

Adelaide Desalination Project (ADP) – DBOM

Quarterly Salinity Monitoring Report

October to December 2020

Rev	Date	Approved AdelaideAqua
1	15-Feb-21	R. Liu

Table of Contents

1. Volumes of seawater received, and outfall discharged	3
2. Water Quality.....	3
2.1 Seawater Characteristics Results.....	3
2.2 Discharge Characteristics Results.....	4
3. Salinity Monitoring Results	7
3.1 Average Salinity Discharge (U-149) Results	7
3.2 Salinity Discharge (U-145, U-146) Results	7

1. Volumes of seawater received, and outfall discharged

Table 1 below shows the summary of seawater received and outfall discharged volumes for this reporting period. ADP winter shutdown started from 24th June until 22nd September

Table 1 - Intake and Discharge Volume Summary

Month	Intake (ML)	Outfall (ML)
October	1,476	977
November	852	513
December	1,351	866
Quarterly Total	3,679	2,356

2. Water Quality

2.1 Seawater Characteristics Results

Tables 2A and 2B below show the summary of seawater characteristics for this reporting period.

Table 2A - Seawater Characteristics Summary-Online Analyser

Parameter	Conductivity	Temperature	pH	DO
	µS/cm	°C	-	mg/L
Average	55,171	17.7	8.0	8.0
Minimum	50,116	14.8	5.9	6.0
Maximum	57,876	22.1	8.8	10.0

Note: DO value exceeded maximum seawater saturation value at lowest temperature during reporting period. Probe re-calibrated monthly

Source: Online analyser (10 minutes intervals data over 3 month)

Table 2B - Seawater Characteristics Summary-External lab

Parameter	Biochemical Oxygen Demand	Suspended solids	Nitrogen (Total)	Phosphorus (Total)	Zinc (Total)	Lead (Total)	Copper (Total)
	mg/L	mg/L	mg/L as N	mg/L as P	mg/L	mg/L	mg/L
Average	<2	<1	0.16	0.017	<0.003	<0.001	<0.001
Minimum	<2	<1	<0.05	<0.005	<0.003	<0.001	<0.001
Maximum	<2	2	0.29	0.022	0.004	<0.001	<0.001

Source: AWQC

The ADP conducts intake chemical shock dosing to control the bio-growth in the intake tunnel. During the intake shock dosing, pH dropped to 5.9 (normal operation range 8.0-8.5) due to the acid dosing and came back to normal sea water pH range after shock dosing.

2.2 Discharge Characteristics Results

Tables 3A and 3B below show the summary of discharge characteristics for this reporting period.

Table 3A - Discharge Characteristics Summary-Online Analyser

Parameter	Conductivity	Temperature	pH	DO	Cl ₂
	µS/cm	°C	-	mg/L	mg/L
Average	85,229	18.1	7.80	7.9	0.0
Minimum	41,176	11.6	6.04	6.5	0.0
Maximum	99.872	32.8	9.29	10.0	0.0

Note: DO value exceeded maximum seawater saturation value at lowest temperature during reporting period. Probe re-calibrated monthly

Source: Online analyser (10 minutes intervals data over 3 months)

Table 3B - Discharge Characteristics Summary- External lab

Parameter	Biochemical Oxygen Demand	Suspended solids	Nitrogen (Total)	Phosphorus (Total)	Zinc (Total)	Lead (Total)	Copper (Total)
	mg/L	mg/L	mg/L as N	mg/L as P	mg/L	mg/L	mg/L
Average	<2	<1	0.19	0.08	<0.003	<0.001	<0.001
Minimum	<2	<1	<0.06	0.05	<0.003	<0.001	<0.001
Maximum	3	3	0.37	0.13	0.018	<0.001	0.005

Source: AWQC

During intake shock dosing, discharge stream pH value dropped in correlation to intake pH drop and came back to normal operation range after shock dosing.

