ATAL – Degrémont – China State Joint Venture

Contractor's Submission Form (CSF)

Contract No.	DC/2008/03		
Project Title:	Design, Build and Operate Pillar Point Sewage Treatment Works		
CSF No.:	DC200803/CSF/GD/800335	**Issue: B**	**Date: 22nd June 2016**
To:	Drainage Services Department (ST1)	**Your Ref: Nil**	
Attention:	Supervising Officer's – Michael K.F. Yeung		
Cc:	dc200803.aecom@gmail.com ; ATAL-Mandy Tsoi ; ADJV – Norman Cheng		
From:	ATAL-Degremont-China State Joint Venture		
Title:	Monthly EM&A Report No.10 (May 2016)		
Specification:	-		
Purpose:	*Information / ~~Comments~~ / ~~Approval~~		

Description of Contents:

We submit herewith 7 copy of the Monthly EM&A Report for May 2016.

Attachment: *Yes /~~No~~ **Number of Copies: 7**

Remarks:

Issued By: _____ **Printed Name:** Norman Cheng

Designation: Operation Manager **Date:** 22nd June 2016

Received By: _____ **Date:** _____

(Signature & Received Chop)

*Delete if not applicable

(Rev.7)

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Drainage Services Department
Sewage Services Branch
Harbour Area Treatment Scheme Division
5/F., Western Magistracy,
2A Pok Fu Lam Road,
Hong Kong.

Attn: Ms. Carol Ho (T: 2159 3405)

17 June 2016

Dear Madam,

Contract No. DC/2008/03
Design, Build and Operate
Pillar Point Sewage Treatment Works

Monthly EM&A Report for May 2016 (10th Monthly Operation Phase Monitoring Report for May 2016)

Reference is made to Environmental Team (ET)'s draft of the Monthly EM&A Report for May 2016 provided by email dated 14, 15 and 17 June 2016. We have no further comment.

We hereby verify the said Monthly EM&A Report as having complied with the requirement as set out in the Final EM&A Manual.

Should you have any queries, please feel free to contact the undersigned at 3922 9393.

Yours faithfully,

For and on behalf of
AECOM Asia Co. Ltd.

Y T Tang
Independent Environmental Checker

c.c. AECOM – Mr. C Y Hung (Fax No. 2441 1755)
SMEC – Ms. Vivian Chan (Fax No. 3995 8101)
ATAL–Degremont–China State JV – Mr. Raymond Chan (Fax No. 2811 3321)

ATAL – Degrémont – China State Joint Venture

SMEC ASIA

67th Monthly EM&A Report (10th Monthly Operation Phase Monitoring Report for May 2016)

Contract No. DC/2008/03

Design, Build and Operate
Pillar Point Sewage Treatment Works

June 2016

AUSTRALIA | ASIA | MIDDLE EAST | AFRICA | PACIFIC

ATAL – Degrémont – China State Joint Venture

SMEC ASIA

67th Monthly EM&A Report (10th Monthly Operation Phase Monitoring Report for May 2016)

Contract No. DC/2008/03

Design, Build and Operate
Pillar Point Sewage Treatment Works

June 2016

Certified By **Vivian CHAN**
ET Leader

Project/Deliverable No.	7076134 | D18/01
Project Name	Upgrading of Pillar Point Sewage Treatment Works – Design, Build and Operate
Report Name	67th Monthly EM&A Report (10th Monthly Operation Phase Monitoring Report for May 2016)
Report Date	June 2016
Report for	ATAL Engineering - Degrémont SA - China State Construction Engineering Joint Venture

PREPARATION, REVIEW AND AUTHORISATION

Revision #	Date	Prepared by	Reviewed by	Approved by
1.0 (Draft)	June 2016	Man CHEUNG	Vivian CHAN	Alexi BHANJA
2.0 (Final)	June 2016	Man CHEUNG	Vivian CHAN	Alexi BHANJA

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EXECUTIVE SUMMARY

E.1. In accordance with the Environmental Monitoring and Audit Manual (EM&A Manual) and the Environmental Permit (EP-321/2008/B) for the Upgrading of Pillar Point Sewage Treatment Works (PPSTW) (the Project), odour and water quality monitoring is required during the first year after Project commissioning and Water Quality Monitoring is required for each emergency discharge event. The purpose of operation phase monitoring is to confirm the predictions of odour and water quality made in the EIA report.

E.2. As confirmed by the Contractor, all major construction activities of the upgraded PPSTW has been completed in August 2015. The Operation Phase of the Upgraded PPSTW commenced on 15 August 2015. This Monthly Operation Phase Monitoring Report (Post-commissioning) summarizes monitoring events carried out during post-commissioning period from 1 to 31 May 2016. There were a total of eight monitoring events carried out during the reporting period. The exact dates of monitoring carried out in this month are tabulated below:

Table E-1 Dates of Monitoring Events

Monitoring Events	10th Reporting Month Monitoring Period: 1 – 31 May 2016
Odour Monitoring	16/5/2016
Effluent Quality Monitoring	19/5/2016 - 20/5/2016
Sediment Quality Monitoring	15/5/2016
Benthic Survey	15/5/2016
Water Quality Monitoring	24/5/2016
Ecotoxicological Monitoring Sampling	19/5/2016 - 20/5/2016
H_2S Monitoring	1/5/2016 - 31/5/2016 (continuous monitoring)
Landscape and Visual Monitoring	12/5/2016

E.3. The monitoring results obtained were certified by the Environmental Team (ET) Leader and verified by the Independent Environmental Checker (IEC) in accordance with the EM&A Manual.

Breach of Action and Limit Levels

E.4. No exceedance of Action and Limit Level of odour monitoring was recorded at the monitoring location in the reporting month.

E.5. No exceedance of Action and Limit Level of odour emission monitoring was recorded at the monitoring location in the reporting month.

E.6. 8 exceedances of Action Level and 10 Limit Level exceedance of water quality monitoring were recorded at the monitoring location in the reporting month. The exceedances are considered to be non-project related.

E.7. 6 exceedances of Action Level and 46 exceedances of Limit Level for sediment quality monitoring were recorded at the monitoring location in the reporting month. The exceedances are considered to be non-project related.

E.8. The monitoring results for benthic survey are pending and the results will be reported in the next reporting period.

E.9. The assessment results for ecotoxicological assessment are pending and the results will be reported in the next reporting period.

E.10. No non-compliance of the landscape and visual monitoring has been recorded in the reporting month.

Environmental Complaint

E.11. In this reporting period, no environmental complaint in relation to the EM&A Programme was recorded.

Reporting Change

E.12. This is the 10th Monthly Operation Phase Monitoring report and no reporting changes were made in the Reporting Period.

Major Activities on Site

E.13. The major activities being carried out on site during the reporting period is list as follows:

- Normal operation of the upgraded PPSTW.

Future Key Issues

E.14. The Project has entered the Operation Phase since August 2015 and the upgraded PPSTW will continue its normal operation in the following monitoring period. Mitigation measures as proposed in the approved Environmental Impact Assessment report will be provided and maintained at the Project.

E.15. Potential environmental impacts arising from the Project operation are mainly associated with odour and effluent discharging from the Project.

1 INTRODUCTION

1.1 Background

1.1.1 Before the upgrading, the Pillar Point Sewage Treatment Works (PPSTW) was a preliminary treatment works with 5.79m^3/s capacity located at the north of Tuen Mun River Trade Terminal and bounded by Lung Mun Road to the north, as shown in ***Figure 1-1***. The PPSTW used to provide only preliminary treatment – screening followed by grit removal – prior to effluent discharge into the sea (within the North Western Water Control Zone) via twin submarine outfalls.

1.1.2 The *Review of the Tuen Mun and Tsing Yi Sewerage Master Plan*, commissioned in February 1999, recommended upgrading the capacity of PPSTW to 6.08m^3/s and upgrading the treatment level to incorporate Chemically Enhanced Primary Treatment (CEPT) with Ultraviolet (UV) disinfection. The aim of the upgrading works (the Project) is to provide sufficient capacity to meet future demand and pollutant loading for ultimate development scenario for Tuen Mun area, and to improve effluent quality.

1.1.3 An Environmental Impact Assessment (EIA) (EIA-145/2008) was carried out for the Project and was approved without conditions by the Environmental Protection Department (EPD) on 10 June 2008. An Environmental Permit (EP) (EP 321/2008) issued on 17 November 2008. Two Applications for variation of the EP was submitted and approved, and varied EPs, EP 321/2008/A and EP-321/2008/B were issued on 23 April 2013 and 30 May 2014 respectively. The Environmental Monitoring & Audit Manual (EM&A Manual) and EP provide guidelines for the Operational Phase Monitoring Reports and for preparation of the Operational Phase Monitoring Reports.

1.2 Major Activities on Site

1.2.1 The major activities being carried out on site during the reporting period is list as follows:

- Normal operation of the upgraded PPSTW.

1.3 Purpose of the Report

1.3.1 This is the tenth Monthly Operational Phase Monitoring Reports which summarizes the findings of EM&A works during the reporting period from 1 to 31 May 2016.

Figure 1-1 Site Location

2 ODOUR MONITORING

2.1 Monitoring Methodology and Parameters

2.1.1 In accordance with Section 2.7.1.1 to 2.7.1.9 of the final EM&A Manual, odour patrols are required to be conducted for a period of one year during the operation of the upgraded PPSTW, one patrol for daytime and one patrol for evening every month at the same locations as for the baseline monitoring.

2.1.2 The 1-year monthly odour patrol might be extended as stipulated in second and third bullet point in Table 2.4 of Final EM&A Manual.

2.1.3 The odour monitoring should not be undertaken on rainy days and hourly meteorological conditions (temperature, wind speed & direction, humidity) as shown in ***Appendix J*** were recorded in the monitoring period.

2.1.4 The odour patrol shall be conducted by two independent trained personnel/ competent persons patrolling and sniffing along the PPSTW boundary and the air sensitive receivers (ASRs) in the vicinity of the PPSTW as identified in Section 2.4.1.4 of the final EM&A Manual. The odour patrol shall be carried from less odorous locations to stronger odorous locations.

2.1.5 Subject to the prevailing weather forecast condition, odour patrol shall be conducted by independent trained personnel/competent persons at the downwind locations. During the patrol, the sequence should start from less odourous locations to stronger odourous locations.

2.1.6 The trained personnel/competent persons shall record the findings including odour intensity, odour nature and possible sources and local wind speed and direction at each monitoring location. The perceived odour intensity is divided into five levels (0 to 4):

0 Not detected. No odour perceived or an odour so weak that it cannot be easily characterised or described.

1 Slight identifiable odour, and slight chance to have odour nuisance.

2 Moderate identifiable odour, and moderate chance to have odour nuisance.

3 Strong identifiable, likely to have odour nuisance.

4 Extreme severe odour, and unacceptable odour level.

2.2 Monitoring Stations

2.2.1 The identified monitoring locations for odour patrol are tabulated in ***Table 2-1*** and illustrated in ***Figure 2-1***.

Table 2-1 Monitoring Locations for Odour Patrol

Station ID	Description
A1	River Trade Terminal Office
A2	Chu Kong Warehouse 1

Station ID	Description
A3	Chu Kong Warehouse 2
A4	Wai Sang Sawmill Ltd. [1]
A5	Pillar Point Fire Station
A6	Sunhing Hung Kai Tuen Mun Godown
A7	EMSD Vehicle Servicing Station
S1	Northern Site Boundary
S2	Eastern Site Boundary
S3	Southern Site Boundary
S4	Western Site Boundary

2.3 Monitoring Personnel

2.3.1 The two independent trained personnel/competent persons (the "panellists") have satisfied the requirements listed in Section 2.3.1.9 and 2.7.1.4 of the approved EM&A Manual during odour patrol, namely:

- Have their individual odour threshold of n-butanol in nitrogen gas in the range of 20 to 80ppb/v required by the European Standard Method (EN 13725).
- Be at least 16 years of age and willing and able to follow instructions.
- Be free from any respiratory illnesses.
- Be engaged for a sufficient period to build up and monitor/detect at several monitoring location.
- Not be allowed to smoke, eat, drink (except water) or use chewing gum or sweets 30 min before and during odour intensity analysis.
- Take great care not to cause any interference with their own perception or that of others by lack of personal hygiene or the use of perfumes, deodorants, body lotions or cosmetics.
- Not communicate with each other about the results of their choices.
- Do not normally work at or live in the area in the vicinity of PPSTW.

2.3.2 The two qualified panellists are Ms KONG Wing Man, Samantha and Mr CHEUNG Man Kit. The Nose Sensory Test Reports of the two panellists are provided in ***Appendix A***.

2.4 Action and Limit Levels

2.4.1 The Action and Limit Levels as proposed in Table 2.5 of the final EM&A Manual are summarized in ***Table 2-2***.

1. Wai Sang Sawmill Ltd. had been demolished, the patrol and the monitoring location was kept as the same location as Pre-commissioning monitoring conducted in Year 2013.

Table 2-2 Action and Limit Levels for Odour Patrol

Parameter	Action Level	Limit Level
Odour Nuisance (from odour intensity analysis or odour patrol)	Odour intensity of higher than 1 is measured from odour intensity analysis	Odour intensity of 2 or above is measured from odour intensity analysis

Note: To avoid ambiguity, a more conservative approach will be adopted: Action Level will be trigger when odour intensity equals to 1 and Limit Level will be triggered when odour intensity is 2 or above due to the operation of the PPSTW.

2.5 Event and Action Plan

2.5.1 The Event and Action Plan for Odour Quality Monitoring is provided in ***Appendix I***.

2.6 Monitoring Results and Observations

2.6.1 The odour patrol was carried out on 16 May 2016 during daytime and evening by two "panellists" (Panellist A and Panellist B) at all monitoring stations, as required by the EM&A Manual.

2.6.2 The Hong Kong Observatory's Tuen Mun Weather Station reported that the weather on the day of the patrol was cloudy. The weather condition during the period is provided in ***Appendix J***.

2.6.3 The results for odour patrol at each monitoring location are provided in ***Appendix B***.

2.6.4 No exceedance of the action or limit level was identified during the reporting period.

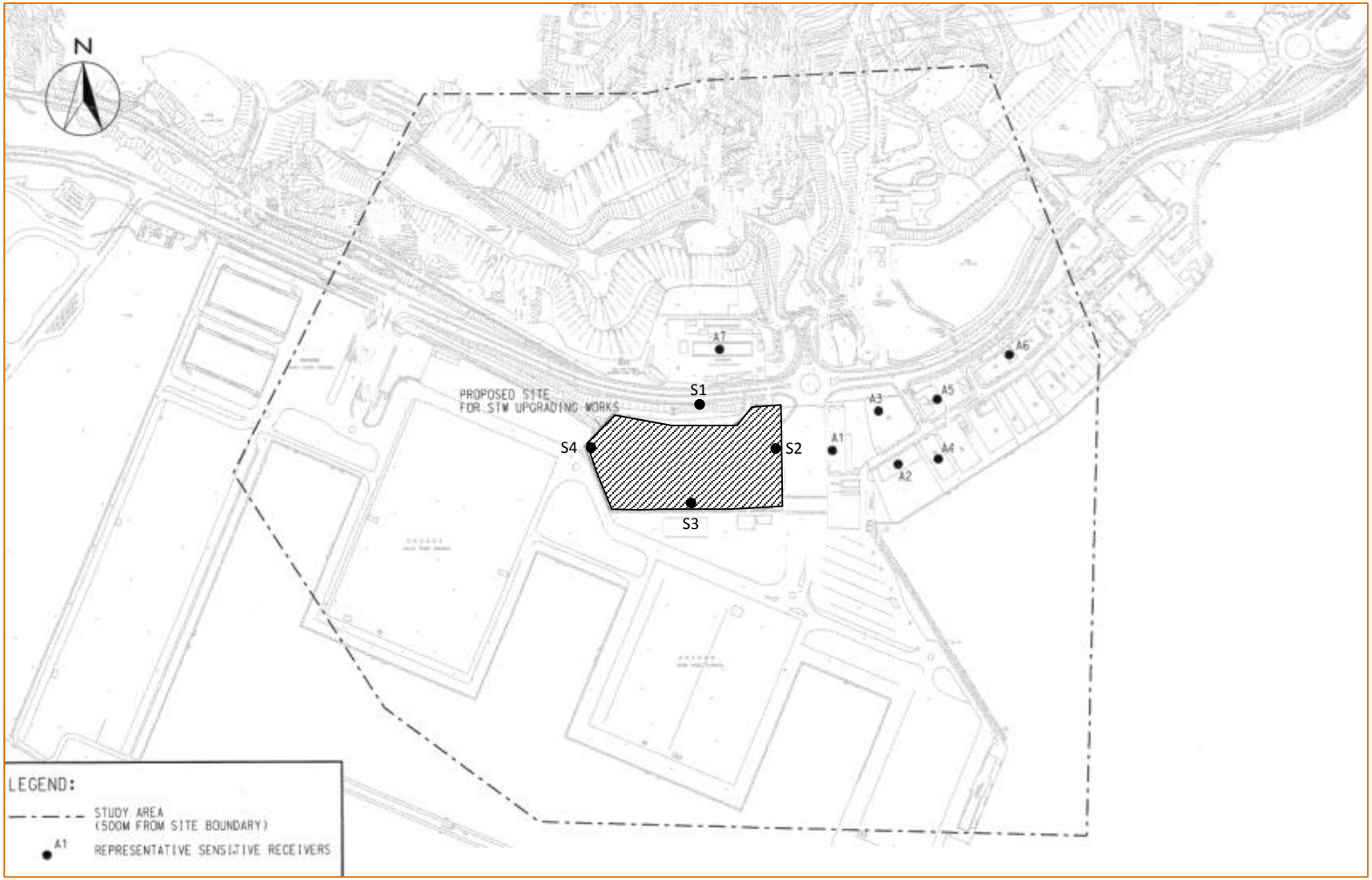
2.6.5 During the odour patrol, no noticeable odour due to operation of the PPSTW was observed at the sensitive receivers.

2.6.6 As predicted in Section 3.8.2.1 of the Final EIA report, there shall be no exceedances of the odour criteria at ASRs located outside of the project boundary. Since no odour monitoring results exceeded the odour criteria, the monitoring verified that the EIA predictions were correct.

2.7 Odour Complaint Registration System

2.7.1 An odour complaint registration system has been set up for the project. No odour complaint was received and registered in the odour complaint registration system in the reporting month.

Figure 2-1 Monitoring Locations for Odour Patrol



3 ODOUR EMISSION MONITORING

3.1 Monitoring Methodology and Parameters

3.1.1 In accordance with Section 3.8 of the Register of Change under Environmental Permit (EP) dated March 2013, two rounds of air sampling and olfactometric analysis are required to be conducted under full-load operation of the upgraded Pillar Point Sewage Treatment Works (PPSTW) to monitor the performance and effectiveness of the deodorization units. The first round of air sampling and olfactometric analysis will be conducted upon commissioning of the upgraded PPSTW and the second round will be carried out 1 year thereafter. The upgraded PPSTW commissioned on 15 August 2015 and the first round of air sampling and olfactometric analysis was carried out on 21 September 2015.

Air Sampling & Olfactomectric Analysis

Air Sampling Requirements and Methodology

3.1.2 As stipulated in 1.3.2 of Annex 3F of the Final EM&A Manual, the source temperature shall be measured at the time of air sampling. Other meteorological conditions including wind speed, wind direction and relative humidity should also be measured at the time of the monitoring. Two samples at each inlet/ outlet should be collected. Air sampling shall not be conducted in rainy days as it would affect the odour strength of the sources.

3.1.3 The air sampling procedure followed the European Standard Method EN13725:2003 and the procedures are listed as follow:

i. The sampling bags were prepared by filling the sampling bags with odour-free air at the odour laboratory to test any leaking problem.
ii. Sampling bags were emptied before sampling.
iii. For area sources, air samples were collected by hood sampling method. The odour sampling system includes a battery-operated air pump, a sampling vessel, and nalophane odour bags. Empty sample bag was placed in a rigid plastic container and the container was then evacuated at a controlled rate and the bag was filled. Sufficient volume of gas sample was collected at each sampling location and wind tunnel was employed during the sampling work.
iv. For non-area sources or “hood” method cannot be applied due to site constraint, the air samples were collected using a positive displacement pump and nalophane odour bags. The Positive displacement pump would be connected to the odour source and the sample bag was filled at a fixed flowrate.
v. The odour bags are Odour-free, which no odours added to the samples. The sampling bags were made of a material which does absorb or react with odorous samples. The odour bags were sufficiently impervious, reasonably robust, leak-free, equipped with leak-free fittings, compatible with olfactometer and other sampling equipment and the bags have sufficient capacity to complete a full test series.
vi. The temperature of the sampling bags was kept above dew point and exposure of samples to sunlight was avoided. Exposure of samples to direct sunlight was avoided to minimise photochemical reactions.

vii. The odour samples were delivered to a qualified laboratory for olfactometric analysis analysed within twenty-four hours.

Olfactometric Analysis Requirements and Methodology

3.1.4 The collected air samples were transported to Hong Kong Productivity Council (HKPC), which is a qualified laboratory for olfactometric analysis, within 24 hours.

i. The odour concentrations of the samples were determined by a forced-choice dynamic olfactometer with a panel of human assessors.

ii. The odour concentration is measured by determining the dilution factor required to reach the detection threshold, which is 1ou/m^3.

iii. The odour laboratory was ventilated to maintain an odour-free environment and to provide air to the panel members.

iv. The panellists were screened beforehand by using a 50-ppm solution/mixture of certified n-butanol standard gas in at least 3 sections on separated days with a pause of at least one day between sections, which the most sensitive and least sensitive individuals were eliminated and each odour testing session should comprise of 6 to 8 qualified panellists in 2 rounds of analysis.

v. The panel members were not allowed to eat or smoke one hour prior to the session, or use perfumes, after-shave lotions or any other fragrant essences before the session. They should be in the odour room 15 minutes before measurements. If they had health problems that affect their noses, they were not allowed to attend the testing session. No panel member were involved in the odour testing for more than 4 hours, within this period at least 2 ten minutes breaks for olfactory rest should be taken. The odour panel were housed in a room that constructs of odour-free materials and equipped with ventilation system.

vi. Regular calibration of the olfactometer was performed yearly to check the accuracy and repeatability of its dilution settings and to establish its calibration history. The olfactometer was calibrated regularly using propane as a tracer, which is an option recommended in BS 13725:2003 calibration method. The accuracy and repeatability of the olfactometer are calculated from two propane concentrations, one measured at the sniffing port of the olfactometer and once being the certified propane concentration.

H_2S Measurement

H_2S Measurement Methodology

i. H_2S level sensors were installed at the respective inlet and outlet of the deodorization units to continuously monitor the H_2S emission level at the stacks and H_2S removal efficiency of the deodorization units.

3.2 Monitoring Stations

3.2.1 The air samples collection locations are tabulated in ***Table 3-1*** and illustrated in ***Figure 3-1***.

Table 3-1 Monitoring Locations for Air Sampling

Deodourization Unit Portion	Station ID	Description
A	A1	Inlet for Portion A of the Deodorization Unit
	A2	Outlet from Activated Carbon Filter A1
	A3	Outlet from Activated Carbon Filter A2
B	B1	Inlet for Portion B of the Deodorization Unit
	B2	Outlet from Activated Carbon Filter B1
	B3	Outlet from Activated Carbon Filter B2

3.3 Monitoring Equipment

3.3.1 The equipment used for H_2S Gas Detector was listed in ***Table 3-2*** and calibration certificates for this equipment were provided in ***Appendix C***.

Table 3-2 Odour Emission Monitoring Equipment

Equipment	System Model	Detector Model	Unit	Channel Number	Serial Number
H_2S Gas Detector	"Crowcon" Gasmonitor Plus Control Panel	"Crowcon" Xgard Type 1 H_2S Gas Detector	A	1	410710/08-1
				4	410710/07-13
				5	410710/07-9
			B	1	410710/08-2
				4	410710/07-10
				5	410710/07-12

3.4 Action and Limit Levels

3.4.1 The design requirements for stacks (A2, A3 and B2, B3) of deodourizing units A and B stipulated in the Register of Change under Environmental Permit (EP) were summarized in ***Table 3-3***.

Table 3-3 Design Requirements for Outlet Stacks of Deodourizing Units

Stack of Deodorizing unit	Design requirements of deodorizing unit	Odour emission rates
A2	• H=6.81m • V=19.58m/s • D=0.62m	1,786 ou/s (total emission from all vent pipes)
A3	• H=6.81m • V=19.58m/s • D=0.62m	

Stack of Deodorizing unit	Design requirements of deodorizing unit	Odour emission rates
B2	• H=6.81m • V=20.00m/s • D=0.62m	1,809 ou/s (total emission from all vent pipes)
B3	• H=6.81m • V=20.00m/s • D=0.62m	

3.4.2 The Action and Limit Levels as proposed in Table F.1 of Annex 3F of the Register of Change under Environmental Permit (EP) are summarized in ***Table 3-4***.

Table 3-4 Action and Limit Levels for Odour Emission Monitoring

Parameter	Action Level	Limit Level
Odour Emission (from air sampling, olfactometric analysis and H_2S measurement)	Odour emission rate from the outlet of the deodorizaiton unit exceeds 80% of the permitted value in ***Table 3-3***.	Odour emission rate from outlet of the deodorization unit exceeds the permitted value in ***Table 3-3***.

