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REPORT OF TESTS

Description	Chemical Analysis			
Tested for	Dome Oilfield Engineering Services LLC			
Lab Report. No.	WR21-08730	(Page 1 of 5)	Request No.	LOT-100673
Date Received	23/06/2021		Date Reported	20/09/2021

Client's reference : AQ34741
Project ID : ED 21.17 - Marine Water Analysis-Mirfa

1.0 Introduction

Further to the test work instructions received from M/s. Dome Oilfield Engineering Services LLC, Abu Dhabi, dated 23.06.2021, ten samples of marine water have been received for analysis by Element Materials Technology M.E Limited, Abu Dhabi.

2.0 Methods

Parameter	
Solids (Total Dissolved)	APHA 2540 C
Oxygen (Dissolved)	APHA 4500 O G
Chlorophyll	APHA 10200 H
Salinity	APHA 2520 B
Chromium (Hexavalent)	HACH 8023
Metals by ICP-MS	APHA 3125
EPH C10-C40 by GC-FID	EPA 8015B
VPH C5-C10 by GC-FID	EPA 8015B
Polychlorinated Biphenyls PCB by GC MS	EPA 8270D
Enterococci by MF Technique	BS EN ISO 7899-2

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The results relate only to the item(s) tested. Sampling conducted by the organisation indicated.

3.0 Results

		Lot Id	100673-1	100673-2	100673-3	100673-4	100673-5
		Sampled By	Client	Client	Client	Client	Client
		Sample Description	MEWS-01	MEWS-02	MEWS-03	MEWS-04	MEWS-05
		Sampled Date	22/06/2021	22/06/2021	22/06/2021	22/06/2021	22/06/2021
		Sampled Time	9:25:00	0:00	11:35:00	12:05:00	10:35:00
Parameter Name	Unit	Detection Limit	Results	Results	Results	Results	Results
Total Dissolved Solids	mg/L	5	54300	55100	54100	53400	56300
Dissolved Oxygen	mg/L	1	7.6	7.6	7.5	7.7	7.7
Chlorophyll 'a'*	mg/m3	1	<1	<1	<1	<1	<1
Salinity	ppt	1	51.8	51.5	52	51	51.7
Chromium (VI)	µg/L	-	≤ 0.9	≤ 0.5	≤ 0.3	≤ 0.7	≤ 1.0
Chromium (Cr)	µg/L	0.2	0.9	0.5	0.3	0.7	1
Cadmium (Cd)	µg/L	0.1	0.1	<0.1	0.1	<0.1	0.2
Lead (Pb)	µg/L	0.2	<1.0	2.3	2.8	5.7	8.7
Zinc (Zn)	µg/L	2	<2.0	<2.0	<2.0	<2.0	<2.0
Mercury (Hg)	µg/L	0.1	<0.100	<0.100	<0.100	<0.100	<0.100
Copper (Cu)	µg/L	0.3	1	2.4	<0.3	<0.3	<0.3
Nickel (Ni)	µg/L	0.3	0.4	0.5	0.4	1	1
EPH C10-C40**	µg/L	7	31	49	203	120	18
VPH C5-C10	µg/L	7	<7	<7	<7	<7	<7
TPH (sumof VPH & EPH)	µg/L	-	31	49	203	120	18
2,2',3,3',4,4' - Hexachlorobiphenyl (PCB 128)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',3,3',4,4',5 - Heptachlorobiphenyl (PCB 170)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',3,3',4,4',5,5',6,6' - Decachlorobiphenyl	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',3,3',4,4',5,5',6- Nonachlorobiphenyl (PCB 206)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',3,3',4,4',5,6 - Octachlorobiphenyl (PCB 195)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',3,4',5,5',6 - Heptachlorobiphenyl (PCB 187)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',3,4,4',5' - Hexachlorobiphenyl (PCB 138)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

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Results

PCB	Unit	Lot Id	100673-1	100673-2	100673-3	100673-4	100673-5
2,2',3,4,4',5,5' - Heptachlorobiphenyl (PCB 180)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',3,5' - Tetrachlorobiphenyl (PCB 44)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',4,4',5,5' - Hexachlorobiphenyl (PCB 153)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',4,5,5' - Pentachlorobiphenyl (PCB 101)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',5,5' - Tetrachlorobiphenyl (PCB 52)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2`,5 - Trichlorobiphenyl (PCB 18)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
3,3',4,4' - Tetrachlorobiphenyl (PCB 77)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
3,3',4,4',5 - Pentachlorobiphenyl (PCB 126)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,4' - Dichlorobiphenyl (PCB 8)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,4,4' - Trichlorobiphenyl (PCB 28)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,3',4,4' - Tetrachlorobiphenyl (PCB 66)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,3',4,4',5 - Pentachlorobiphenyl (PCB 118)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,3,3',4,4' - Pentachlorobiphenyl (PCB 105)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Enterococci	CFU /100mL	10	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected

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Results

		Lot Id	100673-6	100673-7	100673-8	100673-9	100673-10
		Sampled By	Client	Client	Client	Client	Client
		Sample Description	MEWS-06	MEWS-07	MEWS-08	MEWS-09	MEWS-10
		Sampled Date	22/06/2021	22/06/2021	22/06/2021	22/06/2021	22/06/2021
		Sampled Time	10:10:00	11:00:00	10:40:00	11:15:00	9:05:00
Parameter Name	Unit	Detection Limit	Results	Results	Results	Results	Results
Total Dissolved Solids	mg/L	5	55900	53500	54500	54100	54700
Dissolved Oxygen	mg/L	1	7.6	7.8	7.7	7.7	7.6
Chlorophyll 'a'*	mg/m3	1	<1	<1	<1	<1	<1
Salinity	ppt	1	52	50.9	51.5	52	51.7
Chromium (VI)	µg/L	-	≤ 1.1	≤ 0.7	≤ 1.9	≤ 0.6	≤ 0.9
Chromium (Cr)	µg/L	0.2	1.1	0.7	1.9	0.6	0.9
Cadmium (Cd)	µg/L	0.1	0.1	0.1	0.1	0.1	0.2
Lead (Pb)	µg/L	0.2	1.5	2.9	<1.0	1.5	3
Zinc (Zn)	µg/L	2	<2.0	<2.0	<2.0	<2.0	<2.0
Mercury (Hg)	µg/L	0.1	<0.100	<0.100	<0.100	<0.100	<0.100
Copper (Cu)	µg/L	0.3	2	<0.3	0.3	0.5	<0.3
Nickel (Ni)	µg/L	0.3	0.6	4.2	1.5	0.7	0.5
EPH C10-C40**	µg/L	7	62	12	7	8	10
VPH C5-C10	µg/L	7	<7	<7	<7	<7	<7
TPH (sumof VPH & EPH)	µg/L	-	62	12	7	8	10
2,2',3,3',4,4' - Hexachlorobiphenyl (PCB 128)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',3,3',4,4',5 - Heptachlorobiphenyl (PCB 170)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',3,3',4,4',5,5',6,6' - Decachlorobiphenyl	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',3,3',4,4',5,5',6- Nonachlorobiphenyl (PCB 206)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',3,3',4,4',5,6 - Octachlorobiphenyl (PCB 195)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',3,4',5,5',6 - Heptachlorobiphenyl (PCB 187)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',3,4,4',5' - Hexachlorobiphenyl (PCB 138)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

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Results

PCB	Unit	Lot Id	100673-1	100673-2	100673-3	100673-4	100673-5
2,2',3,4,4',5,5' - Heptachlorobiphenyl (PCB 180)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',3,5' - Tetrachlorobiphenyl (PCB 44)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',4,4',5,5' - Hexachlorobiphenyl (PCB 153)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',4,5,5' - Pentachlorobiphenyl (PCB 101)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2',5,5' - Tetrachlorobiphenyl (PCB 52)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,2`,5 - Trichlorobiphenyl (PCB 18)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
3,3',4,4' - Tetrachlorobiphenyl (PCB 77)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
3,3',4,4',5 - Pentachlorobiphenyl (PCB 126)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,4' - Dichlorobiphenyl (PCB 8)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,4,4' - Trichlorobiphenyl (PCB 28)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,3',4,4' - Tetrachlorobiphenyl (PCB 66)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,3',4,4',5 - Pentachlorobiphenyl (PCB 118)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,3,3',4,4' - Pentachlorobiphenyl (PCB 105)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Enterococci	CFU /100mL	10	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected

S.K. Saji
Asst. Laboratory Manager - Chemistry

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For and on behalf of Element Materials Technology ME Limited, Abu Dhabi

Tested by : AFE

Date tested: 24.06.2021 – 06.07.2021

Sampled by the client, certificate of sampling was not given.

*For all the ten samples, the instrument reading for chlorophyll''a" is 0.2mg/m^3,which is below the meaningful detection level for this method.

**Please note that the EPH results are unusual and are higher than typically expected in marine water samples.

This report supersedes norlims report 139923, dated 06.07.2021. Report revised to reflect Mercury & Cr VI results from ICP MS analysis.

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Analytical Report

Job Ref. No. : 100678
Report No : 139925
Date Reported : 12/07/2021

Client: Dome Oilfield Engineering Services LLC

P.O. Box: 6924
1503, Al Masaood Tower, Hamdan Street
ABU DHABI, United Arab Emirates

Attn: Marc Vico Pauig
Project ID: ED 21.17 - Sediment Analysis-Mirfa Block
Project Name: Dome Oilfield Engineering Services LLC
Project Location: N/A
Tel. No: +971 (0)2 6348800

Approved by: Saji SK

Asst. Laboratory Manager–Chemistry & Microbiology

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Sample ID	100678-1	100678-2	100678-3
Date Received	23/06/2021	23/06/2021	23/06/2021
Sampled By	Client	Client	Client
Sampling Date	22/06/2021	22/06/2021	22/06/2021
Sampling Time	09:26	09:45	11:35
Sample Sub Matrix	Sediment	Sediment	Sediment
Sampling Location	Not Given	Not Given	Not Given
Client Sample ID	MEWS-01	MEWS-02	MEWS-03
Sampling Method	Not Given	Not Given	Not Given