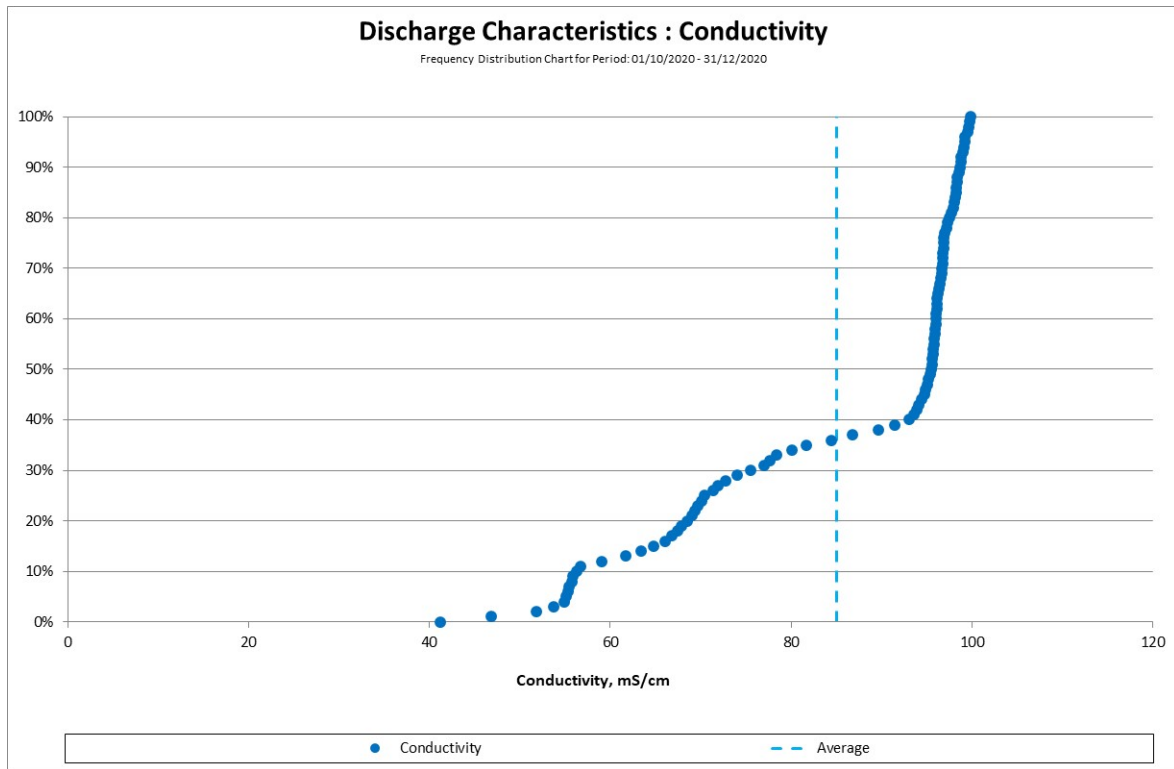


Figure 1 - Discharge Characteristic: Conductivity - Frequency Distribution

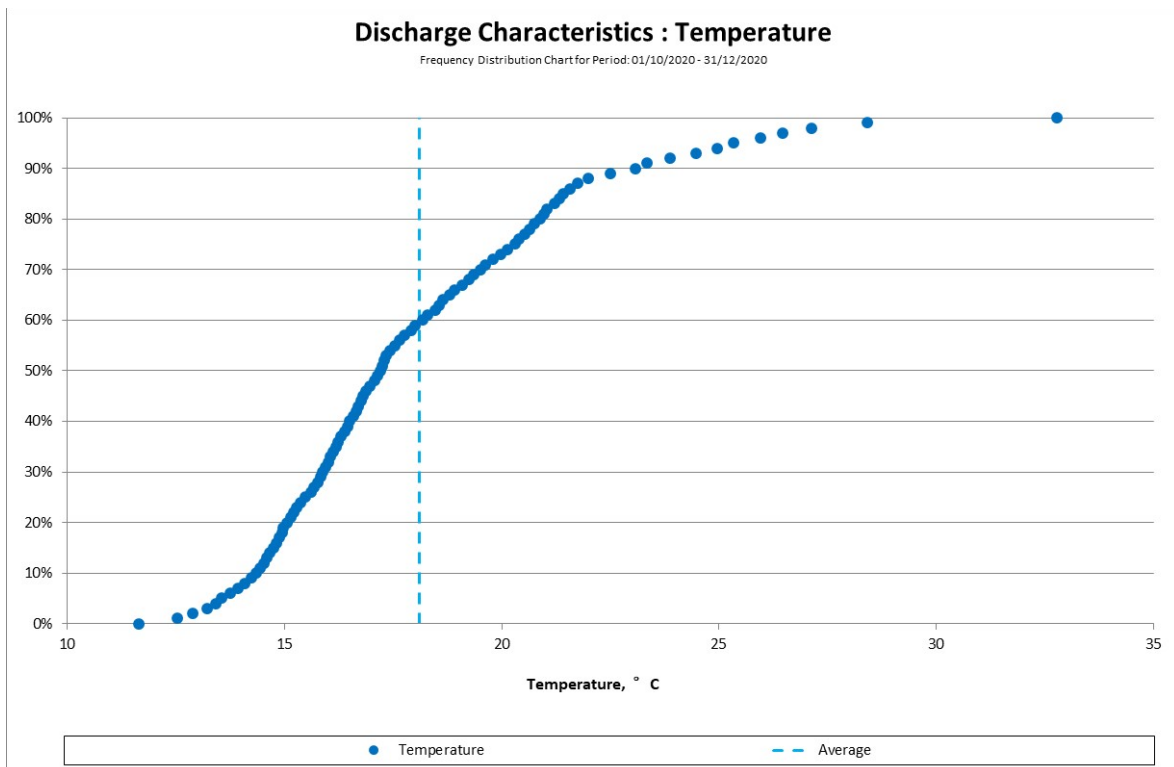


Figure 2 - Discharge Characteristics: Temperature - Frequency Distribution

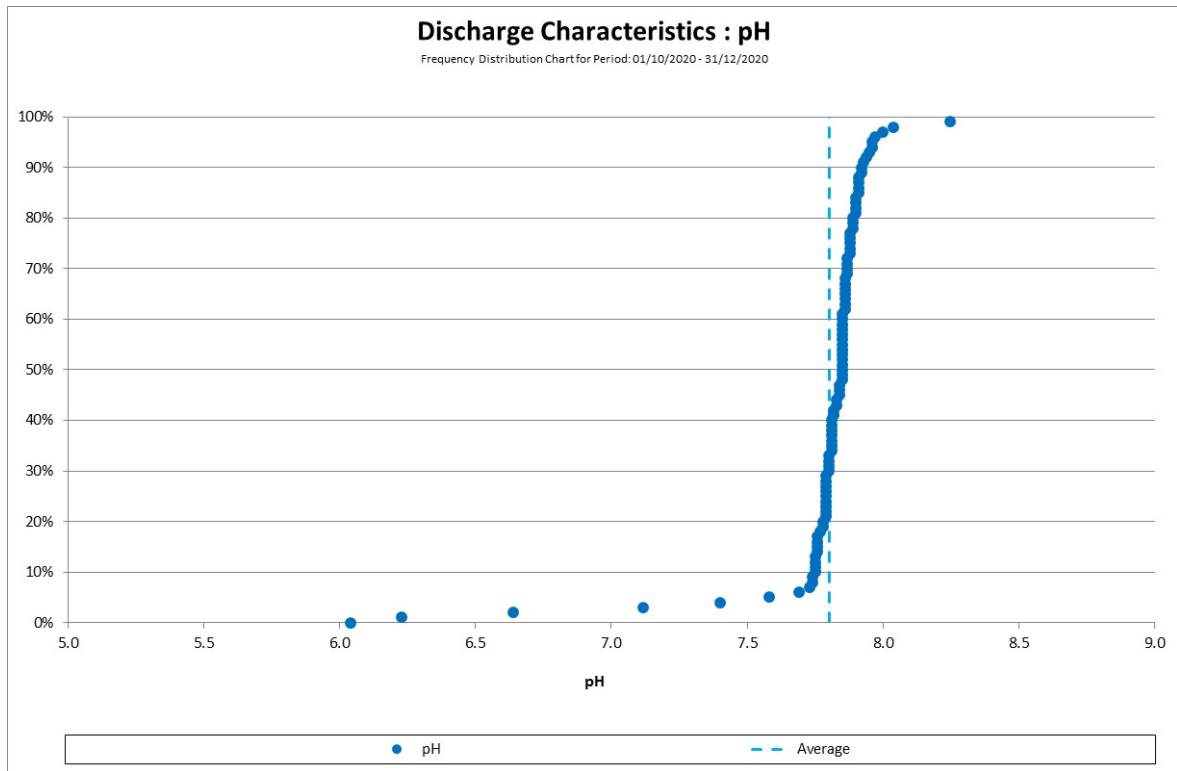


Figure 3 - Discharge Characteristics: pH - Frequency Distribution

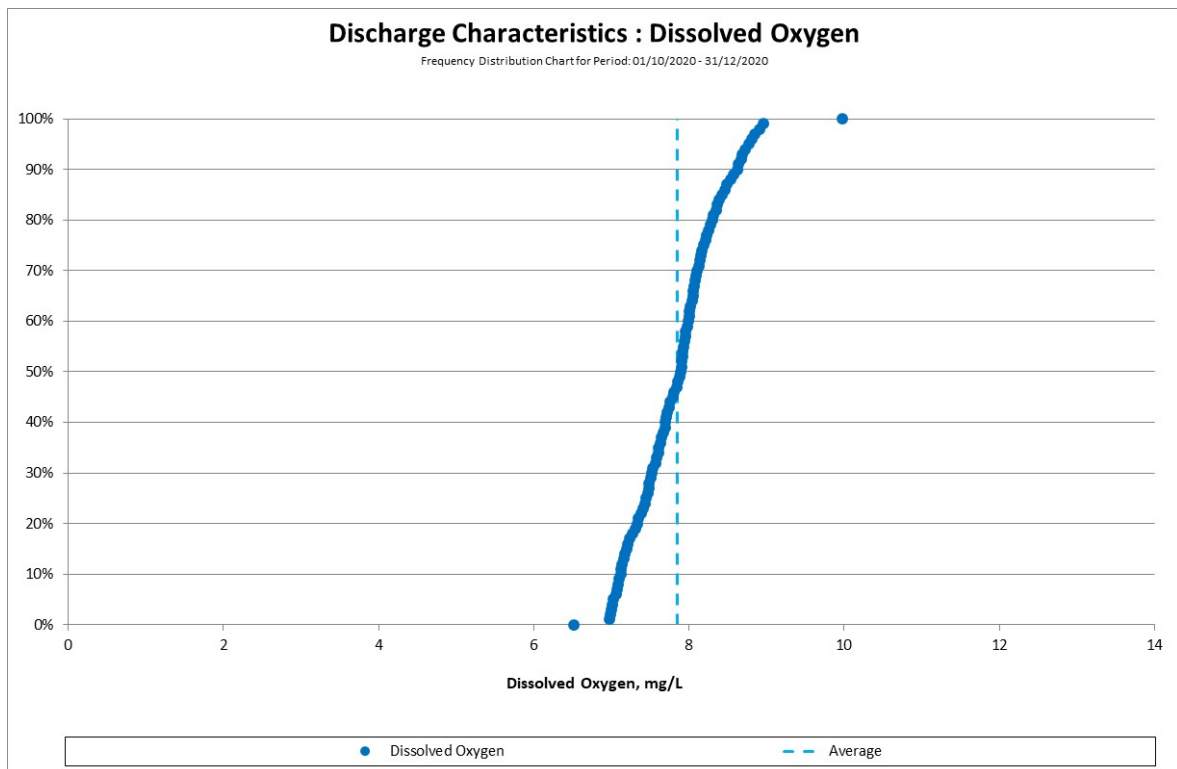


Figure 4 - Discharge Characteristics: DO - Frequency Distribution

