air. Method 14: Meteorological monitoring for ambient air quality monitoring applications
	Ecotech Laboratory Manual	In-house method 8.3 Wind direction by anemometer



1.3.1. NATA Endorsement and Compliance with Standards

Unless stated below, parameters are monitored at the WGTP network according to the methods detailed in Table 3 above.

- Siting of all WGTP stations may not fully comply with the guidelines in *AS 3580.14- 2014* "Methods for sampling and analysis of ambient air Meteorological monitoring for ambient air quality monitoring applications guidelines", due to possible air flow disturbances caused by nearby trees. Locating monitoring stations in urban areas often requires compromise due to a lack of clear space areas without obstructions as well as the availability of usable power supplies. Given the location, the site is fit for purpose while not fully compliant.
- AS/NZS 3580.1.1:2007 recommends a minimum distance between inlets and the roof of the supporting structure of 1.0m. However, all WGTP stations have inlets less than 1.0m above the roof. It is not thought this small difference will have any impact on measured concentrations.
- Ecotech is still waiting for some of Sampler flow orifice cleaning certificates from ALS for the
 reporting period. Whilst we are confident the cylinders provided meet requirements, until
 these certificates are available, compliance to TO-15 cannot be demonstrated. It is expected
 that the certificates will be provided in due course and Ecotech will issue an amended report
 without this statement.
- Ecotech's NATA scope of accreditation covers sampling only for BTEX parameters. Analysis
 and canister preparation is conducted by NATA accredited laboratories ALS as outlined in
 1.3.3 below.
- Wind sensor at Station 3 was out of wind tunnel calibration from 18th January 2018. Ecotech will try to arrange the wind tunnel calibration at the next suitable maintenance visit.

1.3.2. Data Acquisition (Continuous Monitoring)

Data acquisition is performed using a PC based WinAQMS logger (using WinAQMS® Version 2.0) situated at each of the monitoring sites. Each logger is equipped with a 3G modem for remote data collection. The recorded data is remotely collected from the AQMS loggers on a daily basis (using AirodisTM version 5.1) and stored at Ecotech's Environmental Reporting Services (ERS) department in Melbourne, Australia. Data samples are logged in 5-minute intervals.



1.3.3. Sampling and analysis for BTEX

BTEX canister sampling was conducted by Ecotech field service technicians. ALS (NATA Accreditation No. 825) provided the canisters and laboratory analysis services according to method US EPA TO-15.

1.4. Data Validation and Reporting

1.4.1. Validation

The Ecotech ERS department performs daily data checks on continuously monitored parameters to ensure maximum data capture rates are maintained. Any equipment failures are communicated to the responsible field engineers for urgent rectification. Ecotech ERS maintains two distinct databases containing non-validated and validated data respectively.

The validated database is created by duplicating the non-validated database and then flagging data affected by instrument faults, calibrations and other maintenance activities. The data validation software requires the analyst to supply a valid reason (e.g. backed by maintenance notes, calibration sheets etc.) in the database for flagging any data as invalid.

Details of all invalid or missing data are recorded in the Valid Data Exception Tables.

Validation is performed by the analyst, and the validation is reviewed. Graphs and tables are generated based on the validated 5-minute data, while PM_{2.5} is based on validated 1-hour data.

1.4.2. Reporting

The reported data for continuously monitored parameters is in a Microsoft Excel format file named "WGTP Monthly Data Report_January 2018.xls".

The Excel file consists of 5 Excel worksheets:

- 1. Cover
- 2. 5 Minute Data
- 3. 1 Hour Data
- 4. 1 Day Data
- 5. Valid Data Exception Table

The data contained in this report is based on Australian Eastern Standard Time.

Averages are based on a minimum of 75% valid readings within the averaging period. All averages are calculated from the 5-minute data, while PM_{2.5} averages are calculated from 1-hour data.



Averaging periods of eight hours or less are reported for the end of the period, i.e. the hourly average 02:00am is for the data collected from 1:00am to 2:00am. For the purposes of calculating and reporting 4 and 8-hour averages, the first rolling average in a calendar day ends at 1.00 am, and includes hours from the previous calendar day. One-hour averages are calculated based on a clock hour. One day and one-year averages are calculated based on calendar days.

Wind Data Reporting

Wind speed and wind direction data associated with calm wind conditions are reported in accordance with the requirements of AS 3580.14-2014. Calm wind conditions are defined as wind speeds below the starting threshold of the wind speed / direction sensors. Sensor starting thresholds are given in Table 5 under "Measurement Range".

BTEX Reporting

Results will be provided to Ecotech by the analytical laboratory and summarised within this report. Full analytical results will be included as an Appendix 3 at the end of this report.

2.0 Air Quality Standards and Goals

The air quality standards for pollutants monitored at the WGTP monitoring network are based on the Australian National Environmental Protection (Ambient Air Quality) Measure (NEPM) – 2016 and Air Toxic NEPM goals. The air quality goals are shown in Table 4 below.

Table 4: Network Air Quality Standards and Air Toxic NEPM Goals

Parameter	Time Period	Exceedance Level	Units	Maximum allowable exceedances
СО	8 hours (rolling, based on 1-hour averages)	9.0	ppm	1 day a year
NO ₂	1 hour	120	ppb	1 day a year
NO ₂	1 year	30	ppb	None



Parameter	Time Period	Exceedance Level	Units	Maximum allowable exceedances	
Benzene ¹	1 year (based on 1-day averages)	0.003	ppm	8-year goal is to gather sufficient data nationally to facilitate development of a standard.	
	1 day	1	ppm	8-year goal is to gather	
Toluene ¹	1 year (based on 1-day averages)	0.1	ppm	sufficient data nationally to facilitate development of a standard.	
	1 day	0.25	ppm	8-year goal is to gather	
Xylene ¹	1 year (based on 1-day averages)	0.2	ppm	sufficient data nationally to facilitate development of a standard.	
PM ₁₀	1 day	50	μg/m³	None (see note)	
PM ₁₀	1 year	20 ²	μg/m³	None	
PM _{2.5}	1 day	25	μg/m³	None (see note)	
PM _{2.5}	1 year	8	μg/m³	None	

Note:

Exceptional events are excluded from this standard. As per the Ambient Air Quality NEPM, *Exceptional event* means a fire or dust occurrence that adversely affects air quality at a particular location, and causes an exceedance of 1-day average standards in excess of normal historical fluctuations and background levels, and is directly related to: bushfire; jurisdiction authorised hazard reduction burning; or continental scale windblown dust.

¹ This value is monitoring investigation level of air pollution only, not limits according to Legislation F2011C00855 - National Environment Protection (Air Toxic) Measure 2011.

² This value is based on the State Environment Protection Policy (Ambient Air Quality) [SEPP(AAQ)] in Victoria.



Ecotech will include any valid data identified as being associated with an exceptional event in all report tables and graphic representations. However, 1-day averages associated with exceptional events will not be counted as exceedances of the Air Quality standard.

3.0 Calibrations and Maintenance

3.1. Units and Uncertainties

The uncertainties for each parameter have been determined by the manufacturer's tolerance limits of the equipment's parameters, and by the data collection standard method.

The reported uncertainties are expanded uncertainties, calculated using coverage factors which give a level of confidence of approximately 95%.

Table 5: Units and Uncertainties

Parameter	Units	Resolution	Uncertainty	Measurement Range ³
NO, NO _x (EC9841)	ppb	1 ppb	± 13 ppb or 10% of reading, whichever is the greater K factor of 2.0	0 ppb to 500 ppb
NO ₂ (EC9841)	ppb	1 ppb	± 17 ppb K factor of 2.0	0 ppb to 500 ppb
CO (EC9830)	ppm	0.1 ppm	± 1 ppm or 10% of reading, whichever is the greater K factor of 2.0	0 ppm to 50 ppm
PM ₁₀ (TEOM)	μg/m³	0.1 μg/m³	±5.0 μg/m³ or 3.6% of reading, whichever is the greater K factor of 2.0	0 μg/m³ to 1 g/m³
PM _{2.5} (BAM 1020)	μg/m³	1 μg/m³	±5.0 μg/m³ or 5.4% of reading, whichever is the greater k factor of 2.0	5 to 1000 μg/m³

 $^{^3}$ Uncertainties may not be calculated based on the full measurement range. Uncertainty for CO by EC9830 is calculated based on a range of 0-10 ppm. Uncertainty for NO, NO₂ and NO_x by EC 9841 are calculated based on a measurement range of 0-125 ppb.



Parameter	Units	Resolution	Uncertainty	Measurement Range ³
Vector Wind Speed	m/s	0.1 m/s	±0.4 m/s or 2.0% of reading, whichever is greater K factor of 2.0	0 m/s to 30 m/s
Vector Wind Direction	Deg	1 deg	±4 deg K factor of 2.0	0 deg to 360 deg Starting threshold: 0 m/s

3.2. Automatic calibration checks

Automatic span, zero and background checks occur each night for continuously monitored gaseous parameters. Data associated with these checks is invalidated and is not specifically referred to in the valid data exception reports. Table 6 displays the times for when these checks occur.

Table 6: Automatic Span/Zero and Background Check Times

Parameter	Span/Zero	Background
СО	01:00 to 01:25	23:45 to 23:55
NO, NO ₂ , NO _x	01:00 to 01:25	-

3.3. Maintenance

3.3.1. Maintenance notes

3.3.2. Calibration & Maintenance Summary Tables

The last calibrations for the following parameters were performed on the indicated dates. Data supplied after this time is subject to further validation, to be performed at the next calibration cycle.

Note: Maintenance and calibration dates may differ, as calibrations may be less frequent than scheduled maintenance visits.

Tables 7 - 11 on the next pages indicate when the particulate, gas and meteorological equipment were last maintained / calibrated.



Table 7: Station 1 Maintenance Table January 2018

Parameter	Date of Last Maintenance	Maintenance Type	Date of Last Calibration	Calibration Cycle
PM ₁₀	05/01/18	Monthly	23/10/17	6-Monthly
PM _{2.5}	05/01/18	3 Monthly	22/09/17	Yearly
Wind Speed	05/01/18	Monthly	04/05/164	2-Yearly
Wind Direction	05/01/18	Monthly	04/05/164	2-Yearly

Table 8: Station 2 Maintenance Table January 2018

Parameter	Date of Last Maintenance	Maintenance Type	Date of Last Calibration	Calibration Cycle
PM ₁₀	09/01/18	6 Monthly	09/01/18	6-Monthly
PM _{2.5}	09/01/18	Monthly	13/11/17	Yearly
Wind Speed	09/01/18	Monthly	24/05/16 ⁵	2-Yearly
Wind Direction	09/01/18	Monthly	24/05/16 ⁵	2-Yearly

Table 9: Station 3 Maintenance Table January 2018

Parameter	Date of Last	Maintenance	Date of Last	Calibration
	Maintenance	Type	Calibration	Cycle
PM ₁₀	05/01/18	Yearly	04/01/18	6-Monthly

⁴ Wind tunnel calibration performed on 04/05/2016 and installed at Station 1 on 22/07/2016. ⁵ Wind tunnel calibration performed on 24/05/2016 and installed at Station 2 on 12/09/2016.



Parameter	Date of Last Maintenance	Maintenance Type	Date of Last Calibration	Calibration Cycle
PM _{2.5}	05/01/18	Yearly	04/01/18	Yearly
Wind Speed	04/01/18	Yearly	18/01/16 ⁶	2-Yearly
Wind Direction	04/01/18	Yearly	18/01/16 ⁶	2-Yearly

Table 10: Station 4 Maintenance Table January 2018

Parameter	Date of Last Maintenance	Maintenance Type	Date of Last Calibration	Calibration Cycle
PM ₁₀	30/01/18	Monthly	30/01/18	6-Monthly
PM _{2.5}	30/01/18	Monthly	03/07/17	Yearly
СО	30/01/18	Monthly	30/01/18	Monthly
NO, NO ₂ , NO _x	30/01/18	Monthly	30/01/18	Monthly
ВТЕХ	30/01/18	Weekly	Every sample	On supply of flow controller ⁷
Wind Speed	30/01/18	Monthly	21/10/168	2-Yearly
Wind Direction	30/01/18	Monthly	21/10/168	2-Yearly

⁶ Wind tunnel calibration performed on 18/01/2016 and installed at Station 3 on 06/02/2017.

⁷ Sampling flow orifice checks and calibrations performed by ALS for each orifice mass flow controller supplied. Records are held by Ecotech and available on request.

⁸ Wind tunnel calibration performed on 21/10/2016 and installed at Station 4 on 22/11/2016.



Table 11: Station 5 Maintenance Table January 2018

Parameter	Date of Last Maintenance	Maintenance Type		Calibration Cycle
PM ₁₀	19/01/18	Sensor unit replaced (ID: 99-0636 OUT ID: 14AB269901712 IN)	19/01/18	6-Monthly
PM _{2.5}	30/01/18	Unscheduled	06/04/17	Yearly
Wind Speed	08/01/18	Yearly	15/04/16 ⁹	2-Yearly
Wind Direction	08/01/18	Yearly	15/04/16 ⁹	2-Yearly

4.0 Results

4.1. Valid Data Capture

Valid data capture refers to the amount of valid data collected during the report period. It is based on 5-minute data for all continuously monitored parameters, with the exception of PM_{2.5}. The PM_{2.5} data is based on 1-hour data.

The percentage of valid data captured is calculated using the following equation:

Percentage Valid Data capture = (Reported air quality data / Total data) x 100%

Where:

 Reported air quality data = Number of samples (instrument readings) which have been validated through a quality assured process and excludes all data errors, zero data collection due to calibration, equipment failures, planned and unplanned maintenance.

• Total data = Total number of samples (instrument readings) expected for the sampling period. Total data is calculated based on the same averaging period as "reported air quality data" and the duration of the corresponding report period. e.g. for 5-minute data collected over a month of 31 days, the total data would be equal to 12 (5-minute samples in an hour) x 24 (hours in a day) x 31 (days in a month) = 8928 samples.

⁹ Wind tunnel calibration performed on 15/04/2016 and installed at Station 5 on 27/01/2017.



Table 12 on below displays data capture statistics for January 2018. **Bold** values in the table indicates the of percentage valid data capture below 85%.

Table 12: WGTP network Monthly Data Capture for January 2018

Parameter	Station 1 (%)	Station 2 (%)	Station 3 (%)	Station 4 (%)	Station 5 (%)
PM ₁₀	99.8	99.4	96.7	99.6	96.3
PM _{2.5}	99.7	99.7	96.4	99.6	90.5
WS, WD	100.0	96.1	99.9	99.9	99.9
СО	-	-	-	96.4	-
NO, NO ₂ , NO _x	-	-	-	97.6	-
BTEX	-	-	-	100	-

4.2. Air Quality Monthly Summary

Tables 13 - 18 below include a summary of any air quality exceedances recorded at WGTP network during the report period.

Table 13: Station 1 Exceedances recorded for January 2018

Parameter	Time Period	Exceedance Level	Number of exceedances	Value of Exceedance	End Date/Time of Exceedance
PM ₁₀	1 day	50 μg/m³	None recorded	-	-
PM _{2.5}	1 day	25 μg/m³	None recorded	-	-
PM ₁₀	1 year	20 μg/m³	None recorded	-	-



Parameter	Time Exceedance Period Level		Number of exceedances	Value of Exceedance	End Date/Time of Exceedance
PM _{2.5}	1 year	8 μg/m³	None recorded	-	-

Table 14: Station 2 Exceedances recorded for January 2018

Parameter	Time Period	Exceedance Level	Number of exceedances	Value of Exceedance	End Date/Time of Exceedance
PM ₁₀	1 day	50 μg/m³	None recorded	-	-
PM _{2.5}	1 day	25 μg/m³	25 μg/m³ None recorded		-
PM ₁₀	1 year	20 μg/m³	1	20.5 μg/m³	Year 2017
PM _{2.5}	1 year	8 μg/m³	None recorded	-	-

Table 15: Station 3 Exceedances recorded for January 2018

Parameter	Time Period	Exceedance Level	Number of exceedances	Value of Exceedance	End Date/Time of Exceedance
PM ₁₀	1 day	50 μg/m³	None recorded	-	-
PM _{2.5}	1 day	25 μg/m³	None recorded	-	
PM ₁₀	1 year	20 μg/m³	None recorded	-	-
PM _{2.5}	1 year	8 μg/m³	1	9 μg/m³	Year 2017



Table 16: Station 4 Exceedances recorded for January 2018

Parameter	Time Period	Exceedance Level	Number of exceedances	Value of Exceedance	End Date/Time of Exceedance
PM ₁₀	1 day	50 μg/m³	1	50.1 μg/m³	19/01/18
PM _{2.5}	1 day	25 μg/m³	None recorded	-	-
PM ₁₀	1 year	20 μg/m³	1	23.6 μg/m³	Year 2017
PM _{2.5}	1 year	8 μg/m³	None recorded	-	-
СО	8-hour rolling	9 ppm	None recorded	-	-
NO ₂	1 hour	120 ppb	None recorded	-	-

Table 17: Station 4 readings above Monitoring Investigation Level recorded for January 2018

Parameter	Time Period	Exceedance Level	Number of exceedances	Value of Exceedance	End Date/Time of Exceedance
Toluene	1 day	1 ppm	None recorded	-	-
Xylenes	1 day	0.25 ppm	None recorded	-	-

Table 18: Station 5 Exceedances recorded for January 2018

Parameter	Time Period	Exceedance Level	Number of exceedances	Value of Exceedance	End Date/Time of Exceedance
PM ₁₀	1 day	50 μg/m³	None recorded	-	-
PM _{2.5}	1 day	25 μg/m³	None recorded	-	-



Parameter	Time Period	Exceedance Level	Number of exceedances	Value of Exceedance	End Date/Time of Exceedance
PM ₁₀	1 year	20 μg/m³	1	21.9 μg/m³	Year 2017
PM _{2.5}	1 year	8 μg/m³	None recorded	-	-

4.3. BTEX Analytical Results Summary

Table 19 below displays a summary of the analytical results for BTEX during the reporting period. Full analysis reports from ALS are included in Appendix 3. Results displayed as "<x ppb" indicated a reading below the lower detectable limit.

Table 19: Station 4 BTEX Analytical Results for January 2018

Parameter	Units	Samples				
Canister Number		C4981 †	C4992†	C4740†	C4988†	C4982†
Sample Date		04/01/18	09/01/18	15/01/18	21/01/18	27/01/18
Benzene	ppb	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	ppb	3.0	0.5	0.6	0.7	1.1
Ethyl benzene	ppb	<0.5	<0.5	<0.5	<0.5	<0.5
m,p-xylenes	ppb	<1.0	<1.0	<1.0	<1.0	<1.0
o-xylene	ppb	<0.5	<0.5	<0.5	<0.5	<0.5

[†]Sample flow may have decreased towards the end of the 24 hours sampling period. Therefore, the reported result may not be fully representative of the 24-hour average concentration.



4.4. Graphic Representations

Validated 5-minute data for NO, NO₂, NO_x, CO and PM₁₀, and validated 1-hour data for PM_{2.5} were used to construct the following monthly graphic representations.