Analyte	Units	Results	Results	Results	Method Limit of Detection
Metals					
Cadmium (Cd)	mg/kg	<0.2	<0.2	<0.2	0.5
Arsenic (As)	mg/kg	4.6	6.7	5.6	1.0
Chromium (Cr)	mg/kg	10.2	5.8	3.9	1.0
Copper (Cu)	mg/kg	10.0	6.9	4.9	3.0
Lead (Pb)	mg/kg	1.7	1.4	1.2	1.0
Nickel (Ni)	mg/kg	8.7	4.6	2.8	1.0
Zinc (Zn)	mg/kg	12.6	29.0	16.0	3.0
Mercury (Hg)	mg/kg	<0.010	0.010	<0.010	0.010
PAH's					
Acenaphthene	mg/kg	<0.01	<0.01	<0.01	0.01
Acenaphthylene	mg/kg	<0.01	<0.01	<0.01	0.01
Anthracene	mg/kg	<0.01	<0.01	<0.01	0.01
Benzo(a)anthracene	mg/kg	<0.01	<0.01	<0.01	0.01
Benzo(a)pyrene	mg/kg	<0.01	<0.01	<0.01	0.01
Benzo(b)fluoranthene	mg/kg	<0.01	<0.01	<0.01	0.01
Benzo(g,h,i)perylene	mg/kg	<0.01	<0.01	<0.01	0.01
Benzo(k)fluoranthene	mg/kg	<0.01	<0.01	<0.01	0.01
Chrysene	mg/kg	<0.01	<0.01	<0.01	0.01
Dibenzo(a,h)anthracene	mg/kg	<0.01	<0.01	<0.01	0.01
Fluoranthene	mg/kg	<0.01	<0.01	<0.01	0.01
Fluorene	mg/kg	<0.01	<0.01	<0.01	0.01
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.01	<0.01	<0.01	0.01

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Analytical Report

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Report No : 139925
Date Reported : 12/07/2021

Client: Dome Oilfield Engineering Services LLC

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Attn: Marc Vico Pauig
Project ID: ED 21.17 - Sediment Analysis-Mirfa Block
Project Name: Dome Oilfield Engineering Services LLC
Project Location: N/A
Tel. No: +971 (0)2 6348800

Approved by: Saji SK

Asst. Laboratory Manager–Chemistry & Microbiology

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Sample ID	100678-1	100678-2	100678-3
Date Received	23/06/2021	23/06/2021	23/06/2021
Sampled By	Client	Client	Client
Sampling Date	22/06/2021	22/06/2021	22/06/2021
Sampling Time	09:26	09:45	11:35
Sample Sub Matrix	Sediment	Sediment	Sediment
Sampling Location	Not Given	Not Given	Not Given
Client Sample ID	MEWS-01	MEWS-02	MEWS-03
Sampling Method	Not Given	Not Given	Not Given

Analyte	Units	Results	Results	Results	Method Limit of Detection
PAH's - Continued					
Naphthalene	mg/kg	<0.01	<0.01	<0.01	0.01
Phenanthrene	mg/kg	<0.01	<0.01	<0.01	0.01
Pyrene	mg/kg	<0.01	<0.01	<0.01	0.01
PCB's					
3,4,4',5 - Tetrachlorobiphenyl (BZ No. 81)	mg/kg	<0.05	<0.05	<0.05	0.05
3,3',4,4' - Tetrachlorobiphenyl (BZ No. 77)	mg/kg	<0.05	<0.05	<0.05	0.05
2',3,4,4',5 - Pentachlorobiphenyl (BZ No. 123)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3',4,4',5 - Pentachlorobiphenyl (BZ No. 118)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3,4,4',5 - Pentachlorobiphenyl (BZ No. 114)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3,3',4,4' - Pentachlorobiphenyl (BZ No. 105)	mg/kg	<0.05	<0.05	<0.05	0.05
3,3',4,4',5 - Pentachlorobiphenyl (BZ No. 126)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3',4,4',5,5' - hexachlorobiphenyl (BZ No. 167)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3,3',4,4',5 - hexachlorobiphenyl (BZ No. 156)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3,3',4,4',5' - hexachlorobiphenyl (BZ No. 157)	mg/kg	<0.05	<0.05	<0.05	0.05
3,3',4,4',5,5' - hexachlorobiphenyl (BZ No. 169)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3,3',4,4',5,5' - heptachlorobiphenyl (BZ No. 189	mg/kg	<0.05	<0.05	<0.05	0.05

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Job Ref. No. : 100678
Report No : 139925
Date Reported : 12/07/2021

Client: Dome Oilfield Engineering Services LLC

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Attn: Marc Vico Pauig
Project ID: ED 21.17 - Sediment Analysis-Mirfa Block
Project Name: Dome Oilfield Engineering Services LLC
Project Location: N/A
Tel. No: +971 (0)2 6348800

Approved by: Saji SK

Asst. Laboratory Manager–Chemistry & Microbiology

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Sample ID	100678-4	100678-5	100678-6
Date Received	23/06/2021	23/06/2021	23/06/2021
Sampled By	Client	Client	Client
Sampling Date	22/06/2021	22/06/2021	22/06/2021
Sampling Time	12:05	10:10	11:00
Sample Sub Matrix	Sediment	Sediment	Sediment
Sampling Location	Not Given	Not Given	Not Given
Client Sample ID	MEWS-04	MEWS-06	MEWS-07
Sampling Method	Not Given	Not Given	Not Given

