

Monthly Environmental Monitoring & Auditing Report for
Drainage Diversion Works for the Comprehensive Residential Development
at Various Lots in DD227 & DD229,
Tai Po Tsai, Sai Kung

December 2012

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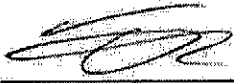
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TABLE OF CONTENT

1	Introduction	1
2	Project Information.....	1
3	Project Organization.....	2
	3.1 Key personal contact information chart.....	2
4	Construction Stage	3
	4.1 Construction Activities in Reporting Period	3
	4.2 Construction Activities for Coming Months	3
	4.3 Environmental Status.....	3
5	Noise Monitoring	4
	5.1 Monitoring Parameters and Methodology	4
	5.2 Monitoring Equipment	4
	5.3 Monitoring Locations.....	5
	5.4 Monitoring Frequency	7
	5.5 Monitoring Results and Interpretation	7
	5.6 Action and Limit Level for Construction noise	8
	5.7 Monitoring Schedule for the next reporting period	13
6	Water Monitoring.....	13
	6.1 Water Quality Monitoring Parameters and Methodology.....	13
	6.2 Monitoring Equipment	13
	6.3 Monitoring Locations.....	14
	6.4 Monitoring Frequency	17
	6.5 Monitoring Results and Interpretation	17
	6.6 Action and Limit Level for Water Quality	17
	6.7 Monitoring Schedule for Next Reporting Period	22
7	Air Quality Monitoring.....	23
	7.1 Monitoring Methodology and Parameters	23
	7.2 Monitoring Equipment	23
	7.3 Monitoring Locations.....	24
	7.4 Monitoring Frequency	26
	7.5 Monitoring Results and Interpretation	26
	7.6 Action and Limit Level for 1-hr TSP and 24-hrs TSP	27
	7.7 Monitoring Schedule for Next Reporting Period	30
8	Ecology.....	31
9	Action Taken in Event of Exceedance.....	31
10	Construction Waste Disposal	31
11	Status of Permits and Licenses	33

12	Compliant Log	34
13	Site Environmental Audits	34
	13.1 Site Inspection	34
	13.2 Compliance with Legal and Contractual Requirement	35
	13.3 Implementation Status and Effectiveness of Mitigation Measures ...	35
14	Future Key Issues and Recommendations	36
	Conclusions	37

LIST OF APPENDIXES

Appendix A: Construction Master Programme and Site Location Plan

Appendix B: Key Personal Contact Information Chart

Appendix C: Calibration Certificates for Measuring Instruments

Appendix D: Construction Noise Monitoring Data

Appendix E: Water Quality Monitoring Data

Appendix F: Air Quality Monitoring Data

EXECUTIVE SUMMARY

This is the fourth monthly Environmental Monitoring and Audit (EM&A) Report for Drainage Diversion Works for the Comprehensive Residential Development at Various Lots in DD227 & DD229, Tai Po Tsai, Sai Kung under New World Project Management Ltd. This report concludes the impact monitoring for the activities undertaken during the period from 1st of December 2012 to 31st December 2012. The major site activities in this reporting period were mainly tree retain, transplanting and stream course diversion works.

The Environmental Team (ET) is responsible for the EM&A works required in the Particular Specifications (PS). Site inspections were carried out on weekly basis to investigate and audit the equipment and work methodologies with respect to pollution control and environmental mitigation. The weekly inspections and photos records were kept.

Noise, water quality and air quality monitoring were performed during the reporting period. Results were compared with the established Action/Limit (A/L) level.

In general, waste management was satisfactory during the reporting period.

Impact monitoring for construction noise, water quality and air quality was conducted in the reporting period. No exceedance of A/L level was reported.

There was no complaint, notification of any summons and successful prosecutions against the project received during the reporting period.

It is expected that noise, water quality and air quality impacts may be resulted from the site works. ET has reminded the contractor to provide environmental pollution control measures wherever necessary and to keep a good environmental management at site practice. The recommended mitigation measures proposed for the project as well as implementation status can refer to section 13.3.

The ET will continue to implement the environmental monitoring & audit programme in accordance with the PS and Environmental Permit requirement.

1 Introduction

This is the fourth monthly Environmental Monitoring and Audit (EM&A) Report for Drainage Diversion Works for the Comprehensive Residential Development at Various Lots in DD227 & DD229, Tai Po Tsai, Sai Kung under New World Project Management Ltd.. The site layout plan is shown in **Appendix A**. The Environmental Team, Environmental Pioneers & Solutions Limited was appointed by Hip Seng Construction Co. Ltd. to prepare the report. The report is to be submitted to the Contractor, the Engineer and the IEC.

This report presents the results of the environmental monitoring of the project activities conducted within the reporting period from 1st December 2012 to 31st December 2012. This report included the noise monitoring, water quality monitoring, air quality monitoring and regular site inspections for verification of implementation of the mitigation measures as recommended in the Environmental Permit (FEP-02/428/2011/A) (EP), PS and the Contractor's Environmental Management Plan (EMP).

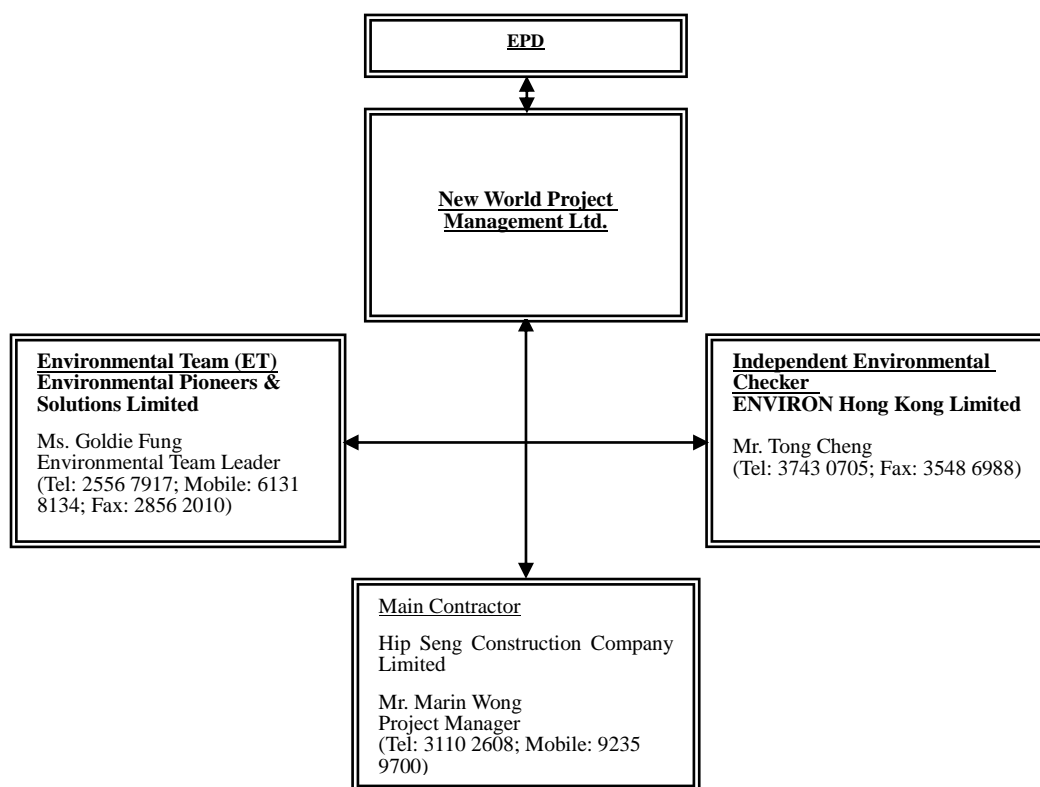
2 Project Information

Construction works of "Drainage Diversion Works for the Comprehensive Residential Development at Various Lots in DD227 & DD229, Tai Po Tsai, Sai Kung" project has been commenced in Sep 2012 and is expected to completed by July 2013. Construction master program is shown in **Appendix A**.

3 Project Organization

The Main Contractor, Hip Seng Construction Company Limited, has commissioned Environmental Pioneers & Solutions Limited as the Environmental Team, which comprises the environmental team leader, the environmental technicians to undertake the environmental monitoring and audit work for this project.

The Environmental management structure is shown in Fig. 3.1



3.1 Key personal contact information chart

Detail contact of key persons involved in environmental aspect of the project is shown in **Appendix B**.

4 Construction Stage

4.1 Construction Activities in Reporting Period

Major activities in the reporting period included the followings:

- Tree retain and transplanting works
- Stream course diversion works
 - Excavation works
 - Precast concrete pipe installation
 - Manhole concreting works
 - Sheet pile installation works

4.2 Construction Activities for Coming Months

Proposed key construction works in the coming month will include:

- Tree retain
- Stream course diversion works
- Site formation – soil nail construction works
- Sit formation – socket – H pile and foundation works

4.3 Environmental Status

The site layout plan is shown in **Appendix A**.

Locations of the monitoring and control stations with environmental sensitive receivers are presented in Section 5.3, 6.3, and 7.3 for noise monitoring, water quality monitoring, and air quality monitoring respectively.

5 Noise Monitoring

5.1 Monitoring Parameters and Methodology

The construction noise level was measured in terms of the A-weighted equivalent continuous sound pressure level (L_{eq}). $L_{eq(30minutes)}$ was used as the monitoring parameter for the impact monitoring in the time period between 0700 to 1900 hours on normal weekdays. For all other time period, $L_{eq(5minutes)}$ was employed for comparison with the Noise Control Ordinance (NCO) criteria.

Noise measurement results obtained from each monitoring location were recorded in the Construction Noise Monitoring Data Sheet immediately after the measurement. As supplementary information for data auditing, statistical results L_{10} and L_{90} were also be recorded for reference.

In case of non-compliance with the construction noise criteria, more frequent monitoring, as specified in the Action plan in Table 5.7.2, shall be carried out. This additional monitoring shall be carried out until the recorded noise levels are rectified or proved to be irrelevant to the construction activities.

5.2 Monitoring Equipment

The sound level meters and calibrators comply with the International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) specifications as referred to in the Technical Memorandum (TM) to the Noise Control Ordinance was deployed as monitoring equipment for noise measurement.

Noise measurement was not be made in the presence of fog, rain, wind with a steady speed exceeding $5ms^{-1}$ or wind with gust exceeding $10ms^{-1}$. Thus wind speed was checked by the portable wind speed indicator capable of measuring the wind speed in m/s. Table 4.2.1 summarizes the equipment list for noise monitoring

Table 5.2.1 Equipment List for Noise Monitoring

Equipment	Manufacturer & Model No.	Precision Grade	Qty
Integrated sound level meter	Svantek 949	IEC 651 Type 1	2
	Svantek 955	IEC 804 Type 1	
Acoustical calibrator	Svantek SV30A	IEC 942 Type 1	1
Remarks: Calibration details of the sound level meter and acoustical calibrator are given in Appendix C for reference			

5.3 Monitoring Locations

According to the PS, impact noise monitoring was undertaken at four locations during the construction phase of the project. The monitoring locations are summarized in Table 5.3.1 and are shown in Figure 5.3.1.

Noise measurement for N4 location was taken at a point 1m from the exterior of the selected premises and at a height with no disturbance to the dweller and least obstructed view, so that façade measurement was made for monitoring location N4 and the free field measurements were made for monitoring locations N1, N2 and N3.

Table 5.3.1 Noise Monitoring Locations during Construction Phase

Identification No.	Noise Monitoring Locations
N1	Staff Quarters 1-12, HKUST
N2	174, Lots in DD227 & DD229, Tai Po Tsai, Sai Kung
N3	152A, Lots in DD227 & DD229, Tai Po Tsai, Sai Kung
N4	109, Lots in DD227 & DD229, Tai Po Tsai, Sai Kung

In accordance with the requirements in the PS, weekly impact monitoring was conducted. For the time period between 0700 and 1900 hours on normal weekdays, and noise parameter of $L_{eq(30minutes)}$ was measured. As if the construction works were carried out during restricted period (i.e. 1900-2300, 2300-0700 of next day and Sundays / general holiday), impact monitoring that comprises 3 consecutive $L_{eq(5minutes)}$ would be carried out.

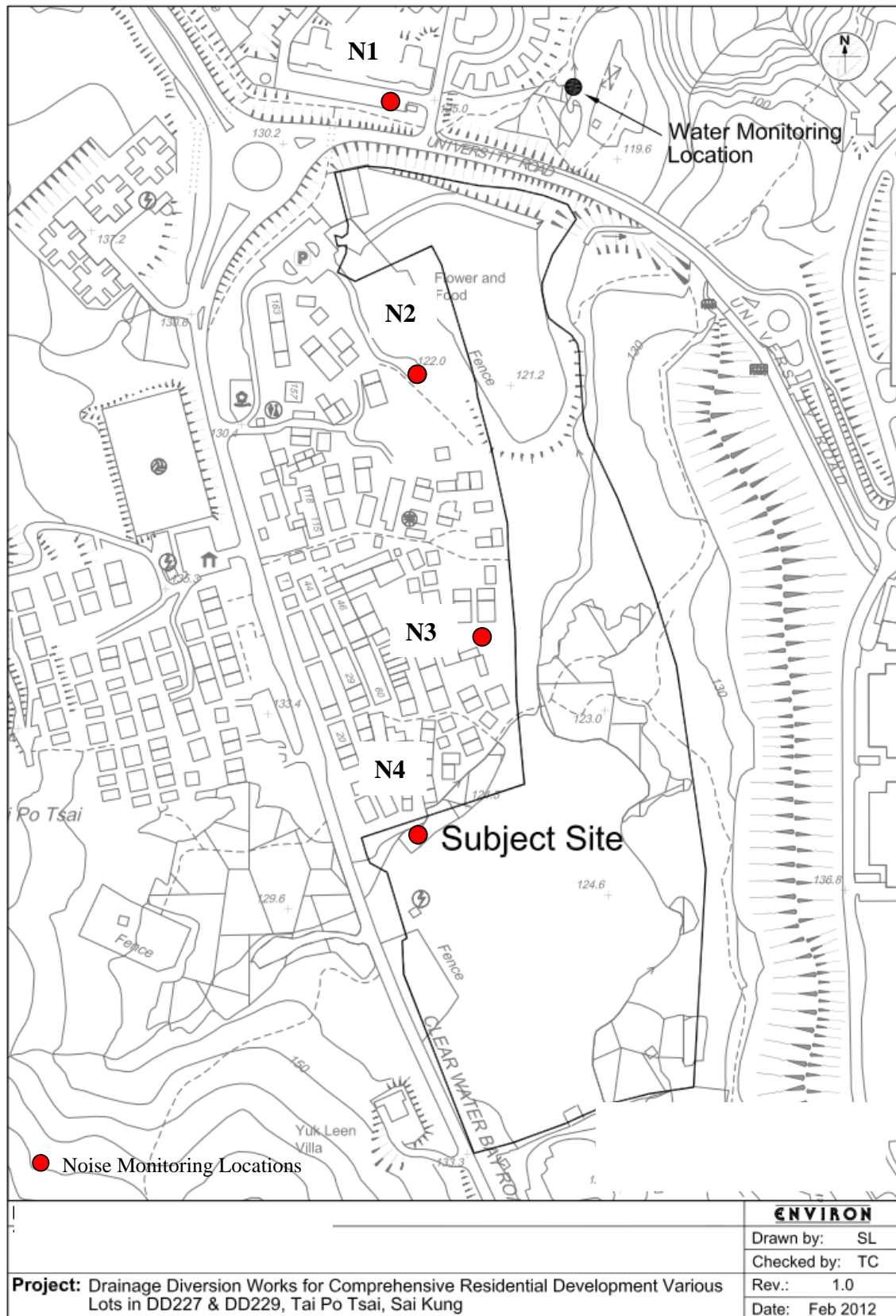


Figure 5.3.1 Impact noise monitoring locations

5.4 Monitoring Frequency

The regular monitoring for each location was performed on a basis of once in every 6 days.

Monitoring was carried out on 1st, 7th, 13th, 19th, 24th and 29th of December 2012.

5.5 Monitoring Results and Interpretation

Relevant details of the noise monitoring results are presented in Table 5.5.1. The results of N1 ranged between 59.5dB (A) and 64.9dB (A), N2 ranged between 52.9dB (A) and 65.0dB (A), N3 ranged between 59.5dB (A) and 68.6dB (A) and N4 ranged between 61.1dB (A) and 62.7dB (A) were within the limit levels and therefore no exceedance was found.

Location	Parameter	Date	Time	L _{Aeq} dB(A)	Limit dB(A)	Exceedance	Weather
*N1	Leq30min	1-Dec-12	16:26	64.9	75	N	Overcast
*N1	Leq30min	7-Dec-12	14:17	61.1	75	N	Cloudy
*N1	Leq30min	13-Dec-12	13:40	59.5	75	N	Cloudy
*N1	Leq30min	19-Dec-12	13:37	63.9	75	N	Cloudy
*N1	Leq30min	24-Dec-12	13:45	63.2	75	N	Sunny
*N1	Leq30min	29-Dec-12	13:42	61.9	75	N	Cloudy
*N2	Leq30min	1-Dec-12	14:12	64.0	75	N	Overcast
*N2	Leq30min	7-Dec-12	13:45	65.0	75	N	Cloudy
*N2	Leq30min	13-Dec-12	13:02	52.9	75	N	Cloudy
*N2	Leq30min	19-Dec-12	13:02	61.1	75	N	Cloudy
*N2	Leq30min	24-Dec-12	13:08	63.9	75	N	Sunny
*N2	Leq30min	29-Dec-12	13:08	63.2	75	N	Cloudy
*N3	Leq30min	1-Dec-12	14:05	62.5	75	N	Overcast
*N3	Leq30min	7-Dec-12	9:50	68.6	75	N	Cloudy
*N3	Leq30min	13-Dec-12	10:01	65.7	75	N	Cloudy
*N3	Leq30min	19-Dec-12	9:42	59.5	75	N	Cloudy
*N3	Leq30min	24-Dec-12	10:35	62.8	75	N	Sunny

*N3	Leq30min	29-Dec-12	10:26	64.3	75	N	Cloudy
N4	Leq30min	1-Dec-12	13:30	61.2	75	N	Overcast
N4	Leq30min	7-Dec-12	10:24	61.1	75	N	Cloudy
N4	Leq30min	13-Dec-12	10:37	61.1	75	N	Cloudy
N4	Leq30min	19-Dec-12	10:15	61.6	75	N	Cloudy
N4	Leq30min	24-Dec-12	10:01	62.0	75	N	Sunny
N4	Leq30min	29-Dec-12	9:50	62.7	75	N	Cloudy

*The equivalent noise level of N1, N2 and N3 is corrected by +3dB(A).