3.5 Event and Action Plan

3.5.1 The Event and Action Plan for Air Quality Monitoring (Operation Phase) is provided on ***Appendix I***.

3.6 Monitoring Results

Air Samples and Olfactometric Analysis

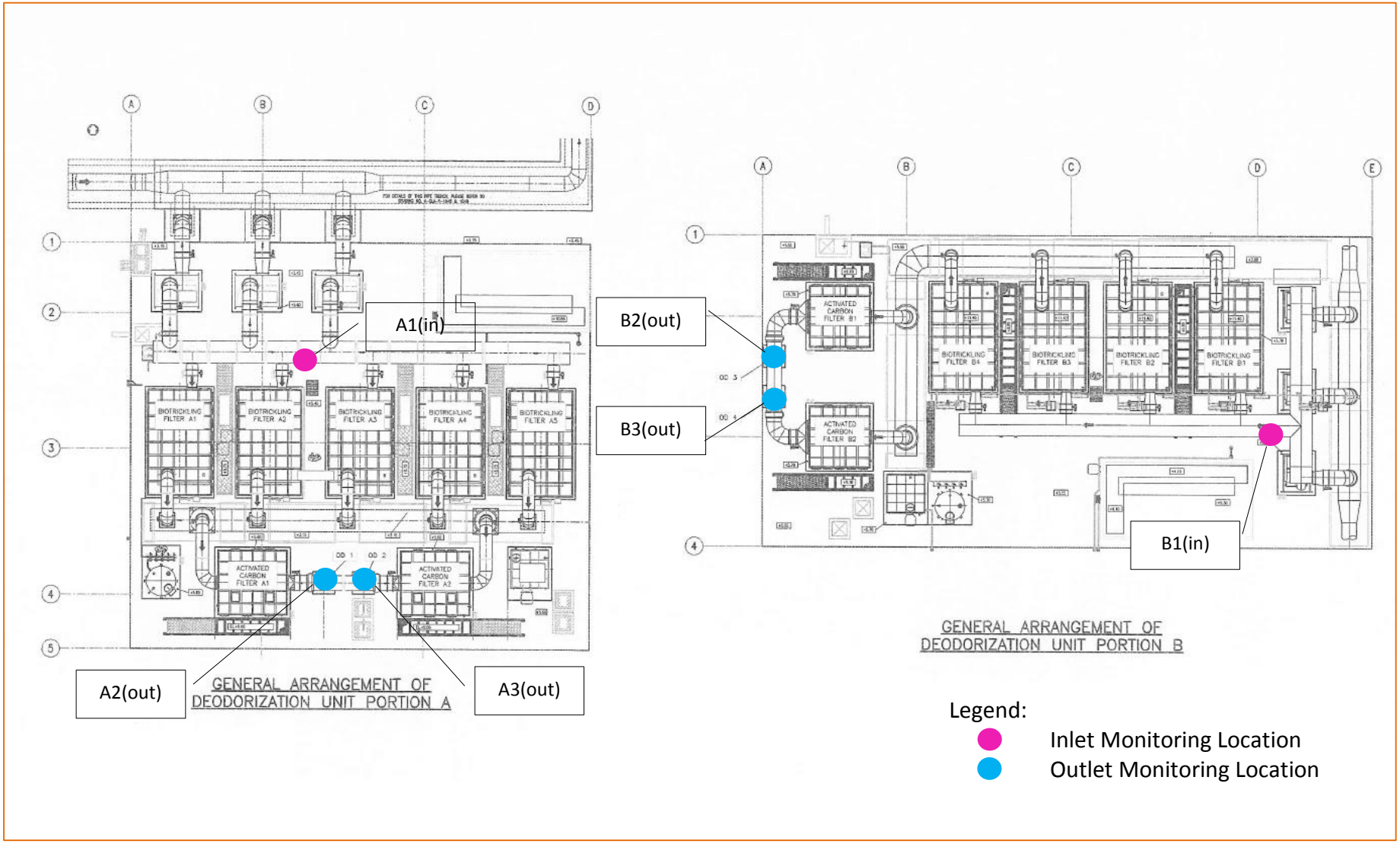
3.6.1 No air sampling for olfactometric analysis was carried out during the reporting month. The next monitoring is scheduled in August 2016, at 1 year after commissioning of the upgraded PPSTW, and the exact date of sampling will be agreed with the Independent Environmental Checker (IEC) in due course.

H_2S Monitoring

3.6.2 Continuous H_2S monitoring was conducted from 1 to 31 May 2016 and the results were provided in ***Appendix D***.

3.6.3 As shown in the continuous H_2S monitoring results, the average percentage of H_2S removal efficiency of the deodorization units were 100%, which is well above the designed control efficiency of at least 90% of the deodorizing units as stipulated in Condition 2.6 of the Environmental Permit No.EP-321/2008/B (EP). To conclude, the effectiveness of the odour control system complied with the design criteria and satisfies the EP requirements.

Figure 3-1 Air sampling locations



4 PPWQM Effluent quality Monitoring

4.1 Monitoring Methodology and Parameters

4.1.1 In accordance with Para 3.4.1.1 of the approved EM&A Manual, a one year impact monitoring of Post Project Water Quality Monitoring (PPWQM) programme shall be implemented after Project commissioning. Effluent quality monitoring is required as part of the PPWQM programme and shall be carried out during the operation phase of the upgraded PPSTW.

4.1.2 Para 1.2.1 of Appendix E of the approved EM&A Manual stated that two cycles of effluent sampling each of a full 24-hour period during both wet and dry seasons over the field work period of one year shall be carried out to characterize the quality of the treated effluent.

4.1.3 Operation Phase of the upgraded PPSTW was scheduled to commence on 15 August 2015, hence the one year operation phase monitoring period shall run from 15 August 2015 to 14 August 2016. The first wet season operation phase effluent quality monitoring was completed on 23 August 2015 and 24 August 2015. Two round of dry season operation phase effluent quality monitoring were completed on 9 November 2015 to 10 November 2015 and 3 February to 4 February 2016 respectively. The second wet season effluent quality monitoring was completed on 19 May 2016 and 20 May 2016.

4.1.4 Effluent monitoring parameters and frequency for effluent quality monitoring as agreed by the Director of Environmental Protection (DEP) are summarised in ***Table 4-1***.

Table 4-1 Effluent Quality Monitoring Parameters and Frequency

Parameter (unit)	Type	Frequency
E.coli (CFU/1000mL)	Laboratory Analysis	Two cycles of a full 24-hour period during both wet and dry seasons.[2]
Biochemical Oxygen Demand (mg/L)		
Suspended Solids (SS) (mg/L)		
Ammonia as N (mg/L)		
Total Nitrogen as N (mg/L)		
Total Nitrogen as N – Filtered (mg/L)		
Total Phosphorous as P (mg/L)		
Total Phosphorous as P – Filtered (mg/L)		
Total Organic Carbon (mg/L)		
Aluminum (Al) (µg/L)		
Boron (B) (µg/L)		
Iron (Fe) (µg/L)		
Mercury (Hg) (µg/L)		

2. The proposal included the appropriate time intervals over the 24 hour period and analysed for a range of variables were endorsed by IEC on 16 November 2012 and approved by EPD on 5 March 2013.

Parameter (unit)	Type	Frequency
Arsenic (As) (µg/L)		
Barium (Ba) (µg/L)		
Cadmium (Cd) (µg/L)		
Chromium (Cr) (µg/L)		
Copper (Cu) (µg/L)		
Lead (Pb) (µg/L)		
Manganese (Mn) (µg/L)		
Nickel (Ni) (µg/L)		
Silver (Ag) (µg/L)		
Vanadium (V) (µg/L)		
Zinc (Zn) (µg/L)		

4.1.5 All laboratory analyses were carried out by ALS Technichem (HK) Pty Limited and Enviro Labs Limited. Both two laboratories are HOKLAS accredited laboratory.

4.1.6 A composite sample of treated effluent was collected by an auto sampler (Hach Sigma AWRS Sampler) on a half-hourly basis over a 24-hour period. The sample was then stored in insulated containers with ice packs to maintain a dark and below 4^{o}C condition without freezing. All collected samples were delivered to the testing laboratory within 24 hours of sampling.

4.2 Monitoring Stations

4.2.1 Effluent quality monitoring was carried out at the effluent outlet of the PPSTW as shown in ***Figure 4-1***.

4.3 Sampling Equipment

4.3.1 An auto effluent sampler, Hach Sigma AWRS Sampler, as shown in ***Photo 4-1*** was installed at the site for collection of effluent sample for laboratory analysis. Details of the sampler are provided in ***Table 4-2***.

Photo 4-1 Hach Sigma AWRS Sampler

Table 4-2 Effluent Quality Monitoring Equipment

Equipment	Brand and Model	Serial Number
Hach Sigma AWRS Sampler	Hach Sigma AWRS Sampler Model 3542SDRH	131000484113

Effluent Sampling Procedures

i. The power supply was checked to ensure the sampler works properly.
ii. The polyethylene sampling bottles were installed properly in the sampler and were cleaned for up to 3 times with source liquid prior to sample collection.
iii. The auto sampler automatically collected treated effluent in sampling bottle from the discharge outlet of the PPSTW on an half-hourly basis over 24-hours period.
iv. Technician gathered 24 hourly treated effluent samples and mixed all samples up in a bucket.
v. A composite effluent sample was collected from the bucket and stored in appropriate containers with suitable preservative as provided by the laboratory.
vi. The samples were sent to HOKLAS accredited laboratory immediately for analysis.

4.4 Effluent Discharge Assumptions and Limit

4.4.1 As presented in Table 4.13 of the approved EIA report and repeated in ***Table 4-3*** below, effluent loadings from the upgraded PPSTW were assumed and used to assess the potential impact to the receiving marine water.

Table 4-3 Assumed Effluent Loadings from the Upgraded PPSTW in the EIA Report

	TSS (mg/L)	BOD_5 (mg/L)	E. coli (counts/100mL)
Effluent Loadings at 95 Percentile	120	180	300,000

4.4.2 As presented in ***Table 4-4*** below, effluent loadings from the upgraded PPSTW were assumed and used to assess the potential impact to the receiving marine water.

Table 4-4 Effluent Loadings from the Upgraded PPSTW in Water Discharge license

	TSS (mg/L)	BOD_5 (mg/L)	E. coli (counts/100mL)
Effluent Loadings at 95 Percentile	120	180	300,000
Upper Limit	240	360	#20,000

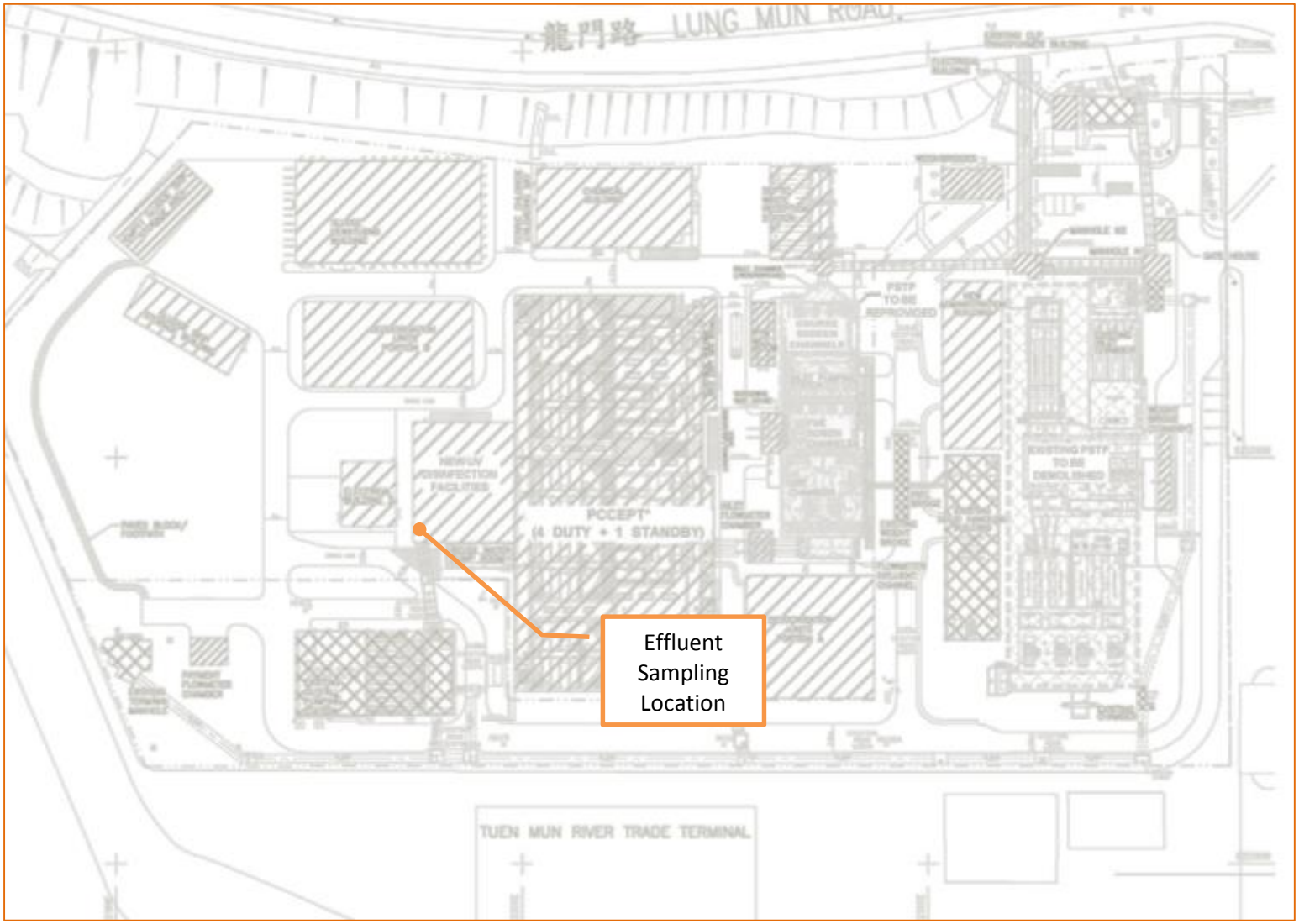
#: The upper limit is monthly geometric mean.

4.5 Monitoring Results

4.5.1 The monitoring was conducted from 00:00 to 24:00 of 19 May 2016 and the effluent sample was collected on 20 May 2016 for all parameters analysis except that a grab sample for E.Coli analysis was collected onsite on 20 May 2016. Effluent quality monitoring results are shown in ***Appendix F***.

4.5.2 Effluent quality monitoring demonstrated that the assumed effluent loading from the upgraded PPSTW can be achieved and therefore the water quality predictions made in the EIA are considered valid.

Figure 4-1 Monitoring Locations for Effluent Quality Monitoring



5 PPWQM WATER QUALITY MONITORING

5.1 Monitoring Methodology and Parameters

5.1.1 In accordance with Section 3.4.1.1 of the final EM&A Manual, PPWQM programme shall be implemented during first year of the Operation Phase of the upgraded PPSTW.

5.1.2 Section 1.3.1 of Appendix E of the final EM&A Manual stated that water quality monitoring should be performed four times over the field work period of one year to give adequate coverage of different tidal states during both wet and dry seasons. The operation phase of Upgraded PPSTW commenced on 15 August 2015, hence the one year field work shall run from 15 August 2015 to 14 August 2016. The first wet season and dry season operation phase water quality monitoring were completed on 26 August 2015 and on 5 November 2015 respectively. The second dry season water quality monitoring was completed on 18 February 2016, and the second wet season operation phase water monitoring works was completed on 24 May 2016.

5.1.3 Water monitoring parameters, frequency and water depths for water quality monitoring as agreed with the Director of Environmental Protection (DEP) [Ref. #3] are summarised in ***Table 5-1***.

Table 5-1 Water Quality Monitoring Parameters, Frequency and Water Depth

Parameter (unit)	Type	Frequency	Water Depth
Temperature (°C)	In situ Measurement	Mid-flood tide and Mid-ebb tide	• If water depth >6m, 1m below water surface, mid-depth and 1m above seabed • If water depth <6m, and >3m, 1m below surface and 1m above seabed • If water depth <3m, mid-depth only
Turbidity (NTU)			
pH			
DO (mg/L and %)			
Salinity (ppt)			
E.coli (CFU/100mL)	Laboratory Analysis		
BOD (mg/L)			
SS (mg/L)			
Nitrate (mg/L)			
Nitrite (mg/L)			
Total Nitrogen as N (mg/L)			
Total Nitrogen as N – Filtered (mg/L)			
Total Phosphorous as P (mg/L)			
Total Phosphorous as P – Filtered (mg/L)			
Ammonia (mg/L)			

5.1.4 All laboratory analyses were carried out by ALS Technichem (HK) Pty Limited, which is a HOKLAS accredited laboratory.

3. Via Drainage Services Department's letter memo dated 7 Dec 2012 (ref.: DSD SS 8/4329DS/CE200251/17) and Environmental Department's letter dated 5 March 2013 (ref.: (9) in Ax (11) to EP2/N4/F/34 Pt. 9)

5.1.5 Samples were stored in appropriate containers provided in advance by the testing laboratory. The containers were immediately sealed and labelled. Sample ID and sampling date were marked on each sample. The samples were then stored in insulated containers with ice packs to maintain a dark and below 4°C condition without freezing. All collected samples were delivered to the testing laboratory within 24 hours of sampling.

5.2 Monitoring Stations

5.2.1 As agreed with DEP, water quality monitoring was carried out at 11 monitoring stations as shown in ***Table 5-2***. Locations are shown in ***Figure 5-1*****.**

Table 5-2 Monitoring Locations for Water Quality Monitoring

Station ID	Description of Location	Co-ordinates	
		Easting	Northing
B1	Butterfly Beach	813517.1	825825.6
B2	Castle Peak Beach	815779.2	826530.7
B3	Kadoorie Beach	816098.4	826328.0
B4	Cafeteria Old Beach	816310.1	826240.2
B5	Cafeteria New Beach	816751.8	825888.4
B6	Golden Beach	816813.5	825493.2
WSD1	Flushing Water Intake near Butterfly Beach	813103.0	825511.1
WSD2	Flushing Water Intake near LRT Terminus	815241.3	825860.0
U2	Secondary Contact Recreation Subzone at Lung Kwu Tan	809704.9	827855.5
NM6	Control Station	820121.5	807822.1
NM1	Control Station	823025.4	820503.9

5.3 Monitoring Equipment

5.3.1 The equipment used for water quality monitoring was listed in ***Table 5-3*** and calibration certificates for this equipment were provided in ***Appendix C***.

Table 5-3 Water Quality Monitoring Equipment

Equipment	Model	Serial Number
Multiparameter sonde	YSI Sonde 6920 v2	00019CB2

5.4 Action and Limit Levels

5.4.1 The Action and Limit Levels for the water quality monitoring was established by using the baseline water monitoring data which carried out before commissioning of the upgraded PPSTW for each monitoring locations. The Action and Limit Levels are showed in ***Table 5-4***.

5.5 Monitoring Results and Observations

5.5.1 Water quality monitoring was carried out on 24 May 2016 and the water quality monitoring results are presented in ***Appendix G***.

5.5.2 As indicated in ***Appendix G***, 8 exceedances of the Action Level and 10 Limit Level exceedances for water quality monitoring were recorded in various monitoring stations. The baseline water quality monitoring was conducted in September 2012 to August 2013. After completion of the baseline monitoring, a number of major infrastructure construction projects has then commenced in the western water of Hong Kong that involves a lot of reclamation and marine construction works. These projects were suspected to be the major contributor for marine water quality pollution in the area.

5.5.3 Moreover, the effluent quality monitoring results also demonstrated that discharges from the upgraded PPSTW can both comply with the discharge licence criteria and assumptions made in the EIA report. As indicated in ***Appendix F***, the recorded results for E.coli, BOD and SS were all respectively below the EIA Design Assumption.

5.5.4 As revealed above, the exceedances being recorded shall not be project-related.

Table 5-4 Action and Limit Levels for Water Quality

Parameters	Detection Limit	Dry Season (October to March)		Wet Season (April to September)	
		Action Level *	Limit Level **	Action Level *	Limit Level **
DO in mg/L	0.01	6.39 (Surface & Middle) 6.25 (Bottom)	6.22 (Surface & Middle) 6.15 (Bottom)	5.14 (Surface & Middle) 4.51 (Bottom)	4.84 (Surface & Middle) 4.49 (Bottom)
DO in %age	0.1	90.0 (Surface & Middle) 88.6 (Bottom)	87.7 (Surface & Middle) 87.2 (Bottom)	74.7 (Surface & Middle) 65.9 (Bottom)	70.6 (Surface & Middle) 65.6 (Bottom)
Turbidity in NTU	0.1	6.8	9.4	6.8	8.4
Salinity in ppt	0.01	31.98	32.15	29.66	30.06
E.coli count	1	90	102	333	1002
BOD in mg/L	2	2	3	2	>2
SS in mg/L	2	11	14	9	13
Nitrate in mg/L	0.01	0.52	0.85	0.7	0.72
Nitrite in mg/L	0.01	0.18	0.29	0.11	0.14
Total Nitrogen in mg/L	0.1	1.2	1.6	1.3	1.4
Total Phosphorous in mg/L	0.1	0.1	>0.1	0.1	>0.1
Ammonia in mg/L	0.01	0.18	0.21	0.21	0.24

Note:

* Action Levels were derived based on 95 percentile of baseline data. If baseline monitoring results were found to be below the detection limit, the detection was used as the Action Level or for calculation of the 95th percentile. During impact monitoring, 120% of upstream control station value at the same tide on the same day shall also be used as the Action Level for assessment of the monitoring results.

** Limit Levels were derived based on 99 percentile of baseline data. If baseline monitoring results were found to be below the detection limit, the detection was used as the Limit level or for calculation of the 99th percentile. During impact monitoring, 130% of upstream control station value at the same tide on the same day shall also be used as the Limit Level for assessment of the monitoring results.

Figure 5-1 Monitoring Locations for Water Quality Monitoring

6 PPWQM BENTHIC SURVEY

6.1 Monitoring Methodology and Parameters

6.1.1 In accordance with Para 3.4.1.1 of the approved EM&A Manual, Post Project Water Quality Monitoring programme was implemented during the first year of Operation Phase. Benthic Survey shall be carried out as part of PPWQM programme during the first year of operation phase of the upgraded PPSTW.

6.1.2 Para 1.5.1 of Appendix E of the approved EM&A Manual stated that benthic survey should be performed four times over the field work period of one year, in parallel with the sediment sampling, covering both wet and dry season.

6.1.3 The operation of Upgraded PPSTW is scheduled to commence on 15 August 2015, hence the one year operation phase monitoring period shall run from 15 August 2015 to 14 August 2016. The first wet season operation phase benthic survey was carried out on 15 August 2015 and the first dry season operation phase benthic survey was carried out on 14 November 2015 together with sediment quality sampling. The second dry season benthic survey was carried out on 21 February 2016, and the second wet season operation phase benthic survey was carried out on 15 May 2016.

6.1.4 The collected benthos samples were analysed for the below parameters through Field Sampling and Laboratory Work:

- Species composition to the lowest taxonomic level.
- Benthic community structure.

Field Sampling

6.1.5 At each monitoring station, five replicates of sediment samples were collected using a 0.1m^2 van Veen grab. Collected samples were accepted when at least two-third of grab volume was filled. A photographic record of the sediment texture and colour was taken. The samples were washed with gentle seawater through a plastic box with sieve of 0.5mm mesh size. Large animals that were visible from the residues were hand-picked into a small plastic vial. All remains were transferred into a plastic container for temporary storage.

Laboratory Work

6.1.6 The samples were delivered to laboratory within two hours of completion of field works. The samples were preserved with 70% ethanol solution followed by staining with 1% Rose Bengal solution. The samples were stored for one day to ensure sufficient preservation and staining. The fauna collected were sorted out from the sediment residues. For quality assurance, the sediment residues of one-third sorted samples were randomly rechecked. No missed fauna was found in the recheck.

6.1.7 The collected specimens were identified to the lowest taxonomic resolution. Examination of the morphological features of the specimens was undertaken with the aid of both stereoscopic and compound microscopes.

6.1.8 The taxonomic classification was conducted according with the following references: Polychaetes: Day (1967)[Ref.#4], Gallardo (1967)[Ref.#5], Fauchald (1977)[Ref.#6], Yang and Sun (1988)[Ref.#7], Wu et al. (1997)[Ref.#8], Sun and Yang (2004)[Ref.#9]; Arthropods: Dai and Yang (1991)[Ref.#10], Dong (1991)[Ref.#11]; and Molluscs: Qi (2004)[Ref.#12]. The number of individuals of each species was recorded by counting the anterior portions of the fauna only. Total biomass of each species was determined as preserved wet weight, after blotting the animals on filter paper for 3 minutes before weighing to the nearest 0.0001g.

