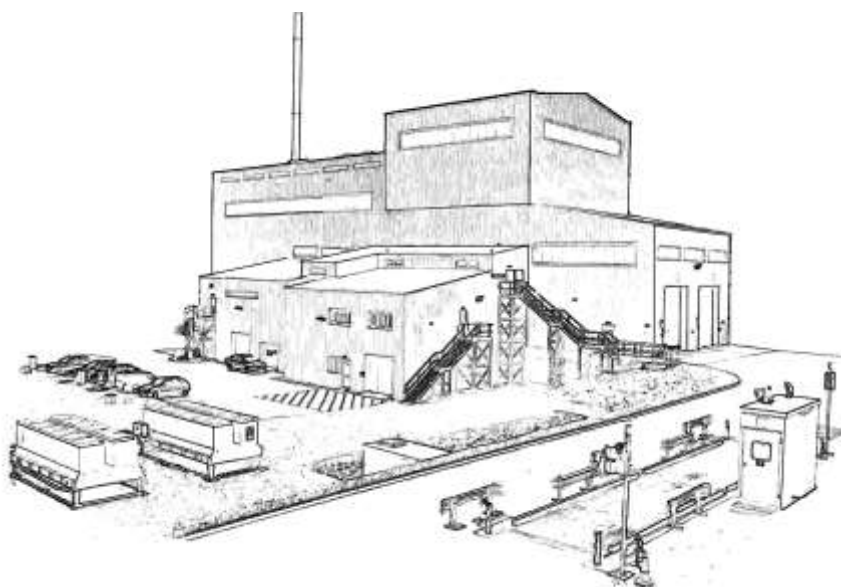


Shetland Islands Council Environmental Services

Energy Recovery Plant Annual Report

2020



Pollution Prevention and Control (Scotland) Regulations 2000

Permit Number: PPC/A/1003141

Prepared for: Scottish Environment Protection Agency

Prepared by: [REDACTED]



**Shetland Islands Council
Environmental Services
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Introduction

The Energy Recovery Plant was built for the Shetland Islands Council and is situated at Greenhead, Lerwick. The furnace is equipped with a traditional moving grate system for the incineration of mixed waste. The waste used is mainly municipal, generated from Shetland, Orkney and Off Shore. In the latter three months municipal waste has been delivered for processing from Highland Council.

The energy from the furnace is transformed into hot water, which is fed into a District Heating Scheme.

Flue gases from the primary incineration stage are treated prior to discharge to the atmosphere by controlled secondary combustion, dry electrostatic precipitation and wet scrubbing and then dried before finally passing through bag filtration.

This is the Annual report for the Energy Recovery Plant for the months January – December 2020 inclusive.

Dioxins and Furans from the stack are monitored twice yearly and the discharge from the water treatment is monitored on a monthly basis.

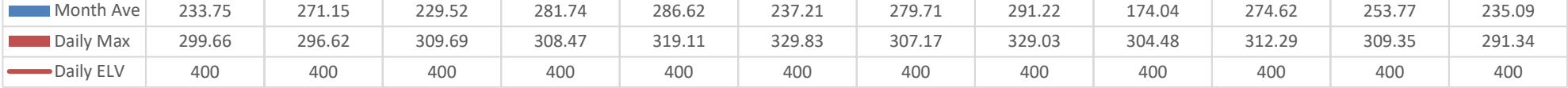
This report contains information requested in table 2.1 of the authorisation and is submitted in accordance with the conditions.

All continuous emission information in the report is obtained automatically from the reporting PC, which is an integrated part of the incinerator plant's Control Regulating and Monitoring system.

