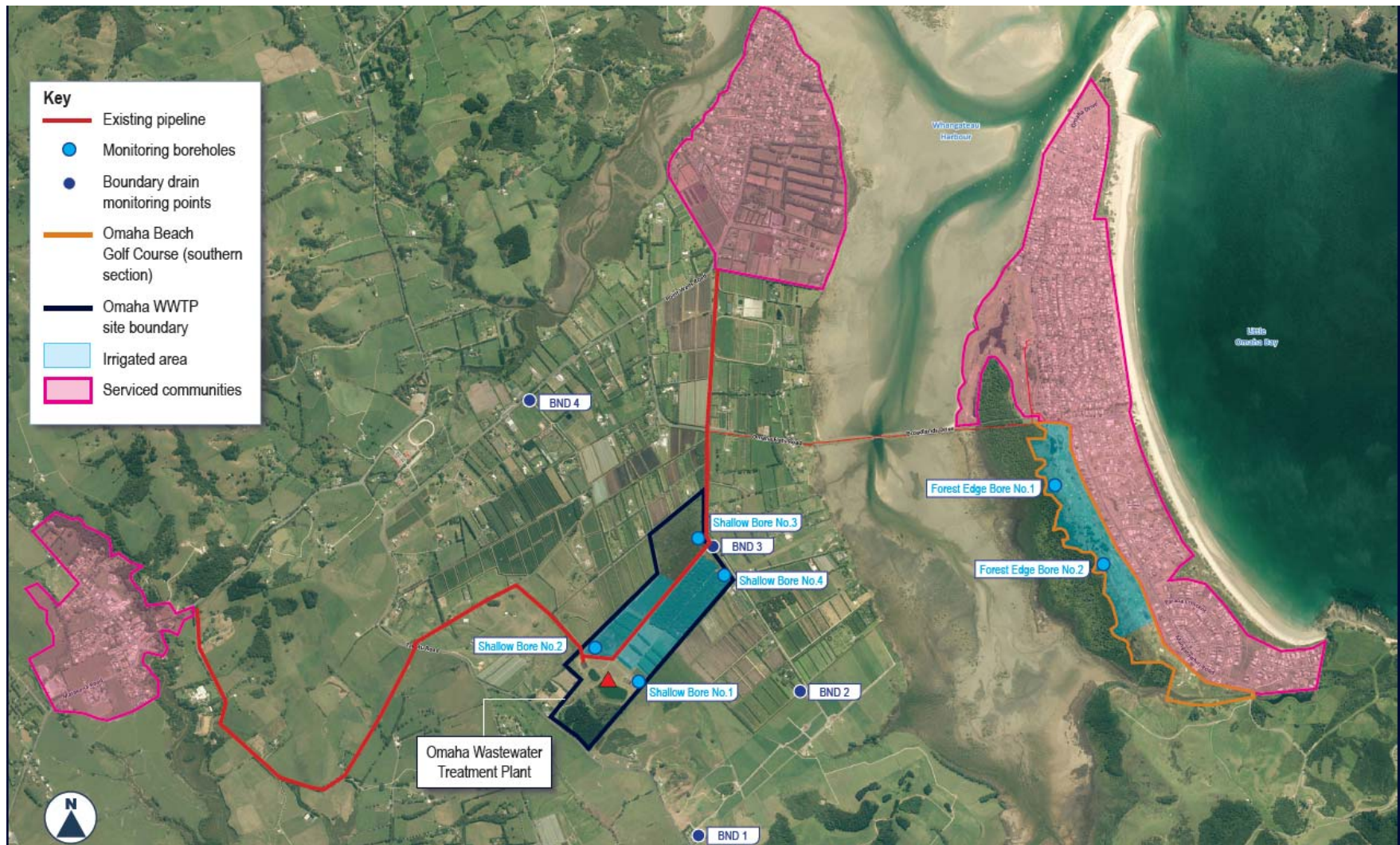


Omaha WWTP



Omaha WWTP



What is Wastewater?

