

POINT LOMA OCEAN OUTFALL MONTHLY RECEIVING WATERS MONITORING REPORT

POINT LOMA WASTEWATER TREATMENT PLANT

NPDES Permit No. CA0107409
SDRWQCB Order No. R9-2017-0007

JUNE 2019
REVISED MARCH 2021

Environmental Monitoring and Technical Services
2392 Kincaid Road • Mail Station 45A • San Diego, CA 92101
Tel (619) 758-2300 Fax (619) 758-2309



April 1, 2021

Mr. David W. Gibson, Executive Officer
California Regional Water Quality Control Board
San Diego Region
2375 Northside Drive, Suite 100
San Diego, CA 92108

Attention: POTW Compliance Unit

Dear Mr. Gibson:

Enclosed is the revised June 2019 Monthly Receiving Waters Monitoring Report for the Point Loma Ocean Outfall, Point Loma Wastewater Treatment Plant as required per Order No. R9-2017-0007, NPDES Permit No. CA0107409. This revised report is being submitted to address data integrity issues identified to the Board in the letter dated October 22, 2020, subject: "San Diego NPDES Shoreline Sampling Program Report."

This report includes raw ocean monitoring data and summaries of water quality parameters and ocean conditions measured during the month for the Point Loma outfall region. Also included are summaries of compliance with the bacterial water-contact standards specified in the California Ocean Plan.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,



Peter S. Vroom, Ph.D.
Deputy Public Utilities Director

PV/rk

cc: U.S. Environmental Protection Agency, Region 9

INTRODUCTION

Monthly reports of water quality and ocean conditions for the San Diego coastal region surrounding the Point Loma Ocean Outfall are submitted to the San Diego Regional Water Quality Control Board and U.S. EPA Region 9 in accordance with Order No. R9-2017-0007, NPDES Permit No. CA0107409 for the Point Loma Wastewater Treatment Plant (PLWTP), Point Loma Ocean Outfall (PLOO). This report includes receiving waters monitoring data collected from all shore, kelp and offshore stations specified in the above order. Data for influent and effluent monitoring activities for the PLWTP are presented in separate reports.

MATERIALS AND METHODS

Shore Stations

Water quality conditions are required to be monitored at eight shoreline stations, including D4, D5, D7, D8, D9, D10, D11 and D12, which range from the tip of the Point Loma Peninsula to west of Mission Bay (see station locations map). Over the past several years, due to increasing instability in several cliffside areas of Point Loma, City staff have been unable to safely access and sample several stations at various times. This lack of access has resulted in the following modifications:

- Station D8 was replaced by alternate station D8-A during June 2016. However, due to increasing instability, City staff have been unable to safely access and sample station D8-A since February 7, 2018. During March 2018, the City identified an alternate location for stations D8/D8-A. This new station, designated D8-B, is located about 150 feet north of D8-A.

Seawater samples were collected from the surf zone at each station on a weekly basis. These samples were subsequently transported to the City's Marine Microbiology Laboratory and analyzed for the presence of several types of fecal indicator bacteria (FIBs), including total coliforms, fecal coliforms, and *Enterococcus*. Visual observations of water color and clarity, surf height, human or animal activity, and weather conditions were also recorded at the time of sample collection. Wind speed and direction were measured using a hand-held anemometer with a compass.

Kelp Bed Stations

The eight kelp stations were sampled weekly according to permit specifications in order to monitor water quality conditions within the Point Loma kelp forest. These stations include three sites located along the inshore edge of the kelp bed paralleling the 9-m depth contour (i.e., stations C4, C5 and C6), and five sites located near the offshore edge of the kelp bed along the 18-m depth contour (i.e., stations A1, A6, A7, C7 and C8).

Routine weekly monitoring at each of the kelp bed sites consisted primarily of collecting seawater samples at discrete depths to determine concentrations of indicator bacteria (i.e., total coliforms, fecal coliforms, and *Enterococcus*). Water column profiles of various physical/chemical parameters were also generated during each sampling event, and visual observations of weather and water conditions were recorded at each station.

Seawater samples at the kelp bed stations were collected using a CTD-integrated rosette sampler with Niskin bottles. Aliquots for bacteriological analyses were drawn from these bottles into sterile sample bottles for processing at the City's Marine Microbiology Laboratory. Water column profiles of temperature, transmissivity, dissolved oxygen, pH, salinity, density, chlorophyll *a* were generated using a Sea-Bird conductivity, temperature and depth instrument (CTD), which collects these data at a rate of ≥ 4 scans per second. These scans were then internally averaged to create water column profiles with data readings at a rate of one per meter. Additionally, CTD profile data for each water sample depth are presented with the bacteriological data.

Offshore Stations

Offshore water quality sampling is conducted quarterly typically during the months of February, May, August and November. A total of 36 offshore stations (F01–F36) are sampled during each survey usually over a 3-day period. Three of the stations (F01–F03) are located along the 18-m depth contour, while 11 stations are located along each of the following contours: 60 m (stations F04–F14); 80 m (stations F15–F25); 98 m (stations F26–F36). Of these 36 stations, 15 (F01–F03, F06–F14, F18–F20) are located within State jurisdictional waters (i.e., within 3 nautical miles of shore) and are subject to the California Ocean Plan's compliance standards. Monitoring at all offshore sites includes measurements of *Enterococcus* bacteria, water temperature, salinity, density, dissolved oxygen, pH, chlorophyll *a*, transmissivity, chromomorphic dissolved organic matter (CDOM), and visual observations of weather and water conditions.

Seawater samples for bacteriological analyses at the offshore stations were collected using a CTD-integrated rosette sampler with Niskin bottles. Profiles of the various physical/chemical parameters (listed above) are taken using a Sea-Bird CTD. Additionally, data for depths closest to those at which bacteriological samples were collected were extracted from the CTD profiles and presented with the bacteriological data.

Bacteriological Reporting and Quality Assurance

Estimated values for bacteriological analyses are denoted by greater than (>), less than (<), or estimated (e) qualifiers and result from plates with colony counts above or below the permissible counting limits established in Bordner et al. (1978)^[1]. This document defines membrane filtration limits of 20–80 colonies per plate for total coliforms and 20–60 colonies per plate for fecal coliforms and *Enterococcus*. No Data (ND) is reported if plate counts from all dilutions have a total colony count of >200 per plate.

Results of the bacteriological analysis of seawater samples collected from each of the shore, kelp bed, and offshore stations located within State waters are assessed relative to the geometric mean and single sample maximum water-contact standards specified in the California Ocean Plan. The seven standards are defined as follows:

30-day Geometric Mean: The following standards are based on the geometric mean of the five most recent samples from each site.

- (1) Total coliform density shall not exceed 1000 CFU/100 mL;

^[1]Bordner, R., J. Winter, and P. Scarpino (eds.). (1978). *Microbiological Methods for Monitoring the Environment: Water and Wastes*, EPA Research and Development, EPA-600/8-78-017. 337 p.

- (2) Fecal coliform density shall not exceed 200 CFU/100 mL;
- (3) *Enterococcus* density shall not exceed 35 CFU/100 mL.

Single Sample Maximums:

- (1) Total coliform density shall not exceed 10,000 CFU/100 mL;
- (2) Fecal coliform density shall not exceed 400 CFU/100 mL;
- (3) *Enterococcus* density shall not exceed 104 CFU/100 mL;
- (4) Total coliform density shall not exceed 1,000 CFU/100 mL when the fecal coliform/total coliform ratio exceeds 0.1.

Quality controls of bacteriological data include laboratory and field duplicate analyses. Laboratory duplicates are performed on approximately 10% of the water quality samples, while field duplicates are performed six times a month (see Appendix A). Laboratory duplicates represent two aliquots of the original sample that are split in the laboratory and analyzed by the same analyst using identical procedures within the same analytical run. The results of these analyses provide a measure of intra-analyst precision. In contrast, field duplicates represent two separate samples collected at the same time from the same site, which are handled under identical circumstances and treated exactly the same throughout field and lab procedures. The results of these analyses provide a measure of precision associated with sample collection, preservation, storage, and lab procedures. The sign test (see Gilbert, 1987) is used to statistically compare both the results from the laboratory duplicates, as well as the results from the field duplicates. These data will be further analyzed in the City's 2019 Quality Assurance Report, which will be completed in March 2020.

SUMMARY OF RESULTS

Shore Stations

- The eight shore stations (D4, D5, D7, D8-B, D9, D10, D11, D12) were sampled four times during June (i.e. June 6, 12, 20, 26). Subsequent to initial reporting, the sample collected at station D8-B on June 26 was determined to be problematic. The results from this sample have been removed from this report.
- All remaining samples collected in June were in compliance with various California Ocean Plan (Ocean Plan) water-contact standards.
- Over the years, elevated bacteria levels at shore and kelp bed stations have tended to be associated with rainfall events, heavy recreational use, or the presence of seabirds or decaying kelp and surfgrass. See the City of San Diego's most recent Biennial Receiving Waters Monitoring and Assessment Report for the Point Loma and South Bay Ocean Outfalls details (<https://www.sandiego.gov/public-utilities/sustainability/ocean-monitoring/reports>).
- Nothing of sewage origin was observed at any of the shore stations.

Kelp Bed Stations

- The eight kelp bed water quality stations (A1, A6, A7, C4, C5, C6, C7, C8) were sampled four times during the month (i.e. June 3, 10, 17, 25).
- During June, all of the kelp bed stations were in compliance with various water-contact standards specified in the Ocean Plan.

- Water column temperatures ranged from 11.36 to 18.87°C during the month. The difference between surface and bottom waters ranged from 2.51 to 6.75°C, indicating that the water column was stratified at some of the kelp bed stations during the month.
- Chlorophyll *a* concentrations ranged from 0.28 to 20.10 µg/L during June, suggesting the presence of phytoplankton blooms during the month.
- Nothing of sewage origin was observed at any of the kelp stations.

Offshore Stations

- Quarterly water quality sampling was conducted during June at the offshore stations. The next quarterly sampling is scheduled for August 2019.



TABLES AND FIGURES

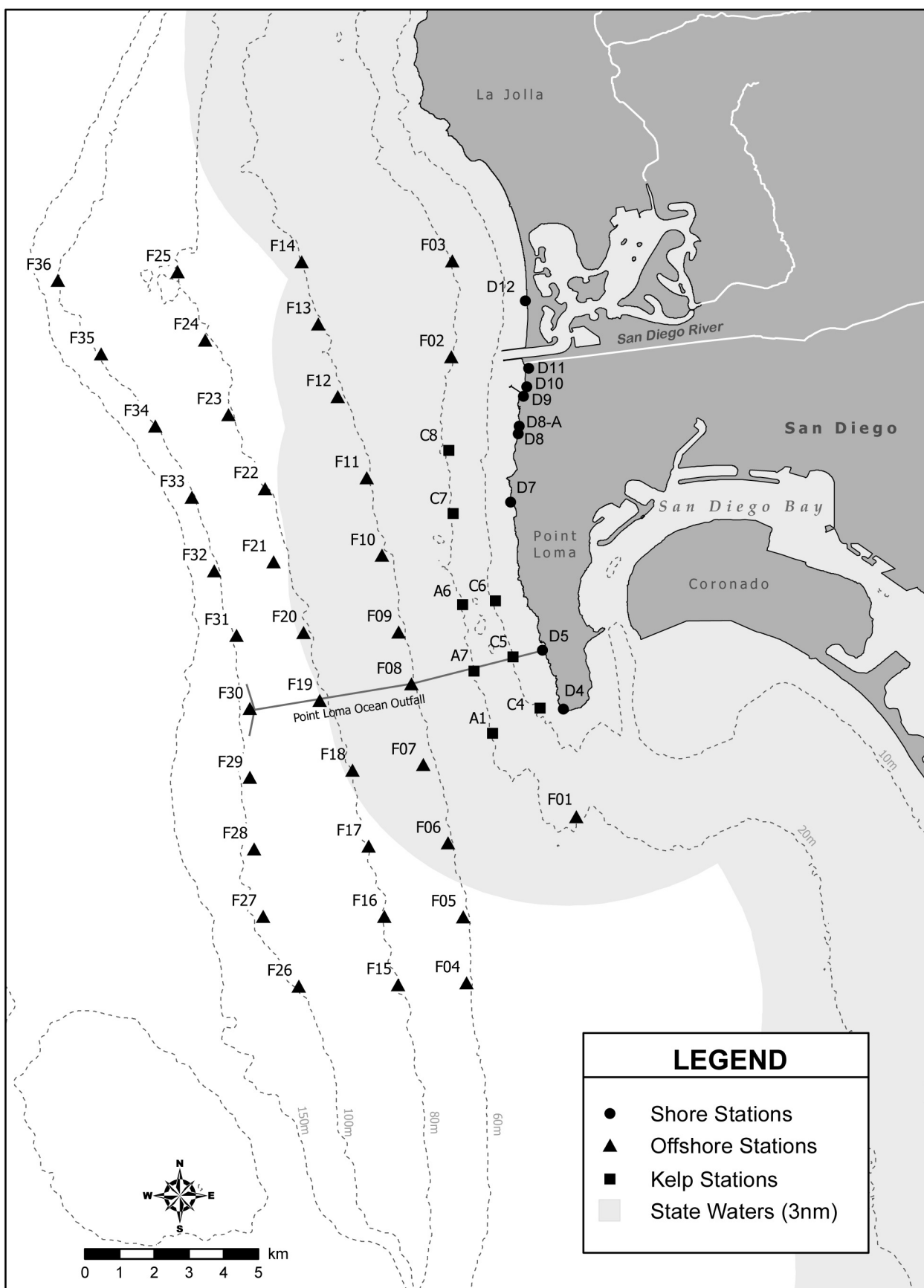


Figure 1.1 Station Map

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Shore Stations

Table 2.1

Summary of compliance with the Ocean Plan's 30-day Geometric Mean standard for total coliform bacteria at the PLOO shore stations. Data are based on the geometric mean of the five most recent samples from each site over the previous 30 days unless otherwise noted (*). Values >1,000 CFU/100 mL exceed the standard.

Date	D4	D5	D7	D8-B	D9	D10	D11	D12
01 Jun 2019	10	6	13	36	20	49	37	11
02 Jun 2019	10	6	13	36	20	49	37	11
03 Jun 2019	10	6	13	36	20	49	37	11
04 Jun 2019	10	6	13	36	20	49	37	11
05 Jun 2019	10	6	13	36	20	49	37	11
06 Jun 2019	7	9	20	55	20	54	52	8
07 Jun 2019	10	13	20	71	20	66	50	11
08 Jun 2019	10	13	20	71	20	66	50	11
09 Jun 2019	10	13	20	71	20	66	50	11
10 Jun 2019	10	13	20	71	20	66	50	11
11 Jun 2019	10	13	20	71	20	66	50	11
12 Jun 2019	18	14	32	73	20	52	42	13
13 Jun 2019	18	14	32	73	20	52	42	13
14 Jun 2019	31	24	63	179	20	89	63	20
15 Jun 2019	31	24	63	179	20	89	63	20
16 Jun 2019	31	24	63	179	20	89	63	20
17 Jun 2019	31	24	63	179	20	89	63	20
18 Jun 2019	31	24	63	179	20	89	63	20
19 Jun 2019	31	24	63	179	20	89	63	20
20 Jun 2019	29	23	50	115	32	76	58	13
21 Jun 2019	18	24	63	101	36	60	42	11
22 Jun 2019	18	24	63	101	36	60	42	11
23 Jun 2019	18	24	63	101	36	60	42	11
24 Jun 2019	18	24	63	101	36	60	42	11
25 Jun 2019	18	24	63	101	36	60	42	11
26 Jun 2019	11	14	32	101	25	48	29	13
27 Jun 2019	11	14	32	101	25	48	29	13
28 Jun 2019	11	13	30	80	26	34	31	6
29 Jun 2019	11	13	30	80	26	34	31	6
30 Jun 2019	11	13	30	80	26	34	31	6

* Geometric mean calculated using n<5
 ns = not sampled

Table 2.2

Summary of compliance with the Ocean Plan's 30-day Geometric Mean standard for fecal coliform bacteria at the PLOO shore stations. Data are based on the geometric mean of the five most recent samples from each site over the previous 30 days unless otherwise noted (*). Values >200 CFU/100 mL exceed the standard.

Date	D4	D5	D7	D8-B	D9	D10	D11	D12
01 Jun 2019	2	2	9	7	6	3	5	3
02 Jun 2019	2	2	9	7	6	3	5	3
03 Jun 2019	2	2	9	7	6	3	5	3
04 Jun 2019	2	2	9	7	6	3	5	3
05 Jun 2019	2	2	9	7	6	3	5	3
06 Jun 2019	2	2	11	14	5	4	6	3
07 Jun 2019	2	2	11	23	4	5	6	3
08 Jun 2019	2	2	11	23	4	5	6	3
09 Jun 2019	2	2	11	23	4	5	6	3
10 Jun 2019	2	2	11	23	4	5	6	3
11 Jun 2019	2	2	11	23	4	5	6	3
12 Jun 2019	2	3	13	14	4	4	5	3
13 Jun 2019	2	3	13	14	4	4	5	3
14 Jun 2019	2	4	20	23	4	4	6	3
15 Jun 2019	2	4	20	23	4	4	6	3
16 Jun 2019	2	4	20	23	4	4	6	3
17 Jun 2019	2	4	20	23	4	4	6	3
18 Jun 2019	2	4	20	23	4	4	6	3
19 Jun 2019	2	4	20	23	4	4	6	3
20 Jun 2019	2	5	14	14	3	5	9	3
21 Jun 2019	2	7	13	9	2	6	9	2
22 Jun 2019	2	7	13	9	2	6	9	2
23 Jun 2019	2	7	13	9	2	6	9	2
24 Jun 2019	2	7	13	9	2	6	9	2
25 Jun 2019	2	7	13	9	2	6	9	2
26 Jun 2019	2	5	9	9	2	8	8	2
27 Jun 2019	2	5	9	9	2	8	8	2
28 Jun 2019	2	7	8	10	2	11	10	2
29 Jun 2019	2	7	8	10	2	11	10	2
30 Jun 2019	2	7	8	10	2	11	10	2

* Geometric mean calculated using n<5

ns = not sampled

Table 2.3

Summary of compliance with the Ocean Plan's 30-day Geometric Mean standard for *Enterococcus* at the PLOO shore stations. Data are based on the geometric mean of the five most recent samples from each site over the previous 30 days unless otherwise noted (*). Values >35 CFU/100 mL exceed the standard.