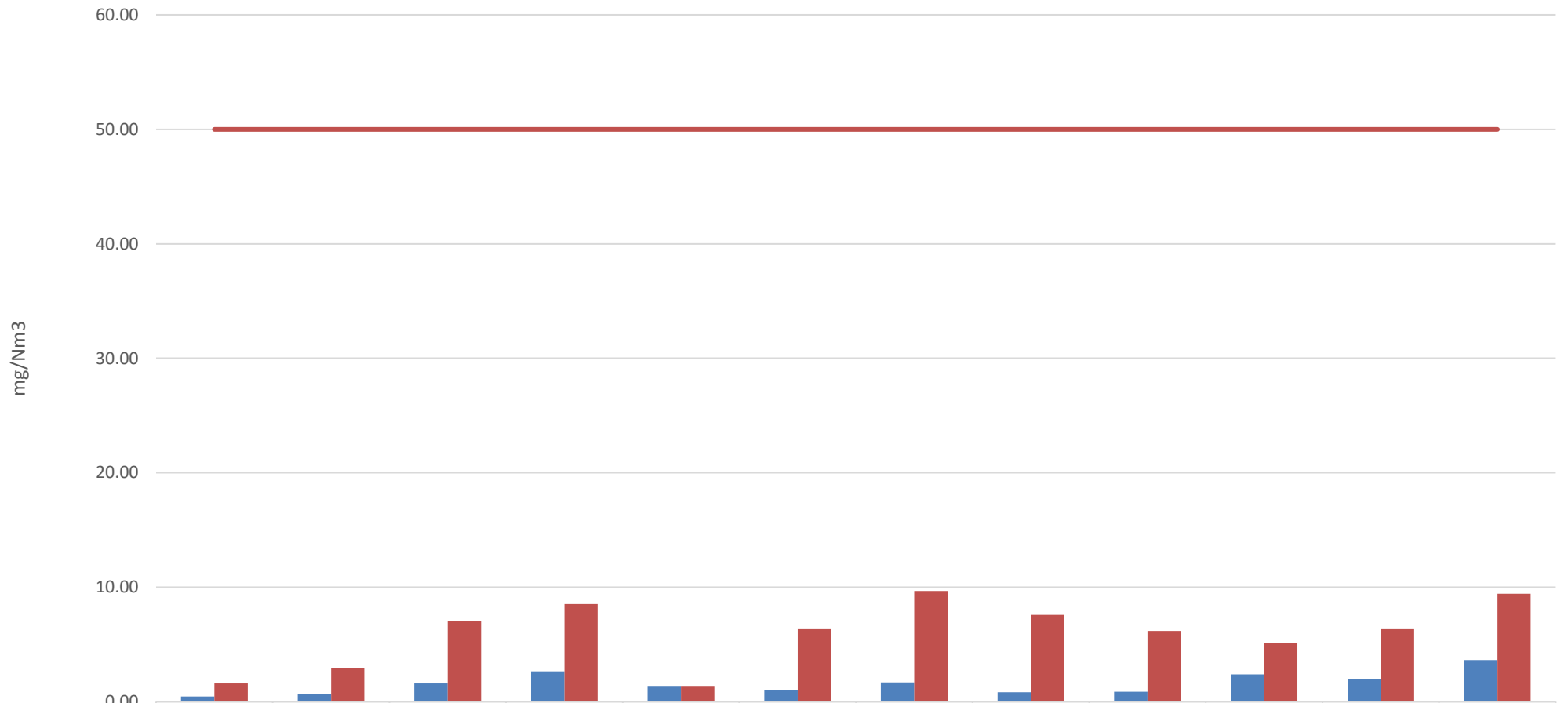
Information referring to water discharges is the result of samples analysed by external laboratories.

Waste values are obtained from the weighbridge report PC.

During 2020 the plant was shut down for maintenance and repairs on 5 occasions.

[illegible]