Data Analysis

6.1.9 Data collected from five replicate samples at every monitoring station were pooled together for data analysis. Shannon-Weaver Diversity Index (*H'*) and Pielou's Species Evenness (J) were calculated using the formulae below,

$$H' = -\Sigma (Ni / N) \ln (Ni / N) \qquad \textit{(Shannon and Weaver, 1963)}$$

$$J = H' / \ln S \qquad \textit{(Pielou, 1966)}$$

where S is the total number of species in the sample, N is the total number of individuals, and Ni is the number of individuals of the i^{th} species

6.2 Monitoring Stations

6.2.1 In accordance with Para 1.5.1 of Appendix E of the approved EM&A Manual, benthic survey was undertaken in parallel with sediment sampling using the same monitoring stations. Nine of the stations represented the sensitive receivers which could potentially be affected by the untreated or partially treated effluent from the PPSTW (B1 to B6: gazetted beaches; WSD1 to WSD2: flushing water intake points and U2: secondary contact recreation subzone).

6.2.2 Stations NM1 and NM6 were control stations locating outside the influence zone of the emergency discharge as predicted by the water quality modelling and would unlikely be affected by the PPSTW.

6.2.3 During the benthic survey, slight adjustments to the location of seven of the monitoring stations were necessary due to shallow water near the shore that made the original locations inaccessible by the sampling vessel. The revised co-ordinates are provided in ***Appendix E*** for reference.

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4. Day, J.H., 1967. A monograph on the polychaeta of South Africa. Trustees of the British Museum, London.
5. Gallardo, V., 1967. Polychaeta from the Bay of Nha Trang, South Viet Nam. In: Scientific Results of Marine Investigations of the South China Sea and the Gulf of Thailand 1959-1961, Naga Report 4(3). Scripps Institution of Oceanography, University of California Press. La Jolla, California, 35-279.
6. Fauchald, K., 1977. The polychaete worms. Definitions and keys to the orders, families and genera. Natural History Museum of Los Angeles County, Science Series 28. Los Angeles, U.S.A.
7. Yang, D.J, Sun, R.P., 1988. Polychaetous annelids commonly seen from the Chinese waters (Chinese version). China Agriculture Press, China.
8. Wu, B.L., Wu, Q.Q., Qiu, J.W., Lu, H., 1997. Fauna Sinica, Phylum Annelida, Class Polychaeta, Order Phyllodocimorpha. Science Press. Beijing.
9. Sun, R.P., Yang, D.J., 2004. Fauna Sinica. Phylum Annelida. Class Polychaeta II, Order Nereidida. Science Press. Beijing.
10. Dai, A.Y., Yang, S.L., 1991. Crabs of the China Seas. China Ocean Press. Beijing.
11. Dong, Y.M., 1991. Fauna of ZheJiang Crustacea. Zhejiang Science and Technology Publishing House. ZheJiang.
12. Qi, Z.Y., 2004. Seashells of China. China Ocean Press. Beijing, China.

6.3 Monitoring Equipment

6.3.1 A 0.1m^2 van Veen grab, as shown in ***Photo 6-1***, was used to collect sediment samples for laboratory analysis.

Photo 6-1 Van Veen Grab Sampler

6.4 Wet Season Baseline Ecological Status of the Benthic Communities

6.4.1 The results will be comparing to the wet season mean benthic baseline survey results which were conducted in wet season before commissioning of the upgraded PPSTW at each monitoring locations. The mean of the benthic survey conduct during baseline were showed in ***Table 6-1 .***

Table 6-1 Benthic Survey Wet Season Baseline Results Summary

Station ID	Mean				
	Number of Species (spp. 0.5m^2)	Density (ind. m^{-2})	Biomass (g m^{-2})	Shannon weaver Diversity index H'	Pielou's Species Evenness J
B1	16	110	46.8	2.06	0.74
B2	13	43	6.2	2.13	0.84
B3	5	11	2.18	1.59	0.98
B4	6	17	0.55	1.34	0.95
B5	14	60	3.02	2.22	0.89
B6	19	216	36.14	1.88	0.7
WSD1	31	126	20.61	3.21	0.94
WSD2	11	70	4.59	1.89	0.86
U2	18	75	20.01	2.52	0.88
NM1	30	269	27.52	2.61	0.77
NM6	23	189	43.64	2.15	0.68

6.5 Monitoring Results

6.5.1 Benthic survey was carried out on 15 May 2016 and analysis of the benthos samples will take 4 to 6 weeks and therefore not available during the time of report preparation. Benthic survey results for this monitoring period will be reported in next monthly operation phase monitoring report.

7 PPWQM SEDIMENT QUALITY MONITORING

7.1 Monitoring Methodology and Parameters

7.1.1 In accordance with Section 3.4.1.1 of the final EM&A Manual, PPWQM programme shall be implemented during first year of the Operation Phase of the upgraded PPSTW.

7.1.2 Para 1.4.1 of Appendix E of the approved EM&A Manual stated that sediment quality monitoring should be performed four times over the field work period of one year to give adequate coverage of different tidal states during both wet and dry seasons.

7.1.3 The operation of Upgraded PPSTW is scheduled to commence in 15 August 2015, hence the one year operation phase monitoring period shall run from 15 August 2015 to 14 August 2016. The first wet season and dry season operation phase sediment quality monitoring were completed on 15 August 2015 and 15 November 2015 respectively. The second dry season sediment quality monitoring was completed on 21 February 2016, and the second wet season operation phase sediment quality monitoring was carried out on 15 May 2016.

7.1.4 ***Table 7-1*** summarizes the monitoring parameters agreed with the DEP and reference measurement methods.

Table 7-1 Sediment Quality Monitoring Parameters and Measurement Methods

Parameter	Method Reference / Technique [13]
Percentage of Silt/ Clay	BS 1377
pH Value	APHA 4500H: B
Acid Volatile Sulphide (AVS)	Allen H.E. et al , 1991
Total Volatile Solids (TVS)	APHA 2540 G
Total Organic Carbon (TOC)	APHA 5310 B
Ammonia (NH_4-N)	APHA 4500NH3: B&C
Total Nitrogen	APHA 4500Norg: D APHA 4500NO3: I
Total Phosphorus	APHA 4500P: B&H
Aluminium, Arsenic, Barium, Boron, Cadmium, Copper, Chromium, Lead, Manganese, Nickel, Silver, Vanadium, Zinc	USEPA 6020A
Iron	USEPA 6010A
Mercury	APHA 3112B

7.1.5 All laboratory analysis was carried out by ALS Technichem (HK) Pty Limited, which is a HOKLAS accredited laboratory.

13 .The proposal included the sampling locations and analysis of sediment samples to be conducted were endorsed by IEC on 16 November 2012 and approved by EPD on 5 March 2013.

7.1.6 Samples were stored in appropriate containers provided in advance by the testing laboratory. The containers were immediately sealed and labelled. Sample ID and sampling date were marked on each sample. The samples were then stored in insulated containers with ice packs to maintain a dark and below 4°C condition without freezing. All collected samples were collected by the testing laboratory within 24 hours of sampling.

7.2 Monitoring Stations

7.2.1 As agreed with the DEP, the sediment quality monitoring were carried out at the same 11 monitoring stations as for water quality monitoring, as shown in ***Table 5-2*** and in ***Figure 5-1***.

7.2.2 During the sediment sampling, slight adjustments to the location of seven of the monitoring stations were necessary due to shallow water near the shore that made the original locations inaccessible by the sampling vessel. The revised co-ordinates of the seven monitoring stations (B1, B3 to B6, WSD1 and U2) are provided in ***Appendix E*** for reference. As far as reasonably practicable, the relocated sampling points were chosen at the closest possible locations from the original locations. The relocated stations were 73 to 341m from the original co-ordinates with similar water depth (difference <1.0m). Hence the sediment quality monitoring data can be aligned with the water quality data.

7.3 Monitoring Equipment

7.3.1 A 0.1m^2 van Veen grab, same as the equipment used for benthic survey in ***Section 6.3*** was used for sample collection.

7.4 Action and Limit Levels

7.4.1 The Action and Limit Levels for the sediment quality monitoring was established by using the baseline sediment monitoring data which were gathered before commissioning of the upgraded PPSTW for each monitoring locations. The Action and Limit Levels are shown in ***Table 7-2***.

7.5 Monitoring Results and Observations

7.5.1 Sediment sampling was carried out on 15 May 2016 and the sediment quality monitoring results are summarised in ***Appendix H***.

7.5.2 As indicated in ***Appendix H***, 6 exceedances of Action Level and 46 exceedances of Limit Level for sediment quality monitoring were recorded in various monitoring stations. Similar to the water quality monitoring, baseline sediment quality monitoring was conducted in September 2012 to August 2013. After completion of the baseline monitoring, a number of major infrastructure construction projects has then commenced in the western water of Hong Kong that involves a lot of reclamation and marine construction works. These projects were suspected to be the major contributor for marine water quality pollution in the area.

7.5.3 The effluent quality monitoring results also demonstrated that discharges from the upgraded PPSTW can both comply with the discharge licence criteria and assumptions made in the EIA report. As indicated in ***Appendix F***, the recorded results for E.coli, BOD and SS were all respectively below the EIA Design Assumption.

7.5.4 Thus, the exceedances being recorded shall not be project-related.

Table 7-2 Action and Limit Levels for Sediment Quality

Station ID	B1		B2		B3		B4		B5		B6		WSD1		WSD2		U2		NM1		NM6	
Monitoring Parameters	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level
pH	7.8	7.8	7.8	7.8	7.8	7.8	8.0	8.0	7.9	7.9	8.1	8.1	8.1	8.1	8.0	8.0	8.1	8.1	8.1	8.1	8.1	8.1
Volatile Solids (%)	6.5	6.7	7.4	7.6	35.3	36.7	5.2	5.2	6.0	6.2	4.3	4.4	4.1	4.2	5.3	5.5	3.6	3.6	2.4	2.4	1.5	1.5
Acid Volatile Sulphides (mg/kg)	46	47	227	233	94	95	40	41	38	39	36	37	37	10	10	23	23	10	10	14	14	10
Ammonia (mg/kg)	10	10	20	20	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Nitrite + Nitrate (mg/kg)	0.5	0.5	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.5	0.2	0.2	0.2	0.2	0.4	0.4	1.0	1.0	0.2	0.2
Total Nitrogen (mg/kg)	1,090	1,098	1,237	1,239	1,236	1,239	999	1,000	968	970	843	849	590	590	680	688	657	667	631	638	435	439
Total Phosphorus (mg/kg)	551	554	603	605	631	633	526	528	533	537	439	442	324	324	373	374	459	459	362	364	448	458
Aluminium(mg/kg)	39,800	40,280	45,175	45,595	47,140	47,588	39,655	40,011	38,985	39,317	30,135	30,347	24,135	24,667	32,945	33,789	23,355	23,391	19,582	19,996	17,750	17,950
Boron(mg/kg)	31	31	35	35	33	33	26	26	26	26	21	21	20	20	25	26	23	23	24	24	13	13
Iron(mg/kg)	34,005	34,241	39,295	39,619	38,395	38,639	35,655	35,851	34,280	34,456	26,610	26,762	21,530	21,906	30,385	31,037	52,980	53,796	19,200	19,520	22,220	22,364
Mercury(mg/kg)	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Arsenic(mg/kg)	12	12	13	13	14	14	13	13	13	13	10	10	7	7	10	10	13	13	8	8	10	10
Barium(mg/kg)	49	49	56	57	56	56	46	46	45	45	36	36	30	30	65	66	30	31	35	36	23	24
Cadmium(mg/kg)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Chromium(mg/kg)	42	42	52	52	52	52	44	44	42	42	31	31	26	27	32	33	31	31	25	26	22	22
Copper(mg/kg)	40	40	81	81	65	65	49	49	45	45	32	32	25	26	54	56	26	26	24	25	13	13
Lead(mg/kg)	40	40	54	54	51	51	42	42	41	41	33	33	26	26	29	30	41	41	63	65	22	22
Manganese(mg/kg)	664	672	543	546	580	583	531	533	537	539	529	535	385	386	480	481	695	701	562	565	356	362
Nickel(mg/kg)	25	25	30	30	30	30	25	25	25	25	18	18	15	15	18	19	19	19	14	14	13	13
Silver(mg/kg)	0.5	0.5	0.7	0.7	0.7	0.7	0.5	0.5	0.6	0.6	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.1	0.1
Vanadium(mg/kg)	49	49	60	60	58	58	51	52	50	51	40	40	28	28	31	31	38	39	33	34	33	34
Zinc(mg/kg)	133	134	187	188	172	173	140	141	139	140	105	105	87	89	99	101	111	112	105	108	51	52
Total Organic Carbon(%)	1.08	1.09	1.44	1.44	1.26	1.27	0.97	0.97	1.09	1.10	0.82	0.83	0.81	0.83	1.19	1.22	0.94	0.96	1.01	1.02	0.44	0.45
Gravel (%)	10	10	0	0	0	0	1	1	1	1	9	9	22	22	16	17	3	3	33	34	10	10
Sand (%)	31	31	2	2	4	4	18	18	15	15	33	33	48	49	39	40	69	70	51	51	65	66
Silt (%)	37	37	63	63	61	61	57	58	57	57	39	39	24	24	43	44	34	35	18	19	26	27
Clay (%)	33	33	44	44	44	44	36	36	37	38	26	26	29	30	34	35	19	20	18	18	19	19

Note:

* Action Levels were derived based on 95 percentile of baseline data and 120% of upstream control station value on the same day shall also be used as the Action Level for assessment of the monitoring results.

** Limit Levels were derived based on 99 percentile of baseline data and 130% of upstream control station value on the same day shall also be used as the Limit Level for assessment of the monitoring results.

8 LANDSCAPE AND VISUAL MONITORING

8.1.1 In accordance with Section 5.4 of the final EM&A Manual, landscape and visual mitigation measures shall be monitored monthly during the first year of the Operational Phase to ensure the effectiveness of the mitigation measures. All measures undertaken by both the Contractor and their Landscape Contractor during the first year of the operational phase shall be audited by the registered landscape architect (RLA).

8.1.2 ERM Hong Kong Limited (ERM) has been commissioned to carry out the landscape and visual mitigation measures monitoring including the 12 months establishment period in the Operation Phase.

8.2 Monitoring Results and Recommendations

8.2.1 The landscape and visual monitoring was carried out on 12 May 2016. The Hong Kong Observatory's Tuen Mun Weather Station reported that the weather on the day of the patrol was sunny. The weather condition during the period is provided in ***Appendix J***.

8.2.2 The site inspection findings and recommendations made by the RLA are contained in the monthly Operational Phase Landscape & Visual Monitoring Report prepared by ERM is provided in ***Appendix K***. The findings and recommendations also summarised in ***Table 8-1***.

8.2.3 No non-compliance of the landscape and visual mitigation measures has been recorded in ERM's landscape and visual mitigation measures monitoring report.

Table 8-1 Summary of Site Audit Findings and Recommendations

Area of Works	Establishment Works Stage	
	Observation	**Recommendation/Action**
Outstanding issues		
Issues Observed in this Audit		
Within Pillar Point Sewage Treatment Works	Trees nos. 131, 133, 134, 129, R156, R157, N84 and R185 in ground floor garden were observed in poor condition.	It is recommended to carry out additional maintenance works for the trees no. N84, 128, 134 and R185. The Contractor had prepared the tree felling proposal for the tree nos 131, 133, 129, R156 and R157. Trees will be replaced after it is approved.
Within Pillar Point Sewage Treatment Works	The non-abrasive nylon rope were observed released and tree tags had been provided.	-
Within Pillar Point Sewage Treatment Works	Collapsed tree was observed to be replanted during this site inspection.	It is recommended to provide sufficient watering and carry out maintenance works for the collapsed tree.
Within Pillar Point Sewage Treatment Works	Groundcover and lawn were observed in poor condition during this site inspection	It is strongly recommended to provide sufficient watering and carry out necessary maintenance works for the groundcover and lawn.

9 ECOTOXICOLOGICAL ASSESSMENT

9.1 Assessment Methodology

9.1.1 In accordance with Section 3.4.1.1 of the final EM&A Manual, PPWQM programme shall be implemented during first year of the Operation Phase of the upgraded PPSTW. Ecotoxicological Assessment shall be carried out as part of PPWQM programme during the first year of operation phase of the upgraded PPSTW.

9.1.2 Para 1.6.1 of Appendix E of the approved EM&A Manual stated that Ecotoxicological Assessment shall be carried out to determine the toxicity of the treated effluent and the toxicity of the receiving marine water.

9.1.3 An Ecotoxicological Assessment Programme with detailed requirements for conducting Whole Effluent Toxicity Test (WETT) was submitted and approved by the Director of Environmental Protection.

9.1.4 As the hydrodynamic conditions change between wet and dry seasons, each WETT is proposed to be conducted once during wet season and once during dry season in the first year after project commencement. Furthermore, the three (3) WETTs may be conducted separately as test species may not be available at the same time. Effluent sample collection for the dry season WETT and wet season WETT were carried out on 3 to 4 February 2016 and 19 to 20 May 2016 respectively.

9.2 Whole Effluent Toxicity Test (WETT)

9.2.1 WETT was conducted to determine the whole effluent toxicity of UV disinfected CEPT effluent from Pillar Point Sewage Treatment Works for the following three (3) species:

- Dinoflagellate (*Prorocentrum dentatum*), with 7-days growth inhibition test
- Barnacle Larvae (*Balanus amphitrite*), with 4-days settlement test
- Fish (*Oryzias melastigma*), with 14-days survival and growth test

9.2.2 The toxicity tests for barnacle larvae, fish and algae are to determine the chronic toxicity of the effluents to the species via percentage of successful metamorphosis, growth measurements and cell density measurements respectively.

9.2.3 The WETT followed the protocol agreed and adopted in previous study that aimed to establish fisheries and marine ecological criteria appropriate to local marine biota and fisheries resources (Centre for Coastal Pollution and Conservation (CCP&C), 2001). The species proposed in this WETT are based on their availability according to the PPWQM timeline, of which are considered as the “representative local species” of great ecological and fisheries significance.

Effluent Sample Collection

9.2.4 Effluent sample collection for dry season WETT and wet season WETT were conducted on 3 to 4 February 2016 and 19 to 20 May 2016 respectively, in conjunction with the

effluent sampling. Sampling location and procedures shall follow the effluent monitoring programme as specified in the PPWQM Programme. The effluent sampling was planned to ensure adequate volume was collected in order to prepare sufficient amount of flow-weighted composite sample for WETT. The effluent samples was kept in sterilized containers and transported to the laboratory using a chilled vehicle. WETT commenced within 36 hours from sample collection.

Dilution Seawater Collection

9.2.5 Dilution seawater used for WETT was collected from Clear Water Bay, Sai Kung. The site is away from any effluent discharge and is free from toxicity and other contamination. It is also far from areas of agricultural runoff, storm sewers or other potential point source contaminations.

9.2.6 The collected seawater was filtered and stored in a fibre tank and circulated through a UV sterilization system for more than 24 hours. Autoclave sterilization was completed at 120°C at least fifteen (15) minutes before use.

9.2.7 The salinity was adjusted to 30% with artificial sea salt or distilled water if necessary.

Test Methodology and Procedures

9.2.8 The WETT methodology and procedures followed the *Standard Operating Procedures for Whole Effluent Toxicity Test (SOP for WETT)* developed by the Environmental Protection Department (EPD) for the proposed species issued in February 2009. The test consisted of five effluent concentrations and the WETT results will be used to derive the inhibition concentration (IC), No Observed Effect Concentration (NOEC) and Lowest Observed Effect Concentration (LOEC) to determine whether toxicity of the effluent has exceeded the target toxicity level.

9.2.9 At least three (3) replicates of each control and effluent concentration were tested such that parametric and non-parametric statistical tests can be performed for each set of data.

Reference Toxicant Testing

9.2.10 Cadmium (Cd^{2+}) was used as the reference toxicant. Five (5) concentrations spanning over the effective concentration range were selected for testing. The concentration range covered at least one IC below and one IC above the intended IC. In addition, to facilitate regression analysis, at least two levels of inhibition between 10% and 90% were included.

9.2.11 Five (5) replicates for each reference toxicant concentration was made and dose-response curves will be constructed based on the findings to calculate LOEC, NOEC and IC.

9.2.12 An additional effluent sample was retained. Should the effluent toxicity level exceed the target, the sample will be further analyzed for contaminants as listed in ***Table 9.1***.

Table 9-1 List of Contaminants and Analytical Methods to be Applied

Determinant	Suggested Method	Suggested Detection Limit (ug/L)
Aluminium	USEPA 200.7	1
Antimony		1
Arsenic		1
Barium		1
Chromium III		1
Copper		1
Lead		1
Mercury		0.1
Nickel		1
Selenium		1
Silver		1
Tin		1
Vanadium		1
Zinc		1
Ammonia	APHA 4500NH: G	10
Sulphide	APHA 20e 4500-S^{2-}	10
TCDD	USEPA 1613	1 TEQ pg/L
Toluene	USEPA 1624	10
Diazinon	USEPA 1657	0.01
Malathion	USEPA 1657	0.01
Sulphide	APHA 17ed 4500-S^{2-}	0.01
Suspended Solids	APHA 17ed 2540D	2

9.2.13 The suggested detection limit is based on local/international authority approved standard.

Data Collection and Analysis

9.2.14 All raw data including water quality measurements, cell counts, fish sizes and mortality was recorded on data sheets. Formal statistical analysis of raw data will be performed in accordance with the flowchart in Figure 5.1 in the SOP for each respective species.

Target Toxicity Level

9.2.15 The target toxicity level is derived from the dilution potential of the receiving water body. The effluent from PPSTW is considered not inducing unacceptable toxicity to aquatic life if chronic toxicity at edge of mixing zone (EMZ) is < 1.0 chronic toxicity unit (TU_c). Based on these two conditions, the target chronic toxicity level shall be determined in a supplemental far-field modeling study to derive the average dilution factor (DF) at the edge of the mixing zone. The target chronic toxicity level can be determined as follows:

$$NOEC_{TARGET} = \frac{100}{DF_{EMZ} \times TU_c}$$

9.2.16 A water quality and plume dispersion modelling study is being carried out as part of the Post-Project Water Quality Monitoring Programme and chronic toxicity levels will be established based on the far-field dilution factor to be established by the model prior to the WETT. The target toxicity levels are summarized in ***Table 9.2***.

Table 9-2 Target Toxicity Levels of PPSTW Effluent

Effluent Characteristics	Dilution Factor		Target Level	
Chronic Toxicity	Wet Season	Dry Season	Wet Season	Dry Season
NOEC in 7-day algae growth inhibition test	451[Note 1]	504[Note 1]	≥22.2%	≥19.8%
NOEC in 4-day barnacle larvae settlement test				
NOEC in 14-day fish survival and growth test				

Note:
1. Dilution factor was generated from the plume dispersion modelling.

9.2.17 In the event that the results exceed the target toxicity levels, further investigation shall be carried out to identify specific pollutants that contributed to the toxicity, including:

- Sample analysis collected from testing chambers at the beginning and the end of WETT for contaminants as shown in Table 1.1;
- Review the data collected in the effluent quality testing and identify the pollutants that may contribute to the observed toxicity;
- Re-test the species that exceeded the target level toxicity; and
- Should the re-test results indicate persistent pollution, advise operators to implement measures to reduce contaminant concentrations in the effluent

Quality Assurance / Quality Control (QA/QC)

9.2.18 The QA/QC measures shall refer to the QA/QC section from the SOP for each respective species such that the acceptability criteria is met, as shown in ***Table 1.3***:

Table 9-3 Test Acceptability Criteria

Fish	Barnacle Larvae	Algae
• The average survival of fish in the control > 85%, AND • Significant change in body weight and/or body length is observable.	• Mean % settlement in the seawater control is greater than 50%	• The control cell density shall have increased by a factor >16 in 7 days, AND • The level of variability between control replicates (i.e. coefficient of variation) is <20%

9.2.19 Should the test results in the controls do not meet the acceptability criteria, the validity of WETT data should be evaluated and test to be re-performed if required.

9.3 Monitoring Results

9.3.1 Sampling of Ecotoxicological assessment was carried out on 19 to 20 May 2016 and WETT were carried out in the laboratory on 21 May to 5 June 2016. Analysis of the results will take 4 to 6 weeks and therefore not available during the time of report preparation. The results of assessment will be reported in next monthly operation phase monitoring report.

10 CONCLUSION

10.1.1 In accordance with the EM&A Manual for the Upgrading of PPSTW, operation phase monitoring report is required on a monthly basis after the Project commissioning. The purpose of the operation phase monitoring report is to confirm the predictions of odour and water quality made in the EIA report and also ensure the effectiveness of the landscape and visual mitigation measure.

10.1.2 This is the 10th Monthly Operation Phase Monitoring Report which summarizes all environmental monitoring events carried out during post-commissioning period from 1 to 31 May 2016. A total of eight monitoring events were carried out during the reporting period.

10.1.3 The exact dates of monitoring carried out are shown in ***Table 10-1***, below:

Table 10-1 Monitoring Dates During the Reporting Month

Monitoring Events	10th Reporting Month Monitoring Period: 1 – 31 May 2016
Odour Monitoring	16/5/2016
Effluent Quality Monitoring	19/5/2016 - 20/5/2016
Sediment Quality Monitoring	15/5/2016
Benthic Survey	15/5/2016
Water Quality Monitoring	24/5/2016
Ecotoxicological Monitoring Sampling	19/5/2016 - 20/5/2016
H_2S Monitoring	1/5/2016 - 31/5/2016 (continuous monitoring)
Landscape and Visual Monitoring	12/5/2016

10.1.4 The monitoring results carried out in reporting period were certified by the Environmental Team (ET) Leader and verified by the Independent Environmental Checker (IEC) in accordance with the EM&A Manual.