Date	D4	D5	D7	D8-B	D9	D10	D11	D12
01 Jun 2019	2	2	3	4	3	4	4	3
02 Jun 2019	2	2	3	4	3	4	4	3
03 Jun 2019	2	2	3	4	3	4	4	3
04 Jun 2019	2	2	3	4	3	4	4	3
05 Jun 2019	2	2	3	4	3	4	4	3
06 Jun 2019	2	2	5	4	3	5	6	3
07 Jun 2019	2	2	4	3	3	3	6	2
08 Jun 2019	2	2	4	3	3	3	6	2
09 Jun 2019	2	2	4	3	3	3	6	2
10 Jun 2019	2	2	4	3	3	3	6	2
11 Jun 2019	2	2	4	3	3	3	6	2
12 Jun 2019	2	2	4	2	3	3	5	2
13 Jun 2019	2	2	4	2	3	3	5	2
14 Jun 2019	2	2	4	3	3	3	6	2
15 Jun 2019	2	2	4	3	3	3	6	2
16 Jun 2019	2	2	4	3	3	3	6	2
17 Jun 2019	2	2	4	3	3	3	6	2
18 Jun 2019	2	2	4	3	3	3	6	2
19 Jun 2019	2	2	4	3	3	3	6	2
20 Jun 2019	2	2	4	2	3	4	8	2
21 Jun 2019	2	2	5	3	2	4	6	2
22 Jun 2019	2	2	5	3	2	4	6	2
23 Jun 2019	2	2	5	3	2	4	6	2
24 Jun 2019	2	2	5	3	2	4	6	2
25 Jun 2019	2	2	5	3	2	4	6	2
26 Jun 2019	2	2	4	3	2	4	5	2
27 Jun 2019	2	2	4	3	2	4	5	2
28 Jun 2019	2	2	5	3	2	4	6	2
29 Jun 2019	2	2	5	3	2	4	6	2
30 Jun 2019	2	2	5	3	2	4	6	2

* Geometric mean calculated using n<5

ns = not sampled

Table 2.4

Summary of compliance at the PLOO shore stations with the Ocean Plan's Single Sample Maximum standard for total coliform bacteria, which states that total coliform density shall not exceed 10,000 CFU/100 mL.

Date	D4	D5	D7	D8-B	D9	D10	D11	D12
06 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
12 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
20 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
26 Jun 2019	IC	IC	IC	ns	IC	IC	IC	IC

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

Table 2.5

Summary of compliance at the PLOO shore stations with the Ocean Plan's Single Sample Maximum standard for fecal coliform bacteria, which states that fecal coliform density shall not exceed 400 CFU/100 mL.

Date	D4	D5	D7	D8-B	D9	D10	D11	D12
06 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
12 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
20 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
26 Jun 2019	IC	IC	IC	ns	IC	IC	IC	IC

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

Table 2.6

Summary of compliance at the PLOO shore stations with the Ocean Plan's Single Sample Maximum standard for *Enterococcus* bacteria, which states that *Enterococcus* density shall not exceed 104 CFU/100 mL.

Date	D4	D5	D7	D8-B	D9	D10	D11	D12
06 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
12 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
20 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
26 Jun 2019	IC	IC	IC	ns	IC	IC	IC	IC

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

Table 2.7

Summary of compliance at the PLOO shore stations with the Ocean Plan's Single Sample Maximum standard for total coliform bacteria and the fecal/total coliform ratio (F:T), which states that total coliform density shall not exceed 1,000 CFU/100 mL when F:T > 0.1.

Date	D4	D5	D7	D8-B	D9	D10	D11	D12
06 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
12 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
20 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
26 Jun 2019	IC	IC	IC	ns	IC	IC	IC	IC

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

Table 2.8

Summary of water quality parameters at the PLOO shore stations for each sample date. Densities of total coliform (Total), fecal coliform (Fecal), and *Enterococcus* (Entero) are reported as CFU/100 mL. The fecal:total coliform ratio (F:T) is unitless. Comments follow the data summary.

Station	Date	Time	Total	Fecal	Entero	F:T
D4	06 Jun 2019	804	2e	<2	<2	1.00
D4	12 Jun 2019	758	<200	<2	<2	0.01
D4	20 Jun 2019	906	20e	<2	<2	0.10
D4	26 Jun 2019	941	<2	<2	<2	1.00
D5	06 Jun 2019	748	40e	<2	<2	0.05
D5	12 Jun 2019	741	20e	<20	<2	1.00
D5	20 Jun 2019	919	20e	28e	<2	1.40
D5	26 Jun 2019	955	<2	<2	<2	1.00
D7	06 Jun 2019	826	100e	20e	34e	0.20
D7	12 Jun 2019	816	<200	<20	2e	0.10
D7	20 Jun 2019	846	<20	4e	4e	0.20
D7	26 Jun 2019	1020	2e	<2	<2	1.00
D8-B	06 Jun 2019	837	320e	240e	6e	0.75
D8-B	12 Jun 2019	831	80e	2e	2e	0.02
D8-B	20 Jun 2019	825	20e	2e	<2	0.10
D8-B	26 Jun 2019		ns	ns	ns	ns
D9	06 Jun 2019	845	<20	<2	4e	0.10
D9	12 Jun 2019	840	20e	<2	<2	0.10
D9	20 Jun 2019	810	200e	<2	<2	0.01
D9	26 Jun 2019	1044	6e	<2	2e	0.33
D10	06 Jun 2019	855	80e	20e	16e	0.25
D10	12 Jun 2019	853	<20	2e	2e	0.10
D10	20 Jun 2019	754	40e	<20	6e	0.50
D10	26 Jun 2019	1058	<20	20e	<2	1.00
D11	06 Jun 2019	907	200e	20e	22e	0.10
D11	12 Jun 2019	906	<20	<2	<2	0.10
D11	20 Jun 2019	739	40e	40e	14e	1.00
D11	26 Jun 2019	1108	6e	6e	2e	1.00
D12	06 Jun 2019	927	<2	<2	<2	1.00
D12	12 Jun 2019	932	<20	<2	<2	0.10
D12	20 Jun 2019	713	<2	<2	<2	1.00
D12	26 Jun 2019	1138	<20	<2	<2	0.10

ns = not sampled

ND = no data

Table 2.9

Summary of visual observations made during the month for each PLOO shore station by sample date.

Station	Date	Parameter	Value
D4	06 Jun 2019	Arrive Time	804
D4	06 Jun 2019	Weather	Cloudy
D4	06 Jun 2019	Wind Speed (kts)	3.4
D4	06 Jun 2019	Wind Dir	W
D4	06 Jun 2019	Animal Life	None
D4	06 Jun 2019	Floatables	None
D4	06 Jun 2019	Water Color	Green
D4	06 Jun 2019	Current Direction	N
D4	06 Jun 2019	Water Temp (C)	18.5
D4	06 Jun 2019	Wave Height Low (ft)	2
D4	06 Jun 2019	High Tide (ft)	3.6
D4	06 Jun 2019	High Tide Time	1303
D4	06 Jun 2019	Low Tide (ft)	-1
D4	06 Jun 2019	Low Tide Time	626
D4	06 Jun 2019	Comments	Kelp; Seagrass; Algae; Water clear
D4	12 Jun 2019	Arrive Time	758
D4	12 Jun 2019	Weather	Overcast
D4	12 Jun 2019	Wind Speed (kts)	0
D4	12 Jun 2019	Wind Dir	
D4	12 Jun 2019	Animal Life	None
D4	12 Jun 2019	Floatables	None
D4	12 Jun 2019	Water Color	Green
D4	12 Jun 2019	Current Direction	
D4	12 Jun 2019	Water Temp (C)	19.7
D4	12 Jun 2019	Wave Height Low (ft)	2
D4	12 Jun 2019	High Tide (ft)	3.8
D4	12 Jun 2019	High Tide Time	606
D4	12 Jun 2019	Low Tide (ft)	0.7
D4	12 Jun 2019	Low Tide Time	1206
D4	12 Jun 2019	Comments	Kelp; Seagrass; Algae; Water clear
D4	20 Jun 2019	Arrive Time	906
D4	20 Jun 2019	Weather	Overcast
D4	20 Jun 2019	Wind Speed (kts)	2.7
D4	20 Jun 2019	Wind Dir	E
D4	20 Jun 2019	Animal Life	1 Cormorant; 1 Seagull
D4	20 Jun 2019	Floatables	Film
D4	20 Jun 2019	Water Color	Green
D4	20 Jun 2019	Current Direction	E
D4	20 Jun 2019	Water Temp (C)	20.2
D4	20 Jun 2019	Wave Height Low (ft)	1
D4	20 Jun 2019	High Tide (ft)	3.6
D4	20 Jun 2019	High Tide Time	1249
D4	20 Jun 2019	Low Tide (ft)	-0.4
D4	20 Jun 2019	Low Tide Time	615
D4	20 Jun 2019	Comments	Kelp; Seagrass; Algae; Water clear
D4	26 Jun 2019	Arrive Time	941
D4	26 Jun 2019	Weather	Cloudy
D4	26 Jun 2019	Wind Speed (kts)	0.8
D4	26 Jun 2019	Wind Dir	W
D4	26 Jun 2019	Animal Life	None
D4	26 Jun 2019	Floatables	None
D4	26 Jun 2019	Water Color	Green
D4	26 Jun 2019	Current Direction	N

Station	Date	Parameter	Value
D4	26 Jun 2019	Water Temp (C)	19.9
D4	26 Jun 2019	Wave Height Low (ft)	2
D4	26 Jun 2019	High Tide (ft)	3.2
D4	26 Jun 2019	High Tide Time	439
D4	26 Jun 2019	Low Tide (ft)	1.3
D4	26 Jun 2019	Low Tide Time	1050
D4	26 Jun 2019	Comments	Kelp; Seagrass; Algae; Water clear
D5	06 Jun 2019	Arrive Time	748
D5	06 Jun 2019	Weather	Cloudy
D5	06 Jun 2019	Wind Speed (kts)	0.7
D5	06 Jun 2019	Wind Dir	W
D5	06 Jun 2019	Animal Life	None
D5	06 Jun 2019	Floatables	None
D5	06 Jun 2019	Water Color	Green
D5	06 Jun 2019	Current Direction	N
D5	06 Jun 2019	Water Temp (C)	20.2
D5	06 Jun 2019	Wave Height Low (ft)	2
D5	06 Jun 2019	High Tide (ft)	3.6
D5	06 Jun 2019	High Tide Time	1303
D5	06 Jun 2019	Low Tide (ft)	-1
D5	06 Jun 2019	Low Tide Time	626
D5	06 Jun 2019	Comments	Kelp; Seagrass; Algae; Water clear
D5	12 Jun 2019	Arrive Time	741
D5	12 Jun 2019	Weather	Overcast
D5	12 Jun 2019	Wind Speed (kts)	0.3
D5	12 Jun 2019	Wind Dir	N
D5	12 Jun 2019	Animal Life	3 Shorebirds
D5	12 Jun 2019	Floatables	Foam
D5	12 Jun 2019	Water Color	Green
D5	12 Jun 2019	Current Direction	N
D5	12 Jun 2019	Water Temp (C)	21.3
D5	12 Jun 2019	Wave Height Low (ft)	1
D5	12 Jun 2019	High Tide (ft)	3.8
D5	12 Jun 2019	High Tide Time	606
D5	12 Jun 2019	Low Tide (ft)	0.7
D5	12 Jun 2019	Low Tide Time	1206
D5	12 Jun 2019	Comments	Kelp; Seagrass; Algae; 1 Boat; Water clear
D5	20 Jun 2019	Arrive Time	919
D5	20 Jun 2019	Weather	Overcast
D5	20 Jun 2019	Wind Speed (kts)	1.7
D5	20 Jun 2019	Wind Dir	N
D5	20 Jun 2019	Animal Life	3 Seagulls
D5	20 Jun 2019	Floatables	Foam; Film
D5	20 Jun 2019	Water Color	Green
D5	20 Jun 2019	Current Direction	N
D5	20 Jun 2019	Water Temp (C)	21.6
D5	20 Jun 2019	Wave Height Low (ft)	1
D5	20 Jun 2019	High Tide (ft)	3.6
D5	20 Jun 2019	High Tide Time	1249
D5	20 Jun 2019	Low Tide (ft)	-0.4
D5	20 Jun 2019	Low Tide Time	615
D5	20 Jun 2019	Comments	Kelp; Seagrass; Algae; Water clear
D5	26 Jun 2019	Arrive Time	955
D5	26 Jun 2019	Weather	Cloudy
D5	26 Jun 2019	Wind Speed (kts)	1.6
D5	26 Jun 2019	Wind Dir	W
D5	26 Jun 2019	Animal Life	None

Station	Date	Parameter	Value
D5	26 Jun 2019	Floatables	None
D5	26 Jun 2019	Water Color	Green
D5	26 Jun 2019	Current Direction	N
D5	26 Jun 2019	Water Temp (C)	20.2
D5	26 Jun 2019	Wave Height Low (ft)	1
D5	26 Jun 2019	High Tide (ft)	3.2
D5	26 Jun 2019	High Tide Time	439
D5	26 Jun 2019	Low Tide (ft)	1.3
D5	26 Jun 2019	Low Tide Time	1050
D5	26 Jun 2019	Comments	Kelp; Seagrass; Algae; Water clear
D7	06 Jun 2019	Arrive Time	826
D7	06 Jun 2019	Weather	Cloudy
D7	06 Jun 2019	Wind Speed (kts)	2.2
D7	06 Jun 2019	Wind Dir	W
D7	06 Jun 2019	Animal Life	None
D7	06 Jun 2019	Floatables	None
D7	06 Jun 2019	Water Color	Green
D7	06 Jun 2019	Current Direction	N
D7	06 Jun 2019	Water Temp (C)	18.8
D7	06 Jun 2019	Wave Height Low (ft)	3
D7	06 Jun 2019	High Tide (ft)	3.6
D7	06 Jun 2019	High Tide Time	1303
D7	06 Jun 2019	Low Tide (ft)	-1
D7	06 Jun 2019	Low Tide Time	626
D7	06 Jun 2019	Comments	Kelp; Seagrass; Algae; 9 Surfers; Water clear
D7	12 Jun 2019	Arrive Time	816
D7	12 Jun 2019	Weather	Overcast
D7	12 Jun 2019	Wind Speed (kts)	0
D7	12 Jun 2019	Wind Dir	
D7	12 Jun 2019	Animal Life	1 Pelican
D7	12 Jun 2019	Floatables	None
D7	12 Jun 2019	Water Color	Green
D7	12 Jun 2019	Current Direction	
D7	12 Jun 2019	Water Temp (C)	21.5
D7	12 Jun 2019	Wave Height Low (ft)	2
D7	12 Jun 2019	High Tide (ft)	3.8
D7	12 Jun 2019	High Tide Time	606
D7	12 Jun 2019	Low Tide (ft)	0.7
D7	12 Jun 2019	Low Tide Time	1206
D7	12 Jun 2019	Comments	Kelp; Seagrass; Algae; 4 Persons; 8 Surfers; Water clear
D7	20 Jun 2019	Arrive Time	846
D7	20 Jun 2019	Weather	Overcast
D7	20 Jun 2019	Wind Speed (kts)	2.1
D7	20 Jun 2019	Wind Dir	E
D7	20 Jun 2019	Animal Life	None
D7	20 Jun 2019	Floatables	Foam
D7	20 Jun 2019	Water Color	Green
D7	20 Jun 2019	Current Direction	E
D7	20 Jun 2019	Water Temp (C)	21.1
D7	20 Jun 2019	Wave Height Low (ft)	3
D7	20 Jun 2019	High Tide (ft)	3.6
D7	20 Jun 2019	High Tide Time	1249
D7	20 Jun 2019	Low Tide (ft)	-0.4
D7	20 Jun 2019	Low Tide Time	615
D7	20 Jun 2019	Comments	Kelp; Seagrass; Algae; Debris; 10 Persons; 19 Surfers; Water clear
D7	26 Jun 2019	Arrive Time	1020

Station	Date	Parameter	Value
D7	26 Jun 2019	Weather	Cloudy
D7	26 Jun 2019	Wind Speed (kts)	1.9
D7	26 Jun 2019	Wind Dir	W
D7	26 Jun 2019	Animal Life	None
D7	26 Jun 2019	Floatables	None
D7	26 Jun 2019	Water Color	Green
D7	26 Jun 2019	Current Direction	N
D7	26 Jun 2019	Water Temp (C)	20.1
D7	26 Jun 2019	Wave Height Low (ft)	2
D7	26 Jun 2019	High Tide (ft)	3.2
D7	26 Jun 2019	High Tide Time	439
D7	26 Jun 2019	Low Tide (ft)	1.3
D7	26 Jun 2019	Low Tide Time	1050
D7	26 Jun 2019	Comments	Kelp; Seagrass; 3 Surfers; Water clear
D8-B	06 Jun 2019	Arrive Time	837
D8-B	06 Jun 2019	Weather	Cloudy
D8-B	06 Jun 2019	Wind Speed (kts)	1.6
D8-B	06 Jun 2019	Wind Dir	W
D8-B	06 Jun 2019	Animal Life	None
D8-B	06 Jun 2019	Floatables	None
D8-B	06 Jun 2019	Water Color	Green
D8-B	06 Jun 2019	Current Direction	N
D8-B	06 Jun 2019	Water Temp (C)	19.1
D8-B	06 Jun 2019	Wave Height Low (ft)	3
D8-B	06 Jun 2019	High Tide (ft)	3.6
D8-B	06 Jun 2019	High Tide Time	1303
D8-B	06 Jun 2019	Low Tide (ft)	-1
D8-B	06 Jun 2019	Low Tide Time	626
D8-B	06 Jun 2019	Comments	Kelp; Seagrass; Algae; 2 Persons; Water clear
D8-B	12 Jun 2019	Arrive Time	831
D8-B	12 Jun 2019	Weather	Overcast
D8-B	12 Jun 2019	Wind Speed (kts)	0.9
D8-B	12 Jun 2019	Wind Dir	NE
D8-B	12 Jun 2019	Animal Life	1 Dog
D8-B	12 Jun 2019	Floatables	Foam
D8-B	12 Jun 2019	Water Color	Green
D8-B	12 Jun 2019	Current Direction	NE
D8-B	12 Jun 2019	Water Temp (C)	21
D8-B	12 Jun 2019	Wave Height Low (ft)	1
D8-B	12 Jun 2019	High Tide (ft)	3.8
D8-B	12 Jun 2019	High Tide Time	606
D8-B	12 Jun 2019	Low Tide (ft)	0.7
D8-B	12 Jun 2019	Low Tide Time	1206
D8-B	12 Jun 2019	Comments	Kelp; Seagrass; Algae; 1 Person; Water clear
D8-B	20 Jun 2019	Arrive Time	825
D8-B	20 Jun 2019	Weather	Overcast
D8-B	20 Jun 2019	Wind Speed (kts)	2.7
D8-B	20 Jun 2019	Wind Dir	NE
D8-B	20 Jun 2019	Animal Life	2 Seagulls
D8-B	20 Jun 2019	Floatables	None
D8-B	20 Jun 2019	Water Color	Green
D8-B	20 Jun 2019	Current Direction	NE
D8-B	20 Jun 2019	Water Temp (C)	20.7
D8-B	20 Jun 2019	Wave Height Low (ft)	2
D8-B	20 Jun 2019	High Tide (ft)	3.6
D8-B	20 Jun 2019	High Tide Time	1249
D8-B	20 Jun 2019	Low Tide (ft)	-0.4
D8-B	20 Jun 2019	Low Tide Time	615