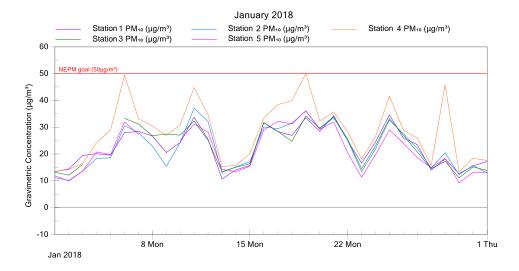


Figure 2: WGTP PM₁₀ 1-day Averages for January 2018

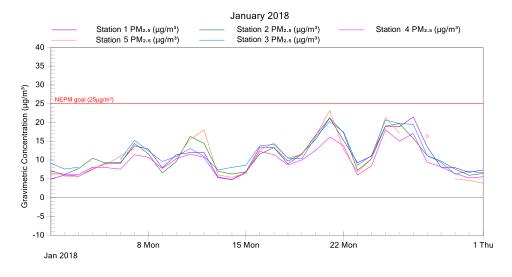


Figure 3: WGTP PM_{2.5} 1-day Averages for January 2018



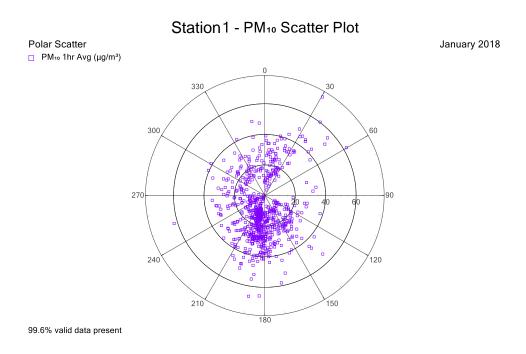


Figure 4: Station 1 PM₁₀ 1-hour Averages scatter plot for January 2018

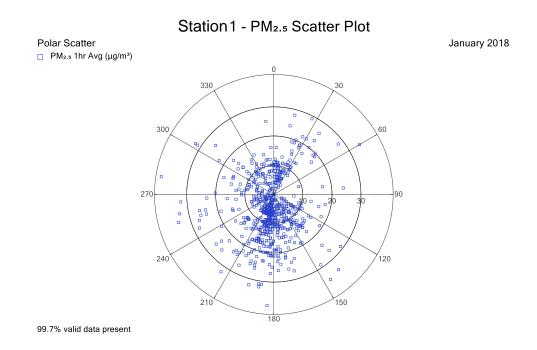


Figure 5: Station 1 PM_{2.5} 1-hour Averages scatter plot for January 2018



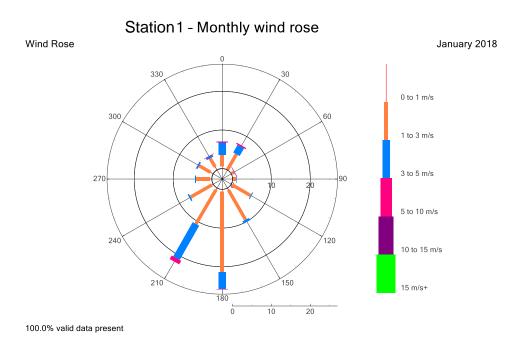


Figure 6: Station 1 Monthly Wind Rose for January 2018

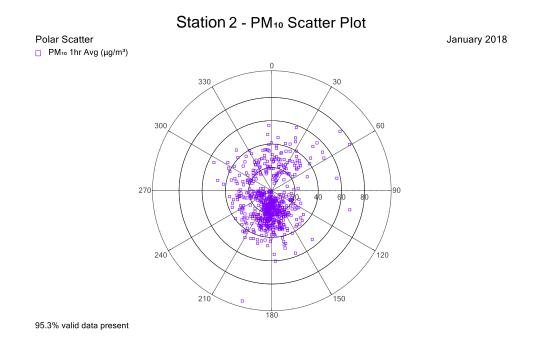


Figure 7: Station 2 PM₁₀ 1-hour Averages scatter plot for January 2018



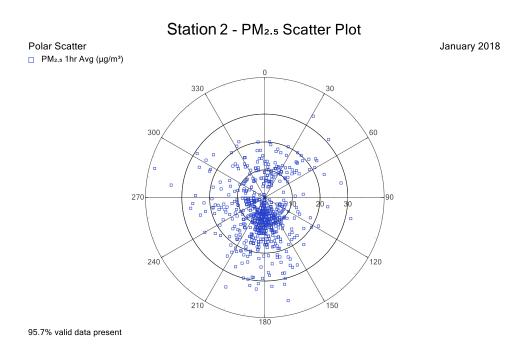


Figure 8: Station 2 PM_{2.5} 1-hour Averages scatter plot for January 2018

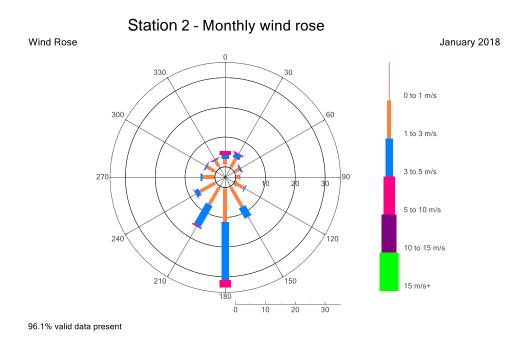


Figure 9: Station 2 Monthly Wind Rose for January 2018



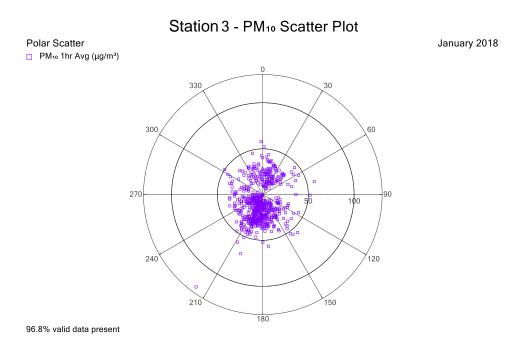


Figure 10: Station 3 PM₁₀ 1-hour Averages scatter plot for January 2018

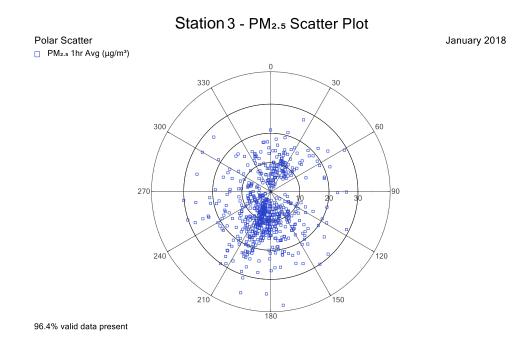


Figure 11: Station 3 PM_{2.5} 1-hour Averages scatter plot for January 2018



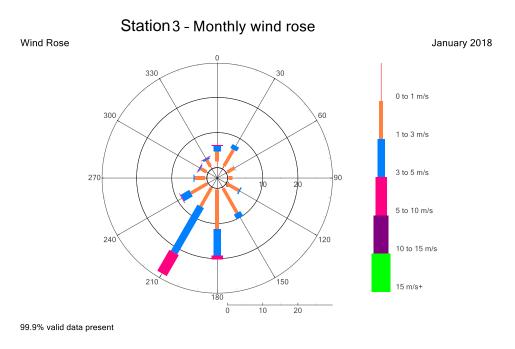


Figure 12: Station 3 Monthly Wind Rose for January 2018

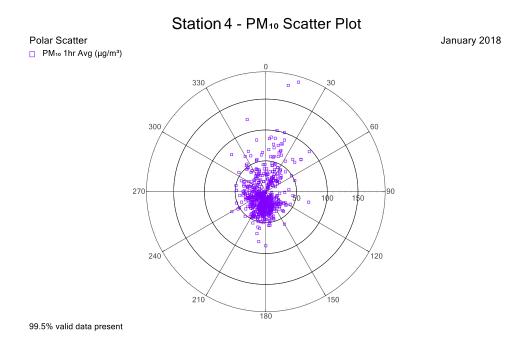


Figure 13: Station 4 PM₁₀ 1-hour Averages scatter plot for January 2018



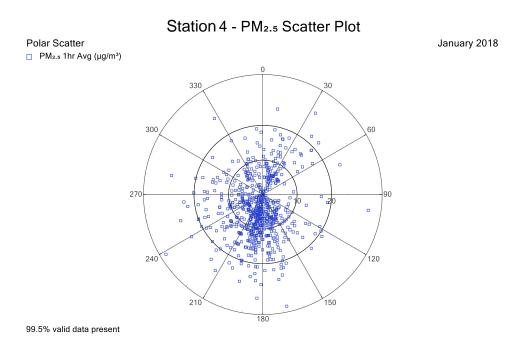


Figure 14: Station 4 PM_{2.5} 1-hour Averages scatter plot for January 2018

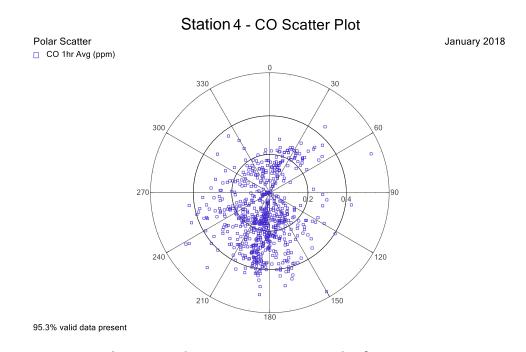


Figure 15: Station 4 CO 1-hour Averages scatter plot for January 2018



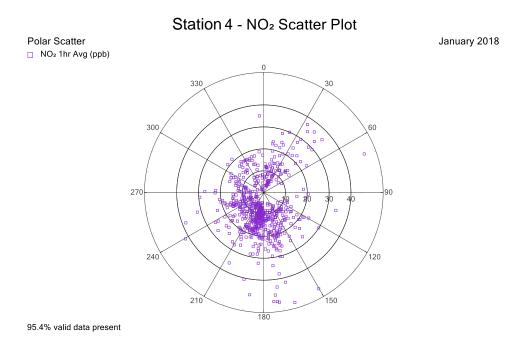


Figure 16: Station 4 NO₂ 1-hour Averages scatter plot for January 2018

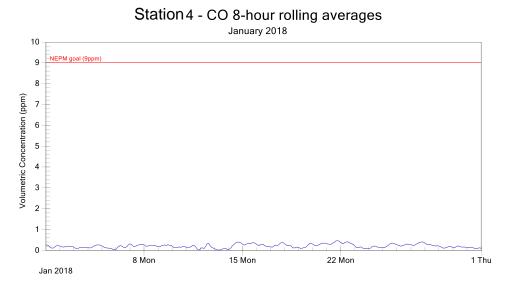


Figure 17: Station 4 CO 8-hours rolling Averages for January 2018



Station 4 - NO₂ 1-hour rolling averages

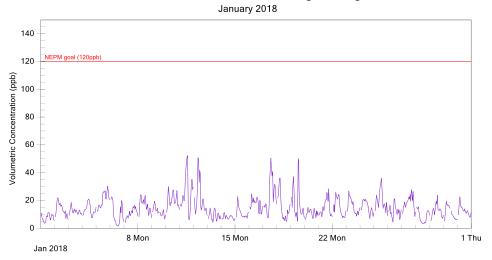


Figure 18: Station 4 NO₂ 1-hour Averages for January 2018

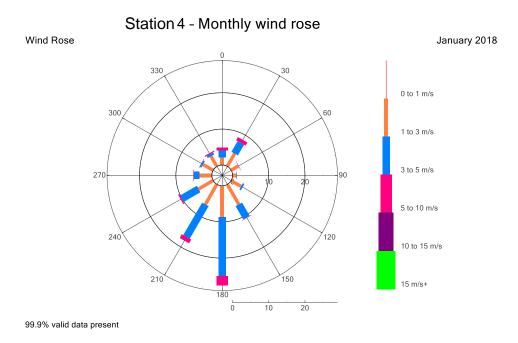


Figure 19: Station 4 Monthly Wind Rose for January 2018



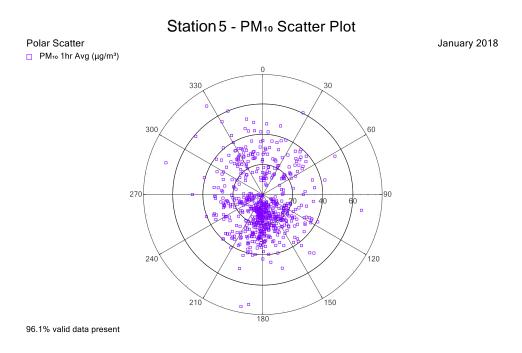


Figure 20: Station 5 PM₁₀ 1-hour Averages scatter plot for January 2018

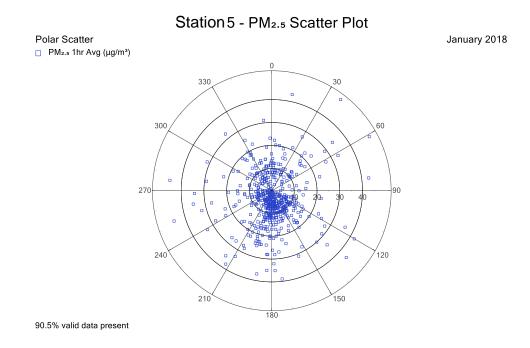


Figure 21: Station 5 PM_{2.5} 1-hour Averages scatter plot for January 2018



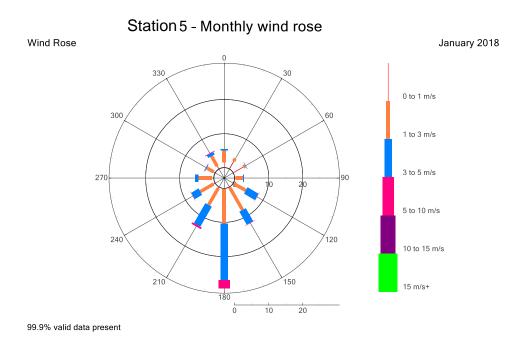


Figure 22: Station 5 Monthly Wind Rose for January 2018

5.0 Valid Data Exception Table

Tables 20 - 24 below detail all changes made to the raw data set during the validation process. An explanation of reasons given in the table can be found in Appendix 2.

Table 20: Station 1 Valid Data Exception Table

Start Date	End Date	Reason	Change Details	User Name	Change Date
05/01/18 11:00	05/01/18 12:00	Scheduled 3 monthly maintenance - BAM tape replaced, flow audit and leak test performed.	PM _{2.5}	DL	19/02/18
05/01/18 12:30	05/01/18 14:15	Scheduled monthly maintenance - TEOM flow audit, leak test performed and filter changed.	PM ₁₀	DL	19/02/18



Table 21: Station 2 Valid Data Exception Table

Start Date	End Date	Reason	Change Details	User Name	Change Date
09/01/18 11:00	09/01/18 12:00	Scheduled monthly maintenance - Flow audit and leak test performed.	PM _{2.5}	DL	19/02/18
09/01/18 12:10	09/01/18 16:15	Scheduled 6 monthly maintenance - TEOM calibration and filter changed	PM ₁₀	DL	19/02/18
28/01/18 14:50	31/01/18 10:40	Intermittent logger faults - Only BAM and TEOM data can be recovered from the instruments	WS & WD	DL	19/02/18
29/01/18 11:55	29/01/18 12:20	Non-scheduled maintenance - Logger reset	WS, WD, PM ₁₀	DL	19/02/18
31/01/18 03:40	31/01/18 03:40	Data affected by logger fault	PM ₁₀	DL	19/02/18
31/01/18 10:45	31/01/18 10:50	Logger reset	WS, WD, PM ₁₀	DL	19/02/18

Table 22: Station 3 Valid Data Exception Table

Start Date	End Date	Reason	Change Details	User Name	Change Date
04/01/18 09:00	05/01/18 11:05	Scheduled yearly maintenance - BAM and TEOM calibrations and zero checked performed. TEOM filter changed	PM _{2.5} , PM ₁₀	DL	19/02/18
04/01/18 13:55	04/01/18 14:20	Scheduled yearly maintenance - Wind sensor zero check performed.	WS, WD	DL	19/02/18
05/01/18 11:10	05/01/18 11:55	Scheduled yearly maintenance - Zero filter removed	PM ₁₀	DL	19/02/18
08/01/18 20:55	08/01/18 21:10	Unrealistic data - Possible moisture interference	PM ₁₀	DL	19/02/18



Table 23: Station 4 Valid Data Exception Table

Start Date	End Date	Reason	Change Details	User Name	Change Date
01/01/18 01:30	31/01/18 01:50	Additional instrument stabilisation following the automatic span checks	СО	DL	19/02/18
03/01/18 13:45	03/01/18 15:05	Scheduled monthly maintenance - Flow audit and leak test performed. TEOM filter changed. BTX TO-15 Canister changed over	PM _{2.5} , PM ₁₀	DL	19/02/18
04/01/18 00:30	04/01/18 23:30	Sample C4981 flow final vacuum was low. Sample flow may have decreased towards the end of the 24 hours sampling period. Therefore, the reported result may not be fully representative of the 24 hours average concentration	BTX TO-15	DL	19/02/18
08/01/18 09:40	08/01/18 09:40	Data transmission error	CO, NO, NO ₂ , NO _x	DL	19/02/18
08/01/18 12:00	08/01/18 12:00	Scheduled weekly maintenance - BTX TO-15 Canister changed over	No data affected	DL	19/02/18
09/01/18 00:30	09/01/18 23:30	Sample C4992 flow final vacuum was low. Sample flow may have decreased towards the end of the 24 hours sampling period. Therefore, the reported result may not be fully representative of the 24 hours average concentration	BTX TO-15	DL	19/02/18
09/01/18 13:20	09/01/18 14:10	Scheduled 3 monthly maintenance - CO & NO_x calibrations	CO, NO, NO ₂ , NO _x	DL	19/02/18
11/01/18 11:35	11/01/18 12:00	Scheduled weekly maintenance - BTX TO-15 Canister changed over and Data logger analog Input check	CO, WS & WD	DL	19/02/18
11/01/18 12:55	11/01/18 13:55	Data intermittently affected by maintenance	СО	DL	19/02/18
12/01/18 01:00	12/01/18 01:55	Brief power interruption and subsequent instrument stabilisation	PM _{2.5} , PM ₁₀ , CO, NO, NO ₂ , NO _x	DL	19/02/18



Start Date	End Date	Reason	Change Details	User Name	Change Date
15/01/18 00:30	15/01/18 23:30	Sample C4740 flow final vacuum was low. Sample flow may have decreased towards the end of the 24 hours sampling period. Therefore, the reported result may not be fully representative of the 24 hours average concentration	BTX TO-15	DL	19/02/18
17/01/18 15:00	17/01/18 15:15	Scheduled weekly maintenance - BTX TO-15 Canister changed over	No data affected	DL	19/02/18
21/01/18 00:30	21/01/18 23:30	Sample C4988 flow final vacuum was low. Sample flow may have decreased towards the end of the 24 hours sampling period. Therefore, the reported result may not be fully representative of the 24 hours average concentration	BTX TO-15	DL	19/02/18
23/01/18 15:00	23/01/18 15:30	Scheduled weekly maintenance - BTX TO-15 Canister changed over	No data affected	DL	19/02/18
27/01/18 00:30	27/01/18 23:30	Sample 4982 flow final vacuum was low. Sample flow may have decreased towards the end of the 24 hours sampling period. Therefore, the reported result may not be fully representative of the 24 hours average concentration	BTX TO-15	DL	19/02/18
29/01/18 14:30	29/01/18 14:45	Scheduled weekly maintenance - BTX TO-15 Canister removed	No data affected	DL	19/02/18
30/01/18 13:05	30/01/18 15:25	Scheduled monthly maintenance & BTX TO- 15 Canister installed	PM _{2.5} , PM ₁₀ , CO, NO, NO ₂ , NO _x	DL	19/02/18

Table 24: Station 5 Valid Data Exception Table

Start Date	End Date	Reason	Change Details	User Name	Change Date
08/01/18 10:00	09/01/18 09:55	Scheduled yearly maintenance - BAM and TEOM calibrations and zero checked performed. TEOM filter changed	PM _{2.5} , PM ₁₀	DL	19/02/18



Start Date	End Date	Reason	Change Details	User Name	Change Date
09/01/18 10:00	09/01/18 10:20	Scheduled yearly maintenance - Zero filter removed and TEOM PM ₁₀ AT shield replaced/upgraded	PM ₁₀	DL	19/02/18
11/01/18 06:00	18/01/18 06:15	Intermittent unrealistic data - WS spikes	WS & WD	DL	19/02/18
11/01/18 09:55	11/01/18 11:45	Non-scheduled maintenance - TEOM Amplifier Board Tuning re-check	PM ₁₀	DL	19/02/18
12/01/18 14:00	28/01/18 23:00	Intermittent unrealistic data - Data affected by interference from sample humidity due to shelter conditions	PM _{2.5}	DL	19/02/18
19/01/18 14:20	19/01/18 18:35	Non-scheduled maintenance - TEOM sensor unit replaced due to yearly amplifier tuning test failed during previous maintenance visits	PM ₁₀	DL	19/02/18
19/01/18 14:30	19/01/18 14:35	Data affected by maintenance	WS & WD	DL	19/02/18
22/01/18 14:00	30/01/18 00:00	Intermittent unrealistic data - Readings out of instrument range	PM _{2.5}	DL	19/02/18
30/01/18 11:00	30/01/18 11:00	Non-scheduled maintenance - Aircon temperature adjusted and BAM 1020 heater setpoint changed from 35% to 30%	PM _{2.5}	DL	19/02/18

6.0 Report Summary

- The percentage of valid data capture for most of parameters at WGTP network was above 85% for the reporting month.
- The flow final vacuums of all canisters sampled during January 2018 were low. The sample flow may have decreased towards the end of the 24 hours sampling period. Therefore, the reported results may not be fully representative of the 24-hour average concentration.
- There was one recorded PM₁₀ readings over the exceedance limits at Station 4 during the reporting month. Refer to Table 16 for more details.
- There were three recorded PM₁₀ readings over the exceedance limits at stations 2, 4 and 5 during the year of 2017 according to the State Environment Protection Policy. Refer to Tables 14, 16 and 18 for more details.