Remarks: Raw datasheet for noise monitoring are attached in **Appendix D** for reference.

5.6 Action and Limit Level for Construction noise

The Action and Limit (A/L) levels for construction noise are defined in Table 5.6.1. Should non-compliance of the criteria occur, action in accordance with the Action Plan in Table 5.6.2 should be carried out.

There was no exceedance recorded in the reporting period.

Table 5.6.1 Action and Limit Levels for Construction Noise at All Sensitive Receivers		
Time Period	Action	Limit
Daytime 0700 – 1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A)*
1900 – 2300 on all days and 0700 – 2300 on general holidays (including Sundays)		60/65/70 dB(A)**
2300 – 0700 on all days		45/50/55 dB(A)**

Table 5.6.2 Event / Action Plan for Construction Noise

EVENT				
	ET Leader	IEC	ER	CONTRACTOR
Exceedance for one sample in Action Level	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures. 2. Inform ER, IEC and Contractor. 3. Repeat measurement to confirm finding. 4. Increase monitoring frequency to daily. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET. 2. Check Contractor's working method. 	<ol style="list-style-type: none"> 1. Notify Contractor. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice. 2. Amend working methods if appropriate.

<p>Exceedance for two or more consecutive samples in Action Level.</p>	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures. 2. Inform IEC and Contractor. 3. Repeat measurements to confirm findings. 4. Increase monitoring frequency to daily. 5. Discuss with IEC and Contractor on remedial actions. 6. If exceedance continues, arrange meeting with IEC and ER. 7. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Checking monitoring data submitted by ET. 2. Check Contractor's working method. 3. Discuss with ET and Contractor on possible remedial measures. 4. Advise the ER on the effectiveness of the proposed remedial measures. 5. Supervisor implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Submit proposals for remedial actions to IEC within three working days of notification. 2. Implement the agreed proposals. 3. Amend proposals if appropriate.
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<p>Exceedance for on sample in Limit Level</p>	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures. 2. Inform ER, Contractor and EPD. 3. Repeat measurement to confirm finding. 4. Increase monitoring frequency to daily. 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. 	<ol style="list-style-type: none"> 1. Checking monitoring data submitted by ET 2. Check Contractor's working method 3. Discuss with ET and Contractor on possible remedial measures 4. Advise the ER on the effectiveness of the proposed remedial measures. 5. Supervisor implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to IEC within three working days of notification. 3. Implement the agreed proposals. 4. Amend proposal if appropriate.
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<p>Exceedance for two or more consecutive samples in Limit Level</p>	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures. 2. Notify IEC, ER, Contractor and EPD. 3. Repeat measurement to confirm findings. 4. Increase monitoring frequency to daily. 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented. 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken. 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET and Contractor on the potential remedial actions. 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented. 4. Ensure remedial measures properly implemented 5. If exceedance continues consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated remedial actions. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to IEC within three working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problem still not under control. 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.
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	informed of the results 8. If exceedance stops, cease additional monitoring			
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5.7 Monitoring Schedule for the next reporting period

Noise monitoring schedule is proposed to be carried out on 3rd, 9th, 14th, 19th, 25th and 31st of January 2013.

6 Water Monitoring

6.1 Water Quality Monitoring Parameters and Methodology

Turbidity in Nephelometric Turbidity Unit (NTU), and Dissolved Oxygen (DO) in mg/L, temperature, water depth and pH measurements were in-situ measurements and suspended solids measurements were performed by a HOKLAS accredited laboratory using recommended reference method APHA 2540D.

6.2 Monitoring Equipment

Turbidity, DO, Salinity, pH and temperature was measured by an instrument complied with the following requirements:

The instrument is a portable as well as weatherproof multimeter complete with cable and uses a DC power source. It is capable of measuring:

- A turbidity between 0-1000NTU;
- A dissolved Oxygen level in the range of 0-20mg/L and 0-200% saturation;
- A temperature of 0-50°C;
- pH in the range of 0-14.

The measurements were performed by a portable and weatherproof multi-meter, model TOA-DKK WQC-24. The equipment was calibrated and verified by certified laboratory every 3 months to ensure they perform to the same level of accuracy as stated in the manufacturer's specification. Detailed calibration records of the multi-meter were shown in Appendix C for reference

Suspended solids were determined by the water samples collected from the monitoring locations for further analysis in accredited HOKLAS laboratory. Water samples were contained by polythene bottles, packed in ice (cooled in 4°C without frozen) and delivered to the laboratory for analysis as soon as possible after collection.

Since water depths for all monitoring stations were less than 0.5m during the impact measurement period, only mid-depth level was monitored. The monitoring parameters and measurement methods of water quality monitoring are summarized in Table 6.2.1.

Table 6.2.1 – Water Quality Monitoring Parameters and Measurement Methods	
Parameter	Measurement Method
Temperature (°C)	<i>in-situ</i>
Turbidity (NTU)	
pH	
Dissolved Oxygen (mg/L and %)	
Suspended Solids (mg/L)	Reference method APHA 2540D

6.3 Monitoring Locations

In accordance with the PS, monitoring stations were established at two locations, which are summarized in Table 6.3.1.

Table 6.3.1 – Water Quality Monitoring Locations		
Monitoring Station	Coordinates	
	Easting	Northing
W1 (upstream)	E:844944	N:821720
W2 (downstream)	E:844959	N:822249

As illustrated in Figure 6.3.1, W1 served as the control station while W2 was the monitoring location of water quality.

In accordance with the PS, measurements shall be taken at 3 water depths, namely, 1m below water surface, mid-depth and 1m above river bed, except where the water depth less than 6m, the mid-depth station may be omitted. Should the water depth be less than 3m, only the mid-depth station will be monitored.

As the depth of water was less than 3m, water samples were collected at mid-depth of each monitoring stations for measurements and sample collection.



Figure 6.3.1 Water Quality Monitoring Locations

6.4 Monitoring Frequency

Water quality monitoring for each monitoring station was performed at mid-flood or mid-ebb tides for 3 days per week during the course of the construction river works.

Monitoring was carried out on 3rd, 5th, 7th, 10th, 12th, 14th, 17th, 19th, 21st, 24th, 27th, 29th and 31st of December 2012.

6.5 Monitoring Results and Interpretation

Water quality monitoring was carried out thirteen times in this reporting month. Detailed on-site measurements are shown in **Appendix E**. Table 6.5.1 presents consolidated results throughout the reporting month.

During the reporting period, no exceedance was recorded.

	Average of Monitoring Results					
	<i>Temperature</i> (°C)	<i>Turbidity</i> (NTU)	<i>pH</i>	<i>Dissolved</i> <i>Oxygen</i> (mg/L)	<i>Dissolved</i> <i>Oxygen</i> (%)	<i>Suspended</i> <i>Solids</i> (mg/L)
W1	22.5	4.2	7.19	7.28	78.4	11.23
W2	22.3	2.4	7.25	7.50	80.9	4.92

6.6 Action and Limit Level for Water Quality

Based on the criteria stipulated in PS (Table 6.6.1) and baseline water quality monitoring data obtained, the A/L levels are shown in Table 6.6.2. The A/L levels for W1 were ignored since W1 functions as the control station for the project. If the water quality monitoring results at any impact stations exceeded the criteria, the actions in accordance with the Event and Action Plan in Table 6.6.3 should be taken.

Table 6.6.1 Action and Limit Levels for Water Quality at All Monitoring Stations		
Parameters	Action	Limit
DO in mg/L	5 percentile of baseline data	4 mg/L or 1 percentile of baseline data
SS in mg/L	95 percentile of baseline data or 120% of upstream control station's SS recorded on the same day	99 percentile of baseline data or 130% of upstream control station's SS recorded on the same day
Turbidity in NTU	95 percentile of baseline data or 120% of upstream control station's Turbidity recorded on the same day	99 percentile of baseline data or 130% of upstream control station's Turbidity recorded on the same day
pH	<6.5 or >8.4 or > the upstream control station's pH recorded on the same day	<6.0 or >9.0

Table 6.6.2 Action and Limit Levels for Water Quality at All Monitoring Stations		
Parameters	Monitoring Stations	
	W2	
	Action Level	Limit Level
DO in mg/L	6.42	6.24
SS in mg/L	18.9	19.8
Turbidity in NTU	6.2	6.2
pH	<6.5 or >8.4	<6.0 or >9.0

Remarks:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For SS and Turbidity, non-compliance of the water quality limits occurs when monitoring results is higher than the limits.
3. For pH, for the action level, reference is made to the data recorded at EPD' river monitoring stations at the nearby Tseng Lan Shue Stream (JR3, JR6 and JR22) from year 2006 to 2010; while the limit level is referring to the water quality objective for Inland Water of Junk Bay Water Control Zone.

Table 6.6.3 Event and action Plan for Water Quality

Event	ET Leader	IEC	ER	Contractor
ACTION LEVEL				
Exceedance for one sample day	<ol style="list-style-type: none"> 1. Repeat in-site measurement to confirm findings. 2. Identify source(s) of impact. 3. Inform IEC and Contractor. 4. Check monitoring data, all plant, equipment and Contractor's working methods. 5. Discuss mitigation measures with IEC and Contractor. 6. Repeat measurement on next day of exceedance. 	<ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures. 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IEC on the proposed mitigation measures. 2. Make agreement on mitigation measures to be implemented. 3. Assess effectiveness of implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing. 2. Rectify unacceptable practice. 3. Check all plant and equipment. 4. Consider changes of working methods. 5. Discuss with ET, IEC and propose mitigation measures to IEC and ER. 6. Implement the agreed mitigation measures.

<p>Exceedance for more than one consecutive sampling days</p>	<ol style="list-style-type: none"> 1. Repeat in-situ measurements to confirm findings. 2. Identify source(s) of impact. 3. Inform IEC and Contractor. 4. Check monitoring data, all plant, equipment and Contractor's working methods. 5. Discuss mitigation measures with IEC and Contractor. 6. Ensure mitigation measures are implemented. 7. Prepare to increase the monitoring frequency to daily. 8. Repeat measurement on next day of exceedance. 	<ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures. 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly. 3. Assess effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IEC on the proposed mitigation measures. 2. Make agreement on the mitigation measures to be implemented. 3. Assess effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing. 2. Rectify unacceptable practice. 3. Check all plant and equipment. 4. Consider changes of working methods. 5. Discuss with ET and IEC and propose mitigation measures within three working days. 6. Implement the agreed mitigation measures.
LIMIT LEVEL				
<p>Exceedance for one sampling day</p>	<ol style="list-style-type: none"> 1. Repeat in-situ measurements to confirm findings. 2. Identify source(s) of impact. 3. Inform EPD, IEC, Contractor. 4. Check monitoring data, all plant, equipment and 	<ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures. 2. Review proposals on mitigation measures submitted by 	<ol style="list-style-type: none"> 1. Discuss with IEC, ET and Contractor on the proposed mitigation measures. 2. Request Contractor to critically review the 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing. 2. Rectify unacceptable practice. 3. Check all plant and equipment.

	<p>Contractor's working methods;</p> <p>5. Discuss mitigation measures with IEC, ER and Contractor.</p> <p>6. Ensure mitigation measures are implemented.</p> <p>7. Increase the monitoring frequency to daily until no exceedance of Limit level.</p>	<p>Contractor and advise the ER accordingly.</p> <p>3. Assess effectiveness of the implemented mitigation measures.</p>	<p>working methods.</p> <p>3. Make agreement on the mitigation measures to be implemented.</p> <p>4. Assess the effectiveness of the implemented mitigation measures.</p>	<p>4. Consider changes of working methods.</p> <p>5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within three working days.</p> <p>6. Implement the agreed mitigation measures.</p>
<p>Exceedance for more than on consecutive sampling days</p>	<p>1. Repeat in-situ measurements to confirm findings.</p> <p>2. Identify source(s) of impact.</p> <p>3. Inform EPD, IEC and Contractor.</p> <p>4. Check monitoring data, all plant, equipment and Contractor's working methods.</p> <p>5. Discuss mitigation measures with IEC, ER and Contractor.</p> <p>6. Ensure mitigation measures are implemented.</p> <p>7. Increase the monitoring frequency to daily</p>	<p>1. Discuss with ET and Contractor on the mitigation measures.</p> <p>2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly.</p> <p>3. Assess the effectiveness of the implemented mitigation measures.</p>	<p>1. Discuss with IEC, ET and Contractor on the proposed mitigation measures.</p> <p>2. Request Contractor to critically review the working methods.</p> <p>3. Make agreement on the mitigation measures to be implemented.</p> <p>4. Assess the effectiveness of the</p>	<p>1. Inform the ER and confirm notification of the non-compliance in writing.</p> <p>2. Rectify unacceptable practice.</p> <p>3. Check all plant and equipment.</p> <p>4. Consider changes of working methods.</p> <p>5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within three working days.</p>

	<p>until no exceedance of Limit level for two consecutive days.</p>		<p>implemented mitigation measures. 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the work until no exceedance of Limit Level.</p>	<p>6. Implement the agreed mitigation measures. 7. As directed by the ER, to slow down or to stop all or part of the work or construction activities.</p>
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6.7 Monitoring Schedule for Next Reporting Period

Water quality monitoring schedule is proposed to be carried out on 2nd, 4th, 8th, 10th, 12th, 15th, 17th, 19th, 22nd, 24th, 26th, 29th and 31st of January 2013.

7 Air Quality Monitoring

7.1 Monitoring Methodology and Parameters

1-hr and 24-hrs air quality monitoring have been carried out during the reporting period.

Measurements of 1-hr TSP monitoring were taken by a Dust Trak aerosol monitor or its equivalent that is a portable and battery-operated laser photometer capable of performing real time 1-hr TSP measurements.

24-hrs TSP was measured by the High Volume Sampler. The filter papers for each monitoring locations were sent to the accredited HOKLAS laboratory for further analysis.

Other relevant data such as monitoring location, time, weather conditions and any other special phenomena at the construction site were recorded during the measurement period.

7.2 Monitoring Equipment

24-hrs TSP was measured by the High Volume Sampler. And the 3 sets of 1-hr TSP were carried out by the portable dust meter. The measurement equipments are listed in Table 7.2.1 and Calibration Certificates of the equipments are shown in **Appendix C**.

Table 7.2.1 Air Quality Monitoring Equipments

Equipment	Manufacturer & Model No.	Parameter	Qty
Laser Dust Monitor	SIBATA/LD-3B	1-hr TSP	2
High Volume Sampler	TE-5025A	24-hrs TSP	4

7.3 Monitoring Locations

Monitoring locations were established at 4 locations, which are summarized in Table 7.3.1 and are shown in Figure 7.3.1

Table 7.3.1 Air Quality Monitoring Locations

Identification No.	TSP Monitoring Locations
D1	Staff Quarters 1-12, HKUST
D2	174, Lots in DD227 & DD229, Tai Po Tsai, Sai Kung
D3	152A, Lots in DD227 & DD229, Tai Po Tsai, Sai Kung
D4	109, Lots in DD227 & DD229, Tai Po Tsai, Sai Kung

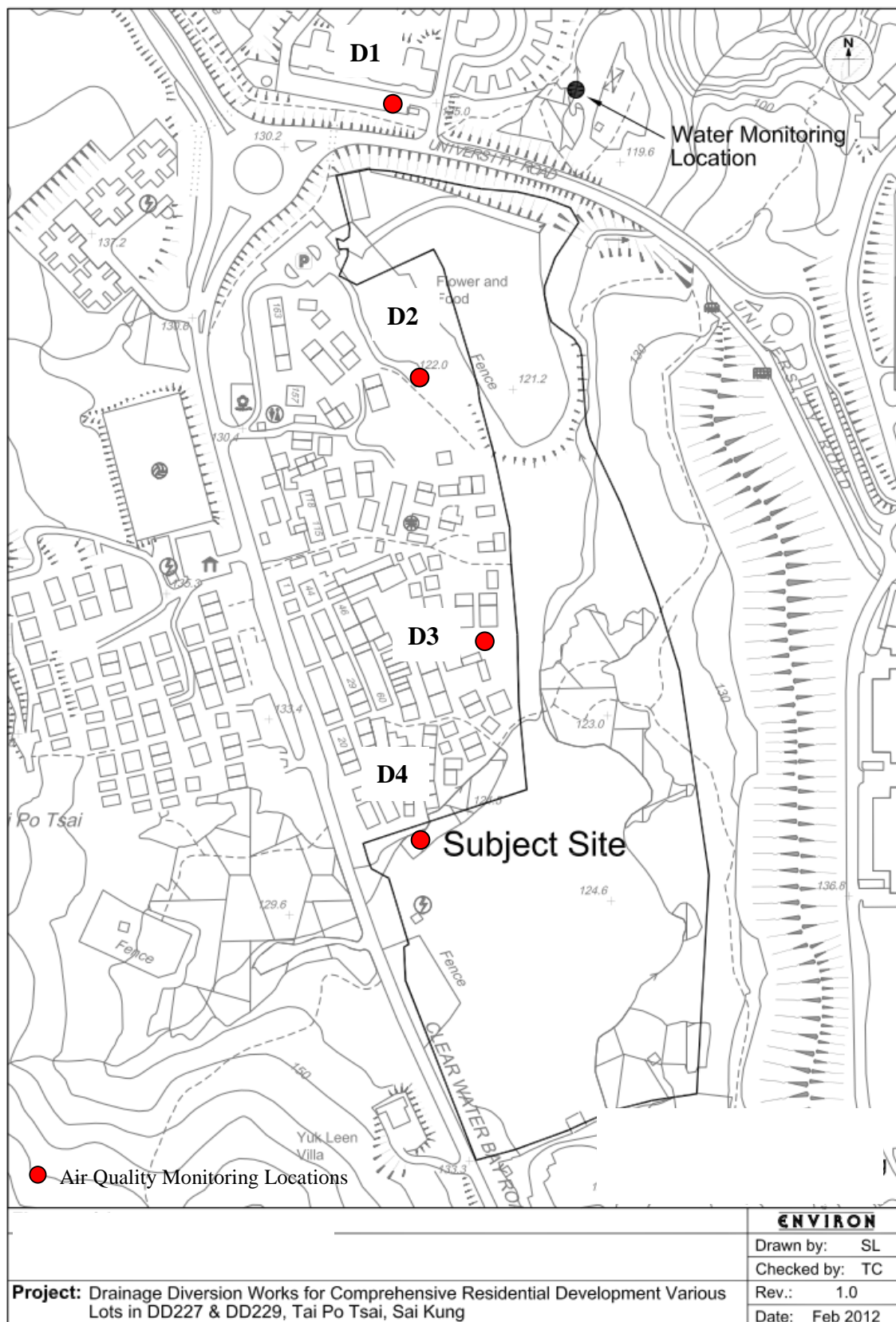


Figure 7.3.1 Air Quality Monitoring Locations

7.4 Monitoring Frequency

For 1-hr and 24-hr TSP monitoring, the sampling frequency of at least once in every six days.