Station	Date	Parameter	Value
D8-B	20 Jun 2019	Comments	Kelp; Seagrass; Algae; Debris; 2 Surfers; 1 Fisherman; Water clear
D9	06 Jun 2019	Arrive Time	845
D9	06 Jun 2019	Weather	Cloudy
D9	06 Jun 2019	Wind Speed (kts)	3.3
D9	06 Jun 2019	Wind Dir	W
D9	06 Jun 2019	Animal Life	None
D9	06 Jun 2019	Floatables	None
D9	06 Jun 2019	Water Color	Green
D9	06 Jun 2019	Current Direction	N
D9	06 Jun 2019	Water Temp (C)	19.3
D9	06 Jun 2019	Wave Height Low (ft)	3
D9	06 Jun 2019	High Tide (ft)	3.6
D9	06 Jun 2019	High Tide Time	1303
D9	06 Jun 2019	Low Tide (ft)	-1
D9	06 Jun 2019	Low Tide Time	626
D9	06 Jun 2019	Comments	Kelp; Seagrass; Algae; 3 Persons; Water clear
D9	12 Jun 2019	Arrive Time	840
D9	12 Jun 2019	Weather	Overcast
D9	12 Jun 2019	Wind Speed (kts)	1.3
D9	12 Jun 2019	Wind Dir	E
D9	12 Jun 2019	Animal Life	None
D9	12 Jun 2019	Floatables	Foam
D9	12 Jun 2019	Water Color	Green
D9	12 Jun 2019	Current Direction	E
D9	12 Jun 2019	Water Temp (C)	21.9
D9	12 Jun 2019	Wave Height Low (ft)	2
D9	12 Jun 2019	High Tide (ft)	3.8
D9	12 Jun 2019	High Tide Time	606
D9	12 Jun 2019	Low Tide (ft)	0.7
D9	12 Jun 2019	Low Tide Time	1206
D9	12 Jun 2019	Comments	Kelp; Seagrass; Algae; Water clear
D9	20 Jun 2019	Arrive Time	810
D9	20 Jun 2019	Weather	Overcast
D9	20 Jun 2019	Wind Speed (kts)	6
D9	20 Jun 2019	Wind Dir	N
D9	20 Jun 2019	Animal Life	2 Grebes; 1 Seagull
D9	20 Jun 2019	Floatables	Foam
D9	20 Jun 2019	Water Color	Green
D9	20 Jun 2019	Current Direction	N
D9	20 Jun 2019	Water Temp (C)	20.1
D9	20 Jun 2019	Wave Height Low (ft)	2
D9	20 Jun 2019	High Tide (ft)	3.6
D9	20 Jun 2019	High Tide Time	1249
D9	20 Jun 2019	Low Tide (ft)	-0.4
D9	20 Jun 2019	Low Tide Time	615
D9	20 Jun 2019	Comments	Kelp; Seagrass; Algae; 2 Persons; Water clear
D9	26 Jun 2019	Arrive Time	1044
D9	26 Jun 2019	Weather	Cloudy
D9	26 Jun 2019	Wind Speed (kts)	2.7
D9	26 Jun 2019	Wind Dir	W
D9	26 Jun 2019	Animal Life	1 Dog
D9	26 Jun 2019	Floatables	None
D9	26 Jun 2019	Water Color	Green
D9	26 Jun 2019	Current Direction	N
D9	26 Jun 2019	Water Temp (C)	19.8
D9	26 Jun 2019	Wave Height Low (ft)	3

Station	Date	Parameter	Value
D9	26 Jun 2019	High Tide (ft)	3.2
D9	26 Jun 2019	High Tide Time	439
D9	26 Jun 2019	Low Tide (ft)	1.3
D9	26 Jun 2019	Low Tide Time	1050
D9	26 Jun 2019	Comments	Kelp; Seagrass; 1 Person; Water clear
D10	06 Jun 2019	Arrive Time	855
D10	06 Jun 2019	Weather	Cloudy
D10	06 Jun 2019	Wind Speed (kts)	2.3
D10	06 Jun 2019	Wind Dir	W
D10	06 Jun 2019	Animal Life	None
D10	06 Jun 2019	Floatables	None
D10	06 Jun 2019	Water Color	Green
D10	06 Jun 2019	Current Direction	N
D10	06 Jun 2019	Water Temp (C)	19.9
D10	06 Jun 2019	Wave Height Low (ft)	4
D10	06 Jun 2019	High Tide (ft)	3.6
D10	06 Jun 2019	High Tide Time	1303
D10	06 Jun 2019	Low Tide (ft)	-1
D10	06 Jun 2019	Low Tide Time	626
D10	06 Jun 2019	Comments	Kelp; Seagrass; 5 Persons; 18 Surfers; Water clear
D10	12 Jun 2019	Arrive Time	853
D10	12 Jun 2019	Weather	Overcast
D10	12 Jun 2019	Wind Speed (kts)	1.9
D10	12 Jun 2019	Wind Dir	E
D10	12 Jun 2019	Animal Life	38 Seagulls
D10	12 Jun 2019	Floatables	Foam
D10	12 Jun 2019	Water Color	Green
D10	12 Jun 2019	Current Direction	E
D10	12 Jun 2019	Water Temp (C)	21.1
D10	12 Jun 2019	Wave Height Low (ft)	2
D10	12 Jun 2019	High Tide (ft)	3.8
D10	12 Jun 2019	High Tide Time	606
D10	12 Jun 2019	Low Tide (ft)	0.7
D10	12 Jun 2019	Low Tide Time	1206
D10	12 Jun 2019	Comments	Kelp; Seagrass; 1 Jogger; 26 Persons; 30 Surfers; Water clear
D10	20 Jun 2019	Arrive Time	754
D10	20 Jun 2019	Weather	Overcast
D10	20 Jun 2019	Wind Speed (kts)	5.6
D10	20 Jun 2019	Wind Dir	N
D10	20 Jun 2019	Animal Life	2 Cormorants; 28 Seagulls
D10	20 Jun 2019	Floatables	Foam; Film
D10	20 Jun 2019	Water Color	Green
D10	20 Jun 2019	Current Direction	N
D10	20 Jun 2019	Water Temp (C)	19.9
D10	20 Jun 2019	Wave Height Low (ft)	2
D10	20 Jun 2019	High Tide (ft)	3.6
D10	20 Jun 2019	High Tide Time	1249
D10	20 Jun 2019	Low Tide (ft)	-0.4
D10	20 Jun 2019	Low Tide Time	615
D10	20 Jun 2019	Comments	Kelp; Seagrass; 1 Jogger; 18 Persons; 29 Surfers; Water clear
D10	26 Jun 2019	Arrive Time	1058
D10	26 Jun 2019	Weather	Cloudy
D10	26 Jun 2019	Wind Speed (kts)	3.5
D10	26 Jun 2019	Wind Dir	W
D10	26 Jun 2019	Animal Life	None

Station	Date	Parameter	Value
D10	26 Jun 2019	Floatables	None
D10	26 Jun 2019	Water Color	Green
D10	26 Jun 2019	Current Direction	W
D10	26 Jun 2019	Water Temp (C)	19.5
D10	26 Jun 2019	Wave Height Low (ft)	3
D10	26 Jun 2019	High Tide (ft)	3.2
D10	26 Jun 2019	High Tide Time	439
D10	26 Jun 2019	Low Tide (ft)	1.3
D10	26 Jun 2019	Low Tide Time	1050
D10	26 Jun 2019	Comments	Kelp; Seagrass; 18 Persons; 12 Surfers; 11 Swimmers; Water clear
D11	06 Jun 2019	Arrive Time	907
D11	06 Jun 2019	Weather	Cloudy
D11	06 Jun 2019	Wind Speed (kts)	1.1
D11	06 Jun 2019	Wind Dir	W
D11	06 Jun 2019	Animal Life	None
D11	06 Jun 2019	Floatables	None
D11	06 Jun 2019	Water Color	Green
D11	06 Jun 2019	Current Direction	N
D11	06 Jun 2019	Water Temp (C)	19.7
D11	06 Jun 2019	Wave Height Low (ft)	3
D11	06 Jun 2019	High Tide (ft)	3.6
D11	06 Jun 2019	High Tide Time	1303
D11	06 Jun 2019	Low Tide (ft)	-1
D11	06 Jun 2019	Low Tide Time	626
D11	06 Jun 2019	Comments	Kelp; Seagrass; 2 Persons; 10 Surfers; Water clear
D11	12 Jun 2019	Arrive Time	906
D11	12 Jun 2019	Weather	Overcast
D11	12 Jun 2019	Wind Speed (kts)	1.1
D11	12 Jun 2019	Wind Dir	S
D11	12 Jun 2019	Animal Life	None
D11	12 Jun 2019	Floatables	Foam
D11	12 Jun 2019	Water Color	Green
D11	12 Jun 2019	Current Direction	S
D11	12 Jun 2019	Water Temp (C)	22
D11	12 Jun 2019	Wave Height Low (ft)	2
D11	12 Jun 2019	High Tide (ft)	3.8
D11	12 Jun 2019	High Tide Time	606
D11	12 Jun 2019	Low Tide (ft)	0.7
D11	12 Jun 2019	Low Tide Time	1206
D11	12 Jun 2019	Comments	Kelp; Seagrass; 35 Persons; 30 Surfers; Water clear
D11	20 Jun 2019	Arrive Time	739
D11	20 Jun 2019	Weather	Overcast
D11	20 Jun 2019	Wind Speed (kts)	3.3
D11	20 Jun 2019	Wind Dir	E
D11	20 Jun 2019	Animal Life	1 Dog
D11	20 Jun 2019	Floatables	Foam; Film
D11	20 Jun 2019	Water Color	Green
D11	20 Jun 2019	Current Direction	E
D11	20 Jun 2019	Water Temp (C)	20.6
D11	20 Jun 2019	Wave Height Low (ft)	2
D11	20 Jun 2019	High Tide (ft)	3.6
D11	20 Jun 2019	High Tide Time	1249
D11	20 Jun 2019	Low Tide (ft)	-0.4
D11	20 Jun 2019	Low Tide Time	615
D11	20 Jun 2019	Comments	Kelp; Seagrass; 5 Persons; 30 Surfers; Water clear
D11	26 Jun 2019	Arrive Time	1108

Station	Date	Parameter	Value
D11	26 Jun 2019	Weather	Cloudy
D11	26 Jun 2019	Wind Speed (kts)	2.5
D11	26 Jun 2019	Wind Dir	W
D11	26 Jun 2019	Animal Life	None
D11	26 Jun 2019	Floatables	None
D11	26 Jun 2019	Water Color	Green
D11	26 Jun 2019	Current Direction	N
D11	26 Jun 2019	Water Temp (C)	19.9
D11	26 Jun 2019	Wave Height Low (ft)	3
D11	26 Jun 2019	High Tide (ft)	4.6
D11	26 Jun 2019	High Tide Time	1735
D11	26 Jun 2019	Low Tide (ft)	1.3
D11	26 Jun 2019	Low Tide Time	1050
D11	26 Jun 2019	Comments	Kelp; Seagrass; 12 Persons; 19 Surfers; Water clear
D12	06 Jun 2019	Arrive Time	927
D12	06 Jun 2019	Weather	Cloudy
D12	06 Jun 2019	Wind Speed (kts)	2.3
D12	06 Jun 2019	Wind Dir	W
D12	06 Jun 2019	Animal Life	None
D12	06 Jun 2019	Floatables	None
D12	06 Jun 2019	Water Color	Green
D12	06 Jun 2019	Current Direction	N
D12	06 Jun 2019	Water Temp (C)	21.1
D12	06 Jun 2019	Wave Height Low (ft)	2
D12	06 Jun 2019	High Tide (ft)	3.6
D12	06 Jun 2019	High Tide Time	1303
D12	06 Jun 2019	Low Tide (ft)	-1
D12	06 Jun 2019	Low Tide Time	626
D12	06 Jun 2019	Comments	Kelp; Seagrass; 12 Persons; 1 Surfer; Water clear
D12	12 Jun 2019	Arrive Time	932
D12	12 Jun 2019	Weather	Overcast
D12	12 Jun 2019	Wind Speed (kts)	1.3
D12	12 Jun 2019	Wind Dir	E
D12	12 Jun 2019	Animal Life	None
D12	12 Jun 2019	Floatables	None
D12	12 Jun 2019	Water Color	Green
D12	12 Jun 2019	Current Direction	E
D12	12 Jun 2019	Water Temp (C)	22.8
D12	12 Jun 2019	Wave Height Low (ft)	2
D12	12 Jun 2019	High Tide (ft)	3.8
D12	12 Jun 2019	High Tide Time	606
D12	12 Jun 2019	Low Tide (ft)	0.7
D12	12 Jun 2019	Low Tide Time	1206
D12	12 Jun 2019	Comments	Kelp; Seagrass; 2 Joggers; 25 Persons; 15 Surfers; 3 Boats; 7 Swimmers; Water clear
D12	20 Jun 2019	Arrive Time	713
D12	20 Jun 2019	Weather	Overcast
D12	20 Jun 2019	Wind Speed (kts)	5.4
D12	20 Jun 2019	Wind Dir	N
D12	20 Jun 2019	Animal Life	2 Dogs; 22 Seagulls
D12	20 Jun 2019	Floatables	None
D12	20 Jun 2019	Water Color	Green
D12	20 Jun 2019	Current Direction	N
D12	20 Jun 2019	Water Temp (C)	19.8
D12	20 Jun 2019	Wave Height Low (ft)	1
D12	20 Jun 2019	High Tide (ft)	3.6
D12	20 Jun 2019	High Tide Time	1249
D12	20 Jun 2019	Low Tide (ft)	-0.4

Station	Date	Parameter	Value
D12	20 Jun 2019	Low Tide Time	615
D12	20 Jun 2019	Comments	Kelp; Seagrass; 14 Persons; 8 Surfers; 1 Fisherman; Water clear
D12	26 Jun 2019	Arrive Time	1138
D12	26 Jun 2019	Weather	Cloudy
D12	26 Jun 2019	Wind Speed (kts)	3.4
D12	26 Jun 2019	Wind Dir	W
D12	26 Jun 2019	Animal Life	None
D12	26 Jun 2019	Floatables	None
D12	26 Jun 2019	Water Color	Green
D12	26 Jun 2019	Current Direction	N
D12	26 Jun 2019	Water Temp (C)	19.8
D12	26 Jun 2019	Wave Height Low (ft)	3
D12	26 Jun 2019	High Tide (ft)	4.6
D12	26 Jun 2019	High Tide Time	1735
D12	26 Jun 2019	Low Tide (ft)	1.3
D12	26 Jun 2019	Low Tide Time	1050
D12	26 Jun 2019	Comments	Kelp; Seagrass; 23 Persons; 12 Swimmers; Water clear

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Kelp Stations

Table 3.1

Summary of compliance with the Ocean Plan's 30-day Geometric Mean standard for total coliform bacteria at the PLOO kelp stations. Data are based on the geometric mean of the five most recent samples from each site over the previous 30 days unless otherwise noted (*). Values >1,000 CFU/100 mL exceed the standard.

Date	A1	A6	A7	C4	C5	C6	C7	C8
01 Jun 2019	4	11	8	6	12	8	12	8
02 Jun 2019	4	11	8	6	12	8	12	8
03 Jun 2019	4	12	6	7	18	13	11	6
04 Jun 2019	4	12	6	7	18	13	11	6
05 Jun 2019	4	14	8	10	29	21	12	8
06 Jun 2019	4	14	8	10	29	21	12	8
07 Jun 2019	4	14	8	10	29	21	12	8
08 Jun 2019	4	14	8	10	29	21	12	8
09 Jun 2019	4	14	8	10	29	21	12	8
10 Jun 2019	3	9	6	7	17	13	8	7
11 Jun 2019	3	9	6	7	17	13	8	7
12 Jun 2019	4	14	8	10	20	12	11	9
13 Jun 2019	4	14	8	10	20	12	11	9
14 Jun 2019	4	14	8	10	20	12	11	9
15 Jun 2019	4	14	8	10	20	12	11	9
16 Jun 2019	4	14	8	10	20	12	11	9
17 Jun 2019	4	16	8	12	17	13	10	10
18 Jun 2019	4	16	8	12	17	13	10	10
19 Jun 2019	4	16	8	12	17	13	10	10
20 Jun 2019	4	16	8	12	17	13	10	10
21 Jun 2019	4	16	8	12	17	13	10	10
22 Jun 2019	3	9	7	10	20	15	6	5
23 Jun 2019	3	9	7	10	20	15	6	5
24 Jun 2019	3	9	7	10	20	15	6	5
25 Jun 2019	4	11	7	7	17	10	5	5
26 Jun 2019	4	11	7	7	17	10	5	5
27 Jun 2019	4	11	7	7	17	10	5	5
28 Jun 2019	5	11	4	6	10	9	4	5
29 Jun 2019	5	11	4	6	10	9	4	5
30 Jun 2019	5	11	4	6	10	9	4	5

* Geometric mean calculated using n<5

Table 3.2

Summary of compliance with the Ocean Plan's 30-day Geometric Mean standard for fecal coliform bacteria at the PLOO kelp stations. Data are based on the geometric mean of the five most recent samples from each site over the previous 30 days unless otherwise noted (*). Values >200 CFU/100 mL exceed the standard.

Date	A1	A6	A7	C4	C5	C6	C7	C8
01 Jun 2019	2	4	2	3	2	2	4	4
02 Jun 2019	2	4	2	3	2	2	4	4
03 Jun 2019	2	4	2	3	2	2	3	3
04 Jun 2019	2	4	2	3	2	2	3	3
05 Jun 2019	2	3	2	3	2	2	3	4
06 Jun 2019	2	3	2	3	2	2	3	4
07 Jun 2019	2	3	2	3	2	2	3	4
08 Jun 2019	2	3	2	3	2	2	3	4
09 Jun 2019	2	3	2	3	2	2	3	4
10 Jun 2019	2	3	2	3	2	2	3	3
11 Jun 2019	2	3	2	3	2	2	3	3
12 Jun 2019	2	3	2	3	2	2	3	4
13 Jun 2019	2	3	2	3	2	2	3	4
14 Jun 2019	2	3	2	3	2	2	3	4
15 Jun 2019	2	3	2	3	2	2	3	4
16 Jun 2019	2	3	2	3	2	2	3	4
17 Jun 2019	3	3	2	3	2	2	3	3
18 Jun 2019	3	3	2	3	2	2	3	3
19 Jun 2019	3	3	2	3	2	2	3	3
20 Jun 2019	3	3	2	3	2	2	3	3
21 Jun 2019	3	3	2	3	2	2	3	3
22 Jun 2019	3	2	2	2	2	2	2	2
23 Jun 2019	3	2	2	2	2	2	2	2
24 Jun 2019	3	2	2	2	2	2	2	2
25 Jun 2019	3	2	2	2	2	2	2	2
26 Jun 2019	3	2	2	2	2	2	2	2
27 Jun 2019	3	2	2	2	2	2	2	2
28 Jun 2019	3	2	2	2	2	2	2	2
29 Jun 2019	3	2	2	2	2	2	2	2
30 Jun 2019	3	2	2	2	2	2	2	2

* Geometric mean calculated using n<5

Table 3.3

Summary of compliance with the Ocean Plan's 30-day Geometric Mean standard for *Enterococcus* at the PLOO kelp stations. Data are based on the geometric mean of the five most recent samples from each site over the previous 30 days unless otherwise noted (*). Values >35 CFU/100 mL exceed the standard.