• There was one recorded PM _{2.5} readings over the exceedance limits at Station 3 during the year of 2017. Refer to Table 15 for more details.
END OF REPORT



Appendix 1 - Definitions & Abbreviations

Micrograms per cubic metre at standard temperature and pressure (0°C and 101.3

 $\mu g/m^3$ kPa)

BTEX Benzene, Toluene, Ethyl Benzene and Xylene *ortho-, meta-* and *para-*isomers

Wind conditions where the wind speed is below the operating range of the wind

calm sensor

CO Carbon monoxide

deg Degrees (True North)

m/s Metres per second

NO Nitric oxide

NO₂ Nitrogen dioxide

NO_x Oxides of nitrogen

PM₁₀ Particulate less than 10 microns in equivalent aerodynamic diameter

PM_{2.5} Particulate less than 2.5 microns in equivalent aerodynamic diameter

ppb Parts per billion

ppm Parts per million

Sigma Theta is the standard deviation of the horizontal wind direction fluctuations

Sigma over the averaging period.

WD Vector Wind Direction

WS Vector Wind Speed



Appendix 2 - Explanation of Exception Table

Automatic background check refers to when analyser samples zero air and measures the level of the concentration voltage. This voltage is taken as the zero signal level and this value is subtracted from any subsequent readings as an active zero compensation. This is the analyser's fine zero measurement.

Beta count failure refers to a fault in the functioning of the beta attenuation monitor.

Calibration check outside tolerance refers to when the calibration values are outside the tolerance limits set for the precision check.

Calibration correction factor applied to data refers to an offset or multiplier applied to the data. This operation may be performed for a number of reasons including: (a) when a clear trend / drift outside the tolerance limit can be demonstrated by repeated operation precision checks, (b) when a correction is required on previously logged data due to a calibration check being outside the allowable tolerance.

Commissioning refers to the initial setup and calibration of the instrument when it is first installed. For some instruments there may be a stabilisation period before normal operation commences.

Data affected by environmental conditions – wind speed spike refers to when a one-off high reading occurs due to a natural occurrence such as a bird sitting on the wind sensor, or some other event causing the readings to spike.

Data transmission error refers to a period of time when the instrument could not transmit data. This may be due to interference, or a problem with the phone line or modem.

Equipment malfunction/instrument fault refers to a period of time when the instrument was not in the normal operating mode and did not measure a representative value of the existing conditions.

Gap in data/data not available refers to a period of time when either data has been lost or could not be collected.

Instrument Alarm refers to an alarm produced by the instrument. A range of alarms can be produced depending on how operation of the instrument is being affected.

Instrument out of service refers to a lack of data due to an instrument being shut down for repair, maintenance, or factory calibration.



Linear offset or multiplier refers to when an offset or multiplier has been applied between two points where the values of the offset or multiplier are different and the correction is interpolated between the two points.

Logger error refers to when an error occurs and instrument readings are not correctly recorded by the logger.

Maintenance refers to a period of time when the logger / instrument was switched off due to maintenance.

Overnight span/zero out of tolerance refers to when the span/zero reading measured by the analyser during an automatic precision check falls outside of the expected concentration limits.

Overnight zero out of tolerance refers to when the automatic zero reading measured by the analyser falls outside the expected limits.

Power Interruption refers to no power to the station therefore no data was collected at this time.

Remote Calibration refers to when a technician remotely connects to the station and manually performs a span check.

Static offset or multiplier refers to when a single offset or multiplier has been applied to the data between two points either to increase or decrease the measured value.

Tape break refers to the breaking of the beta attenuation monitor sample tape during operation.

Warm up after power interruption refers to the start up period of an instrument after power has been restored.



Appendix 3 – BTEX Analytical Results



CERTIFICATE OF ANALYSIS

Work Order : EN1801147

: ECOTECH PTY LTD

Contact : LARA NICHOLAS

Address : 1492 FERNTREE GULLY ROAD

KNOXFIELD VICTORIA, AUSTRALIA 3180

Telephone : +61 03 9730 7800
Project : WD4 PRIMULA AVE

Order number : 234215

C-O-C number : ----

Client

Sampler : Daniel Raymond

Site : ---

Quote number : NE/070/17

No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 4

Laboratory : Environmental Division Newcastle

Contact : Hayley Withers

Address : 5/585 Maitland Road Mayfield West NSW Australia 2304

Telephone : +612 4014 2500
Date Samples Received : 12-Jan-2018 08:45

Date Analysis Commenced : 12-Jan-2018

Issue Date : 16-Jan-2018 13:26



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

SignatoriesPositionAccreditation CategoryDale SempleAnalystNewcastle - Organics, Mayfield West, NSWDaniel JunekSenior Air AnalystNewcastle - Organics, Mayfield West, NSWDaniel JunekSenior Air AnalystNewcastle, Mayfield West, NSW

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Work Order : EN1801147

Client : ECOTECH PTY LTD
Project : WD4 PRIMULA AVE



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key: CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

- ^ = This result is computed from individual analyte detections at or above the level of reporting
- ø = ALS is not NATA accredited for these tests.
- ~ = Indicates an estimated value.
- EP101: Results reported in μg/m³ are calculated from PPBV results based on a temperature of 25°C and atmospheric pressure of 101.3 kPa.
- CAN-001: Results for Pressure As Received are measured under controlled conditions using calibrated laboratory gauges. These results are expressed as an Absolute Pressure. Equivalent gauge pressures may be calculated by subtracting the Pressure Laboratory Atmosphere taken at the time of measurement.
- CAN-001: Results for Pressure Gauge as Received are obtained from uncalibrated field gauges and are indicative only. These results may not precisely match calibrated gauge readings and may vary from field measurements due to changes in temperature and pressure

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Work Order : EN1801147

Client : ECOTECH PTY LTD
Project : WD4 PRIMULA AVE



Analytical Results

Sub-Matrix: AIR (Matrix: AIR)		Clie	ent sample ID	301217 C4985_S2824	040118 C4981_S2856	 	
	Cli	ient sampli	ng date / time	30-Dec-2017 00:00	04-Jan-2018 00:00	 	
Compound	CAS Number	LOR	Unit	EN1801147-001	EN1801147-002	 	
				Result	Result	 	
EP101: VOCs by USEPA Method TO	15 (Calculated Conce	entration)					
Benzene	71-43-2	1.6	µg/m³	<1.6	<1.6	 	
Toluene	108-88-3	1.9	µg/m³	3.0	11.3	 	
Ethylbenzene	100-41-4	2.2	μg/m³	<2.2	<2.2	 	
meta- & para-Xylene	108-38-3 106-42-3	4.3	µg/m³	<4.3	<4.3	 	
ortho-Xylene	95-47-6	2.2	µg/m³	<2.2	<2.2	 	
Naphthalene	91-20-3	2.6	μg/m³	<2.6	<2.6	 	
Total Xylenes		6.6	μg/m³	<6.6	<6.6	 	
EP101: VOCs by USEPA Method TO	15r						
Benzene	71-43-2	0.5	ppbv	<0.5	<0.5	 	
Toluene	108-88-3	0.5	ppbv	0.8	3.0	 	
Ethylbenzene	100-41-4	0.5	ppbv	<0.5	<0.5	 	
meta- & para-Xylene	108-38-3 106-42-3	1.0	ppbv	<1.0	<1.0	 	
ortho-Xylene	95-47-6	0.5	ppbv	<0.5	<0.5	 	
Naphthalene	91-20-3	0.5	ppbv	<0.5	<0.5	 	
Total Xylenes		1.5	ppbv	<1.5	<1.5	 	
Sampling Quality Assurance							
Pressure - As received	PRESSURE	0.1	kPaa	89.0	100	 	
Pressure - Gauge as Received		1	Inches Hg	-4	-1	 	
Pressure - Laboratory Atmosphere		0.1	kPaa	101	101	 	
Temperature as Received		0.1	°C	22.0	22.0	 	
USEPA Air Toxics Method TO15r Su	ırrogates						
4-Bromofluorobenzene	460-00-4	0.5	%	98.7	102	 	

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Project : WD4 PRIMULA AVE



Surrogate Control Limits

Sub-Matrix: AIR		Recovery	Limits (%)
Compound	CAS Number	Low	High
USEPA Air Toxics Method TO15r Surrogates			
4-Bromofluorobenzene	460-00-4	60	140



QUALITY CONTROL REPORT

Issue Date

· EN1801147 Work Order

: ECOTECH PTY LTD

Contact : LARA NICHOLAS

Address : 1492 FERNTREE GULLY ROAD

KNOXFIELD VICTORIA. AUSTRALIA 3180

Telephone : +61 03 9730 7800 : WD4 PRIMULA AVE Project

Order number : 234215

C-O-C number

Sampler : Daniel Raymond

Site

Quote number : NE/070/17

No. of samples received : 2 No. of samples analysed : 2 Page : 1 of 3

Laboratory : Environmental Division Newcastle

Contact : Hayley Withers

Address : 5/585 Maitland Road Mayfield West NSW Australia 2304

Telephone : +612 4014 2500 Date Samples Received : 12-Jan-2018 **Date Analysis Commenced** : 12-Jan-2018 · 16-Jan-2018



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full. This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report; Recovery and Acceptance Limits

Signatories

Client

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dale Semple	Analyst	Newcastle - Organics, Mayfield West, NSW
Daniel Junek	Senior Air Analyst	Newcastle - Organics, Mayfield West, NSW
Daniel Junek	Senior Air Analyst	Newcastle, Mayfield West, NSW

Page : 2 of 3 Work Order : EN1801147

Client : ECOTECH PTY LTD
Project : WD4 PRIMULA AVE



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key: Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit: Result between 10 and 20 times LOR: 0% - 50%: Result > 20 times LOR: 0% - 20%.

Sub-Matrix: AIR				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EP101: VOCs by USEPA Method TO15r (QC Lot: 1368357)										
EN1801147-001	301217 C4985_S2824	EP101-H: Benzene	71-43-2	0.5	ppbv	<0.5	<0.5	0.00	No Limit	
		EP101-H: Toluene	108-88-3	0.5	ppbv	0.8	0.8	0.00	No Limit	
		EP101-H: Ethylbenzene	100-41-4	0.5	ppbv	<0.5	<0.5	0.00	No Limit	
		EP101-H: ortho-Xylene	95-47-6	0.5	ppbv	<0.5	<0.5	0.00	No Limit	
		EP101-H: meta- & para-Xylene	108-38-3	1	ppbv	<1.0	<1.0	0.00	No Limit	
			106-42-3							

Page : 3 of 3 Work Order : EN1801147

Client : ECOTECH PTY LTD
Project : WD4 PRIMULA AVE



Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control terms Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicate (DCS) refers to certified reference materials, or known interference free matrices spiked with target analytes. The purpose of these QC parameters are to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS and DCS.

Sub-Matrix: AIR		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike	Spike Re	covery (%)	Recovery	Limits (%)	RPL	Os (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EP101: VOCs by USEPA Method TO15r	(QCLot: 1368357)										
EP101-H: Benzene	71-43-2	0.5	ppbv	<0.5	100 ppbv	97.4	98.1	77	114	25	25
EP101-H: Toluene	108-88-3	0.5	ppbv	<0.5	100 ppbv	99.6	103	78	115	25	25
EP101-H: Ethylbenzene	100-41-4	0.5	ppbv	<0.5	100 ppbv	106	105	82	121	25	25
EP101-H: meta- & para-Xylene	108-38-3	1	ppbv	<1.0	200 ppbv	100	100	82	122	25	25
	106-42-3										
EP101-H: ortho-Xylene	95-47-6	0.5	ppbv	<0.5	100 ppbv	103	100	83	122	25	25

[•] No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.



QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EN1801147** Page : 1 of 4

Client : ECOTECH PTY LTD Laboratory : Environmental Division Newcastle

 Contact
 : LARA NICHOLAS
 Telephone
 : +612 4014 2500

 Project
 : WD4 PRIMULA AVE
 Date Samples Received
 : 12-Jan-2018

 Site
 :--- Issue Date
 : 16-Jan-2018

Sampler : Daniel Raymond No. of samples received : 2
Order number : 234215 No. of samples analysed : 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers: Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- NO Method Blank value outliers occur.
- NO Duplicate outliers occur.
- NO Laboratory Control outliers occur.
- NO Matrix Spike outliers occur.
- For all regular sample matrices, NO surrogate recovery outliers occur.

Outliers: Analysis Holding Time Compliance

NO Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

• NO Quality Control Sample Frequency Outliers exist.

Page : 2 of 4 Work Order : EN1801147

Client : ECOTECH PTY LTD
Project : WD4 PRIMULA AVE



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for <u>VOC in soils</u> vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: AIR

Evaluation: * = Holding time breach: \checkmark = Within holding time.

Method	Sample Date	Ex	traction / Preparation		Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP101: VOCs by USEPA Method TO15r							
Summa style Canister - ALS Supplied Silonite (EP101-H) 040118 - C4981_S2856	04-Jan-2018				15-Jan-2018	03-Feb-2018	✓
Summa style Canister - ALS Supplied Silonite (EP101-H) 301217 - C4985_S2824	30-Dec-2017				15-Jan-2018	29-Jan-2018	✓
Sampling Quality Assurance							
Summa style Canister - ALS Supplied Silonite (CAN-001) 040118 - C4981_S2856	04-Jan-2018				12-Jan-2018	04-Jan-2019	✓
Summa style Canister - ALS Supplied Silonite (CAN-001) 301217 - C4985_S2824	30-Dec-2017				12-Jan-2018	30-Dec-2018	✓

Page : 3 of 4 Work Order : EN1801147

Client : ECOTECH PTY LTD
Project : WD4 PRIMULA AVE



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: AIR	Matrix: AIR Evaluation: × = Quality Control frequency not within specification; ✓ = Quality Control frequency within specification									
Quality Control Sample Type			ount		Rate (%)		Quality Control Specification			
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation				
Duplicate Control Samples (DCS)										
Hydrocarbons in Air by USEPA TO15	EP101-H	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard			
Laboratory Duplicates (DUP)										
Hydrocarbons in Air by USEPA TO15	EP101-H	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard			
Laboratory Control Samples (LCS)										
Hydrocarbons in Air by USEPA TO15	EP101-H	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard			
Method Blanks (MB)										
Hydrocarbons in Air by USEPA TO15	EP101-H	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard			

Page : 4 of 4 Work Order : EN1801147

Client : ECOTECH PTY LTD
Project : WD4 PRIMULA AVE



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Canister Sampling - Field Data	CAN-001	AIR	In house: Referenced to USEPA TO14 / TO15
Hydrocarbons in Air by USEPA TO15	EP101-H	AIR	In house: Referenced to USEPA TO15r Volatile Organic Compounds in Air by USEPA TO15. Aliphatic and Aromatic Hydrocarbons
Hydrocarbons in Air by USEPA TO15 (mass/volume)	EP101-H-MV	AIR	In house: Referenced to USEPA TO15r Hydrocarbons in Air by USEPA TO15 (Calculated Concentration)

AIR CANISTER CHAIN OF CUSTODY

If sourced from an ALS Laboratory: please tick →

Client Supplied Canister(s)?

DSRDBAHE 2.6ym Street Staffpro-OLD 4953 Ph: 07.3340 7222 E. camples propenedial spicestopm DGLADSTONE 46 Calemonton Drive Coron GLD 4180 Pr. 07 1471 5650 2 moderne Garbane brains

DMBLBOVIANE Districted Road Spraguage VX 3171
Pr. 83.5561 9600 E. samples, melastrongly in protection DMVDGEE 1/25 Sydney Road Hudges NSW 3858 Ph. 52 9572 5765 E. meddes mailtha marchyllogen

Toll: Axmx 000116

DREWCASTLE 6/585 Neltond Road Hewliet: Hess Min/ 2004 Pr. 32 4614 1306 E. wartiks new castleffinencers.com DWOWRA 4413 Geory Price North Neutra NSW 2541 Pt: 02-4423 1063 2 no-th (helegiobalisma)

GPERT: 10 Mod Way Malage PM 5390 Ph: 06 8200 7656 E: samples.cern@alagemetes.ce.

DSYDMEY 177-186 Volvidoork Rend Scalinded MSW 2164 Fit 02 8754 8855 E. samples appropriate behind too OTOWNSVELS 14-15 Dearen Court Botte OLO 4818 Ph: 87 4796 0000 C: termentile.environs.magaza; com-

DWCLLOHOONG 39 Krony Street Wakesgreg HSW 2500 Pt. 82 4225 3125 St washingang@ssylved.com

Approved Date; 22/05/2014

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	ENFM (204A/2)						C D 1	-11																





pispareikraeoro

Inquiries: Client Services - Newcastle Phone: +61 (02) 4014 2500

E-mail: samples.newcastle@alsenviro.com

ECOTECH	ALS Use ONLY
Lara Nicholas	
03 9730 7800	D-BD
NE/070/17	Dispetation I D
1492 Ferntree Gully Rd	Workorder:
Knoxfield VIC 3180	Agreed Rent Free Period: 14 days
	Lara Nicholas 03 9730 7800 NE/070/17 1492 Ferntree Gully Rd

SPECIAL INSTRUCTIONS:

Air Sampling Equipment Request

CANISTERS Ambre Intends Cont.

No. Canister Type	机图3000000000000000000000000000000000000	都を方式のない。	William St. Sale	4.55-12-12-16-26-	Contractor of	Janes vacore de la care			Analysis hili	inls & De	7fc
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CONNECTORS AND FLOW CONTROL DEVICES

No	Equipment Type	Duration (Flow:	T- Piece	Gauge)	Certified.	Sealed / Vacuum	Connection	No. Returned	Rental ¹
2	Passive Sampler -TWA	24hr		No	Yes	Yes	Yes / No	S Swagelok	15/5/1/11/6/2	Incl Above
L	1/4" Swagelok connectors and ferrules (spares)	<u> </u>	-			-	-		·	\$5 ea.

2 Other (specify) CLIENT SAMPLER (CLEANED)

Refer to Acceptance of Terms

	ALS use only	
ļ	Sampling Guide Included (Y/N) Packed by: Dispatch Time / Date 48 6 12 11	_
	Number of Boxes; Consignment Note Number: ECU (2005)	_
Į	Consignment Dispatched by:	

ALS



AIRISAMPOING EQUIPMENT. PISPATO FIRECOI

ALS SUPPLIED EQUIPMENT

ltem	Quantity	Item Description	Seriat Nos
	2	6L Silonite Summa™ canister	4981
	2	Passive Sampler – TWA – 24hr	2824 / 2856 /

MGDR1.1 11-05-11

PIGHT SOLUTIONS

BIOHT SOLUTIONS

Britsene - Adviside - Bendigo - Cautierra - Georgia - Galdisone - Melhourine (Scinecity) - Melhourine (Sunngrale) - Mudice - Newcaste - Roura - Perth - Wolfengong - Sydney - Townsville - Taralgon - Wannardata

larle - Bendiyo - Canberra - Geolong - Gladstone - Meliourne (Sporesby) - Meliourne (Springvale) - Mudgee - Newcasile - Novra - Perth - Wollongong - Bydney - Towr





Canister No:

30/12/17

Specified Purpose:

Dispatch Pressure:

USEPA TO15 (Extended Suite)

Ambient Air

Verification Date: Valid To (At least): Verification File:

29-Nov-2017 27-Dec-2017 171129_07,D

Canister Type:

Entech Silonite - Summa Style

Canister Size: Valve Type:

6L

TOV2 <0.01 psia

Last Stability Check: Next Check Scheduled: 03-Jul-2017 03-Jul-2019

Analyst:

Approved for Dispatch by:

K. Gelderman

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Carbi secultrantos investos a checa for contaminantes, lama and clamate to volvey, Statility chassis are centremed after 5 years of il demage to the cartister in suspecial, them every two years, within the designated helding time to entitue each carester is capable of holding the target chemicals were suit rightfreen, depostation.