- 99.5% water, 0.5% contaminants
- Physical impurities: urine, faecal solids, body fats, paper, soap, vegetables, meat scraps and grit
- Chemical impurities: mainly carbon, hydrogen and oxygen compounds, with some iron, nitrogen, sulphur, phosphorous, calcium carbonate
- Biological impurities: bacteria, algae, fungi, protozoa

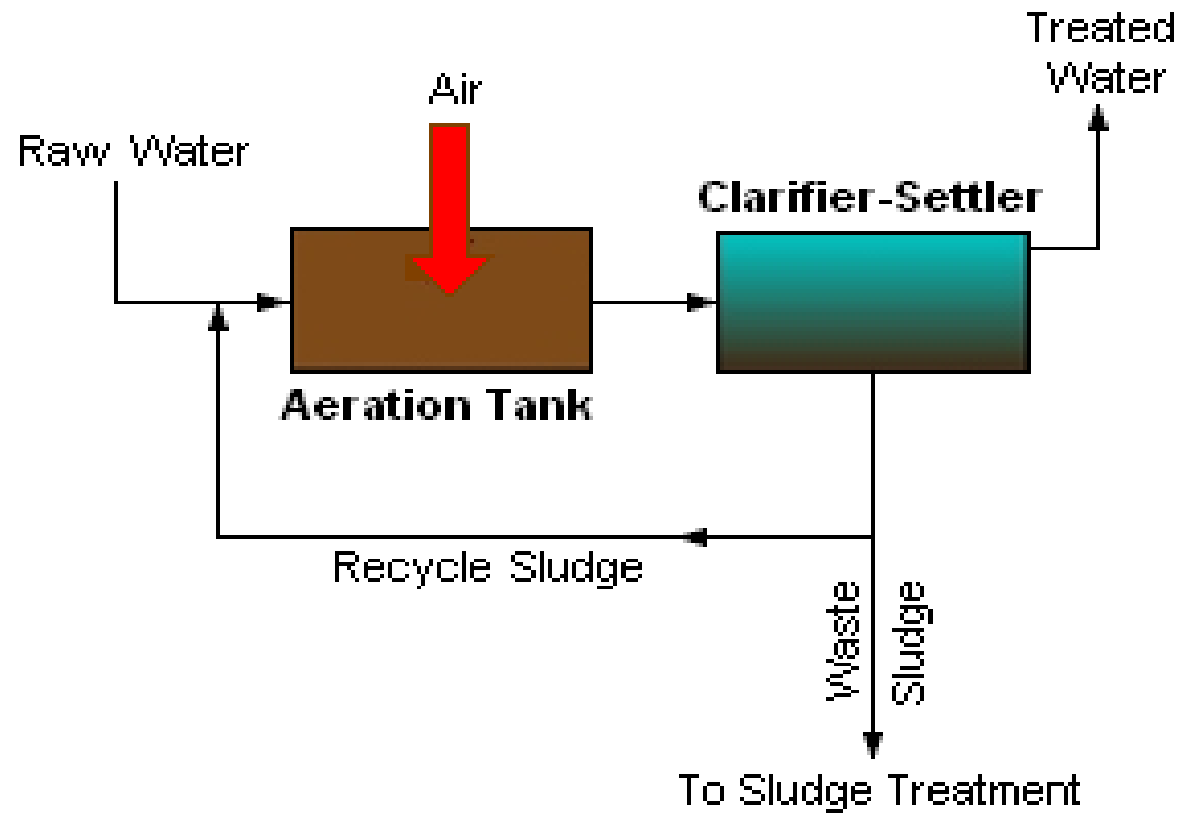
What is Wastewater Treatment?

- The removal of impurities from wastewater to protect the environment and the public's health.

