



**CMA Testing
and Certification
Laboratories**

廠商會檢定中心

**Term Contract for Provision of Sampling and Analyzing of
Wastewater and Sludge for Various Sewage Treatment Facilities in
Urban Area, Lantau and Outlying Islands to the
Drainage Services Department**

Contract No. : DE/2016/12

Applicant : DRAINAGE SERVICES DEPARTMENT
SEWAGE SERVICES BRANCH
HARBOUR AREA TREATMENT SCHEME DIVISION

Address : 5/F., WESTERN MAGISTRACY,
2A, POK FU LAM ROAD, HONG KONG

Application Number : LV023396(1)

Report Number : AV0062880(2)

Report Issued Date : 06 Nov 2017

For and on behalf of

CMA Industrial Development Foundation Limited

Authorized Signature : _____

Lau Yan Kin
Senior Manager
Environmental Division

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Report No.: AV0062880(2)

Term Contract for Provision of Sampling and Analyzing of Wastewater and Sludge Samples for Various and Sludge Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to the Drainage Services Department

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Term Contract for Provision of Sampling and Analyzing of Wastewater
and Sludge Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to
the Drainage Services Department

EXECUTIVE SUMMARY

1. This is the water quality monitoring report prepared by CMA Testing and Certification Laboratory (CMA Testing) for Contract No. DE/2016/12 “Term Contract for Provision of Sampling and analysing of Wastewater and Sludge Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to the Drainage Services Department (2017-2019)”. This report documented the results and findings of Operation Phase Environmental Monitoring works conducted for Effluent Quality Monitoring (EQM) of Project in 26 Sep 2017.
2. In accordance with the Final EM&A Manual, environmental monitoring has been conducted in the reporting month with a Quarterly Basis for various parameters as summarized in **Table I**.

Table I Summary Table for Environmental Monitoring Works Conducted in the Reporting Month

Monitoring Parameters	Monitoring Date	Laboratory Testing Parameters
Effluent Quality	26 Sep 2017 to 27 Sep 2017	Chlorination by-products (CBPs) and Contaminants of Concern (COCs)



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Term Contract for Provision of Sampling and Analyzing of Wastewater
and Sludge Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to
the Drainage Services Department

1. INTRODUCTION

- 1.1. CMA Testing was commissioned by Drainage Services Department (DSD) to undertake the operation phase environmental monitoring for Advance Disinfection Facilities (ADF) at Stonecutters Island Sewage Treatment Works (SCISTW) (thereafter called the “the Services”).
- 1.2. The operation phase monitoring, which include effluent quality monitoring, marine water quality monitoring and emergency discharge monitoring, is to monitor the effluent and marine water quality impact of ADF during its operation phase.
- 1.3. This is the water quality monitoring report prepared by CMA Testing that documented the results and findings of Operation Phase Water Quality Monitoring works conducted for Effluent Quality Monitoring (EQM) of Project on 26 Sep 2017.



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2. EFFLUENT QUALITY MONITORING

Monitoring Requirements

- 2.1. Effluent samples were collected at Disinfection Facilities in a full 24-hour period. 24-hour flow weighted composite effluent samples for subsequent chemical analysis and testing were prepared by CMA according to the following procedures:
 - Collect effluent sub-sample by direct grab sampling method at bi-hourly interval over a 24 hour period;
 - Obtain flow record of Stonecutters Island Sewage Treatment Works (SCISTW) for the 24-hour sampling period;
 - Calculate the volume of each sub-sample for preparation the bi-hourly of 24 hour flow-weighted composite samples; and
 - Transfer the appropriate the volume of sub-samples to a clean container and mix thoroughly.
- 2.2. Chlorination By-Products (CBPs) and Contaminants of Concern (COCs) shall be performed quarterly throughout the contract period.

Monitoring Location

- 2.3. The sampling locations for effluent from SCISTW were collected at the Disinfection Facilities

Monitoring Schedule

- 2.4. The effluent quality monitoring was conducted between the time periods of 10:00 26 Sep 2017 to 10:00 of 27 Sep 2017 in the reporting month. Collection of marine water samples were within the time period of effluent quality monitoring was to be collected.