Monitoring was carried out on 1st, 7th, 13th, 19th, 24th and 29th of December 2012.

7.5 Monitoring Results and Interpretation

1-hr TSP and 24-hrs TSP were carried out during this reporting. And, no exceedance was recorded.

1-hr TSP monitoring was conducted at four designated monitoring locations. The monitoring results are summarized in Table 7.5.1.

Location	Range (µg/m ³) (Min – Max)	Average (µg/m ³)
D1	41-112	63.2
D2	47-88	63.7
D3	47-111	65.4
D4	38-105	64.4

24-hrs TSP monitoring data was obtained at four designated monitoring locations. The monitoring results are summarized in Table 7.5.2.

Location	Range (µg/m ³) (Min – Max)	Average (µg/m ³)
D1	26.4-97.7	53.1
D2	29.0-125.4	56.2
D3	32.2-79.8	50.2
D4	9.6-77.0	55.9

Details of the monitoring data were presented in **Appendix F**.

7.6 Action and Limit Level for 1-hr TSP and 24-hrs TSP

The Action and Limit levels for all monitoring stations are summarized in Table 7.6.1 and Table 7.6.2, which would be applied for compliance assessment of air quality for this project. If the air quality monitoring results at any impact stations exceeded the criteria, the actions in accordance with the Event and Action Plan in Table 7.6.3 should be taken.

Table 7.6.1 Action and Limit Levels for 1-hr TSP at All Monitoring Stations			
Monitoring Station	Monitoring Frequency	Action Level	Limit Level
D1	1-hr	285.6 $\mu\text{g}/\text{m}^3$	500 $\mu\text{g}/\text{m}^3$
D2		279.4 $\mu\text{g}/\text{m}^3$	500 $\mu\text{g}/\text{m}^3$
D3		289.4 $\mu\text{g}/\text{m}^3$	500 $\mu\text{g}/\text{m}^3$
D4		284.3 $\mu\text{g}/\text{m}^3$	500 $\mu\text{g}/\text{m}^3$

Table 7.6.2 Action and Limit Levels for 24-hrs TSP at All Monitoring Stations			
Monitoring Station	Monitoring Frequency	Action Level	Limit Level
D1	24-hrs	156.4 $\mu\text{g}/\text{m}^3$	260 $\mu\text{g}/\text{m}^3$
D2		153.8 $\mu\text{g}/\text{m}^3$	260 $\mu\text{g}/\text{m}^3$
D3		155.2 $\mu\text{g}/\text{m}^3$	260 $\mu\text{g}/\text{m}^3$
D4		158.0 $\mu\text{g}/\text{m}^3$	260 $\mu\text{g}/\text{m}^3$

Table 7.6.3 Event and action Plan for Air Quality

Event	ET Leader	IEC	ER	Contractor
ACTION LEVEL				
Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures. 2. Inform ER, IEC and Contractor. 3. Repeat measurement to confirm finding. 4. Increase monitoring frequency to daily. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET. 2. Check Contractor's working method. 	<ol style="list-style-type: none"> 1. Notify Contractor. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice. 2. Amend working methods if appropriate.
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures. 2. Inform IEC and Contractor. 3. Repeat measurements to confirm findings 4. Increase monitoring frequency to daily. 5. Discuss with IEC and Contractor on remedial actions. 6. If exceedance continues, arrange meeting with IEC and ER 	<ol style="list-style-type: none"> 1. Checking monitoring data submitted by ET. 2. Check Contractor's working method. 3. Discuss with ET and Contractor on Possible remedial measures. 4. Advise the ER on the effectiveness of the proposed remedial measures. 5. Supervisor implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Ensure remedial measures properly implemented 	<ol style="list-style-type: none"> 1. Submit proposals for remedial actions to IEC within three working days of notification. 2. Implement the agreed proposals. 3. Amend proposal if appropriate.

	7. If exceedance stops, cease additional monitoring.			
LIMIT LEVEL				
Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures. 2. Inform ER, Contractor and EPD. 3. Repeat measurement to confirm finding. 4. Increase monitoring frequency to daily. 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the result. 	<ol style="list-style-type: none"> 1. Checking monitoring data submitted by ET. 2. Check Contractor's working method 3. Discuss with ET and Contractor on possible remedial measures 4. Advise the ER on the effectiveness of the proposed remedial measures. 5. Supervisor implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to IEC within three working days of notification. 3. Implement the agreed proposals. 4. Amend proposal if appropriate.
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures. 2. Notify IEC, ER, Contractor and EPD. 3. Repeat measurement to confirm findings. 4. Increase monitoring frequency to daily. 5. Carry out analysis of Contractor's working procedures to 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET and Contractor on the potential remedial actions. 2. Reviews Contractor's remedial actions whenever necessary to assure their effectiveness and advise the 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. In consultation with the IEC, agree with the Contractor on the remedial 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to IEC within three working days of notification. 3. Implement the agreed proposals 4. Resubmit proposals if

	<p>determine possible mitigation to be implemented.</p> <p>6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken.</p> <p>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.</p> <p>8. If exceedance stops, cease additional monitoring</p>	<p>ER accordingly.</p> <p>3. Supervisor the implementation of remedial measures.</p>	<p>measures to be implemented.</p> <p>4. Ensure remedial measures properly implemented.</p> <p>5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated remedial actions.</p>	<p>problem still not under control.</p> <p>5. Stop the relevant portion of works as determined by the ER until the exceedance is abated</p>
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7.7 Monitoring Schedule for Next Reporting Period

1-hr TSP and 24-hrs TSP monitoring schedule is proposed to be carried out on 3rd, 9th, 14th, 19th, 25th and 31st of January 2013.

8 Ecology

During the reporting period, tree protection measures have been implemented by contractor, such as provision of tree protective fencing for the retained trees and transplanted trees. The tree protection zone has enough space to prevent the construction activities to damage the trees. And, the felled trees were also removed accordingly.

As the construction activities do not affect the existing river conditions, the water flow in the existing river within the site is maintained.

9 Action Taken in Event of Exceedance

If the measurements (Noise, Water and Air) exceed the action / limit level, exceedance details will be reported and follow-up actions will be taken by relevant parties involved.

During the reporting month there was no exceedance for noise, water and air measurements recorded; therefore, no actions were taken.

10 Construction Waste Disposal

It is the contractor's responsibility to ensure that all wastes produced during the construction phase for the drainage improvement works are handled, stored and disposed in accordance with good waste management practices and EPD's regulation and requirement. Waste materials generated during construction activities, such as construction and demolition (C&D) material, chemical wastes and general refuse, are recommended to be audited at regular intervals to ensure that proper storage, transportation and disposal practices are being implemented.

Table 10.1 is a summary of figures of the construction wastes disposal provided by Contractor.

11 Status of Permits and Licenses

Table 11.1 is the updated status of environmental related permits/ license obtained for the construction activities

Table 11.1 Status of Permits and Licenses Obtained					
Description	License / Permit No.#	Date of Issue	Site	Date of expiry	Status
EP	EP-428/2011	4 November 2011	Various Lots in DD227 & DD229, Tai Po Tsai, Sai Kung	N/A	Superseded by VEP
EP	EP-428/2011/A	1 June 2012			Valid
FEP	FEP-01/428/2011/A	9 July 2012			Surrendered on 28 Nov 2012
FEP	FEP-02/428/2011/A	26 November 2012			Valid
Discharge License	WT00014162-2012	18 October 2012			Valid
Registration as a Chemical Waste Producer	349704	27 Sep 2012			Valid
Waste Disposal	N/A	N/A			N/A
Notification Pursuant to Section 3(1) of The Air Pollution Control (Construction Dust) Regulation	349519	4 Sep 2012	Various Lots in DD227 & DD229, Tai Po Tsai, Sai Kung	Valid	

12 Compliant Log

There was no formal complaint received during the reporting period. Therefore, no follow up actions for the environmental complaint is required.

	Noise	Water	Air	Others
September 2012	0	0	0	0
October 2012	0	0	0	0
November 2012	0	0	0	0
December 2012	0	0	0	0
Total	0	0	0	0

13 Site Environmental Audits

13.1 Site Inspection

Site inspections were undertaken weekly to inspect the construction activities in active site areas to ensure that appropriate environmental protection and pollution control mitigation measures are properly implemented.

Within this reporting period, site inspections were conducted on 7th, 12th, 19th and 24th of December 2012. A detailed checklist of each site inspection together with comments and relevant photos have been filed and kept. The findings from inspection were summarized in Table 12.1.

Table 12.1 Summary results of site inspections findings

Date	Findings	Identification	Advice from ET	Action taken	Closing date	Remarks
14, 21 Nov 12	Observation	Damaged tree protective fencing for T106 was observed.	Contractor was reminded that damaged tree protective fencing should be replaced as soon as possible.	Damaged tree protective fencing was replaced by contractor.	7 Dec 12	N/A

Date	Findings	Identification	Advice from ET	Action taken	Closing date	Remarks
29 Nov 12 7 & 12 Dec 12	Reminder	Stockpile of C&D material was not covered properly.	Contractor was reminded to cover the stockpile with tarpaulin sheets.	Stockpile was covered with tarpaulin sheets by contractor	19 Dec 12	N/A
29 Nov 12	Observation	Exposed area observed near the existing river.	Contractor was reminded to provide bund near the edge of exposed area to prevent the muddy water from entering into the river.	The bund along the edge of exposed area was provided by contractor.	7 Dec 12	N/A
12, 19 & 24 Dec 12	Reminder	Boulder breaking activities were observed.	Contractor was reminded that noise barriers should be provided adequately and located properly.	To be followed during next inspection.	N/A	N/A
24 Dec 12	Observation	Damaged tarpaulin sheets were observed.	Contractor was reminded to replace the tarpaulin sheets and covered properly.	To be followed during next inspection.	N/A	N/A

13.2 Compliance with Legal and Contractual Requirement

There was no non-compliance recorded for the month of December 2012.

13.3 Implementation Status and Effectiveness of Mitigation Measures

Contractor has implemented mitigation measures to address those problems as advised by ET. Some of the measures taken by the contractor were considered as effective to minimize negative impact to the environment. Ongoing investigation will be carried out to observe performance and effectiveness of those measures. Outstanding environmental items will be inspected in next month.

As there were some ongoing follow up practices, contractor was reminded to regularly review and rectify the discrepancy once found and maintain good site condition. The contractor implemented various environmental mitigation measures as recommended in the Environmental Permit.

14 Future Key Issues and Recommendations

According to the forecasted site activities, key environmental issues to be considered should at least include the following items:

- Site water control and relevant protective measures
- Dust suppression
- Noise control
- Control and disposal for construction wastes generated from works

Tree protective measures for tree planting and transplanting should be implemented such as tree protection zone and regular watering.

Conclusions

Tree retain, transplanting works and stream course diversion works were major site activities being carried out within this reporting period.

Regular site meetings and inspection audits led by the seniors for discussing site environmental matters were held among Contractor and the ET on weekly basis. Also monthly site meeting and inspection audits with the above parties, IEC and EPD were carried out on 12th Dec 2012.

No exceedance was recorded for Noise, Water and Air during the reporting period.

Also, there was no notification of summons, formal prosecution or complaints being recorded during the reporting period.

ET has reminded the contractor to provide environmental pollution control measures wherever necessary, and to keep a good environmental management at site practice.

The ET will continue to implement the environmental monitoring & audit programme in accordance with the PS and Environmental Permit requirements.

Appendix A

Construction Master Programme and Site Location Plan

Appendix B

Key Personal Contact Information Chart

Key Personal Contact Information Chart

Organization Name	Role	Name	Telephone	Fax Number
ENVIRON Hong Kong Limited	Independent Environmental Checker (IEC)	Mr. Tong Cheng	3743 0705	3548 6988
Hip Seng Construction Company Limited	Main Contractor	Mr. Martin Wong	3110 2608	3110 2606
Environmental Pioneers & Solutions Limited	Environmental Team (ET)	Ms. Goldie Fung	2556 9172	2856 2010

Appendix C

Calibration Certificates for Measuring Instruments



Calibration Certificate

Certificate No. 21290

Page 1 of 2 Pages

Customer : Environmental Pioneers and Solutions Limited

Address : Flat A, 19/F., Chai Wan Industrial Centre Building, 21 Lee Chung Street, Chai Wan, HK.

Order No. : Q20468

Date of receipt : 2-Mar-12

Item Tested

Description : Sound Level Calibrator

Manufacturer : Svantek

Model : SV30A

Serial No. : 7908

Test Conditions

Date of Test : 5-Mar-12

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure : F21, Z02.

Test Results

All results were within the IEC 942 Class 1 specification.

The results are shown in the attached page(s).

Main Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S014	Spectrum Analyzer	13535	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	15136	NIM-PRC & SCL-HKSAR
S041	Universal Counter	15610	SCL-HKSAR
S206	Sound Level Meter	16338	SCL-HKSAR

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI).

The test results apply to the above Unit-Under-Test only

Calibrated by : 

P. F. Wong

Approved by : 

Dorothy Cheuk

Date: 7-Mar-12

This Certificate is issued by:
Hong Kong Calibration Ltd.

Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong.
Tel: 2425 8801 Fax: 2425 8646



Calibration Certificate

Certificate No. 21290

Page 2 of 2 Pages

Results :

1. Level Accuracy

UUT Nominal Value (dB)	Measured Value (dB)	IEC 942 Class 1 Spec.
94	94.10	± 0.3 dB
114	114.18	

Uncertainty : ± 0.1 dB

2. Frequency

UUT Nominal Value	Measured Value	IEC 942 Class 1 Spec.
1 kHz	1.000 kHz	± 2 %

Uncertainty : ± 3.6 x 10⁻⁶

3. Level Stability : 0.0 dB

IEC 942 Class 1 Spec. : ± 0.1 dB

Uncertainty : ± 0.01 dB

4. Total Harmonic Distortion : < 0.8 %

IEC 942 Class 1 Spec. : < 3 %

Uncertainty : ± 2.3 % of reading

Remark : 1. UUT : Unit-Under-Test

2. The above measured values are the mean of 3 measurements.

3. The uncertainty claimed is for a confidence probability of not less than 95%.

4. Atmospheric Pressure : 1001 hPa.

----- END -----



Calibration Certificate

Certificate No. 21289

Page 1 of 3 Pages

Customer : Environmental Pioneers and Solutions Limited

Address : Flat A, 19/F., Chai Wan Industrial Centre Building, 21 Lee Chung Street, Chai Wan, HK.

Order No. : Q20468

Date of receipt : 2-Mar-12

Item Tested

Description : Digital Sound Level Meter

Manufacturer : SVAN

Model : 949

Serial No. : 8571

Test Conditions

Date of Test : 5-Mar-12

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure: Z01.

Test Results

All results were within the IEC 651 Type 1 & IEC 804 Type 1 specification after adjustment.

The results are shown in the attached page(s).

Main Test equipment used:


<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S017A	Multi-Function Generator	07279	SCL-HKSAR
S024	Sound Level Calibrator	15136	NIM-PRC & SCL-HKSAR

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI).

The test results apply to the above Unit-Under-Test only

Calibrated by : 
P. F. Wong

Approved by : 
Dorothy Cheuk

This Certificate is issued by:
Hong Kong Calibration Ltd.

Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong.
Tel: 2425 8801 Fax: 2425 8646

Date: 7-Mar-12



Calibration Certificate

Certificate No. 21289

Page 2 of 3 Pages

Results :

1. SPL Accuracy

Level Range	UUT Setting			Applied Value (dB)	UUT Reading (dB)	
	Octave Filter	Weight	Response		Before adjust	After adjust
105 dB	OFF	A	Fast	94.0	*92.0	94.0
			Slow		--	94.0
		C	Fast		--	94.0
130 dB	OFF	A	Fast	94.0	--	94.0
			Slow		--	94.0
		C	Fast		--	94.0
	OFF	A	Fast	114.0	--	114.1
			Slow		--	114.1
		C	Fast		--	114.1

IEC 651 Type 1 Spec. : ± 0.7 dB

Uncertainty : ± 0.1 dB

2. Level Stability : 0.0 dB

IEC 651 Type 1 Spec. : ± 0.3 dB

Uncertainty : ± 0.01 dB

3. Linearity

3.1 Level Linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec. (inside Primary)
130	114.0	114.0	0.0	± 0.7 dB
	104.0	104.0	0.0	
	94.0	94.0 (Ref.)	--	
105	84.0	84.0	0.0	
	74.0	74.0	0.0	
	64.0	64.0	0.0	
	54.0	54.0	0.0	

Uncertainty : ± 0.1 dB



Calibration Certificate

Certificate No. 21289

Page 3 of 3 Pages

3.2 Differential level linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec.
130	84.0	84.0	0.0	± 0.4 dB
	94.0	94.0 (Ref.)	0.0	
	95.0	95.0	0.0	± 0.2 dB

Uncertainty : ± 0.1 dB

4. Frequency Weighting

A weighting

Frequency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5 Hz	-40.4	- 39.4 dB, ± 1.5 dB
63 Hz	-27.2	- 26.2 dB, ± 1.5 dB
125 Hz	-17.0	- 16.1 dB, ± 1 dB
250 Hz	-9.4	- 8.6 dB, ± 1 dB
500 Hz	-2.6	- 3.2 dB, ± 1 dB
1 kHz	0.0 (Ref)	0 dB, ± 1 dB
2 kHz	+1.8	+ 1.2 dB, ± 1 dB
4 kHz	+1.8	+ 1.0 dB, ± 1 dB
8 kHz	-0.4	- 1.1 dB, + 1.5 dB ~ -3 dB
16 kHz	-6.3	- 6.6 dB, + 3 dB ~ -∞

Uncertainty : ± 0.1 dB

5. Time Averaging

Applied Burst duty Factor	Applied Leq. Value (dB)	UUT Reading (dB)	IEC 804 Type 1 Spec.
continuous	50.0	--	--
1/10	50.0	50.2	± 0.5 dB
1/10 ²	50.0	49.8	
1/10 ³	50.0	50.1	± 1.0 dB
1/10 ⁴	50.0	49.9	

Uncertainty : ± 0.1 dB

Remarks : 1. UUT : Unit-Under-Test

2. The uncertainty claimed is for a confidence probability of not less than 95%.

3. Atmospheric Pressure : 1 001 hPa.

4. *Out of specification.

----- END -----

FACTORY CALIBRATION DATA OF THE SVAN 955 No. 27301

with preamplifier SVANTEK type SV12L No. 25734 and microphone ACO type 7052E No. 49607

1. CALIBRATION (electrical)

LEVEL METER; Characteristic: Z; $f_{sm}=1000\text{Hz}$

Nominal result [dB]	Indication [dB]	Error [dB]
114.0	114.0	0.0

2. CALIBRATION* (acoustical)

LEVEL METER; Range: High; Reference frequency: 1000Hz; Sound Pressure Level: 113.89 dB.

Characteristic	Correct value [dB]	Indication [dB]	Error [dB]
Z	113.63	113.56	-0.07
A	113.63	113.58	-0.05
C	113.63	113.58	-0.05

Calibration measured with the microphone ACO type 7052E No. 49607. Calibration factor: 1.16 dB.

3. LINEARITY TEST* (electrical)

LEVEL METER; Characteristic: A; $f_{sm}=31.5\text{ Hz}$

Nominal result [dB]	25.0	26.0	28.0	30.0	40.0	60.0	80.0	98.0
Error [dB]	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0

LEVEL METER; Characteristic: A; $f_{sm}=1000\text{ Hz}$

Nominal result [dB]	25.0	26.0	28.0	30.0	40.0	60.0	80.0	100.0	120.0	138.0
Error [dB]	0.1	0.1	0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.0

LEVEL METER; Characteristic: A; $f_{sm}=8000\text{ Hz}$

Nominal result [dB]	25.0	26.0	28.0	30.0	40.0	60.0	80.0	100.0	120.0	137.0
Error [dB]	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0

4. TONEBURST RESPONSE* (electrical)

LEVEL METER; Characteristic: A; $f_{sm}=4000\text{ Hz}$; Burst duration: 2s;

Steady level nominal result = 135dB

Result	Detector	Duration [ms]	1000	500	200	100	50	20	10	5	2	1	0.5	0.25
MAX	Fast	Indication [dB]	135.0	134.9	134.0	132.4	130.2	126.7	123.8	120.9	117.0	113.9	110.9	107.9
		Error [dB]	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	-0.1	-0.1	-0.1
	Slow	Indication [dB]	132.9	130.9	127.5	124.7	121.8	117.9	114.9	111.9	107.9	-	-	-
		Error [dB]	-0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-	-	-
SEL	-	Indication [dB]	135.0	132.0	128.0	125.0	122.0	118.0	115.0	112.0	108.0	104.9	101.9	98.9
		Error [dB]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1

Steady level nominal result = 55dB

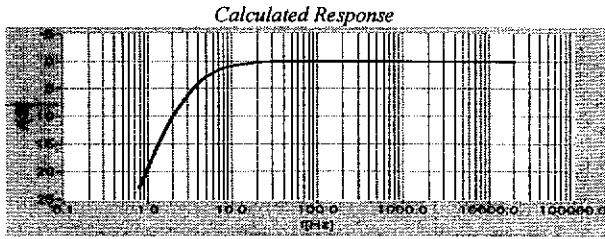
Result	Detector	Duration [ms]	1000	500	200	100	50	20	10	5	2
MAX	Fast	Indication [dB]	55.0	54.9	54.0	52.4	50.1	46.7	43.8	40.9	36.9
		Error [dB]	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0	-0.1
	Slow	Indication [dB]	52.9	50.8	47.4	44.6	41.7	37.8	34.8	31.9	27.8
		Error [dB]	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	-0.2
SEL	-	Indication [dB]	55.0	51.9	48.0	45.0	42.0	38.0	35.0	32.0	28.0
		Error [dB]	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Steady level nominal result = 35dB

Result	Detector	Duration [ms]	1000	500	200
MAX	Fast	Indication [dB]	35.0	34.9	34.0
		Error [dB]	0.0	-0.0	0.0
	Slow	Indication [dB]	32.9	30.8	27.4
		Error [dB]	-0.1	-0.1	-0.2
SEL	-	Indication [dB]	35.0	32.0	28.1
		Error [dB]	0.0	0.0	0.1

5. FREQUENCY RESPONSE* (electrical)

LEVEL METER; Characteristic: Z; Nominal result (1kHz)=135 dB;



Measured Response (f-frequency, A-attenuation)

f [Hz]	A [dB]	f [Hz]	A [dB]	f [Hz]	A [dB]
10	0.9	63	0.0	4000	0.0
12.5	0.6	125	0.0	8000	0.1
16	0.4	250	0.0	16000	0.0
20	0.3	500	0.0	20000	0.2
25	0.2	1000	0.0		
31.5	0.1	2000	0.0		

All frequencies are nominal center values for the 1/3 octave band

6. INTERNAL NOISE LEVEL* (electrical - compensated)

LEVEL METER; Backlight – off; Calibration factor: 0dB

Characteristic	Z	A	C
Indication [dB]	≤ 25	≤ 14	≤ 15

* measured with preamplifier SVANTEK type SV12L No. 25734.

7. INTERNAL NOISE LEVEL (acoustical - compensated)

LEVEL METER; Range: LOW; Backlight – off

Characteristic	A
Indication [dB]	<15

Noise measured in special chamber, with reference microphone G.R.A.S type 40AN No. 73421

ENVIRONMENTAL CONDITIONS

Temperature	Relative humidity	Ambient pressure
24.2 °C	14 %	1027 hPa

TEST EQUIPMENT

Item	Manufacturer	Model	Serial no.	Description
1.	SVANTEK	SVAN 401	87	Signal generator
2.	SVANTEK	SVAN 912A	6120	Sound & Vibration Analyser
3.	KEITHLEY	2000	0910165	Digital multimeter
4.	SVANTEK	SV30A	5369	Acoustic calibrator
5.	SVANTEK	ST02	-	Microphone equivalent electrical impedance (18pF)

CONFORMITY & TEST DECLARATION

1. Herewith Svantek company declares that this instrument has been calibrated and tested in compliance with the internal ISO9001 procedures and meets all specification given in the Manual(s) or respectively surpass them.
2. The acoustic calibration was performed using the Sound Calibrator and is traceable to the GUM (Central Office of Measures) reference standard - sound level calibrator type 4231 No 2292773.
3. The information appearing on this sheet has been compiled specifically for this instrument. This form is produced with advanced equipment & procedures which permit comprehensive quality assurance verification of all data supplied herein.
4. This calibration sheet shall not be reproduced except in full, without written permission of the SVANTEK Ltd.

Calibration specialist: Anna Talecka 

Test date: 2012-01-31



ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MR ALLEN CHAN
CLIENT: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD
ADDRESS: FLAT 19A, CHAI WAN INDUSTRIAL CENTRE BUILDING,
20 LEE CHUNG STREET,
CHAI WAN,
HONG KONG.

WORK ORDER: HK1227602
LABORATORY: HONG KONG
DATE RECEIVED: 15/10/2012
DATE OF ISSUE: 16/10/2012

PROJECT: --

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.

Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of ALS will be followed.

Scope of Test: Conductivity, Dissolved Oxygen, pH, Temperature and Turbidity
Description: Multi-meter
Brand Name: TOA-DKK
Model No.: WMS-24
Serial No.: 685940
Equipment No.: --
Date of Calibration: 15 October, 2012

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

Address

ALS Technichem (HK) Pty Ltd
11/F Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung
HONG KONG

Phone: 852-2610 1044
Fax: 852-2610 2021
Email: hongkong@alsglobal.com


Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

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Page 1 of 3

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ALS TECHNICHEM (HK) PTY LTD Part of the ALS Laboratory Group A Campbell Brothers Limited Company

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1227602
Date of Issue: 16/10/2012
Client: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD



Description: Multi-meter
Brand Name: TOA-DKK
Model No.: WMS-24
Serial No.: 685940
Equipment No.: --

Date of Calibration: 15 October, 2012 **Date of next Calibration:** 15 January, 2013

Parameters:

Conductivity

Method Ref: APHA (21st edition), 2510B

Expected Reading (uS/cm)	Displayed Reading (uS/cm)	Tolerance (%)
146.9	141.0	-4.0
6667	6460	-3.1
12890	12900	0.1
58670	59000	0.6
Tolerance Limit (%)		10.0

Dissolved Oxygen

Method Ref: APHA (21st edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.55	3.42	-0.13
5.01	5.00	-0.01
7.95	7.93	-0.02
Tolerance Limit (±mg/L)		0.20

pH Value

Method Ref: APHA (21st edition), 4500H:B

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.00	0.00
7.0	7.00	0.00
10.0	10.03	0.03
Tolerance Limit (±unit)		0.20

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical

Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
10.0	10.1	0.1
23.5	23.5	0.0
40.5	40.7	0.2
Tolerance Limit (°C)		2.0


 Mr Chan Kwok Fai, Godfrey
 Laboratory Manager - Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1227602
Date of Issue: 16/10/2012
Client: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD



Description: Multi-meter
Brand Name: TOA-DKK
Model No.: WMS-24
Serial No.: 685940
Equipment No.: --

Date of Calibration: 15 October, 2012 **Date of next Calibration:** 15 January, 2013

Parameters:

Turbidity

Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.0	--
4	3.7	-7.5
40	41.8	4.5
80	82.6	3.2
400	432.8	8.2
800	793.6	-0.8
	Tolerance Limit ($\pm\%$)	10.0


Mr. Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

CALIBRATION CERTIFICATE

Date: January 11, 2012

Equipment Name	:	Laser Dust Monitor, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	095027
Sensitivity	:	0.001 mg/m ³
Sensitivity Adjustment	:	463 CPM
Scale Setting	:	January 5, 2012

We hereby certify that the above mentioned instrument has been calibrated satisfactory.

Sincerely

SIBATA SCIENTIFIC TECHNOLOGY LTD.

Kentaro Togo

Overseas Sales Division



Calibration Certificate

Certificate No. **24181**

Page 1 of 2 Pages

Customer : Environmental Pioneers and Solutions Limited

Address : Flat A, 19/F., Chai Wan Industrial Centre Building, 21 Lee Chung Street, Chai Wan, HK.

Order No. : Q21644

Date of receipt : 3-Jul-12

Item Tested

Description : Laser Dust Monitor

Manufacturer : SIBATA

Model : LD-3B

Serial No. : 954254

Test Conditions

Date of Test : 5-Jul-12 ~13-Jul-12

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure : Manufacturer recommended method (gravimetric), Z28.

Test Results

The results are shown in the attached page(s).

Main Test equipment used:

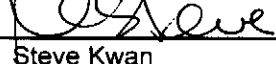
<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S136B	Stop Watch	13184	NIM-PRC
S156	Analytical Balance	00352	NIM-PRC
S201	Std. Test Dust	61291	NIST
S207B	Std. Flowmeter	20588	NIM-PRC

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI).

The test results apply to the above Unit-Under-Test only

Calibrated by : 
Dorothy Cheuk

Approved by : 
Steve Kwan

Date: 23-Jul-12



Calibration Certificate

Certificate No. 24181

Page 2 of 2 Pages

Results :

Applied Value ($\mu\text{g}/\text{m}^3$)	UUT Measured Value (K=1.3) ($\mu\text{g}/\text{m}^3$), (cpm)
1225.3	1266.2

- Remarks :
1. UUT : Unit-Under-Test
 2. Uncertainty $\pm 15\%$, for a confidence probability of not less than 95%.
 3. The results were the mean of 3 measurements,
 4. ISO 12103-1 A1 respirable standard test dust was used for the calibration.
 5. The K-Factor had been adjusted from 2.0 to 1.3

----- END -----



TISCH ENVIRONMENTAL, INC.
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 WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - May 17, 2012 Rootsmeter S/N 0438320 Ta (K) - 294
 Operator Tisch Orifice I.D. - 1483 Pa (mm) - 754.38

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER	ORFICE
					DIFF Hg (mm)	DIFF H2O (in.)
1	NA	NA	1.00	1.4140	3.2	2.00
2	NA	NA	1.00	0.9960	6.4	4.00
3	NA	NA	1.00	0.8910	7.9	5.00
4	NA	NA	1.00	0.8510	8.7	5.50
5	NA	NA	1.00	0.7020	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0018	0.7085	1.4185	0.9957	0.7042	0.8829
0.9976	1.0016	2.0061	0.9915	0.9955	1.2486
0.9955	1.1173	2.2429	0.9894	1.1105	1.3959
0.9945	1.1686	2.3524	0.9884	1.1615	1.4641
0.9890	1.4088	2.8371	0.9830	1.4003	1.7657
Qstd slope (m) = 2.02742			Qa slope (m) = 1.26953		
intercept (b) = -0.02027			intercept (b) = -0.01262		
coefficient (r) = 0.99996			coefficient (r) = 0.99996		
y axis = SQRT[H2O(Pa/760) (298/Ta)]			y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

$$Vstd = \text{Diff. Vol}[(Pa - \text{Diff. Hg})/760] (298/Ta)$$

$$Qstd = Vstd/Time$$

$$Va = \text{Diff Vol} [(Pa - \text{Diff Hg})/Pa]$$

$$Qa = Va/Time$$

For subsequent flow rate calculations:

$$Qstd = 1/m\{[\text{SQRT}(H2O(Pa/760) (298/Ta))] - b\}$$

$$Qa = 1/m\{[\text{SQRT} H2O(Ta/Pa)] - b\}$$

Appendix D

Construction Noise Monitoring Data

大成環境科技拓展有限公司
Environmental Pioneers and Solutions Limited

Noise Monitoring Data Sheet

Monitoring Location		N1	N2	N3	N4
Monitoring Method		Freefield	Freefield	Freefield	Façade
Date of Monitoring		1/12/2012	1/12/2012	1/12/2012	1/12/2012
Weather Condition		Overcast	Overcast	Overcast	Overcast
Measurement Start Time (hh:mm)		16:26	14:12	14:05	13:30
Measurement Time Length (mins)		30 mins		30 mins	
SLM Model & S/N		SVAN 955		SVAN 955	
Wind Speed (m/s)		<5, Southeast	<5, East	<5, East	<5, East
Measurement Results	L _{eq} (dB(A))	64.9	64.0	62.5	61.2
	L ₁₀ (dB(A))	64.5	69.3	65.0	63.9
	L ₉₀ (dB(A))	53.5	55.3	57.7	54.9
Major Construction Noise Source(s) During Monitoring		Nil	Nil	Nil	Nil
Other Noise Source(s) During Monitoring		Background noise	Background noise	Background noise	Background noise Traffic noise

Name

Signature

Date

Prepared by: Lai Chi Hang



1/12/2012

大成環境科技拓展有限公司
Environmental Pioneers and Solutions Limited

Noise Monitoring Data Sheet

Monitoring Location		N1	N2	N3	N4
Monitoring Method		Freefield	Freefield	Freefield	Façade
Date of Monitoring		7/12/2012	7/12/2012	7/12/2012	7/12/2012
Weather Condition		Cloudy	Cloudy	Cloudy	Cloudy
Measurement Start Time (hh:mm)		14:17	13:45	9:50	10:24
Measurement Time Length (mins)		30 mins		30 mins	
SLM Model & S/N		SVAN 955		SVAN 955	
Wind Speed (m/s)		<5, North	<5, North	<5, Northeast	<5, Northeast
Measurement Results	L _{eq} (dB(A))	61.1	65.0	68.6	61.1
	L ₁₀ (dB(A))	64.2	67.1	72.7	64.5
	L ₉₀ (dB(A))	55.0	55.3	58.9	53.1
Major Construction Noise Source(s) During Monitoring		Nil	Nil	Nil	Nil
Other Noise Source(s) During Monitoring		Background noise	Background noise	Background noise	Background noise Traffic noise