Analyte	Units	Results	Results	Results	Method Limit of Detection
Metals					
Cadmium (Cd)	mg/kg	<0.2	<0.2	<0.2	0.5
Arsenic (As)	mg/kg	3.8	5.3	5.6	1.0
Chromium (Cr)	mg/kg	2.6	4.6	5.2	1.0
Copper (Cu)	mg/kg	4.8	4.9	5.5	3.0
Lead (Pb)	mg/kg	1.1	1.2	1.3	1.0
Nickel (Ni)	mg/kg	1.9	3.0	4.2	1.0
Zinc (Zn)	mg/kg	11.3	9.8	13.0	3.0
Mercury (Hg)	mg/kg	<0.010	<0.010	<0.010	0.010
PAH's					
Acenaphthene	mg/kg	<0.01	<0.01	<0.01	0.01
Acenaphthylene	mg/kg	<0.01	<0.01	<0.01	0.01
Anthracene	mg/kg	<0.01	<0.01	<0.01	0.01
Benzo(a)anthracene	mg/kg	<0.01	<0.01	<0.01	0.01
Benzo(a)pyrene	mg/kg	<0.01	<0.01	<0.01	0.01
Benzo(b)fluoranthene	mg/kg	<0.01	<0.01	<0.01	0.01
Benzo(g,h,i)perylene	mg/kg	<0.01	<0.01	<0.01	0.01
Benzo(k)fluoranthene	mg/kg	<0.01	<0.01	<0.01	0.01
Chrysene	mg/kg	<0.01	<0.01	<0.01	0.01
Dibenzo(a,h)anthracene	mg/kg	<0.01	<0.01	<0.01	0.01
Fluoranthene	mg/kg	<0.01	<0.01	<0.01	0.01
Fluorene	mg/kg	<0.01	<0.01	<0.01	0.01
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.01	<0.01	<0.01	0.01

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Analytical Report

Job Ref. No. : 100678
Report No : 139925
Date Reported : 12/07/2021

Client: Dome Oilfield Engineering Services LLC

P.O. Box: 6924
1503, Al Masaood Tower, Hamdan Street
ABU DHABI, United Arab Emirates

Attn: Marc Vico Pauig
Project ID: ED 21.17 - Sediment Analysis-Mirfa Block
Project Name: Dome Oilfield Engineering Services LLC
Project Location: N/A
Tel. No: +971 (0)2 6348800

Approved by: Saji SK

Asst. Laboratory Manager–Chemistry & Microbiology

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Sample ID	100678-4	100678-5	100678-6
Date Received	23/06/2021	23/06/2021	23/06/2021
Sampled By	Client	Client	Client
Sampling Date	22/06/2021	22/06/2021	22/06/2021
Sampling Time	12:05	10:10	11:00
Sample Sub Matrix	Sediment	Sediment	Sediment
Sampling Location	Not Given	Not Given	Not Given
Client Sample ID	MEWS-04	MEWS-06	MEWS-07
Sampling Method	Not Given	Not Given	Not Given

Analyte	Units	Results	Results	Results	Method Limit of Detection
PAH's - Continued					
Naphthalene	mg/kg	<0.01	<0.01	<0.01	0.01
Phenanthrene	mg/kg	<0.01	<0.01	<0.01	0.01
Pyrene	mg/kg	<0.01	<0.01	<0.01	0.01
PCB's					
3,4,4',5 - Tetrachlorobiphenyl (BZ No. 81)	mg/kg	<0.05	<0.05	<0.05	0.05
3,3',4,4' - Tetrachlorobiphenyl (BZ No. 77)	mg/kg	<0.05	<0.05	<0.05	0.05
2',3,4,4',5 - Pentachlorobiphenyl (BZ No. 123)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3',4,4',5 - Pentachlorobiphenyl (BZ No. 118)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3,4,4',5 - Pentachlorobiphenyl (BZ No. 114)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3,3',4,4' - Pentachlorobiphenyl (BZ No. 105)	mg/kg	<0.05	<0.05	<0.05	0.05
3,3',4,4',5 - Pentachlorobiphenyl (BZ No. 126)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3',4,4',5,5' - hexachlorobiphenyl (BZ No. 167)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3,3',4,4',5 - hexachlorobiphenyl (BZ No. 156)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3,3',4,4',5' - hexachlorobiphenyl (BZ No. 157)	mg/kg	<0.05	<0.05	<0.05	0.05
3,3',4,4',5,5' - hexachlorobiphenyl (BZ No. 169)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3,3',4,4',5,5' - heptachlorobiphenyl (BZ No. 189	mg/kg	<0.05	<0.05	<0.05	0.05

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Analytical Report

Job Ref. No. : 100678
Report No : 139925
Date Reported : 12/07/2021

Client: Dome Oilfield Engineering Services LLC

P.O. Box: 6924
1503, Al Masaood Tower, Hamdan Street
ABU DHABI, United Arab Emirates

Attn: Marc Vico Pauig
Project ID: ED 21.17 - Sediment Analysis-Mirfa Block
Project Name: Dome Oilfield Engineering Services LLC
Project Location: N/A
Tel. No: +971 (0)2 6348800