Inlet Screen & Odour Scrubber



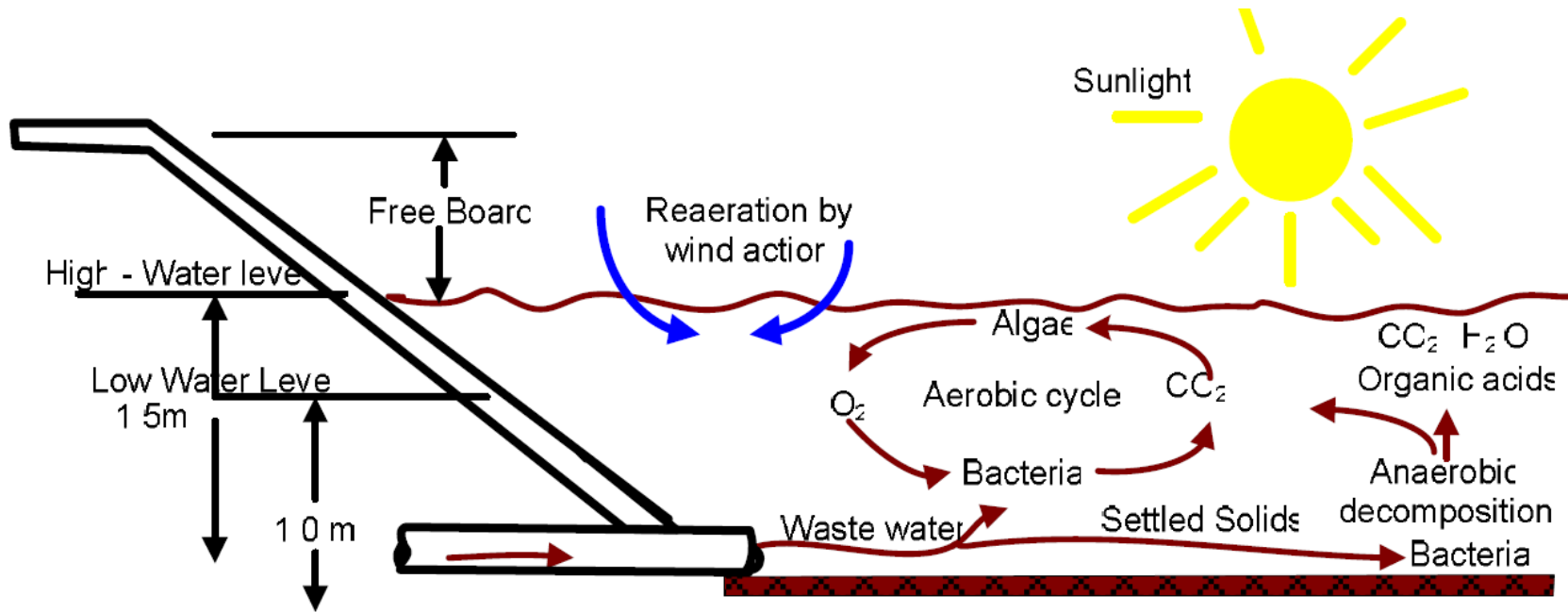
Aerated Lagoon



Aerated Lagoon



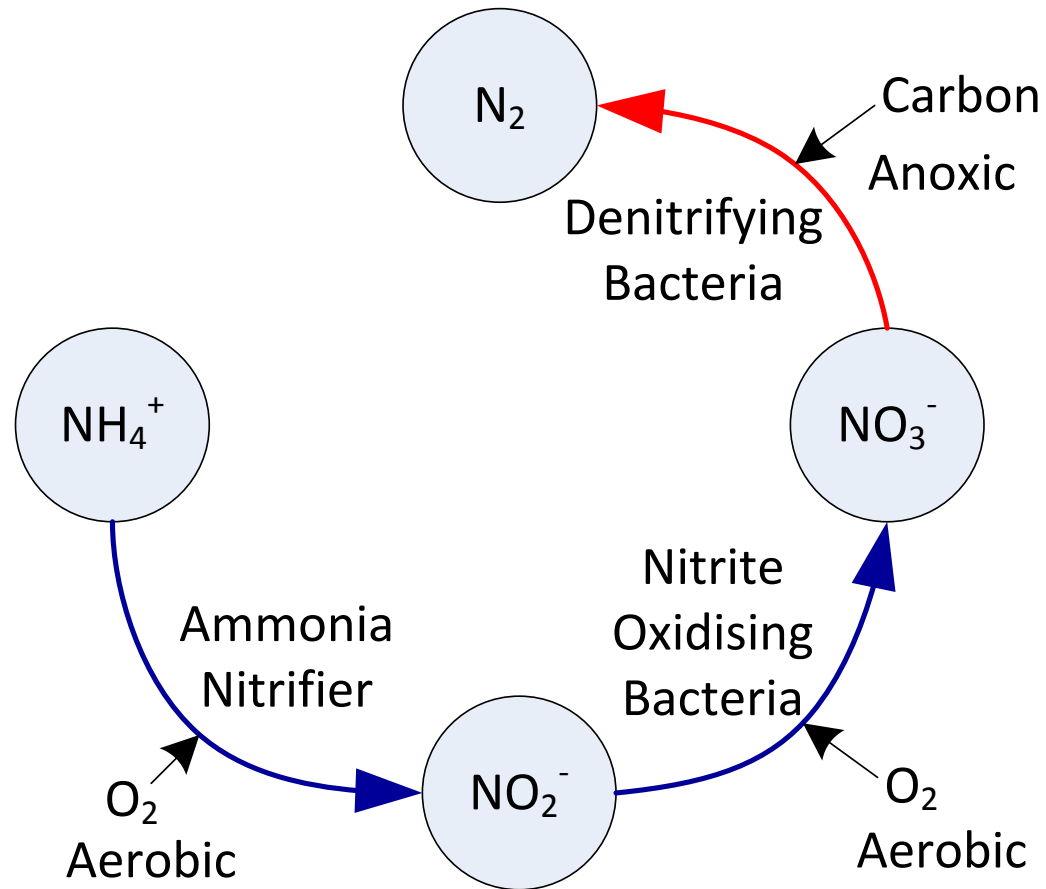
Oxidation Ponds



Oxidation Pond



Nitrification / Denitrification



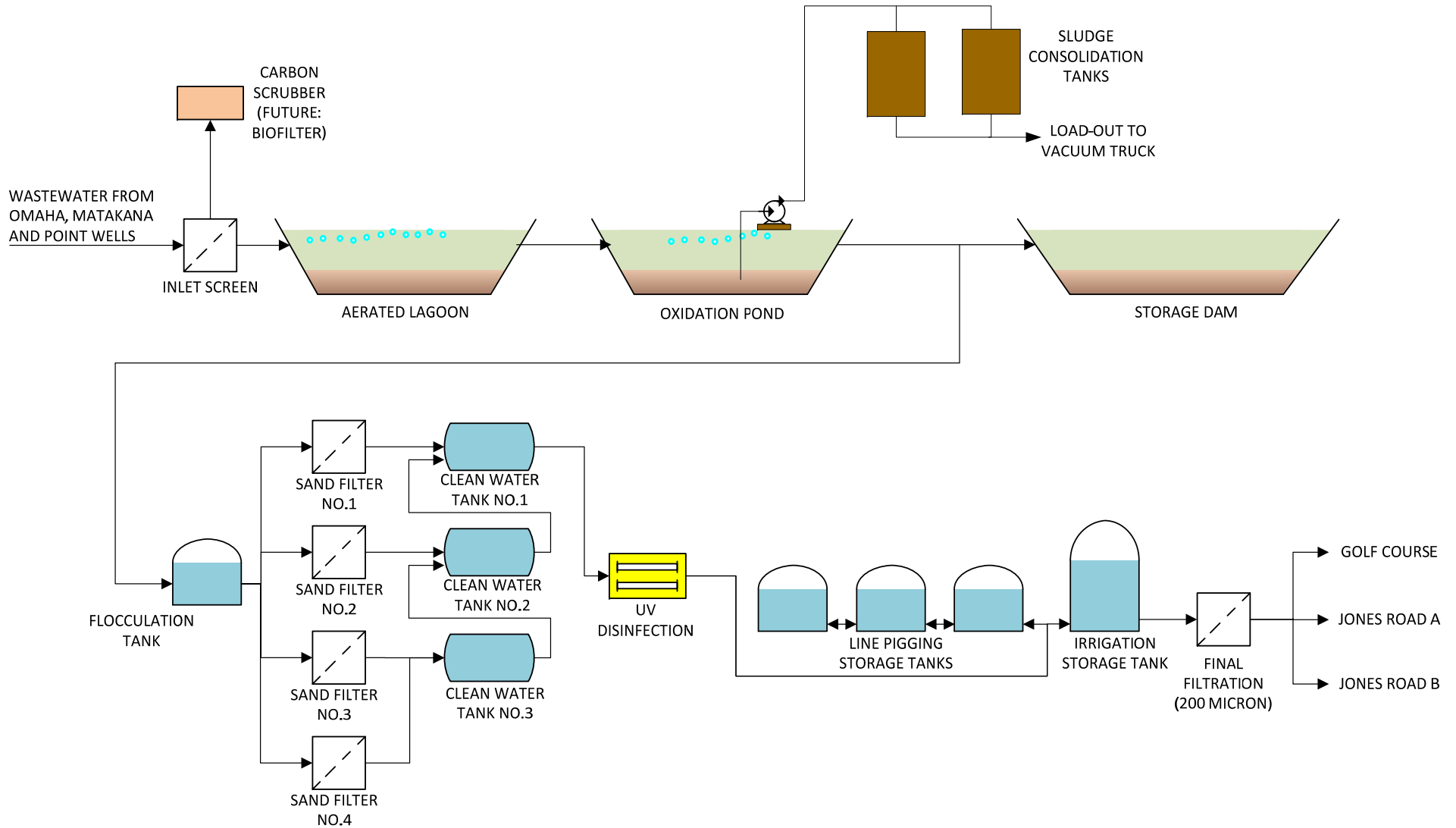
Ultraviolet Disinfection

- UV disinfection prevents replication or kills micro-organisms.
- Removal of larger particles prior to UV improves effectiveness
- UV dose is a function of intensity and time

Filters and UV