10.1.5 All laboratory results satisfied the QA/QC requirements and all monitoring equipment was properly calibrated and has valid calibration certificates.

10.1.6 No exceedance of Action and Limit Level of odour monitoring was recorded at the monitoring location in the reporting month.

10.1.7 No exceedance of Action and Limit Level of odour emission monitoring was recorded at the monitoring location in the reporting month.

10.1.8 No exceedance of Action and Limit Level of effluent monitoring was recorded at the monitoring location in the reporting month.

10.1.9 8 exceedances of Action Level and 10 Limit Level exceedance of water quality monitoring were recorded at the monitoring location in the reporting month. The exceedances are considered to be non-project related.

10.1.10 6 exceedances of Action Level and 46 exceedances of Limit Level for sediment quality monitoring were recorded at the monitoring location in the reporting month. The exceedances are considered to be non-project related.

10.1.11 The monitoring results for benthic survey are pending and the results will be reported in the next reporting period. No non-compliance of the landscape and visual mitigation measures has been recorded.

10.1.12 The assessment results for ecotoxicological assessment are pending and the results will be reported in the next reporting period.

10.1.13 No non-compliance of the landscape and visual monitoring has been recorded in the reporting month.

10.1.14 No environmental complaint was reported during the reporting month.

10.1.15 The ET will keep track on the EM&A programme to ensure the compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

APPENDIX A

Nose Sensory Test Report

SMEC ASIA LIMITED

REPORT ON NOSE SENSORY TEST

(Project No. : 4101-10002276 #039)

Environmental Management Division
Hong Kong Productivity Council

Quality Index

Date	Reference No.	Prepared by	Endorsed by
16 May 2016	10002276#039v1	KW Poon	CHAU Kam Man, Grant

1. COMPANY NAME AND NAME OF PANELISTS

Company name : SMEC Asia Limited
Name of panelists : (1) Cheung Man Kit
(2) Kong Wing Man, Samantha

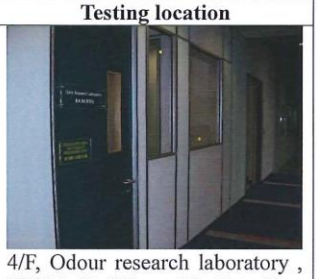
2. OBJECTIVE

The objective of this study was to have a nose sensory test for SMEC Asia limited staff, Cheung Man Kit and Kong Wing Man (Samantha), and report them if they are to be "certified panelists" according to the British Standard Method BS EN13725:2003.

3. TESTING DATES AND LOCATION

The dates of testing and testing location are summarized in Table 1:

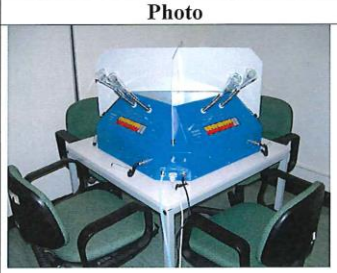
Table 1: Name of panelist, testing dates and testing location

Name of panelist	Testing Dates	Testing location
Cheung Man Kit (Re-certified)	26 April 2016	 4/F, Odour research laboratory , HKPC Building, 78 Tat Chee Avenue, Kowloon
Kong Wing Man, Samantha	(1) 18 April 2016 (2) 21 April 2016 (3) 26 April 2016	

4. METHODOLOGY OF MEASUREMENT

The methodology of the nose sensory test was listed in Table 2:

Table 2: Methodology of the nose sensory test

Description	Methodology	Photo
Nose sensory test	BS EN13725:2003:- (1) Odour concentration measurement (60 ppm n-butanol): Dynamic olfactometer (Model TO9, Ecoma) (2) Force choice method	 Olfactometer (Model TO9, Ecoma)

5. RESULTS OF THE TEST

Certified 60ppm/v standard n-butanol gas was applied as reference material and the n-butanol thresholds in the range of 20 to 80 ppb/v (accordance with BS EN13725:2003) was determined as follows (Table 3):-

Table 3: Nose sensory test results

Odour panelist	Repeatability (Requirement: Repeatability ≤ 2.3)	Accuracy (Requirement: 20 ≤ Accuracy ≤ 80)	Pass/ Fail
Cheung Man Kit	2.25	75.08	Pass
Kong Wing Man, Samantha	1.40	51.01	Pass

*The requirements followed BS EN13725:2003.

6. DISCUSSION

Referring to the nose sensory test results, the following findings could be summarized:

a. Both Cheung Man Kit and Kong Wing Man, Samantha of SMEC Asia Limited passed the repeatability and accuracy requirement of nose sensory test according to British standard method BS EN13725:2003.

b. Both Cheung Man Kit and Kong Wing Man, Samantha of SMEC Asia Limited are certified panelists with effective from 26 April 2016 to 25 April 2017.

7. LIMITATION OF MEASUREMENT

The results obtained in this test are only representative of the nose sensory system at the specific time. The result should not be extrapolated to other conditions without caution. Please refer to code of behavior of BS EN13725:2003 for the details.

Environmental Management Division
Hong Kong Productivity Council

16 May 2016

APPENDIX B

Odour Monitoring Results and Field Record Sheet

Summary of Odour Intensity (OI) at Each Monitoring Location

Date	Period	ID	Location	Time	Wind Direction	Wind Speed (m/s)	Odour Intensity		Odour Characteristics
							Panellist 1	Panellist 2	
16-May-16	Daytime (14:54-15:54)	A1	River Trade Terminal Office	15:15	NE	0.4	0	0	-
		A2	Chu Kong Warehouse 1	15:04	SW	0.2	0	0	-
		A3	Chu Kong Warehouse 2	15:02	SW	0.9	0	0	-
		A4	Wai Sang Sawmill Ltd.	15:04	SW	0.1	0	0	-
		A5	Pillar Point Fire Station	15:00	S	1.7	0	0	-
		A6	Sunhing Hung Kai Tuen Mun Godown	14:54	NE	0.1	0	0	-
		A7	EMSD Servicing Vehicle Station	15:28	E	3.9	0	0	-
		S1	Northern Site Boundary	15:40	W	0.1	0	0	-
		S2	Eastern Site Boundary	15:43	S	0.1	0	0	-
		S3	Southern Site Boundary	15:50	W	0.5	0	0	-
		S4	Western Site Boundary	15:54	NW	0.1	0	0	-
16-May-16	Evening (17:00-17:56)	A1	River Trade Terminal Office	17:23	E	0.7	0	0	-
		A2	Chu Kong Warehouse 1	17:10	SW	1.8	0	0	-
		A3	Chu Kong Warehouse 2	17:08	SW	1.5	0	0	-
		A4	Wai Sang Sawmill Ltd.	17:12	SW	0.7	0	0	-
		A5	Pillar Point Fire Station	17:06	SW	0.1	0	0	-
		A6	Sunhing Hung Kai Tuen Mun Godown	17:00	W	2.6	0	0	-
		A7	EMSD Servicing Vehicle Station	17:36	E	0.3	0	0	-
		S1	Northern Site Boundary	17:42	N	1.6	0	0	-
		S2	Eastern Site Boundary	17:45	E	0.3	0	0	-
		S3	Southern Site Boundary	17:52	NW	0.1	0	0	-
		S4	Western Site Boundary	17:56	NW	0.1	0	0	-

Upgrading of Pillar Point STW - Investigation, Design and Construction
Operation Period EM&A - Odour Patrol Record Sheet

Date	16/05/2016
HKO Monitoring Location	Tuen Mun
Weather	Sunny
Temperature	26.1
Humidity	63%

Odour Intensity (OI)

0- Not detected and an odour so weak that it cannot be easily characterized and described.
1- Slight identifiable odour and slight chance to have odour nuisance.
2- Moderate identifiable and moderate chance to have odour nuisance.
3- Strong identifiable, likely to have odour nuisance.
4- Extreme severe odour and unacceptable odur level.

ID	Location	Daytime Period:					Evening Period:				
		Time	Wind Direction	Wind Speed (m/s)	OI	Odour Characteristics	Time	Wind Direction	Wind Speed (m/s)	OI	Odour Characteristics
A1	River Trade Terminal Office	15:15	NE	0.1	0	/	17:23	E	0.7	0	/
A2	Chu Kong Warehouse 1	15:04	SW	3.4	0	/	17:10	SW	1.8	0	/
A3	Chu Kong Warehouse 2	15:02	SW	1.2	0	/	17:08	SW	1.5	0	/
A4	Wai Sang Sawmill Ltd.	15:04	SW	3.7	0	/	17:12	SW	0.7	0	/
A5	Pillar Point Fire Station	15:00	S	1.6	0	/	17:06	SW	0.1	0	/
A6	Sunhing Hung Kai Tuen Mun Godown	14:54	NE	0.7	0	/	17:00	W	2.6	0	/
A7	EMSD Servicing Vehicle Station	15:28	E	0.7	0	/	17:36	E	0.3	0	/
S1	Northern Site Boundary	15:40	W	0.1	0	/	17:42	N	1.6	0	/
S2	Eastern Site Boundary	15:43	S	1.5	0	/	17:45	E	0.3	0	/
S3	Southern Site Boundary	15:50	W	0.6	0	/	17:52	NW	0.1	0	/
S4	Western Site Boundary	15:54	NW	0.1	0	/	17:56	NW	0.1	0	/

I declare that the below requirements as listed in Clauses 2.3.1.9 and 2.7 of the final EM&A Manual are complied with:

- passing the nose sensory test;
- being free from any respiratory illnesses;
- no smoking, eating, drinking (except water) or using chewing gum or sweets 30 min before and during odour intensity analysis;
- taking great care not to cause any interference with their own perception or that of others by lack of personal hygiene or the use of perfumes, deodorants, body lotions or cosmetics;
- no communication with each other about the results of our choices; and
- not normally working at or live in the areas in the vicinity of PPSTW.

	Name	Signature	Date
Recorded By:	Man Cheung	Man	16/05/2016
Checked By:	Vivian Chan	V.C	17/05/16

707134 | Odour Patrol Record Sheet | Revision No. 1
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Upgrading of Pillar Point STW - Investigation, Design and Construction
Operation Period EM&A - Odour Patrol Record Sheet

Date	16/05/2016
HKO Monitoring Location	Tuen Mun
Weather	Sunny
Temperature	26.1
Humidity	63%

Odour Intensity (OI)

0- Not detected and an odour so weak that it cannot be easily characterized and described.
1- Slight identifiable odour and slight chance to have odour nuisance.
2- Moderate identifiable and moderate chance to have odour nuisance.
3- Strong identifiable, likely to have odour nuisance.
4- Extreme severe odour and unacceptable odur level.

ID	Location	Daytime Period: -					Evening Period: -				
		Time	Wind Direction	Wind Speed (m/s)	OI	Odour Characteristics	Time	Wind Direction	Wind Speed (m/s)	OI	Odour Characteristics
A1	River Trade Terminal Office	15:15	NE	0.1	0	/	17:23	E	0.7	0	/
A2	Chu Kong Warehouse 1	15:04	SW	3.4	0	/	17:10	SW	1.8	0	/
A3	Chu Kong Warehouse 2	15:02	SW	1.2	0	/	17:08	SW	1.5	0	/
A4	Wai Sang Sawmill Ltd.	15:04	SW	3.7	0	/	17:12	SW	0.7	0	/
A5	Pillar Point Fire Station	15:00	S	1.6	0	/	17:06	SW	0.1	0	/
A6	Sunhing Hung Kai Tuen Mun Godown	14:54	NE	0.7	0	/	17:00	W	2.6	0	/
A7	EMSD Servicing Vehicle Station	15:28	E	0.7	0	/	17:36	E	0.3	0	/
S1	Northern Site Boundary	15:40	W	0.1	0	/	17:42	N	1.6	0	/
S2	Eastern Site Boundary	15:43	S	1.5	0	/	17:45	E	0.3	0	/
S3	Southern Site Boundary	15:50	W	0.6	0	/	17:52	NW	0.1	0	/
S4	Western Site Boundary	15:54	NW	0.1	0	/	17:56	NW	0.1	0	/

I declare that the below requirements as listed in Clauses 2.3.1.9 and 2.7 of the final EM&A Manual are complied with:

- **passing the nose sensory test;**
- **being free from any respiratory illnesses;**
- **no smoking, eating, drinking (except water) or using chewing gum or sweets 30 min before and during odour intensity analysis;**
- **taking great care not to cause any interference with their own perception or that of others by lack of personal hygiene or the use of perfumes, deodorants, body lotions or cosmetics;**
- **no communication with each other about the results of our choices; and**
- **not normally working at or live in the areas in the vicinity of PPSTW.**

	Name	Signature	Date
Recorded By:	Samantha Kong		16/5/2016
Checked By:	Vivian Chan		17/5/16

707134 | Odour Patrol Record Sheet | Revision No. 1
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APPENDIX C

Monitoring Equipment Calibration Certificates

FIREMARK

Calibration Certificate

Number: CCS/65694

Customer: ATAL-Degremont Joint Venture
Contact Person: Mr. Gary Chan
System Model: "Crowcon" Gasmonitor Plus Control Panel
Detector Model: "Crowcon" Xgard Type 1 H2S Gas Detector
Plant Address: DOUA at DSD Pillar Point Sewage Treatment Works

Channel Number	Sensor Type	Measuring Range	Serial Number	Alarm 1	Alarm 2	Calibration Gas	Result
1	H2S	0 to 100ppm	AE8124	100	100	100ppm	Passed
2	H2S	0 to 50ppm	AE8134A	50	50	50ppm	Passed
4	H2S	0 to 10ppm	AE8141A	10	10	10ppm	Passed
5	H2S	0 to 10ppm	AE8141B	10	10	10ppm	Passed
7	H2S	0 to 10ppm	AE8107B	10	10	10ppm	Passed
9	H2S	0 to 10ppm	AE8107D	10	10	10ppm	Passed
10	H2S	0 to 10ppm	AE8107E	10	10	10ppm	Passed

Remarks: Instrument PASSED – fit for service.

Next calibration: 12th Jan 2017

Authorized Signature

Technical Department
13th Jan 2016

FireMark Hong Kong Limited
Flat A, 11/F., Hop Hing Industrial Building, 704 Castle Peak Road, Lai Chi Kok, Kowloon, Hong Kong.
Tel : (852) 2751 8871 Fax : (852) 2751 880

FIREMARK

Calibration Certificate

Number: CCS/65695

Customer: ATAL-Degremont Joint Venture
Contact Person: Mr. Gary Chan
System Model: "Crowcon" Gasmonitor Plus Control Panel
Detector Model: "Crowcon" Xgard Type 1 H2S Gas Detector
Plant Address: DOB at DSD Pillar Point Sewage Treatment Works

Channel Number	Sensor Type	Measuring Range	Serial Number	Alarm 1	Alarm 2	Calibration Gas	Result
1	H2S	0 to 100ppm	AE8224	100	100	100ppm	Passed
2	H2S	0 to 50ppm	AE8234A	50	50	50ppm	Passed
3	H2S	0 to 50ppm	AE8234B	50	50	50ppm	Passed
4	H2S	0 to 10ppm	AE8241A	10	10	10ppm	Passed
5	H2S	0 to 10ppm	AE8241B	10	10	10ppm	Passed
6	H2S	0 to 10ppm	AE8207A	10	10	10ppm	Passed

Remarks: Instrument PASSED – fit for service.

Next calibration: 12th Jan 2017

Authorized Signature

Technical Department
13th Jan 2016

FireMark Hong Kong Limited
Flat A, 11/F., Hop Hing Industrial Building, 704 Castle Peak Road, Lai Chi Kok, Kowloon, Hong Kong.
Tel : (852) 2751 8871 Fax : (852) 2751 880

Remarks:

1. The sensor of channel number 1 is used for monitoring the H_2S emission level at inlet.
2. The sensor of channel number 4 and 5 are used for monitoring the H_2S emission level at outlet

ALS Technichem (HK) Pty Ltd
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F: +852 2610 2021
www.alsglobal.com

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR THOMAS WONG	**WORK ORDER:**	HK1612309
CLIENT:	ENOVATIVE ENVIRONMENTAL SERVICE LTD	**SUB-BATCH:**	0
ADDRESS:	RM811, HIN PUI HOUSE,	**LABORATORY:**	HONG KONG
	HIN KENG ESTATE,	**DATE RECEIVED:**	31/03/2016
	TAI WAI,	**DATE OF ISSUE:**	06/04/2016
	N.T., HONG KONG		

COMMENTS

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.
The "Next Calibration Date" is recommended according to best practice principals as practised by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test:	Conductivity, Dissolved Oxygen, pH, Salinity, Temperature and Turbidity
Equipment Type:	Multifunctional Meter
Brand Name:	YSI
Model No.:	6920 V2
Serial No.:	00019CB2
Equipment No.:	--
Date of Calibration:	31 March, 2016

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.

Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1612309
Sub-Batch: 0
Date of Issue: 06/04/2016
Client: ENOVATIVE ENVIRONMENTAL SERVICE LTD

Description: Multifunctional Meter
Brand Name: YSI
Model No.: 6920 V2
Serial No.: 00019CB2
Equipment No.: --
Date of Calibration: 31 March, 2016 Date of next Calibration: 30 June, 2016

Parameters:

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

Expected Reading (uS/cm)	Displayed Reading (uS/cm)	Tolerance (%)
146.9	149.2	+1.6
6667	6689	+0.3
12890	12920	+0.2
58670	58062	-1.0
	Tolerance Limit (%)	±10.0

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
1.50	1.54	+0.04
5.02	5.09	+0.07
9.04	8.96	-0.08
	Tolerance Limit (mg/L)	±0.20

pH Value **Method Ref: APHA 21st Ed. 4500H:B**

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.06	+0.06
7.0	7.06	+0.06
10.0	9.94	-0.06
	Tolerance Limit (pH unit)	±0.20

Salinity **Method Ref: APHA (21st edition), 2520B**

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
10	9.92	-0.8
20	19.82	-0.9
30	29.88	-0.4
	Tolerance Limit (%)	±10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

ALS Technichem (HK) Pty Ltd
ALS Environmental

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1612309
Sub-Batch: 0
Date of Issue: 06/04/2016
Client: ENOVATIVE ENVIRONMENTAL SERVICE LTD

Description: Multifunctional Meter
Brand Name: YSI
Model No.: 6920 V2
Serial No.: 00019CB2
Equipment No.: --
Date of Calibration: 31 March, 2016 Date of next Calibration: 30 June, 2016

Parameters:

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)
13	13.2	+0.2
21	21.1	+0.1
31	30.6	-0.4
	Tolerance Limit (°C)	±2.0

Turbidity

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

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
4	4.2	+5.0
40	40.5	+1.3
80	78.9	-1.4
400	384.1	-4.0
800	786.7	-1.7
	Tolerance Limit (%)	±10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

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Appendix D

Odour Emission Monitoring Result

Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
		ppm	ppm	ppm	ppm	ppm	ppm				
5/1/2016	00:00:00-00:59:59	14.4	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	14.4	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	10.1	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	13.2	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	10.7	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	9.3	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	11.2	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	16.6	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	17.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	20.4	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	16.0	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	11.2	0.0	0.0	2.2	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	10.7	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	19.0	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	23.5	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	31.3	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	36.0	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	34.4	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	59.5	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	59.5	0.0	0.0	13.9	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	63.3	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	44.7	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	36.0	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	39.1	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
5/2/2016	00:00:00-00:59:59	24.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	25.0	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	10.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	8.8	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	10.7	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	6.9	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	8.8	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	8.8	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	10.1	0.0	0.0	2.2	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	13.8	0.0	0.0	2.2	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	13.2	0.0	0.0	2.2	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	25.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	36.0	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	41.0	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	59.5	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	69.9	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%

Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
		ppm	ppm	ppm	ppm	ppm	ppm				
	16:00:00-16:59:59	82.0	0.0	0.0	9.7	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	100.0	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	100.0	0.0	0.0	13.9	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	71.1	0.0	0.0	9.7	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	47.0	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	41.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	53.8	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	41.6	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
5/3/2016	00:00:00-00:59:59	42.4	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	33.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	18.5	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	27.8	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	12.9	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	11.9	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	16.1	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	16.0	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	22.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	22.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	31.3	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	23.5	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	31.9	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	42.9	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	47.5	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	29.3	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	21.6	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	30.1	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	47.5	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	52.6	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	21.6	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	13.2	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	10.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	10.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
5/4/2016	00:00:00-00:59:59	10.7	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	11.2	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	15.4	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	21.0	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	10.7	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	16.0	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	8.8	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	8.8	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	12.6	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%

Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
		ppm	ppm	ppm	ppm	ppm	ppm				
	09:00:00-09:59:59	12.6	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	21.0	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	13.2	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	19.6	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	26.3	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	30.1	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	19.6	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	17.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	15.4	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	17.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	26.3	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	25.0	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	19.6	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	21.0	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	24.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
5/5/2016	00:00:00-00:59:59	13.2	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	11.9	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	9.3	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	9.3	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	9.3	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	11.2	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	12.6	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	15.4	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	24.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	22.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	18.5	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	19.6	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	15.4	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	25.0	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	30.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	100.0	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	30.3	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	30.9	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	30.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	58.4	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	55.3	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	41.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	34.6	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	42.4	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
5/6/2016	00:00:00-00:59:59	46.9	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	29.4	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%

Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
		ppm	ppm	ppm	ppm	ppm	ppm				
	02:00:00-02:59:59	28.2	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	30.7	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	28.8	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	30.3	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	35.6	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	28.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	45.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	44.3	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	45.3	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	39.3	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	31.9	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	39.7	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	39.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	57.7	0.0	0.0	15.1	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	45.1	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	55.8	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	62.8	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	98.8	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	43.7	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	26.8	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	19.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	22.9	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
5/7/2016	00:00:00-00:59:59	21.6	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	16.8	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	21.6	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	19.3	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	16.0	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	17.3	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	14.1	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	16.2	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	19.1	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	18.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	16.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	14.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	18.1	0.0	0.0	1.7	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	24.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	20.6	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	21.8	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	17.4	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	23.7	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	22.9	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%

Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
		ppm	ppm	ppm	ppm	ppm	ppm				
	19:00:00-19:59:59	28.4	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	66.7	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	52.1	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	36.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	53.9	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
5/8/2016	00:00:00-00:59:59	51.3	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	45.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	33.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	36.6	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	44.9	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	100.0	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	50.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	31.9	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	34.4	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	29.6	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	20.4	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	21.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	41.6	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	43.1	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	54.4	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	52.1	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	65.5	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	76.4	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	100.0	0.0	0.0	11.7	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	58.4	0.0	0.0	12.3	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	57.8	0.0	0.0	13.0	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	75.8	0.0	0.0	15.8	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	53.4	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	53.9	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
5/9/2016	00:00:00-00:59:59	29.0	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	21.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	18.5	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	14.4	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	14.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	13.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	14.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	15.6	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	19.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	18.5	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	15.6	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	14.0	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%

Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
		ppm	ppm	ppm	ppm	ppm	ppm				
	12:00:00-12:59:59	13.5	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	18.1	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	18.7	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	21.8	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	20.6	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	19.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	24.7	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	33.8	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	37.9	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	48.8	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	41.8	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	39.3	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
5/10/2016	00:00:00-00:59:59	50.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	39.3	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	30.3	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	32.1	0.0	0.0	1.7	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	22.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	24.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	22.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	30.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	43.6	0.0	0.0	4.6	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	38.1	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	18.7	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	24.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	25.1	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	23.1	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	16.0	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	16.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	18.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	18.0	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	19.3	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	20.4	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	27.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	22.3	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	25.9	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	22.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
5/11/2016	00:00:00-00:59:59	25.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	16.0	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	13.8	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	10.8	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	10.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%

Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
		ppm	ppm	ppm	ppm	ppm	ppm				
	05:00:00-05:59:59	9.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	8.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	9.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	10.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	11.6	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	9.4	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	16.6	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	34.4	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	26.9	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	34.0	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	43.8	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	34.5	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	46.4	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	58.9	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	39.3	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	34.6	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	30.7	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	25.3	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	28.3	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
5/12/2016	00:00:00-00:59:59	24.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	13.8	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	11.0	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	8.8	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	8.8	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	9.6	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	9.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	12.6	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	14.4	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	16.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	15.5	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	17.2	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	19.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	20.4	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	17.2	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	32.8	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	35.4	0.0	0.0	14.5	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	25.7	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	21.2	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	22.2	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	24.1	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	19.9	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%

Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
		ppm	ppm	ppm	ppm	ppm	ppm				
	22:00:00-22:59:59	26.9	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	19.1	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
5/13/2016	00:00:00-00:59:59	18.5	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	11.9	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	10.8	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	11.0	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	9.1	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	12.9	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	7.8	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	24.7	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	26.1	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	22.4	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	19.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	20.6	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	19.9	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	19.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	41.1	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	42.3	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	42.9	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	77.0	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	36.6	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	36.7	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	44.7	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	44.7	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	45.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	30.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
5/14/2016	00:00:00-00:59:59	35.4	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	37.9	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	23.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	28.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	22.4	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	21.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	21.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	29.4	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	30.9	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	24.9	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	30.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	25.3	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	38.5	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	32.8	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	30.3	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%

Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
		ppm	ppm	ppm	ppm	ppm	ppm				
	15:00:00-15:59:59	29.4	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	29.0	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	28.3	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	37.4	0.0	0.0	9.7	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	31.3	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	30.1	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	22.9	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	17.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	16.0	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
5/15/2016	00:00:00-00:59:59	16.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	18.1	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	16.2	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	15.6	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	16.0	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	16.2	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	18.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	21.0	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	23.0	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	22.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	22.2	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	17.4	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	16.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	18.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	21.8	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	43.1	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	47.6	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	43.1	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	43.8	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	52.0	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	45.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	64.5	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	55.8	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	66.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
5/16/2016	00:00:00-00:59:59	64.5	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	40.6	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	24.7	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	29.4	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	25.3	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	19.9	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	13.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	15.4	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%

Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
		ppm	ppm	ppm	ppm	ppm	ppm				
	08:00:00-08:59:59	32.6	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	38.1	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	34.6	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	28.9	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	33.9	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	32.1	0.0	0.0	10.3	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	25.9	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	39.7	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	43.1	0.0	0.0	11.7	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	50.8	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	65.5	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	71.1	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	71.1	0.0	0.0	10.3	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	75.2	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	53.3	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	59.0	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
5/17/2016	00:00:00-00:59:59	43.6	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	52.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	39.3	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	41.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	44.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	53.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	39.7	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	41.8	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	53.8	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	52.8	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	43.1	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	38.0	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	42.9	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	43.6	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	43.6	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	31.9	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	43.6	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	42.9	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	37.2	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	48.8	0.0	0.0	10.3	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	53.9	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	40.5	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	33.8	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	32.6	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
5/18/2016	00:00:00-00:59:59	20.6	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%

Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
		ppm	ppm	ppm	ppm	ppm	ppm				
	01:00:00-01:59:59	19.9	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	15.4	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	16.0	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	18.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	19.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	19.3	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	22.4	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	25.9	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	24.2	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	37.4	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	21.6	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	21.6	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	30.1	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	55.2	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	58.9	0.0	0.0	9.7	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	53.8	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	79.5	0.0	0.0	12.9	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	87.9	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	83.8	0.0	0.0	12.3	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	67.4	0.0	0.0	9.7	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	62.0	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	51.3	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	47.5	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
5/19/2016	00:00:00-00:59:59	36.5	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	48.7	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	30.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	24.1	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	24.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	24.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	24.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	28.2	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	39.7	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	36.5	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	31.3	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	30.7	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	30.1	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	45.1	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	28.2	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	44.7	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	44.7	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	30.1	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%

Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
		ppm	ppm	ppm	ppm	ppm	ppm				
	18:00:00-18:59:59	41.0	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	48.7	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	37.2	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	33.2	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	30.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	28.2	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
5/20/2016	00:00:00-00:59:59	29.3	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	30.7	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	41.6	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	45.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	58.3	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	62.0	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	51.9	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	43.5	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	58.9	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	41.6	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	32.0	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	41.0	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	44.2	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	100.0	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	96.3	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	73.0	0.0	0.0	10.3	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	41.8	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	53.3	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	43.7	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	43.6	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	39.7	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	43.6	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	27.1	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	29.0	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
5/21/2016	00:00:00-00:59:59	19.1	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	15.4	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	10.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	11.9	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	10.4	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	12.6	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	10.1	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	9.4	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	9.4	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	8.8	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	12.2	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%

Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
		ppm	ppm	ppm	ppm	ppm	ppm				
	11:00:00-11:59:59	13.2	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	18.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	18.5	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	20.4	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	19.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	28.3	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	32.1	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	32.8	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	30.2	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	32.6	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	23.1	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	21.8	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	28.8	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
5/22/2016	00:00:00-00:59:59	27.8	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	24.3	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	17.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	18.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	15.6	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	15.6	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	13.4	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	17.4	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	30.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	21.6	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	19.9	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	17.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	17.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	32.6	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	45.9	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	44.3	0.0	0.0	12.3	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	55.8	0.0	0.0	12.9	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	35.4	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	59.5	0.0	0.0	16.5	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	58.9	0.0	0.0	11.7	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	81.4	0.0	0.0	16.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	80.9	0.0	0.0	17.7	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	77.7	0.0	0.0	12.3	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	71.1	0.0	0.0	10.3	0.0	0.0	100%	100%	100%	100%
5/23/2016	00:00:00-00:59:59	64.5	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	43.6	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	30.3	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	20.6	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%

Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
		ppm	ppm	ppm	ppm	ppm	ppm				
	04:00:00-04:59:59	17.4	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	16.0	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	14.7	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	14.0	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	19.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	73.0	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	29.5	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	22.4	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	21.8	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	28.8	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	34.4	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	34.6	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	100.0	0.0	0.0	28.4	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	78.3	0.0	0.0	17.1	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	57.1	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	72.5	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	71.1	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	62.8	0.0	0.0	7.2	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	46.3	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	38.5	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
5/24/2016	00:00:00-00:59:59	27.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	28.3	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	17.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	30.9	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	19.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	21.0	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	19.9	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	18.7	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	25.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	25.3	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	21.6	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	39.1	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	43.6	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	70.5	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	66.1	0.0	0.0	10.4	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	59.5	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	43.7	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	66.7	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	61.5	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	73.6	0.0	0.0	7.2	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	62.8	0.0	0.0	7.8	0.0	0.0	100%	100%	100%	100%

Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
		ppm	ppm	ppm	ppm	ppm	ppm				
	21:00:00-21:59:59	57.8	0.0	0.0	7.2	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	100.0	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	94.2	0.0	0.0	17.1	0.0	0.0	100%	100%	100%	100%
5/25/2016	00:00:00-00:59:59	57.7	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	56.4	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	37.3	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	38.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	43.6	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	62.8	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	36.8	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	32.6	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	41.1	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	34.4	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	53.9	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	47.8	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	49.5	0.0	0.0	7.2	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	43.6	0.0	0.0	7.2	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	39.7	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	36.6	0.0	0.0	7.2	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	39.7	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	33.2	0.0	0.0	9.7	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	78.9	0.0	0.0	9.7	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	66.7	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	64.5	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	65.5	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	68.6	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	59.5	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
5/26/2016	00:00:00-00:59:59	50.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	57.0	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	46.9	0.0	0.0	1.7	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	62.8	0.0	0.0	1.7	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	45.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	53.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	34.4	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	30.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	38.5	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	32.6	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	50.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	44.7	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	34.4	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	42.2	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%

Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
		ppm	ppm	ppm	ppm	ppm	ppm				
	14:00:00-14:59:59	37.2	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	26.8	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	39.7	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	30.1	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	64.9	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	79.5	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	63.3	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	48.8	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	52.6	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	51.3	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
5/27/2016	00:00:00-00:59:59	36.5	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	35.4	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	46.9	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	48.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	56.4	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	50.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	48.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	50.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	62.8	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	55.2	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	25.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	29.3	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	24.7	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	66.7	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	66.7	0.0	0.0	9.7	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	62.0	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	60.8	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	100.0	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	57.1	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	57.7	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	65.5	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	52.1	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	62.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	66.7	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
5/28/2016	00:00:00-00:59:59	55.8	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	59.5	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	51.9	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	39.9	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	46.4	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	45.9	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	27.6	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%

Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
		ppm	ppm	ppm	ppm	ppm	ppm				
	07:00:00-07:59:59	36.8	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	41.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	44.9	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	39.3	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	32.8	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	47.8	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	62.8	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	68.6	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	66.7	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	69.9	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	66.7	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	78.9	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	71.2	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	53.9	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	39.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	50.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	98.3	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
5/29/2016	00:00:00-00:59:59	34.4	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	33.9	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	23.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	20.6	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	22.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	19.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	21.6	0.0	0.0	2.2	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	22.9	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	26.5	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	24.3	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	21.8	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	15.6	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	28.4	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	61.5	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	74.2	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	89.2	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	100.0	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	100.0	0.0	0.0	12.9	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	95.2	0.0	0.0	11.7	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	100.0	0.0	0.0	13.9	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	100.0	0.0	0.0	12.9	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	86.1	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	66.7	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	39.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%

Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
		ppm	ppm	ppm	ppm	ppm	ppm				
5/30/2016	00:00:00-00:59:59	27.6	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	27.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	18.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	18.0	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	18.0	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	16.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	14.1	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	16.2	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	18.0	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	49.4	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	30.3	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	66.7	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	34.4	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	70.5	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	43.8	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	55.9	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	61.5	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	71.7	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	89.9	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	77.8	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	68.6	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	52.7	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	57.8	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	59.0	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
5/31/2016	00:00:00-00:59:59	62.0	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	48.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	28.4	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	30.9	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	21.0	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	26.5	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	19.9	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	28.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	24.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	25.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	26.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	30.3	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	30.9	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	41.8	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	43.8	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	30.3	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	21.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%

Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
		ppm	ppm	ppm	ppm	ppm	ppm				
	17:00:00-17:59:59	23.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	34.0	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	45.1	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	49.4	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	32.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	57.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	34.6	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%

APPENDIX E

Locations for Sediment Sampling and Benthic Survey

The GPS Co-ordinates (in WGS84 Datum (ITRF96 Reference Frame)), Collection Time, Measured Water Depth and Tidal State of Monitoring Station

Station ID	Description	Original Location		Revised Location		Remarks	
		Northing	Easting	Northing	Easting	Reason for Location Change	Distance from Original Location (m)
B1	Butterfly Beach	825825.6	813517.1	825702	813719	Inaccessible*	237
B2	Castle Peak Beach	826530.7	815779.2	-	-	-	-
B3	Kadoorie Beach	826328.0	816098.4	826188	815954	Inaccessible*	201
B4	Cafeteria Old Beach	826240.2	816310.1	826031	816143	Inaccessible*	268
B5	Cafeteria New Beach	825888.4	816751.8	825697	816470	Inaccessible*	341
B6	Golden Beach	825493.2	816813.5	825431	816748	Inaccessible*	90
WSD1	Flushing Water Intake near Butterfly Beach	825511.1	813103.0	825447	813138	Inaccessible*	73
WSD2	Flushing Water Intake near LRT Terminus	825860.0	815241.3	-	-	-	-
U2	Secondary Contact RecreationSubzone at Lung Kwu Tan	827855.5	809704.9	827761	809488	Inaccessible*	237
NM6	Control Station	820121.5	807822.1	-	-	-	-
NM1	Control Station	823025.4	820503.9	-	-	-	-

Note: * Proposed location inaccessible by sampling vessel due to shallow water.

APPENDIX F

PPWQM Effluent Quality Monitoring Results

Summary of Effluent Quality Monitoring Results

Parameter (unit)	EIA Design Assumption	Water Discharge License		Detection Limit	19/05/2016 (00:00-24:00) Result
		95%ile	Upper Limit Level		
E.coli (CFU/100mL)*	300,000	300,000	#20,000	1	#12,000
Biochemical Oxygen Demand (mg/L)	180	180	360	2	88
Suspended Solids (SS) (mg/L)	120	120	240	2	71
Ammonia as N (mg/L)	-	-	-	0.01	25.1
Total Nitrogen as N (mg/L)	-	-	-	0.1	27.3
Total Nitrogen as N – Filtered (mg/L)	-	-	-	0.1	25.7
Total Phosphorous as P (mg/L)	-	-	-	0.1	2.6
Total Phosphorous as P – Filtered (mg/L)	-	-	-	0.1	1.8
Total Organic Carbon (mg/L)	-	-	-	1	49
Aluminum (Al) (µg/L)	-	-	-	10	64
Boron (B) (µg/L)	-	-	-	100	1,110
Iron (Fe) (µg/L)	-	-	-	0.5	3.5
Mercury (Hg) (µg/L)	-	-	-	0.5	<0.5
Arsenic (As) (µg/L)	-	-	-	1	<1
Barium (Ba) (µg/L)	-	-	-	1	18
Cadmium (Cd) (µg/L)	-	-	-	0.2	<0.2
Chromium (Cr) (µg/L)	-	-	-	1	4
Copper (Cu) (µg/L)	-	-	-	1	6
Lead (Pb) (µg/L)	-	-	-	1	1
Manganese (Mn) (µg/L)	-	-	-	1	93
Nickel (Ni) (µg/L)	-	-	-	1	10
Silver (Ag) (µg/L)	-	-	-	1	<1
Vanadium (V) (µg/L)	-	-	-	1	<1
Zinc (Zn) (µg/L)	-	-	-	10	20

#: The upper limit is in monthly geometric mean.

*: E.Coli sampling was conducted on 20 May 2016 and the result of E.Coil is a geometric mean of 3 samples

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: ATAL-DEGREMONT JOINT VENTURE	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 6
Contact	: MR TECK SUAN LOY	Contact	: Fung Lim Chee, Richard	Work Order	: HK1619930
Address	: 2801 ISLAND PLACE TOWER, 510 KING`S ROAD, NORTH POINT HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: teck.suan.loy@degremont.com	E-mail	: Richard.Fung@alsglobal.com		
Telephone	: +852 2404 1538	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: DC_2008_03 DESIGN BUILD AND OPERATE PILLAR POINT SEWAGE TREATMENT WORKS	Quote number	: ----	Date Samples Received	: 20-MAY-2016
Order number	: 430			Issue Date	: 30-MAY-2016
C-O-C number	: ----			No. of samples received	: 1
Site	: ----			No. of samples analysed	: 1

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: 30-MAY-2016

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: HK1619930

Sample(s) were collected by ALS Technichem (HK) staff.
Water sample(s) analysed and reported on an as received basis.
Water sample(s) digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	Position	Authorised results for
Fung Lim Chee, Richard	General Manager	Inorganics

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Page Number : 2 of 6
Client : ATAL-DEGREMONT JOINT VENTURE
Work Order HK1619930

Analytical Results

Sub-Matrix: EFFLUENT

Compound	CAS Number	LOR	Unit	Client sample ID: SAMPLE 1 — Client sampling date / time: 20-MAY-2016 09:40 — HK1619930-001
ED/EK: Inorganic Nonmetallic Parameters				
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	25.1
EK062P: Total Nitrogen as N	----	0.1	mg/L	27.3
EK062P: Total Nitrogen as N - Filtered	----	0.1	mg/L	25.7
EK067P: Total Phosphorus as P	----	0.1	mg/L	2.6
EK067P: Total Phosphorus - Filtered	----	0.1	mg/L	1.8
EP: Aggregate Organics				
EP005: Total Organic Carbon	----	1	mg/L	49
EG: Metals and Major Cations - Total				
EG020: Arsenic	7440-38-2	1	µg/L	<1
EG020: Barium	7440-39-3	1	µg/L	18
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2
EG020: Chromium	7440-47-3	1	µg/L	4
EG020: Copper	7440-50-8	1	µg/L	6
EG020: Lead	7439-92-1	1	µg/L	1
EG020: Manganese	7439-96-5	1	µg/L	93
EG020: Nickel	7440-02-0	1	µg/L	10
EG020: Silver	7440-22-4	1	µg/L	<1
EG020: Vanadium	7440-62-2	1	µg/L	<1
EG020: Zinc	7440-66-6	10	µg/L	20
EG020: Aluminium	7429-90-5	10	µg/L	64
EG020: Boron	7440-42-8	100	µg/L	1110
EG025: Iron	7439-89-6	0.5	mg/L	3.5
EG036: Mercury	7439-97-6	0.5	µg/L	<0.5

Page Number : 3 of 6
Client : ATAL-DEGREMONT JOINT VENTURE
Work Order HK1619930

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212243)								
HK1619898-011	Anonymous	EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.46	0.46	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214806)								
HK1619647-001	Anonymous	EK067P: Total Phosphorus as P	----	0.1	mg/L	<0.1	<0.1	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214807)								
HK1619647-001	Anonymous	EK062P: Total Nitrogen as N	----	0.1	mg/L	1.1	1.2	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214808)								
HK1619930-001	SAMPLE 1	EK067P: Total Phosphorus - Filtered	----	0.1	mg/L	1.8	1.8	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214809)								
HK1619647-001	Anonymous	EK062P: Total Nitrogen as N - Filtered	----	0.1	mg/L	1.1	1.1	0.0
EG: Metals and Major Cations (QC Lot: 4213389)								
HK1619930-001	SAMPLE 1	EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	<0.2	0.0
		EG020: Arsenic	7440-38-2	1	µg/L	<1	<1	0.0
		EG020: Barium	7440-39-3	1	µg/L	18	19	0.0
		EG020: Chromium	7440-47-3	1	µg/L	4	3	0.0
		EG020: Copper	7440-50-8	1	µg/L	6	6	0.0
		EG020: Lead	7439-92-1	1	µg/L	1	<1	0.0
		EG020: Manganese	7439-96-5	1	µg/L	93	93	0.0
		EG020: Nickel	7440-02-0	1	µg/L	10	9	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Vanadium	7440-62-2	1	µg/L	<1	<1	0.0
		EG020: Zinc	7440-66-6	10	µg/L	20	20	0.0
HK1619936-001	Anonymous	EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	<0.2	0.0
		EG020: Barium	7440-39-3	1	µg/L	7	7	0.0
		EG020: Chromium	7440-47-3	1	µg/L	4	4	0.0
		EG020: Copper	7440-50-8	1	µg/L	<1	1	0.0
		EG020: Lead	7439-92-1	1	µg/L	<1	<1	0.0
		EG020: Manganese	7439-96-5	1	µg/L	271	267	1.5
		EG020: Nickel	7440-02-0	1	µg/L	15	16	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Vanadium	7440-62-2	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	<10	<10	0.0
EG: Metals and Major Cations (QC Lot: 4213390)								
HK1619930-001	SAMPLE 1	EG020: Aluminium	7429-90-5	10	µg/L	64	56	12.2
HK1620089-002	Anonymous	EG020: Aluminium	7429-90-5	10	µg/L	60	59	0.0
EG: Metals and Major Cations (QC Lot: 4213391)								
HK1619930-001	SAMPLE 1	EG025: Iron	7439-89-6	0.5	mg/L	3.5	3.0	13.9
EG: Metals and Major Cations (QC Lot: 4213392)								

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Client : ATAL-DEGREMONT JOINT VENTURE
Work Order HK1619930

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations (QC Lot: 4213392) - Continued								
HK1619930-001	SAMPLE 1	EG020: Boron	7440-42-8	100	µg/L	1110	1130	1.2
HK1620089-002	Anonymous	EG020: Boron	7440-42-8	10	µg/L	<10	<10	0.0
EP: Aggregate Organics (QC Lot: 4214272)								
HK1619975-008	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	<1	<1	0.0

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212243)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	99.3	----	92	108	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214806)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	96.2	----	93	103	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214807)											
EK062P: Total Nitrogen as N	----	0.1	mg/L	<0.1	0.5 mg/L	95.2	----	92	114	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214808)											
EK067P: Total Phosphorus - Filtered	----	0.01	mg/L	<0.01	0.5 mg/L	97.3	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214809)											
EK062P: Total Nitrogen as N - Filtered	----	0.1	mg/L	<0.1	0.5 mg/L	99.7	----	85	115	----	----
EG: Metals and Major Cations (QC Lot: 4213388)											
EG036: Mercury	7439-97-6	0.05	µg/L	<0.05	2 µg/L	102	----	77	113	----	----
EG: Metals and Major Cations (QC Lot: 4213389)											
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	96.6	----	79	109	----	----
EG020: Barium	7440-39-3	1	µg/L	<1	100 µg/L	93.7	----	79	109	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	98.9	----	80	106	----	----
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg/L	90.8	----	77	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	90.0	----	77	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	89.7	----	80	110	----	----
EG020: Manganese	7439-96-5	1	µg/L	<1	100 µg/L	90.7	----	76	116	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	90.5	----	78	112	----	----
EG020: Silver	7440-22-4	1	µg/L	<1	100 µg/L	89.1	----	78	104	----	----
EG020: Vanadium	7440-62-2	10	µg/L	<10	100 µg/L	91.4	----	77	113	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	96.5	----	76	114	----	----
EG: Metals and Major Cations (QC Lot: 4213390)											
EG020: Aluminium	7429-90-5	10	µg/L	<10	100 µg/L	95.8	----	85	117	----	----
EG: Metals and Major Cations (QC Lot: 4213391)											
EG025: Iron	7439-89-6	0.05	mg/L	<0.05	2 mg/L	96.6	----	92	112	----	----
EG: Metals and Major Cations (QC Lot: 4213392)											
EG020: Boron	7440-42-8	10	µg/L	<10	100 µg/L	94.8	----	72	118	----	----

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Client : ATAL-DEGREMONT JOINT VENTURE
Work Order HK1619930

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
		LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP: Aggregate Organics (QC Lot: 4214272)											
EP005: Total Organic Carbon	----	1	mg/L	<1	5 mg/L	99.9	----	94	118	----	----
				----	100 mg/L	98.2	----	84	118	----	----

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Client : ATAL-DEGREMONT JOINT VENTURE
Work Order HK1619930

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

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212243)										
HK1619898-011	Anonymous	EK055K: Ammonia as N	7664-41-7	0.5 mg/L	96.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214806)										
HK1619647-001	Anonymous	EK067P: Total Phosphorus as P	----	0.5 mg/L	108	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214807)										
HK1619647-001	Anonymous	EK062P: Total Nitrogen as N	----	0.5 mg/L	98.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214808)										
HK1619930-001	SAMPLE 1	EK067P: Total Phosphorus - Filtered	----	5 mg/L	93.2	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214809)										
HK1619647-001	Anonymous	EK062P: Total Nitrogen as N - Filtered	----	0.5 mg/L	86.0	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4213388)										
HK1619930-001	SAMPLE 1	EG036: Mercury	7439-97-6	2 µg/L	98.0	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4213389)										
HK1619930-001	SAMPLE 1	EG020: Arsenic	7440-38-2	100 µg/L	101	----	75	125	----	----
		EG020: Barium	7440-39-3	100 µg/L	94.2	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	87.2	----	75	125	----	----
		EG020: Chromium	7440-47-3	100 µg/L	99.4	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	88.8	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	91.0	----	75	125	----	----
		EG020: Manganese	7439-96-5	100 µg/L	97.6	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	90.0	----	75	125	----	----
		EG020: Silver	7440-22-4	100 µg/L	91.7	----	75	125	----	----
		EG020: Vanadium	7440-62-2	100 µg/L	103	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	103	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4213390)										
HK1619930-001	SAMPLE 1	EG020: Aluminium	7429-90-5	100 µg/L	101	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4213392)										
HK1619930-001	SAMPLE 1	EG020: Boron	7440-42-8	100 µg/L	# Not Determined	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4214272)										
HK1619975-008	Anonymous	EP005: Total Organic Carbon	----	5 mg/L	88.6	----	75	125	----	----

ENVIRO LABS LTD.