Name

Signature

Date

Prepared by: Lai Chi Hang



7/12/2012

大成環境科技拓展有限公司
Environmental Pioneers and Solutions Limited

Noise Monitoring Data Sheet

Monitoring Location		N1	N2	N3	N4
Monitoring Method		Freefield	Freefield	Freefield	Façade
Date of Monitoring		13/12/2012	13/12/2012	13/12/2012	13/12/2012
Weather Condition		Cloudy	Cloudy	Cloudy	Cloudy
Measurement Start Time (hh:mm)		13:40	13:02	10:01	10:37
Measurement Time Length (mins)		30 mins		30 mins	
SLM Model & S/N		SVAN 955		SVAN 955	
Wind Speed (m/s)		<5, East	<5, East	<5, East	<5, East
Measurement Results	L _{eq} (dB(A))	59.5	52.9	65.7	61.1
	L ₁₀ (dB(A))	62.7	53.6	69.8	63.9
	L ₉₀ (dB(A))	52.3	50.4	55.8	52.1
Major Construction Noise Source(s) During Monitoring		Nil	Nil	Nil	Nil
Other Noise Source(s) During Monitoring		Background noise	Background noise	Background noise	Background noise Traffic noise

Name

Signature

Date

Prepared by: Lai Chi Hang



13/12/2012

大成環境科技拓展有限公司
Environmental Pioneers and Solutions Limited

Noise Monitoring Data Sheet

Monitoring Location		N1	N2	N3	N4
Monitoring Method		Freefield	Freefield	Freefield	Façade
Date of Monitoring		19/12/2012	19/12/2012	19/12/2012	19/12/2012
Weather Condition		Cloudy	Cloudy	Cloudy	Cloudy
Measurement Start Time (hh:mm)		13:37	13:02	9:42	10:15
Measurement Time Length (mins)		30 mins		30 mins	
SLM Model & S/N		SVAN 955		SVAN 955	
Wind Speed (m/s)		<5, Northeast	<5, Northeast	<5, Northeast	<5, Northeast
Measurement Results	L _{eq} (dB(A))	63.9	61.1	59.5	61.6
	L ₁₀ (dB(A))	66.4	63.2	61.9	64.7
	L ₉₀ (dB(A))	58.6	56.4	52.1	53.9
Major Construction Noise Source(s) During Monitoring		Nil	Nil	Nil	Nil
Other Noise Source(s) During Monitoring		Background noise	Background noise	Background noise	Background noise Traffic noise

Name

Signature

Date

Prepared by: Lai Chi Hang



19/12/2012

大成環境科技拓展有限公司
Environmental Pioneers and Solutions Limited

Noise Monitoring Data Sheet

Monitoring Location		N1	N2	N3	N4
Monitoring Method		Freefield	Freefield	Freefield	Façade
Date of Monitoring		24/12/2012	24/12/2012	24/12/2012	24/12/2012
Weather Condition		Sunny	Sunny	Sunny	Sunny
Measurement Start Time (hh:mm)		13:45	13:08	10:35	10:01
Measurement Time Length (mins)		30 mins		30 mins	
SLM Model & S/N		SVAN 955		SVAN 955	
Wind Speed (m/s)		<5, East	<5, East	<5, East	<5, Northeast
Measurement Results	L _{eq} (dB(A))	63.2	63.9	62.8	62.0
	L ₁₀ (dB(A))	66.3	65.7	66.4	64.9
	L ₉₀ (dB(A))	57.7	56.2	53.5	54.1
Major Construction Noise Source(s) During Monitoring		Nil	Nil	Nil	Nil
Other Noise Source(s) During Monitoring		Background noise	Background noise	Background noise	Background noise Traffic noise

Name

Signature

Date

Prepared by: Andy Tsang



24/12/2012

大成環境科技拓展有限公司
Environmental Pioneers and Solutions Limited

Noise Monitoring Data Sheet

Monitoring Location		N1	N2	N3	N4
Monitoring Method		Freefield	Freefield	Freefield	Façade
Date of Monitoring		29/12/2012	29/12/2012	29/12/2012	29/12/2012
Weather Condition		Cloudy	Cloudy	Cloudy	Cloudy
Measurement Start Time (hh:mm)		13:42	13:08	10:26	9:50
Measurement Time Length (mins)		30 mins		30 mins	
SLM Model & S/N		SVAN 955		SVAN 955	
Wind Speed (m/s)		<5, West	<5, South	<5, East	<5, East
Measurement Results	L _{eq} (dB(A))	61.9	63.2	64.3	62.7
	L ₁₀ (dB(A))	64.4	66.7	66.9	63.7
	L ₉₀ (dB(A))	52.7	55.8	58.4	54.8
Major Construction Noise Source(s) During Monitoring		Nil	Nil	Nil	Nil
Other Noise Source(s) During Monitoring		Background noise	Background noise	Background noise	Background noise Traffic noise

Name

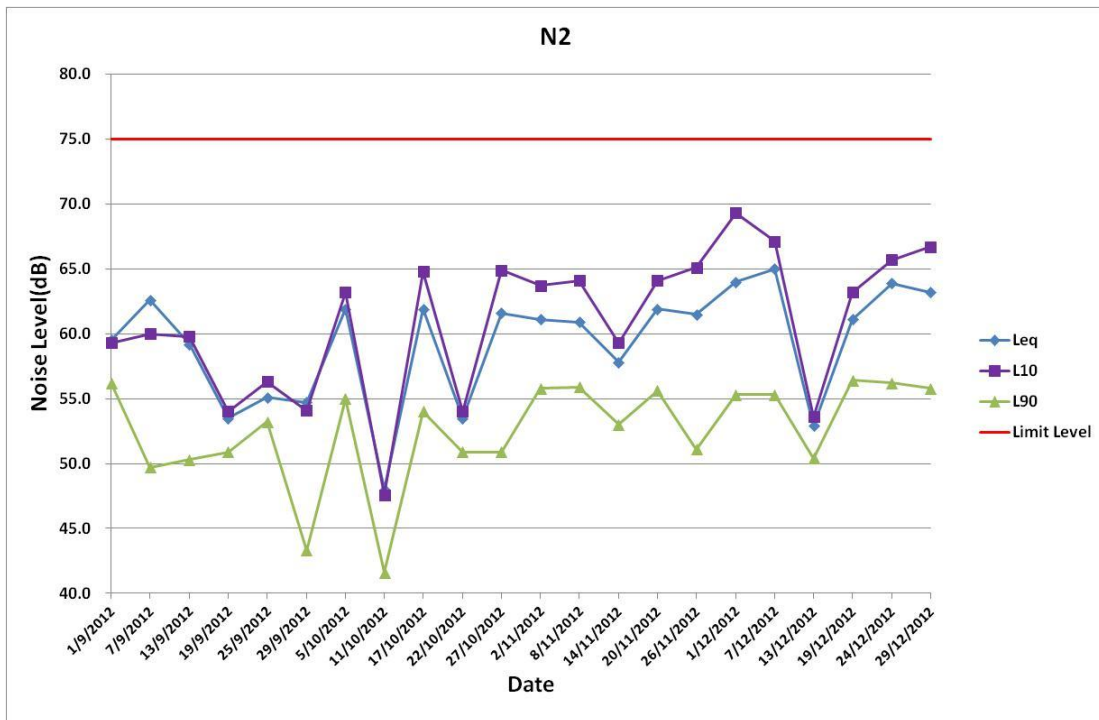
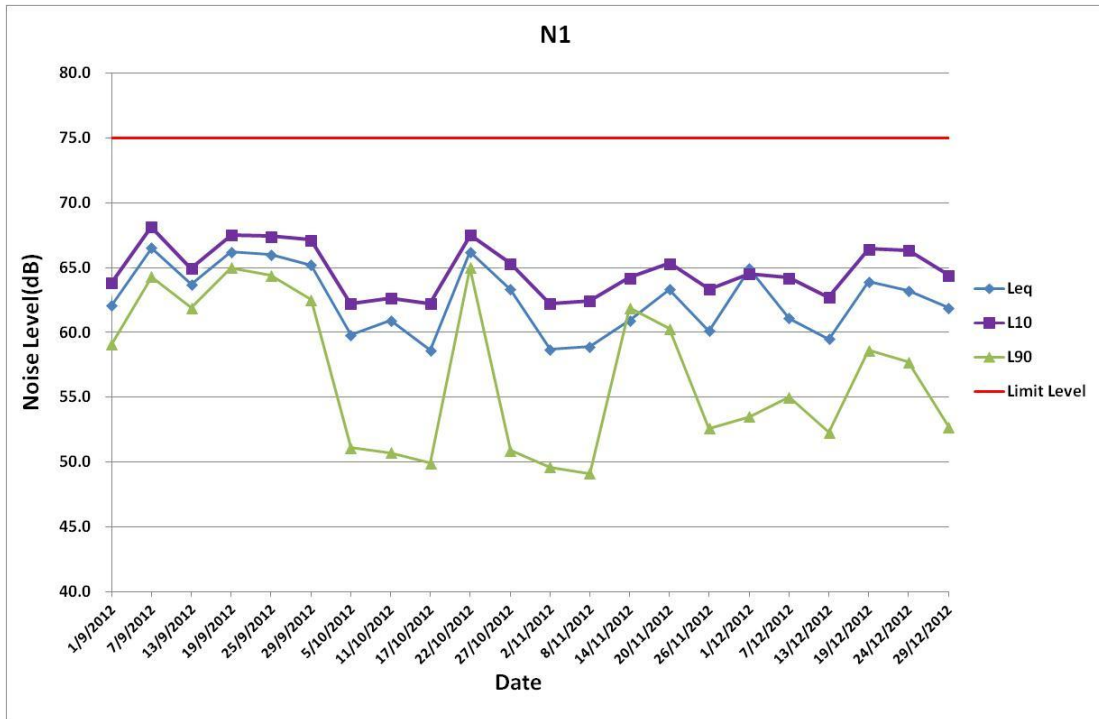
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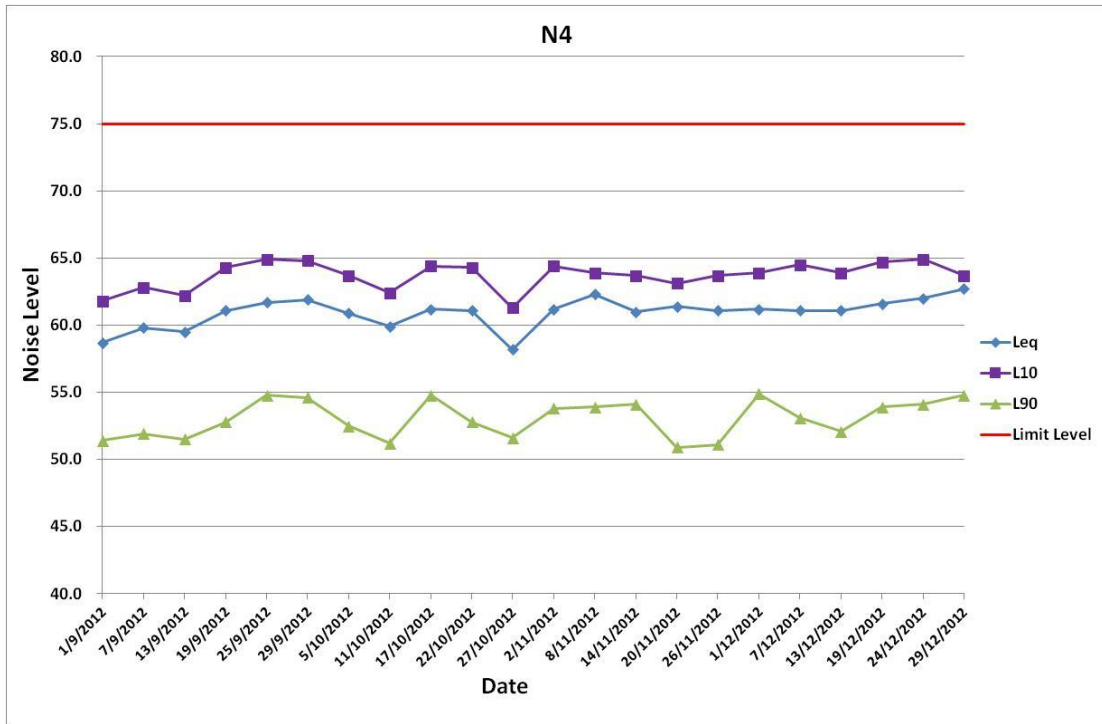
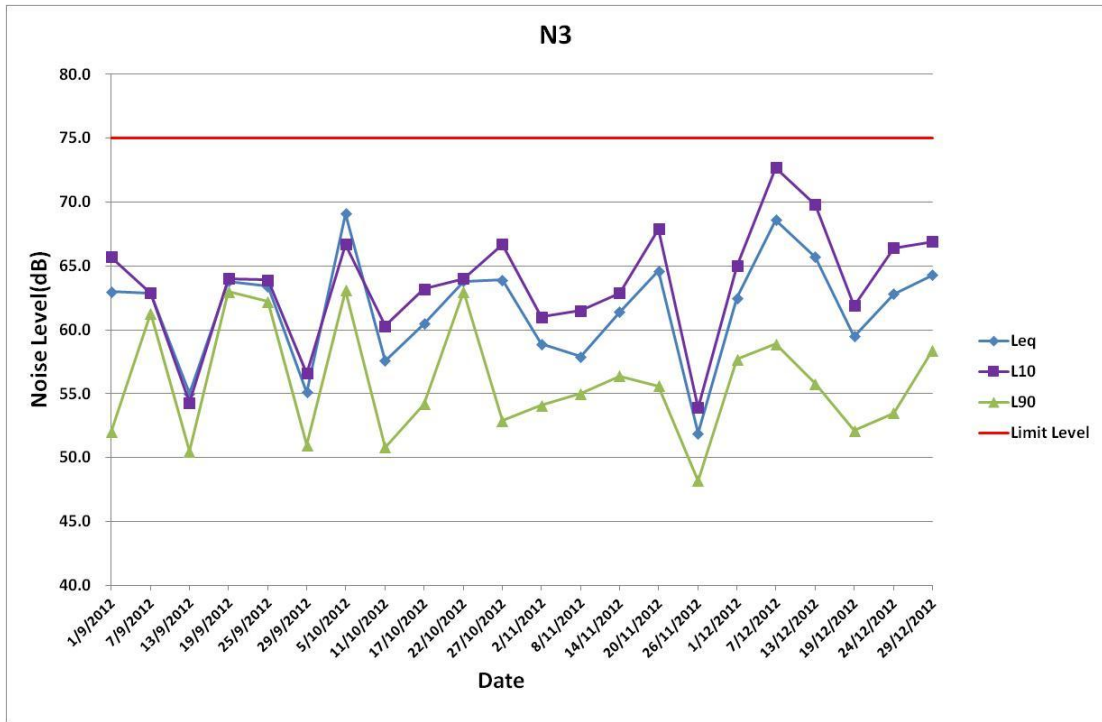
Date

Prepared by: Andy Tsang



29/12/2012





Appendix E

Water Quality Monitoring Data

Environmental Pioneers & Solutions Limited
Water Quality Monitoring - Summary of On-Site Measurement Results

Date of Sampling : 3/12/2012

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	11:00	11:30
Water Depth (m)	<1	<1
pH value	7.00	7.40
Temperature (°C)	23.2	22.9
Turbidity (NTU)	5.6	2.4
DO (mg/L)	7.30	7.20
DO Saturation (%)	82%	80%
Suspended Solids (mg/L)	12.0	12.0

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



3/12/2012

Environmental Pioneers & Solutions Limited
Water Quality Monitoring - Summary of On-Site Measurement Results

Date of Sampling : 5/12/2012

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.30	7.30
Temperature (°C)	22.9	22.7
Turbidity (NTU)	6.7	2.5
DO (mg/L)	6.70	7.52
DO Saturation (%)	75%	85%
Suspended Solids (mg/L)	7.0	5.0

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



5/12/2012

Environmental Pioneers & Solutions Limited
Water Quality Monitoring - Summary of On-Site Measurement Results

Date of Sampling : 7/12/2012

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.00	7.30
Temperature (°C)	23.1	23.5
Turbidity (NTU)	2.90	2.3
DO (mg/L)	8.10	8.10
DO Saturation (%)	81%	79%
Suspended Solids (mg/L)	3.0	2.0

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



7/12/2012

Environmental Pioneers & Solutions Limited
Water Quality Monitoring - Summary of On-Site Measurement Results

Date of Sampling : 10/12/2012

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.20	7.10
Temperature (°C)	22.6	22.2
Turbidity (NTU)	3.4	1.9
DO (mg/L)	7.10	8.00
DO Saturation (%)	74%	81%
Suspended Solids (mg/L)	7.0	2.0

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



10/12/2012

Environmental Pioneers & Solutions Limited
Water Quality Monitoring - Summary of On-Site Measurement Results

Date of Sampling : 12/12/2012

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.10	7.20
Temperature (°C)	23.6	23.3
Turbidity (NTU)	4.2	2.4
DO (mg/L)	7.80	7.30
DO Saturation (%)	79%	74%
Suspended Solids (mg/L)	20.0	2.0

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



12/12/2012

Environmental Pioneers & Solutions Limited
Water Quality Monitoring - Summary of On-Site Measurement Results

Date of Sampling : 14/12/2012

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.10	7.40
Temperature (°C)	22.6	22.1
Turbidity (NTU)	5.9	1.7
DO (mg/L)	7.20	7.40
DO Saturation (%)	75%	76%
Suspended Solids (mg/L)	30.0	2.0

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



14/12/2012

Environmental Pioneers & Solutions Limited
Water Quality Monitoring - Summary of On-Site Measurement Results