OMAHA WASTEWATER TREATMENT PLANT – PROCESS FLOW DIAGRAM



Dam



Population Statistics – Omaha

Year	Connections	Peak Population	Base with rain (m3/d)	Holiday with rain (m3/d)
2014	1,572	4,000	381	942
2024	1,981	5,000	475	1,155
2034	2,108	5,300	523	1,221
2050	2,311	6,000	635	1,327

Omaha WWTP – Capacity

Unit Process	Current Capacity (2014)	Current Base Population	Current Peak Population	Required Future Capacity (2050)
Aerated Lagoon	Approx. 4,500 PE ¹	1,200 PE	4,000 PE	6,000 PE
Oxidation Pond	Approx. 4,500 PE ²	1,200 PE	4,000 PE	6,000 PE
Rapid Gravity Filters	600 - 900 m ³ /d ³	1,200 PE	4,000 PE	1,327 m ³ /d

¹ Based on achieving approx. 55% BOD reduction across aerated lagoon

² Based on 55% removal in aerated lagoon

³ 600 m³/d limited by blue green algae, approx. 900 m³/d (Operational Experience)

Omaha WWTP – Capacity Upgrade Options

- Ponds
 - Additional aeration
 - Additional pond capacity
 - Build new mechanical plant
- Filters
 - Additional units
 - Membrane separation from pond
- Irrigation
 - Additional irrigation area