			Verification	
Target Compound	Alt. Name	Qualifiers	Goal (<)	Result
			ppbv	ppbv
1,1,1-Trichloroethane	1,1,1-TCA / Methyl chloroform		0.2	<0.2
1,1,2,2-Tetrachloroethane	R-130 / Acetylene tetrachloride		0.2	<0.2
1,1,2-Trichloroethane	Vinyl trichloride		0.2	<0.2
1,1-Dichloroethane	Ethylidene chloride		0.2	<0.2
1,1-Dichloroethene	1,1-DCE / Vinylidene chloride		0.2	<0.2
1,2-Dichloroethane	Ethylene chloride		0.2	<0.2
1,2,4-Trimethylbenzene	Pseudocumene		0.2	<0.2
1,2-Dibromoethane	EDB / Ethylene dibromide		0.2	<0.2
1,2-Dichlorobenzene	o-Dichlorobenzene		0.2	<0.2
1,2-Dichloropropane	Propylene dichloride		0.2	<0.2
1,3,5-Trimethylbenzene	Mesitylene		0.2	<0.2
1,3-Dichlorobenzene	m-Dichlorobenzene		0.2	<0.2
1,4-Dichlorobenzene	p-Dichlorobenzene		0.2	<0.2
Benzene	Cyclohexatriene		0,2	<0.2
Bromomethane	Methyl bromide		0.2	<0.2
Tetrachloromethane	Carbon tetrachloride		0.2	<0.2
Chlorobenzene	Phenyl chloride		0.2	<0.2
Chloroethane	Ethyl chloride		0.2	<0.2
Chloroform	Trichloromethane		0.2	<0.2
Chloromethane	Methyl chloride		0.2	<0.2
cis-1,2-Dichloroethene	cis-1,2-Dichloroethylene		0.2	<0.2
cis-1,3-Dichloropropene	cis-1,3-Dichloropropylene		0.2	<0.2
Ethylbenzene	Phenyl ethane		0.2	<0.2
Freon 12	Dichlorodifluoromethane		0.2	<0.2
Freon 11	Trichlorofluoromethane		0.2	<0.2
Freon 113	1,1,2-Trichloro-1,2,2-trifluoroethane		0.2	<0.2
Freon 114	1,2-Dichlorotetrafluoroethane		0.2	<0.2
Hexachlorobutadiene	Hexachloro-1,3-Butadiene		0.2	<0.2















T	Alt Name	O116	Verification	D 14
Target Compound	Alt. Name	Qualifiers	Goal (<)	Result
Diable and the second	\$ dash dana akinda		ppbv	ppbv
Dichloromethane	Methylene chloride 1,3 & 1,4 -Dimethylbenzene		0.2 0.4	<0.2 <0.4
m -& p-Xylene	1,2-Dimethylbenzene		0.4	<0.4
o-Xylene				
Styrene	Vinyl benzene		0.2	<0.2
Tetrachloroethene	PCE / Perchlorethylene		0.2	<0.2
Toluene	Methyl Benzene		0.2	<0.2
trans-1,3-Dichloropropene	trans-1,3-Dichloropropylene		0.2	<0.2
Trichloroethene	TCE / Trichloroethylene		0.2	<0.2
Vinyl chloride	Chloroethene		0.2	<0.2
1,2,4-Trichlorobenzene	District		0.2	<0.2
1,3-Butadiene	Biethylene		0.2	<0.2
1,4-Dioxane	p-Dioxane		0.2	<0.2
2,2,4-Trimethylpentane	!sooctane		0.2	<0.2
4-Ethyltoluene	p-Ethyltoluene		0.2	<0.2
Acetone	2-Propanone		0.2	<0.2
Allyl chloride	3-Chioropropene		0.2	<0.2
Bromodichloromethane	Dichlorobromomethane		0.2	<0.2
Bromoform	Tribromomethane		0.2	<0.2
Carbon disulfide	CS2		0.2	<0.2
Cyclohexane			0.2	<0.2
Dibromochloromethane	Chlorodibromoethane		0.2	<0.2
Ethyl acetate	Acetic ester		0.2	<0.2
Isopropyi alcohol	Isopropanol / 2-Propanol		0.2	<0.2
Methyl butyl ketone	MBK / 2-Hexanone		0.2	<0.2
Methyl ethyl ketone	MEK / 2-Butanone		0.2	<0.2
Methyl isobutyl ketone	MIBK / 4-Methyl-2-pentanone		0.2	<0.2
Methyl tert-butyl ether	MTBE		0.2	<0.2
n-Heptane			0.2	<0.2
n-Hexane			0.2	<0.2
Propene	Propylene		0.2	<0.2
Tetrahydrofuran	THF		0.2	<0.2
trans-1,2-Dichloroethene	trans-1,2-Dichloroethylene		0,2	<0.2
Vinyl acetate	Acetic acid vinyl ester		0,2	<0.2
Bromoethene	Vinyl bromide		0.2	<0.2
Benzyl chloride	a-Chlorotoluene		0.2	<0.2
Ethanol	Ethyl alcohol		0.2	<0.2
Acetonitrile	Methyl cyanide		0.2	<0.2
Acrolein	2-Propenal		0.2	<0.2
Acrylonitrile	2-Propenenitrile		0.2	<0.2
tert-Butyl alcohol	TBA		0.2	<0.2
2-Chloroprene	2-Chloro-1,3-butadiene		0.2	<0.2
Diisopropyl Ether	DIPE		0.2	<0.2
Ethyl tert-butyl ether	ETBE		0.2	<0.2
tert-Amyl methyl ether	TAME		0.2	<0.2
Methyl methacrylate	MMA		0.2	<0.2
1,1,1,2-Tetrachloroethane	R-130a / Acetylene trichloride		0.2	<0.2
Isopropylbenzene	Cumene		0.2	<0.2
2-Chlorotoluene	o-Chlorotoluene		0.2	<0.2
n-Propylbenzene	Phenyl propane		0.2	<0.2
tert-Butylbenzene	1,1-Dimethylethylbenzene		0.2	<0.2
sec-Butylbenzene	1-Methylpropylbenzene		0.2	<0.2
2-isopropyltoluene	o-Cymene		0.2	<0.2
			∪.∠	
n-Butylbenzene	Phenyl butane		0.2	<0.2





Sampler Verification Report

Sampler No:

2824

Specified Purpose: LORs Required: USEPA TO15 (Extended Suite)

Ambient Air

Passive Sampler

Verification Date: Valid To (At least): Verification File: 29-Nov-2017 27-Dec-2017 171129__14.D

Flow Rate Calibrated at:

3.5

ml/min

Analyst:

K. Gelderman

Calibrated by:

Sampler Type:

1/2

30/11/07

Approved for Dispatch by:

V8 6/12/17

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Sampler Verilication Protocol		
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Target Compound	Alt. Name	Verified to	Result
		ppbv	ppbv
1,1,1-Trichloroethane	1,1,1-TCA / Methyl chloroform	0.2	<0.2
1,1,2,2-Tetrachloroethane	R-130 / Acetylene tetrachloride	0.2	<0.2
1,1,2-Trichloroethane	Vinyl trichloride	0.2	<0.2
1,1-Dichloroethane	Ethylidene chloride	0.2	<0.2
1,1-Dichloroethene	1,1-DCE / Vinylidene chloride	0.2	<0.2
1,2-Dichloroethane	Ethylene chloride	0.2	<0.2
1,2,4-Trimethylbenzene	Pseudocumene	0.2	<0.2
1,2-Dibromoethane	EDB / Ethylene dibromide	0.2	<0.2
1,2-Dichlorobenzene	o-Dichlorobenzene	0.2	<0.2
1,2-Dichloropropane	Propylene dichloride	0.2	<0.2
1,3,5-Trimethylbenzene	Mesitylene	0.2	<0.2
1,3-Dichlorobenzene	m-Dichlorobenzene	0.2	<0.2
1,4-Dichlorobenzene	p-Dichlorobenzene	0,2	<0.2
Benzene	Cyclohexatriene	0,2	<0.2
Bromomethane	Methyl bromide	0,2	<0.2
Tetrachloromethane	Carbon tetrachloride	0.2	<0.2
Chlorobenzene.	Phenyl chloride	0.2	<0.2
Chloroethane	Ethyl chloride	0.2	<0.2
Chloroform	Trîchloromethane	0.2	<0.2
Chloromethane	Methyl chloride	0,2	<0.2
cis-1,2-Dichloroethene	cis-1,2-Dichloroethylene	0.2	<0.2
cis-1,3-Dichlorоргореле	cis-1,3-Dichloropropylene	0.2	<0.2
Ethylbenzene	Phenyl ethane	0.2	<0.2
Freon 12	Dichlorodifluoromethane	0.2	<0.2
reon 11	Trichlorofluoromethane	0.2	<0.2
Freon 113	1,1,2-Trichloro-1,1,2-trifluoroethane	0.2	<0.2
Freon 114	1,2-Dichlorotetrafluoroethane	0.2	<0.2
Hexachlorobutadiene	Hexachloro-1,3-Butadiene	0.2	<0.2
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Target Compound	Alt. Name	Verified to	Result
		ppbv	ppb∨
Dichloromethane	Methylene chloride	0.2	<0.2
m -& p-Xylene	1,3 & 1,4 -Dimethylbenzene	0.4	<0.4
o-Xylene	1,2-Dimethylbenzeле	0.2	<0.2
Styrene	Vinyl benzene	0.2	<0.2
Tetrachloroethene	PCE / Perchlorethylene	0.2	<0.2
Toluene	Methyl Benzene	0.2	<0.2
trans-1,3-Dichloropropene	trans-1,3-Dichloropropylene	0.2	<0.2
Trichloroethene	TCE / Trichlorgethylene	0.2	<0.2
Vinyl chloride	Chloroethene	0.2	<0.2
1,2,4-Trichlorobenzene		0.2	<0.2
1,3-Butadiene	Biethylene	0.2	<0.2
1,4-Dioxane	p-Dioxane	0.2	<0.2
2,2,4-Trimethylpentane	Isooctane	0.2	<0.2
4-Ethyltoluene	p-Ethyltoluene	0.2	<0.2
Acetone	2-Propanone	0.2	<0.2
Allyl chloride	3-Chloropropene	0.2	<0.2
Bromodichloromethane	Dichlorobromomethane	0.2	<0.2
Bromoform	Tribromomethane	0.2	<0.2
Carbon disulfide	CS2	0.2	<0.2
Cyclohexane	,	0.2	<0.2
Dibromochioromethane	Chlorodibromoethane	0.2	<0.2
Ethyl acetate	Acetic ester	0.2	<0.2
Isopropyl alcohol	isopropanol / 2-Propanol	0.2	<0.2
Methyl butyl ketone	MBK / 2-Hexanone	0.2	<0.2
Methyl ethyl ketone	MEK / 2-Butanone	0.2	<0.2
Methyl isobutyl ketone	MIBK / 4-Methyl-2-pentanone	0.2	<0.2
Methyl tert-butyl ether	MTBE	0.2	<0.2
n-Heptane		0.2	<0.2
n-Hexane		0.2	<0.2
Propene	Propylene	0.2	<0.2
Tetrahydrofuran	THF	0.2	<0.2
trans-1,2-Dichloroethene	trans-1,2-Dichloroethylene	0.2	<0.2
Vinyl acetate	Acetic acid vinyl ester	0.2	<0.2
Bromoethene	Vinyl bromide	0.2	<0.2
Benzyl chloride	a-Chlorotoluene	0.2	<0.2
Ethanol	Ethyl alcohol	0.2	<0.2
Acetonitrile	Methyl cyanide	0.2	<0.2
Acrolein	2-Propenal	0.2	<0.2
Acrylonitrile	2-Propenenitrile	0.2	<0.2
tert-Butyl alcohol	TBA	0.2	<0.2
2-Chloroprene	2-Chloro-1,3-butadiene	0.2	<0.2
Diisopropyl Ether	DIPE	0.2	<0.2
Ethyl tert-butyl ether	ETBE	0.2	<0.2
tert-Amyl methyl ether	TAME	0.2	<0.2
Methyl methacrylate	MMA	0.2	<0.2
1,1,1,2-Tetrachloroethane	R-130a / Acetylene trichloride	0.2	<0.2
Isopropylbenzene	Cumene	0.2	<0.2
2-Chiorotoluene	o-Chlorotoluene	0.2	<0.2
n-Propylbenzene	Phenyl propane	0.2	<0.2
tert-Butylbenzene	1,1-Dimethylethylbenzene	0.2	<0.2
sec-Butylbenzene	1-Methylpropylbenzene	0.2	<0.2
2-isopropyltoluene	o-Cymene	0.2	<0.2
n-Butylbenzene	Phenyl butane	0.2	<0.2
Naphthalene	• • • • • • • • • • • • • • • • • • • •	0.2	<0.2
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Canister No:

4981

Sampled

~ 4/1/18

Specified Purpose:

USEPA TO15 (Extended Suite)

Ambient Air

Verification Date: Valid To (At least): Verification File:

Last Stability Check:

29-Nov-2017 27-Dec-2017

171129 06.D

Canister Type: Canister Size: Entech Silonite - Summa Style

6L

Next Check Scheduled:

22-Sep-2016 22-Sep-2018

Valve Type:

Nupro

Analyst:

K. Gelderman

Dispatch Pressure:

<0.01 psia

Approved for Dispatch by:

VS 6 (12)13

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Contriers are vertical for furposal for the requesives an execution of principles of known). For most applications continues are verified clean according to the requirements of the PA method TO 15.

Each verification involves a chank for contamination, leaks and damage to valves. Stability checks are performed after 5 years or if damage to the carlister is expected, then every two years, within the Jastpeated liciding time is expected and carried each carried in the factors the performance of contact is capable of holding the target chemicals without significant degradation.

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Target Compound	Alt. Name	Qualifiers	Goal (<)	Result	
			ppbv	ppbv	
1,1,1-Trichloroethane	1,1,1-TCA / Methyl chloroform		0.2	<0.2	
1,1,2,2-Tetrachloroethane	R-130 / Acetylene tetrachloride		0.2	<0.2	
1,1,2-Trichloroethane	Vinyl trichloride		0.2	<0.2	
1,1-Dichloroethane	Ethylidene chloride		0.2	<0.2	
1,1-Dichloroethene	1,1-DCE / Vinylidene chloride	•	0.2	<0.2	
1,2-Dichloroethane	Ethylene chłoride		0.2	<0.2	
1,2,4-Trimethylbenzene	Pseudocumene		0.2	<0.2	
1,2-Dibromoethane	EDB / Ethylene dibromide		0.2	<0.2	
1,2-Dichlorobenzene	o-Dichlorobenzene		0.2	<0.2	
1,2-Dichloropropane	Propylene dichloride		0.2	<0.2	
1,3,5-Trimethylbenzene	Mesitylene		0.2	<0.2	
1,3-Dichlorobenzene	m-Dichlorobenzene		0.2	<0.2	
1,4-Dichlorobenzene	p-Dichlorobenzene		0.2	<0.2	
Benzene	Cyclohexatriene		0.2	<0.2	
Bromomethane	Methyl bromide		0.2	<0.2	
Tetrachioromethane	Carbon tetrachloride		0.2	<0.2	
Chlorobenzene	Phenyl chloride		0.2	<0.2	
Chloroethane	Ethyl chloride		0.2	<0.2	
Chloroform	Trichloromethane		0.2	<0.2	
Chloromethane	Methyl chloride		0.2	<0.2	
cis-1,2-Dichloroethene	cis-1,2-Dichloroethylene		0.2	<0.2	
cis-1,3-Dichloropropene	cis-1,3-Dichloropropylene		0.2	<0.2	
Ethylbenzene	Phenyl ethane		0.2	<0.2	
Freon 12	Dichforodifluoromethane		0.2	<0.2	
Freon 11	Trichlorofluoromethane		0.2	<0.2	
Freon 113	1,1,2-Trichloro-1,2,2-trifluoroethane		0.2	<0.2	
Freon 114	1,2-Dichlorotetrafluoroethane		0.2	<0.2	
Hexachlorobutadiene	Hexachloro-1,3-Butadiene		0,2	<0.2	

Qualifiers - F: Fails Stability Check, V: Fails Verification





	*** **			
Target Compound	Alt. Name	Qualifiers	Goal (<)	Result
			ppbv	ppbv
Dichloromethane	Methylene chloride		0.2	<0.2 <0.4
m -& p-Xylene	1,3 & 1,4 -Dimethylbenzene		0.4	
o-Xylene	1,2-Dimethylbenzene		0.2	<0.2
Styrene	Vinyl benzene		0.2	<0.2
Tetrachloroethene	PCE / Perchlorethylene		0.2	<0.2
Toluene	Methyl Benzene		0.2	<0.2
trans-1,3-Dichloropropene	trans-1,3-Dichloropropylene		0.2	<0.2
Trichloroethene	TCE / Trichloroethylene		0.2	<0.2
Vinyl chloride	Chloroethene		0.2	<0.2
1,2,4-Trichlorobenzene	5 1.0.4		0.2	<0.2
1,3-Butadiene	Biethylene		0.2	<0.2
1,4-Dioxane	p-Dioxane		0.2	<0.2
2,2,4-Trimethylpentane	Isooctane		0.2	<0.2
4-Ethyltoluene	p-Ethyltoluene		0.2	<0.2
Acetone	2-Propanone		0.2	<0.2
Allyl chloride	3-Chloropropene		0.2	<0.2
Bromodichloromethane	Dichlorobromomethane		0.2	<0.2
Bromoform	Tribromomethane		0.2	<0.2
Carbon disulfide	CS2		0.2	<0.2
Cyclohexane			0.2	<0.2
Dibromochioromethane	Chlorodibromoethane		0.2	<0.2
Ethyl acetate	Acetic ester		0.2	<0.2
Isopropyl alcohol	Isopropanol / 2-Propanol		0.2	<0.2
Methyl butyl ketone	MBK / 2-Hexanone		0.2	<0.2
Methyl ethyl ketone	MEK / 2-Butanone		0.2	<0.2
Methyl isobutyl ketone	MIBK / 4-Methyl-2-pentanone		0.2	<0.2
Methyl tert-butyl ether	MTBE		0.2	<0.2
n-Heptane			0.2	<0.2
n-Hexane			0.2	<0.2
Propene	Propylene		0.2	<0.2
Tetrahydrofuran	THF		0.2	<0.2
trans-1,2-Dichloroethene	trans-1,2-Dichloroethylene		0.2	<0.2
Vinyl acetate	Acetic acid vinyl ester		0.2	<0.2
Bromoethene	Vinyl bromide		0.2	<0.2
Benzyl chloride	a-Chlorotoluene		0.2	<0.2
Ethanol	Ethyl alcohol		0.2	<0.2
Acetonitrile	Methyl cyanide		0.2	<0.2
Acrolein	2-Propenal		0.2	<0.2
Acrylonitrile	2-Propenenitrile		0.2	<0.2
tert-Butyl alcohol	TBA		0.2	<0.2
2-Chioroprene	2-Chloro-1,3-butadiene		0.2	<0.2
Diisopropyl Ether	DIPE		0.2	<0.2
Ethyl tert-bulyl ether	ETBE		0.2	<0.2
tert-Amyl methyl ether	TAMÉ		0.2	<0.2
Methyl methacrylate	MMA		0.2	<0.2
1,1,1,2-Tetrachloroethane	R-130a / Acetylene trichloride		0.2	<0.2
isopropylbenzene	Cumene		0.2	<0.2
2-Chlorotoluene	o-Chlorotoluene		0.2	<0.2
n-Propylbenzene	Phenyl propane		0.2	<0.2
tert-Butylbenzene	1,1-Dimethylethylbenzene		0.2	<0.2
sec-Butylbenzene	1-Methylpropylbenzene		0.2	<0.2
2-Isopropyltoluene	o-Cymene		0.2	<0.2
n-Butylbenzene	Phenyl butane		0.2	<0.2
Naphthalene			0.2	<0.2





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Analyst:

Sampler No:

2856

Specified Purpose: LORs Required:

Sampler Type:

USEPA TO15 (Extended Suite)

Ambient Air Passive Sampler Verification Date: Valid To (At least): Verification File:

05-Dec-2017 02-Jan-2018 171205_06,D

Flow Rate Calibrated at:

3-5

ml/min

K. Gelderman

Calibrated by:

Vf 5/12/17

Approved for Dispatch by:

43-6/2/17

Sampler Verification Protocol

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Target Compound	Verified to	Result	
A A A TOUR OF		ρpbv	ppbv
1,1,1-Trichtoroethane	1,1,1-TCA / Methyl chloroform	0.2	<0.2
1,1,2,2-Tetrachioroethane	R-130 / Acetylene tetrachloride	0.2	<0.2
1,1,2-Trichloroethane	Vinyl trichloride	0.2	<0.2
1,1-Dichloroethane	Ethylidene chloride	0.2	<0.2
1,1-Dichloroethene	1,1-DCE / Vinylidene chloride	0.2	<0.2
1,2-Dichloroethane	Ethylene chloride	0.2	<0.2
1,2,4-Trimethylbenzene	Pseudocumene	0.2	<0.2
1,2-Dibromoethane	EDB / Ethylene dibromide	0.2	<0.2
1,2-Dichlorobenzene	o-Dichlorobenzene	0.2	<0.2
1,2-Dichloropropane	Propylene dichloride	0.2	<0.2
1,3,5-Trimethylbenzene	Mesitylene	0.2	<0.2
1,3-Dichlorobenzene	m-Dichlorobenzene	0.2	<0.2
1,4-Dichlorobenzene	p-Dichlorobenzene	0.2	<0.2
Benzene	Cyclohexatriene	0.2	<0.2
Bromomethane	Methyl bromide	0.2	<0.2
Tetrachloromethane	Carbon tetrachloride	0.2	<0.2
Chlorobenzene	Phenyl chloride	0.2	<0.2
Chloroethane	Ethyl chloride	0.2	<0.2
Chloroform	Trichloromethane	0,2	<0.2
Chloromethane	Methyl chloride	0.2	<0.2
cis-1,2-Dichloroethene	cis-1,2-Dichloroethylene	0.2	<0.2
cis-1,3-Dichloropropene	cis-1,3-Dichloropropylene	0.2	<0.2
Ethylbenzene	Phenyl ethane	0.2	<0.2
Freon 12	Dichlorodifluoromethane	0.2	<0.2
Freon 11	Trichlorofluoromethane	0.2	<0.2
Freon 113	1,1,2-Trichloro-1,1,2-trifluoroethane	0.2	<0.2
Freon 114	1,2-Dichlorotetrafluoroethane	0.2	<0.2
Hexachiorobutadiene	Hexachloro-1,3-Butadiene	0.2	<0.2
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Target Compound	Alt. Name	Verified to	Result
-		ppbv	ppbv
Dichtoromethane	Methylene chloride	0.2	<0.2
m -& p-Xylene	1,3 & 1,4 -Dimethylbenzene	0.4	<0.4
o-Xylene	1,2-Dimethylbenzene	0.2	<0.2
Styrene	Vinyl benzene	0.2	<0.2
Tetrachloroethene	PCE / Perchlorethylene	0.2	<0.2
Toluene	Methyl Benzene	0.2	<0.2
trans-1,3-Dichloropropene	trans-1,3-Dichloropropylene	0.2	<0,2
Trichloroethene	TCE / Trichloroethylene	0.2	<0.2
Vinyl chloride	Chloroethene	0.2	<0.2
1,2,4-Trichlorobenzene		0.2	<0.2
1,3-Butadiene	Biethylene	0.2	<0.2
1,4-Dioxane	p-Dioxane	0.2	<0.2
2,2,4-Trimethylpentane	Isooctane	0.2	<0.2
4-Ethyltoluene	p-Ethyltoluene	0.2	<0.2
Acetone	2-Propanone	0.2	<0.2
Allyl chloride	3-Chloropropene	0.2	<0.2
Bromodichloromethane	Dichlorobromomethane	0.2	<0.2
Bromoform	Tribromomethane	0.2	<0.2
Carbon disulfide	C\$2	0.2	<0.2
Cyclohexane	**-	0.2	<0.2
Dibromochloromethane	Chlorodibromoethane	0.2	<0.2
Ethyl acelate	Acetic ester	0.2	<0.2
Isopropyl alcohol	Isopropanol / 2-Propanol	0.2	<0.2
Methyl butyl ketone	MBK / 2-Hexanone	0.2	<0.2
Methyl ethyl ketone	MEK / 2-Bulanone	0,2	<0.2
Methyl isobutyl ketone	MIBK / 4-Methyl-2-pentanone	0.2	<0.2
Methyl tert-butyl ether	MTBE	0.2	<0.2
n-Heptane	111,02	0.2	<0.2
n-Hexane		0.2	<0.2
	Propylene	0,2	<0.2
Propene Tetrahydrofuran	THE	0.2	<0.2
	trans-1,2-Dichloroethylene	0.2	<0.2
trans-1,2-Dichloroethene	Acetic acid vinyl ester	0.2	<0.2
Vinyl acetate	Vinyl bromide	0.2	<0.2
Bromoethene	g-Chlorotoluene	0,2	<0.2
Benzyl chloride	Ethyl alcohol	0.2	<0.2
Ethanol		0.2	<0.2
Acetonitrile	Methyl cyanide	0.2	<0.2
Acrolein	2-Propenal	0.2	<0.2
Acrylonitrile	2-Propenenitrile	0.2	<0.2
tert-Butyl alcohol	TBA	0.2	<0.2
2-Chloroprene	2-Chloro-1,3-butadiene	0.2	<0.2
Diisopropyl Ether	DIPE	0.2	<0.2
Ethyl tert-butyl ether	ETBE	0.2	<0.2
tert-Amyl methyl ether	TAME		<0.2
Methyl methacrylate	MMA	0.2	<0.2
1,1,1,2-Tetrachloroethane	R-130a / Acetylene trichloride	0.2	<0.2 <0.2
Isopropylbenzene	Cumene	0.2	<0.2 <0.2
2-Chlorotoluene	o-Chlorotoluene	0.2	
n-Propylbenzene	Phenyl propane	0.2	<0.2
tert-Butylbenzene	1,1-Dimethylethylbenzene	0.2	<0.2
sec-Butylbenzene	1-Methylpropylbenzene	0.2	<0.2
2-Isopropyltoluene	o-Cymene	0.2	<0.2
n-Butylbenzene	Phenyl butane	0.2	<0.2
Naphthalene		0.2	<0.2

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CERTIFICATE OF ANALYSIS

Work Order : EN1801287 Page : 1 of 4

Amendment : 2

Client Laboratory **ECOTECH PTY LTD** : Environmental Division Newcastle

Contact : LARA NICHOLAS Contact : Hayley Withers

Address Address : 5/585 Maitland Road Mayfield West NSW Australia 2304 : 1492 FERNTREE GULLY ROAD

KNOXFIELD VICTORIA. AUSTRALIA 3180

Telephone : +61 03 9730 7800 Telephone : +612 4014 2500 Project : WD4 PRIMULA AVE **Date Samples Received** : 23-Jan-2018 11:10

Order number : 234215 Date Analysis Commenced : 29-Jan-2018

C-O-C number Issue Date : 14-Feb-2018 11:44

Sampler : Daniel Raymond

Site

No. of samples received

Quote number : NE/070/17

: 3 No. of samples analysed : 3

Accreditation No. 825 Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with **Quality Review and Sample Receipt Notification.**

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dale Semple	Analyst	Newcastle - Organics, Mayfield West, NSW
Daniel Junek	Senior Air Analyst	Newcastle - Organics, Mayfield West, NSW
Daniel Junek	Senior Air Analyst	Newcastle, Mayfield West, NSW

Page : 2 of 4

Work Order : EN1801287 Amendment 2
Client : ECOTECH PTY LTD
Project : WD4 PRIMULA AVE



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key: CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

- ^ = This result is computed from individual analyte detections at or above the level of reporting
- ø = ALS is not NATA accredited for these tests.
- ~ = Indicates an estimated value.
- Amendment (14/02/2018): This report has been amended as a result of misinterpretation of sample identification numbers (IDs). All analysis results are as per the previous report
- Amendment (06/02/2018): This report has been amended to correct sampling dates. All analysis results are as per the previous report.
- EP101: Results reported in μg/m³ are calculated from PPBV results based on a temperature of 25°C and atmospheric pressure of 101.3 kPa.
- CAN-001: Results for Pressure As Received are measured under controlled conditions using calibrated laboratory gauges. These results are expressed as an Absolute Pressure. Equivalent gauge pressures may be calculated by subtracting the Pressure Laboratory Atmosphere taken at the time of measurement.
- CAN-001: Results for Pressure Gauge as Received are obtained from uncalibrated field gauges and are indicative only. These results may not precisely match calibrated gauge readings and may vary from field measurements due to changes in temperature and pressure

Page

: 3 of 4 : EN1801287 Amendment 2 Work Order : ECOTECH PTY LTD Client Project WD4 PRIMULA AVE



Analytical Results

sub-Matrix: AIR Client sample ID Matrix: AIR)		221217 C4768_S2856	090118 C4992_S1620	150118 C4740_S9318				
	CI	ient sampli	ng date / time	22-Dec-2017 23:30	09-Jan-2018 23:30	15-Jan-2018 23:30		
Compound	CAS Number	LOR	Unit	EN1801287-001	EN1801287-002	EN1801287-003		
				Result	Result	Result		
EP101: VOCs by USEPA Method TO	15 (Calculated Conce	entration)						
Benzene	71-43-2	1.6	μg/m³	<1.6	<1.6	<1.6		
Toluene	108-88-3	1.9	μg/m³	4.1	<1.9	2.2		
Ethylbenzene	100-41-4	2.2	μg/m³	<2.2	<2.2	<2.2		
meta- & para-Xylene	108-38-3 106-42-3	4.3	μg/m³	<4.3	<4.3	<4.3		
ortho-Xylene	95-47-6	2.2	µg/m³	<2.2	<2.2	<2.2		
Naphthalene	91-20-3	2.6	μg/m³	<2.6	<2.6	<2.6		
Total Xylenes	Total Xylenes 6.6		μg/m³	<6.6	<6.6	<6.6 <6.6		
EP101: VOCs by USEPA Method TO	15r							
Benzene	71-43-2	0.5	ppbv	<0.5	<0.5	<0.5		
Toluene	108-88-3	0.5	ppbv	1.1	0.5	0.6		
Ethylbenzene	100-41-4	0.5	ppbv	<0.5	<0.5	<0.5		
meta- & para-Xylene	108-38-3 106-42-3	1.0	ppbv	<1.0	<1.0	<1.0		
ortho-Xylene	95-47-6	0.5	ppbv	<0.5	<0.5	<0.5		
Naphthalene	91-20-3	0.5	ppbv	<0.5	<0.5	<0.5		
Total Xylenes		1.5	ppbv	<1.5	<1.5	<1.5		
Sampling Quality Assurance								
Pressure - As received	PRESSURE	0.1	kPaa	98.7	102	97.2		
Pressure - Gauge as Received		1	Inches Hg	-2	-1	-2		
Pressure - Laboratory Atmosphere		0.1	kPaa	101	101	101		
Temperature as Received		0.1	°C	22.0	22.0	22.0		
USEPA Air Toxics Method TO15r Su	ırrogates							
4-Bromofluorobenzene	460-00-4	0.5	%	110	110	111		

Page

: 4 of 4 : EN1801287 Amendment 2 Work Order Client : ECOTECH PTY LTD WD4 PRIMULA AVE Project



Surrogate Control Limits

Sub-Matrix: AIR		Recovery	Limits (%)			
Compound	CAS Number Low High					
USEPA Air Toxics Method TO15r Surrogates						
4-Bromofluorobenzene	460-00-4	60	140			

AIR CANISTER CHAIN OF CUSTODY

If sourced from an ALS Laboratory: please tick →

Client Supplied Canister(s)?

OACELADE 21 Sarma Road Foorska SA 5995 Ph. 08 5355 0896 E. adebide@arspidation.m

DERISBANG 2 Byth Street Statistics QLD 4053 Ph: 07 3243 7222 E. samples brisbane@alsglobal.com DGLADSTONE AS Calemondan Drive Cántar DLC 4660 Pt. 677471 5606 S. gwastone@alkglobe.com DMACKA: 75 Hartour Road Mackay CLE 4740 Ph: 97 4944 9477 E; mackan@akabbai.com

GMELBOSIANE 2-4 Vitalai Fond Seriografa VIC 3171 DMM/DGEE 1/29 Sydney Road Mydgee NG/V 2050 Ph; 02 6072 6735 E: mwdger mwi@ataskqtal.com

CINEWCASTLE SUSS Madand Road Maytekt from HSW 1284 Pr. 02 4014 2500 K. sanskaloswiczalacjanegooslomi CINOWRA 4/10 Grary Place North Nowra 45/7 254: Ph. 32 4420 2963 E. newtadžalsolomi kom

QPERT n 10 kms livey hatego W4 5090 Ph; 06 5250 7655 6; semples pertin@etspictations

DECEMENT 277-289 Pedadonis Road Sastrials with 2164 Pt. 02 878= 3555 E. sapples evines/Guisgabai com CTCS/HSVS.LE 14-15 Desire Court Bone GcD 4812 Fn: 07-4756-9680 E; knampelou knakemma tai@afopobal.com GWOLLONGOWS - 98 Teany Street Workingong HSW 1580 Ph. 62 4225 3425 E: www.engillengiber.com

Approved Dato: 22/05/2014

CLIENT	ECOTEC	Н						UIREMENT			Stand	lard TA	AT (Lis	t due date):					L/	BORATO	RY USE ONL	Y. (Circle) Receive <u>sta inite</u> a	nd dele#m
OFFICE	1492 Fer	ntree	Gully Rd, KNOX	FIELD VIC			analysis suites	xtended for mu s)	ultiple		Non S	Standa	rd or u	rgent TAT (L	st due da	te):			31000	stody:Seal I	A PART OF THE REST OF THE PART	abγ≀N N(Ý)N .	N/A
PROJE	CT: WD4	PRIM	IULA AVE			ALS QU	OTE NO.: N	E/070/17							COC SEC	QUENCE N	IUMBEI	R (Circle)	Va Re	lves closed celpt?	on Red L	abY/N :NEY/N	N/A
PURCH	ASE ORDE	RNC	234215			COUNTR	RY OF ORIG	in:						coc:		3	4	5 6	7 Cá	nister/Samp	ler Complete en	d Not Damaged Ye	s No
PROJE	T MANAG	ER:	Lara Nicholas		COI	NTACT PH	: 03 9370 78	45 0417351	1053					OF:	$(1)^2$	2 3	4	5 6	7 Oi	iet collimen	e -	Temperature *C	
SAMPLI	ER:			Daniel Raymond	SAN	IPLER MO	BILE: 04194	124932		REL	NQUI	SHEC	BY:		RELINQ	UISHED	BY:		RELINQ	UISHED E	BY:	RELINQUISHED BY	′ :
COC En	nailed to Al	.S7 (YES / NO)	•	EDI	FORMAT	(or default):	:						Skasture and detections			94	cehire and deladin			Signature and deletedine	Simus.	
Email R	eports to (vill de	efault to PM if no o	ther addresses are listed): lara.nicholas@eco	otech.com			-		REC	EIVEC	BY:	12	-1-18	RECEIVI	ED BY:	-		RECEIV	ED BY:	Square and a second	RECEIVED BY:	are and deliaring
Email In	voice to (w	ill del	fault to PM if no ot	her addresses are listed); naomi.dans@ecote	ech.com					14	att	<u> </u>		Signature and detailine			Sig	nature and detertim	9		Sigmline and data/time	Signati	ure and detection
COMME	NTS/SPEC	IAL F	ANDLING/REPL	ACEMENT OR RETURN INSTRUCTIONS:	· 						0	[]	10) 				200	(1-C)	<u> </u>			
			GAS SAMF	PLE CONTAINER INFORMAT	TON			er Gauge res (PSI)	Refer COAs	to Caniste for press	r Varifica ures mea	ation Rep sured by	orts and the Lab		ANA	LYSE	S RE	QUES	TED		Addition	onal Informat	ion
ALS USE ONL				CANISTER/SAMPLE DETAILS]		Re	porting	g Req	uirem	ents	Sui	te Codes	must be	listed	to attrac	t suite pri	ce			
LAB ID	CANIST SERIAL		FLOW CONTROLLER SERIAL NO.	CLIENT SAMPLE ID	DATE / TIME SAMPLED	MATRIX (eg Air, Soil Gas)	Pre- Sampling	Post Sampling	Ambier	LORS		ppbv,	ppmv,	VI-V1 BTEXN							hazards, likely requiring spec	on LORs required, pot y contaminant levels, or ific QC analysis etc. (Lor ine method LOR after dilution)	samples
1	4768	7	2856	221217	22/12/17 00:30 - 23:30	AIR	30	4	х			х	Ĭ	х									
2	4992	1	1620	090118	09/01/18 00:30 - 23:30	AIR	30	4	x			х		х			-						INVOICED
3	4740	1	9318	150118	15/01/18 00:30 - 23:30	AIR	30	4	×			x		x									=
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ob Spe	cific Inst	ucti	ons: Ecotech T	imers Sent with samples to be cleane	d with nitrogen an	d returne	d with new	canisters												L			
							•																
	ENFM (204A/2)							Form Door 1	el 1													1	





CONTRACTOR OF THE STATE OF THE Inquiries: Client Services - Newcastle Phone: +61 (02) 4014 2500 E-mail: samples.newcastle@alsenviro.com

Dispatch to:	110.101(0.	,	E-mail; samples.newcastle(@alsenviro.d	om
4	ECOTECH				_
Contact:	Lara Nicholas	<u> </u>	ALS Use ONLY	(
Telephone:	03 9730 7800		Request Received By:	HW	
ALS Quotation:	NE/070/17		Deliver By:	asap	
Delivery Address:	1492 Ferntree Gully Rd		Dispatched By:	asap	
	Knoxfield VIC 3180		Workorder:		
			Agreed Rent Free Period:	14	day

SPECIAL INSTRUCTIONS:

Air Sampling Equipment Request

CANISTERS		
No.		
2 Entech Silonite Car	Ster (Summally) Rentally to be until Leak Cherked	Certified OV
	163 5 Yes \$200 ea	2Z/12/7
Entech Silonite Car	ster (Summa TM) 6l Voc Cap Rental 10 No. 10	Certified OK 2Z/12/14

CONNECTORS AND FLOW CONTROL DEVICES

966-324-324 2443394-35-5	- CONTINC	ים טבי	VICES					
No. Equipment Types:	uration: Flow	13 A 16	300 Jan	Table to develop	Towns against the	T		
	A STATE OF THE STA	Piece	Gauge	Certified	Sealed /	Connection	No.	19649999
Paccing Camel Trus	24hr	1	100 100 100	基均保护	Vacuum	Q Quick Connect Swagetok		Rental
%"Swagelok connectors		No	Yes	Yes	Yes / No	S		en de zoe Viku personni
and ferrules (spares)	- -	-	-			 		Incl Above
7 00 1		L	L					\$5 ea.
Other (specify)	FCOM	ماء]		_1	<u> </u>		Replacement

Jother (specify) 2x Ecotech cleaned Samples 1 Refer to Acceptance of Terms

ALS use only Sampling Guide Included (Y / N) Number of Boxes: Dispatch Time / Date Consignment Note Number: TWAPCO3018. Courier / Dispatcher: Consignment Dispatched by:

A Please return the plags + nats from the Ecotech samplers. They are owned by ALS

ENFMCDR1.1

MIGHT SOLUTIONS





ALS SUPPLIED EQUIPMENT

Item	Quantity	ltem Description	Serial Nos
	2	6L Silonite Summa™ canister	4992 / 4740 /
	2 p	Sassive Sampler - TWA - 24hr 3 - Sm Umin	283) 1834

BIGHT SOLUTIONS

Brisbane - Adelaide - Bantlingo - Canberra - Gerlong - Cladatone - Melbourne (Scoresby) - Melbourne (Sornoyaler - Modgee - Newcastle - Norwa - Perth - Wolfongoing - Sediney - T





Canister No:

Sampled

Specified Purpose:

USEPA TO15 (Extended Suite)

Ambient Air

Verification Date: Valid To (At least): Verification File:

13-Dec-2017 10-Jan-2018 171212 23.D

Canister Type:

Entech Silonite - Summa Style

Canister Size: Valve Type: Dispatch Pressure: 6L

Nupro <0.01 psia Last Stability Check: 17-Jul-2017 Next Check Scheduled: 17-Jul-2019

Analyst:

Approved for Dispatch by:

K. Gelderman 12/2/7

Camister Verification Protocol.

Camister are verified in for purpose its the requested analyses and applications of known). For most applications, constant are verified dean actording to the requirements of USERA method TOUS.

Tack verify allow a collect for configuration, leads and somage to value). Socially checks are performed after 3 years or if demage to the confeter in suspected, then every two years, within the designated holding time to ensure each consister or separate of holding the larget chemicals without significant degradation.