Date of Sampling : 17/12/2012

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.30	7.10
Temperature (°C)	22.6	22.8
Turbidity (NTU)	6.2	2.1
DO (mg/L)	7.90	7.00
DO Saturation (%)	80%	76%
Suspended Solids (mg/L)	10.0	5.0

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



17/12/2012

Environmental Pioneers & Solutions Limited
Water Quality Monitoring - Summary of On-Site Measurement Results

Date of Sampling : 19/12/2012

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.00	7.20
Temperature (°C)	22.2	23.1
Turbidity (NTU)	3.7	1.8
DO (mg/L)	7.40	7.80
DO Saturation (%)	78%	79%
Suspended Solids (mg/L)	5.0	5.0


Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



19/12/2012

Environmental Pioneers & Solutions Limited
Water Quality Monitoring - Summary of On-Site Measurement Results

Date of Sampling : 21/12/2012

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.30	7.30
Temperature (°C)	22.9	22.1
Turbidity (NTU)	2.9	2.2
DO (mg/L)	6.90	8.20
DO Saturation (%)	69%	89%
Suspended Solids (mg/L)	6.0	7.0

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



21/12/2012

Environmental Pioneers & Solutions Limited
Water Quality Monitoring - Summary of On-Site Measurement Results

Date of Sampling : 24/12/2012

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.40	7.30
Temperature (°C)	22	21.5
Turbidity (NTU)	4.1	1.7
DO (mg/L)	7.60	7.30
DO Saturation (%)	89%	87%
Suspended Solids (mg/L)	18.0	11.0

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



24/12/2012

Environmental Pioneers & Solutions Limited
Water Quality Monitoring - Summary of On-Site Measurement Results

Date of Sampling : 27/12/2012

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.50	7.10
Temperature (°C)	21.9	21.1
Turbidity (NTU)	3.9	5.9
DO (mg/L)	6.90	6.90
DO Saturation (%)	75%	78%
Suspended Solids (mg/L)	6.0	7.0


Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



27/12/2012

Environmental Pioneers & Solutions Limited
Water Quality Monitoring - Summary of On-Site Measurement Results

Date of Sampling : 29/12/2012

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.20	7.20
Temperature (°C)	22.1	21.5
Turbidity (NTU)	3.4	1.3
DO (mg/L)	7.30	7.10
DO Saturation (%)	88%	82%
Suspended Solids (mg/L)	11.0	2.0

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



29/12/2012

Environmental Pioneers & Solutions Limited
Water Quality Monitoring - Summary of On-Site Measurement Results

Date of Sampling : 31/12/2012

Weather : Rainny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.10	7.30
Temperature (°C)	21.1	21
Turbidity (NTU)	2.1	3.0
DO (mg/L)	6.40	7.70
DO Saturation (%)	74%	86%
Suspended Solids (mg/L)	11.0	2.0

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



31/12/2012



CERTIFICATE OF ANALYSIS

Client	: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
Contact	: MR ALLEN CHAN	Contact	: Chan Kwok Fai, Godfrey	Work Order	: HK1231804
Address	: FLAT A, 19/F, CHAI WAN INDUSTRIAL CENTRE BUILDING, 20 LEE CHUNG STREET, CHAI WAN HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: allenchan@epsil.com.hk	E-mail	: Godfrey.Chan@alsglobal.com	Date Samples Received	: 03-DEC-2012
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 11-DEC-2012
Facsimile	: ----	Facsimile	: +852 2610 2021	No. of samples received	: 4
Project	: TAI PO TSAI	Quote number	: ----	No. of samples analysed	: 4
Order number	: ----				
C-O-C number	: ----				
Site	: ----				

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. 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. The completion date of analysis is: 06-DEC-2012

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

Specific comments for Work Order: **HK1231804**

Sample(s) were picked up from client by ALS Technichem (HK) staff in a chilled condition.

Water sample(s) analysed and reported on an as received basis.

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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics

ALS Laboratory Group

Trading Name: ALS Technichem (HK) Pty Ltd

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong

Tel: +852 2610 1044 Fax: +852 2610 2021 www.alsenviro.com

A Campbell Brothers Limited Company



Analytical Results

Sub-Matrix: WATER

				Client sample ID	W1	W2	W1	W2	
				Client sampling date / time	[30-NOV-2012]	[30-NOV-2012]	[03-DEC-2012]	[03-DEC-2012]	
Compound	CAS Number	LOR	Unit		HK1231804-001	HK1231804-002	HK1231804-003	HK1231804-004	
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		3	9	12	12	



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2634200)								
HK1231776-002	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	6	4	40.0
HK1231804-003	W1	EA025: Suspended Solids (SS)	----	2	mg/L	12	13	9.3

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

Matrix: WATER			Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 2634200)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	95.5	----	85	113	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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



CERTIFICATE OF ANALYSIS

Client	: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
Contact	: MR ALLEN CHAN	Contact	: Chan Kwok Fai, Godfrey	Work Order	: HK1232459
Address	: FLAT A, 19/F, CHAI WAN INDUSTRIAL CENTRE BUILDING, 20 LEE CHUNG STREET, CHAI WAN HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: allenchan@epsil.com.hk	E-mail	: Godfrey.Chan@alsglobal.com	Date Samples Received	: 07-DEC-2012
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 17-DEC-2012
Facsimile	: ----	Facsimile	: +852 2610 2021	No. of samples received	: 4
Project	: TAI PO TSAI	Quote number	: ----	No. of samples analysed	: 4
Order number	: ----				
C-O-C number	: ----				
Site	: ----				

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. 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. The completion date of analysis is: 12-DEC-2012

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

Specific comments for Work Order: **HK1232459**

Sample(s) were picked up from client by ALS Technichem (HK) staff in a chilled condition.

Water sample(s) analysed and reported on an as received basis.

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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics

ALS Laboratory Group

Trading Name: ALS Technichem (HK) Pty Ltd

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong

Tel: +852 2610 1044 Fax: +852 2610 2021 www.alsenviro.com

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Analytical Results

Sub-Matrix: WATER

				Client sample ID	W1	W2	W1	W2	
				Client sampling date / time	[05-DEC-2012]	[05-DEC-2012]	[07-DEC-2012]	[07-DEC-2012]	
Compound	CAS Number	LOR	Unit		HK1232459-001	HK1232459-002	HK1232459-003	HK1232459-004	
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		7	5	3	<2	



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2640905)								
HK1232155-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	15	16	10.2
HK1232272-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
EA/ED: Physical and Aggregate Properties (QC Lot: 2643361)								
HK1232325-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	20	20	5.0
HK1232361-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	16	16	0.0

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

Matrix: WATER			Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 2640905)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	100	----	85	113	----	----
EA/ED: Physical and Aggregate Properties (QC Lot: 2643361)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	104	----	85	113	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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



CERTIFICATE OF ANALYSIS

Client	: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
Contact	: MR ALLEN CHAN	Contact	: Chan Kwok Fai, Godfrey	Work Order	: HK1232940
Address	: FLAT A, 19/F, CHAI WAN INDUSTRIAL CENTRE BUILDING, 20 LEE CHUNG STREET, CHAI WAN HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: allenchan@epsil.com.hk	E-mail	: Godfrey.Chan@alsglobal.com	Date Samples Received	: 12-DEC-2012
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 21-DEC-2012
Facsimile	: ----	Facsimile	: +852 2610 2021	No. of samples received	: 4
Project	: TAI PO TSAI	Quote number	: ----	No. of samples analysed	: 4
Order number	: ----				
C-O-C number	: ----				
Site	: ----				

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. 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. The completion date of analysis is: 17-DEC-2012

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

Specific comments for Work Order: **HK1232940**

Sample(s) were picked up from client by ALS Technichem (HK) staff in a chilled condition.

Water sample(s) analysed and reported on an as received basis.

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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics

ALS Laboratory Group

Trading Name: ALS Technichem (HK) Pty Ltd

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong

Tel: +852 2610 1044 Fax: +852 2610 2021 www.alsenviro.com

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Analytical Results

Sub-Matrix: WATER

				Client sample ID	W1	W2	W1	W2	
				Client sampling date / time	[10-DEC-2012]	[10-DEC-2012]	[12-DEC-2012]	[12-DEC-2012]	
Compound	CAS Number	LOR	Unit		HK1232940-001	HK1232940-002	HK1232940-003	HK1232940-004	
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		7	2	20	2	



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2651359)								
HK1232807-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	6	5	0.0
HK1232934-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0

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

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 2651359)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	94.5	----	85	113	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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



CERTIFICATE OF ANALYSIS

Client	: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
Contact	: MR ALLEN CHAN	Contact	: Chan Kwok Fai, Godfrey	Work Order	: HK1233384
Address	: FLAT A, 19/F, CHAI WAN INDUSTRIAL CENTRE BUILDING, 20 LEE CHUNG STREET, CHAI WAN HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: allenchan@epsl.com.hk	E-mail	: Godfrey.Chan@alsglobal.com		
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: TAI PO TSAI	Quote number	: ----	Date Samples Received	: 17-DEC-2012
Order number	: ----			Issue Date	: 27-DEC-2012
C-O-C number	: ----			No. of samples received	: 4
Site	: ----			No. of samples analysed	: 4

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. 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. The completion date of analysis is: 19-DEC-2012

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

Specific comments for Work Order: **HK1233384**

Sample(s) were picked up from client by ALS Technichem (HK) staff in a chilled condition.

Water sample(s) analysed and reported on an as received basis.

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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics

ALS Laboratory Group

Trading Name: **ALS Technichem (HK) Pty Ltd**

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong

Tel: +852 2610 1044 Fax: +852 2610 2021 www.alsenviro.com

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Analytical Results

Sub-Matrix: WATER

				Client sample ID	W1	W2	W1	W2	
				Client sampling date / time	[14-DEC-2012]	[14-DEC-2012]	[17-DEC-2012]	[17-DEC-2012]	
Compound	CAS Number	LOR	Unit		HK1233384-001	HK1233384-002	HK1233384-003	HK1233384-004	
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		30	2	10	5	



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2656113)								
HK1233318-007	Anonymous	EA025: Suspended Solids (SS)	----	2.0	mg/L	<2.0	<2.0	0.0
HK1233324-004	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	117	123	5.0

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

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 2656113)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	99.0	----	85	113	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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



CERTIFICATE OF ANALYSIS

Client	: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
Contact	: MR ALLEN CHAN	Contact	: Chan Kwok Fai, Godfrey	Work Order	: HK1233973
Address	: FLAT A, 19/F, CHAI WAN INDUSTRIAL CENTRE BUILDING, 20 LEE CHUNG STREET, CHAI WAN HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: allenchan@eps1.com.hk	E-mail	: Godfrey.Chan@alsglobal.com	Date Samples Received	: 21-DEC-2012
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 03-JAN-2013
Facsimile	: ----	Facsimile	: +852 2610 2021	No. of samples received	: 4
Project	: TAI PO TSAI	Quote number	: ----	No. of samples analysed	: 4
Order number	: ----				
C-O-C number	: ----				
Site	: ----				

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. 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. The completion date of analysis is: 28-DEC-2012

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

Specific comments for Work Order: **HK1233973**

Sample(s) were received in an ambient condition.

Water sample(s) analysed and reported on an as received basis.

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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics

ALS Laboratory Group

Trading Name: ALS Technichem (HK) Pty Ltd

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong

Tel: +852 2610 1044 Fax: +852 2610 2021 www.alsenviro.com

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Analytical Results

Sub-Matrix: WATER

				Client sample ID	W1	W2	W1	W2	
				Client sampling date / time	[19-DEC-2012]	[19-DEC-2012]	[21-DEC-2012]	[21-DEC-2012]	
Compound	CAS Number	LOR	Unit		HK1233973-001	HK1233973-002	HK1233973-003	HK1233973-004	
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		5	5	6	7	



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2664076)								
HK1233973-001	W1	EA025: Suspended Solids (SS)	----	2	mg/L	5	6	22.0
EA/ED: Physical and Aggregate Properties (QC Lot: 2667119)								
HK1233952-010	Anonymous	EA025: Suspended Solids (SS)	----	2.0	mg/L	<2.0	<2.0	0.0
HK1234030-002	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	12	13	0.0

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

Matrix: WATER			Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 2664076)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	106	----	85	113	----	----
EA/ED: Physical and Aggregate Properties (QC Lot: 2667119)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	94.5	----	85	113	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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



CERTIFICATE OF ANALYSIS

Client	: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
Contact	: MR ALLEN CHAN	Contact	: Chan Kwok Fai, Godfrey	Work Order	: HK1234375
Address	: FLAT A, 19/F, CHAI WAN INDUSTRIAL CENTRE BUILDING, 20 LEE CHUNG STREET, CHAI WAN HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: allenchan@epsl.com.hk	E-mail	: Godfrey.Chan@alsglobal.com	Date Samples Received	: 27-DEC-2012
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 07-JAN-2013
Facsimile	: ----	Facsimile	: +852 2610 2021	No. of samples received	: 4
Project	: TAI PO TSAI	Quote number	: ----	No. of samples analysed	: 4
Order number	: ----				
C-O-C number	: ----				
Site	: ----				

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. 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. The completion date of analysis is: 03-JAN-2013

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

Specific comments for Work Order: **HK1234375**

Sample(s) were received in an ambient condition.

Water sample(s) analysed and reported on an as received basis.

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This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6.

Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics

ALS Laboratory Group

Trading Name: ALS Technichem (HK) Pty Ltd

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong

Tel: +852 2610 1044 Fax: +852 2610 2021 www.alsenviro.com

A Campbell Brothers Limited Company



Analytical Results

Sub-Matrix: WATER

				Client sample ID	W1	W2	W1	W2	
				Client sampling date / time	[24-DEC-2012]	[24-DEC-2012]	[27-DEC-2012]	[27-DEC-2012]	
Compound	CAS Number	LOR	Unit		HK1234375-001	HK1234375-002	HK1234375-003	HK1234375-004	
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		18	11	6	7	



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2668945)								
HK1234260-002	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
EA/ED: Physical and Aggregate Properties (QC Lot: 2671111)								
HK1234193-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	3	3	0.0
HK1234375-004	W2	EA025: Suspended Solids (SS)	----	2	mg/L	7	7	0.0

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

Matrix: WATER			Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 2668945)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	101	----	85	113	----	----
EA/ED: Physical and Aggregate Properties (QC Lot: 2671111)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	94.0	----	85	113	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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



CERTIFICATE OF ANALYSIS

Client	: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
Contact	: MR ALLEN CHAN	Contact	: Chan Kwok Fai, Godfrey	Work Order	: HK1234616
Address	: FLAT A, 19/F, CHAI WAN INDUSTRIAL CENTRE BUILDING, 20 LEE CHUNG STREET, CHAI WAN HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: allenchan@eps1.com.hk	E-mail	: Godfrey.Chan@alsglobal.com	Date Samples Received	: 31-DEC-2012
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 09-JAN-2013
Facsimile	: ----	Facsimile	: +852 2610 2021	No. of samples received	: 4
Project	: TAI PO TSAI	Quote number	: ----	No. of samples analysed	: 4
Order number	: ----				
C-O-C number	: ----				
Site	: ----				

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. 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. The completion date of analysis is: 08-JAN-2013

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

Specific comments for Work Order: **HK1234616**

Sample(s) were received in an ambient condition.

Water sample(s) analysed and reported on an as received basis.