CO



Month Ave

Daily Max

Daily ELV

Jan

Feb

Mar

Apr

May

Jun

Jul

Aug

Sep

Oct

Nov

Dec

0.46

0.69

1.59

2.64

1.37

1.01

1.67

0.82

0.86

2.37

2.00

3.62

1.59

2.91

7.01

8.54

1.37

6.33

9.66

7.59

6.18

5.13

6.34

9.43

50

50

50

50

50

50

50

50

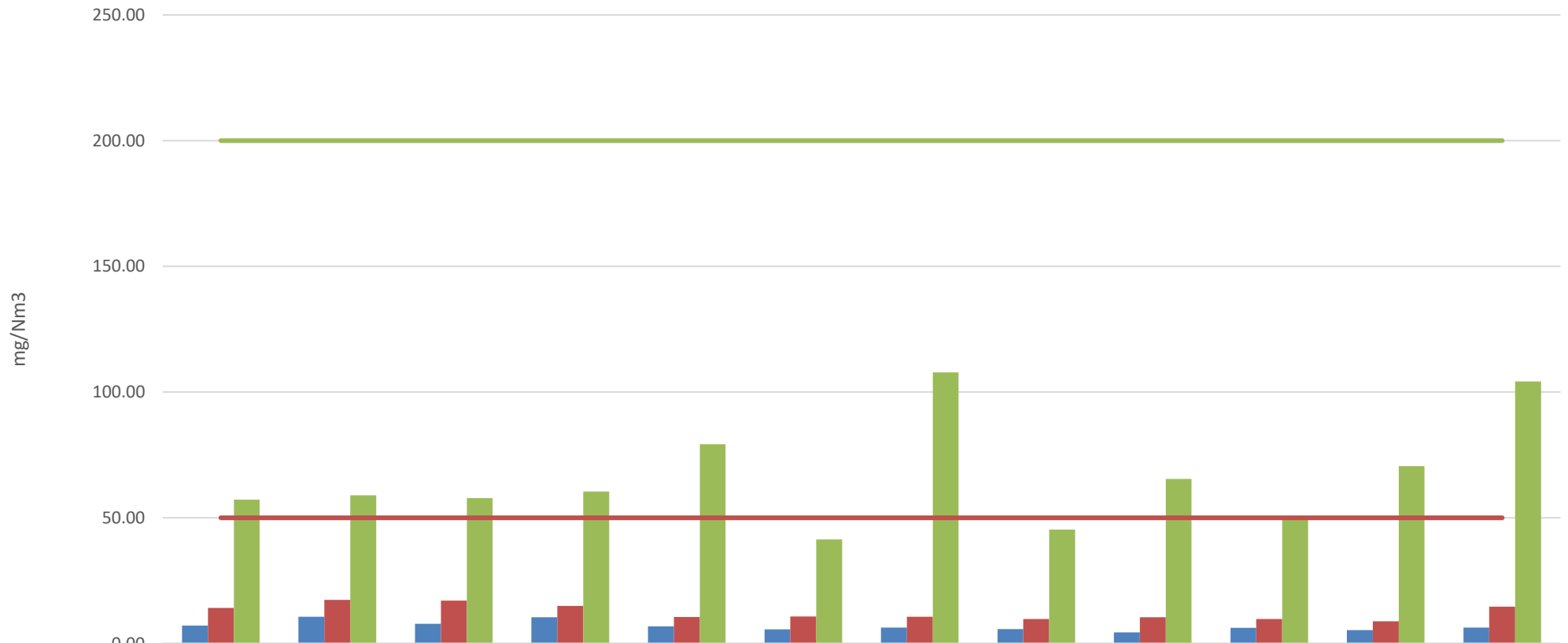
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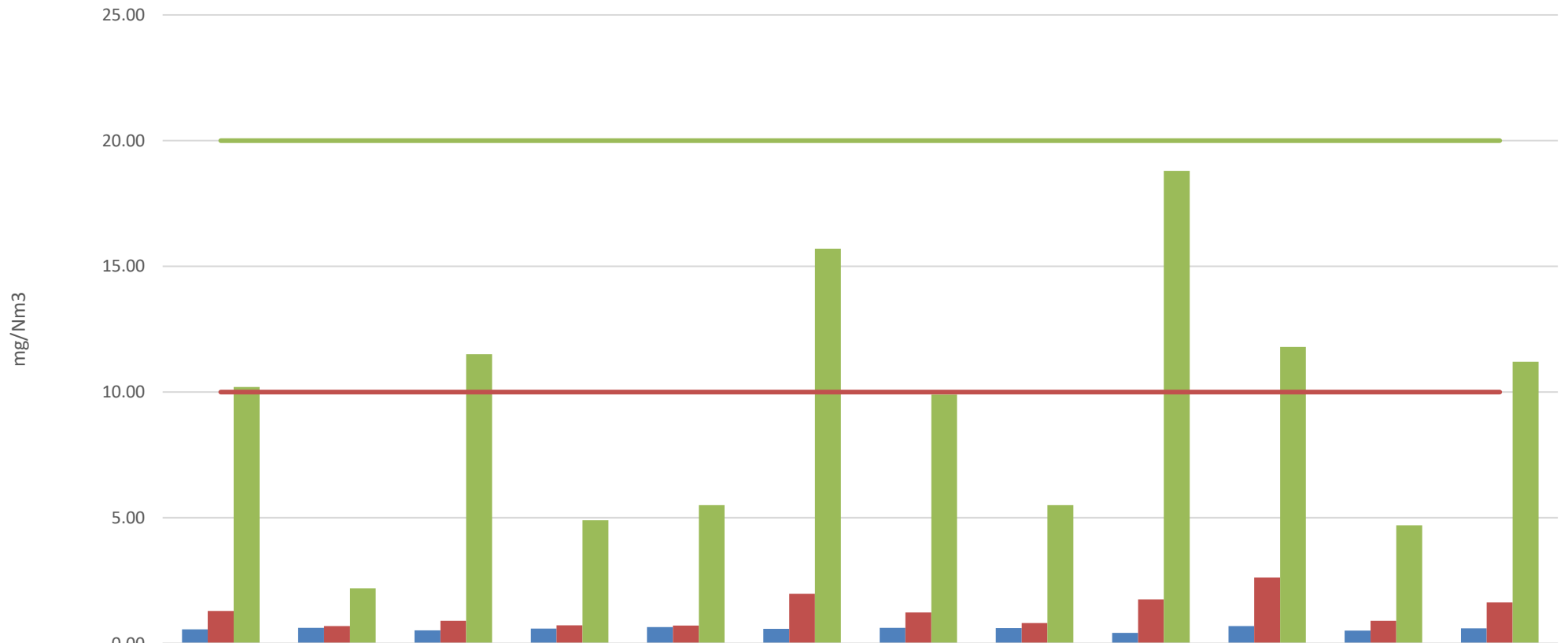
SO2