Approved by: Saji SK

Asst. Laboratory Manager–Chemistry & Microbiology

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Sample ID	100678-7	100678-8	100678-9
Date Received	23/06/2021	23/06/2021	23/06/2021
Sampled By	Client	Client	Client
Sampling Date	22/06/2021	22/06/2021	22/06/2021
Sampling Time	10:40	11:15	09:05
Sample Sub Matrix	Sediment	Sediment	Sediment
Sampling Location	Not Given	Not Given	Not Given
Client Sample ID	MEWS-08	MEWS-09	MEWS-10
Sampling Method	Not Given	Not Given	Not Given

Analyte	Units	Results	Results	Results	Method Limit of Detection
Metals					
Cadmium (Cd)	mg/kg	<0.2	<0.2	<0.2	0.5
Arsenic (As)	mg/kg	6.6	5.7	6.6	1.0
Chromium (Cr)	mg/kg	4.4	5.4	16.2	1.0
Copper (Cu)	mg/kg	5.5	4.8	9.3	3.0
Lead (Pb)	mg/kg	1.2	1.2	1.7	1.0
Nickel (Ni)	mg/kg	3.8	3.4	11.9	1.0
Zinc (Zn)	mg/kg	11.9	10.4	16.9	3.0
Mercury (Hg)	mg/kg	<0.010	<0.010	<0.010	0.010
PAH's					
Acenaphthene	mg/kg	<0.01	<0.01	<0.01	0.01
Acenaphthylene	mg/kg	<0.01	<0.01	<0.01	0.01
Anthracene	mg/kg	<0.01	<0.01	<0.01	0.01
Benzo(a)anthracene	mg/kg	<0.01	<0.01	<0.01	0.01
Benzo(a)pyrene	mg/kg	<0.01	<0.01	<0.01	0.01
Benzo(b)fluoranthene	mg/kg	<0.01	<0.01	<0.01	0.01
Benzo(g,h,i)perylene	mg/kg	<0.01	<0.01	<0.01	0.01
Benzo(k)fluoranthene	mg/kg	<0.01	<0.01	<0.01	0.01
Chrysene	mg/kg	<0.01	<0.01	<0.01	0.01
Dibenzo(a,h)anthracene	mg/kg	<0.01	<0.01	<0.01	0.01
Fluoranthene	mg/kg	<0.01	<0.01	<0.01	0.01
Fluorene	mg/kg	<0.01	<0.01	<0.01	0.01
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.01	<0.01	<0.01	0.01

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Analytical Report

Job Ref. No. : 100678
Report No : 139925
Date Reported : 12/07/2021

Client: Dome Oilfield Engineering Services LLC

P.O. Box: 6924
1503, Al Masaood Tower, Hamdan Street
ABU DHABI, United Arab Emirates

Attn: Marc Vico Pauig
Project ID: ED 21.17 - Sediment Analysis-Mirfa Block
Project Name: Dome Oilfield Engineering Services LLC
Project Location: N/A
Tel. No: +971 (0)2 6348800

Approved by: Saji SK

Asst. Laboratory Manager–Chemistry & Microbiology

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Sample ID	100678-7	100678-8	100678-9
Date Received	23/06/2021	23/06/2021	23/06/2021
Sampled By	Client	Client	Client
Sampling Date	22/06/2021	22/06/2021	22/06/2021
Sampling Time	10:40	11:15	09:05
Sample Sub Matrix	Sediment	Sediment	Sediment
Sampling Location	Not Given	Not Given	Not Given
Client Sample ID	MEWS-08	MEWS-09	MEWS-10
Sampling Method	Not Given	Not Given	Not Given

Analyte	Units	Results	Results	Results	Method Limit of Detection
PAH's - Continued					
Naphthalene	mg/kg	<0.01	<0.01	<0.01	0.01
Phenanthrene	mg/kg	<0.01	<0.01	<0.01	0.01
Pyrene	mg/kg	<0.01	<0.01	<0.01	0.01
PCB's					
3,4,4',5 - Tetrachlorobiphenyl (BZ No. 81)	mg/kg	<0.05	<0.05	<0.05	0.05
3,3',4,4' - Tetrachlorobiphenyl (BZ No. 77)	mg/kg	<0.05	<0.05	<0.05	0.05
2',3,4,4',5 - Pentachlorobiphenyl (BZ No. 123)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3',4,4',5 - Pentachlorobiphenyl (BZ No. 118)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3,4,4',5 - Pentachlorobiphenyl (BZ No. 114)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3,3',4,4' - Pentachlorobiphenyl (BZ No. 105)	mg/kg	<0.05	<0.05	<0.05	0.05
3,3',4,4',5 - Pentachlorobiphenyl (BZ No. 126)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3',4,4',5,5' - hexachlorobiphenyl (BZ No. 167)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3,3',4,4',5 - hexachlorobiphenyl (BZ No. 156)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3,3',4,4',5' - hexachlorobiphenyl (BZ No. 157)	mg/kg	<0.05	<0.05	<0.05	0.05
3,3',4,4',5,5' - hexachlorobiphenyl (BZ No. 169)	mg/kg	<0.05	<0.05	<0.05	0.05
2,3,3',4,4',5,5' - heptachlorobiphenyl (BZ No. 189	mg/kg	<0.05	<0.05	<0.05	0.05