		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Verification	***************************************
Target Compound	Alt. Name	Qualifiers	Goal (<)	Result
			ppbv	vdgg
1,1,1-Trichloroethane	1,1,1-TCA / Methyl chloroform		0.2	<0.2
1,1,2,2-Tetrachloroethane	R-130 / Acetylene tetrachloride		0.2	<0.2
1,1,2-Trichloroethane	Vinyl trichloride		0.2	<0.2
1,1-Dichloroethane	Ethylidene chloride		0.2	<0.2
1,1-Dichloroethene	1,1-DCE / Vinylidene chloride		0.2	<0.2
1,2-Dichloroethane	Ethylene chloride		0.2	<0.2
1,2,4-Trimethylbenzene	Pseudocumene		0.2	< 0.2
1,2-Dibromoethane	EDB / Ethylene dibromide		0.2	<0.2
1,2-Dichlorobenzene	o-Dichlorobenzene	•	0.2	<0.2
1,2-Dichloropropane	Propylene dichloride		0.2	<0.2
1,3,5-Trimethylbenzene	Mesitylene		0.2	< 0.2
1,3-Dichlorobenzene	m-Dichlorobenzene		0.2	<0.2
1,4-Dichlorobenzene	p-Dichlorobenzene		0.2	<0.2
Benzene	Cyclohexatriene		0.2	< 0.2
Bromomethane	Methyl bromide		0.2	<0.2
Tetrachloromethane	Carbon tetrachloride		0.2	<0.2
Chlorobenzene	Phenyl chloride		0.2	<0.2
Chloroethane	Ethyl chloride		0.2	< 0.2
Chloroform	Trichloromethane		0.2	< 0.2
Chloromethane	Methyl chloride		0.2	<0.2
cis-1,2-Dichloroethene	cis-1,2-Dichloroethylene		0.2	<0.2
cis-1,3-Dichloropropene	cis-1,3-Dichloropropylene		0.2	<0.2
Ethylbenzene	Phenyl ethane		0.2	<0.2
Freon 12	Dichlorodifluoromethane		0.2	< 0.2
eon 11	Trichlorofluoromethane		0.2	< 0.2
reon 113	1,1,2-Trichloro-1,2,2-trifluoroethane		0.2	<0.2
Freon 114	1,2-Dichlorotetrafluoroethane		0.2	<0.2
Hexachlorobutadiene	Hexachloro-1,3-Butadiene		0.2	< 0.2





Name				Varification	
Dichloromethane Methylene chloride 0.2 0.2 m-& p-Xylene 1,3 & 1,4 - Dimethylbenzene 0.4 0.4 o-Xylene 1,2 - Dimethylbenzene 0.2 0.2 Styrene 1,2 - Dimethylbenzene 0.2 0.2 Styrene 1,2 - Dimethylbenzene 0.2 0.2 Cetachloroethene PCE / Perchlorothylene 0.2 0.2 Tetrachloroethene PCE / Perchlorothylene 0.2 0.2 Tetrachloroethene TCE / Trichloroethylene 0.2 0.2 trans-1,3 - Dichloropropene trans-1,3 - Dichloropropylene 0.2 0.2 trans-1,3 - Dichloropropene TCE / Trichloroethylene 0.2 0.2 trans-1,3 - Dichloropropene TCE / Trichloroethylene 0.2 0.2 trans-1,3 - Dichloropropene TCE / Trichloroethylene 0.2 0.2 trichloroethene Dichloroethene 0.2 0.2 trichloroethene Dichloroethene 0.2 0.2 trichloroethene Dichloroethene 0.2 0.2 trichloroethene Dichloroethene 0.2 0.2 trichloroethene P-Ethyltoluene 0.2 0.2 trichloroethene P-Ethyltoluene 0.2 0.2 trichloroethene P-Ethyltoluene 0.2 0.2 trichloroethene Dichloropropene 0.2 0.2 trichloroethene Dichloropropene 0.2 0.2 trichloroethene Dichloropropene 0.2 0.2 trichloroethene Dichloropropene 0.2 0.2 trichloroethene Dichlorobromomethane 0.2 0.2 trichloroethene Chlorodibromethane 0.2 0.2 trichloroethene Chlorodibromethane 0.2 0.2 trichloroethene MBK / 2+texanone 0.2 0.2 thethyl textone MBK / 2-texanone 0.2 0.2 trans-1,2-Dichloroethene trans-1,2-Dichloroethylene 0.2 0.2 trans-1,2-Dichloroethene	Target Compound	Alf Name	Ouglifiers	Verification	Daniele
Dichloromethane Methylene chloride 0.2 -0.2 m-8 p-Xylene 1,3 & 1,4 -Dimethylbenzene 0.4 -0.4 o-Xylene 1,2-Dimethylbenzene 0.2 -0.2 Slyrene Vinyl benzene 0.2 -0.2 Tetrachloroethene PCE / Ferchlorethylene 0.2 -0.2 Toluene Methyl Benzene 0.2 -0.2 trans-1,3-Dichloropropene trans-1,3-Dichloropropylene 0.2 -0.2 Trichloroethene TCE / Trichloroethylene 0.2 -0.2 Vinyl chloride Chloroethene 0.2 -0.2 1,2-4-Trichlorobenzene 1.2 -0.2 -0.2 1,3-Butadiene Biefhylene 0.2 -0.2 1,3-Butadiene Ppiloxane 0.2 -0.2 2,2-4-Trimethylpentane lsocotane 0.2 -0.2 4-Ethyltoluene 2-2 -0.2 Acetone 2-2 Propanone 0.2 -0.2 4-Ethyltoluene 2-2 -0.2 Bromodichloromethane 0.2	rarget Compound	Alt. Name	Quanners	* -	
m-sp-Xylene 1,3 & 1,4 - Dimethylbenzene 0,4 < 0.4	Dichloromethane	Mathylana chlorida			
o-Nylene 1,2-Dimethylbenzene 0,2 <0,2		•			
Styrene					
Tetrachloroethene					
Tolluene Methyl Benzene 0.2 <0.2 trans-1,3-Dichloropropene 1.2 <0.2 <0.2 Trichloroetheme TCE / Trichloroethylene 0.2 <0.2 Vinyl chloride Chloroethene 0.2 <0.2 1,2,4-Trichlorobenzene 0.2 <0.2 <0.2 1,3-Butadiene Biethylene 0.2 <0.2 1,4-Dioxane P-Dioxane 0.2 <0.2 2,2,4-Trimethylpentane Isooctane 0.2 <0.2 4-Eithyltoluene P-Ethytloluene 0.2 <0.2 4-Eithyltolide 3-Chloropropene 0.2 <0.2 Acetone 2-Propanone 0.2 <0.2 Ally chloride 3-Chloropropene 0.2 <0.2 Bromoform Tribromomethane 0.2 <0.2 Bromoform CS2 0.2 <0.2 Cyclohexane 0.2 <0.2 <0.2 Dibromochloromethane Chlorodibromethane 0.2 <0.2 Elhyl acetate Acetic ester <td></td> <td></td> <td></td> <td></td> <td></td>					
trans-1,3-Dichloropropene trans-1,3-Dichloropropylene 0.2 <0.2 Trichloroethene TCE / Trichloroethylene 0.2 <0.2					
Trichloroethene TCE / Trichloroethylene 0.2 <0.2 Vinyl chloride Chloroethene 0.2 <0.2 1,2,4-Trichlorobenzene 0.2 <0.2 1,3-Butadiene Biethylene 0.2 <0.2 1,4-Dioxane p-Dioxane 0.2 <0.2 2,2,4-Trimethylpentane Isooctane 0.2 <0.2 4-Ethyltoluene 0.2 <0.2 <0.2 Acetone 2-Propanone 0.2 <0.2 Acetone 3-Chloropropene 0.2 <0.2 Bromofich 3-Chloropropene 0.2 <0.2 Bromofich Tirbomomethane 0.2 <0.2 Bromofich Tirbomomethane 0.2 <0.2 Bromofich CS2 0.2 <0.2 Cyclohexane CS2 0.2 <0.2 Dibromochloromethane Chlorodibromoethane 0.2 <0.2 Ethyl acetate Acetic ester 0.2 <0.2 Bopropanol J 2-Propanol 0.2 <0.2		•			
Viny chloride Chloroethene 0.2 <0.2 1,2,4-Trichlorobenzene 0.2 <0.2	• •				
1,2,4-Trichlorobenzene 0,2 <0,2		•			
1,3-Butadiene Biethylene 0.2 <0.2	1,2,4-Trichlorobenzene				
1,4-Dioxane p-Dioxane 0.2 <0.2		Biethylene			
2,2.4-Trimethylpentane Isooctane 0.2 <0.2	1,4-Dioxane				
4-Ethyltoluene p-Ethyltoluene 0.2 <0.2	2,2,4-Trimethylpentane				
Acetone 2-Propanone 0.2 <0.2	4-Ethyltoluene	p-Ethyltoluene			<0.2
Bromodichloromethane Dichlorobromomethane 0.2 <0.2 Bromoform Tribromomethane 0.2 <0.2	Acetone			0.2	
Bromoform Tribromomethane 0.2 <0.2 Carbon disulfide CS2 0.2 <0.2	Allyl chloride				
Carbon disulfide CS2 0.2 <0.2 Cyclohexane 0.2 <0.2	Bromodichloromethane	Dichlorobromomethane		0.2	< 0.2
Cyclohexane 0.2 <0.2 Dibromochloromethane Chlorodibromoethane 0.2 <0.2	Bromoform	Tribromomethane		0.2	<0,2
Dibromochloromethane Chlorodibromoethane 0.2 <0.2 Ethyl acetate Acetic ester 0.2 <0.2	Carbon disulfide	CS2		0.2	<0.2
Ethyl acetate Acetic ester 0.2 < 0.2 Isopropyl alcohol Isopropanol / 2-Propanol 0.2 < 0.2	Cyclohexane			0.2	<0.2
Isopropyl alcohol Isopropanol / 2-Propanol 0.2 <0.2	Dibromochloromethane	Chlorodibromoethane		0.2	<0.2
Methyl butyl ketone M8K / 2-Hexanone 0.2 <0.2 Methyl ethyl ketone MEK / 2-Butanone 0.2 <0.2		Acetic ester		0.2	<0.2
Methyl ethyl ketone MEK / 2-Butanone 0.2 <0.2 Methyl isobutyl ketone MIBK / 4-Methyl-2-pentanone 0.2 <0.2				0.2	<0.2
Methyl isobutyl ketone MIBK / 4-Methyl-2-pentanone 0.2 <0.2 Methyl tert-butyl ether MTBE 0.2 <0.2					
Methyl tert-butyl ether MTBE 0.2 <0.2 n-Heptane 0.2 <0.2					
n-Heptane 0.2 <0.2		- ,			
n-Hexane 0.2 <0.2 Propene Propylene 0.2 <0.2		MTBE			
Propene Propylene 0.2 <0.2 Tetrahydrofuran THF 0.2 <0.2	·				
Tetrahydrofuran THF 0.2 <0.2 trans-1,2-Dichloroethene trans-1,2-Dichloroethylene 0.2 <0.2					
trans-1,2-Dichloroethene trans-1,2-Dichloroethylene 0.2 <0.2	•	, ,			
Vinyl acetate Acetic acid vinyl ester 0.2 <0.2 Bromoethene Vinyl bromide 0.2 <0.2	-				
Bromoethene Vinyl bromide 0.2 <0.2 Benzyl chloride a-Chlorotoluene 0.2 <0.2		-			
Benzyl chloride a-Chlorotoluene 0.2 <0.2	•				
Ethanol Ethyl alcohol 0.2 <0.2		•			
Acetonitrile Methyl cyanide 0.2 <0.2	•				
Acrolein 2-Propenal 0.2 <0.2		-			
Acrylonitrile 2-Propenenitrile 0.2 <0.2					
tert-Butyl alcohol TBA 0.2 <0.2 2-Chloroprene 2-Chloro-1,3-butadiene 0.2 <0.2					
2-Chloroprene 2-Chloro-1,3-butadiene 0.2 <0.2	•	•			
•••					
Discorrony Finer DIPF 0.2 <0.2	Diisopropyl Ether	DIPE		0.2	<0.2
Ethyl tert-butyl ether ETBE 0.2 <0.2	· · · · · · · · · · · · · · · · · · ·				
tert-Amyl methyl ether TAME 0.2 <0.2	· · · · · · · · · · · · · · · · · · ·				
Methyl methacrylate MMA 0.2 <0.2					
1,1,1,2-Tetrachloroethane R-130a / Acetylene trichloride 0.2 <0.2					
Isopropylbenzene Cumene 0.2 <0.2					
2-Chlorotoluene 0.2 <0.2					
n-Propylbenzene Phenyl propane 0.2 <0.2					
tert-Butylbenzene 1,1-Dimethylethylbenzene 0.2 <0.2	• •	* , ,			
sec-Butylbenzene 1-Methylpropylbenzene 0.2 <0.2					
2-isopropyltoluene 0.2 <0.2	-				
n-Butylbenzene Phenyl butane 0.2 <0.2	· · · · · · · · · · · · · · · · · · ·				
Naphthalene 0.2 <0.2		•			











Canister No:

4740

Specified Purpose:

USEPA TO15 (Extended Suite)

Ambient Air

Verification Date: Valid To (At least): Verification File:

13-Dec-2017 10-Jan-2018

171212 24.D

Canister Type:

Entech Silonite - Summa Style

6L

Last Stability Check: **Next Check Scheduled:** 07-Mar-2017 07-Mar-2019

Canister Size: Valve Type:

Nupro

Analyst:

Disposit Pressure:

+0.01 pain

Approved for Dispatch by:

K. Gelderman

Considers are verified in for purpose for the requested analyses and applications of knowns. For most applications Cariffres are surfles cause accuracy to the requirements of 652PA emitted (1115

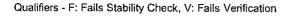
Each verhication exerces a these for contamination, issue and damage to eacher. Stability chacks are performed after 5 years or if carrage to the current or exepected, then every has years, within the designates nothing case to ensure each caethar a caetharal eoladha the erget cermicair adhnar eigilficeir legaetaran.

			Verification	
Target Compound	Alt. Name	Qualifiers	Goal (<)	Result
			ppbv	ppbv
1,1,1-Trichloroethane	1,1,1-TCA / Methyl chloroform		0.2	<0.2
1,1,2,2-Tetrachloroethane	R-130 / Acetylene tetrachloride		0.2	<0.2
1,1,2-Trichloroethane	Vinyl trichloride		0.2	<0.2
1,1-Dichloroethane	Ethylidene chloride		0.2	<0.2
1,1-Dichloroethene	1,1-DCE / Vinylidene chloride		0.2	<0.2
1,2-Dichloroethane	Ethylene chloride	*	0.2	<0.2
1,2,4-Trimethylbenzene	Pseudocumene		0.2	<0.2
1,2-Dibromoethane	EDB / Ethylene dibromide		0.2	<0.2
1,2-Dichlorobenzene	o-Dichlorobenzene		0.2	< 0.2
1,2-Dichloropropane	Propylene dichloride		0.2	<0.2
1,3,5-Trimethylbenzene	Mesitylene		0.2	<0.2
1,3-Dichlorobenzene	m-Dichlorobenzene		0.2	<0.2
1,4-Dichlorobenzene	p-Dichlorobenzene		0.2	<0.2
Benzene	Cyclohexatriene		0.2	<0.2
Bromomethane	Methyl bromide		0.2	<0.2
Tetrachloromethane	Carbon tetrachloride		0.2	<0.2
Chlorobenzene	Phenyl chloride		0.2	<0.2
Chloroethane	Ethyl chloride		0.2	<0.2
Chloroform	Trichloromethane		0.2	<0.2
Chloromethane	Methyl chloride		0,2	<0.2
cis-1,2-Dichloroethene	cis-1,2-Dichloroethylene		0.2	<0.2
cis-1,3-Dichloropropene	cis-1,3-Dichloropropylene		0.2	<0.2
Ethylbenzene	Phenyl ethane		0.2	<0.2
Freon 12	Dichlorodifluoromethane		0.2	<0.2
30n 11	Trichlorofluoromethane		0.2	<0.2
eon 113	1,1,2-Trichloro-1,2,2-trifluoroethane		0.2	<0.2
Freon 114	1,2-Dichlorotetrafluoroethane		0.2	<0.2
Hexachlorobutadiene	Hexachloro-1,3-Butadiene		0.2	<0.2





			Verification	
Target Compound	Alt. Name	Qualifiers	Goal (<)	Result
			ppbv	ppbv
Dichloromethane	Methylene chloride		0.2	<0.2
m -& p-Xylene	1,3 & 1,4 -Dimethylbenzeле		0.4	<0.4
o-Xylene	1,2-Dimethylbenzene		0.2	<0.2
Styrene	Vinyl benzene		0.2	<0.2
Tetrachloroethene	PCE / Perchlorethylene		0.2	<0.2
Toluene	Methyl Benzene		0.2	<0.2
trans-1,3-Dichloropropene	trans-1,3-Dichloropropylene		0.2	<0.2
Trichloroethene	TCE / Trichloroethylene		0.2	<0.2
Vinyl chloride	Chloroethene		0.2	<0.2
1,2,4-Trichlorobenzene			0.2	<0.2
1,3-Butadiene	Biethylene		0.2	<0.2
1,4-Dioxane	p-Dioxane		0.2	<0.2
2,2,4-Trìmethylpentane	Isooctane		0.2	<0.2
4-Ethyltoluene	p-Ethyltoluene		0.2	<0.2
Acetone	2-Propanone		0.2	<0.2
Allyl chloride	3-Chloropropene		0.2	<0.2
Bromodichloromethane	Dichlorobromomethane		0.2	<0.2
Bromoform	Tribromomethane		0.2	<0.2
Carbon disulfide	CS2		0.2	<0.2
Cyclohexane			0.2	<0.2
Dibromochloromethane	Chlorodibromoethane		0.2	<0.2
Ethyl acetate	Acetic ester		0.2	<0.2
Isopropyl alcohol	Isopropanol / 2-Propanol		0.2	<0.2
Methyl butyl ketone	MBK / 2-Hexanone		0.2	<0.2
Methyl ethyl ketone	MEK / 2-Butanone		0.2	<0.2
Methyl isobutyl ketone	MIBK / 4-Methyl-2-pentanone		0.2	<0.2
Methyl tert-butyl ether	MTBE		0.2	<0.2
n-Heptane			0.2	<0.2
n-Hexane			0.2	<0.2
Propene	Propylene		0.2	<0.2
Tetrahydrofuran	THF		0.2	<0.2
trans-1,2-Dichloroethene	trans-1,2-Dichloroethylene		0.2	<0.2
Vinyl acetate	Acetic acid vinyl ester		0.2	<0.2
Bromoethene	Vinyl bromide		0.2	<0.2
Benzyl chloride	a-Chlorotoluene		0.2	<0.2
Ethanol	Ethyl alcohol		0.2	<0.2
Acetonitrile	Methyl cyanide		0.2	<0.2
Acrolein	2-Propenal	•	0.2	<0.2
Acrylonitrile	2-Propenenitrile		0.2	<0.2
tert-Butyl alcohol	TBA		0.2	<0.2
2-Chloroprene	2-Chloro-1,3-butadiene		0.2	<0.2
Diisopropyl Ether	DIPE		0.2	<0.2
Ethyl tert-butyl ether	ETBE		0.2	<0.2
tert-Amyl methyl ether	TAME		0.2	<0.2
Methyl methacrylate	MMA		0.2	<0.2
1,1,1,2-Tetrachloroethane	R-130a / Acetylene trichloride		0.2	<0.2
Isopropylbenzene	Cumene		0.2	<0.2
2-Chlorotoluene	o-Chlorotoluene		0.2	<0.2
n-Propylbenzene	Phenyl propane		0.2	<0.2
tert-Butylbenzene	1,1-Dimethylethylbenzene		0.2	<0.2
sec-Butylbenzene	1-Methylpropylbenzene		0.2	<0.2
2-Isopropyltoluene	o-Cymene		0.2	<0.2
n-Butylbenzene	Phenyl butane		0.2	<0.2
Naphthalene			0.2	<0.2





CERTIFICATE OF ANALYSIS

Issue Date

: 01-Feb-2018

· 22-Feb-2018 11:38

Work Order : EN1801399 Page : 1 of 4

Amendment : 2

Client Laboratory **ECOTECH PTY LTD** : Environmental Division Newcastle

Contact : LARA NICHOLAS Contact : Hayley Withers

Address Address : 5/585 Maitland Road Mayfield West NSW Australia 2304 : 1492 FERNTREE GULLY ROAD

KNOXFIELD VICTORIA. AUSTRALIA 3180

Telephone : +61 03 9730 7800 Telephone : +612 4014 2500 Project : WD4 PRIMULA AVE **Date Samples Received** : 01-Feb-2018 09:00

Order number : 234215 Date Analysis Commenced C-O-C number

Sampler : Daniel Raymond

Site

Quote number : NE/070/17

No. of samples received : 2 No. of samples analysed : 2

Accreditation No. 825 Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with **Quality Review and Sample Receipt Notification.**

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dale Semple	Analyst	Newcastle - Organics, Mayfield West, NSW
Dale Semple	Analyst	Newcastle, Mayfield West, NSW
Daniel Junek	Senior Air Analyst	Newcastle - Organics, Mayfield West, NSW

Page : 2 of 4

Work Order : EN1801399 Amendment 2
Client : ECOTECH PTY LTD
Project : WD4 PRIMULA AVE



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key: CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

- ^ = This result is computed from individual analyte detections at or above the level of reporting
- ø = ALS is not NATA accredited for these tests.
- ~ = Indicates an estimated value.
- Amendment (22/02/2018): This report has been amended as a result of a request to change sample dates received by ALS from Diep Lam on 22/02/18. All analysis results are as per the previous report.
- Amendment (21/02/2018): This report has been amended as a result of misinterpretation of sample identification numbers (IDs). All analysis results are as per the previous report
- EP101: Results reported in µg/m³ are calculated from PPBV results based on a temperature of 25°C and atmospheric pressure of 101.3 kPa.
- CAN-001: Results for Pressure As Received are measured under controlled conditions using calibrated laboratory gauges. These results are expressed as an Absolute Pressure. Equivalent gauge pressures may be calculated by subtracting the Pressure Laboratory Atmosphere taken at the time of measurement.
- CAN-001: Results for Pressure Gauge as Received are obtained from uncalibrated field gauges and are indicative only. These results may not precisely match calibrated gauge readings and may vary from field measurements due to changes in temperature and pressure