[illegible]

HCl

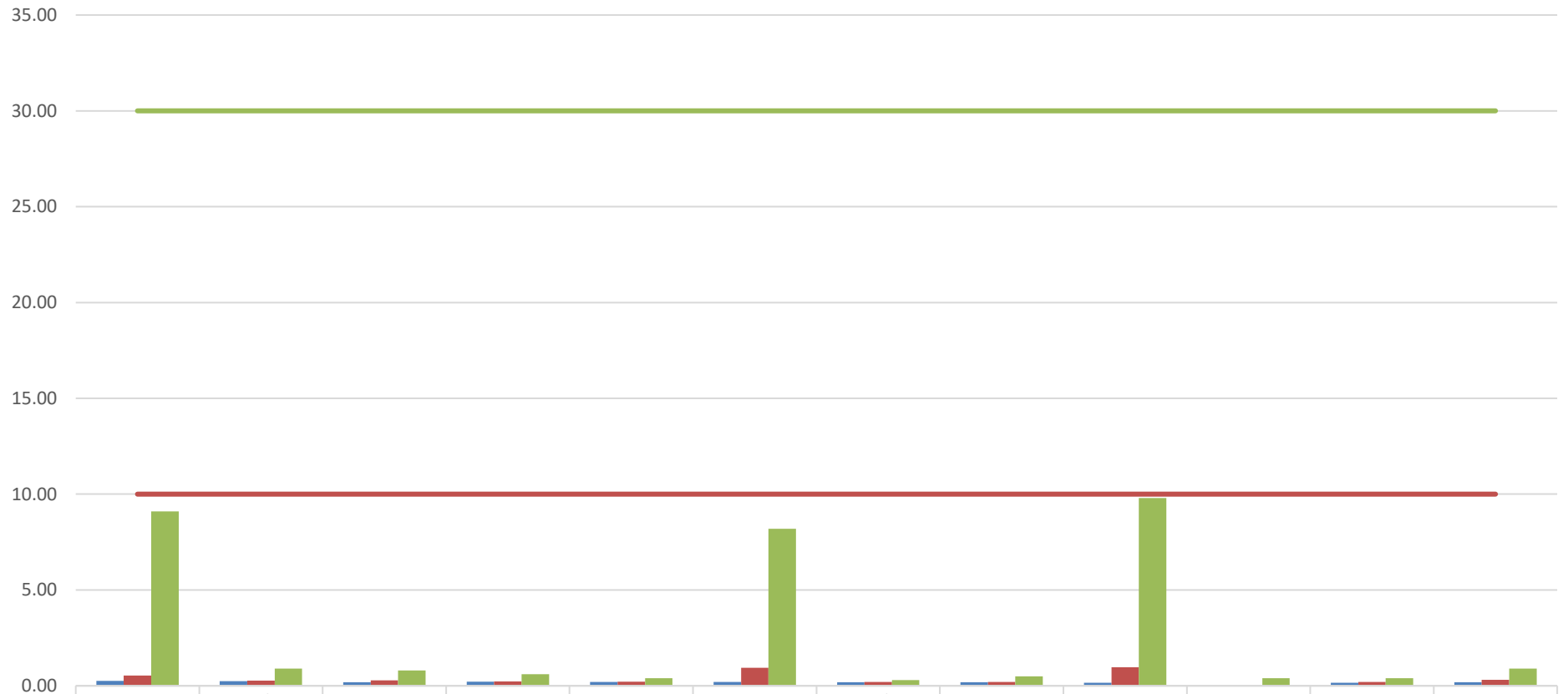
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TOC