Method of Analysis

Method Name	Reference
Mercury by PSA [EPA 245.7] SSS-DXB	EPA [245.7]
	EPA [245.7]
Metals ICP OES [APHA 3120 B] SSS-DXB	APHA [3120 B]

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Analytical Report

Job Ref. No. : 100678
Report No : 139925
Date Reported : 12/07/2021

Client:	Dome Oilfield Engineering Services LLC
	P.O. Box: 6924
	1503, Al Masaood Tower, Hamdan Street
	ABU DHABI, United Arab Emirates
Attn:	Marc Vico Pauig
Project ID:	ED 21.17 - Sediment Analysis-Mirfa Block
Project Name:	Dome Oilfield Engineering Services LLC
Project Location:	N/A
Tel. No:	+971 (0)2 6348800

Approved by: Saji SK

Asst. Laboratory Manager–Chemistry & Microbiology

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Method of Analysis

Method Name	Reference
PAH in Soils [EPA 8270 D]-DXB	EPA [8270 D]
PCB (WHO 12) - [EPA 8082] Solids-DXB	EPA [8082]

** Reference Method Modified*

Comments:

· Tested By : GAN, SAU, SKR
· Date Tested: 30/06/2021 to 11/07/2021

. Please note that all tests shown containing the 'DXB' extension are subcontracted to Al Futtaim Element Materials Technology Dubai L.L.C.

. Please note that if the sample has to be diluted due to the matrix, the reported Limit of Detection (LOD) value will increase from the method LOD.

. Any APHA methods stated herein are documented in-house procedures, referenced to 23rd edition.

. No Sample acquired @ hard bottom substrate for MEWS-05 sample.

IN-SITU WATER ANALYSIS - REPORT
by Multiparameter Water Quality Meter

Client : ILF Consulting Engineers
Project : Neashore Geotechnical Investigation for Project Wave Sea Water Intake
Location : Al Mirfa, Abu Dhabi

Laboratory Information

Date of test : 28/05/2021
Coordinates : E: 745823, N: 2671496
Test location : Al Mirfa Project Site
Test method used : In-house Procedure
Test method variation : None
Remarks : Nil
Visual description : Seawater

Project No. : PU-21-0026-AD
Report No. : 21-00633.1
Report Date : 30/05/2021
FME Sample No. : 21-00633/1
Tested by : MI

Preliminary

Test Result

Source / Sample No.	FME Sample No.	Depth (m)	Samp. Type	pH	Temp. °C	Conductivity (µS/cm)	Dissolved Oxygen (ppm)	Dissolved Oxygen (%)	Salinity (PSU)	ORP (mV)
SW-01	21-00633/1	1.00	W	8.69	33.0	67740	1.14	19.9	45.82	-80.0

Sample Type : ***D*** *= small disturbed sample,* ***U*** *= undisturbed sample,* ***C*** *= core sample,* ***B*** *= bulk disturbed sample,* ***W*** *= water sample*

Authorized by : Marcin Trznadel
Laboratory Manager

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IN-SITU WATER ANALYSIS - REPORT
by Multiparameter Water Quality Meter

Preliminary

Client : ILF Consulting Engineers
Project : Neashore Geotechnical Investigation for Project Wave Sea Water Intake
Location : Al Mirfa, Abu Dhabi

Laboratory Information

Date of test : 28/05/2021
Coordinates : E: 745686, N: 2670923
Test location : Al Mirfa Project Site
Test method used : In-house Procedure
Test method variation : None
Remarks : Nil
Visual description : Seawater

Project No. : PU-21-0026-AD
Report No. : 21-00634.1
Report Date : 30/05/2021
FME Sample No. : 21-00634/1
Tested by : MI

Test Result

Source / Sample No.	FME Sample No.	Depth (m)	Samp. Type	pH	Temp. °C	Conductivity (µS/cm)	Dissolved Oxygen (ppm)	Dissolved Oxygen (%)	Salinity (PSU)	ORP (mV)
SW-02	21-00634/1	1.00	W	8.72	32.9	68400	1.18	20.6	46.35	-63.7

*Sample Type : **D** = small disturbed sample, **U** = undisturbed sample, **C** = core sample, **B** = bulk disturbed sample, **W** = water sample*

Authorized by : Marcin Trznadel
Laboratory Manager

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IN-SITU WATER ANALYSIS - REPORT
by Multiparameter Water Quality Meter

Client : ILF Consulting Engineers
Project : Neashore Geotechnical Investigation for Project Wave Sea Water Intake
Location : Al Mirfa, Abu Dhabi

Laboratory Information

Date of test : 28/05/2021
Coordinates : E: 746303, N: 2671154
Test location : Al Mirfa Project Site
Test method used : In-house Procedure
Test method variation : None
Remarks : Nil
Visual description : Seawater

Project No. : PU-21-0026-AD
Report No. : 21-00635.1
Report Date : 30/05/2021
FME Sample No. : 21-00635/1
Tested by : MI