ENVIRO LABS LIMITED

Rm. 510 & 611-612, Hong Leong Plaza, 33 Lok Yip Rd., Fanling, N.T., H.K.
Tel: (852) 2676 2983 Fax: (852) 2676 2860
e-mail: ell@envirolabs.com.hk website: http://www.envirolabs.com.hk

TEST REPORT

JOB NO.	:	**16050396-1**			
DATE OF ISSUE	:	**02 June 2016**	**PAGE**	:	Page 1 of 2

1. Customer

ATAL-Degremont Joint Venture
No.101 Lung Mun Road,
Mong Hau Shek,
Tuen Mun, N.T.
Attn : Mr. LOY Teck Suan - Operation Manager

2. Sample Identification

Sample Description	:	Four batch(es) of wastewater were collected from 'Pillar Point Sewage Treatment Plant' and received at the laboratory in cool condition.
Sampling[a]	:	Conducted by the staff of the Enviro Labs Limited
Sampling Date	:	20 May 2016
Received Date	:	20 May 2016
Testing Period	:	20 May 2016 to 27 May 2016

3. Test Methods

Parameters	Reference Methods	Limits of Reporting
Carbonaceous Biochemical Oxygen Demand ($cBOD_5$)	APHA[b] 20e 5210 B	2 mg/L
Total Suspended Solid (TSS)	APHA 17e 2540 D	2.5 mg/L
E.coli	DoE (1983)[c] Section 7.8 & 7.9.4.2	1 cfu/100mL

--- Continued On Next Page ---

[a] Sampling task is outside the scope of accreditation
[b] APHA Standard Methods for the Examination of Water and Wastewater, AWWA
[c] The Bacteriological Examination of Drinking Water Supplies, 1982 Membrane Filtration Procedure: Section 7.8 and 7.9.4.2 Bacterial Confirmation: in-situ urease test

APPROVED SIGNATORY:
Kenneth, Kar-kin LAM
Senior Lab. Manager

ENVIRO LABS LIMITED
Rm. 510 & 611-612, Hong Leong Plaza, 33 Lok Yip Rd., Fanling, N.T., H.K.
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TEST REPORT

JOB NO.	:	**16050396-1**		
DATE OF ISSUE	:	**02 June 2016**	**PAGE** :	Page 2 of 2

4. Test Results[d]

Sample ID	Sample No.	Carbonaceous Biochemical Oxygen Demand (mg/L)		Total Suspended Solids (mg/L)	
		Value	Average	Value	Average
Final Effluent (24hr Composite) 19 May 2016	007 to 008	87	88	62	71
		85		76	
		91		74	

Sample ID	Sample No.	*E.coli* (cfu/100mL)	
		Value	Geometric Mean
Final Effluent (Grab) 20 May 2016	009 to 012	9,000	12,000
		14,000	
		13,000	

--- END OF REPORT ---

[d] Test results relate only to the items received

APPENDIX G

PPWQM Water Quality Monitoring Results

Water Quality Monitoring Results (In-situ Measurement)

24/5/2016											
Monitoring Location	Tide	Time	Water Depth (m)	Level	Sampling Depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)	pH
B1	Flood	7:15	4.1	Surface	1	25.43	22.3	6.43	89	**7.3**	7.81
B1	Flood	7:15		Bottom	3.1	25.15	24.44	6.06	84.4	6.3	7.82
B2	Flood	6:40	4.2	Surface	1	25.55	21.09	6.69	99.2	2.6	7.82
B2	Flood	6:40		Bottom	3.2	25.33	22.7	6.34	87.8	4.9	7.79
B3	Flood	6:35	4	Surface	1	25.49	21.39	6.65	97.7	2.7	7.81
B3	Flood	6:35		Bottom	3	25.15	24.18	6.07	84.6	5.3	7.82
B4	Flood	6:30	4.1	Surface	1	25.5	20.98	6.68	91.9	3	7.8
B4	Flood	6:30		Bottom	3.1	25.27	23.24	6.13	85.1	**7.7**	7.79
B5	Flood	6:25	4.2	Surface	1	25.42	21.84	6.61	91.2	3.9	7.81
B5	Flood	6:25		Bottom	3.2	25.45	21.74	6.39	88.2	4	7.81
B6	Flood	6:20	4.2	Surface	1	25.49	21.93	6.25	86.4	4.9	7.8
B6	Flood	6:20		Bottom	3.2	25.51	22.6	6.27	87	6.2	7.79
WSD1	Flood	7:25	4.2	Surface	1	25.69	21.24	6.6	91.2	5.9	7.84
WSD1	Flood	7:25		Bottom	3.2	25.41	22.58	6.25	86.6	4.9	7.84
WSD2	Flood	6:55	8.2	Surface	1	25.57	21.61	6.57	90.8	4.6	7.83
WSD2	Flood	6:55		Middle	3.9	24.88	26.48	6.01	84.3	4.8	7.86
WSD2	Flood	6:55		Bottom	7.2	24.72	27.66	5.79	81.6	**7.9**	7.87
U2	Flood	8:05	3.1	Surface	1	26.67	12.68	6.26	83.9	3.3	7.64
U2	Flood	8:05		Bottom	3.2	25.69	16.78	6.02	81.2	3.5	7.66
NM1	Flood	6:00	36.1	Surface	1	25.23	22.68	6.3	87	2.2	7.9
NM1	Flood	6:00		Middle	18.05	24.72	27.09	5.93	83.4	4	7.97
NM1	Flood	6:00		Bottom	35.1	24.6	27.98	5.71	80.4	10.8	7.9
NM6	Flood	9:00	6.2	Surface	1	25.56	14.13	6.31	83.6	3.5	7.68
NM6	Flood	9:00		Middle	3.1	25.36	21.55	5.82	80.1	3.9	7.74
NM6	Flood	9:00		Bottom	5.2	25.25	22.44	5.76	79.6	5.2	7.79
B1	Ebb	14:15	4	Surface	1	25.44	22.06	6.49	89.7	5.3	7.75
B1	Ebb	14:15		Bottom	3	25.05	24.4	6.14	85.4	**7**	7.82

24/5/2016											
Monitoring Location	Tide	Time	Water Depth (m)	Level	Sampling Depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)	pH
B2	Ebb	14:50	4.3	Surface	1	25.72	22.88	6.84	95.4	5.5	7.92
B2	Ebb	14:50		Bottom	3.3	24.86	27.37	5.98	84.3	**8.2**	7.89
B3	Ebb	14:55	4.3	Surface	1	25.71	23.11	6.81	95.1	5.4	7.92
B3	Ebb	14:55		Bottom	3.3	24.87	27.33	6.02	84.9	**7.8**	7.9
B4	Ebb	15:00	4.2	Surface	1	25.51	23.99	6.75	94.4	6.6	7.91
B4	Ebb	15:00		Bottom	3.2	24.89	27.14	6.09	85.8	**10.4**	7.91
B5	Ebb	15:05	4	Surface	1	26.01	23.65	6.7	94.3	5.3	7.91
B5	Ebb	15:05		Bottom	3	24.87	27.3	5.97	84.2	**6.9**	7.91
B6	Ebb	15:10	4.2	Surface	1	26.04	23.01	6.96	97.8	**8.7**	7.95
B6	Ebb	15:10		Bottom	3.2	24.92	26.96	5.96	83.9	**8.3**	7.92
WSD1	Ebb	14:05	4.1	Surface	1	25.51	21.3	6.84	94.3	5.2	7.76
WSD1	Ebb	14:05		Bottom	3.1	25.29	22.65	6.27	86.7	6.1	7.85
WSD2	Ebb	14:40	7.2	Surface	1	25.76	23.49	6.63	93	5.6	7.91
WSD2	Ebb	14:40		Middle	3.6	25.44	24.43	6.47	90.6	3.7	7.87
WSD2	Ebb	14:40		Bottom	6.2	24.85	27.6	6.04	85.3	6.7	7.86
U2	Ebb	13:30	3.3	Surface	1	26.8	12.98	6.54	87.9	3.1	7.69
U2	Ebb	13:30		Bottom	2.3	25.87	16.29	6.07	81.9	3.3	7.74
NM1	Ebb	15:45	35.9	Surface	1	26.03	22.87	6.75	97.8	7.7	7.93
NM1	Ebb	15:45		Middle	17.95	25.44	24.09	6.5	90.9	2.8	7.9
NM1	Ebb	15:45		Bottom	34.9	25.3	25.43	6.31	88.7	2.2	7.91
NM6	Ebb	12:50	6.4	Surface	1	25.75	14.24	6.38	84.9	4	7.71
NM6	Ebb	12:50		Middle	3.2	25.2	21.71	5.75	79	4.4	7.74
NM6	Ebb	12:50		Bottom	5.4	25.28	22.23	5.71	78.8	5	7.8

Notes: Bold numbers indicate action level exceedances. Bold and underline numbers indicate limit level exceedances.

Water Quality Monitoring Results (Laboratory Analysis)

24/5/2016										
Monitoring Location	Tide	Level	Suspended Solids (SS) (mg/L)	Ammonia as N (mg/L)	Total Phosphorus as P (mg/L)	Nitrate as N (mg/L)	Nitrite as N (mg/L)	Total Nitrogen as N (mg/L)	E. coli (CFU/100ml)	Biochemical Oxygen Demand (BOD) (mg/L)
B1	Flood	Surface	6	0.17	<0.1	0.65	0.05	1.1	58	<2
B1	Flood	Bottom	6	0.14	<0.1	0.46	0.05	0.9	19	<2
B2	Flood	Surface	5	0.18	<0.1	0.70	0.06	1.3	27	<2
B2	Flood	Bottom	6	0.15	<0.1	0.63	0.05	1.1	84	<2
B3	Flood	Surface	5	0.18	<0.1	0.71	0.06	1.3	31	<2
B3	Flood	Bottom	5	0.17	<0.1	0.63	0.05	1.1	57	<2
B4	Flood	Surface	3	0.16	<0.1	0.62	0.05	1.2	34	<2
B4	Flood	Bottom	10	0.16	<0.1	0.53	0.05	1.0	21	<2
B5	Flood	Surface	7	0.16	<0.1	0.62	0.05	1.2	37	<2
B5	Flood	Bottom	6	0.16	<0.1	0.54	0.04	1.0	27	<2
B6	Flood	Surface	6	0.16	<0.1	0.62	0.05	1.2	22	<2
B6	Flood	Bottom	11	0.16	<0.1	0.54	0.04	1.0	26	<2
WSD1	Flood	Surface	6	0.17	<0.1	0.62	0.05	1.2	54	<2
WSD1	Flood	Bottom	10	0.15	<0.1	0.47	0.05	1.1	26	<2
WSD2	Flood	Surface	7	0.17	<0.1	0.54	0.05	1.1	24	<2
WSD2	Flood	Middle	10	0.13	<0.1	0.33	0.03	0.7	19	<2
WSD2	Flood	Bottom	9	0.13	<0.1	0.34	0.02	0.8	30	<2
U2	Flood	Surface	3	0.21	<0.1	**1.20**	0.10	**1.9**	170	<2
U2	Flood	Bottom	5	0.22	<0.1	**1.00**	0.09	**1.7**	120	<2
NM1	Flood	Surface	3	0.18	<0.1	0.56	0.05	1.1	33	<2
NM1	Flood	Middle	5	0.14	<0.1	0.36	0.02	0.9	9	<2
NM1	Flood	Bottom	22	0.13	<0.1	0.26	0.02	0.6	15	<2
NM6	Flood	Surface	2	0.20	<0.1	0.87	0.08	1.6	150	<2
NM6	Flood	Middle	5	0.18	<0.1	0.64	0.05	1.2	34	<2
NM6	Flood	Bottom	8	0.17	<0.1	0.63	0.05	1.2	42	<2

24/5/2016										
Monitoring Location	Tide	Level	Suspended Solids (SS) (mg/L)	Ammonia as N (mg/L)	Total Phosphorus as P (mg/L)	Nitrate as N (mg/L)	Nitrite as N (mg/L)	Total Nitrogen as N (mg/L)	E. coli (CFU/100ml)	Biochemical Oxygen Demand (BOD) (mg/L)
B1	Ebb	Surface	10	0.16	<0.1	0.62	0.05	1.1	89	<2
B1	Ebb	Bottom	11	0.15	<0.1	0.48	0.04	0.9	46	<2
B2	Ebb	Surface	10	0.12	<0.1	0.60	0.06	1.0	31	<2
B2	Ebb	Bottom	10	0.14	<0.1	0.42	0.04	0.8	11	<2
B3	Ebb	Surface	8	0.13	<0.1	0.62	0.04	1.1	24	<2
B3	Ebb	Bottom	13	0.10	<0.1	0.42	0.03	0.8	34	<2
B4	Ebb	Surface	8	0.10	<0.1	0.54	0.04	0.9	46	<2
B4	Ebb	Bottom	15	0.12	<0.1	0.36	0.02	0.7	57	<2
B5	Ebb	Surface	11	0.10	<0.1	0.55	0.04	1.0	84	<2
B5	Ebb	Bottom	15	0.12	<0.1	0.34	0.04	0.8	64	<2
B6	Ebb	Surface	6	0.10	<0.1	0.55	0.04	1.0	130	<2
B6	Ebb	Bottom	12	0.13	<0.1	0.36	0.03	0.7	51	<2
WSD1	Ebb	Surface	5	0.17	<0.1	0.62	0.05	1.2	60	<2
WSD1	Ebb	Bottom	7	0.15	<0.1	0.47	0.05	1.0	25	<2
WSD2	Ebb	Surface	4	0.11	<0.1	0.54	0.05	0.9	130	<2
WSD2	Ebb	Middle	5	0.13	<0.1	0.51	0.04	1.1	170	<2
WSD2	Ebb	Bottom	8	0.13	<0.1	0.44	0.03	1.0	89	<2
U2	Ebb	Surface	3	0.21	<0.1	**1.24**	0.10	**1.8**	67	<2
U2	Ebb	Bottom	3	0.21	<0.1	**0.98**	0.09	**1.6**	34	<2
NM1	Ebb	Surface	5	0.14	<0.1	0.57	0.04	1.0	16	<2
NM1	Ebb	Middle	4	0.13	<0.1	0.45	0.04	0.9	12	<2
NM1	Ebb	Bottom	5	0.13	<0.1	0.45	0.04	0.9	17	<2
NM6	Ebb	Surface	4	0.19	<0.1	0.83	0.07	1.4	79	<2
NM6	Ebb	Middle	6	0.17	<0.1	0.64	0.05	1.0	18	<2
NM6	Ebb	Bottom	9	0.16	<0.1	0.63	0.05	1.2	33	<2

Notes: Bold numbers indicate action level exceedances. Bold and underline numbers indicate limit level exceedances.

Laboratory Results

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: ATAL-DEGREMONT JOINT VENTURE	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 17
Contact	: MR TECK SUAN LOY	Contact	: Fung Lim Chee, Richard	Work Order	: HK1619647
Address	: 2801 ISLAND PLACE TOWER, 510 KING`S ROAD, NORTH POINT HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: teck.suan.loy@degremont.com	E-mail	: Richard.Fung@alsglobal.com		
Telephone	: +852 2404 1538	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: DC_2008_03 DESIGN BUILD AND OPERATE PILLAR POINT SEWAGE TREATMENT WORKS	Quote number	: ----	Date Samples Received	: 24-MAY-2016
Order number	: 430			Issue Date	: 07-JUN-2016
C-O-C number	: ----			No. of samples received	: 50
Site	: ----			No. of samples analysed	: 50

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	Position	Authorised results for
Fung Lim Chee, Richard	General Manager	Inorganics
Ng Sin Kou, May	Assistant Laboratory Manager	Microbiology

ALS Technichem (HK) Pty Ltd
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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: 30-MAY-2016

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: HK1619647

Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.
Sample(s) arrived in the laboratory at 15:30. Microbiological sample(s), in 250/125mL glass/plastic bottle labelled sterile, with addition of sodium thiosulfate solution. Microbiological testing period: 24/05/2016 - 26/05/2016.
NOT DETECTED denotes result(s) is (are) less than the Limit of Report (LOR).

Page Number : 3 of 17
Client : ATAL-DEGREMONT JOINT VENTURE
Work Order HK1619647

Analytical Results

Sub-Matrix: MARINE WATER

Compound	CAS Number	LOR	Unit	Client sample ID: B1/S/EBB Client sampling date / time: [24-MAY-2016] HK1619647-001	B1/B/EBB [24-MAY-2016] HK1619647-003	B2/S/EBB [24-MAY-2016] HK1619647-004	B2/B/EBB [24-MAY-2016] HK1619647-006	B3/S/EBB [24-MAY-2016] HK1619647-007
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	2	mg/L	10	11	10	10	8
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.16	0.15	0.12	0.14	0.13
EK057A: Nitrite as N	14797-65-0	0.01	mg/L	0.05	0.04	0.06	0.04	0.04
EK058A: Nitrate as N	14797-55-8	0.01	mg/L	0.62	0.48	0.60	0.42	0.62
EK062P: Total Nitrogen as N	----	0.1	mg/L	1.1	0.9	1.0	0.8	1.1
EK062P: Total Nitrogen as N - Filtered	----	0.1	mg/L	1.1	0.9	1.0	0.8	1.1
EK067P: Total Phosphorus as P	----	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
EK067P: Total Phosphorus - Filtered	----	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
EP: Aggregate Organics								
EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	<2	<2	<2	<2
EM: Microbiological Testing								
EM002: *Escherichia coli*	----	1	CFU/100mL	89	46	31	11	24

Page Number : 4 of 17
Client : ATAL-DEGREMONT JOINT VENTURE
Work Order HK1619647

Sub-Matrix: MARINE WATER

Compound	CAS Number	LOR	Unit	Client sample ID: B3/B/EBB Client sampling date / time: [24-MAY-2016] HK1619647-009	B4/S/EBB [24-MAY-2016] HK1619647-010	B4/B/EBB [24-MAY-2016] HK1619647-012	B5/S/EBB [24-MAY-2016] HK1619647-013	B5/B/EBB [24-MAY-2016] HK1619647-015
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	2	mg/L	13	8	15	11	15
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.10	0.10	0.12	0.10	0.12
EK057A: Nitrite as N	14797-65-0	0.01	mg/L	0.03	0.04	0.02	0.04	0.04
EK058A: Nitrate as N	14797-55-8	0.01	mg/L	0.42	0.54	0.36	0.55	0.34
EK062P: Total Nitrogen as N	----	0.1	mg/L	0.8	1.0	0.7	1.0	0.8
EK062P: Total Nitrogen as N - Filtered	----	0.1	mg/L	0.8	0.9	0.7	1.0	0.8
EK067P: Total Phosphorus as P	----	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
EK067P: Total Phosphorus - Filtered	----	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
EP: Aggregate Organics								
EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	<2	<2	<2	<2
EM: Microbiological Testing								
EM002: *Escherichia coli*	----	1	CFU/100mL	34	46	57	84	64

Page Number : 5 of 17
Client : ATAL-DEGREMONT JOINT VENTURE
Work Order HK1619647

Sub-Matrix: MARINE WATER				Client sample ID	B6/S/EBB	B6/B/EBB	WSD1/S/EBB	WSD1/B/EBB	WSD2/S/EBB
				Client sampling date / time	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]
Compound	CAS Number	LOR	Unit		HK1619647-016	HK1619647-018	HK1619647-019	HK1619647-021	HK1619647-022
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		6	12	5	7	4
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.01	mg/L		0.10	0.13	0.17	0.15	0.11
EK057A: Nitrite as N	14797-65-0	0.01	mg/L		0.04	0.03	0.05	0.05	0.05
EK058A: Nitrate as N	14797-55-8	0.01	mg/L		0.55	0.36	0.62	0.47	0.54
EK062P: Total Nitrogen as N	----	0.1	mg/L		1.0	0.7	1.2	1.0	1.0
EK062P: Total Nitrogen as N - Filtered	----	0.1	mg/L		1.0	0.7	1.2	1.0	0.9
EK067P: Total Phosphorus as P	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
EK067P: Total Phosphorus - Filtered	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
EP: Aggregate Organics									
EP030: Biochemical Oxygen Demand	----	2	mg/L		<2	<2	<2	<2	<2
EM: Microbiological Testing									
EM002: *Escherichia coli*	----	1	CFU/100mL		130	51	60	25	130

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Client : ATAL-DEGREMONT JOINT VENTURE
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Sub-Matrix: MARINE WATER				Client sample ID	WSD2/M/EBB	WSD2/B/EBB	U2/S/EBB	U2/B/EBB	NM6/S/EBB
				Client sampling date / time	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]
Compound	CAS Number	LOR	Unit		HK1619647-023	HK1619647-024	HK1619647-025	HK1619647-027	HK1619647-028
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		5	8	3	3	4
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.01	mg/L		0.13	0.13	0.21	0.21	0.19
EK057A: Nitrite as N	14797-65-0	0.01	mg/L		0.04	0.03	0.10	0.09	0.07
EK058A: Nitrate as N	14797-55-8	0.01	mg/L		0.51	0.44	1.24	0.98	0.86
EK062P: Total Nitrogen as N	----	0.1	mg/L		1.1	1.0	1.8	1.6	1.4
EK062P: Total Nitrogen as N - Filtered	----	0.1	mg/L		1.1	1.0	1.8	1.6	1.4
EK067P: Total Phosphorus as P	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
EK067P: Total Phosphorus - Filtered	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
EP: Aggregate Organics									
EP030: Biochemical Oxygen Demand	----	2	mg/L		<2	<2	<2	<2	<2
EM: Microbiological Testing									
EM002: *Escherichia coli*	----	1	CFU/100mL		170	89	67	34	79

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Sub-Matrix: MARINE WATER				Client sample ID	NM6/M/EBB	NM6/B/EBB	NM1/S/EBB	NM1/M/EBB	NM1/B/EBB
				Client sampling date / time	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]
Compound	CAS Number	LOR	Unit		HK1619647-029	HK1619647-030	HK1619647-031	HK1619647-032	HK1619647-033
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		6	9	5	4	5
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.01	mg/L		0.17	0.16	0.14	0.13	0.13
EK057A: Nitrite as N	14797-65-0	0.01	mg/L		0.05	0.05	0.04	0.04	0.04
EK058A: Nitrate as N	14797-55-8	0.01	mg/L		0.64	0.63	0.57	0.45	0.45
EK062P: Total Nitrogen as N	----	0.1	mg/L		1.1	1.3	1.0	0.9	0.9
EK062P: Total Nitrogen as N - Filtered	----	0.1	mg/L		1.0	1.2	1.0	0.9	0.9
EK067P: Total Phosphorus as P	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
EK067P: Total Phosphorus - Filtered	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
EP: Aggregate Organics									
EP030: Biochemical Oxygen Demand	----	2	mg/L		<2	<2	<2	<2	<2
EM: Microbiological Testing									
EM002: *Escherichia coli*	----	1	CFU/100mL		18	33	16	12	17

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Sub-Matrix: MARINE WATER				Client sample ID	B1/S/FLOOD	B1/B/FLOOD	B2/S/FLOOD	B2/B/FLOOD	B3/S/FLOOD
				Client sampling date / time	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]
Compound	CAS Number	LOR	Unit		HK1619647-034	HK1619647-036	HK1619647-037	HK1619647-039	HK1619647-040
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		6	6	5	6	5
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.01	mg/L		0.17	0.14	0.18	0.15	0.18
EK057A: Nitrite as N	14797-65-0	0.01	mg/L		0.05	0.05	0.06	0.05	0.06
EK058A: Nitrate as N	14797-55-8	0.01	mg/L		0.65	0.46	0.70	0.63	0.71
EK062P: Total Nitrogen as N	----	0.1	mg/L		1.1	0.9	1.3	1.2	1.3
EK062P: Total Nitrogen as N - Filtered	----	0.1	mg/L		1.1	0.9	1.3	1.1	1.3
EK067P: Total Phosphorus as P	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
EK067P: Total Phosphorus - Filtered	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
EP: Aggregate Organics									
EP030: Biochemical Oxygen Demand	----	2	mg/L		<2	<2	<2	<2	<2
EM: Microbiological Testing									
EM002: *Escherichia coli*	----	1	CFU/100mL		58	19	27	84	31

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Sub-Matrix: MARINE WATER				Client sample ID	B3/B/FLOOD	B4/S/FLOOD	B4/B/FLOOD	B5/S/FLOOD	B5/B/FLOOD
				Client sampling date / time	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]
Compound	CAS Number	LOR	Unit		HK1619647-042	HK1619647-043	HK1619647-045	HK1619647-046	HK1619647-048
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		5	3	10	7	6
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.01	mg/L		0.17	0.16	0.16	0.16	0.16
EK057A: Nitrite as N	14797-65-0	0.01	mg/L		0.05	0.05	0.05	0.05	0.04
EK058A: Nitrate as N	14797-55-8	0.01	mg/L		0.63	0.62	0.53	0.62	0.54
EK062P: Total Nitrogen as N	----	0.1	mg/L		1.1	1.2	1.0	1.2	1.0
EK062P: Total Nitrogen as N - Filtered	----	0.1	mg/L		1.1	1.2	1.0	1.2	1.0
EK067P: Total Phosphorus as P	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
EK067P: Total Phosphorus - Filtered	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
EP: Aggregate Organics									
EP030: Biochemical Oxygen Demand	----	2	mg/L		<2	<2	<2	<2	<2
EM: Microbiological Testing									
EM002: *Escherichia coli*	----	1	CFU/100mL		57	34	21	37	27

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Sub-Matrix: MARINE WATER				Client sample ID	B6/S/FLOOD	B6/B/FLOOD	WSD1/S/FLOOD	WSD1/B/FLOOD	WSD2/S/FLOOD
				Client sampling date / time	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]
Compound	CAS Number	LOR	Unit		HK1619647-049	HK1619647-051	HK1619647-052	HK1619647-054	HK1619647-055
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		6	11	6	10	7
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.01	mg/L		0.16	0.16	0.17	0.15	0.17
EK057A: Nitrite as N	14797-65-0	0.01	mg/L		0.05	0.04	0.05	0.05	0.05
EK058A: Nitrate as N	14797-55-8	0.01	mg/L		0.62	0.54	0.62	0.47	0.54
EK062P: Total Nitrogen as N	----	0.1	mg/L		1.4	1.0	1.3	1.2	1.1
EK062P: Total Nitrogen as N - Filtered	----	0.1	mg/L		1.2	1.0	1.2	1.1	1.1
EK067P: Total Phosphorus as P	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
EK067P: Total Phosphorus - Filtered	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
EP: Aggregate Organics									
EP030: Biochemical Oxygen Demand	----	2	mg/L		<2	<2	<2	<2	<2
EM: Microbiological Testing									
EM002: *Escherichia coli*	----	1	CFU/100mL		22	26	54	26	24

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Sub-Matrix: MARINE WATER

Compound	CAS Number	LOR	Unit	Client sample ID / Client sampling date / time	WSD2/M/FLOOD [24-MAY-2016]	WSD2/B/FLOOD [24-MAY-2016]	U2/S/FLOOD [24-MAY-2016]	U2/B/FLOOD [24-MAY-2016]	NM6/S/FLOOD [24-MAY-2016]
					HK1619647-056	HK1619647-057	HK1619647-058	HK1619647-060	HK1619647-061
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		10	9	3	5	2
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.01	mg/L		0.13	0.13	0.21	0.22	0.20
EK057A: Nitrite as N	14797-65-0	0.01	mg/L		0.03	0.02	0.10	0.09	0.08
EK058A: Nitrate as N	14797-55-8	0.01	mg/L		0.33	0.34	1.20	1.00	0.87
EK062P: Total Nitrogen as N	----	0.1	mg/L		0.8	0.8	1.9	1.7	1.6
EK062P: Total Nitrogen as N - Filtered	----	0.1	mg/L		0.7	0.8	1.9	1.7	1.6
EK067P: Total Phosphorus as P	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
EK067P: Total Phosphorus - Filtered	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
EP: Aggregate Organics									
EP030: Biochemical Oxygen Demand	----	2	mg/L		<2	<2	<2	<2	<2
EM: Microbiological Testing									
EM002: *Escherichia coli*	----	1	CFU/100mL		19	30	170	120	150