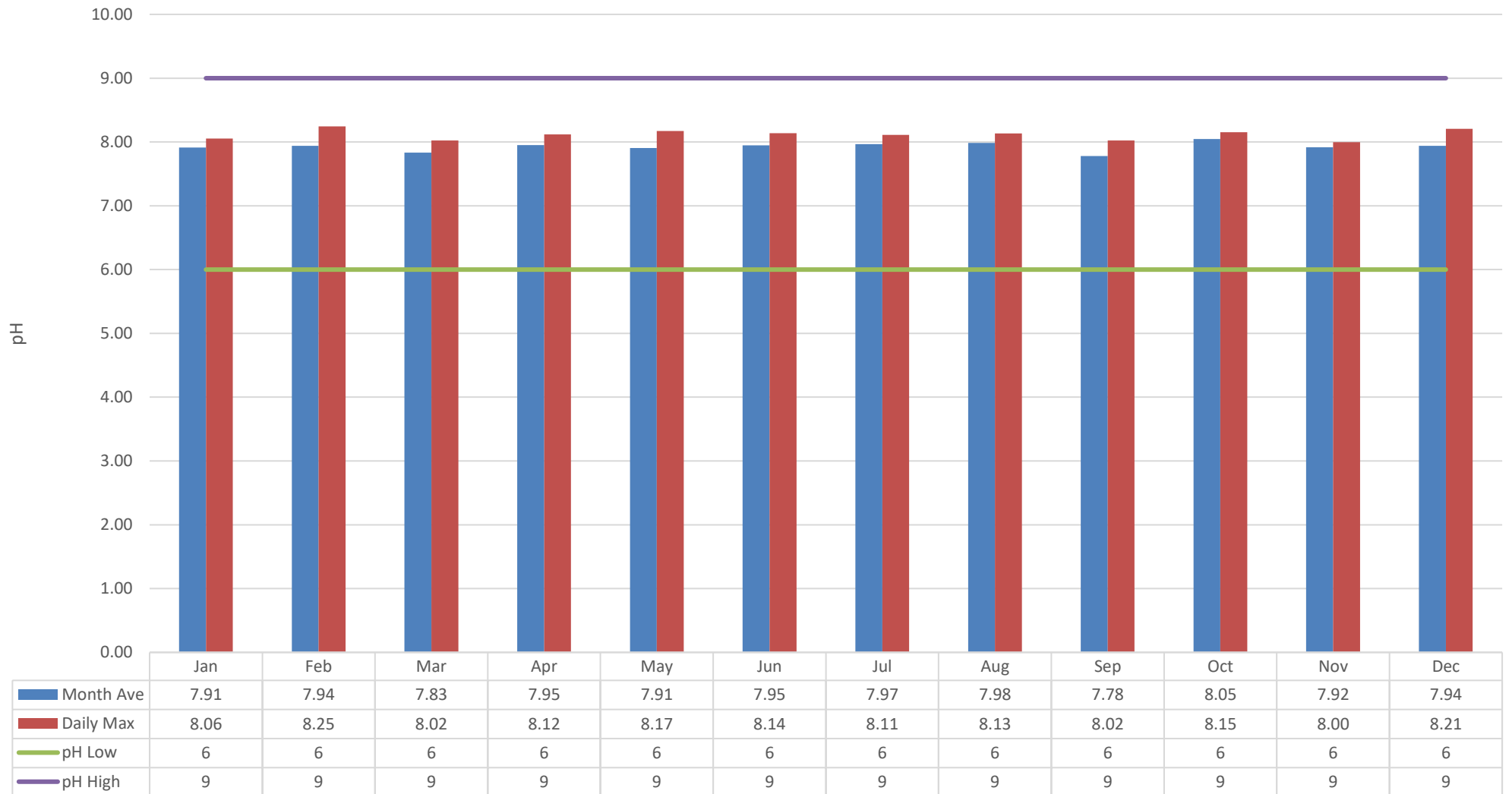
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Dust