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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics

ALS Laboratory Group

Trading Name: ALS Technichem (HK) Pty Ltd

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong

Tel: +852 2610 1044 Fax: +852 2610 2021 www.alsenviro.com

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Analytical Results

Sub-Matrix: WATER

				Client sample ID	W1	W2	W1	W2	
				Client sampling date / time	[29-DEC-2012]	[29-DEC-2012]	[31-DEC-2012]	[31-DEC-2012]	
Compound	CAS Number	LOR	Unit		HK1234616-001	HK1234616-002	HK1234616-003	HK1234616-004	
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		11	2	11	2	



Laboratory Duplicate (DUP) Report

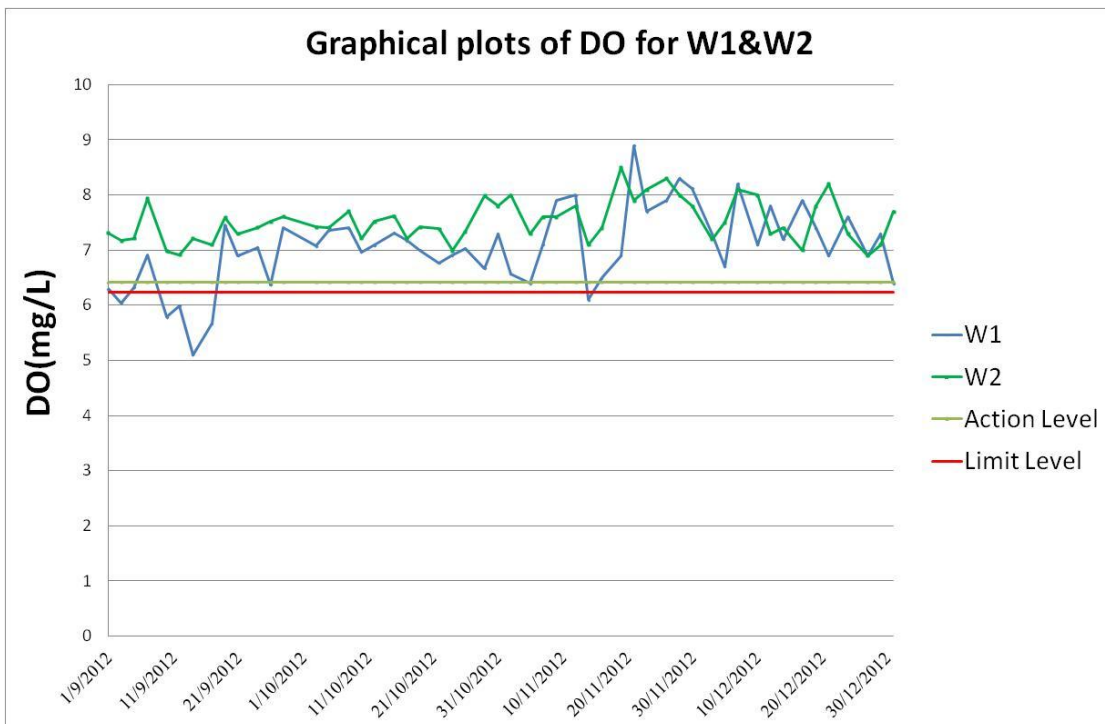
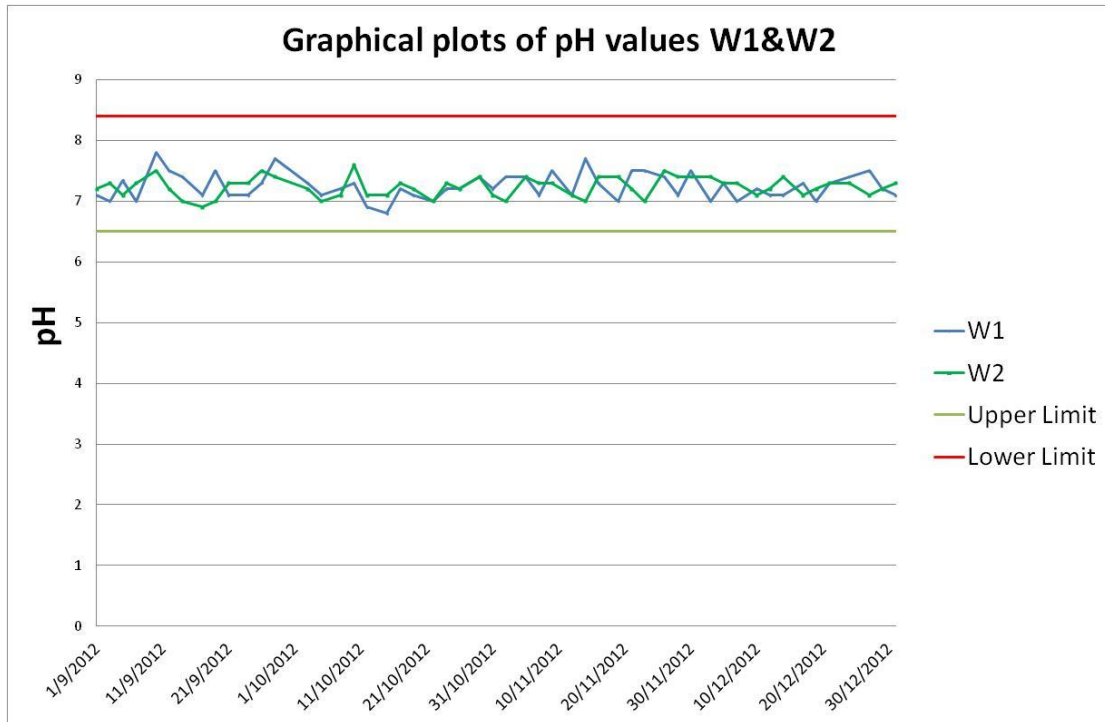
Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2675872)								
HK1233952-013	Anonymous	EA025: Suspended Solids (SS)	----	2.0	mg/L	5.2	4.0	26.1
HK1234585-007	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	15	16	0.0

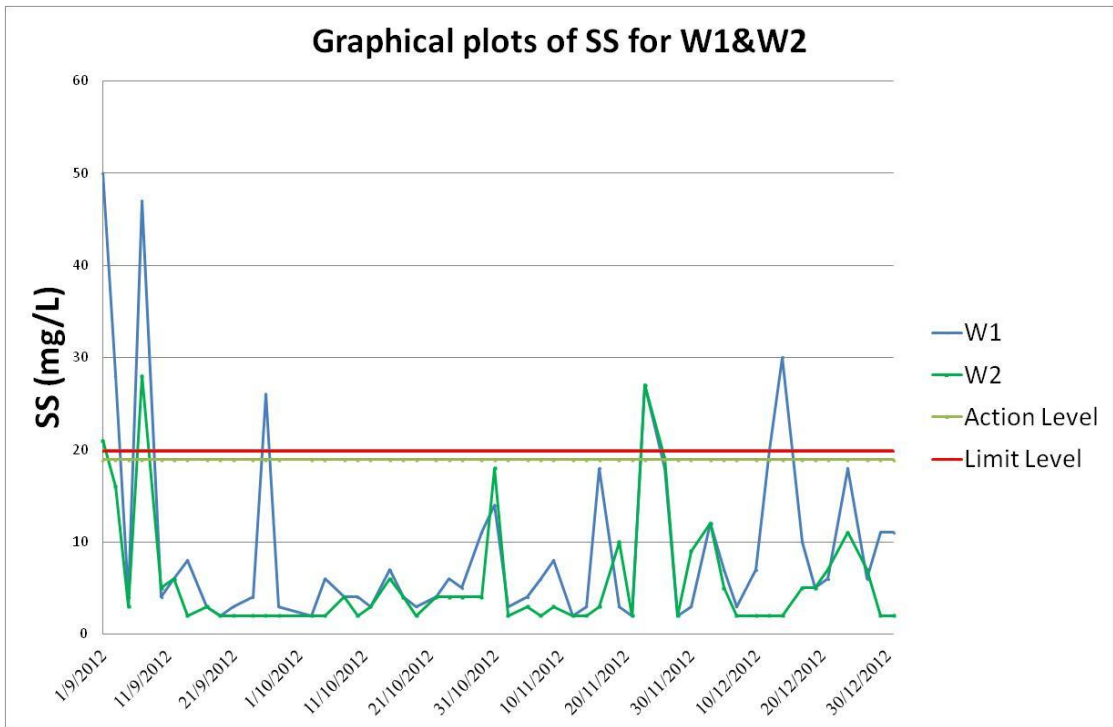
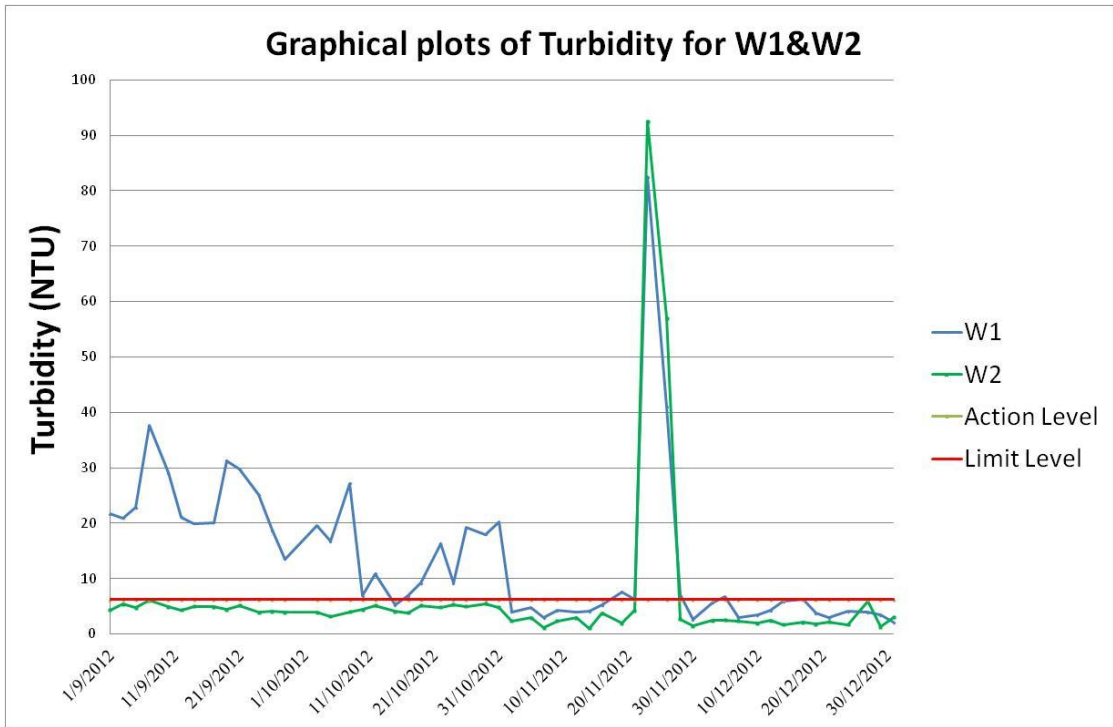
Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 2675872)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	96.0	----	88	110	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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



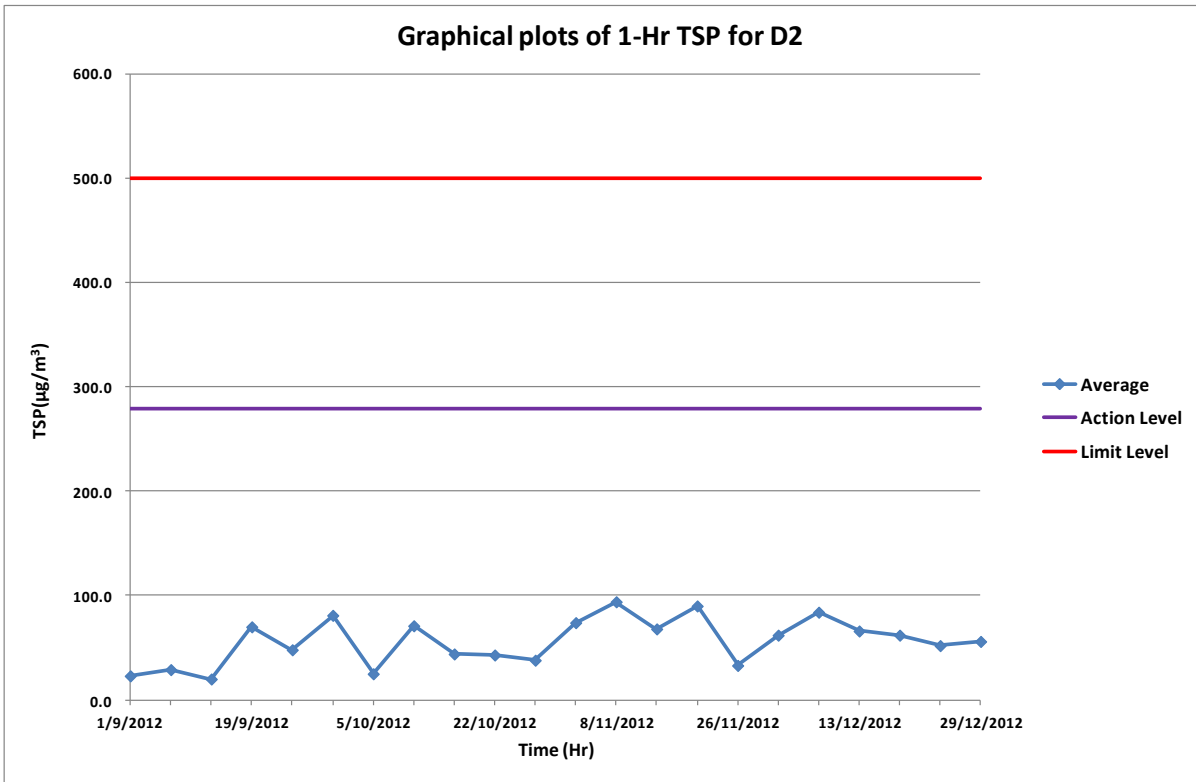
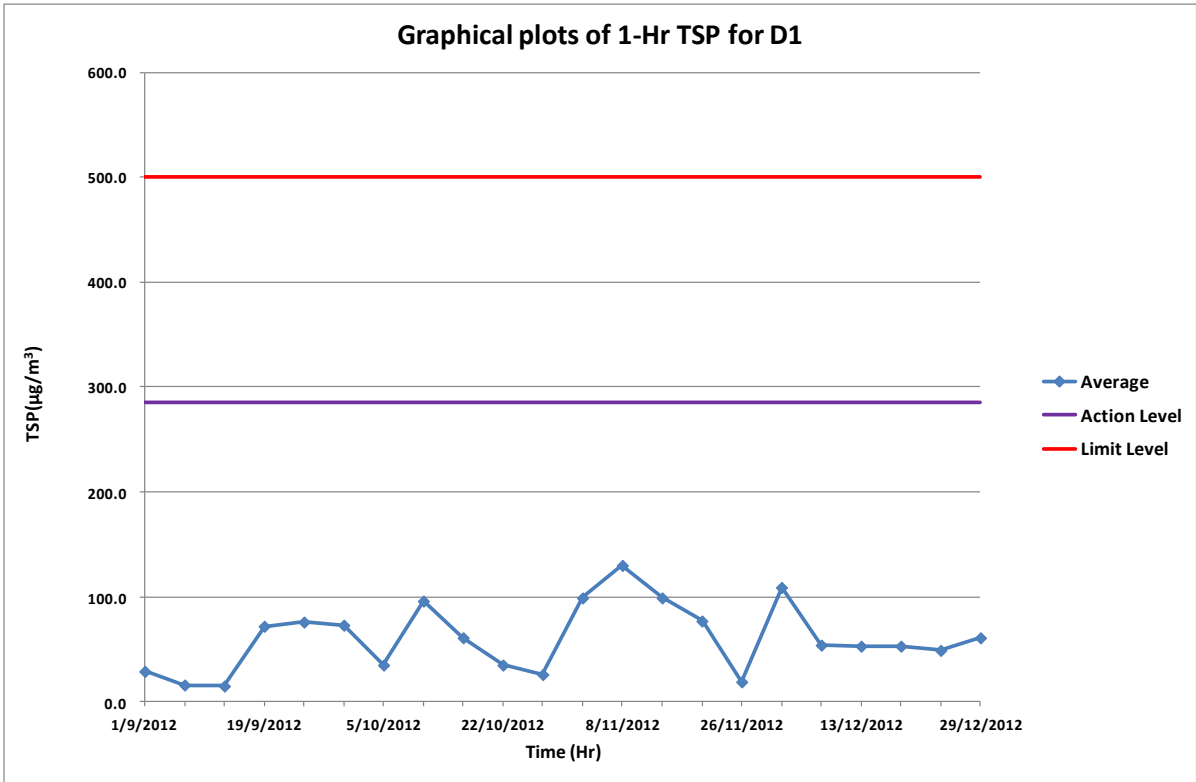


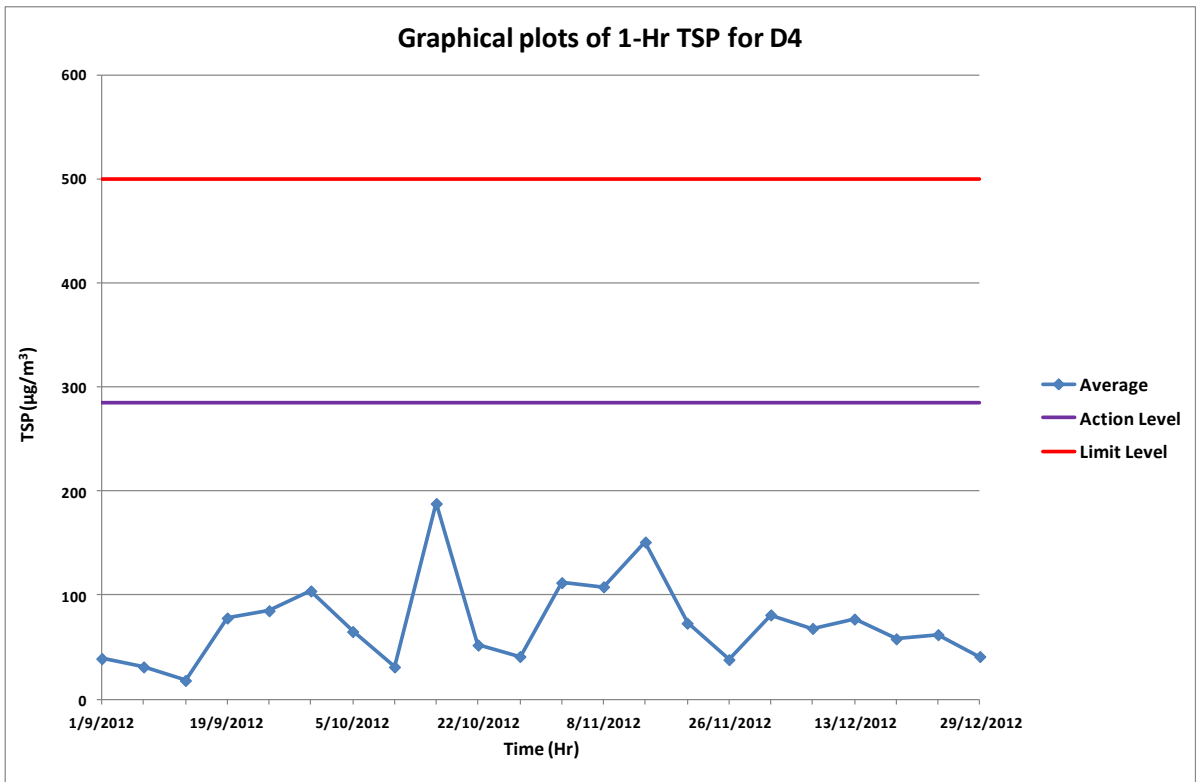
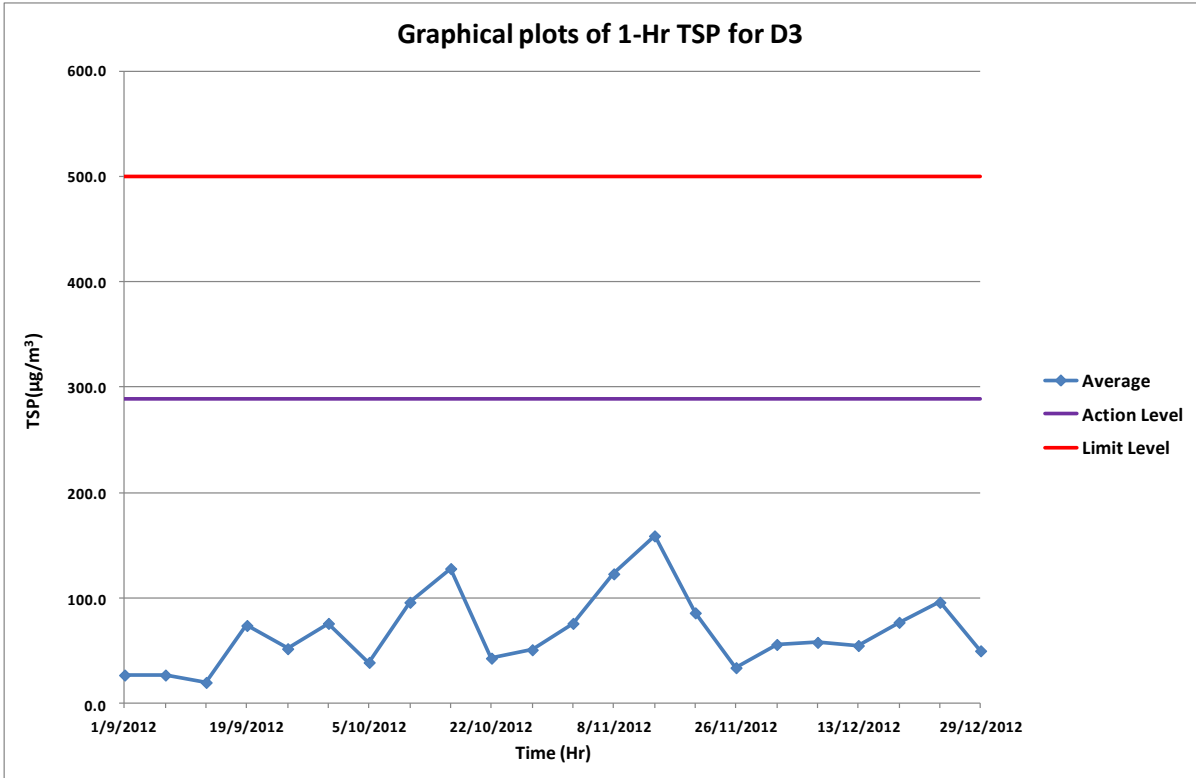
Appendix F