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Sub-Matrix: MARINE WATER

Compound	CAS Number	LOR	Unit	Client sample ID / Client sampling date / time	NM6/M/FLOOD [24-MAY-2016]	NM6/B/FLOOD [24-MAY-2016]	NM1/S/FLOOD [24-MAY-2016]	NM1/M/FLOOD [24-MAY-2016]	NM1/B/FLOOD [24-MAY-2016]
					HK1619647-062	HK1619647-063	HK1619647-064	HK1619647-065	HK1619647-066
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		5	8	3	5	22
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.01	mg/L		0.18	0.17	0.18	0.14	0.13
EK057A: Nitrite as N	14797-65-0	0.01	mg/L		0.05	0.05	0.05	0.02	0.02
EK058A: Nitrate as N	14797-55-8	0.01	mg/L		0.64	0.63	0.56	0.36	0.26
EK062P: Total Nitrogen as N	----	0.1	mg/L		1.4	1.3	1.1	1.0	0.7
EK062P: Total Nitrogen as N - Filtered	----	0.1	mg/L		1.2	1.2	1.1	0.9	0.6
EK067P: Total Phosphorus as P	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
EK067P: Total Phosphorus - Filtered	----	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
EP: Aggregate Organics									
EP030: Biochemical Oxygen Demand	----	2	mg/L		<2	<2	<2	<2	<2
EM: Microbiological Testing									
EM002: *Escherichia coli*	----	1	CFU/100mL		34	42	33	9	15

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Work Order HK1619647

Laboratory Duplicate (DUP) Report

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4212219)								
HK1619647-001	B1/S/EBB	EA025: Suspended Solids (SS)	----	2	mg/L	10	10	0.0
HK1619647-016	B6/S/EBB	EA025: Suspended Solids (SS)	----	2	mg/L	6	6	0.0
EA/ED: Physical and Aggregate Properties (QC Lot: 4212220)								
HK1619647-029	NM6/M/EBB	EA025: Suspended Solids (SS)	----	2	mg/L	6	6	0.0
HK1619647-042	B3/B/FLOOD	EA025: Suspended Solids (SS)	----	2	mg/L	5	5	0.0
EA/ED: Physical and Aggregate Properties (QC Lot: 4212221)								
HK1619647-056	WSD2/M/FLOOD	EA025: Suspended Solids (SS)	----	2	mg/L	10	10	0.0
HK1619908-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	30	30	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212240)								
HK1619647-012	B4/B/EBB	EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.12	0.12	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212241)								
HK1619647-021	WSD1/B/EBB	EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.15	0.15	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212242)								
HK1619647-042	B3/B/FLOOD	EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.17	0.16	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212257)								
HK1619647-001	B1/S/EBB	EK057A: Nitrite as N	14797-65-0	0.01	mg/L	0.05	0.05	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212259)								
HK1619647-012	B4/B/EBB	EK057A: Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.02	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212261)								
HK1619647-042	B3/B/FLOOD	EK057A: Nitrite as N	14797-65-0	0.01	mg/L	0.05	0.05	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214798)								
HK1619647-004	B2/S/EBB	EK067P: Total Phosphorus as P	----	0.1	mg/L	<0.1	<0.1	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214799)								
HK1619647-004	B2/S/EBB	EK062P: Total Nitrogen as N	----	0.1	mg/L	1.0	1.0	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214800)								
HK1619647-001	B1/S/EBB	EK067P: Total Phosphorus - Filtered	----	0.1	mg/L	<0.1	<0.1	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214801)								
HK1619647-004	B2/S/EBB	EK062P: Total Nitrogen as N - Filtered	----	0.1	mg/L	1.0	1.0	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214802)								
HK1619647-045	B4/B/FLOOD	EK067P: Total Phosphorus as P	----	0.1	mg/L	<0.1	<0.1	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214803)								
HK1619647-045	B4/B/FLOOD	EK062P: Total Nitrogen as N	----	0.1	mg/L	1.0	1.0	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214804)								
HK1619647-012	B4/B/EBB	EK067P: Total Phosphorus - Filtered	----	0.1	mg/L	<0.1	<0.1	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214805)								
HK1619647-021	WSD1/B/EBB	EK062P: Total Nitrogen as N - Filtered	----	0.1	mg/L	1.0	1.1	9.5
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214806)								

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Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214806) - Continued								
HK1619647-001	B1/S/EBB	EK067P: Total Phosphorus as P	----	0.1	mg/L	<0.1	<0.1	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214807)								
HK1619647-001	B1/S/EBB	EK062P: Total Nitrogen as N	----	0.1	mg/L	1.1	1.2	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214808)								
HK1619930-001	Anonymous	EK067P: Total Phosphorus - Filtered	----	0.1	mg/L	1.8	1.8	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214809)								
HK1619647-001	B1/S/EBB	EK062P: Total Nitrogen as N - Filtered	----	0.1	mg/L	1.1	1.1	0.0

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

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 4212219)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	106	----	87	113	----	----
EA/ED: Physical and Aggregate Properties (QC Lot: 4212220)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	108	----	87	113	----	----
EA/ED: Physical and Aggregate Properties (QC Lot: 4212221)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	97.0	----	87	113	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212240)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	105	----	92	108	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212241)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	102	----	92	108	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212242)											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	102	----	92	108	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212257)											
EK057A: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.05 mg/L	98.6	----	87	115	----	----
				----	0.4 mg/L	105	----	98	112	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212259)											
EK057A: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.05 mg/L	97.0	----	87	115	----	----
				----	0.4 mg/L	104	----	98	112	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212261)											
EK057A: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.05 mg/L	112	----	87	115	----	----
				----	0.4 mg/L	104	----	98	112	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214798)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	97.1	----	93	103	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214799)											
EK062P: Total Nitrogen as N	----	0.1	mg/L	<0.1	0.5 mg/L	104	----	92	114	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214800)											
EK067P: Total Phosphorus - Filtered	----	0.01	mg/L	<0.01	0.5 mg/L	97.2	----	85	115	----	----

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Work Order : HK1619647

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report LOR	Unit	Result	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report Spike Concentration	Spike Recovery (%) LCS	DCS	Recovery Limits (%) Low	High	RPD (%) Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214800) - Continued											
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214801)											
EK062P: Total Nitrogen as N - Filtered	----	0.1	mg/L	<0.1	0.5 mg/L	104	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214802)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	97.0	----	93	103	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214803)											
EK062P: Total Nitrogen as N	----	0.1	mg/L	<0.1	0.5 mg/L	105	----	92	114	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214804)											
EK067P: Total Phosphorus - Filtered	----	0.01	mg/L	<0.01	0.5 mg/L	97.5	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214805)											
EK062P: Total Nitrogen as N - Filtered	----	0.1	mg/L	<0.1	0.5 mg/L	101	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214806)											
EK067P: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.5 mg/L	96.2	----	93	103	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214807)											
EK062P: Total Nitrogen as N	----	0.1	mg/L	<0.1	0.5 mg/L	95.2	----	92	114	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214808)											
EK067P: Total Phosphorus - Filtered	----	0.01	mg/L	<0.01	0.5 mg/L	97.3	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214809)											
EK062P: Total Nitrogen as N - Filtered	----	0.1	mg/L	<0.1	0.5 mg/L	99.7	----	85	115	----	----
EP: Aggregate Organics (QC Lot: 4212391)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	110	----	87	117	----	----
EP: Aggregate Organics (QC Lot: 4212392)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	113	----	87	117	----	----
EP: Aggregate Organics (QC Lot: 4212393)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	110	----	87	117	----	----

Page Number : 16 of 17
Client : ATAL-DEGREMONT JOINT VENTURE
Work Order : HK1619647

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

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report Spike Concentration	Spike Recovery (%) MS	MSD	Recovery Limits (%) Low	High	RPD (%) Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212240)										
HK1619647-012	B4/B/EBB	EK055K: Ammonia as N	7664-41-7	0.5 mg/L	80.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212241)										
HK1619647-021	WSD1/B/EBB	EK055K: Ammonia as N	7664-41-7	0.5 mg/L	90.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212242)										
HK1619647-042	B3/B/FLOOD	EK055K: Ammonia as N	7664-41-7	0.5 mg/L	110	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212257)										
HK1619647-001	B1/S/EBB	EK057A: Nitrite as N	14797-65-0	0.5 mg/L	106	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212259)										
HK1619647-012	B4/B/EBB	EK057A: Nitrite as N	14797-65-0	0.5 mg/L	104	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212261)										
HK1619647-042	B3/B/FLOOD	EK057A: Nitrite as N	14797-65-0	0.5 mg/L	106	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214798)										
HK1619647-004	B2/S/EBB	EK067P: Total Phosphorus as P	----	0.5 mg/L	100	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214799)										
HK1619647-004	B2/S/EBB	EK062P: Total Nitrogen as N	----	0.5 mg/L	94.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214800)										
HK1619647-001	B1/S/EBB	EK067P: Total Phosphorus - Filtered	----	0.5 mg/L	100	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214801)										
HK1619647-004	B2/S/EBB	EK062P: Total Nitrogen as N - Filtered	----	0.5 mg/L	86.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214802)										
HK1619647-045	B4/B/FLOOD	EK067P: Total Phosphorus as P	----	0.5 mg/L	106	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214803)										
HK1619647-045	B4/B/FLOOD	EK062P: Total Nitrogen as N	----	0.5 mg/L	88.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214804)										
HK1619647-012	B4/B/EBB	EK067P: Total Phosphorus - Filtered	----	0.5 mg/L	102	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214805)										
HK1619647-021	WSD1/B/EBB	EK062P: Total Nitrogen as N - Filtered	----	0.5 mg/L	104	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214806)										
HK1619647-001	B1/S/EBB	EK067P: Total Phosphorus as P	----	0.5 mg/L	108	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214807)										
HK1619647-001	B1/S/EBB	EK062P: Total Nitrogen as N	----	0.5 mg/L	98.0	----	75	125	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214808)										
HK1619930-001	Anonymous	EK067P: Total Phosphorus - Filtered	----	5 mg/L	93.2	----	75	125	----	----

Page Number : 17 of 17
Client : ATAL-DEGREMONT JOINT VENTURE
Work Order HK1619647

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report: Spike Concentration	Spike Recovery (%): MS	Spike Recovery (%): MSD	Recovery Limits (%): Low	Recovery Limits (%): High	RPD (%): Value	RPD (%): Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214809)										
HK1619647-001	B1/S/EBB	EK062P: Total Nitrogen as N - Filtered	----	0.5 mg/L	86.0	----	75	125	----	----

APPENDIX H

PPWQM Sediment Quality Monitoring Results

Summary of Sediment Quality Monitoring Results

15/5/2016												
Station ID	Detection Limit	B1	B2	B3	B4	B5	B6	WSD 1	WSD 2	U2	NM6	NM1
pH	0.1	8	8.1	8.1	8.3	8.3	8.2	8.1	8.2	9.4	8.6	8
Volatile Solids (%)	1	**8.7**	**8.6**	7.6	**6.7**	**7.3**	6	**6.9**	**6.7**	3.8	3.6	7
Acid Volatile Sulphides (mg/kg)	10	52	19	45	10	46	12	14	10	10	10	222
Ammonia (mg/kg)	10	18	13	11	<10	<10	<10	12	11	10	10	11
Nitrite + Nitrate (mg/kg)	0.1	**1.8**	**0.9**	**0.8**	0.5	0.4	**0.8**	**2.3**	**1.5**	0.1	0.1	0.8
Total Nitrogen (mg/kg)	20	**1470**	**1510**	**1460**	**1160**	**1260**	**1140**	**1150**	990	340	420	1350
Total Phosphorus (mg/kg)	20	**596**	**644**	603	527	519	**455**	**465**	**456**	326	201	491
Aluminium(mg/kg)	1	39500	36000	30600	29200	35100	27100	22800	22700	13900	11500	27800
Boron(mg/kg)	1	28	24	25	19	22	16	17	21	19	8	23
Iron(mg/kg)	10	**38300**	32400	31300	29600	33500	24700	21300	27800	51800	18400	27500
Mercury(mg/kg)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Arsenic(mg/kg)	1	11	13	11	10	12	9	8	10	9	7	10
Barium(mg/kg)	0.5	**59.1**	**59.8**	52.6	43	**46.8**	**43.8**	34.2	33.4	15.8	17	40.2
Cadmium(mg/kg)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Chromium(mg/kg)	1	**53**	51	46	40	**45**	**35**	29	31	25	18	38
Copper(mg/kg)	1	**53**	**91**	57	46	**47**	**38**	**29**	29	11	10	36
Lead(mg/kg)	1	**56**	**60**	50	**44**	**49**	**41**	**36**	33	38	17	38
Manganese(mg/kg)	0.5	**773**	518	486	429	478	385	**572**	**557**	645	194	638
Nickel(mg/kg)	1	**31**	27	25	22	25	**20**	16	16	15	8	22
Silver(mg/kg)	0.1	0.4	0.6	0.5	0.4	0.4	0.3	0.3	0.2	0.1	0.1	0.3
Vanadium(mg/kg)	10	**55**	47	43	38	45	35	28	29	18	21	36
Zinc(mg/kg)	1	**155**	166	142	123	134	**111**	**94**	96	88	33	107
Total Organic Carbon(%)	0.05	0.86	1.25	0.98	0.81	0.95	0.66	0.76	0.88	0.23	0.21	0.88
Gravel (%)	N/A	5	0	0	0	0	0	12	3	2	9	6

	15/5/2016											
Sand (%)	N/A	14	1	2	8	10	28	23	28	87	45	23
Silt (%)	N/A	46	58	55	54	52	43	33	38	6	25	40
Clay (%)	N/A	35	41	43	38	38	29	32	31	5	21	31

Notes: Bold numbers indicate action level exceedances. Bold and underline numbers indicate limit level exceedances.

Laboratory Results

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: ATAL-DEGREMONT JOINT VENTURE	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 9
Contact	: MR TECK SUAN LOY	Contact	: Fung Lim Chee, Richard	Work Order	: HK1619151
Address	: 2801 ISLAND PLACE TOWER, 510 KING`S ROAD, NORTH POINT HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
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Telephone	: +852 2404 1538	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: DC_2008_03 DESIGN BUILD AND OPERATE PILLAR POINT SEWAGE TREATMENT WORKS	Quote number	: ----	Date Samples Received	: 16-MAY-2016
Order number	: 430			Issue Date	: 01-JUN-2016
C-O-C number	: ----			No. of samples received	: 11
Site	: ----			No. of samples analysed	: 11

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	Position	Authorised results for
Fung Lim Chee, Richard	General Manager	Inorganics

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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: 31-MAY-2016

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: HK1619151

Sample(s) were received in a chilled condition.
Sediment sample(s) analysed on an as received basis. Result(s) reported on a dry weight basis.
Sediment sample(s) as received, digested by In-house method E-ASTM D3974-09 prior to determination of metals. The In-house method is developed based on ASTM D3974-09 method.
pH determined and reported on a 1:5 soil / water extract.
Total Nitrogen is the sum of Total Oxidizable and Total Kjeldahl Nitrogen.
Particle Size Distribution was subcontracted to and analysed by Gammon Construction Limited.

Page Number : 3 of 9
Client : ATAL-DEGREMONT JOINT VENTURE
Work Order HK1619151

Analytical Results

Sub-Matrix: SEDIMENT

Compound	CAS Number	LOR	Unit	Client sample ID: B1 Client sampling date / time: [15-MAY-2016] HK1619151-001	B2 [15-MAY-2016] HK1619151-002	B3 [15-MAY-2016] HK1619151-003	B4 [15-MAY-2016] HK1619151-004	B5 [15-MAY-2016] HK1619151-005
EA/ED: Physical and Aggregate Properties								
EA002: pH Value	----	0.1	pH Unit	8.0	8.1	8.1	8.3	8.3
EA035B: Volatile Solids @ 550°C	----	1.0	%	8.7	8.6	7.6	6.7	7.3
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	66.0	67.7	63.5	57.7	60.1
ED/EK: Inorganic Nonmetallic Parameters								
EK055: Ammonia as N	7664-41-7	10	mg/kg	18	13	11	<10	<10
EK059A: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	1.8	0.9	0.8	0.5	0.4
EK061A: Total Kjeldahl Nitrogen as N	----	20	mg/kg	1470	1510	1460	1160	1260
EK062A: Total Nitrogen as N	----	20	mg/kg	1470	1510	1460	1160	1260
EK067A: Total Phosphorus as P	----	20	mg/kg	596	644	603	527	519
EK082: Acid Volatile Sulphides (as S)	----	10	mg/kg	52	19	45	<10	46
EG: Metals and Major Cations								
EG020: Arsenic	7440-38-2	1	mg/kg	11	13	11	10	12
EG020: Barium	7440-39-3	0.5	mg/kg	59.1	59.8	52.6	43.0	46.8
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EG020: Chromium	7440-47-3	1	mg/kg	53	51	46	40	45
EG020: Copper	7440-50-8	1	mg/kg	53	91	57	46	47
EG020: Lead	7439-92-1	1	mg/kg	56	60	50	44	49
EG020: Manganese	7439-96-5	0.5	mg/kg	773	518	486	429	478
EG020: Nickel	7440-02-0	1	mg/kg	31	27	25	22	25
EG020: Silver	7440-22-4	0.1	mg/kg	0.4	0.6	0.5	0.4	0.4
EG020: Vanadium	7440-62-2	10	mg/kg	55	47	43	38	45
EG020: Zinc	7440-66-6	1	mg/kg	155	166	142	123	134
EG020: Aluminium	7429-90-5	1	mg/kg	39500	36000	30600	29200	35100
EG020: Boron	7440-42-8	1	mg/kg	28	24	25	19	22
EG025: Iron	7439-89-6	10	mg/kg	38300	32400	31300	29600	33600
EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP: Aggregate Organics								
EP005: Total Organic Carbon	----	0.05	%	0.86	1.25	0.98	0.81	0.95

Page Number : 4 of 9
Client : ATAL-DEGREMONT JOINT VENTURE
Work Order HK1619151

Sub-Matrix: SEDIMENT

Compound	CAS Number	LOR	Unit	Client sample ID: B6 Client sampling date / time: [15-MAY-2016] HK1619151-006	WSD1 [15-MAY-2016] HK1619151-007	WSD2 [15-MAY-2016] HK1619151-008	U2 [15-MAY-2016] HK1619151-009	NM6 [15-MAY-2016] HK1619151-010
EA/ED: Physical and Aggregate Properties								
EA002: pH Value	----	0.1	pH Unit	8.2	8.1	8.2	9.4	8.6
EA035B: Volatile Solids @ 550°C	----	1.0	%	6.0	6.9	6.7	3.8	3.6
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	55.9	55.9	54.4	28.0	30.4
ED/EK: Inorganic Nonmetallic Parameters								
EK055: Ammonia as N	7664-41-7	10	mg/kg	<10	12	11	<10	<10
EK059A: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.8	2.3	1.5	0.1	<0.1
EK061A: Total Kjeldahl Nitrogen as N	----	20	mg/kg	1140	1150	990	340	420
EK062A: Total Nitrogen as N	----	20	mg/kg	1140	1150	990	340	420
EK067A: Total Phosphorus as P	----	20	mg/kg	455	465	456	326	201
EK082: Acid Volatile Sulphides (as S)	----	10	mg/kg	12	14	<10	<10	<10
EG: Metals and Major Cations								
EG020: Arsenic	7440-38-2	1	mg/kg	9	8	10	9	7
EG020: Barium	7440-39-3	0.5	mg/kg	43.8	34.2	33.4	15.8	17.0
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EG020: Chromium	7440-47-3	1	mg/kg	35	29	31	25	18
EG020: Copper	7440-50-8	1	mg/kg	38	29	29	11	10
EG020: Lead	7439-92-1	1	mg/kg	41	36	33	38	17
EG020: Manganese	7439-96-5	0.5	mg/kg	385	572	557	645	194
EG020: Nickel	7440-02-0	1	mg/kg	20	16	16	15	8
EG020: Silver	7440-22-4	0.1	mg/kg	0.3	0.3	0.2	<0.1	<0.1
EG020: Vanadium	7440-62-2	10	mg/kg	35	28	29	18	21
EG020: Zinc	7440-66-6	1	mg/kg	111	94	96	88	33
EG020: Aluminium	7429-90-5	1	mg/kg	27100	22800	22700	13900	11500
EG020: Boron	7440-42-8	1	mg/kg	16	17	21	19	8
EG025: Iron	7439-89-6	10	mg/kg	24700	21300	27800	51800	18400
EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP: Aggregate Organics								
EP005: Total Organic Carbon	----	0.05	%	0.66	0.76	0.88	0.23	0.21

Page Number : 5 of 9
Client : ATAL-DEGREMONT JOINT VENTURE
Work Order HK1619151

Sub-Matrix: SEDIMENT

Compound	CAS Number	LOR	Unit	Client sample ID: NM1 / Client sampling date / time: [15-MAY-2016] / HK1619151-011
EA/ED: Physical and Aggregate Properties				
EA002: pH Value	----	0.1	pH Unit	8.0
EA035B: Volatile Solids @ 550°C	----	1.0	%	7.0
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	60.5
ED/EK: Inorganic Nonmetallic Parameters				
EK055: Ammonia as N	7664-41-7	10	mg/kg	11
EK059A: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	0.8
EK061A: Total Kjeldahl Nitrogen as N	----	20	mg/kg	1350
EK062A: Total Nitrogen as N	----	20	mg/kg	1350
EK067A: Total Phosphorus as P	----	20	mg/kg	491
EK082: Acid Volatile Sulphides (as S)	----	10	mg/kg	222
EG: Metals and Major Cations				
EG020: Arsenic	7440-38-2	1	mg/kg	10
EG020: Barium	7440-39-3	0.5	mg/kg	40.2
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2
EG020: Chromium	7440-47-3	1	mg/kg	38
EG020: Copper	7440-50-8	1	mg/kg	36
EG020: Lead	7439-92-1	1	mg/kg	38
EG020: Manganese	7439-96-5	0.5	mg/kg	638
EG020: Nickel	7440-02-0	1	mg/kg	22
EG020: Silver	7440-22-4	0.1	mg/kg	0.3
EG020: Vanadium	7440-62-2	10	mg/kg	36
EG020: Zinc	7440-66-6	1	mg/kg	107
EG020: Aluminium	7429-90-5	1	mg/kg	27800
EG020: Boron	7440-42-8	1	mg/kg	23
EG025: Iron	7439-89-6	10	mg/kg	27500
EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2
EP: Aggregate Organics				
EP005: Total Organic Carbon	----	0.05	%	0.88

Page Number : 6 of 9
Client : ATAL-DEGREMONT JOINT VENTURE
Work Order HK1619151

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report: LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4208149)								
HK1619151-001	B1	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	66.0	65.7	0.4
HK1619151-011	NM1	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	60.5	59.6	1.4
EA/ED: Physical and Aggregate Properties (QC Lot: 4208154)								
HK1619151-001	B1	EA002: pH Value	----	0.1	pH Unit	8.0	8.0	0.0
EA/ED: Physical and Aggregate Properties (QC Lot: 4209333)								
HK1619151-001	B1	EA035B: Volatile Solids @ 550°C	----	1.0	%	8.7	8.3	4.7
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4208155)								
HK1619151-001	B1	EK059A: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	1.8	1.8	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4210710)								
HK1619151-011	NM1	EK055: Ammonia as N	7664-41-7	10	mg/kg	11	12	9.3
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212246)								
HK1619151-005	B5	EK082: Acid Volatile Sulphides (as S)	----	10	mg/kg	46	41	11.1
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4213626)								
HK1619151-001	B1	EK061A: Total Kjeldahl Nitrogen as N	----	20	mg/kg	1470	1600	8.6
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4213627)								
HK1619151-001	B1	EK067A: Total Phosphorus as P	----	20	mg/kg	596	632	5.7
EG: Metals and Major Cations (QC Lot: 4207892)								
HK1619151-002	B2	EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	0.0
HK1619151-011	NM1	EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	0.0
EG: Metals and Major Cations (QC Lot: 4207893)								
HK1619151-002	B2	EG025: Iron	7439-89-6	10	mg/kg	32400	34700	6.8
EG: Metals and Major Cations (QC Lot: 4207894)								
HK1619151-002	B2	EG020: Silver	7440-22-4	0.1	mg/kg	0.6	0.5	0.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Barium	7440-39-3	0.5	mg/kg	59.8	58.8	1.6
		EG020: Manganese	7439-96-5	0.5	mg/kg	518	512	1.3
		EG020: Arsenic	7440-38-2	1	mg/kg	13	12	0.0
		EG020: Chromium	7440-47-3	1	mg/kg	51	48	5.3
		EG020: Copper	7440-50-8	1	mg/kg	91	80	13.3
		EG020: Lead	7439-92-1	1	mg/kg	60	59	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	27	25	5.5
		EG020: Zinc	7440-66-6	1	mg/kg	166	156	6.0
		EG020: Vanadium	7440-62-2	10	mg/kg	47	43	7.2
HK1619151-011	NM1	EG020: Silver	7440-22-4	0.1	mg/kg	0.3	0.3	0.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Barium	7440-39-3	0.5	mg/kg	40.2	42.2	4.6
		EG020: Manganese	7439-96-5	0.5	mg/kg	638	632	0.8
		EG020: Arsenic	7440-38-2	1	mg/kg	10	10	0.0