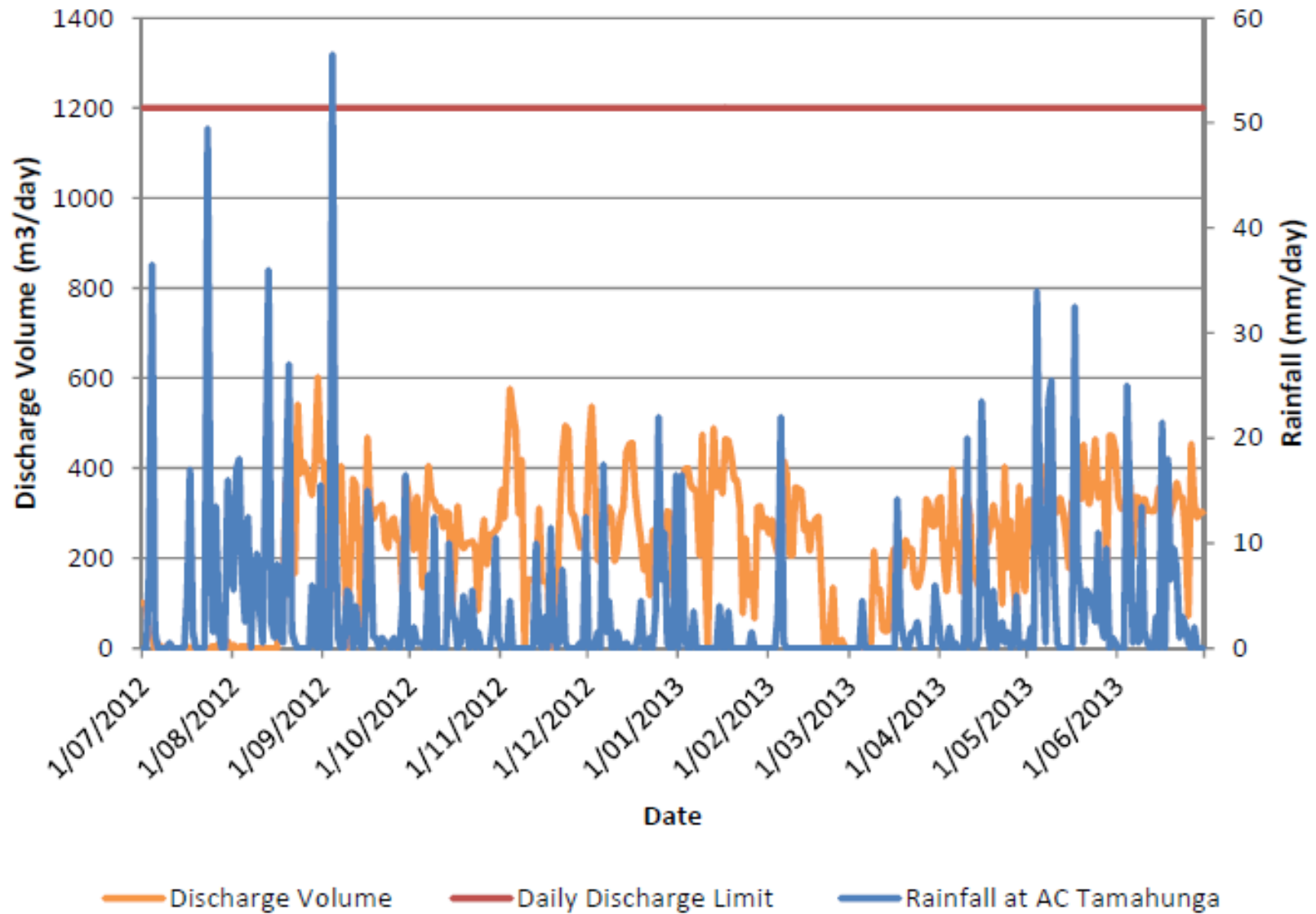
Table 6-4 Summary of Effluent Monitoring Results - Omaha WWTP (1 July 2012 to 30 June 2013)

Parameter	Units	n	Minimum	Maximum	Average	Median	95 th Percentile	Consented 95 th Percentile	Compliant with 95 th Percentile
pH	SU	53	7.0	7.9	7.9	7.9	7.8		-
Dissolved Oxygen	mg/L	53	5.8	9.1	9.1	9.1	8.8		-
Faecal Coliforms	cfu/100ml	26	1.6	8.2	2.5	1.6	6.6	500	Y
Total Suspended Solids	mg/L	27	1.0	22.0	7.2	7.2	11.0	20	Y
CBOD ₅	mg/L	27	0.5	8.3	3.9	4.4	7.8	30	Y
Ammoniacal Nitrogen	mg/L	26	0.4	37.0	19.3	18.5	34.5		-
Nitrate Nitrogen	mg/L	26	2.0	11.0	6.1	6.5	10.0		-

Table 6-3 Summary of Effluent Discharge Volumes - Omaha WWTP (1 July 2012 to 30 June 2013)

Parameters For Irrigation Area	Units	Maximum	Consented Maximum	Compliant with Maximum
Discharge Volume (Jones Road)	m ³ /day	602	1,200	Y
Discharge Volume (Jones Road)	m ³ /year	84,526	210,000	Y
Summer Discharge Volume (Golf Course) - 1 October to 30 April	m ³ /day	479	860	Y
Winter Discharge Volume (Golf Course) - 1 May to 30 September	m ³ /day	339	570	Y
Discharge Volume (Golf Course)	m ³ /year	54,441	180,000	Y
Summer Discharge Volume (Golf Course) - 1 October to 30 April	m ³ /week	2,651	6,000	Y
Winter Discharge Volume (Golf Course) - 1 May to 30 September	m ³ /week	1,777	4,000	Y

Omaha (Jones Road) (1 July 2012 - 30 June 2013)



Omaha (Golf Course) (1 July 2012 - 30 June 2013)