Preliminary

Test Result

Source / Sample No.	FME Sample No.	Depth (m)	Samp. Type	pH	Temp. °C	Conductivity (µS/cm)	Dissolved Oxygen (ppm)	Dissolved Oxygen (%)	Salinity (PSU)	ORP (mV)
SW-03	21-00635/1	1.00	W	9.97	33.1	69500	1.07	18.8	47.19	-81.1

*Sample Type : **D** = small disturbed sample, **U** = undisturbed sample, **C** = core sample, **B** = bulk disturbed sample, **W** = water sample*

Authorized by : Marcin Trznadel
Laboratory Manager

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CHEMICAL ANALYSIS ON SEA WATER - REPORT

Client : ILF Consulting Engineers
Project : Neashore Geotechnical Investigation for Project Wave Sea Water Intake
Location : Al Mirfa, Abu Dhabi

Laboratory Information

Date of test : 01/06/2021 to 15/06/2021
Coordinates : E: 745823, N: 2671496
Tested at : Element Materials Technology ME Limited
Test method used : See below
Test method variation : None
Source / Sample No. : SW-01
Depth (m) : 1.00

Project No. : PU-21-0026-AD
Report No. : 21-00633.2
Report Date : 15/06/2021
FME Sample No. : 21/00633/2

Preliminary

Test Results

Test / Analyte	Test Method	Results	Unit	Limit of Detection
Total Suspended Solids (TSS)	APHA 2540 D	<5.0	mg/L	5
Total Dissolved Solids (TDS)	APHA 2540 C	53100	mg/L	5
Turbidity	APHA 2130B	0.3	NTU	0.1
Alkalinity (Bicarbonate)	APHA 2320 B	129	mg/L	1
Alkalinity (Carbonate)	APHA 2320 B	14	mg/L	1
Total Alkalinity	APHA 2320 B	130	mg/L	1
Fluoride	HACH 8029	1.6	mg/L	0.1
Nitrate	HACH 8039	<0.04	mg/L	0.04
Sulphate	APHA 4500SO42-C	3150	mg/L	5
Chloride	APHA 4500Cl B	26900	mg/L	2
Chemical Oxygen Demand (COD)	APHA 5220 B	<5	mg/L	5
Total Organic Carbon (TOC)	APHA 5310B	2.0	mg/L	1.0
Sodium (Na)	APHA 3125	14800	mg/L	1000
Arsenic (As)	APHA 3125	0.0042	mg/L	0.0005
Barium (Ba)	APHA 3125	0.00229	mg/L	0.0005
Cadmium (Cd)	APHA 3125	0.0002	mg/L	0.0001
Cobalt (Co)	APHA 3125	0.0026	mg/L	0.0001
Copper (Cu)	APHA 3125	<0.0003	mg/L	0.0003
Iron (Fe)	APHA 3125	<0.02	mg/L	0.02
Lead (Pb)	APHA 3125	0.0013	mg/L	0.0002
Mercury (Hg)	APHA 3125	<0.0001	mg/L	0.0001
Strontium (Sr)	APHA 3125	10.7	mg/L	0.005
Zinc (Zn)	APHA 3125	<0.002	mg/L	0.002
Silica (SiO2)	HACH 8185/8186	0.172	mg/L	0.010
Calcium (Ca)	APHA 3125	560	mg/L	3
Potassium (K)	APHA 3125	604	mg/L	1.2
Magnesium (Mg)	APHA 3125	1820	mg/L	3
Chromium (Cr)	APHA 3125	1.5	µg/L	0.3
Nickel (Ni)	APHA 3125	<0.3	µg/L	0.3
Total Petroleum Hydrocarbons (C10 to C40) EPH (Low Level)	EPA 8015 B	<10	µg/L	10
Total Petroleum Hydrocarbons (C5 to C10) VPH	EPA 8015	<7	µg/L	7

Notes:
N.B: Tests have been conducted by Fugro's approved third party Laboratory.

Authorized by : Marcin Trznadel
Laboratory Manager

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CHEMICAL ANALYSIS ON SEA WATER - REPORT

Client : ILF Consulting Engineers
Project : Neashore Geotechnical Investigation for Project Wave Sea Water Intake
Location : Al Mirfa, Abu Dhabi

Laboratory Information

Date of test : 01/06/2021 to 15/06/2021
Coordinates : E: 745686, N: 2670923
Tested at : Element Materials Technology ME Limited
Test method used : See below
Test method variation : None
Source / Sample No. : SW-02
Depth (m) : 1.00

Project No. : PU-21-0026-AD
Report No. : 21-00634/2
Report Date : 15/06/2021
FME Sample No. : 21/00634/2