Date	A1	A6	A7	C4	C5	C6	C7	C8
01 Jun 2019	2	3	2	2	2	2	2	2
02 Jun 2019	2	3	2	2	2	2	2	2
03 Jun 2019	2	3	2	2	2	2	2	2
04 Jun 2019	2	3	2	2	2	2	2	2
05 Jun 2019	2	3	2	2	2	2	2	2
06 Jun 2019	2	3	2	2	2	2	2	2
07 Jun 2019	2	3	2	2	2	2	2	2
08 Jun 2019	2	3	2	2	2	2	2	2
09 Jun 2019	2	3	2	2	2	2	2	2
10 Jun 2019	2	3	2	2	2	2	2	2
11 Jun 2019	2	3	2	2	2	2	2	2
12 Jun 2019	2	3	2	2	2	2	2	2
13 Jun 2019	2	3	2	2	2	2	2	2
14 Jun 2019	2	3	2	2	2	2	2	2
15 Jun 2019	2	3	2	2	2	2	2	2
16 Jun 2019	2	3	2	2	2	2	2	2
17 Jun 2019	2	3	2	2	2	2	2	2
18 Jun 2019	2	3	2	2	2	2	2	2
19 Jun 2019	2	3	2	2	2	2	2	2
20 Jun 2019	2	3	2	2	2	2	2	2
21 Jun 2019	2	3	2	2	2	2	2	2
22 Jun 2019	2	2	2	2	2	2	2	2
23 Jun 2019	2	2	2	2	2	2	2	2
24 Jun 2019	2	2	2	2	2	2	2	2
25 Jun 2019	2	2	2	2	2	2	2	2
26 Jun 2019	2	2	2	2	2	2	2	2
27 Jun 2019	2	2	2	2	2	2	2	2
28 Jun 2019	2	2	2	2	2	2	2	2
29 Jun 2019	2	2	2	2	2	2	2	2
30 Jun 2019	2	2	2	2	2	2	2	2

* Geometric mean calculated using n<5

Table 3.4

Summary of compliance at the PLOO kelp stations with the Ocean Plan's Single Sample Maximum standard for total coliform bacteria, which states that total coliform density shall not exceed 10,000 CFU/100 mL.

Date	A1	A6	A7	C4	C5	C6	C7	C8
03 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
10 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
17 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
25 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

Table 3.5

Summary of compliance at the PLOO kelp stations with the Ocean Plan's Single Sample Maximum standard for fecal coliform bacteria, which states that fecal coliform density shall not exceed 400 CFU/100 mL.

Date	A1	A6	A7	C4	C5	C6	C7	C8
03 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
10 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
17 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
25 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

Table 3.6

Summary of compliance at the PLOO kelp stations with the Ocean Plan's Single Sample Maximum standard for *Enterococcus* bacteria, which states that *Enterococcus* density shall not exceed 104 CFU/100 mL.

Date	A1	A6	A7	C4	C5	C6	C7	C8
03 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
10 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
17 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
25 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

Table 3.7

Summary of compliance at the PLOO kelp stations with the Ocean Plan's Single Sample Maximum standard for total coliform bacteria and the fecal/total coliform ratio (F:T), which states that total coliform density shall not exceed 1,000 CFU/100 mL when F:T > 0.1.

Date	A1	A6	A7	C4	C5	C6	C7	C8
03 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
10 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
17 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC
25 Jun 2019	IC	IC	IC	IC	IC	IC	IC	IC

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

Table 3.8

Summary of water quality parameters at the PLOO kelp stations for each sample date. Densities of total coliform (Total), fecal coliform (Fecal) and *Enterococcus* (Entero) bacteria are reported as CFU/100 mL; the fecal:total coliform ratio (F:T) is unitless; values for temperature (Temp, °C), transmissivity (XMS, %), dissolved oxygen (DO, mg/L), salinity (Sal, ppt) and pH were extracted from CTD profile data for depths closest to those at which the bacteriological samples were collected. Comments follow the data summary.

Station	Date	Time	Depth	Total	Fecal	Entero	F:T	Temp	XMS	DO	Sal	pH
A1	03 Jun 2019	806	1	<2	<2	<2	1.00	17.0	82.33	8.7	33.67	8.1
A1	03 Jun 2019	806	12	<2	<2	<2	1.00	12.2	80.34	5.7	33.61	7.8
A1	03 Jun 2019	806	18	<2	<2	<2	1.00	11.9	84.79	5.5	33.63	7.8
A1	10 Jun 2019	753	1	<2	<2	<2	1.00	17.5	72.23	9.1	33.67	8.1
A1	10 Jun 2019	753	12	<2	<2	<2	1.00	13.3	76.98	5.2	33.62	7.7
A1	10 Jun 2019	753	18	2e	<2	2e	1.00	12.9	75.68	4.7	33.65	7.6
A1	17 Jun 2019	744	1	4e	<2	<2	0.50	17.8	68.24	8.8	33.70	8.2
A1	17 Jun 2019	744	12	8e	4e	<2	0.50	11.6	87.11	4.4	33.68	8.1
A1	17 Jun 2019	744	18	<20	<20	<2	1.00	11.5	84.39	4.4	33.70	8.0
A1	25 Jun 2019	750	1	<2	<2	<2	1.00	15.4	70.42	6.0	33.69	8.0
A1	25 Jun 2019	750	12	<20	<2	<2	0.10	13.9	74.56	5.0	33.68	7.9
A1	25 Jun 2019	750	18	10e	4e	<2	0.40	11.4	86.26	4.5	33.69	7.9
A6	03 Jun 2019	832	1	<20	<2	<2	0.10	17.8	79.32	10.2	33.68	8.2
A6	03 Jun 2019	832	12	<20	<2	<2	0.10	12.5	84.30	5.8	33.64	7.8
A6	03 Jun 2019	832	18	2e	<2	<2	1.00	11.8	83.72	5.2	33.65	7.8
A6	10 Jun 2019	830	1	<2	<2	<2	1.00	17.5	68.74	9.9	33.67	8.2
A6	10 Jun 2019	830	12	<2	<2	<2	1.00	14.4	74.98	6.5	33.65	7.9
A6	10 Jun 2019	830	18	<2	<2	<2	1.00	13.4	79.98	5.4	33.64	7.8
A6	17 Jun 2019	812	1	<2	<2	<2	1.00	18.3	58.31	9.6	33.70	8.5
A6	17 Jun 2019	812	12	<20	<2	<2	0.10	12.6	84.35	4.6	33.65	8.3
A6	17 Jun 2019	812	18	60e	2e	<2	0.03	11.8	86.31	4.2	33.68	8.2
A6	25 Jun 2019	825	1	<2	<2	<2	1.00	17.3	74.14	7.0	33.70	8.2
A6	25 Jun 2019	825	12	<20	<2	<2	0.10	12.4	85.78	4.7	33.65	8.1
A6	25 Jun 2019	825	18	32e	<2	<2	0.06	12.1	86.60	4.5	33.68	8.1
A7	03 Jun 2019	819	1	2e	<2	<2	1.00	17.6	82.52	9.2	33.67	8.2
A7	03 Jun 2019	819	12	<2	<2	<2	1.00	12.3	76.39	5.8	33.60	7.8
A7	03 Jun 2019	819	18	2e	<2	<2	1.00	11.6	85.05	5.1	33.66	7.7
A7	10 Jun 2019	811	1	<2	<2	<2	1.00	17.9	76.26	9.4	33.68	8.2
A7	10 Jun 2019	811	12	<2	<2	<2	1.00	15.3	73.31	7.3	33.70	8.0
A7	10 Jun 2019	811	18	<2	<2	<2	1.00	13.9	82.03	5.8	33.65	7.8
A7	17 Jun 2019	759	1	<2	<2	<2	1.00	18.3	65.40	9.6	33.69	8.4
A7	17 Jun 2019	759	12	<20	2e	<2	0.10	12.0	86.19	4.2	33.68	8.2
A7	17 Jun 2019	759	18	2e	<2	<2	1.00	11.5	86.09	4.2	33.69	8.1
A7	25 Jun 2019	805	1	<2	<2	2e	1.00	16.6	63.68	6.6	33.67	8.1
A7	25 Jun 2019	805	12	<2	<2	<2	1.00	13.7	77.21	5.6	33.65	8.1
A7	25 Jun 2019	805	18	<20	4e	<2	0.20	12.3	86.23	4.4	33.66	8.0
C4	03 Jun 2019	905	1	<20	<2	<2	0.10	18.1	79.28	9.1	33.70	8.2
C4	03 Jun 2019	905	3	<20	<2	<2	0.10	17.0	68.45	7.8	33.77	8.1
C4	03 Jun 2019	905	9	<2	<2	<2	1.00	13.0	82.05	5.3	33.63	7.8

Station	Date	Time	Depth	Total	Fecal	Entero	F:T	Temp	XMS	DO	Sal	pH
C4	10 Jun 2019	953	1	<2	<2	<2	1.00	18.5	77.72	9.4	33.69	8.2
C4	10 Jun 2019	953	3	<2	<2	<2	1.00	18.4	77.66	9.3	33.69	8.2
C4	10 Jun 2019	953	9	<2	<2	<2	1.00	17.6	77.70	8.0	33.76	8.2
C4	17 Jun 2019	923	1	<20	<2	<2	0.10	18.6	46.62	10.3	33.70	8.5
C4	17 Jun 2019	923	3	<20	<2	<2	0.10	18.4	45.46	9.4	33.75	8.5
C4	17 Jun 2019	923	9	<20	2e	<2	0.10	13.3	78.82	3.4	33.69	8.3
C4	25 Jun 2019	946	1	<2	<2	<2	1.00	18.1	78.18	6.7	33.71	8.2
C4	25 Jun 2019	946	3	<2	<2	<2	1.00	16.7	79.84	5.7	33.74	8.2
C4	25 Jun 2019	946	9	<2	<2	<2	1.00	13.9	81.10	3.3	33.69	8.1
C5	03 Jun 2019	939	1	<200	<2	<2	0.01	18.3	76.87	9.4	33.52	8.2
C5	03 Jun 2019	939	3	<20	<2	<2	0.10	18.2	80.50	8.9	33.73	8.2
C5	03 Jun 2019	939	9	2e	<2	<2	1.00	13.5	83.09	6.4	33.67	7.9
C5	10 Jun 2019	944	1	<2	<2	<2	1.00	18.9	74.79	11.0	33.70	8.3
C5	10 Jun 2019	944	3	<2	<2	<2	1.00	18.6	73.96	10.6	33.72	8.3
C5	10 Jun 2019	944	9	<2	<2	<2	1.00	14.3	83.45	6.3	33.66	7.9
C5	17 Jun 2019	912	1	<20	<2	<2	0.10	18.6	50.15	11.0	33.71	8.6
C5	17 Jun 2019	912	3	<2	<2	<2	1.00	18.4	50.78	9.1	33.73	8.6
C5	17 Jun 2019	912	9	<2	2e	<2	1.00	14.1	83.63	4.7	33.69	8.3
C5	25 Jun 2019	933	1	<20	<2	<2	0.10	18.5	79.31	6.8	33.72	8.2
C5	25 Jun 2019	933	3	2e	<2	<2	1.00	17.1	78.65	5.4	33.86	8.2
C5	25 Jun 2019	933	9	2e	<2	<2	1.00	12.8	86.05	4.4	33.64	8.1
C6	03 Jun 2019	928	1	<20	<2	<2	0.10	18.2	79.71	10.3	33.70	8.3
C6	03 Jun 2019	928	3	<200	<2	<2	0.01	18.0	79.14	9.4	33.72	8.2
C6	03 Jun 2019	928	9	<20	<2	<2	0.10	13.7	83.23	6.3	33.66	7.9
C6	10 Jun 2019	924	1	<2	<2	<2	1.00	18.6	65.82	11.4	33.69	8.3
C6	10 Jun 2019	924	3	<2	<2	<2	1.00	17.6	66.56	10.3	33.70	8.2
C6	10 Jun 2019	924	9	<2	<2	<2	1.00	15.1	80.77	7.1	33.62	7.9
C6	17 Jun 2019	901	1	<20	<2	<2	0.10	18.6	51.76	10.1	33.70	8.5
C6	17 Jun 2019	901	3	<20	<2	<2	0.10	18.0	54.57	8.5	33.74	8.5
C6	17 Jun 2019	901	9	<20	<2	<2	0.10	14.7	79.08	4.7	33.70	8.3
C6	25 Jun 2019	921	1	<2	<2	<2	1.00	18.5	80.42	7.5	33.72	8.3
C6	25 Jun 2019	921	3	<2	<2	<2	1.00	17.3	80.41	6.1	33.82	8.3
C6	25 Jun 2019	921	9	<2	<2	<2	1.00	12.8	85.90	3.5	33.65	8.1
C7	03 Jun 2019	855	1	<20	<2	<2	0.10	17.8	77.36	9.4	33.68	8.2
C7	03 Jun 2019	855	12	<2	<2	<2	1.00	12.2	81.86	5.7	33.62	7.8
C7	03 Jun 2019	855	18	<2	<2	<2	1.00	11.9	85.58	5.3	33.64	7.8
C7	10 Jun 2019	855	1	<2	<2	<2	1.00	17.9	67.54	10.2	33.67	8.2
C7	10 Jun 2019	855	12	<2	<2	<2	1.00	13.6	78.30	6.1	33.62	7.8
C7	10 Jun 2019	855	18	2e	<2	<2	1.00	13.1	85.58	5.2	33.60	7.7
C7	17 Jun 2019	829	1	<2	<2	<2	1.00	18.0	68.73	9.0	33.70	8.4
C7	17 Jun 2019	829	12	8e	<2	<2	0.25	12.9	80.10	4.7	33.66	8.2
C7	17 Jun 2019	829	18	10e	<2	2e	0.20	12.3	85.58	4.5	33.66	8.2
C7	25 Jun 2019	839	1	<2	<2	<2	1.00	17.1	71.23	7.6	33.66	8.2
C7	25 Jun 2019	839	12	4e	2e	<2	0.50	12.0	86.25	4.7	33.64	8.1
C7	25 Jun 2019	839	18	2e	<2	<2	1.00	11.8	87.21	4.6	33.66	8.1
C8	03 Jun 2019	907	1	<2	<2	<2	1.00	17.9	78.06	9.3	33.66	8.2

Station	Date	Time	Depth	Total	Fecal	Entero	F:T	Temp	XMS	DO	Sal	pH
C8	03 Jun 2019	907	12	<2	<2	<2	1.00	12.6	76.52	6.0	33.67	7.8
C8	03 Jun 2019	907	18	<2	<2	<2	1.00	11.9	85.10	5.1	33.65	7.8
C8	10 Jun 2019	905	1	<2	<2	<2	1.00	18.2	74.87	9.8	33.68	8.2
C8	10 Jun 2019	905	12	<2	<2	<2	1.00	13.7	77.74	6.2	33.62	7.8
C8	10 Jun 2019	905	18	4e	<2	<2	0.50	12.3	84.76	4.5	33.65	7.6
C8	17 Jun 2019	841	1	<20	<2	<2	0.10	17.9	61.99	8.9	33.69	8.4
C8	17 Jun 2019	841	12	<20	<2	<2	0.10	12.5	81.72	5.3	33.62	8.3
C8	17 Jun 2019	841	18	<20	<2	<2	0.10	12.1	84.98	4.3	33.66	8.2
C8	25 Jun 2019	858	1	2e	<2	<2	1.00	16.8	70.64	7.2	33.69	8.2
C8	25 Jun 2019	858	12	<2	<2	<2	1.00	12.1	86.24	4.6	33.70	8.1
C8	25 Jun 2019	858	18	8e	<2	<2	0.25	11.8	86.98	4.6	33.67	8.1

ns = not sampled

ND = no data

Table 3.9

Summary of visual observations made during the month for each PLOO kelp bed station by sample date.