Page

: 3 of 4 : EN1801399 Amendment 2 Work Order : ECOTECH PTY LTD Client Project WD4 PRIMULA AVE



Analytical Results

Sub-Matrix: SOIL GAS (Matrix: AIR)			270118 C4982 S1621	210118 C4988 S2831	 		
	CI	ient sampli	ng date / time	27-Jan-2018 00:00	21-Jan-2018 00:00	 	
Compound	CAS Number	LOR	Unit	EN1801399-001	EN1801399-002	 	
				Result	Result	 	
EP101: VOCs by USEPA Method TO	15 (Calculated Conce	entration)					
Benzene	71-43-2	1.6	μg/m³	<1.6	<1.6	 	
Toluene	108-88-3	1.9	μg/m³	4.1	2.6	 	
Ethylbenzene	100-41-4	2.2	μg/m³	<2.2	<2.2	 	
meta- & para-Xylene	108-38-3 106-42-3	4.3	μg/m³	<4.3	<4.3	 	
ortho-Xylene	95-47-6	2.2	μg/m³	<2.2	<2.2	 	
Naphthalene	91-20-3	2.6	μg/m³	<2.6	<2.6	 	
Total Xylenes		6.6	μg/m³	<6.6	<6.6	 	
EP101: VOCs by USEPA Method TO	15r						
Benzene	71-43-2	0.5	ppbv	<0.5	<0.5	 	
Toluene	108-88-3	0.5	ppbv	1.1	0.7	 	
Ethylbenzene	100-41-4	0.5	ppbv	<0.5	<0.5	 	
meta- & para-Xylene	108-38-3 106-42-3	1.0	ppbv	<1.0	<1.0	 	
ortho-Xylene	95-47-6	0.5	ppbv	<0.5	<0.5	 	
Naphthalene	91-20-3	0.5	ppbv	<0.5	<0.5	 	
Total Xylenes		1.5	ppbv	<1.5	<1.5	 	
Sampling Quality Assurance							
Pressure - As received	PRESSURE	0.1	kPaa	95.4	91.2	 	
Pressure - Gauge as Received		1	Inches Hg	-2	-3	 	
Pressure - Laboratory Atmosphere		0.1	kPaa	101	101	 	
Temperature as Received		0.1	°C	21.0	21.0	 	
USEPA Air Toxics Method TO15r Su	ırrogates						
4-Bromofluorobenzene	460-00-4	0.5	%	108	110	 	

Page

: 4 of 4 : EN1801399 Amendment 2 Work Order Client : ECOTECH PTY LTD WD4 PRIMULA AVE Project



Surrogate Control Limits

Sub-Matrix: SOIL GAS		Recovery	Limits (%)
Compound	CAS Number	Low	High
USEPA Air Toxics Method TO15r Surrogates			
4-Bromofluorobenzene	460-00-4	60	140



QUALITY CONTROL REPORT

Issue Date

22-Feb-2018

Work Order : **EN1801399** Page : 1 of 3

Amendment : 2

Client : **ECOTECH PTY LTD** Laboratory : Environmental Division Newcastle

Contact : LARA NICHOLAS Contact : Hayley Withers

Address : 1492 FERNTREE GULLY ROAD Address : 5/585 Maitland Road Mayfield West NSW Australia 2304

KNOXFIELD VICTORIA, AUSTRALIA 3180

 Telephone
 : +61 03 9730 7800
 Telephone
 : +612 4014 2500

 Project
 : WD4 PRIMULA AVE
 Date Samples Received
 : 01-Feb-2018

Order number : 234215 Date Analysis Commenced : 01-Feb-2018

C-O-C number : ---Sampler : Daniel Raymond

Site · ____

Quote number : NE/070/17

No. of samples received : 2

No. of samples analysed : 2

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full. This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dale Semple	Analyst	Newcastle - Organics, Mayfield West, NSW
Dale Semple	Analyst	Newcastle, Mayfield West, NSW
Daniel Junek	Senior Air Analyst	Newcastle - Organics, Mayfield West, NSW

Page : 2 of 3

Work Order : EN1801399 Amendment 2
Client : ECOTECH PTY LTD
Project : WD4 PRIMULA AVE



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key: Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit: Result between 10 and 20 times LOR: 0% - 50%: Result > 20 times LOR: 0% - 20%.

Sub-Matrix: AIR						Laboratory D	Ouplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP101: VOCs by USEPA Method TO15r (QC Lot: 1405229)									
EN1801399-001	270118 C4982 S1621	EP101-H: Benzene	71-43-2	0.5	ppbv	<0.5	<0.5	0.00	No Limit
		EP101-H: Toluene	108-88-3	0.5	ppbv	1.1	1.1	0.00	No Limit
		EP101-H: Ethylbenzene	100-41-4	0.5	ppbv	<0.5	<0.5	0.00	No Limit
		EP101-H: ortho-Xylene	95-47-6	0.5	ppbv	<0.5	<0.5	0.00	No Limit
		EP101-H: meta- & para-Xylene	108-38-3	1	ppbv	<1.0	<1.0	0.00	No Limit
			106-42-3						

Page : 3 of 3

Work Order : EN1801399 Amendment 2
Client : ECOTECH PTY LTD
Project : WD4 PRIMULA AVE



Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control terms Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicate (DCS) refers to certified reference materials, or known interference free matrices spiked with target analytes. The purpose of these QC parameters are to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS and DCS.

Sub-Matrix: AIR			Method Blank (MI	B) Report	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike	Spike Red	covery (%)	Recovery Limits (%)		RPDs (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EP101: VOCs by USEPA Method TO15r (QCLot: 1405229)											
EP101-H: Benzene	71-43-2	0.5	ppbv	<0.5	100 ppbv	101	105	77	114	25	25
EP101-H: Toluene	108-88-3	0.5	ppbv	<0.5	100 ppbv	106	107	78	115	25	25
EP101-H: Ethylbenzene	100-41-4	0.5	ppbv	<0.5	100 ppbv	105	108	82	121	25	25
EP101-H: meta- & para-Xylene	108-38-3	1	ppbv	<1.0	200 ppbv	112	114	82	122	25	25
	106-42-3										
EP101-H: ortho-Xylene	95-47-6	0.5	ppbv	<0.5	100 ppbv	109	110	83	122	25	25

[•] No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.



QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EN1801399** Page : 1 of 4

Amendment : 2

Client : ECOTECH PTY LTD Laboratory : Environmental Division Newcastle

 Contact
 : LARA NICHOLAS
 Telephone
 : +612 4014 2500

 Project
 : WD4 PRIMULA AVE
 Date Samples Received
 : 01-Feb-2018

 Site
 :--- Issue Date
 : 22-Feb-2018

Sampler : Daniel Raymond No. of samples received : 2

Order number : 234215 No. of samples analysed : 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers: Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- NO Method Blank value outliers occur.
- NO Duplicate outliers occur.
- NO Laboratory Control outliers occur.
- NO Matrix Spike outliers occur.
- For all regular sample matrices, NO surrogate recovery outliers occur.

Outliers: Analysis Holding Time Compliance

NO Analysis Holding Time Outliers exist.

Outliers: Frequency of Quality Control Samples

• NO Quality Control Sample Frequency Outliers exist.

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Work Order : EN1801399 Amendment 2
Client : ECOTECH PTY LTD
Project : WD4 PRIMULA AVE



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for <u>VOC in soils</u> vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: AIR

Evaluation: * = Holding time breach: \checkmark = Within holding time.

Method	Sample Date	Ex	traction / Preparation		Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP101: VOCs by USEPA Method TO15r							
Summa style Canister - ALS Supplied Silonite (EP101-H) 210118 - C4988 S2831	21-Jan-2018				01-Feb-2018	20-Feb-2018	✓
Summa style Canister - ALS Supplied Silonite (EP101-H) 270118 - C4982 S1621	27-Jan-2018				01-Feb-2018	26-Feb-2018	✓
Sampling Quality Assurance							
Summa style Canister - ALS Supplied Silonite (CAN-001) 210118 - C4988 S2831	21-Jan-2018				01-Feb-2018	21-Jan-2019	✓
Summa style Canister - ALS Supplied Silonite (CAN-001) 270118 - C4982 S1621	27-Jan-2018				01-Feb-2018	27-Jan-2019	✓

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Work Order EN1801399 Amendment 2 Client ECOTECH PTY LTD WD4 PRIMULA AVE Project



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: AIR Evaluation: × = Quality Control frequency not within specification; ✓ = Quality Control frequency within specification								
Quality Control Sample Type		Co	ount		Rate (%)		Quality Control Specification	
Analytical Methods	Method	OC	Reaular	Actual	Expected	Evaluation		
Duplicate Control Samples (DCS)								
Hydrocarbons in Air by USEPA TO15	EP101-H	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard	
Laboratory Duplicates (DUP)								
Hydrocarbons in Air by USEPA TO15	EP101-H	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard	
Laboratory Control Samples (LCS)								
Hydrocarbons in Air by USEPA TO15	EP101-H	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard	
Method Blanks (MB)								
Hydrocarbons in Air by USEPA TO15	EP101-H	1	2	50.00	5.00	√	NEPM 2013 B3 & ALS QC Standard	

Page : 4 of 4

Work Order : EN1801399 Amendment 2
Client : ECOTECH PTY LTD
Project : WD4 PRIMULA AVE



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Canister Sampling - Field Data	CAN-001	AIR	In house: Referenced to USEPA TO14 / TO15
Hydrocarbons in Air by USEPA TO15	EP101-H	AIR	In house: Referenced to USEPA TO15r Volatile Organic Compounds in Air by USEPA TO15. Aliphatic and Aromatic Hydrocarbons
Hydrocarbons in Air by USEPA TO15 (mass/volume)	EP101-H-MV	AIR	In house: Referenced to USEPA TO15r Hydrocarbons in Air by USEPA TO15 (Calculated Concentration)

AIR CANISTER CHAIN OF CUSTODY

If sourced from an ALS Laboratory: please tick →

□ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com

□BRISBANE 2 Byth Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com □GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com

■MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com

□MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

□MUDGEE 1/29 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

□NEWCASTLE 5/585 Maitland Road Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com □NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com

□PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com

■SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com □TOWNSVILLE 14-15 Desma Court Bohle QLD 4818

Ph: 07 4796 0600 E: townesville.environmental@alsglobal.com

■WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: wollongong@alsglobal.com

Client Supplied Canister(s)? Y / N															
CLIENT: ECOTECH	TURNAROUND REQUIREMENTS:	☐ Standard TAT (Lis	st due date	e):							LABO	RATORY	USE ONL	Y (Circle) Receiver to init	itial and date/time
OFFICE: 1492 Ferntree Gully Rd, KNOXFIELD VIC	(Standard TAT may be extended for multiple sequential analysis suites)	☐ Non Standard or u	rgent TAT	(List	t due	date):						y Seal Intact		_ab Y / N NE Y / N	
ROJECT: WD4 PRIMULA AVE	ALS QUOTE NO.: NE/070/17				coc s	SEQUE	NCE NU	JMBEI	R (Circ	le)	Valves o	closed on t?	Rec I	_ab Y / N NE Y / N	N/A
PURCHASE ORDER NO 234215	COUNTRY OF ORIGIN:		СО	C:	1	2	3	4	5	6	7 Caniste	r/Sampler C	Complete ar	nd Not Damaged	Yes No
ROJECT MANAGER: Lara Nicholas	CONTACT PH: 03 9370 7845 0417351053	_	OI	F:	1	2	3	4	5	6	7 Other c	omment:		Temperature °C	
SAMPLER: Daniel Raymond	SAMPLER MOBILE: 0419424932	RELINQUISHED BY:		F	RELIN	NQUIS	HED B	Y:		RI	ELINQUISH	HED BY:		RELINQUISHED	BY:
COC Emailed to ALS? (YES / NO)	EDD FORMAT (or default):		Signature and date	/time				Si	gnature and dat	e/time		Sig	nature and date/time		Signature and date/time
mail Reports to (will default to PM if no other addresses are listed): lara.nicholas@ecotech.com		RECEIVED BY:		F	RECE	IVED	BY:			RI	ECEIVED E	3Y:		RECEIVED BY:	
mail Invoice to (will default to PM if no other addresses are listed): naomi.dans@ecotech.com			Signature and date	/time				Si	gnature and dat	e/time		Sig	nature and date/time		Signature and date/time
OMMENTS/SPECIAL HANDLING/REPLACEMENT OR RETURN INSTRUCTIONS:															
	Canistor Gauge														

		GAS SAMPLE	CONTAINER INFORM	ATION			er Gauge res (PSI)	Refer to Caniste COAs for press	r Verification Rep ures measured by	ports and y the Lab		ANALYSES REQUESTED			Additional Information	
ALS USE ONLY			CANISTER / SAMPLE DETAILS					Reporting	g Requirem	nents	Su	uite Codes must be listed to attract suite price				
LAB ID	CANISTER SERIAL NO.	FLOW CONTROLLER SERIAL NO.	CLIENT SAMPLE ID	DATE / TIME SAMPLED	MATRIX (eg Air, Soil Gas)	Pre- Sampling	Post Sampling	Ambient Soil Gas (NEPM)		ppmv,	VI-V1 BTEXN			Comments on LORs required, potential hazards, likely contaminant levels, or sample requiring specific QC analysis etc. (LOR defaults routine method LOR after dilution)		
	4988	2831	210118	21/01/18 00:30 - 23:30	AIR	30	4	х	х		х					
	4982	1621	270118	27/01/18 00:30 - 23:30	AIR	30	4	х	х		х					
			•													





Canister No:

4988

Sampled on 2 11/1

Specified Purpose:

USEPA TO15 (Extended Suite)

Ambient Air

Verification Date: Valid To (At least): Verification File:

29-Dec-2017 26-Jan-2018

171229 02.D

Canister Type:

Entech Silonite - Summa Style

Canister Size: Valve Type:

Nupro Dispatch Pressure: <0.01 psia Last Stability Check: 31-May-2017 Next Check Scheduled: Analyst:

31-May-2019 K. Gelderman

Approved for Dispatch by:

Camplars are verified for for purpose for the requested armyses and applications of anomal. For most applications, canishers are verified slean according to the resource consult (\$250 mg/h); for it,

Each verdication mention a cheak for contamination, leaks and damage to values. Stability checks are performed efter S Peers of a demage to the case step in suspected. Their cases two sears, within the designated earling time to assess each carrette de contacte et fording les larget chemicae, without soné cart de shasie en

18.		Verification					
Target Compound	Alt. Name	Qualifiers	Goal (<)	Result			
			ppbv	ppbv			
1,1,1-Trichloroethane	1,1,1-TCA / Methyl chloroform		0.2	<0.2			
1,1,2,2-Tetrachloroethane	R-130 / Acetylene tetrachloride		0.2	<0.2			
1,1,2-Trichloroethane	Vinyl trichloride		0.2	<0.2			
1,1-Dichloroethane	Ethylidene chloride		0.2	<0.2			
1,1-Dichloroethene	1,1-DCE / Vinylidene chloride		0.2	<0.2			
1,2-Dichloroethane	Ethylene chloride		0.2	<0.2			
1,2,4-Trimethylbenzene	Pseudocumene		0.2	<0.2			
1,2-Dibromoethane	EDB / Ethylene dibromide		0.2	<0.2			
1,2-Dichlorobenzene	o-Dichlorobenzene		0.2	<0.2			
1,2-Dichloropropane	Propylene dichloride		0.2	<0.2			
1,3,5-Trimethylbenzene	Mesitylene		0.2	<0.2			
1,3-Dichlorobenzene	m-Dichlorobenzene		0.2	<0.2			
1,4-Dichlorobenzene	p-Dichlorobenzene		0.2	<0.2			
Benzene	Cyclohexatriene		0.2	<0.2			
Bromomethane	Methyl bromide		0.2	<0.2			
Tetrachloromethane	Carbon tetrachloride		0.2	<0.2			
Chlorobenzene	Phenyl chloride		0.2	<0.2			
Chloroethane	Ethyl chloride		0.2	<0.2			
Chloroform	Trichloromethane		0.2	<0.2			
Chloromethane	Methyl chloride		0.2	<0.2			
cis-1,2-Dichloroethene	cis-1,2-Dichloroethylene		0.2	<0.2			
cis-1,3-Dichloropropene	cis-1,3-Dichloropropylene		0.2	<0.2			
Ethylbenzene	Phenyl ethane		0.2	<0.2			
Freon 12	Dichlorodifluoromethane		0.2	<0.2			
∕ 3on 11	Trichlorofluoromethane		0.2	<0.2			
<i></i>	1,1,2-Trichloro-1,2,2-trifluoroethane		0.2	<0.2			
Freon 114	1,2-Dichlorotetrafluoroethane		0.2	<0.2			
Hexachlorobutadiene	Hexachloro-1,3-Butadiene		0.2	<0.2			





			Verification	i di
Target Compound	Alt. Name	Qualifiers	Goal (<)	Result
3-			ppbv	ppbv
Dichloromethane	Methylene chloride		0.2	<0.2
m -& p-Xylene	1,3 & 1,4 -Dimethylbenzene		0.4	< 0.4
o-Xylene	1,2-Dimethylbenzene		0.2	<0.2
Styrene	Vinyl benzene		0.2	<0.2
Tetrachloroethene	PCE / Perchlorethylene		0.2	<0.2
Toluene	Methyl Benzene		0.2	<0.2
trans-1,3-Dichloropropene	trans-1,3-Dichloropropylene		0.2	<0.2
Trichloroethene	TCE / Trichloroethylene		0.2	<0.2
Vinyl chloride	Chloroethene		0.2	<0.2
1,2,4-Trichlorobenzene	·		0.2	<0.2
1,3-Butadiene	Biethylene		0.2	<0.2
1,4-Dioxane	p-Dioxane		0.2	<0.2
2,2,4-Trimethylpentane	Isooctane		0.2	<0.2
4-Ethyltoluene	p-Ethyltoluene		0.2	<0.2
Acetone	2-Propanone		0.2	<0.2
Allyl chloride	3-Chloropropene		0.2	<0.2
Bromodichloromethane	Dichlorobromomethane		0.2	<0.2
Bromoform	Tribromomethane		0.2	<0.2
Carbon disulfide	CS2		0.2	<0.2
Cyclohexane			0.2	<0.2
Dibromochloromethane	Chlorodibromoethane		0.2	<0.2
Ethyl acetate	Acetic ester		0.2	<0.2
Isopropyl alcohol	Isopropanol / 2-Propanol		0.2	<0.2
Methyl butyl ketone	MBK / 2-Hexanone		0.2	<0.2
Methyl ethyl ketone	MEK / 2-Butanone		0.2	<0.2
Methyl isobutyl ketone	MIBK / 4-Methyl-2-pentanone		0.2	<0.2
Methyl tert-butyl ether	MTBE		0.2	<0.2
n-Heptane			0.2	<0.2
n-Hexane			0.2	<0.2
Propene	Propylene		0.2	<0.2
Tetrahydrofuran	THF		0.2	<0.2
trans-1,2-Dichloroethene	trans-1,2-Dichloroethylene		0.2	<0.2
Vinyl acetate	Acetic acid vinyl ester		0.2	<0.2
Bromoethene	Vinyl bromide		0.2	<0.2
Benzyl chloride	o-Chlorotoluene		0.2	<0.2
Ethanol	Ethyl alcohol		0.2	<0.2
Acetonitrile	Methyl cyanide		0.2	<0.2
Acrolein	2-Propenal		0.2	<0.2
Acrylonitrile	2-Propenenitrile		0.2	<0.2
tert-Butyl alcohol	ТВА		0.2	<0.2
2-Chloroprene	2-Chloro-1,3-butadiene		0.2	<0.2
Diisopropyl Ether	DIPE		0.2	<0.2
Ethyl tert-butyl ether	ETBE		0.2	<0.2
tert-Amyl methyl ether	TAME		0.2	<0.2
Methyl methacrylate	MMA		0.2	<0.2
1,1,1,2-Tetrachloroethane	R-130a / Acetylene trichloride		0.2	<0.2
Isopropylbenzene	Cumene		0.2	<0.2
2-Chlorotoluene	o-Chlorotoluene		0.2	<0.2
n-Propylbenzene	Phenyl propane		0.2	<0.2
tert-Butylbenzene	1,1-Dimethylethylbenzene		0.2	<0.2
sec-Butylbenzene	1-Methylpropylbenzene		0.2	<0.2
2-Isopropyltoluene	o-Cymene		0.2	<0.2
n-Butylbenzene	Phenyl butane		0.2	<0.2
Naphthalene			0.2	<0.2















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Sampler No:

2831

Specified Purpose:

USEPA TO15 (Extended Suite)

LORs Required: Sampler Type:

Ambient Air Passive Sampler

Verification Date: Valid To (At least): Verification File:

13-Dec-2017 10-Jan-2018 171212_24.D

Flow Rate Calibrated at:

ml/min

Analyst:

K. Gelderman

Calibrated by:

13/12/17

Approved for Dispatch by:

22/12/7

atisests are generally verified the for purpose for the requested analyses and applications. For most applications, sample in our vertient clean according to the requirements of USEPA mathod TCL 5.