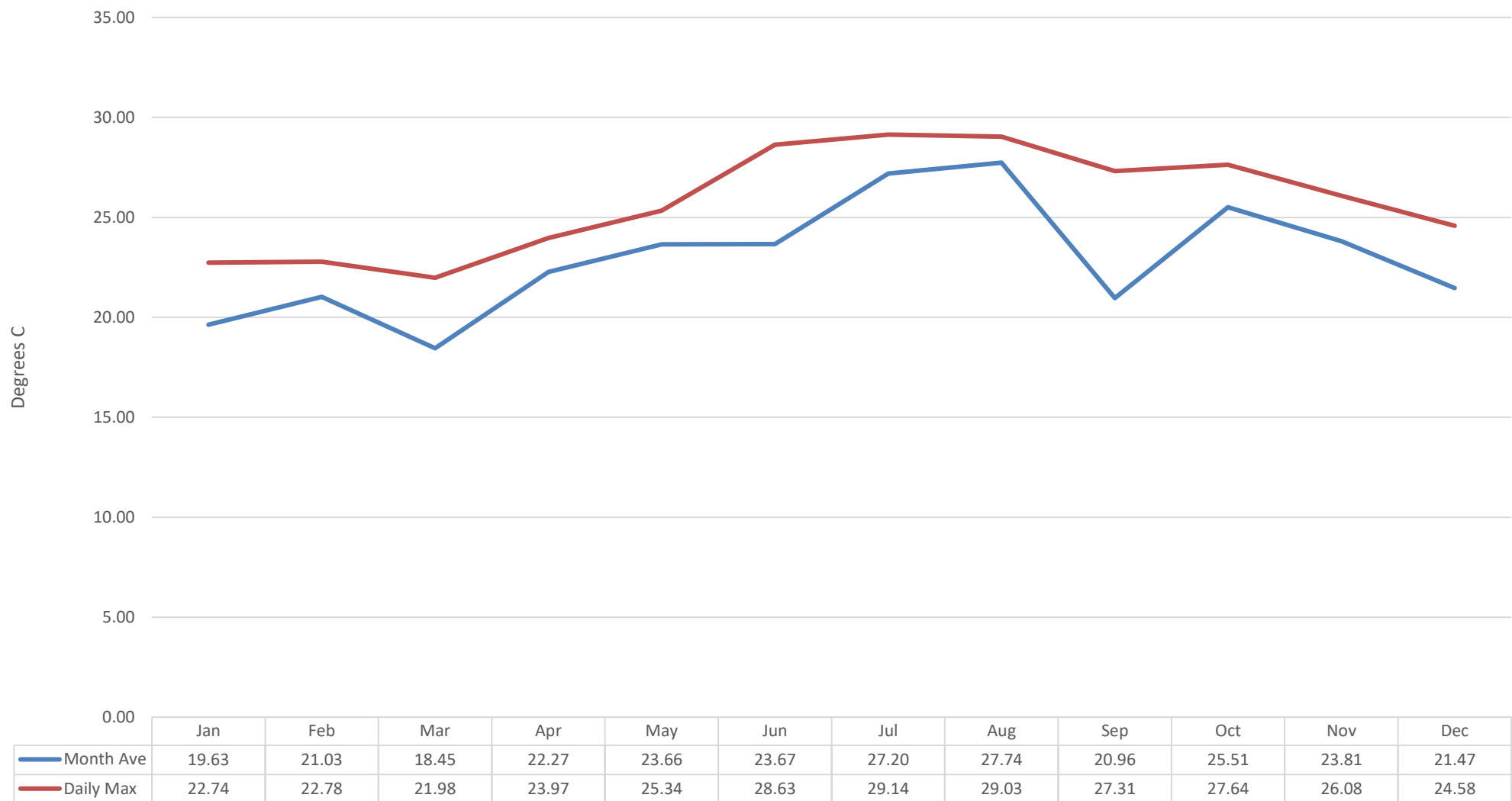
mg/Nm3

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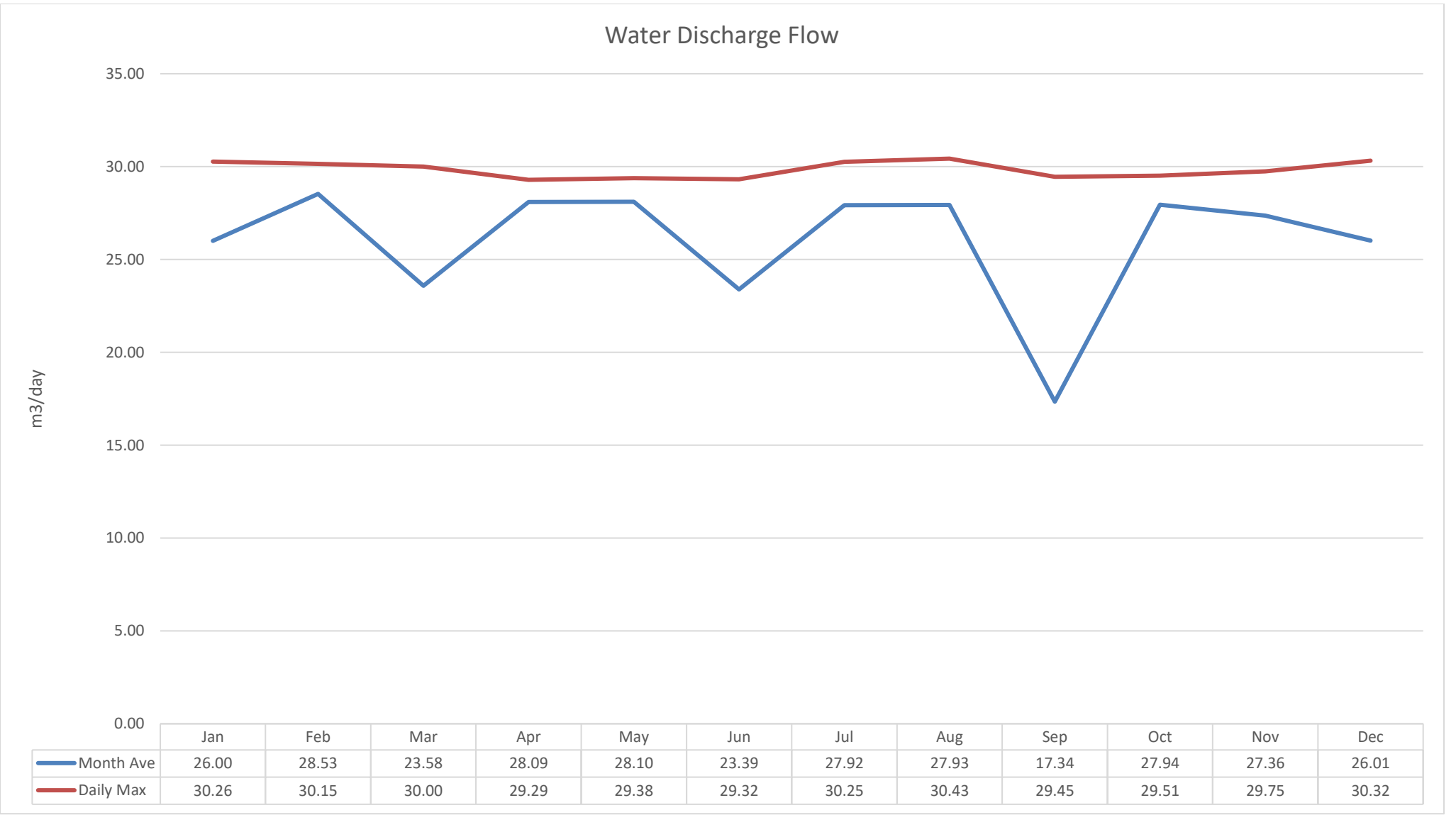
Water Discharge pH



Water Discharge Temperature



Water Discharge Flow



Periodic Monitoring

Periodic emissions to atmosphere sampling was carried out by SOCOTEC in June (LEK 12178) and December (****)

See Appendix 1a

Analysis of ashes and water was carried out by SOCOTEC in March (EFS/205821), June (20060256), September (20091731) and in December (20121058). Analysis of leachate was carried out in the June and December reports.