Station	Date	Parameter	Value
A1	03 Jun 2019	Depth (m)	18
A1	03 Jun 2019	Arrive Time	806
A1	03 Jun 2019	Depart Time	810
A1	03 Jun 2019	Air Temp (C)	16
A1	03 Jun 2019	Weather	Drizzle
A1	03 Jun 2019	Visibility (mi)	1
A1	03 Jun 2019	Wind Speed (kts)	4
A1	03 Jun 2019	Wind Dir	W
A1	03 Jun 2019	Water Color	Greenish-Blue
A1	03 Jun 2019	Wave Ht Low (ft)	2
A1	03 Jun 2019	Wave Period (sec)	13
A1	03 Jun 2019	Sea State	Light chop
A1	03 Jun 2019	High Tide (ft)	3.78
A1	03 Jun 2019	High Tide Time	1023
A1	03 Jun 2019	Low Tide (ft)	1.64
A1	03 Jun 2019	Low Tide Time	1524
A1	03 Jun 2019	Comments	Kelp
A1	10 Jun 2019	Depth (m)	18
A1	10 Jun 2019	Arrive Time	753
A1	10 Jun 2019	Depart Time	804
A1	10 Jun 2019	Air Temp (C)	16
A1	10 Jun 2019	Weather	Fog
A1	10 Jun 2019	Visibility (mi)	< 1
A1	10 Jun 2019	Wind Speed (kts)	7
A1	10 Jun 2019	Wind Dir	N
A1	10 Jun 2019	Water Color	Brownish-Green
A1	10 Jun 2019	Wave Ht Low (ft)	3
A1	10 Jun 2019	Wave Period (sec)	9
A1	10 Jun 2019	Sea State	Calm
A1	10 Jun 2019	High Tide (ft)	4.22
A1	10 Jun 2019	High Tide Time	320
A1	10 Jun 2019	Low Tide (ft)	0.14
A1	10 Jun 2019	Low Tide Time	1020
A1	10 Jun 2019	Comments	Kelp
A1	17 Jun 2019	Depth (m)	20
A1	17 Jun 2019	Arrive Time	744
A1	17 Jun 2019	Depart Time	753
A1	17 Jun 2019	Air Temp (C)	16
A1	17 Jun 2019	Weather	Drizzle
A1	17 Jun 2019	Visibility (mi)	5
A1	17 Jun 2019	Wind Speed (kts)	6
A1	17 Jun 2019	Wind Dir	SW
A1	17 Jun 2019	Water Color	Brownish-Green
A1	17 Jun 2019	Wave Ht Low (ft)	3
A1	17 Jun 2019	Wave Period (sec)	16
A1	17 Jun 2019	Sea State	Calm
A1	17 Jun 2019	High Tide (ft)	3.77
A1	17 Jun 2019	High Tide Time	1037
A1	17 Jun 2019	Low Tide (ft)	1.9
A1	17 Jun 2019	Low Tide Time	1530
A1	17 Jun 2019	Comments	Kelp
A1	25 Jun 2019	Depth (m)	18
A1	25 Jun 2019	Arrive Time	750

Station	Date	Parameter	Value
A1	25 Jun 2019	Depart Time	754
A1	25 Jun 2019	Air Temp (C)	17
A1	25 Jun 2019	Weather	Partly Cloudy
A1	25 Jun 2019	Visibility (mi)	5
A1	25 Jun 2019	Wind Speed (kts)	2
A1	25 Jun 2019	Wind Dir	W
A1	25 Jun 2019	Water Color	Brownish-Green
A1	25 Jun 2019	Wave Ht Low (ft)	3
A1	25 Jun 2019	Wave Period (sec)	9
A1	25 Jun 2019	Sea State	Calm
A1	25 Jun 2019	High Tide (ft)	3.41
A1	25 Jun 2019	High Tide Time	311
A1	25 Jun 2019	Low Tide (ft)	1.11
A1	25 Jun 2019	Low Tide Time	1001
A1	25 Jun 2019	Comments	Kelp
A6	03 Jun 2019	Depth (m)	19
A6	03 Jun 2019	Arrive Time	832
A6	03 Jun 2019	Depart Time	844
A6	03 Jun 2019	Air Temp (C)	16
A6	03 Jun 2019	Weather	Drizzle
A6	03 Jun 2019	Visibility (mi)	1
A6	03 Jun 2019	Wind Speed (kts)	4
A6	03 Jun 2019	Wind Dir	SW
A6	03 Jun 2019	Water Color	Greenish-Blue
A6	03 Jun 2019	Wave Ht Low (ft)	2
A6	03 Jun 2019	Wave Period (sec)	13
A6	03 Jun 2019	Sea State	Light chop
A6	03 Jun 2019	High Tide (ft)	3.78
A6	03 Jun 2019	High Tide Time	1023
A6	03 Jun 2019	Low Tide (ft)	1.64
A6	03 Jun 2019	Low Tide Time	1524
A6	03 Jun 2019	Comments	Kelp; Kelp debris
A6	10 Jun 2019	Depth (m)	18
A6	10 Jun 2019	Arrive Time	830
A6	10 Jun 2019	Depart Time	846
A6	10 Jun 2019	Air Temp (C)	16
A6	10 Jun 2019	Weather	Fog
A6	10 Jun 2019	Visibility (mi)	< 1
A6	10 Jun 2019	Wind Speed (kts)	7
A6	10 Jun 2019	Wind Dir	N
A6	10 Jun 2019	Water Color	Brownish-Green
A6	10 Jun 2019	Wave Ht Low (ft)	3
A6	10 Jun 2019	Wave Period (sec)	9
A6	10 Jun 2019	Sea State	Calm
A6	10 Jun 2019	High Tide (ft)	4.22
A6	10 Jun 2019	High Tide Time	320
A6	10 Jun 2019	Low Tide (ft)	0.14
A6	10 Jun 2019	Low Tide Time	1020
A6	10 Jun 2019	Comments	Kelp; Station depth not reached with CTD; 4 attempts made; Low tide
A6	17 Jun 2019	Depth (m)	19
A6	17 Jun 2019	Arrive Time	812
A6	17 Jun 2019	Depart Time	816
A6	17 Jun 2019	Air Temp (C)	16
A6	17 Jun 2019	Weather	Drizzle
A6	17 Jun 2019	Visibility (mi)	10
A6	17 Jun 2019	Wind Speed (kts)	3
A6	17 Jun 2019	Wind Dir	SW

Station	Date	Parameter	Value
A6	17 Jun 2019	Water Color	Brownish-Green
A6	17 Jun 2019	Wave Ht Low (ft)	3
A6	17 Jun 2019	Wave Period (sec)	16
A6	17 Jun 2019	Sea State	Calm
A6	17 Jun 2019	High Tide (ft)	3.77
A6	17 Jun 2019	High Tide Time	1037
A6	17 Jun 2019	Low Tide (ft)	1.9
A6	17 Jun 2019	Low Tide Time	1530
A6	17 Jun 2019	Comments	Kelp
A6	25 Jun 2019	Depth (m)	18
A6	25 Jun 2019	Arrive Time	825
A6	25 Jun 2019	Depart Time	826
A6	25 Jun 2019	Air Temp (C)	17
A6	25 Jun 2019	Weather	Partly Cloudy
A6	25 Jun 2019	Visibility (mi)	5
A6	25 Jun 2019	Wind Speed (kts)	2
A6	25 Jun 2019	Wind Dir	NW
A6	25 Jun 2019	Water Color	Green
A6	25 Jun 2019	Wave Ht Low (ft)	3
A6	25 Jun 2019	Wave Period (sec)	9
A6	25 Jun 2019	Sea State	Calm
A6	25 Jun 2019	High Tide (ft)	3.41
A6	25 Jun 2019	High Tide Time	311
A6	25 Jun 2019	Low Tide (ft)	1.11
A6	25 Jun 2019	Low Tide Time	1001
A6	25 Jun 2019	Comments	Kelp
A7	03 Jun 2019	Depth (m)	18
A7	03 Jun 2019	Arrive Time	819
A7	03 Jun 2019	Depart Time	822
A7	03 Jun 2019	Air Temp (C)	16
A7	03 Jun 2019	Weather	Drizzle
A7	03 Jun 2019	Visibility (mi)	1
A7	03 Jun 2019	Wind Speed (kts)	4
A7	03 Jun 2019	Wind Dir	W
A7	03 Jun 2019	Water Color	Greenish-Blue
A7	03 Jun 2019	Wave Ht Low (ft)	2
A7	03 Jun 2019	Wave Period (sec)	13
A7	03 Jun 2019	Sea State	Light chop
A7	03 Jun 2019	High Tide (ft)	3.78
A7	03 Jun 2019	High Tide Time	1023
A7	03 Jun 2019	Low Tide (ft)	1.64
A7	03 Jun 2019	Low Tide Time	1524
A7	03 Jun 2019	Comments	Kelp; Kelp debris
A7	10 Jun 2019	Depth (m)	18
A7	10 Jun 2019	Arrive Time	811
A7	10 Jun 2019	Depart Time	828
A7	10 Jun 2019	Air Temp (C)	16
A7	10 Jun 2019	Weather	Fog
A7	10 Jun 2019	Visibility (mi)	< 1
A7	10 Jun 2019	Wind Speed (kts)	9
A7	10 Jun 2019	Wind Dir	N
A7	10 Jun 2019	Water Color	Brownish-Green
A7	10 Jun 2019	Wave Ht Low (ft)	3
A7	10 Jun 2019	Wave Period (sec)	9
A7	10 Jun 2019	Sea State	Calm
A7	10 Jun 2019	High Tide (ft)	4.22
A7	10 Jun 2019	High Tide Time	320
A7	10 Jun 2019	Low Tide (ft)	0.14

Station	Date	Parameter	Value
A7	10 Jun 2019	Low Tide Time	1020
A7	10 Jun 2019	Comments	Kelp
A7	17 Jun 2019	Depth (m)	19
A7	17 Jun 2019	Arrive Time	759
A7	17 Jun 2019	Depart Time	804
A7	17 Jun 2019	Air Temp (C)	16
A7	17 Jun 2019	Weather	Drizzle
A7	17 Jun 2019	Visibility (mi)	5
A7	17 Jun 2019	Wind Speed (kts)	4
A7	17 Jun 2019	Wind Dir	W
A7	17 Jun 2019	Water Color	Brownish-Green
A7	17 Jun 2019	Wave Ht Low (ft)	3
A7	17 Jun 2019	Wave Period (sec)	16
A7	17 Jun 2019	Sea State	Calm
A7	17 Jun 2019	High Tide (ft)	3.77
A7	17 Jun 2019	High Tide Time	1037
A7	17 Jun 2019	Low Tide (ft)	1.9
A7	17 Jun 2019	Low Tide Time	1530
A7	17 Jun 2019	Comments	Kelp; Boats
A7	25 Jun 2019	Depth (m)	20
A7	25 Jun 2019	Arrive Time	805
A7	25 Jun 2019	Depart Time	810
A7	25 Jun 2019	Air Temp (C)	17
A7	25 Jun 2019	Weather	Partly Cloudy
A7	25 Jun 2019	Visibility (mi)	5
A7	25 Jun 2019	Wind Speed (kts)	3
A7	25 Jun 2019	Wind Dir	W
A7	25 Jun 2019	Water Color	Reddish-Brown
A7	25 Jun 2019	Wave Ht Low (ft)	3
A7	25 Jun 2019	Wave Period (sec)	9
A7	25 Jun 2019	Sea State	Calm
A7	25 Jun 2019	High Tide (ft)	3.41
A7	25 Jun 2019	High Tide Time	311
A7	25 Jun 2019	Low Tide (ft)	1.11
A7	25 Jun 2019	Low Tide Time	1001
A7	25 Jun 2019	Comments	Kelp; Red tide
C4	03 Jun 2019	Depth (m)	12
C4	03 Jun 2019	Arrive Time	950
C4	03 Jun 2019	Depart Time	952
C4	03 Jun 2019	Air Temp (C)	16
C4	03 Jun 2019	Weather	Continuous layer of clouds
C4	03 Jun 2019	Visibility (mi)	4
C4	03 Jun 2019	Wind Speed (kts)	5
C4	03 Jun 2019	Wind Dir	NW
C4	03 Jun 2019	Water Color	Greenish-Blue
C4	03 Jun 2019	Wave Ht Low (ft)	2
C4	03 Jun 2019	Wave Period (sec)	13
C4	03 Jun 2019	Sea State	Light chop
C4	03 Jun 2019	High Tide (ft)	3.78
C4	03 Jun 2019	High Tide Time	1023
C4	03 Jun 2019	Low Tide (ft)	1.64
C4	03 Jun 2019	Low Tide Time	1524
C4	03 Jun 2019	Comments	Kelp
C4	10 Jun 2019	Depth (m)	11
C4	10 Jun 2019	Arrive Time	953
C4	10 Jun 2019	Depart Time	956
C4	10 Jun 2019	Air Temp (C)	17

Station	Date	Parameter	Value
C4	10 Jun 2019	Weather	Fog
C4	10 Jun 2019	Visibility (mi)	< 1
C4	10 Jun 2019	Wind Speed (kts)	11
C4	10 Jun 2019	Wind Dir	N
C4	10 Jun 2019	Water Color	Brownish-Green
C4	10 Jun 2019	Wave Ht Low (ft)	3
C4	10 Jun 2019	Wave Period (sec)	9
C4	10 Jun 2019	Sea State	Calm
C4	10 Jun 2019	High Tide (ft)	4.22
C4	10 Jun 2019	High Tide Time	320
C4	10 Jun 2019	Low Tide (ft)	0.14
C4	10 Jun 2019	Low Tide Time	1020
C4	10 Jun 2019	Comments	Kelp
C4	17 Jun 2019	Depth (m)	11
C4	17 Jun 2019	Arrive Time	923
C4	17 Jun 2019	Depart Time	926
C4	17 Jun 2019	Air Temp (C)	17
C4	17 Jun 2019	Weather	Drizzle
C4	17 Jun 2019	Visibility (mi)	10
C4	17 Jun 2019	Wind Speed (kts)	4
C4	17 Jun 2019	Wind Dir	W
C4	17 Jun 2019	Water Color	Brownish-Green
C4	17 Jun 2019	Wave Ht Low (ft)	3
C4	17 Jun 2019	Wave Period (sec)	16
C4	17 Jun 2019	Sea State	Calm
C4	17 Jun 2019	High Tide (ft)	3.77
C4	17 Jun 2019	High Tide Time	1037
C4	17 Jun 2019	Low Tide (ft)	1.9
C4	17 Jun 2019	Low Tide Time	1530
C4	17 Jun 2019	Comments	Kelp
C4	25 Jun 2019	Depth (m)	11
C4	25 Jun 2019	Arrive Time	946
C4	25 Jun 2019	Depart Time	950
C4	25 Jun 2019	Air Temp (C)	17
C4	25 Jun 2019	Weather	Partly Cloudy
C4	25 Jun 2019	Visibility (mi)	5
C4	25 Jun 2019	Wind Speed (kts)	9
C4	25 Jun 2019	Wind Dir	SW
C4	25 Jun 2019	Water Color	Green
C4	25 Jun 2019	Wave Ht Low (ft)	3
C4	25 Jun 2019	Wave Period (sec)	9
C4	25 Jun 2019	Sea State	Calm
C4	25 Jun 2019	High Tide (ft)	3.41
C4	25 Jun 2019	High Tide Time	311
C4	25 Jun 2019	Low Tide (ft)	1.11
C4	25 Jun 2019	Low Tide Time	1001
C4	25 Jun 2019	Comments	Kelp
C5	03 Jun 2019	Depth (m)	12
C5	03 Jun 2019	Arrive Time	939
C5	03 Jun 2019	Depart Time	940
C5	03 Jun 2019	Air Temp (C)	16
C5	03 Jun 2019	Weather	Continuous layer of clouds
C5	03 Jun 2019	Visibility (mi)	4
C5	03 Jun 2019	Wind Speed (kts)	3
C5	03 Jun 2019	Wind Dir	W
C5	03 Jun 2019	Water Color	Greenish-Blue
C5	03 Jun 2019	Wave Ht Low (ft)	2
C5	03 Jun 2019	Wave Period (sec)	13

Station	Date	Parameter	Value
C5	03 Jun 2019	Sea State	Light chop
C5	03 Jun 2019	High Tide (ft)	3.78
C5	03 Jun 2019	High Tide Time	1023
C5	03 Jun 2019	Low Tide (ft)	1.64
C5	03 Jun 2019	Low Tide Time	1524
C5	03 Jun 2019	Comments	none
C5	10 Jun 2019	Depth (m)	12
C5	10 Jun 2019	Arrive Time	944
C5	10 Jun 2019	Depart Time	948
C5	10 Jun 2019	Air Temp (C)	17
C5	10 Jun 2019	Weather	Fog
C5	10 Jun 2019	Visibility (mi)	< 1
C5	10 Jun 2019	Wind Speed (kts)	7
C5	10 Jun 2019	Wind Dir	N
C5	10 Jun 2019	Water Color	Brownish-Green
C5	10 Jun 2019	Wave Ht Low (ft)	3
C5	10 Jun 2019	Wave Period (sec)	9
C5	10 Jun 2019	Sea State	Calm
C5	10 Jun 2019	High Tide (ft)	4.22
C5	10 Jun 2019	High Tide Time	320
C5	10 Jun 2019	Low Tide (ft)	0.14
C5	10 Jun 2019	Low Tide Time	1020
C5	10 Jun 2019	Comments	Kelp; DO and pH unusually high
C5	17 Jun 2019	Depth (m)	12
C5	17 Jun 2019	Arrive Time	912
C5	17 Jun 2019	Depart Time	921
C5	17 Jun 2019	Air Temp (C)	17
C5	17 Jun 2019	Weather	Drizzle
C5	17 Jun 2019	Visibility (mi)	10
C5	17 Jun 2019	Wind Speed (kts)	6
C5	17 Jun 2019	Wind Dir	W
C5	17 Jun 2019	Water Color	Brownish-Green
C5	17 Jun 2019	Wave Ht Low (ft)	3
C5	17 Jun 2019	Wave Period (sec)	16
C5	17 Jun 2019	Sea State	Calm
C5	17 Jun 2019	High Tide (ft)	3.77
C5	17 Jun 2019	High Tide Time	1037
C5	17 Jun 2019	Low Tide (ft)	1.9
C5	17 Jun 2019	Low Tide Time	1530
C5	17 Jun 2019	Comments	Kelp
C5	25 Jun 2019	Depth (m)	11
C5	25 Jun 2019	Arrive Time	933
C5	25 Jun 2019	Depart Time	945
C5	25 Jun 2019	Air Temp (C)	17
C5	25 Jun 2019	Weather	Partly Cloudy
C5	25 Jun 2019	Visibility (mi)	5
C5	25 Jun 2019	Wind Speed (kts)	7
C5	25 Jun 2019	Wind Dir	W
C5	25 Jun 2019	Water Color	Green
C5	25 Jun 2019	Wave Ht Low (ft)	3
C5	25 Jun 2019	Wave Period (sec)	9
C5	25 Jun 2019	Sea State	Calm
C5	25 Jun 2019	High Tide (ft)	3.41
C5	25 Jun 2019	High Tide Time	311
C5	25 Jun 2019	Low Tide (ft)	1.11
C5	25 Jun 2019	Low Tide Time	1001
C5	25 Jun 2019	Comments	Kelp

Station	Date	Parameter	Value
C6	03 Jun 2019	Depth (m)	10
C6	03 Jun 2019	Arrive Time	928
C6	03 Jun 2019	Depart Time	938
C6	03 Jun 2019	Air Temp (C)	16
C6	03 Jun 2019	Weather	Continuous layer of clouds
C6	03 Jun 2019	Visibility (mi)	4
C6	03 Jun 2019	Wind Speed (kts)	1
C6	03 Jun 2019	Wind Dir	W
C6	03 Jun 2019	Water Color	Greenish-Blue
C6	03 Jun 2019	Wave Ht Low (ft)	2
C6	03 Jun 2019	Wave Period (sec)	13
C6	03 Jun 2019	Sea State	Light chop
C6	03 Jun 2019	High Tide (ft)	3.78
C6	03 Jun 2019	High Tide Time	1023
C6	03 Jun 2019	Low Tide (ft)	1.64
C6	03 Jun 2019	Low Tide Time	1524
C6	03 Jun 2019	Comments	Kelp
C6	10 Jun 2019	Depth (m)	9
C6	10 Jun 2019	Arrive Time	924
C6	10 Jun 2019	Depart Time	940
C6	10 Jun 2019	Air Temp (C)	17
C6	10 Jun 2019	Weather	Fog
C6	10 Jun 2019	Visibility (mi)	< 1
C6	10 Jun 2019	Wind Speed (kts)	10
C6	10 Jun 2019	Wind Dir	N
C6	10 Jun 2019	Water Color	Brownish-Green
C6	10 Jun 2019	Wave Ht Low (ft)	3
C6	10 Jun 2019	Wave Period (sec)	9
C6	10 Jun 2019	Sea State	Calm
C6	10 Jun 2019	High Tide (ft)	4.22
C6	10 Jun 2019	High Tide Time	320
C6	10 Jun 2019	Low Tide (ft)	0.14
C6	10 Jun 2019	Low Tide Time	1020
C6	10 Jun 2019	Comments	Kelp; pH and DO unusually high; Same result after multiple attempts
C6	17 Jun 2019	Depth (m)	9
C6	17 Jun 2019	Arrive Time	901
C6	17 Jun 2019	Depart Time	905
C6	17 Jun 2019	Air Temp (C)	16
C6	17 Jun 2019	Weather	Drizzle
C6	17 Jun 2019	Visibility (mi)	10
C6	17 Jun 2019	Wind Speed (kts)	4
C6	17 Jun 2019	Wind Dir	SW
C6	17 Jun 2019	Water Color	Brownish-Green
C6	17 Jun 2019	Wave Ht Low (ft)	3
C6	17 Jun 2019	Wave Period (sec)	16
C6	17 Jun 2019	Sea State	Calm
C6	17 Jun 2019	High Tide (ft)	3.77
C6	17 Jun 2019	High Tide Time	1037
C6	17 Jun 2019	Low Tide (ft)	1.9
C6	17 Jun 2019	Low Tide Time	1530
C6	17 Jun 2019	Comments	Kelp
C6	25 Jun 2019	Depth (m)	10
C6	25 Jun 2019	Arrive Time	921
C6	25 Jun 2019	Depart Time	924
C6	25 Jun 2019	Air Temp (C)	17
C6	25 Jun 2019	Weather	Partly Cloudy
C6	25 Jun 2019	Visibility (mi)	5