Preliminary

Test Results

Test / Analyte	Test Method	Results	Unit	Limit of Detection
Total Suspended Solids (TSS)	APHA 2540 D	<5.0	mg/L	5
Total Dissolved Solids (TDS)	APHA 2540 C	53800	mg/L	5
Turbidity	APHA 2130B	2.4	NTU	0.1
Alkalinity (Bicarbonate)	APHA 2320 B	129	mg/L	1
Alkalinity (Carbonate)	APHA 2320 B	14	mg/L	1
Total Alkalinity	APHA 2320 B	130	mg/L	1
Fluoride	HACH 8029	1.4	mg/L	0.1
Nitrate	HACH 8039	3.07	mg/L	0.04
Sulphate	APHA 4500SO42-C	3180	mg/L	5
Chloride	APHA 4500Cl B	27300	mg/L	2
Chemical Oxygen Demand (COD)	APHA 5220 B	<5	mg/L	5
Total Organic Carbon (TOC)	APHA 5310B	2.1	mg/L	1.0
Sodium (Na)	APHA 3125	15700	mg/L	1000
Arsenic (As)	APHA 3125	0.0035	mg/L	0.0005
Barium (Ba)	APHA 3125	0.0147	mg/L	0.0005
Cadmium (Cd)	APHA 3125	0.0007	mg/L	0.0001
Cobalt (Co)	APHA 3125	0.0027	mg/L	0.0001
Copper (Cu)	APHA 3125	<0.0003	mg/L	0.0003
Iron (Fe)	APHA 3125	<0.02	mg/L	0.02
Lead (Pb)	APHA 3125	0.0034	mg/L	0.0002
Mercury (Hg)	APHA 3125	<0.0001	mg/L	0.0001
Strontium (Sr)	APHA 3125	11.1	mg/L	0.005
Zinc (Zn)	APHA 3125	0.029	mg/L	0.002
Silica (SiO2)	HACH 8185/8186	0.176	mg/L	0.010
Calcium (Ca)	APHA 3125	593	mg/L	3
Potassium (K)	APHA 3125	629	mg/L	1.2
Magnesium (Mg)	APHA 3125	1870	mg/L	3
Chromium (Cr)	APHA 3125	1.6	µg/L	0.3
Nickel (Ni)	APHA 3125	<0.3	µg/L	0.3
Total Petroleum Hydrocarbons (C10 to C40) EPH (Low Level)	EPA 8015 B	<10	µg/L	10
Total Petroleum Hydrocarbons (C5 to C10) VPH	EPA 8015	<7	µg/L	7

Notes:
N.B: Tests have been conducted by Fugro's approved third party Laboratory.

Authorized by : Marcin Trznadel
Laboratory Manager

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CHEMICAL ANALYSIS ON SEA WATER - REPORT

Client : ILF Consulting Engineers
Project : Neashore Geotechnical Investigation for Project Wave Sea Water Intake
Location : Al Mirfa, Abu Dhabi

Laboratory Information

Date of test : 01/06/2021 to 15/06/2021
Coordinates : E: 746303, N: 2671154
Tested at : Element Materials Technology ME Limited
Test method used : See below
Test method variation : None
Source / Sample No. : SW-03
Depth (m) : 1.00

Project No. : PU-21-0026-AD
Report No. : 21-00635.2
Report Date : 15/06/2021
FME Sample No. : 21/00635/2

Preliminary

Test Results

Test / Analyte	Test Method	Results	Unit	Limit of Detection
Total Suspended Solids (TSS)	APHA 2540 D	<5.0	mg/L	5
Total Dissolved Solids (TDS)	APHA 2540 C	54300	mg/L	5
Turbidity	APHA 2130B	0.7	NTU	0.1
Alkalinity (Bicarbonate)	APHA 2320 B	129	mg/L	1
Alkalinity (Carbonate)	APHA 2320 B	14	mg/L	1
Total Alkalinity	APHA 2320 B	130	mg/L	1
Fluoride	HACH 8029	1.7	mg/L	0.1
Nitrate	HACH 8039	<0.04	mg/L	0.04
Sulphate	APHA 4500SO42-C	3140	mg/L	5
Chloride	APHA 4500Cl B	27500	mg/L	2
Chemical Oxygen Demand (COD)	APHA 5220 B	<5	mg/L	5
Total Organic Carbon (TOC)	APHA 5310B	2.0	mg/L	1.0
Sodium (Na)	APHA 3125	15400	mg/L	1000
Arsenic (As)	APHA 3125	0.0047	mg/L	0.0005
Barium (Ba)	APHA 3125	0.0223	mg/L	0.0005
Cadmium (Cd)	APHA 3125	0.0003	mg/L	0.0001
Cobalt (Co)	APHA 3125	0.0027	mg/L	0.0001
Copper (Cu)	APHA 3125	<0.0003	mg/L	0.0003
Iron (Fe)	APHA 3125	<0.02	mg/L	0.02
Lead (Pb)	APHA 3125	0.0007	mg/L	0.0002
Mercury (Hg)	APHA 3125	<0.0001	mg/L	0.0001
Strontium (Sr)	APHA 3125	11.0	mg/L	0.005
Zinc (Zn)	APHA 3125	<0.002	mg/L	0.002
Silica (SiO2)	HACH 8185/8186	0.194	mg/L	0.010
Calcium (Ca)	APHA 3125	571	mg/L	3
Potassium (K)	APHA 3125	626	mg/L	1.2
Magnesium (Mg)	APHA 3125	1870	mg/L	3
Chromium (Cr)	APHA 3125	2.2	µg/L	0.3
Nickel (Ni)	APHA 3125	<0.3	µg/L	0.3
Total Petroleum Hydrocarbons (C10 to C40) EPH (Low Level)	EPA 8015 B	<10	µg/L	10
Total Petroleum Hydrocarbons (C5 to C10) VPH	EPA 8015	<7	µg/L	7

Notes:
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