See Appendix 2a, 2b, 2c & 2d

Analysis of water was carried out by SOCOTEC June (20060240) and December (20121064)

See appendix 3a & 3b

Incidents

There are no incidents to report.

Quantities of waste accepted to the premises in 2020 (kg)

Waste Type	Kg
Clinical	107460
Municipal	22575720
Offshore	0
Fish	102840
Total	22786020

Abnormal Operating Event

Date	Device Name	Duration of Failure (Minutes)	Emission Fail (Yes/No)
05/01/2020	Dry Injection	6	No
12/01/2020	Dry Injection	12	No
19/01/2020	Dry Injection	7	No
02/02/2020	Dry Injection	9	No
09/02/2020	Dry Injection	6	No
16/02/2020	Dry Injection	13	No
23/02/2020	Dry Injection	8	No
01/03/2020	Dry Injection	5	No
08/03/2020	Dry Injection	8	No
15/03/2020	Dry Injection	5	No
29/03/2020	Dry Injection	8	No
05/04/2020	Dry Injection	9	No
12/04/2020	Dry Injection	12	No
19/04/2020	Dry Injection	5	No
24/04/2020	Dry Injection	11	No
03/05/2020	Dry Injection	7	No
10/05/2020	Dry Injection	9	No
17/05/2020	Dry Injection	10	No
18/05/2020	Dry Injection	17	No
24/05/2020	Dry Injection	8	No
31/05/2020	Dry Injection	11	No
07/06/2020	Dry Injection	7	No
21/06/2020	Dry Injection	7	No
28/06/2020	Dry Injection	5	No
05/07/2020	Dry Injection	12	No
19/07/2020	Dry Injection	6	No
26/07/2020	Dry Injection	9	No
02/08/2020	Dry Injection	8	No
09/08/2020	Dry Injection	14	No
16/08/2020	Dry Injection	6	No
23/08/2020	Dry Injection	4	No
30/08/2020	Dry Injection	8	No
20/09/2020	Dry Injection	12	No
04/10/2020	Dry Injection	12	No
11/10/2020	Dry Injection	7	No
18/10/2020	Dry Injection	15	No
25/10/2020	Dry Injection	6	No
01/11/2020	Dry Injection	9	No
08/11/2020	Dry Injection	12	No

15/11/2020	Dry Injection	9	No
22/11/2020	Dry Injection	11	No
06/12/2020	Dry Injection	5	No
13/12/2020	Dry Injection	13	No
20/12/2020	Dry Injection	4	No
27/12/2020	Dry Injection	5	No

The above all relate to routine maintenance required to keep the plant operational.

Raw material Utilisation

Item	Component	Unit	Quantity
Electricity from Grid		MW	2,466
Gas Oil		ltr	102600
Gas Treatment	Sorbalite	tonne	42000
	Caustic Solution	ltr	136000
	Urea	ltr	0
Water	Mains	m3	16382
	Spring	m3	1324
Effluent Treatment	HCl	ltr	1230
	FeCl	ltr	2460
	TMT	ltr	3485
	Lime	tonne	88000
	Polymer	Kg	58

Hours of Operation

Total hours of operation – 7904

Water Discharge – Mass emissions

Mass emissions is calculated using the values from the monthly water samples and the total flow discharge of 9525 m³.

Metal	Kg/Year
Arsenic	0.0000377
Cadmium	0.0000154
Chromium	0.0000849
Copper	0.0002578
Lead	0.0000714
Mercury	0.0000019
Nickel	0.0014843
Thallium	0.0001141
Zinc	0.0010548

Emissions to Air – Mass emissions

Mass release rates calculated from 1 test in June (LEK 12178). Total operational hours of 7904.

Component	Kg/Year
Particulate matter	464.12288
PCDD/PCDF, (WHO TEQ)	3.39872E-08
PAHs	0.07904
PCBs	3.70698E-08
Total 'metals'	15.64992
Cadmium + Thallium	1.0291008
Mercury	0.1924624
Ammonia	5.45376
Hydrogen chloride	14.30624
Hydrogen fluoride	3.87296
VOCs, as C	151.44064
Carbon monoxide	764.55392
Oxides of nitrogen, as NO2	36540.192
Sulphur Dioxide	49.08384

Remarks

The reported data is defined in section 6.4.3 and submitted as section 2.4.2 of the permit.

Appendix 1

Appendix 2