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Client : ATAL-DEGREMONT JOINT VENTURE
Work Order HK1619151

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations (QC Lot: 4207894) - Continued								
HK1619151-011	NM1	EG020: Chromium	7440-47-3	1	mg/kg	38	39	3.7
		EG020: Copper	7440-50-8	1	mg/kg	36	37	2.8
		EG020: Lead	7439-92-1	1	mg/kg	38	40	5.8
		EG020: Nickel	7440-02-0	1	mg/kg	22	22	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	107	111	3.1
		EG020: Vanadium	7440-62-2	10	mg/kg	36	37	3.6
EG: Metals and Major Cations (QC Lot: 4207895)								
HK1619151-002	B2	EG020: Aluminium	7429-90-5	1	mg/kg	36000	37000	2.6
EG: Metals and Major Cations (QC Lot: 4207896)								
HK1619151-002	B2	EG020: Boron	7440-42-8	1	mg/kg	24	25	0.0
EP: Aggregate Organics (QC Lot: 4211363)								
HK1618137-113	Anonymous	EP005: Total Organic Carbon	----	0.05	%	0.86	0.85	0.0
HK1619530-004	Anonymous	EP005: Total Organic Carbon	----	0.05	%	2.00	2.32	14.9
EP: Aggregate Organics (QC Lot: 4211364)								
HK1619516-002	Anonymous	EP005: Total Organic Carbon	----	0.05	%	0.90	0.91	2.0

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report LOR	Unit	Result	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report Spike Concentration	Spike Recovery (%) LCS	DCS	Recovery Limits (%) Low	High	RPD (%) Value	Control Limit
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4208155)											
EK059A: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	2 mg/kg	101	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4210710)											
EK055: Ammonia as N	7664-41-7	1	mg/kg	<1	5 mg/kg	106	----	89	113	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212246)											
EK082: Acid Volatile Sulphides (as S)	----	1	mg/kg	<1	9.32 mg/kg	86.0	----	74	112	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4213626)											
EK061A: Total Kjeldahl Nitrogen as N	----	20	mg/kg	<20	1000 mg/kg	104	----	85	115	----	----
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4213627)											
EK067A: Total Phosphorus as P	----	20	mg/kg	<20	695 mg/kg	87.8	----	85	115	----	----
EG: Metals and Major Cations (QC Lot: 4207892)											
EG035: Mercury	7439-97-6	0.02	mg/kg	<0.02	0.1 mg/kg	98.2	----	76	110	----	----
EG: Metals and Major Cations (QC Lot: 4207893)											
EG025: Iron	7439-89-6	10	mg/kg	<10	----	----	----	----	----	----	----
EG: Metals and Major Cations (QC Lot: 4207894)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	89.8	----	75	111	----	----
EG020: Barium	7440-39-3	1	mg/kg	<1	5 mg/kg	93.7	----	79	113	----	----
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	93.0	----	79	109	----	----
EG020: Chromium	7440-47-3	1	mg/kg	<1	5 mg/kg	103	----	81	123	----	----

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Client : ATAL-DEGREMONT JOINT VENTURE
Work Order HK1619151

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report LOR	Unit	Result	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report Spike Concentration	Spike Recovery (%) LCS	DCS	Recovery Limits (%) Low	High	RPD (%) Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4207894) - Continued											
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	99.1	----	79	109	----	----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	93.9	----	81	109	----	----
EG020: Manganese	7439-96-5	1	mg/kg	<1	5 mg/kg	94.7	----	78	122	----	----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	89.7	----	77	111	----	----
EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	5 mg/kg	88.9	----	75	113	----	----
EG020: Vanadium	7440-62-2	1	mg/kg	<1	5 mg/kg	100	----	72	112	----	----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	89.2	----	80	122	----	----
EG: Metals and Major Cations (QC Lot: 4207895)											
EG020: Aluminium	7429-90-5	1	mg/kg	<1	----	----	----	----	----	----	----
EG: Metals and Major Cations (QC Lot: 4207896)											
EG020: Boron	7440-42-8	1	mg/kg	<1	----	----	----	----	----	----	----
EP: Aggregate Organics (QC Lot: 4211363)											
EP005: Total Organic Carbon	----	0.05	%	<0.05	40 %	95.4	----	90	110	----	----
EP: Aggregate Organics (QC Lot: 4211364)											
EP005: Total Organic Carbon	----	0.05	%	<0.05	40 %	97.8	----	90	110	----	----

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Client : ATAL-DEGREMONT JOINT VENTURE
Work Order HK1619151

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

Matrix: SOIL

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4207892)										
HK1619151-001	B1	EG036: Mercury	7439-97-6	0.1 mg/kg	92.5	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4207894)										
HK1619151-001	B1	EG020: Arsenic	7440-38-2	5 mg/kg	94.8	----	75	125	----	----
		EG020: Barium	7440-39-3	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Cadmium	7440-43-9	5 mg/kg	95.1	----	75	125	----	----
		EG020: Chromium	7440-47-3	5 mg/kg	93.7	----	75	125	----	----
		EG020: Copper	7440-50-8	5 mg/kg	88.0	----	75	125	----	----
		EG020: Lead	7439-92-1	5 mg/kg	98.7	----	75	125	----	----
		EG020: Manganese	7439-96-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Nickel	7440-02-0	5 mg/kg	84.6	----	75	125	----	----
		EG020: Silver	7440-22-4	5 mg/kg	82.8	----	75	125	----	----
		EG020: Vanadium	7440-62-2	5 mg/kg	87.9	----	75	125	----	----
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4211363)										
HK1617958-001	Anonymous	EP005: Total Organic Carbon	----	40 %	103	----	75	125	----	----
EP: Aggregate Organics (QC Lot: 4211364)										
HK1619516-002	Anonymous	EP005: Total Organic Carbon	----	40 %	93.5	----	75	125	----	----

APPENDIX I

Event and Action Plan

Event and Action Plan for Odour Monitoring

EVENT	ACTION			
	ET	IEC	SOR	CONTRACTOR
ACTION LEVEL				
Exceedance of action level or receipt of any odour complaint	1. Identify source/reason of exceedance or odour complaints; 2. Notify the Contractor, IEC and SOR of exceedance 3. Carry out investigation to identify the source/reason of exceedance or complaints. Investigation shall be completed within 1 week; 4. Repeat odour patrol to confirm finding; and 5. If exceedance continues, notify the Contractor, IEC and SOR.	1. Check odour patrol results submitted by ET; 2. Check Contractor's mitigation measures. 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing. 2. Notify DSD; and 3. Ensure remedial measures properly implemented.	1. Notify the SOR, ET, IEC and DSD when receipt of odour complaint; 2. Rectify any unacceptable practice; and formulate remedial actions; and 3. Correspond to the complainant within 10 days to inform the cause of the nuisance and action taken.
LIMIT LEVEL				
Exceedance of Limit level or receipt of two or more complaints in 3 months	1. Identify source / reason of exceedance or odour complaints; 2. Notify the Contractor, IEC and SOR of exceedance 3. Carry out investigation to identify the source/reason of exceedance or complaints. Investigation shall be completed within 1 week; 4. Repeat odour patrols to confirm findings; 5. Increase odour patrol frequency to bi-weekly until no exceedance is detected at the ASR in the conservative 2 months and 6. If exceedance continues, notify the Contractor, IEC and SOR.	1. Check patrol results submitted by ET; 2. Discuss amongst SOR and Contractor on the potential remedial actions; 3. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the SOR accordingly; 4. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify DSD; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; and 4. Ensure remedial measures properly implemented.	1. Notify the SOR, ET, IEC and DSD when receipt of odour complaints; 2. Modify or improve design as appropriate; 3. Submit proposals for remedial actions to IEC within three working days of notification of odour exceedance / complaint; 4. Implement the agreed proposals 5. Resubmit proposals if problem still not under control; and 6. Correspond to the complainant within 10 days to inform the cause of the nuisance and action taken.

Event and Action Plan for Odour Emission Monitoring

EVENT	ACTION			
	ET	IEC	SOR	CONTRACTOR
ACTION LEVEL				
Exceedance of action level	1. Identify source/reason of exceedance; 2. Notify the Contractor, IEC and SOR of exceedance 3. Carry out investigation to identify the source/reason of exceedance. Investigation shall be completed within 1 week; 4. Monitor H_2S level sensors readings to confirm finding; and 5. If exceedance continues, notify the Contractor, IEC and SOR	1. Check H_2S level sensors readings submitted by ET; 2. Discuss with ET and Contractor on the possible remedial actions as appropriate 3. Advise SOR on the effectiveness of the proposed remedial measures if any 4. Supervise implementation of remedial measures if any	1. Confirm receipt of notification of exceedance in writing; and 2. Notify DSD. 3. Ensure remedial actions (if any) properly implemented.	1. Rectify any unacceptable practice if any.
LIMIT LEVEL				
Exceedance of Limit level	1. Identify source / reason of exceedance or odour complaints; 2. Notify the Contractor, IEC and SOR of exceedance 3. Carry out investigation to identify the source/reason of exceedance. Investigation shall be completed within 1 week; 4. Monitor H_2S level sensors readings to confirm findings; 5. If exceedance continues, notify the Contractor, IEC and SOR; and 6. If the exceedance is identified by olfactometric analysis, carry out further air sampling and olfactometry analysis to demonstrate the effectiveness of the remedial measures taken	1. Check H_2S level sensors readings and/or olfactometry analysis results submitted by ET; 2. Discuss amongst SOR and Contractor on the potential remedial actions; 3. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the SOR accordingly; 4. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify DSD; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; and 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.	1. Modify or improve system setting as appropriate; 2. Submit proposals for remedial actions to IEC within three working days of notification of odour exceedance; 3. Implement the agreed proposals; 4. Amend proposals if appropriate; and 5. If exceedance continues, consider what portion of the work is responsible and stop that portion of work until the exceedance is abated.

APPENDIX J

Weather Conditions

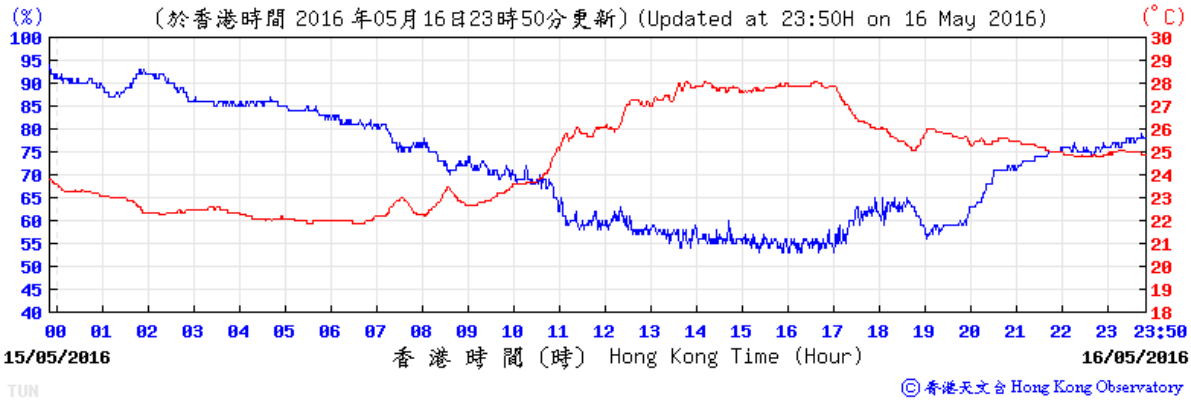
Daily Extract of Meteorological Observations, May 2016 – Tuen Mun Children and Juvenile Home

Day	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
		Absolute Daily Max (deg. C)	Mean (deg.C)	Absolute Daily Min (deg. C)					
1	***	24.9#	23.2	20.7#	21.3	89.0	0.0	***	***
2	***	27.7	25.5	23.7	23.9	91.0	0.0	***	***
3	***	31.3	25.9	22.4	24.0	90.0	66.5	***	***
4	***	29.0	25.7	22.7	23.6	88.0	1.0	***	***
5	***	30.5	27.7	25.5	25.1	87.0	0.0	***	***
6	***	31.0#	27.8	25.8#	25.4	87.0	0.0	***	***
7	***	31.9	28.4	26.0	25.6	85.0	0.0	***	***
8	***	30.8#	28.0	26.4#	25.8	88.0	0.0	***	***
9	***	31.1	28.1	26.5	25.5	86.0	0.0	***	***
10	***	27.7	25.6	22.8	24.2	92.0	54.5	***	***
11	***	30.3#	25.7	22.9#	19.7	70.0	0.0	***	***
12	***	28.9#	25.5	22.9#	21.2	77.0	0.0	***	***
13	***	28.5#	26.0	24.1#	21.8	78.0	0.0	***	***
14	***	30.1	26.9	25.3	22.9	79.0	0.0	***	***
15	***	31.5#	27.2	23.6#	23.6	81.0	3.5	***	***
16	***	28.1	24.7	21.9	18.8	71.0	0.0	***	***
17	***	26.5#	24.3	23.4#	19.7	76.0	0.0	***	***
18	***	27.4#	25.0	23.3#	19.8	73.0	0.0	***	***
19	***	28.1#	25.9	23.8#	22.2	80.0	0.0	***	***
20	***	26.8	25.6	24.2	24.4	93.0	128.5	***	***
21	***	29.3#	26.1	24.1#	24.3	90.0	88.0	***	***
22	***	31.8	27.2	24.8	22.2	75.0	0.0	***	***
23	***	31.8	27.3	24.2	22.5	76.0	0.0	***	***
24	***	32.6	27.9	24.5	24.2	81.0	0.0	***	***
25	***	31.5	28.2	25.2	24.0	79.0	0.0	***	***
26	***	31.9	29.0	26.1	24.4	77.0	0.0	***	***
27	***	30.4	27.7	25.7	25.2	86.0	8.5	***	***
28	***	31.1	27.3	24.3	25.4	90.0	26.5	***	***
29	***	32.0	28.8	25.7	26.5	88.0	0.0	***	***
30	***	33.4	30.0	27.5	26.5	82.0	0.0	***	***
31	***	33.1	30.1	27.9	26	79	0	***	***

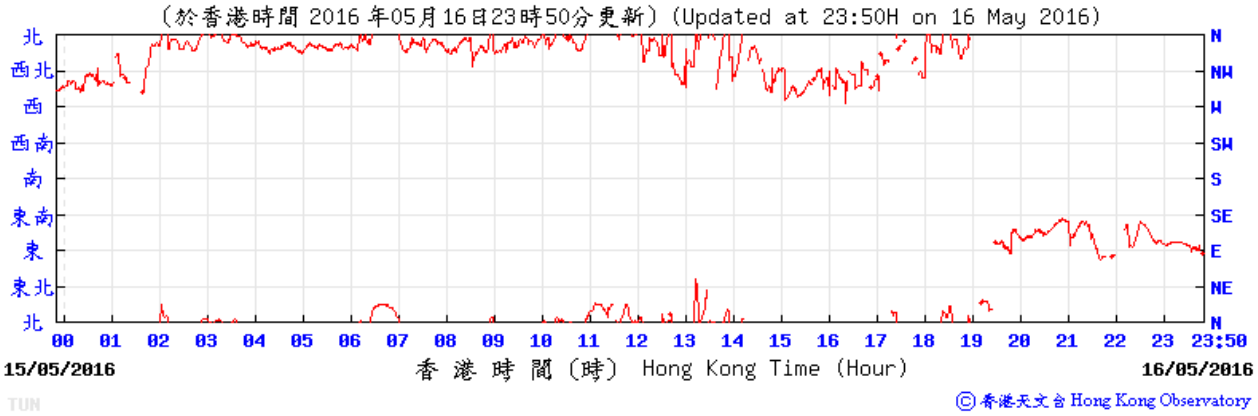
Note:
*** - information unavailable
# data incomplete
Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected.

Hourly Meteorological Conditions on 16 May 2016 at Tuen Mun Station

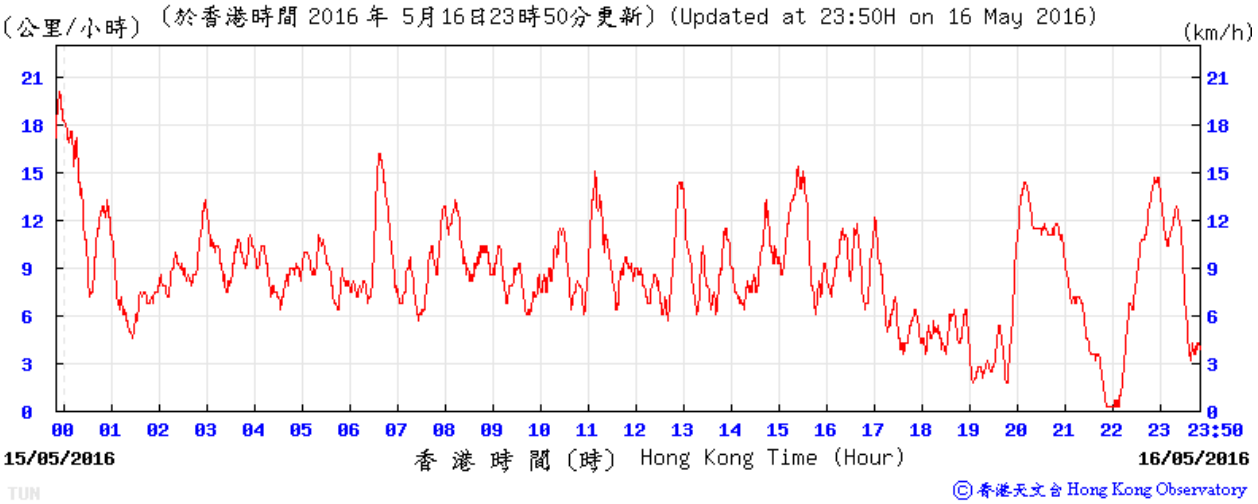
Temperature/ Humidity:



Wind Direction:



Wind Speed:



APPENDIX K

Landscape & Visual Impact Monitoring

Contract No. DC/2008/03
Design, Build and Operate Pillar Point Sewage Treatment Works
Establishment Period - 9th monthly L&V site audit

Site Inspection Date : 12 May 2016

Audited and Certified by:

Kenneth Ng (RLA No. 034 (99))

Area of Works	Items to be Monitored	Previous Observation	Establishment Works Stage	
			Observation	Recommendation/Action
Issues Observed in this Audit				
Within Pillar Point Sewage Treatment Works	Location at Ground Floor Planting Area (Trees, Shrubs & Groundcover) Photo no. G-01 to G-07	Item #1	Tree nos. 131, 133, 134, 128, 129, R156, R157, N84 and R185 in ground floor garden were observed in poor condition. (Please see photo reference below)	It is recommended to carry out additional maintenance works for the tree no. N84, 128, 134 and R185. The Contractor had prepared the tree felling proposal for tree nos 131, 133, 129, R156 and R157. Trees will be replaced after it is approved.
Within Pillar Point Sewage Treatment Works	Location at Ground Floor Planting Trees Area Photo no. G-08	Item #2	The non-abrasive nylon ropes were observed released and tree tags had been provided. (Please see photo reference below)	-

Area of Works	Items to be Monitored	Previous Observation	Establishment Works Stage	
			Observation	Recommendation/Action
Within Pillar Point Sewage Treatment Works	Location at Ground Floor Planting Trees Area Photo no. G-09	Item #3	Collapsed tree was observed to be replanted during this site inspection.	It is recommended to provide sufficient watering and carry out maintenance works for the collapsed tree.
Within Pillar Point Sewage Treatment Works	Location at Ground Floor Planting Trees Area Photo no. G-10	Item #4	Groundcover and lawn were observed in poor condition during this site inspection.	It is strongly recommended to provide sufficient watering and carry out necessary maintenance works for the groundcover and lawn.

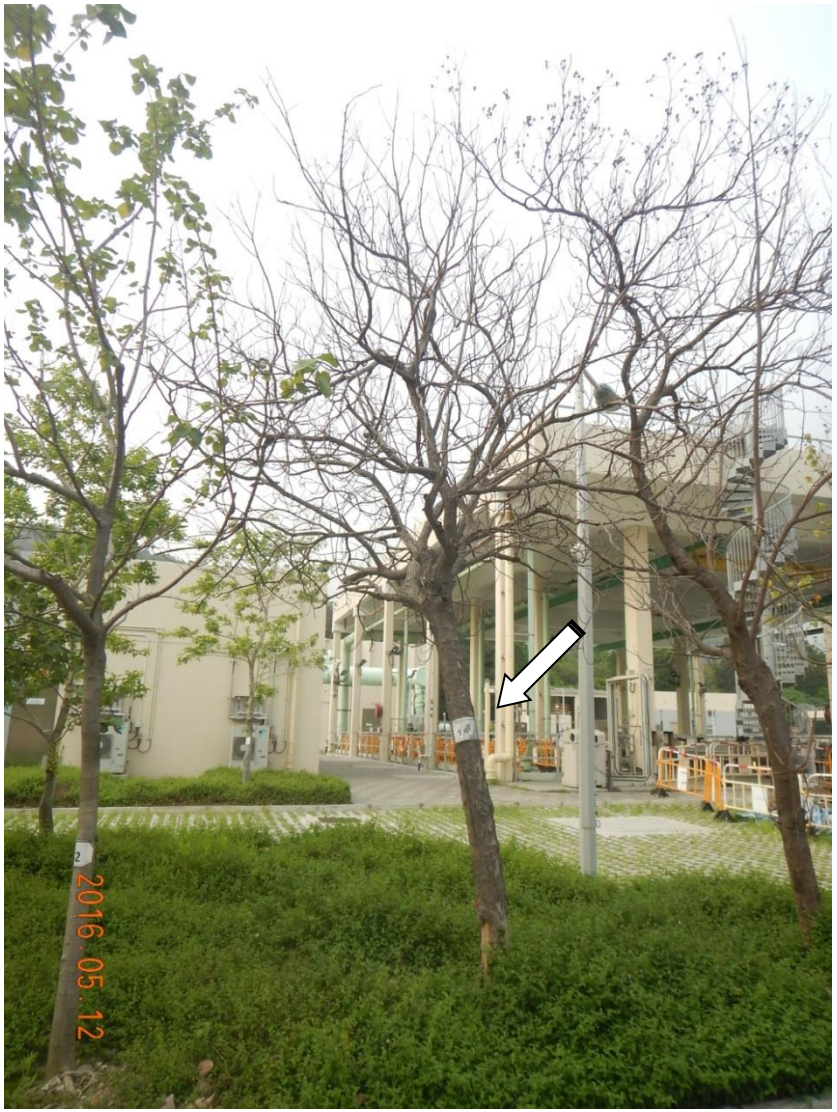
Leaning tree observed

Tree tag was found damaged.

Uproot and girding root.

Photo no. **G-01**: Tree tag no. **131** was observed in poor condition.

Dieback and dead branch was observed



Existing wound was observed on the trunk

Tree tag was found damaged.

Photo no. **G-02**: Tree tag no. **133** was observed in poor condition.

Dieback and dead branch was observed

Existing wound was observed on the trunk

Photo no. **G-02**: Tree tag no. **134** was observed in poor condition.

Few leaf were observed.

Photo no. **G-03**: Tree tag no. **128** was observed in poor condition.

Existing wound was observed on the trunk

Dieback and dead branch was observed

Photo no. **G-03**: Tree tag no. **129** was observed in poor condition.

Dieback and dead branch was observed

Existing wound was observed on the trunk

Photo no. **G-04**: Tree tag no. **N84** was observed in poor condition.

Dieback and dead branch was observed

Dieback and dead branch was observed

Photo no. **G-05**: Tree tag no. **R157** was observed in poor condition.

Dieback and dead branch was observed

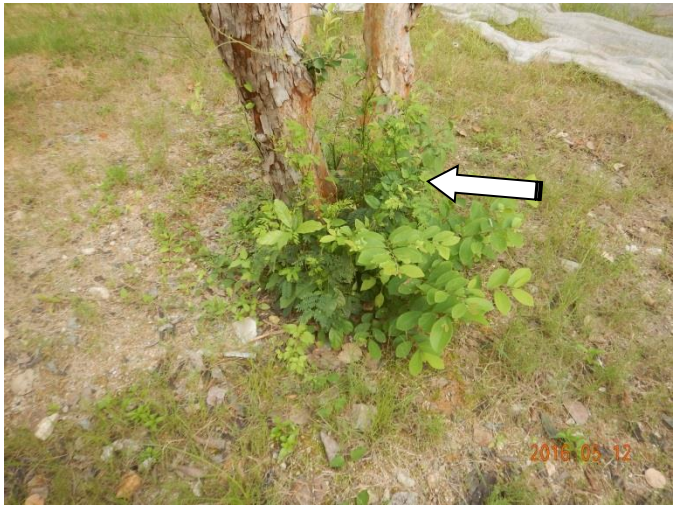


Photo no. **G-06**: Tree tag no. **R156** was observed in poor condition.

Dieback and dead branch was observed

Photo no. **G-07**: Tree tag no. **R185** was observed in poor condition.

Photo no. **G-08**: Tree tags had been provided during this site inspection.

Photo no. **G-09**: Collapsed tree was observed to be replanted during this site inspection.

Photo no. **G-10**: Groundcover and Lawn were observed missing during the site inspection.