Each verification involves a check for companionation leads and damage to fittings.

Target Compound	Alt. Name	Verified to	Result
		ppbv	ppbv
1,1,1-Trichloroethane	1,1,1-TCA / Methyl chloroform	0.2	<0.2
1,1,2,2-Tetrachloroethane	R-130 / Acetylene tetrachloride	0.2	<0.2
1,1,2-Trichloroethane	Vinyl trichloride	0.2	<0.2
1,1-Dichloroethane	Ethylidene chloride	0.2	<0.2
1,1-Dichloroethene	1,1-DCE / Vinylidene chloride	0.2	<0.2
1,2-Dichloroethane	Ethylene chloride	0.2	< 0.2
1,2,4-Trimethylbenzene	Pseudocumene	0.2	<0.2
1,2-Dibromoethane	EDB / Ethylene dibromide	0.2	<0.2
1,2-Dichlorobenzene	o-Dichlorobenzene	0.2	<0.2
1,2-Dichloropropane	Propylene dichloride	0.2	<0.2
1,3,5-Trimethylbenzene	Mesitylene	0.2	<0.2
1,3-Dichlorobenzene	m-Dichlorobenzene	0.2	<0.2
1,4-Dichlorobenzene	p-Dichlorobenzene	0.2	<0.2
Benzene	Cyclohexatriene	0.2	<0.2
Bromomethane	Methyl bromide	0.2	< 0.2
Tetrachloromethane	Carbon tetrachloride	0.2	< 0.2
Chlorobenzene	Phenyl chloride	0.2	<0.2
Chloroethane	Ethyl chloride	0.2	<0.2
Chloroform	Trichloromethane	0.2	<0.2
Chloromethane	Methyl chloride	0.2	<0.2
cis-1,2-Dichloroethene	cis-1,2-Dichloroethylene	0.2	<0.2
cis-1,3-Dichloropropene	cis-1,3-Dichloropropylene	0.2	<0.2
Ethylbenzene	Phenyl ethane	0.2	<0.2
eon 12	Dichlorodifluoromethane	0.2	<0.2
Freon 11	Trichlorofluoromethane	0.2	<0.2
Freon 113	1,1,2-Trichloro-1,1,2-trifluoroethane	0.2	<0.2
Freon 114	1,2-Dichlorotetrafluoroethane	0.2	<0.2
Hexachlorobutadiene	Hexachloro-1,3-Butadiene	0.2	<0.2

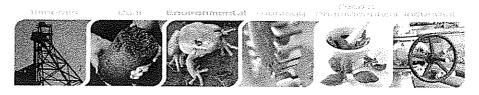
RIGHT SULLYIONS FROM PARTIES





Target Compound	Alt. Name	Verified to	Result
ta got compound	, m. maino	ppbv	ppbv
Dichloromethane	Methylene chloride	0.2	<0.2
m -& p-Xylene	1,3 & 1,4 -Dimethylbenzene	0.4	<0.4
o-Xylene	1,2-Dimethylbenzene	0.2	<0.2
Styrene	Vinyl benzene	0.2	<0.2
Tetrachloroethene	PCE / Perchlorethylene	0.2	<0.2
Toluene	Methyl Benzene	0.2	<0.2
trans-1,3-Dichloropropene	trans-1,3-Dichloropropylene	0.2	<0.2
Trichloroethene	TCE / Trichloroethylene	0.2	<0.2
Vinyl chloride	Chloroethene	0.2	<0.2
1,2,4-Trichlorobenzene	51.0.050.150.15	0.2	<0.2
1,3-Butadiene	Biethylene	0.2	<0.2
1,4-Dioxane	p-Dioxane	0.2	<0.2
2,2,4-Trimethylpentane	Isooctane	0.2	<0.2
4-Ethyltoluene	p-Ethyltoluene	0.2	<0.2
Acetone	2-Propanone	0.2	<0.2
Allyl chloride	3-Chloropropene	0.2	<0.2
Bromodichloromethane	Dichlorobromomethane	0.2	<0.2
Bromoform	Tribromomethane	0.2	<0.2
Carbon disulfide	CS2	0.2	<0.2
Cyclohexane	002	0.2	<0.2
Dibromochloromethane	Chlorodibromoethane	0.2	<0.2
Ethyl acetate	Acetic ester	0.2	<0.2
Isopropyl alcohol	Isopropanol / 2-Propanol	0.2	<0.2
Methyl butyl ketone	MBK / 2-Hexanone	0.2	<0.2 <0.2
Methyl ethyl ketone	MEK / 2-Butanone	0.2	
			<0.2
Methyl isobutyl ketone Methyl tert-butyl ether	MIBK / 4-Methyl-2-pentanone	0.2	<0.2
	MTBE	0.2	<0.2
n-Heptane		0.2	<0.2
n-Hexane	Donata	0.2	<0.2
Propene	Propylene	0.2	<0.2
Tetrahydrofuran	THF	0.2	<0.2
trans-1,2-Dichloroethene	trans-1,2-Dichloroethylene	0.2	<0.2
Vinyl acetate	Acetic acid vinyl ester	0.2	<0.2
Bromoethene	Vinyl bromide	0.2	<0.2
Benzyl chloride	o-Chlorotoluene	0.2	<0.2
Ethano!	Ethyl alcohol	0.2	<0.2
Acetonitrile	Methyl cyanide	0.2	<0.2
Acrolein	2-Propenal	0.2	<0.2
Acrylonitrile	2-Propenenitrile	0.2	<0.2
tert-Butyl alcohol	TBA	0.2	<0.2
2-Chloroprene	2-Chloro-1,3-butadiene	0.2	<0.2
Diisopropyl Ether	DIPE	0.2	<0.2
Ethyl tert-butyl ether	ETBE	0.2	<0.2
tert-Amyl methyl ether	TAME	0.2	<0.2
Methyl methacrylate	MMA	0.2	<0.2
1,1,1,2-Tetrachloroethane	R-130a / Acetylene trichloride	0.2	<0.2
Isopropylbenzene	Cumene	0.2	<0.2
2-Chlorotoluene	o-Chlorotoluene	0.2	<0.2
n-Propylbenzene	Phenyl propane	0.2	<0.2
tert-Butylbenzene	1,1-Dimethylethylbenzene	0.2	<0.2
sec-Butylbenzene	1-Methylpropylbenzene	0.2	<0.2
2-Isopropyltoluene	o-Cymene	0.2	<0.2
n-Butylbenzene	Phenyl butane	0.2	<0.2
Naphthalene		0.2	<0.2





Standing (SIM) (SIM)

Canister No:

Specified Purpose:

USEPA TO15 (Extended Suite)

Ambient Air

Verification Date: Valid To (At least): Verification File:

29-Dec-2017 26-Jan-2018 171229_11.D

Canister Type:

Entech Silonite - Summa Style

Canister Size: Valve Type:

Nupro Dispatch Pressure:

6L

<0.01 psia

Last Stability Check: Next Check Scheduled:

Analyst:

Approved for Dispatch by:

10-Apr-2017

10-Apr-2019 K. Gelderman

Canisters are verified fit for purpose for the requested arrives; and applications (it knows). For most applications, CDFISTERS are resilied clean according to the regularments of USSPA make at 1015

Lich verification avolves a check for contamination, wake and samage to values. Stability charge are certained after S years or if damage to the confeter in suspected, then every two years, within the designated tigliding time to ensure each sacioner et sagadile of Heading the Cargos Chamicals without segnificant degracation.

		Verification						
Target Compound	Alt. Name	Qualifiers	Goal (<)	Result				
			ppbv	ppbv				
1,1,1-Trichloroethane	1,1,1-TCA / Methyl chloroform		0.2	<0.2				
1,1,2,2-Tetrachloroethane	R-130 / Acetylene tetrachloride		0.2	<0.2				
1,1,2-Trichloroethane	Vinyl trichloride		0.2	<0.2				
1,1-Dichloroethane	Ethylidene chloride		0.2	<0.2				
1,1-Dichloroethene	1,1-DCE / Vinylidene chloride		0.2	<0.2				
1,2-Dichloroethane	Ethylene chloride		0.2	<0.2				
1,2,4-Trimethylbenzene	Pseudocumene		0.2	<0.2				
1,2-Dibromoethane	EDB / Ethylene dibromide		0.2	< 0.2				
1,2-Dichlorobenzene	o-Dichlorobenzene		0.2	<0.2				
1,2-Dichloropropane	Propylene dichloride		0.2	<0.2				
1,3,5-Trimethylbenzene	Mesitylene		0.2	< 0.2				
1,3-Dichlorobenzene	m-Dichlorobenzene		0.2	<0.2				
1,4-Dichlorobenzene	p-Dichlorobenzene		0.2	<0.2				
Benzene	Cyclohexatriene		0.2	<0.2				
Bromomethane	Methyl bromide		0.2	<0.2				
Tetrachloromethane	Carbon tetrachloride		0.2	<0.2				
Chlorobenzene	Phenyl chloride		0.2	<0.2				
Chloroethane	Ethyl chloride		0.2	<0.2				
Chloroform	Trichloromethane		0.2	<0.2				
Chloromethane	Methyl chloride		0.2	<0.2				
cis-1,2-Dichloroethene	cis-1,2-Dichloroethylene		0.2	<0.2				
cis-1,3-Dichloropropene	cis-1,3-Dichloropropylene		0.2	<0.2				
Ethylbenzene	Phenyl ethane		0.2	<0.2				
Freon 12	Dichlorodifluoromethane		0.2	<0.2				
non 11	Trichlorofluoromethane		0.2	<0.2				
∝eon 113	1,1,2-Trichloro-1,2,2-trifluoroethane		0.2	<0.2				
Freon 114	1,2-Dichlorotetrafluoroethane		0.2	<0.2				
Hexachlorobutadiene	Hexachloro-1,3-Butadiene		0.2	<0.2				





		*		
Toront Community	814 No	0	Verification	
Target Compound	Alt. Name	Qualifiers	Goal (<)	Result
Diables	Bilathy dana aktarida		ppbv	ppbv
Dichloromethane	Methylene chloride		0.2	<0.2
m -& p-Xylene	1,3 & 1,4 -Dimethylbenzene		0.4	<0.4
o-Xylene	1,2-Dimethylbenzene		0.2	<0.2
Styrene	Vinyl benzene		0.2	<0.2
Tetrachloroethene	PCE / Perchlorethylene		0.2	<0.2
Toluene	Methyl Benzene		0.2	<0.2
trans-1,3-Dichloropropene	trans-1,3-Dichloropropylene		0.2	<0.2
Trichloroethene	TCE / Trichloroethylene		0.2	<0.2
Vinyl chloride	Chloroethene		0.2	<0.2
1,2,4-Trichlorobenzene	Diethylene		0.2	<0.2
1,3-Butadiene	Biethylene		0.2	<0.2
1,4-Dioxane	p-Dioxane Isooctane		0.2	<0.2
2,2,4-Trimethylpentane			0.2	<0.2
4-Ethyltoluene	p-Ethyltoluene		0.2	<0.2
Add abland	2-Propanone		0.2	<0.2
Allyl chloride	3-Chloropropene		0.2	<0.2
Bromodichloromethane	Dichlorobromomethane		0.2	<0.2
Bromoform	Tribromomethane		0.2	<0.2
Carbon disulfide	CS2		0.2	<0.2
Cyclohexane	Oblaca dibas as salles s		0.2	<0.2
Dibromochloromethane	Chlorodibromoethane		0.2	<0.2
Ethyl acetate	Acetic ester		0.2	<0.2
Isopropyl alcohol	isopropanol / 2-Propanol		0.2	<0.2
Methyl butyl ketone	MBK / 2-Hexanone		0.2	<0.2
Methyl ethyl ketone	MEK / 2-Butanone		0.2	<0.2
Methyl isobutyl ketone	MIBK / 4-Methyl-2-pentanone MTBE		0.2	<0.2
Methyl tert-butyl ether	INI I DE		0.2	<0.2
n-Heptane			0.2	<0.2
n-Hexane	Bronvione		0.2	<0.2
Propene	Propylene THF		0.2	<0.2
Tetrahydrofuran			0.2	<0.2
trans-1,2-Dichloroethene	trans-1,2-Dichloroethylene		0.2	<0.2
Vinyl acetate	Acetic acid vinyl ester Vinyl bromide		0.2	<0.2
Bromoethene	a-Chlorotoluene		0.2	<0.2
Benzyl chloride Ethanol			0.2	<0.2
	Ethyl alcohol		0.2	<0.2
Acetonitrile Acrolein	Methyl cyanide 2-Propenal		0.2	<0.2
	2-Propenal 2-Propenalitrile		0.2	<0.2
Acrylonitrile	TBA		0.2	<0.2
tert-Butyl alcohol	2-Chloro-1,3-butadiene		0.2	<0.2
2-Chloroprene	DIPE		0.2	<0.2
Diisopropyl Ether	ETBE		0.2	<0.2
Ethyl tert-butyl ether	TAME		0.2	<0.2
tert-Amyl methyl ether	MMA		0.2	<0.2
Methyl methacrylate			0.2	<0.2
1,1,1,2-Tetrachloroethane Isopropylbenzene	R-130a / Acetylene trichloride Cumene		0.2	<0.2
2-Chlorotoluene	o-Chlorotoluene		0.2 0.2	<0.2
				<0.2
n-Propylbenzene	Phenyl propane		0.2	<0.2
tert-Butylbenzene sec-Butylbenzene	1,1-Dimethylethylbenzene		0.2	<0.2
	1-Methylpropylbenzene o-Cymene		0.2	<0.2
2-Isopropyttoluene n-Butylbenzene			0.2	<0.2
	Phenyl butane		0.2	<0.2
Naphthalene			0.2	<0.2



Sampler No:

1621

Specified Purpose:

USEPA TO15 (Extended Suite)

LORs Required: Sampler Type:

Ambient Air Passive Sampler

Flow Rate Calibrated at:

福島 3.5_{ml/min}

Calibrated by:

10/1/18 vg

Verification Date: Valid To (At least): Verification File:

05-Jan-2018 02-Feb-2018 180105_10.D

Analyst:

K. Gelderman

Approved for Dispatch by:

Sample: Verific (Lison Protoco) Sample: are ceretally reified this purposation for the requestes analyses and applications, for most applications sample: stevenics counsecording to the requirements of USEPA author, FD15.

liach verification involves a chaca für contamination, leaks and damage to fittings.

Target Compound	Alt. Name	Verified to	Result
444 = 111 - 11		ppbv	ppbv
1,1,1-Trichloroethane	1,1,1-TCA / Methyl chloroform	0.2	<0.2
1,1,2,2-Tetrachloroethane	R-130 / Acetylene tetrachloride	0.2	<0.2
1,1,2-Trichloroethane	Vinyl trichloride	0.2	<0.2
1,1-Dichloroethane	Ethylidene chloride	0.2	<0.2
1,1-Dichloroethene	1,1-DCE / Vinylidene chloride	0.2	<0.2
1,2-Dichloroethane	Ethylene chloride	0.2	<0.2
1,2,4-Trimethylbenzene	Pseudocumene	0.2	< 0.2
1,2-Dibromoethane	EDB / Ethylene dibromide	0.2	<0.2
1,2-Dichlorobenzene	o-Dichlorobenzene	0.2	<0.2
1,2-Dichloropropane	Propylene dichloride	0.2	<0.2
1,3,5-Trimethylbenzene	Mesitylene	0.2	<0.2
1,3-Dichlorobenzene	m-Dichlorobenzene	0.2	<0.2
1,4-Dichlorobenzene	p-Dichlorobenzene	0.2	<0.2
Benzene	Cyclohexatriene	0.2	<0.2
Bromomethane	Methyl bromide	0.2	<0.2
Tetrachloromethane	Carbon tetrachloride	0.2	<0.2
Chlorobenzene	Phenyl chloride	0.2	<0.2
Chloroethane	Ethyl chloride	0.2	<0.2
Chloroform	Trichloromethane	0.2	<0.2
Chloromethane	Methyl chloride	0.2	<0.2
cis-1,2-Dichloroethene	cis-1,2-Dichloroethylene	0.2	<0.2
cis-1,3-Dichloropropene	cis-1,3-Dichloropropylene	0.2	<0.2
Fthylbenzene	Phenyl ethane	0.2	<0.2
eon 12	Dichlorodifluoromethane	0.2	<0.2
Freon 11	Trichlorofluoromethane	0.2	<0.2
Freon 113	1,1,2-Trichloro-1,1,2-trifluoroethane	0.2	<0.2
Freon 114	1,2-Dichlorotetrafluoroethane	0.2	<0.2
Hexachlorobutadiene	Hexachloro-1,3-Butadiene	0.2	<0.2





Target Compound	Alt. Name	Verified to	Result				
		ppbv	ppbv				
Dichloromethane	Methylene chloride	0.2	<0.2				
m -& p-Xylene	1,3 & 1,4 -Dimethylbenzene	0.4	<0.4				
o-Xylene	1,2-Dimethylbenzene	0.2	<0.2				
Styrene	Vinyl benzene	0.2	<0.2				
Tetrachloroethene	PCE / Perchlorethylene	0.2	<0.2				
Toluene	Methyl Benzene	0.2	<0.2				
trans-1,3-Dichloropropene	trans-1,3-Dichloropropylene	0.2	<0.2				
Trichloroethene	TCE / Trichloroethylene	0.2	<0.2				
Vinyl chloride	Chloroethene	0.2	<0.2				
1,2,4-Trichlorobenzene	- 2.41.4	0.2	<0.2				
1,3-Butadiene	Biethylene	0.2	<0.2				
1,4-Dioxane	p-Dioxane	0.2	<0.2				
2,2,4-Trimethylpentane	Isooctane	0.2	<0.2				
4-Ethyltoluene	p-Ethyltoluene	0.2	<0.2				
Acetone	2-Propanone	0.2	<0.2				
Allyl chloride	3-Chloropropene	0.2	<0.2				
Bromodichloromethane	Dichlorobromomethane	0.2	<0.2				
Bromoform	Tribromomethane	0.2	<0.2				
Carbon disulfide	C\$2	0.2	<0.2				
Cyclohexane		0.2	<0.2				
Dibromochloromethane	Chloradibromoethane	0.2	<0.2				
Ethyl acetate	Acetic ester	0.2	<0.2				
Isopropyl alcohol	Isopropanol / 2-Propanol	0.2	<0.2				
Methyl butyl ketone	MBK / 2-Hexanone	0.2	<0.2				
Methyl ethyl ketone	MEK / 2-Butanone	0.2	<0.2				
Methyl isobutyl ketone	MIBK / 4-Methyl-2-pentanone	0.2	<0.2				
Methyl tert-butyl ether	MTBE	0.2	<0.2				
n-Heptane		0.2	<0.2				
n-Hexane		0.2	<0.2				
Propene	Propylene	0.2	<0.2				
Tetrahydrofuran	THE	0.2	<0.2				
trans-1,2-Dichloroethene	trans-1,2-Dichloraethylene	0.2	<0.2				
Vinyl acetate	Acetic acid vinyl ester	0.2	<0.2				
Bromoethene	Vinyl bromide	0.2	<0.2				
Benzyl chloride	a-Chlarotoluene	0.2	<0.2				
Ethanol	Ethyl alcohol	0.2	<0.2				
Acetonitrile	Methyl cyanide	0.2	<0.2				
Acrolein	2-Propenal	0.2	<0.2				
Acrylonitrile	2-Propenenitrile	0.2	<0.2				
tert-Butyl alcohol	TBA	0.2	<0.2				
2-Chloroprene	2-Chloro-1,3-butadiene	0.2	<0.2				
Diisopropyl Ether	DIPE	0.2	<0.2				
Ethyl tert-butyl ether	ETBE	0.2	<0.2				
tert-Amyl methyl ether	TAME	0.2	<0.2				
Methyl methacrylate	MMA	0.2	<0.2				
1,1,1,2-Tetrachloroethane	R-130a / Acetylene trichloride	0.2	<0.2				
Isopropylbenzene	Cumene	0.2	<0.2				
2-Chlorotoluene	o-Chlorotoluene	0.2	<0.2				
n-Propylbenzene	Phenyl propane	0.2	<0.2				
tert-Butylbenzene	1,1-Dimethylethylbenzene	0.2	<0.2				
sec-Butylbenzene	1-Methylpropylbenzene	0.2	<0.2				
2-Isopropyltoluene	o-Cymene	0.2	<0.2				
n-Butylbenzene	Phenyl butane	0.2	<0.2				
Naphthalene		0.2	<0.2				