Laboratory Measurement / Analysis

- 2.5. In the reporting month, the bi-hourly of 24-hour flow-weighted composite effluent sample was collected for subsequent laboratory analysis and testing on CBPs and COCs as shown in **Table 2.1**.

Table 2.1 Analytical Methods for Laboratory Analysis for Effluent Samples

Parameters		Analytical Method	Limit of Reporting (µg/L)
Potential CBPs			
Bromoform	Tri-halomethanes (THMs)	TG-ENV-WW-78 (Headspace GC-MS)	0.1
Bromodichloromethane			0.1
Chloroform			0.1
Dibromochloromethane			5
Bromoacetic acid	Haloacetic Acids (HAAs)	TG-ENV-WW-79 (GC-ECD)	2
Chloroacetic acid			2



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Dibromoacetic acid			2
Dichloroacetic acid			2
Trichloroacetic acid			2
Contaminants of Concern (COCs)			
Methylene chloride	Halogenated Aliphatics	TG-ENV-WW-78 (Headspace GC-MS)	20
Carbon tetrachloride			0.5
1,1-dichloroethane			0.5
1,2-dichloroethane			0.5
1,1-dichloroethylene			0.5
1,2-dichloropropane			0.5
Tetrachloroethylene			0.5
1,1,1-trichloroethane	Halogenated Aliphatics		0.5
1,1,2-trichloroethane			0.5
Trichloroethylene			0.5
2-chlorophenol	Phenols & Haloethers	TG-ENV-WW-80 (GC-MS)	0.5
2,4-dichlorophenol			0.5
p-chloro-m-cresol			0.5
Pentachlorophenol			0.5
2,4,6-trichlorophenol			0.5
Bis(2-chloroethoxy) methane			0.5
Chlorobenzene			
1,4-dichlorobenzene	0.5		
Hexachlorobenzene	Chlorinated Hydrocarbons & Organochlorine Pesticides	USEPA 625	0.01
Hexachlorocyclopentadiene			2.5
Hexachloroethane			0.5
1,2,4-trichlorobenzene			0.5
Alpha-BHC			0.01
Beta-BHC			0.01
Gamma-BHC			0.01

3. RESULTS AND OBSERVATIONS

Effluent Quality

- 3.1. The results of effluent quality monitoring conducted on the time period of 10:00 26 Sep 2017 to 10:00 of 27 Sep 2017, whereas the laboratory testing and QC report are shown in **Appendix I-Report no. AV0062882(4)**.



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Report No.: AV0062880(2)

Term Contract for Provision of Sampling and Analyzing of Wastewater
and Sludge Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to
the Drainage Services Department

Appendix I - Report for Laboratory Test(s)



CMA Testing and Certification Laboratories

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TEST REPORT

Report No. : AV0062882(4) Date: 06 Nov 2017

Application No. : LV023396(1)

Applicant : DRAINAGE SERVICES DEPARTMENT
SEWAGE SERVICES BRANCH
HARBOUR AREA TREATMENT SCHEME DIVISION
5/F., WESTERN MAGISTRACY,
2A, POK FU LAM ROAD, HONG KONG

Contract No. : DE/2016/12

Project Name : Term Contract for Provision of Sampling and Analyzing of
Wastewater and Sludge for Various Sewage Treatment Facilities in
Urban Area, Lantau and Outlying Islands to the Drainage Services
Department

Sample Description : One (1) wastewater sample sampled by the staff of CMA Industrial
Development Foundation Limited.
Sample was refrigerated during delivery.

Sample ID : Refer to Sample ID on page 4.

Sampling Location : SCISTW- Disinfection Facilities

Sampling Date : 26 Sep 2017 to 27 Sep 2017.

Date Received : 27 Sep 2017.