Air Quality Monitoring Data

1-Hr TSP Monitoring Results

		Locations											
		D1			D2			D3			D4		
Date	Duration	Start Time	TSP Level (ug/m3)	Average (ug/m3)	Start Time	TSP Level (ug/m3)	Average (ug/m3)	Start Time	TSP Level (ug/m3)	Average (ug/m3)	Start Time	TSP Level (ug/m3)	Average (ug/m3)
1/12/2012	1 Hour	15:13	106	109	8:59	65	62	9:05	59	56	13:08	60	81
		16:13	112		9:59	68		10:05	48		14:08	78	
		17:13	108		10:59	54		11:05	62		15:08	105	
7/12/2012	1 Hour	9:00	56	54	13:00	88	84	8:45	54	58	8:27	67	68
		10:00	47		14:00	85		9:45	59		9:27	63	
		11:00	58		15:00	78		10:45	60		10:27	74	
13/12/2012	1 Hour	8:30	71	53	11:46	60	66	12:38	50	55	8:31	98	77
		9:30	48		12:46	69		13:38	59		9:31	71	
		10:30	41		13:46	69		14:38	56		10:31	62	
19/12/2012	1 Hour	8:30	56	53	12:36	54	62	12:00	59	77	8:40	63	58
		9:30	53		13:36	61		13:00	78		9:40	58	
		10:30	50		14:36	72		14:00	95		10:40	53	
24/12/2012	1 Hour	13:45	49	49	9:03	53	52	9:01	79	96	13:24	60	62
		14:45	47		10:03	47		10:01	99		14:24	65	
		15:45	51		11:03	56		11:01	111		15:24	61	
29/12/2012	1 Hour	8:59	64	61	13:14	61	56	9:02	51	50	13:00	41	41
		9:59	52		14:14	58		10:02	52		14:00	43	
		10:59	68		15:14	49		11:02	47		15:00	38	





D1 24-Hrs TSP Monitoring Results

		Wt. of paper (g)			Elapse Time			Flow Rate (CFM)			Total Volume (m ³)	TSP Concentration (µg/m ³)	Weather
Sampling Date	Paper No.	Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate			
01/12/12	204379	2.8001	2.8454	0.0453	736.87	760.93	24.06	42	42	42.0	1716.88	26.3850	Cloudy
07/12/12	204383	2.7863	2.9540	0.1677	760.93	784.99	24.06	42	42	42.0	1716.88	97.6769	Cloudy
13/12/12	204387	2.7646	2.8308	0.0662	784.99	809.02	24.03	42	42	42.0	1714.74	38.6064	Sunny
19/12/12	204391	2.7561	2.8676	0.1115	809.02	833.02	24.00	42	42	42.0	1712.60	65.1056	Cloudy
24/12/12	204395	2.7553	2.8622	0.1069	833.02	857.04	24.02	42	42	42.0	1714.03	62.3676	Cloudy
29/12/12	204401	2.7616	2.8105	0.0489	857.04	880.98	23.94	42	42	42.0	1708.32	28.6246	Cloudy

D2 24-Hrs TSP Monitoring Results

		Wt. of paper (g)			Elapse Time			Flow Rate (CFM)			Total Volume (m ³)	TSP Concentration (µg/m ³)	Weather
Sampling Date	Paper No.	Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate			
01/12/12	204380	2.7943	2.8467	0.0524	1049.15	1072.76	23.61	42	42	42.0	1684.77	31.1021	Cloudy
07/12/12	204384	2.7873	2.9996	0.2123	1072.76	1096.48	23.72	42	42	42.0	1692.62	125.4267	Cloudy
13/12/12	204388	2.7724	2.8214	0.0490	1096.48	1120.12	23.64	42	42	42.0	1686.91	29.0471	Sunny
19/12/12	204392	2.7525	2.8580	0.1055	1120.12	1143.73	23.61	42	42	42.0	1684.77	62.6197	Cloudy
24/12/12	204396	2.7599	2.8597	0.0998	1143.73	1167.15	23.42	42	42	42.0	1671.21	59.7170	Cloudy
29/12/12	204402	2.7222	2.7718	0.0496	1167.15	1190.90	23.75	42	42	42.0	1694.76	29.2666	Cloudy

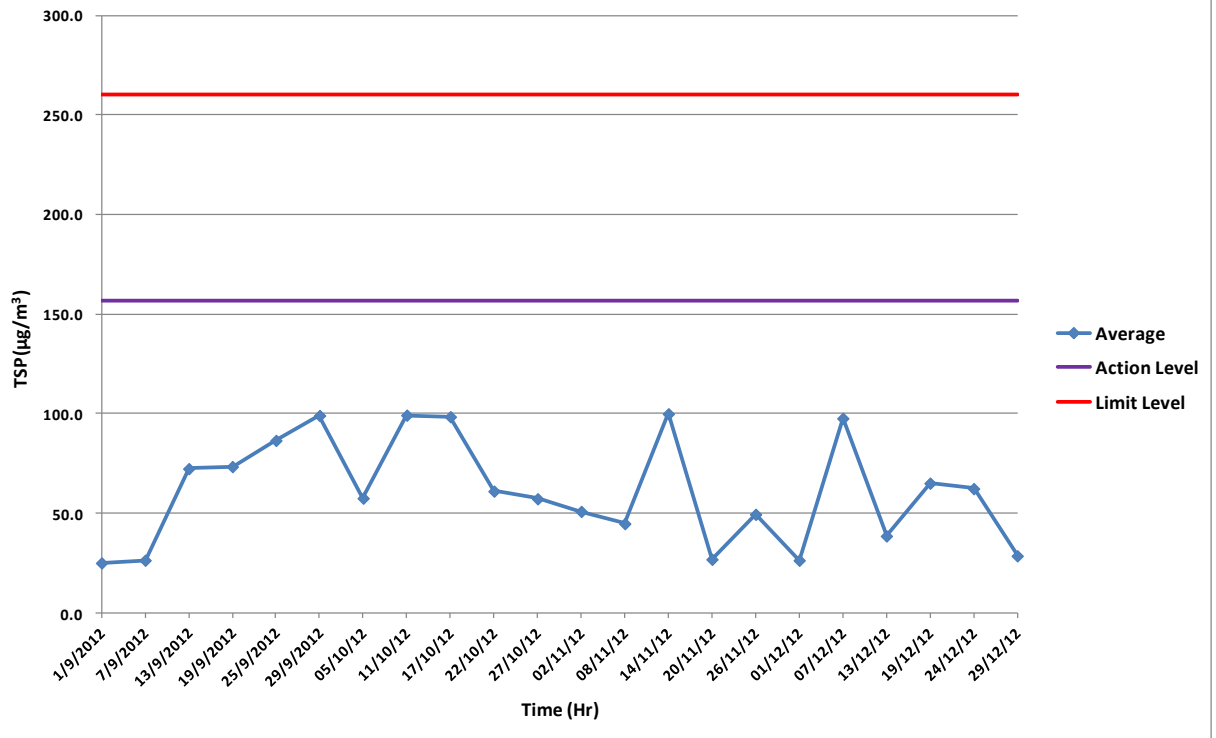
D3 24-Hrs TSP Monitoring Results

Sampling Date	Paper No.	Wt. of paper (g)			Elapse Time			Flow Rate (CFM)			Total Volume (m ³)	TSP Concentration (µg/m ³)	Weather
		Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate			
01/12/12	204381	2.7952	2.9326	0.1374	1038.61	1062.74	24.13	42	42	42.0	1721.88	79.7965	Cloudy
07/12/12	204385	2.7789	2.8431	0.0642	1062.74	1086.81	24.07	42	42	42.0	1717.60	37.3778	Cloudy
13/12/12	204007	2.7113	2.7828	0.0715	1086.81	1110.85	24.04	42	42	42.0	1715.46	41.6799	Sunny
19/12/12	204393	2.7453	2.8170	0.0717	1110.85	1134.90	24.05	42	42	42.0	1716.17	41.7791	Cloudy
24/12/12	204397	2.7589	2.8758	0.1169	1134.90	1158.95	24.05	42	42	42.0	1716.17	68.1168	Cloudy
29/12/12	204399	2.7588	2.8140	0.0552	1158.95	1183.01	24.06	42	42	42.0	1716.88	32.1513	Cloudy

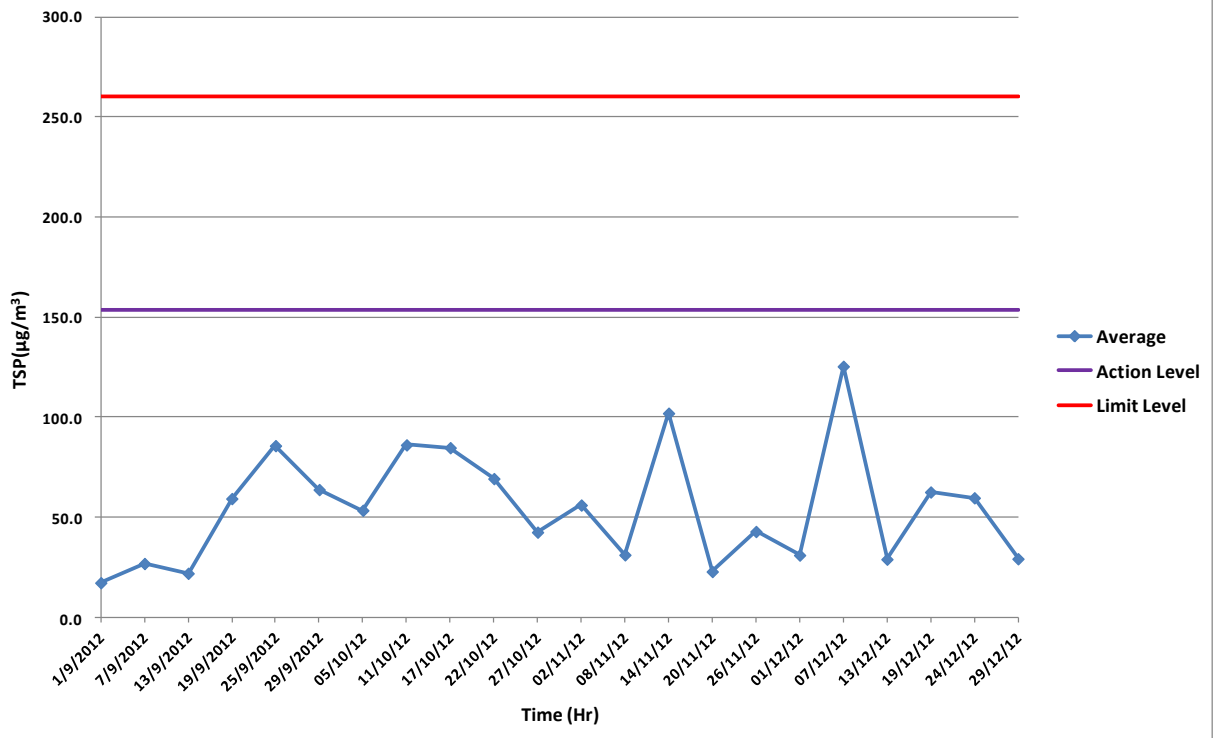
D4 24-Hrs TSP Monitoring Results

Sampling Date	Paper No.	Wt. of paper (g)			Elapse Time			Flow Rate (CFM)			Total Volume (m ³)	TSP Concentration (µg/m ³)	Weather
		Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate			
01/12/12	204382	2.7825	2.9126	0.1301	1066.10	1090.14	24.04	42	42	42.0	1715.46	75.8398	Cloudy
07/12/12	204386	2.7776	2.7942	0.0166	1090.14	1114.27	24.13	42	42	42.0	1721.88	9.6406	Cloudy
13/12/12	204031	2.7412	2.8765	0.1353	1114.27	1138.32	24.05	43	43	43.0	1757.03	77.0049	Sunny
19/12/12	204032	2.7135	2.8395	0.1260	1138.32	1162.40	24.08	42	42	42.0	1718.31	73.3278	Cloudy
24/12/12	204033	2.6969	2.7787	0.0818	1162.40	1186.44	24.04	42	42	42.0	1715.46	47.6841	Cloudy
29/12/12	204394	2.7484	2.8372	0.0888	1186.44	1210.47	24.03	42	42	42.0	1714.74	51.7862	Cloudy

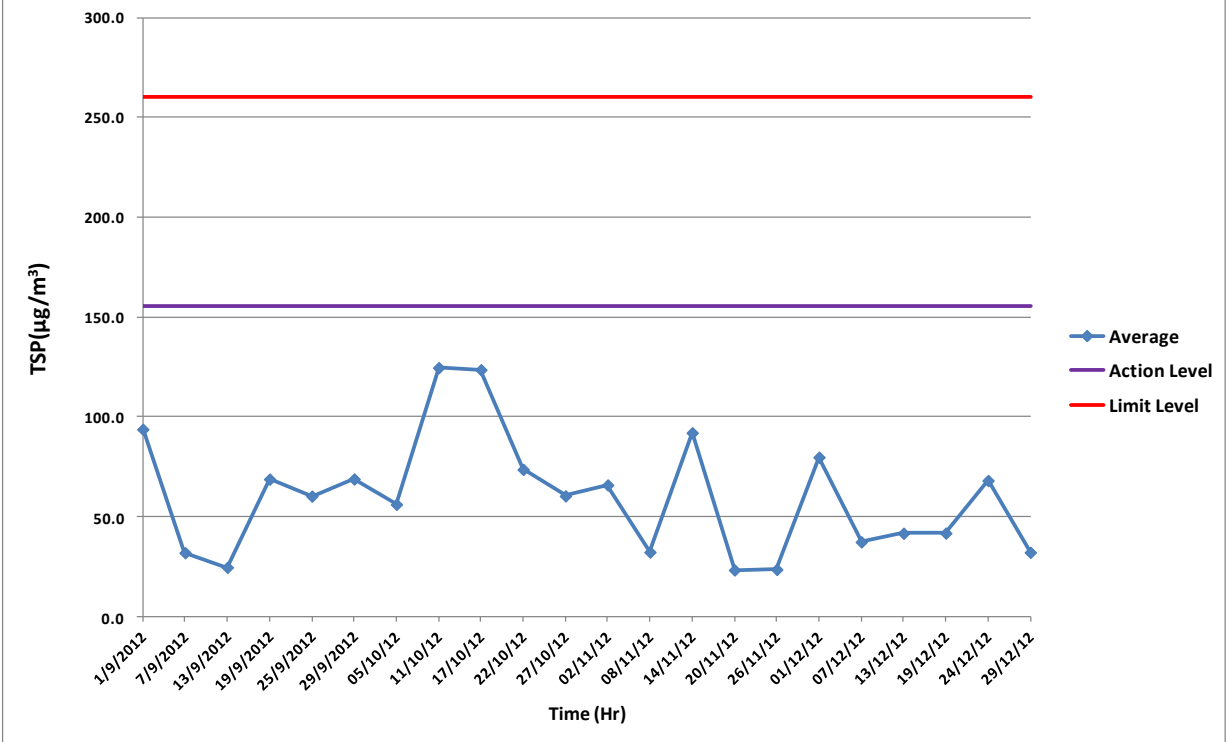
Graphical plots of 24-Hrs TSP for D1



Graphical plots of 24-Hrs TSP for D2



Graphical plots of 24-Hrs TSP for D3



Graphical plots of 24-Hrs TSP for D4