Station	Date	Parameter	Value
C6	25 Jun 2019	Wind Speed (kts)	5
C6	25 Jun 2019	Wind Dir	W
C6	25 Jun 2019	Water Color	Green
C6	25 Jun 2019	Wave Ht Low (ft)	3
C6	25 Jun 2019	Wave Period (sec)	9
C6	25 Jun 2019	Sea State	Calm
C6	25 Jun 2019	High Tide (ft)	3.41
C6	25 Jun 2019	High Tide Time	311
C6	25 Jun 2019	Low Tide (ft)	1.11
C6	25 Jun 2019	Low Tide Time	1001
C6	25 Jun 2019	Comments	Kelp
C7	03 Jun 2019	Depth (m)	18
C7	03 Jun 2019	Arrive Time	855
C7	03 Jun 2019	Depart Time	859
C7	03 Jun 2019	Air Temp (C)	16
C7	03 Jun 2019	Weather	Continuous layer of clouds
C7	03 Jun 2019	Visibility (mi)	3
C7	03 Jun 2019	Wind Speed (kts)	3
C7	03 Jun 2019	Wind Dir	W
C7	03 Jun 2019	Water Color	Greenish-Blue
C7	03 Jun 2019	Wave Ht Low (ft)	2
C7	03 Jun 2019	Wave Period (sec)	13
C7	03 Jun 2019	Sea State	Light chop
C7	03 Jun 2019	High Tide (ft)	3.78
C7	03 Jun 2019	High Tide Time	1023
C7	03 Jun 2019	Low Tide (ft)	1.64
C7	03 Jun 2019	Low Tide Time	1524
C7	03 Jun 2019	Comments	Kelp; Kelp debris
C7	10 Jun 2019	Depth (m)	18
C7	10 Jun 2019	Arrive Time	855
C7	10 Jun 2019	Depart Time	858
C7	10 Jun 2019	Air Temp (C)	16
C7	10 Jun 2019	Weather	Fog
C7	10 Jun 2019	Visibility (mi)	< 1
C7	10 Jun 2019	Wind Speed (kts)	9
C7	10 Jun 2019	Wind Dir	NW
C7	10 Jun 2019	Water Color	Brownish-Green
C7	10 Jun 2019	Wave Ht Low (ft)	3
C7	10 Jun 2019	Wave Period (sec)	9
C7	10 Jun 2019	Sea State	Calm
C7	10 Jun 2019	High Tide (ft)	4.22
C7	10 Jun 2019	High Tide Time	320
C7	10 Jun 2019	Low Tide (ft)	0.14
C7	10 Jun 2019	Low Tide Time	1020
C7	10 Jun 2019	Comments	Kelp
C7	17 Jun 2019	Depth (m)	19
C7	17 Jun 2019	Arrive Time	829
C7	17 Jun 2019	Depart Time	833
C7	17 Jun 2019	Air Temp (C)	16
C7	17 Jun 2019	Weather	Drizzle
C7	17 Jun 2019	Visibility (mi)	10
C7	17 Jun 2019	Wind Speed (kts)	5
C7	17 Jun 2019	Wind Dir	W
C7	17 Jun 2019	Water Color	Brownish-Green
C7	17 Jun 2019	Wave Ht Low (ft)	3
C7	17 Jun 2019	Wave Period (sec)	16
C7	17 Jun 2019	Sea State	Calm
C7	17 Jun 2019	High Tide (ft)	3.77

Station	Date	Parameter	Value
C7	17 Jun 2019	High Tide Time	1037
C7	17 Jun 2019	Low Tide (ft)	1.9
C7	17 Jun 2019	Low Tide Time	1530
C7	17 Jun 2019	Comments	none
C7	25 Jun 2019	Depth (m)	19
C7	25 Jun 2019	Arrive Time	839
C7	25 Jun 2019	Depart Time	848
C7	25 Jun 2019	Air Temp (C)	17
C7	25 Jun 2019	Weather	Partly Cloudy
C7	25 Jun 2019	Visibility (mi)	5
C7	25 Jun 2019	Wind Speed (kts)	4
C7	25 Jun 2019	Wind Dir	SW
C7	25 Jun 2019	Water Color	Green
C7	25 Jun 2019	Wave Ht Low (ft)	3
C7	25 Jun 2019	Wave Period (sec)	9
C7	25 Jun 2019	Sea State	Calm
C7	25 Jun 2019	High Tide (ft)	3.41
C7	25 Jun 2019	High Tide Time	311
C7	25 Jun 2019	Low Tide (ft)	1.11
C7	25 Jun 2019	Low Tide Time	1001
C7	25 Jun 2019	Comments	Kelp
C8	03 Jun 2019	Depth (m)	20
C8	03 Jun 2019	Arrive Time	907
C8	03 Jun 2019	Depart Time	910
C8	03 Jun 2019	Air Temp (C)	16
C8	03 Jun 2019	Weather	Continuous layer of clouds
C8	03 Jun 2019	Visibility (mi)	3
C8	03 Jun 2019	Wind Speed (kts)	6
C8	03 Jun 2019	Wind Dir	SW
C8	03 Jun 2019	Water Color	Greenish-Blue
C8	03 Jun 2019	Wave Ht Low (ft)	2
C8	03 Jun 2019	Wave Period (sec)	13
C8	03 Jun 2019	Sea State	Light chop
C8	03 Jun 2019	High Tide (ft)	3.78
C8	03 Jun 2019	High Tide Time	1023
C8	03 Jun 2019	Low Tide (ft)	1.64
C8	03 Jun 2019	Low Tide Time	1524
C8	03 Jun 2019	Comments	none
C8	10 Jun 2019	Depth (m)	19
C8	10 Jun 2019	Arrive Time	905
C8	10 Jun 2019	Depart Time	908
C8	10 Jun 2019	Air Temp (C)	17
C8	10 Jun 2019	Weather	Fog
C8	10 Jun 2019	Visibility (mi)	< 1
C8	10 Jun 2019	Wind Speed (kts)	10
C8	10 Jun 2019	Wind Dir	NW
C8	10 Jun 2019	Water Color	Brownish-Green
C8	10 Jun 2019	Wave Ht Low (ft)	3
C8	10 Jun 2019	Wave Period (sec)	9
C8	10 Jun 2019	Sea State	Calm
C8	10 Jun 2019	High Tide (ft)	4.22
C8	10 Jun 2019	High Tide Time	320
C8	10 Jun 2019	Low Tide (ft)	0.14
C8	10 Jun 2019	Low Tide Time	1020
C8	10 Jun 2019	Comments	Kelp
C8	17 Jun 2019	Depth (m)	20
C8	17 Jun 2019	Arrive Time	841

Station	Date	Parameter	Value
C8	17 Jun 2019	Depart Time	845
C8	17 Jun 2019	Air Temp (C)	16
C8	17 Jun 2019	Weather	Drizzle
C8	17 Jun 2019	Visibility (mi)	10
C8	17 Jun 2019	Wind Speed (kts)	5
C8	17 Jun 2019	Wind Dir	SW
C8	17 Jun 2019	Water Color	Brownish-Green
C8	17 Jun 2019	Wave Ht Low (ft)	3
C8	17 Jun 2019	Wave Period (sec)	16
C8	17 Jun 2019	Sea State	Calm
C8	17 Jun 2019	High Tide (ft)	3.77
C8	17 Jun 2019	High Tide Time	1037
C8	17 Jun 2019	Low Tide (ft)	1.9
C8	17 Jun 2019	Low Tide Time	1530
C8	17 Jun 2019	Comments	none
C8	25 Jun 2019	Depth (m)	19
C8	25 Jun 2019	Arrive Time	858
C8	25 Jun 2019	Depart Time	902
C8	25 Jun 2019	Air Temp (C)	17
C8	25 Jun 2019	Weather	Partly Cloudy
C8	25 Jun 2019	Visibility (mi)	5
C8	25 Jun 2019	Wind Speed (kts)	7
C8	25 Jun 2019	Wind Dir	SW
C8	25 Jun 2019	Water Color	Green
C8	25 Jun 2019	Wave Ht Low (ft)	3
C8	25 Jun 2019	Wave Period (sec)	9
C8	25 Jun 2019	Sea State	Calm
C8	25 Jun 2019	High Tide (ft)	3.41
C8	25 Jun 2019	High Tide Time	311
C8	25 Jun 2019	Low Tide (ft)	1.11
C8	25 Jun 2019	Low Tide Time	1001
C8	25 Jun 2019	Comments	Kelp

Table 3.10

Summary of CTD profile data from the PLOO kelp stations for each sample date.

Station	Date	Depth (m)	Temp (°C)	XMS (‰)	DO (mg/L)	Sal (ppt)	pH	Dens (σ -t)	Chlor (μ g/L)
A1	03 Jun 2019	1	16.96	82.33	8.7	33.67	8.1	24.5	1.37
A1	03 Jun 2019	2	16.63	82.14	8.3	33.72	8.1	24.6	1.60
A1	03 Jun 2019	3	14.69	78.07	8.2	33.73	8.0	25.1	3.23
A1	03 Jun 2019	4	13.81	74.00	7.8	33.64	7.9	25.2	4.98
A1	03 Jun 2019	5	13.57	72.52	7.2	33.62	7.9	25.2	6.20
A1	03 Jun 2019	6	13.48	74.99	6.8	33.62	7.9	25.2	5.52
A1	03 Jun 2019	7	13.27	77.32	6.5	33.63	7.8	25.3	4.70
A1	03 Jun 2019	8	12.81	78.85	6.1	33.64	7.8	25.4	4.66
A1	03 Jun 2019	9	12.43	76.47	5.9	33.60	7.8	25.4	5.50
A1	03 Jun 2019	10	12.42	76.84	5.8	33.60	7.8	25.4	5.46
A1	03 Jun 2019	11	12.31	78.99	5.8	33.60	7.8	25.4	4.29
A1	03 Jun 2019	12	12.21	80.34	5.7	33.61	7.8	25.5	3.60
A1	03 Jun 2019	13	12.12	81.94	5.7	33.62	7.8	25.5	2.86
A1	03 Jun 2019	14	12.07	83.57	5.6	33.62	7.8	25.5	2.18
A1	03 Jun 2019	15	12.05	83.84	5.5	33.62	7.8	25.5	1.91
A1	03 Jun 2019	16	12.03	84.00	5.5	33.63	7.8	25.5	1.78
A1	03 Jun 2019	17	11.95	84.35	5.5	33.63	7.8	25.5	1.57
A1	03 Jun 2019	18	11.94	84.79	5.5	33.63	7.8	25.5	1.55
A1	10 Jun 2019	1	17.47	72.23	9.1	33.67	8.1	24.4	4.45
A1	10 Jun 2019	2	17.36	72.30	9.0	33.69	8.1	24.4	5.11
A1	10 Jun 2019	3	17.22	72.39	8.8	33.69	8.1	24.5	5.24
A1	10 Jun 2019	4	16.96	73.38	8.5	33.69	8.1	24.5	5.16
A1	10 Jun 2019	5	16.73	73.53	8.2	33.68	8.1	24.6	5.41
A1	10 Jun 2019	6	16.27	73.08	7.8	33.69	8.0	24.7	5.49
A1	10 Jun 2019	7	15.51	72.88	6.9	33.71	8.0	24.9	5.88
A1	10 Jun 2019	8	14.08	73.40	5.8	33.74	7.9	25.2	5.17
A1	10 Jun 2019	9	13.40	76.16	5.2	33.65	7.7	25.3	5.21
A1	10 Jun 2019	10	13.37	76.82	5.2	33.62	7.7	25.3	5.11
A1	10 Jun 2019	11	13.33	77.05	5.2	33.62	7.7	25.3	5.08
A1	10 Jun 2019	12	13.31	76.98	5.2	33.62	7.7	25.3	5.11
A1	10 Jun 2019	13	13.28	76.99	5.2	33.63	7.7	25.3	5.27
A1	10 Jun 2019	14	13.21	76.73	5.1	33.63	7.7	25.3	5.42
A1	10 Jun 2019	15	13.18	76.85	5.0	33.63	7.7	25.3	5.56
A1	10 Jun 2019	16	13.05	76.85	5.0	33.65	7.7	25.3	5.86
A1	10 Jun 2019	17	13.02	76.24	4.9	33.64	7.7	25.3	5.89
A1	10 Jun 2019	18	12.86	75.68	4.7	33.65	7.6	25.4	6.17
A1	10 Jun 2019	19	12.75	75.96	4.5	33.65	7.6	25.4	6.10
A1	17 Jun 2019	1	17.84	68.24	8.8	33.70	8.2	24.3	8.78
A1	17 Jun 2019	2	17.80	68.18	8.5	33.70	8.2	24.3	8.56
A1	17 Jun 2019	3	17.25	68.83	7.6	33.76	8.2	24.5	6.61
A1	17 Jun 2019	4	15.70	75.46	6.5	33.80	8.2	24.9	4.00
A1	17 Jun 2019	5	14.53	78.01	5.7	33.74	8.2	25.1	3.61
A1	17 Jun 2019	6	13.60	79.44	5.2	33.70	8.2	25.3	3.29
A1	17 Jun 2019	7	13.40	81.24	4.9	33.66	8.2	25.3	2.79
A1	17 Jun 2019	8	12.65	82.71	4.6	33.71	8.2	25.5	2.28
A1	17 Jun 2019	9	12.27	83.58	4.4	33.68	8.1	25.5	1.93
A1	17 Jun 2019	10	12.10	85.54	4.4	33.65	8.1	25.5	1.30
A1	17 Jun 2019	11	11.97	86.80	4.4	33.69	8.1	25.6	1.00
A1	17 Jun 2019	12	11.64	87.11	4.4	33.68	8.1	25.6	0.56
A1	17 Jun 2019	13	11.48	87.23	4.5	33.68	8.1	25.7	0.41
A1	17 Jun 2019	14	11.61	87.03	4.4	33.67	8.1	25.6	0.38
A1	17 Jun 2019	15	11.46	86.78	4.4	33.69	8.1	25.7	0.35
A1	17 Jun 2019	16	11.48	86.90	4.4	33.69	8.1	25.7	0.35
A1	17 Jun 2019	17	11.48	86.78	4.4	33.69	8.0	25.7	0.36

Station	Date	Depth (m)	Temp (°C)	XMS (‰)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (µg/L)
A1	17 Jun 2019	18	11.47	84.39	4.4	33.70	8.0	25.7	0.32
A1	25 Jun 2019	1	15.44	70.42	6.0	33.69	8.0	24.9	7.75
A1	25 Jun 2019	2	14.97	72.37	5.7	33.72	8.0	25.0	7.38
A1	25 Jun 2019	3	14.64	73.85	5.5	33.69	8.0	25.0	6.20
A1	25 Jun 2019	4	14.48	75.69	5.4	33.67	8.0	25.1	5.68
A1	25 Jun 2019	5	14.45	75.77	5.4	33.67	8.0	25.1	5.18
A1	25 Jun 2019	6	14.41	75.34	5.3	33.67	8.0	25.1	4.93
A1	25 Jun 2019	7	14.31	75.21	5.2	33.67	8.0	25.1	4.98
A1	25 Jun 2019	8	14.25	75.56	5.0	33.67	8.0	25.1	5.24
A1	25 Jun 2019	9	14.20	75.40	4.9	33.67	8.0	25.1	5.27
A1	25 Jun 2019	10	14.20	75.19	4.9	33.67	7.9	25.1	5.34
A1	25 Jun 2019	11	14.17	74.84	4.9	33.67	7.9	25.1	5.63
A1	25 Jun 2019	12	13.95	74.56	5.0	33.68	7.9	25.2	5.77
A1	25 Jun 2019	13	13.58	77.18	5.2	33.68	7.9	25.3	5.27
A1	25 Jun 2019	14	13.34	79.61	5.1	33.67	7.9	25.3	4.33
A1	25 Jun 2019	15	13.07	82.08	4.9	33.67	7.9	25.4	3.20
A1	25 Jun 2019	16	12.57	83.50	4.5	33.67	7.9	25.4	2.29
A1	25 Jun 2019	17	11.97	86.76	4.5	33.73	7.9	25.6	1.40
A1	25 Jun 2019	18	11.36	86.26	4.5	33.69	7.9	25.7	0.83
A6	03 Jun 2019	1	17.80	79.32	10.2	33.68	8.2	24.3	2.30
A6	03 Jun 2019	2	17.84	79.69	10.2	33.68	8.2	24.3	2.41
A6	03 Jun 2019	3	17.84	80.64	10.3	33.68	8.2	24.3	2.53
A6	03 Jun 2019	4	17.57	79.99	9.8	33.72	8.2	24.4	2.29
A6	03 Jun 2019	5	16.34	77.57	9.1	33.82	8.1	24.8	2.65
A6	03 Jun 2019	6	15.40	77.05	8.3	33.76	8.0	24.9	3.66
A6	03 Jun 2019	7	14.45	76.70	7.8	33.67	8.0	25.1	4.12
A6	03 Jun 2019	8	14.19	77.67	7.2	33.65	7.9	25.1	3.96
A6	03 Jun 2019	9	13.44	80.86	6.5	33.67	7.9	25.3	3.02
A6	03 Jun 2019	10	13.07	82.56	6.2	33.62	7.8	25.3	2.21
A6	03 Jun 2019	11	12.64	83.79	5.9	33.64	7.8	25.4	1.80
A6	03 Jun 2019	12	12.52	84.30	5.8	33.64	7.8	25.4	1.66
A6	03 Jun 2019	13	12.31	84.66	5.6	33.67	7.8	25.5	1.62
A6	03 Jun 2019	14	12.23	84.90	5.5	33.64	7.8	25.5	1.36
A6	03 Jun 2019	15	12.00	85.16	5.3	33.77	7.8	25.6	1.77
A6	03 Jun 2019	16	11.84	85.42	5.3	33.69	7.8	25.6	1.37
A6	03 Jun 2019	17	11.79	85.43	5.2	33.66	7.8	25.6	0.87
A6	03 Jun 2019	18	11.77	83.72	5.2	33.65	7.8	25.6	0.82
A6	10 Jun 2019	1	17.49	68.74	9.9	33.67	8.2	24.4	5.97
A6	10 Jun 2019	2	17.47	69.06	9.8	33.67	8.2	24.4	6.21
A6	10 Jun 2019	3	17.33	67.20	9.6	33.68	8.2	24.4	6.30
A6	10 Jun 2019	4	17.21	64.32	9.5	33.67	8.1	24.4	6.65
A6	10 Jun 2019	5	17.23	57.96	9.6	33.66	8.1	24.4	6.60
A6	10 Jun 2019	6	17.30	62.89	9.5	33.66	8.1	24.4	6.67
A6	10 Jun 2019	7	17.04	66.86	8.9	33.71	8.1	24.5	6.25
A6	10 Jun 2019	8	16.13	68.47	8.1	33.72	8.1	24.7	5.32
A6	10 Jun 2019	9	15.56	68.72	7.6	33.69	8.0	24.8	4.71
A6	10 Jun 2019	10	15.01	70.97	7.3	33.67	8.0	24.9	4.41
A6	10 Jun 2019	11	14.66	73.74	6.9	33.65	7.9	25.0	4.23
A6	10 Jun 2019	12	14.42	74.98	6.5	33.65	7.9	25.1	4.06
A6	10 Jun 2019	13	14.12	76.26	6.2	33.65	7.8	25.1	3.46
A6	10 Jun 2019	14	13.74	77.87	5.9	33.64	7.8	25.2	2.99
A6	10 Jun 2019	15	13.60	79.20	5.7	33.63	7.8	25.2	2.80
A6	10 Jun 2019	16	13.39	79.98	5.4	33.64	7.8	25.3	2.01
A6	17 Jun 2019	1	18.32	58.31	9.6	33.70	8.5	24.2	15.36
A6	17 Jun 2019	2	18.32	58.86	9.6	33.70	8.5	24.2	14.99
A6	17 Jun 2019	3	18.32	59.47	9.2	33.71	8.5	24.2	14.19
A6	17 Jun 2019	4	18.03	65.11	8.4	33.73	8.5	24.3	10.05