Test Period : 26 Sep 2017 to 24 Oct 2017.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature :



Lau Yan Kin
Senior Manager
Environmental Division

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TEST REPORT

Report No. : AV0062882(4)

Date: 06 Nov 2017

Application No. : LV023396(1)

Test Requested :

1. Bromoform
2. Bromodichloromethane
3. Chloroform
4. Dibromochloromethane
5. Bromoacetic acid
6. Chloroacetic acid
7. Dibromoacetic acid
8. Dichloroacetic acid
9. Trichloroacetic acid
10. Methylene chloride
11. Carbon tetrachloride
12. 1,1-dichloroethane
13. 1,2-dichloroethane
14. 1,1-dichloroethylene
15. 1,2-dichloropropane
16. Tetrachloroethylene
17. 1,1,1-trichloroethane
18. 1,1,2-trichloroethane
19. Trichloroethylene
20. 2-chlorophenol
21. 2,4-dichlorophenol
22. p-chloro-m-cresol
23. Pentachlorophenol
24. 2,4,6-trichlorophenol
25. Bis(2-chloroethoxy) methane
26. Chlorobenzene
27. 1,4-dichlorobenzene
28. Hexachlorobenzene
29. Hexachlorocyclopentadiene
30. Hexachloroethane
31. 1,2,4-trichlorobenzene
32. Alpha-BHC
33. Beta-BHC
34. Gamma-BHC



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TEST REPORT

Report No. : AV0062882(4)

Date: 06 Nov 2017

Application No. : LV023396(1)

Test Method :

1. TG-ENV-WW-78 (Headspace GC-MS)
2. TG-ENV-WW-78 (Headspace GC-MS)
3. TG-ENV-WW-78 (Headspace GC-MS)
4. TG-ENV-WW-78 (Headspace GC-MS)
5. TG-ENV-WW-79 (GC-ECD)
6. TG-ENV-WW-79 (GC-ECD)
7. TG-ENV-WW-79 (GC-ECD)
8. TG-ENV-WW-79 (GC-ECD)
9. TG-ENV-WW-79 (GC-ECD)
10. TG-ENV-WW-78 (Headspace GC-MS)
11. TG-ENV-WW-78 (Headspace GC-MS)
12. TG-ENV-WW-78 (Headspace GC-MS)
13. TG-ENV-WW-78 (Headspace GC-MS)
14. TG-ENV-WW-78 (Headspace GC-MS)
15. TG-ENV-WW-78 (Headspace GC-MS)
16. TG-ENV-WW-78 (Headspace GC-MS)
17. TG-ENV-WW-78 (Headspace GC-MS)
18. TG-ENV-WW-78 (Headspace GC-MS)
19. TG-ENV-WW-78 (Headspace GC-MS)
20. TG-ENV-WW-80 (GC-MS)
21. TG-ENV-WW-80 (GC-MS)
22. TG-ENV-WW-80 (GC-MS)
23. TG-ENV-WW-80 (GC-MS)
24. TG-ENV-WW-80 (GC-MS)
25. TG-ENV-WW-80 (GC-MS)
26. TG-ENV-WW-78 (Headspace GC-MS)
27. TG-ENV-WW-78 (Headspace GC-MS)
28. USEPA 625
29. USEPA 625
30. USEPA 625
31. USEPA 625
32. USEPA 625
33. USEPA 625
34. USEPA 625

Test Result : Refer to results on page 4.



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TEST REPORT

Report No. : AV0062882(4)

Date: 06 Nov 2017

Application No. : LV023396(1)

Effluent Water Quality

Application No.: LV023396
Sampling Date: 26-Sep-17
Monitoring Location: Chamber 15A

Parameter	Results (µg/L)
Bromoform	5.0
Bromodichloromethane	4.0
Chloroform	26.2
Dibromochloromethane	<5
Bromoacetic acid	<2
Chloroacetic acid	<2
Dibromoacetic acid	2.0
Dichloroacetic acid	12.0
Trichloroacetic acid	5.4

Parameter	Results (µg/L)
Methylene chloride	<20
Carbon tetrachloride	<0.5
1,1-dichloroethane	<0.5
1,2-dichloroethane	<0.5
1,1-dichloroethylene	<0.5
1,2-dichloropropane	<0.5
Tetrachloroethylene	1.2
1,1,1-trichloroethane	<0.5
1,1,2-trichloroethane	<0.5
Trichloroethylene	0.7
2-chlorophenol	<0.5
2,4-dichlorophenol	<0.5
p-chloro-m-cresol	<0.5
Pentachlorophenol	<0.5
2,4,6-trichlorophenol	<0.5
Bis(2-chloroethoxy) methane	<0.5
Chlorobenzene	<0.5
1,4-dichlorobenzene	<0.5
Hexachlorobenzene	<0.01
Hexachlorocyclopentadiene	<2.5
Hexachloroethane	<0.5
1,2,4-trichlorobenzene	<0.5
Alpha-BHC	<0.01
Beta-BHC	<0.01
Gamma-BHC	<0.01