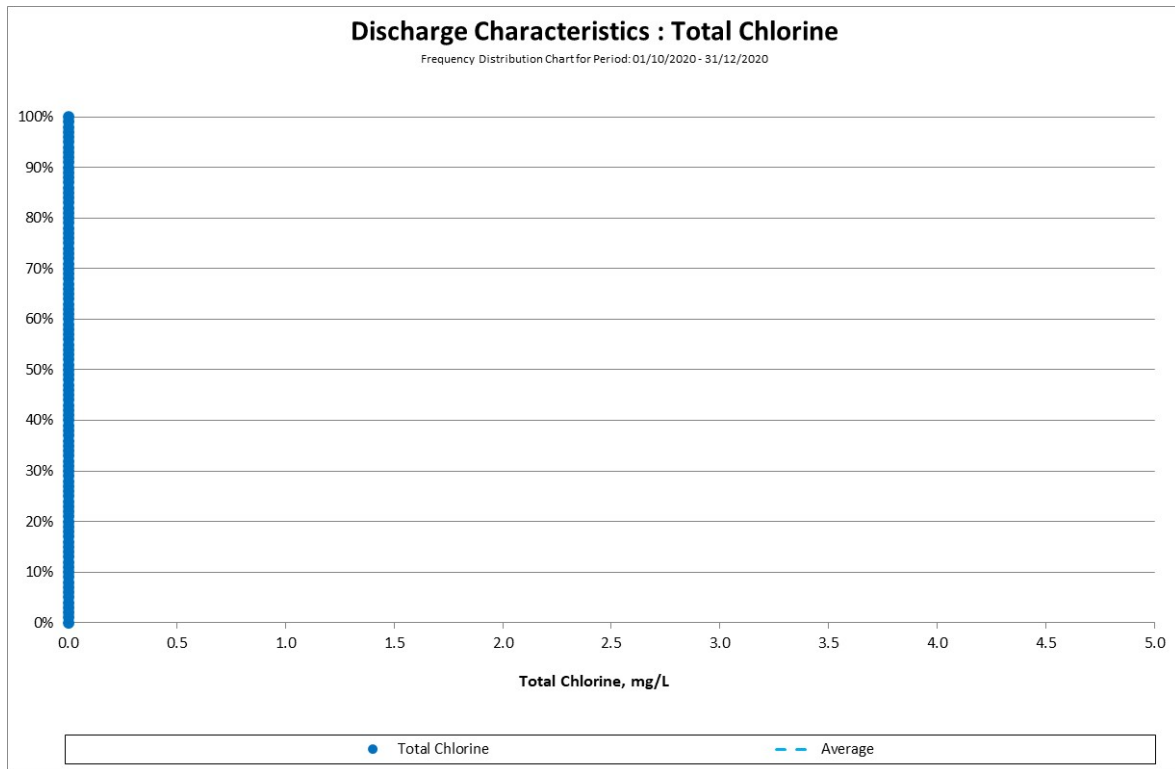


Figure 5 - Discharge Characteristics: Chlorine - Frequency Distribution

3. Salinity Monitoring Results

3.1 Average Salinity Discharge (U-149) Results

Table 4 below shows the summary of salinity readings at the edge of the mixing zone (100m from the discharge point) for this reporting period.

Table 4 – Average Salinity Discharge Summary

	Average Salinity Discharge (ppt)		
	October	November	December
Average	36.33	36.05	36.07
Minimum	35.75	35.62	35.80
Maximum	37.41	37.03	37.66

No exceedances or issues associated with Average Salinity Discharge (U-149) were identified during this reporting period.

3.2 Salinity Discharge (U-145, U-146) Results

Table 5 below shows the summary of salinity discharge ratio results for this reporting period.

Table 5 Salinity discharge ratio summary

	Salinity Discharge Ratio		
	October	November	December
Average	1.20	1.14	1.15
Minimum	1.00	1.00	1.00
Maximum	1.86	1.90	1.89

Over the quarter, the highest salinity discharge ratio recorded was 1.90 on 17/11/2020. This confirms that the discharge salinity did not exceed the intake salinity by a factor of 2.1. No exceedances, issues associated with Salinity Discharge (U-145, U-146) were identified during this reporting period.