Station	Date	Depth (m)	Temp (°C)	XMS (‰)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (µg/L)
A6	17 Jun 2019	5	16.70	72.61	7.3	33.80	8.4	24.7	6.16
A6	17 Jun 2019	6	15.34	74.78	6.0	33.75	8.4	24.9	4.10
A6	17 Jun 2019	7	13.97	80.60	5.2	33.75	8.4	25.2	2.73
A6	17 Jun 2019	8	13.25	82.76	4.8	33.71	8.4	25.3	2.08
A6	17 Jun 2019	9	12.86	83.95	4.7	33.67	8.3	25.4	1.77
A6	17 Jun 2019	10	12.73	84.06	4.7	33.65	8.3	25.4	1.65
A6	17 Jun 2019	11	12.66	84.19	4.7	33.65	8.3	25.4	1.53
A6	17 Jun 2019	12	12.56	84.35	4.6	33.65	8.3	25.4	1.44
A6	17 Jun 2019	13	12.42	85.23	4.5	33.66	8.3	25.5	1.15
A6	17 Jun 2019	14	12.07	85.82	4.3	33.69	8.2	25.6	0.74
A6	17 Jun 2019	15	11.92	86.38	4.2	33.68	8.2	25.6	0.49
A6	17 Jun 2019	16	11.82	86.37	4.2	33.68	8.2	25.6	0.41
A6	17 Jun 2019	17	11.83	86.25	4.2	33.68	8.2	25.6	0.39
A6	17 Jun 2019	18	11.82	86.31	4.2	33.68	8.2	25.6	0.37
A6	17 Jun 2019	19	11.79	84.39	4.1	33.69	8.2	25.6	0.34
A6	25 Jun 2019	1	17.28	74.14	7.0	33.70	8.2	24.4	4.10
A6	25 Jun 2019	2	17.19	73.84	6.9	33.71	8.2	24.5	4.32
A6	25 Jun 2019	3	16.85	74.15	6.5	33.72	8.2	24.6	4.34
A6	25 Jun 2019	4	15.54	75.59	5.9	33.76	8.2	24.9	3.83
A6	25 Jun 2019	5	14.74	77.32	5.5	33.70	8.2	25.0	3.00
A6	25 Jun 2019	6	14.15	79.43	5.3	33.70	8.2	25.1	2.43
A6	25 Jun 2019	7	13.83	81.22	5.2	33.68	8.2	25.2	1.95
A6	25 Jun 2019	8	13.41	82.37	5.0	33.68	8.2	25.3	1.63
A6	25 Jun 2019	9	12.95	83.74	4.9	33.67	8.2	25.4	1.31
A6	25 Jun 2019	10	12.77	84.61	4.8	33.66	8.1	25.4	1.04
A6	25 Jun 2019	11	12.59	85.34	4.7	33.66	8.1	25.4	0.87
A6	25 Jun 2019	12	12.45	85.78	4.7	33.65	8.1	25.5	0.79
A6	25 Jun 2019	13	12.44	86.00	4.7	33.66	8.1	25.5	0.71
A6	25 Jun 2019	14	12.34	86.32	4.7	33.66	8.1	25.5	0.66
A6	25 Jun 2019	15	12.30	86.48	4.7	33.66	8.1	25.5	0.62
A6	25 Jun 2019	16	12.23	86.43	4.6	33.67	8.1	25.5	0.60
A6	25 Jun 2019	17	12.22	86.48	4.6	33.66	8.1	25.5	0.60
A6	25 Jun 2019	18	12.07	86.60	4.5	33.68	8.1	25.6	0.56
A6	25 Jun 2019	19	11.74	86.51	4.5	33.69	8.1	25.6	0.55
A6	25 Jun 2019	20	11.68	86.72	4.5	33.67	8.1	25.6	0.48
A7	03 Jun 2019	1	17.63	82.52	9.2	33.67	8.2	24.3	1.29
A7	03 Jun 2019	2	17.55	82.40	9.1	33.68	8.1	24.4	1.36
A7	03 Jun 2019	3	17.05	82.04	9.0	33.71	8.1	24.5	1.69
A7	03 Jun 2019	4	16.45	80.86	8.6	33.71	8.1	24.7	2.35
A7	03 Jun 2019	5	14.81	78.85	8.3	33.73	8.1	25.0	3.00
A7	03 Jun 2019	6	14.02	77.67	7.6	33.65	8.0	25.1	3.56
A7	03 Jun 2019	7	13.54	77.82	6.8	33.65	7.9	25.2	3.68
A7	03 Jun 2019	8	12.75	78.80	6.2	33.63	7.8	25.4	3.69
A7	03 Jun 2019	9	12.46	78.95	5.9	33.60	7.8	25.4	3.89
A7	03 Jun 2019	10	12.32	79.74	5.9	33.59	7.8	25.4	3.80
A7	03 Jun 2019	11	12.27	79.74	5.8	33.59	7.8	25.4	3.64
A7	03 Jun 2019	12	12.28	76.39	5.8	33.60	7.8	25.4	3.52
A7	03 Jun 2019	13	12.25	79.28	5.7	33.61	7.8	25.5	3.18
A7	03 Jun 2019	14	12.15	82.84	5.5	33.62	7.8	25.5	2.03
A7	03 Jun 2019	15	12.12	84.27	5.4	33.64	7.8	25.5	1.57
A7	03 Jun 2019	16	11.95	84.97	5.3	33.66	7.8	25.6	1.21
A7	03 Jun 2019	17	11.75	85.24	5.2	33.67	7.7	25.6	0.95
A7	03 Jun 2019	18	11.55	85.05	5.1	33.66	7.7	25.6	0.81
A7	03 Jun 2019	19	11.52	84.71	5.0	33.66	7.7	25.6	0.73
A7	10 Jun 2019	1	17.87	76.26	9.4	33.68	8.2	24.3	2.92
A7	10 Jun 2019	2	17.70	75.91	9.4	33.69	8.2	24.3	3.74
A7	10 Jun 2019	3	17.59	74.85	9.4	33.68	8.2	24.4	4.27
A7	10 Jun 2019	4	17.47	74.63	9.4	33.68	8.2	24.4	4.42

Station	Date	Depth (m)	Temp (°C)	XMS (‰)	DO (mg/L)	Sal (ppt)	pH	Dens (σ -t)	Chlor (μ g/L)
A7	10 Jun 2019	5	17.31	72.55	9.5	33.67	8.1	24.4	4.58
A7	10 Jun 2019	6	17.19	72.67	9.5	33.67	8.1	24.4	4.84
A7	10 Jun 2019	7	17.10	71.91	9.5	33.66	8.1	24.5	4.91
A7	10 Jun 2019	8	17.04	72.14	9.4	33.66	8.1	24.5	4.82
A7	10 Jun 2019	9	16.95	72.32	9.3	33.66	8.1	24.5	4.66
A7	10 Jun 2019	10	16.82	72.59	9.1	33.66	8.1	24.5	4.49
A7	10 Jun 2019	11	16.41	72.94	8.3	33.70	8.1	24.7	4.47
A7	10 Jun 2019	12	15.30	73.31	7.3	33.70	8.0	24.9	4.57
A7	10 Jun 2019	13	14.91	74.62	6.8	33.66	7.9	25.0	4.36
A7	10 Jun 2019	14	14.67	76.82	6.6	33.64	7.9	25.0	3.70
A7	10 Jun 2019	15	14.54	78.58	6.5	33.65	7.9	25.0	3.08
A7	10 Jun 2019	16	14.34	80.93	6.2	33.64	7.8	25.1	2.33
A7	10 Jun 2019	17	14.07	80.91	5.9	33.66	7.8	25.1	2.33
A7	10 Jun 2019	18	13.91	82.03	5.8	33.65	7.8	25.2	2.07
A7	10 Jun 2019	19	13.63	83.51	5.7	33.64	7.8	25.2	1.87
A7	17 Jun 2019	1	18.26	65.40	9.6	33.69	8.4	24.2	10.56
A7	17 Jun 2019	2	18.26	65.79	9.5	33.70	8.4	24.2	10.80
A7	17 Jun 2019	3	18.17	67.44	8.7	33.70	8.4	24.2	9.84
A7	17 Jun 2019	4	17.26	71.66	7.5	33.79	8.4	24.5	6.91
A7	17 Jun 2019	5	15.66	74.98	6.2	33.79	8.3	24.9	4.64
A7	17 Jun 2019	6	14.29	78.55	5.3	33.74	8.3	25.1	3.75
A7	17 Jun 2019	7	13.59	80.62	4.9	33.69	8.3	25.3	3.37
A7	17 Jun 2019	8	13.08	81.10	4.7	33.68	8.3	25.4	2.96
A7	17 Jun 2019	9	12.90	83.79	4.7	33.66	8.2	25.4	2.29
A7	17 Jun 2019	10	12.76	84.68	4.6	33.66	8.2	25.4	1.60
A7	17 Jun 2019	11	12.38	85.80	4.4	33.68	8.2	25.5	1.02
A7	17 Jun 2019	12	12.04	86.19	4.2	33.68	8.2	25.6	0.64
A7	17 Jun 2019	13	11.81	86.27	4.2	33.69	8.2	25.6	0.45
A7	17 Jun 2019	14	11.57	86.29	4.2	33.69	8.1	25.7	0.36
A7	17 Jun 2019	15	11.52	86.04	4.2	33.68	8.1	25.7	0.34
A7	17 Jun 2019	16	11.51	86.04	4.2	33.68	8.1	25.7	0.36
A7	17 Jun 2019	17	11.51	86.17	4.2	33.69	8.1	25.7	0.39
A7	17 Jun 2019	18	11.53	86.09	4.2	33.69	8.1	25.7	0.35
A7	25 Jun 2019	1	16.60	63.68	6.6	33.67	8.1	24.6	11.86
A7	25 Jun 2019	2	16.61	63.58	6.5	33.68	8.1	24.6	12.06
A7	25 Jun 2019	3	16.38	63.25	6.3	33.72	8.1	24.7	11.91
A7	25 Jun 2019	4	15.83	63.60	6.0	33.70	8.1	24.8	10.75
A7	25 Jun 2019	5	15.55	65.93	5.8	33.70	8.1	24.8	9.20
A7	25 Jun 2019	6	14.87	69.70	5.5	33.71	8.1	25.0	7.52
A7	25 Jun 2019	7	14.14	73.14	5.4	33.68	8.1	25.1	6.69
A7	25 Jun 2019	8	14.02	73.84	5.5	33.65	8.1	25.1	6.52
A7	25 Jun 2019	9	13.97	74.04	5.5	33.64	8.1	25.1	6.29
A7	25 Jun 2019	10	13.87	74.20	5.6	33.65	8.1	25.2	6.06
A7	25 Jun 2019	11	13.77	75.85	5.7	33.64	8.1	25.2	5.41
A7	25 Jun 2019	12	13.68	77.21	5.6	33.65	8.1	25.2	5.03
A7	25 Jun 2019	13	13.50	77.61	5.4	33.65	8.1	25.2	4.83
A7	25 Jun 2019	14	13.43	78.09	5.3	33.65	8.1	25.3	4.34
A7	25 Jun 2019	15	13.20	79.43	5.1	33.66	8.1	25.3	3.75
A7	25 Jun 2019	16	12.92	82.19	4.8	33.68	8.0	25.4	2.60
A7	25 Jun 2019	17	12.52	85.33	4.6	33.68	8.0	25.5	1.44
A7	25 Jun 2019	18	12.32	86.23	4.4	33.66	8.0	25.5	0.92
A7	25 Jun 2019	19	11.78	86.48	4.4	33.70	8.0	25.6	0.61
C4	03 Jun 2019	1	18.08	79.28	9.1	33.70	8.2	24.3	1.21
C4	03 Jun 2019	2	17.99	72.60	8.6	33.71	8.2	24.3	1.29
C4	03 Jun 2019	3	16.98	68.45	7.8	33.77	8.1	24.6	1.43
C4	03 Jun 2019	4	15.48	70.05	7.0	33.74	8.1	24.9	1.43
C4	03 Jun 2019	5	14.29	75.81	6.4	33.70	8.0	25.1	1.31
C4	03 Jun 2019	6	13.83	79.35	6.2	33.65	7.9	25.2	1.18

Station	Date	Depth (m)	Temp (°C)	XMS (‰)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (µg/L)
C4	03 Jun 2019	7	13.54	81.29	6.0	33.63	7.9	25.2	1.14
C4	03 Jun 2019	8	13.29	82.12	5.8	33.63	7.8	25.3	1.18
C4	03 Jun 2019	9	13.04	82.05	5.3	33.63	7.8	25.3	0.95
C4	03 Jun 2019	10	12.94	80.06	5.2	33.62	7.8	25.3	0.83
C4	03 Jun 2019	11	12.93	78.06	5.1	33.62	7.8	25.3	0.76
C4	03 Jun 2019	12	12.91	76.61	5.0	33.63	7.8	25.3	0.63
C4	10 Jun 2019	1	18.47	77.72	9.4	33.69	8.2	24.2	1.12
C4	10 Jun 2019	2	18.47	77.75	9.4	33.69	8.2	24.2	1.18
C4	10 Jun 2019	3	18.44	77.66	9.3	33.69	8.2	24.2	1.28
C4	10 Jun 2019	4	18.42	77.51	9.3	33.69	8.2	24.2	1.44
C4	10 Jun 2019	5	18.42	77.32	9.3	33.69	8.2	24.2	1.66
C4	10 Jun 2019	6	18.39	77.18	9.2	33.69	8.2	24.2	1.75
C4	10 Jun 2019	7	18.39	77.00	9.2	33.69	8.2	24.2	1.88
C4	10 Jun 2019	8	18.31	77.02	8.8	33.70	8.2	24.2	1.99
C4	10 Jun 2019	9	17.64	77.70	8.0	33.76	8.2	24.4	1.92
C4	10 Jun 2019	10	16.69	80.31	7.1	33.68	8.0	24.6	1.40
C4	10 Jun 2019	11	15.96	80.54	7.1	33.65	7.9	24.7	0.97
C4	17 Jun 2019	1	18.59	46.62	10.3	33.70	8.5	24.1	18.37
C4	17 Jun 2019	2	18.57	46.18	10.1	33.71	8.5	24.1	20.10
C4	17 Jun 2019	3	18.39	45.46	9.4	33.75	8.5	24.2	19.70
C4	17 Jun 2019	4	17.54	49.61	8.0	33.76	8.5	24.4	15.08
C4	17 Jun 2019	5	16.89	65.73	6.9	33.73	8.5	24.6	8.08
C4	17 Jun 2019	6	16.31	71.09	6.0	33.77	8.4	24.7	4.86
C4	17 Jun 2019	7	15.04	75.88	4.9	33.83	8.4	25.1	3.55
C4	17 Jun 2019	8	13.76	76.87	3.9	33.79	8.3	25.3	2.28
C4	17 Jun 2019	9	13.32	78.82	3.4	33.69	8.3	25.3	1.28
C4	17 Jun 2019	10	13.15	78.69	3.2	33.66	8.2	25.3	0.74
C4	17 Jun 2019	11	13.15	77.26	3.1	33.66	8.2	25.3	0.56
C4	25 Jun 2019	1	18.12	78.18	6.7	33.71	8.2	24.3	1.87
C4	25 Jun 2019	2	17.72	77.94	6.3	33.75	8.2	24.4	1.70
C4	25 Jun 2019	3	16.69	79.84	5.7	33.74	8.2	24.6	1.19
C4	25 Jun 2019	4	15.97	80.42	5.3	33.70	8.2	24.8	0.89
C4	25 Jun 2019	5	15.40	82.17	4.9	33.71	8.2	24.9	0.63
C4	25 Jun 2019	6	14.80	82.70	4.3	33.70	8.1	25.0	0.49
C4	25 Jun 2019	7	14.34	81.72	3.8	33.69	8.1	25.1	0.49
C4	25 Jun 2019	8	14.11	80.16	3.5	33.67	8.1	25.1	0.78
C4	25 Jun 2019	9	13.90	81.10	3.3	33.69	8.1	25.2	0.64
C4	25 Jun 2019	10	13.62	82.98	3.0	33.68	8.1	25.2	0.47
C4	25 Jun 2019	11	13.39	82.06	2.9	33.65	8.1	25.3	0.36
C5	03 Jun 2019	1	18.34	76.87	9.4	33.52	8.2	24.1	0.87
C5	03 Jun 2019	2	18.33	79.96	9.3	33.66	8.2	24.2	0.90
C5	03 Jun 2019	3	18.17	80.50	8.9	33.73	8.2	24.3	0.98
C5	03 Jun 2019	4	16.77	81.04	8.3	33.81	8.2	24.7	0.98
C5	03 Jun 2019	5	15.82	81.88	7.7	33.76	8.1	24.8	1.03
C5	03 Jun 2019	6	14.89	82.94	7.1	33.73	8.0	25.0	0.98
C5	03 Jun 2019	7	14.44	83.57	6.7	33.68	8.0	25.1	0.86
C5	03 Jun 2019	8	14.05	83.39	6.5	33.67	7.9	25.2	0.83
C5	03 Jun 2019	9	13.49	83.09	6.4	33.67	7.9	25.3	0.88
C5	03 Jun 2019	10	13.30	83.20	6.2	33.63	7.9	25.3	0.98
C5	03 Jun 2019	11	13.20	82.62	6.1	33.63	7.9	25.3	0.96
C5	10 Jun 2019	1	18.87	74.79	11.0	33.70	8.3	24.1	1.96
C5	10 Jun 2019	2	18.83	74.49	10.9	33.70	8.3	24.1	2.23
C5	10 Jun 2019	3	18.63	73.96	10.6	33.72	8.3	24.1	3.12
C5	10 Jun 2019	4	18.25	73.68	10.0	33.71	8.2	24.2	3.74
C5	10 Jun 2019	5	17.04	75.32	8.8	33.76	8.2	24.6	3.59
C5	10 Jun 2019	6	15.64	76.97	7.7	33.70	8.0	24.8	3.27