TEST REPORT

Report No. : AV0062882(4)

Date: 06 Nov 2017

Application No. : LV023396(1)

QC Report

Sampling Date 26-Sep-17

Parameter	Method Blank (µg/L)	Acceptance Criteria (µg/L)	QC Recovery (%)	Acceptance Criteria (%)	Spike Recovery (%)	Acceptance Criteria (%)	Duplicate (RPD) (%)	Acceptance Criteria (%)
Bromoform	<0.02	<0.02	93	80-120	84	70-130	9	≤20
Bromodichloromethane	<0.02	<0.02	97	80-120	96	70-130	6	≤20
Chloroform	<0.02	<0.02	96	80-120	88	70-130	8	≤20
Dibromochloromethane	<1	<1	108	80-120	85	70-130	7	≤20
Bromoacetic acid	<0.4	<0.4	104	80-120	107	70-130	6	≤20
Chloroacetic acid	<0.4	<0.4	106	80-120	113	70-130	6	≤20
Dibromoacetic acid	<0.4	<0.4	92	80-120	92	70-130	5	≤20
Dichloroacetic acid	<0.4	<0.4	105	80-120	109	70-130	7	≤20
Trichloroacetic acid	<0.4	<0.4	94	80-120	107	70-130	6	≤20

Parameter	(µg/L)	(µg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Methylene chloride	<4	>4	103	80-120	104	70-130	8	≤20
Carbon tetrachloride	<0.1	<0.1	108	80-120	91	70-130	7	≤20
1,1-dichloroethane	<0.1	<0.1	96	80-120	107	70-130	6	≤20
1,2-dichloroethane	<0.1	<0.1	107	80-120	82	70-130	5	≤20
1,1-dichloroethylene	<0.1	<0.1	94	80-120	87	70-130	6	≤20
1,2-dichloropropane	<0.1	<0.1	102	80-120	86	70-130	8	≤20
Tetrachloroethylene	<0.1	<0.1	96	80-120	95	70-130	2	≤20
1,1,1-trichloroethane	<0.1	<0.1	95	80-120	86	70-130	7	≤20
1,1,2-trichloroethane	<0.1	<0.1	98	80-120	89	70-130	8	≤20
Trichloroethylene	<0.1	<0.1	101	80-120	102	70-130	6	≤20
2-chlorophenol	<0.1	<0.1	95	80-120	97	70-130	5	≤20
2,4-dichlorophenol	<0.1	<0.1	106	80-120	86	70-130	6	≤20
p-chloro-m-cresol	<0.1	<0.1	104	80-120	108	70-130	9	≤20
Pentachlorophenol	<0.1	<0.1	107	80-120	93	70-130	8	≤20
2,4,6-trichlorophenol	<0.1	<0.1	97	80-120	95	70-130	4	≤20
Bis(2-chloroethoxy) methane	<0.1	<0.1	97	80-120	87	70-130	8	≤20
Chlorobenzene	<0.1	<0.1	95	80-120	92	70-130	7	≤20
1,4-dichlorobenzene	<0.1	<0.1	98	80-120	98	70-130	9	≤20
Hexachlorobenzene	<0.005	<0.005	104	80-120	103	70-130	3	≤20
Hexachlorocyclopentadiene	<0.5	<0.5	105	80-120	108	70-130	2	≤20
Hexachloroethane	<0.1	<0.1	104	80-120	112	70-130	5	≤20
1,2,4-trichlorobenzene	<0.1	<0.1	104	80-120	107	70-130	5	≤20
Alpha-BHC	<0.005	<0.005	93	80-120	97	70-130	8	≤20
Beta-BHC	<0.005	<0.005	106	80-120	95	70-130	5	≤20
Gamma-BHC	<0.005	<0.005	98	80-120	113	70-130	7	≤20

***** End of Report *****



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