Station	Date	Depth (m)	Temp (°C)	XMS (‰)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (µg/L)
C5	10 Jun 2019	7	15.21	80.57	7.0	33.69	8.0	24.9	2.65
C5	10 Jun 2019	8	14.52	82.30	6.5	33.64	7.9	25.0	1.85
C5	10 Jun 2019	9	14.32	83.45	6.3	33.66	7.9	25.1	1.37
C5	10 Jun 2019	10	14.14	84.45	6.2	33.63	7.8	25.1	0.90
C5	17 Jun 2019	1	18.64	50.15	11.0	33.71	8.6	24.1	16.38
C5	17 Jun 2019	2	18.64	49.74	10.6	33.71	8.6	24.1	16.96
C5	17 Jun 2019	3	18.40	50.78	9.1	33.73	8.6	24.2	15.19
C5	17 Jun 2019	4	17.31	64.25	7.5	33.79	8.5	24.5	9.68
C5	17 Jun 2019	5	15.84	76.26	6.3	33.76	8.5	24.8	4.77
C5	17 Jun 2019	6	15.76	69.98	5.8	33.66	8.4	24.8	2.50
C5	17 Jun 2019	7	14.81	81.28	5.4	33.74	8.4	25.0	1.66
C5	17 Jun 2019	8	14.35	80.62	5.0	33.67	8.4	25.1	1.14
C5	17 Jun 2019	9	14.14	83.63	4.7	33.69	8.3	25.1	0.93
C5	17 Jun 2019	10	13.66	82.98	4.5	33.69	8.3	25.2	0.70
C5	17 Jun 2019	11	13.33	79.60	4.4	33.67	8.3	25.3	0.62
C5	25 Jun 2019	1	18.46	79.31	6.8	33.72	8.2	24.2	1.43
C5	25 Jun 2019	2	18.48	77.38	6.4	33.72	8.2	24.2	1.51
C5	25 Jun 2019	3	17.14	78.65	5.4	33.86	8.2	24.6	1.74
C5	25 Jun 2019	4	14.89	79.65	4.9	33.80	8.2	25.1	2.20
C5	25 Jun 2019	5	14.18	80.42	4.7	33.70	8.2	25.1	2.10
C5	25 Jun 2019	6	13.83	82.34	4.4	33.67	8.2	25.2	1.45
C5	25 Jun 2019	7	13.42	84.45	4.3	33.68	8.2	25.3	0.91
C5	25 Jun 2019	8	12.94	85.06	4.4	33.66	8.1	25.4	0.67
C5	25 Jun 2019	9	12.78	86.05	4.4	33.64	8.1	25.4	0.48
C5	25 Jun 2019	10	12.75	86.30	4.3	33.64	8.1	25.4	0.37
C5	25 Jun 2019	11	12.75	86.24	4.3	33.64	8.1	25.4	0.32
C6	03 Jun 2019	1	18.25	79.71	10.3	33.70	8.3	24.2	1.47
C6	03 Jun 2019	2	18.22	79.62	10.1	33.70	8.3	24.2	1.58
C6	03 Jun 2019	3	18.01	79.14	9.4	33.72	8.2	24.3	1.75
C6	03 Jun 2019	4	17.32	79.32	8.4	33.73	8.2	24.5	1.52
C6	03 Jun 2019	5	16.30	80.48	8.1	33.73	8.1	24.7	1.11
C6	03 Jun 2019	6	15.82	82.03	8.1	33.70	8.1	24.8	0.86
C6	03 Jun 2019	7	14.94	83.28	7.9	33.68	8.1	25.0	0.81
C6	03 Jun 2019	8	14.49	83.71	7.1	33.69	8.0	25.1	0.74
C6	03 Jun 2019	9	13.70	83.23	6.3	33.66	7.9	25.2	0.60
C6	03 Jun 2019	10	14.32	82.80	7.0	33.66	8.0	25.1	0.68
C6	10 Jun 2019	1	18.59	65.82	11.4	33.69	8.3	24.1	6.87
C6	10 Jun 2019	2	18.27	66.05	11.2	33.75	8.3	24.2	7.18
C6	10 Jun 2019	3	17.62	66.56	10.3	33.70	8.2	24.4	7.26
C6	10 Jun 2019	4	17.09	68.23	9.5	33.73	8.2	24.5	6.70
C6	10 Jun 2019	5	16.59	73.42	8.9	33.70	8.1	24.6	5.99
C6	10 Jun 2019	6	16.28	69.94	8.4	33.70	8.1	24.7	4.90
C6	10 Jun 2019	7	15.86	75.22	7.9	33.64	8.1	24.7	3.91
C6	10 Jun 2019	8	15.60	80.47	7.5	33.70	8.1	24.8	3.28
C6	10 Jun 2019	9	15.13	80.77	7.1	33.62	7.9	24.9	2.52
C6	17 Jun 2019	1	18.60	51.76	10.1	33.70	8.5	24.1	16.19
C6	17 Jun 2019	2	18.56	52.11	9.6	33.71	8.5	24.1	16.30
C6	17 Jun 2019	3	18.00	54.57	8.5	33.74	8.5	24.3	11.39
C6	17 Jun 2019	4	17.51	66.70	7.5	33.73	8.5	24.4	5.26
C6	17 Jun 2019	5	16.69	72.95	6.5	33.75	8.5	24.6	3.70
C6	17 Jun 2019	6	15.90	76.41	5.8	33.73	8.4	24.8	3.00
C6	17 Jun 2019	7	15.33	77.65	5.3	33.70	8.4	24.9	3.14
C6	17 Jun 2019	8	14.67	79.08	4.7	33.70	8.3	25.0	3.62
C6	25 Jun 2019	1	18.51	80.42	7.5	33.72	8.3	24.2	1.14
C6	25 Jun 2019	2	18.46	79.87	7.2	33.73	8.3	24.2	1.29

Station	Date	Depth (m)	Temp (°C)	XMS (‰)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (µg/L)
C6	25 Jun 2019	3	17.33	80.41	6.1	33.82	8.3	24.5	1.39
C6	25 Jun 2019	4	15.37	81.71	5.0	33.81	8.3	25.0	1.05
C6	25 Jun 2019	5	14.32	84.06	4.6	33.74	8.2	25.1	0.67
C6	25 Jun 2019	6	13.69	85.24	4.5	33.70	8.2	25.2	0.53
C6	25 Jun 2019	7	13.32	85.64	4.4	33.67	8.2	25.3	0.46
C6	25 Jun 2019	8	13.01	85.74	4.0	33.67	8.2	25.4	0.36
C6	25 Jun 2019	9	12.85	85.90	3.5	33.65	8.1	25.4	0.28
C7	03 Jun 2019	1	17.83	77.36	9.4	33.68	8.2	24.3	3.35
C7	03 Jun 2019	2	17.85	77.42	9.5	33.68	8.2	24.3	3.43
C7	03 Jun 2019	3	17.84	77.45	9.4	33.68	8.2	24.3	3.59
C7	03 Jun 2019	4	17.64	78.06	9.0	33.70	8.2	24.4	3.60
C7	03 Jun 2019	5	16.59	77.76	8.8	33.75	8.2	24.7	3.26
C7	03 Jun 2019	6	14.90	76.33	8.5	33.73	8.1	25.0	3.38
C7	03 Jun 2019	7	14.29	75.65	7.9	33.66	8.0	25.1	3.77
C7	03 Jun 2019	8	13.48	76.53	6.8	33.68	7.9	25.3	4.10
C7	03 Jun 2019	9	12.86	79.85	6.0	33.67	7.9	25.4	3.53
C7	03 Jun 2019	10	12.42	80.48	5.7	33.63	7.8	25.4	3.32
C7	03 Jun 2019	11	12.26	80.74	5.7	33.62	7.8	25.5	3.43
C7	03 Jun 2019	12	12.19	81.86	5.7	33.62	7.8	25.5	3.17
C7	03 Jun 2019	13	12.12	83.16	5.6	33.62	7.8	25.5	2.68
C7	03 Jun 2019	14	12.00	84.76	5.5	33.63	7.8	25.5	2.00
C7	03 Jun 2019	15	11.95	85.18	5.4	33.63	7.8	25.5	1.54
C7	03 Jun 2019	16	11.92	85.58	5.4	33.63	7.8	25.5	1.28
C7	03 Jun 2019	17	11.92	85.68	5.4	33.64	7.8	25.5	1.19
C7	03 Jun 2019	18	11.91	85.58	5.3	33.64	7.8	25.5	1.02
C7	10 Jun 2019	1	17.90	67.54	10.2	33.67	8.2	24.3	6.04
C7	10 Jun 2019	2	17.91	67.49	10.0	33.67	8.2	24.3	6.53
C7	10 Jun 2019	3	17.39	66.83	9.2	33.71	8.2	24.4	7.03
C7	10 Jun 2019	4	16.44	69.62	8.2	33.71	8.1	24.7	5.79
C7	10 Jun 2019	5	15.67	72.63	7.5	33.70	8.0	24.8	5.11
C7	10 Jun 2019	6	14.97	74.60	7.1	33.69	8.0	25.0	4.83
C7	10 Jun 2019	7	14.49	75.83	6.8	33.66	7.9	25.1	4.57
C7	10 Jun 2019	8	14.04	76.62	6.5	33.63	7.8	25.1	4.50
C7	10 Jun 2019	9	13.98	76.89	6.4	33.62	7.8	25.1	4.10
C7	10 Jun 2019	10	13.68	77.80	6.2	33.62	7.8	25.2	4.17
C7	10 Jun 2019	11	13.65	78.25	6.1	33.61	7.8	25.2	3.94
C7	10 Jun 2019	12	13.62	78.30	6.1	33.62	7.8	25.2	3.86
C7	10 Jun 2019	13	13.59	78.58	6.0	33.62	7.8	25.2	3.66
C7	10 Jun 2019	14	13.58	78.84	5.9	33.62	7.8	25.2	3.62
C7	10 Jun 2019	15	13.55	78.97	5.8	33.63	7.8	25.2	3.65
C7	10 Jun 2019	16	13.13	81.10	5.5	33.66	7.8	25.3	2.71
C7	10 Jun 2019	17	12.87	84.54	5.2	33.64	7.7	25.4	1.67
C7	10 Jun 2019	18	13.06	85.58	5.2	33.60	7.7	25.3	1.41
C7	17 Jun 2019	1	17.98	68.73	9.0	33.70	8.4	24.3	8.66
C7	17 Jun 2019	2	17.98	68.99	9.0	33.70	8.4	24.3	9.20
C7	17 Jun 2019	3	17.97	68.90	8.8	33.70	8.4	24.3	9.59
C7	17 Jun 2019	4	17.77	69.67	8.4	33.73	8.4	24.4	8.31
C7	17 Jun 2019	5	17.08	72.13	7.6	33.74	8.4	24.5	5.90
C7	17 Jun 2019	6	16.42	76.81	6.8	33.74	8.4	24.7	4.43
C7	17 Jun 2019	7	15.37	78.44	6.1	33.76	8.4	24.9	3.80
C7	17 Jun 2019	8	14.30	79.70	5.3	33.75	8.3	25.2	3.40
C7	17 Jun 2019	9	13.62	80.10	4.9	33.71	8.3	25.3	3.48
C7	17 Jun 2019	10	13.21	79.77	4.8	33.68	8.3	25.3	3.73
C7	17 Jun 2019	11	12.96	79.90	4.7	33.64	8.3	25.3	4.01
C7	17 Jun 2019	12	12.90	80.10	4.7	33.66	8.2	25.4	3.96
C7	17 Jun 2019	13	12.62	81.43	4.7	33.66	8.2	25.4	3.60
C7	17 Jun 2019	14	12.43	83.56	4.7	33.65	8.2	25.5	2.72
C7	17 Jun 2019	15	12.38	84.26	4.7	33.65	8.2	25.5	2.02

Station	Date	Depth (m)	Temp (°C)	XMS (‰)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (µg/L)
C7	17 Jun 2019	16	12.30	85.00	4.6	33.66	8.2	25.5	1.59
C7	17 Jun 2019	17	12.26	85.56	4.5	33.66	8.2	25.5	1.29
C7	17 Jun 2019	18	12.26	85.58	4.5	33.66	8.2	25.5	0.94
C7	17 Jun 2019	19	12.27	85.46	4.5	33.66	8.2	25.5	0.84
C7	25 Jun 2019	1	17.07	71.23	7.6	33.66	8.2	24.5	4.21
C7	25 Jun 2019	2	16.99	72.14	7.4	33.69	8.2	24.5	4.10
C7	25 Jun 2019	3	16.61	75.06	6.7	33.69	8.2	24.6	2.84
C7	25 Jun 2019	4	15.33	78.34	5.6	33.76	8.2	24.9	2.23
C7	25 Jun 2019	5	14.21	79.91	4.7	33.71	8.2	25.1	1.91
C7	25 Jun 2019	6	12.84	82.90	4.6	33.71	8.2	25.4	1.75
C7	25 Jun 2019	7	12.57	83.87	4.6	33.65	8.2	25.4	1.74
C7	25 Jun 2019	8	12.51	84.24	4.6	33.63	8.1	25.4	1.66
C7	25 Jun 2019	9	12.26	84.68	4.7	33.66	8.1	25.5	1.58
C7	25 Jun 2019	10	12.11	84.77	4.7	33.63	8.1	25.5	1.24
C7	25 Jun 2019	11	11.98	85.43	4.7	33.64	8.1	25.5	0.94
C7	25 Jun 2019	12	11.97	86.25	4.7	33.64	8.1	25.5	0.85
C7	25 Jun 2019	13	11.87	86.34	4.7	33.65	8.1	25.6	0.68
C7	25 Jun 2019	14	11.84	86.74	4.7	33.65	8.1	25.6	0.58
C7	25 Jun 2019	15	11.83	87.15	4.6	33.65	8.1	25.6	0.52
C7	25 Jun 2019	16	11.83	87.28	4.6	33.65	8.1	25.6	0.50
C7	25 Jun 2019	17	11.84	87.30	4.6	33.66	8.1	25.6	0.45
C7	25 Jun 2019	18	11.84	87.21	4.6	33.66	8.1	25.6	0.45
C8	03 Jun 2019	1	17.91	78.06	9.3	33.66	8.2	24.3	2.91
C8	03 Jun 2019	2	17.63	77.77	9.1	33.70	8.2	24.4	3.19
C8	03 Jun 2019	3	16.50	77.19	9.2	33.72	8.2	24.6	3.48
C8	03 Jun 2019	4	15.68	75.23	9.0	33.68	8.1	24.8	3.93
C8	03 Jun 2019	5	15.15	74.72	8.8	33.64	8.1	24.9	3.98
C8	03 Jun 2019	6	14.69	74.77	8.4	33.64	8.0	25.0	4.23
C8	03 Jun 2019	7	14.54	74.62	8.3	33.62	8.0	25.0	4.38
C8	03 Jun 2019	8	14.37	74.45	8.1	33.63	8.0	25.0	4.61
C8	03 Jun 2019	9	14.11	74.20	8.0	33.62	8.0	25.1	4.80
C8	03 Jun 2019	10	13.64	74.19	7.4	33.65	8.0	25.2	5.23
C8	03 Jun 2019	11	13.32	74.53	6.7	33.62	7.9	25.3	5.44
C8	03 Jun 2019	12	12.62	76.52	6.0	33.67	7.8	25.4	5.13
C8	03 Jun 2019	13	12.27	78.31	5.6	33.63	7.8	25.5	4.54
C8	03 Jun 2019	14	12.03	81.91	5.4	33.63	7.8	25.5	3.33
C8	03 Jun 2019	15	12.00	84.10	5.3	33.63	7.8	25.5	2.01
C8	03 Jun 2019	16	11.96	84.45	5.2	33.64	7.8	25.5	1.48
C8	03 Jun 2019	17	11.89	84.94	5.1	33.64	7.8	25.6	1.24
C8	03 Jun 2019	18	11.87	85.10	5.1	33.65	7.8	25.6	1.11
C8	03 Jun 2019	19	11.87	84.26	5.1	33.65	7.8	25.6	1.03
C8	10 Jun 2019	1	18.23	74.87	9.8	33.68	8.2	24.2	2.34
C8	10 Jun 2019	2	18.07	72.95	9.6	33.70	8.2	24.3	2.96
C8	10 Jun 2019	3	16.97	70.95	9.3	33.72	8.2	24.5	3.96
C8	10 Jun 2019	4	16.13	72.70	8.5	33.71	8.1	24.7	3.81
C8	10 Jun 2019	5	15.28	74.70	7.7	33.70	8.0	24.9	3.96
C8	10 Jun 2019	6	14.68	75.34	7.3	33.66	8.0	25.0	4.13
C8	10 Jun 2019	7	14.32	75.52	7.0	33.64	7.9	25.1	4.09
C8	10 Jun 2019	8	14.02	76.14	6.8	33.63	7.9	25.1	4.09
C8	10 Jun 2019	9	13.91	76.89	6.6	33.62	7.8	25.1	3.95
C8	10 Jun 2019	10	13.85	77.06	6.5	33.62	7.8	25.1	3.94
C8	10 Jun 2019	11	13.78	77.23	6.4	33.62	7.8	25.2	3.91
C8	10 Jun 2019	12	13.72	77.74	6.2	33.62	7.8	25.2	3.78
C8	10 Jun 2019	13	13.59	78.53	6.0	33.63	7.8	25.2	3.46
C8	10 Jun 2019	14	13.45	79.53	5.8	33.63	7.8	25.2	3.24
C8	10 Jun 2019	15	13.22	80.19	5.5	33.66	7.8	25.3	2.81
C8	10 Jun 2019	16	12.68	83.20	5.1	33.66	7.7	25.4	1.95
C8	10 Jun 2019	17	12.44	84.44	4.8	33.64	7.7	25.4	1.45

Station	Date	Depth (m)	Temp (°C)	XMS (‰)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (µg/L)
C8	10 Jun 2019	18	12.29	84.76	4.5	33.65	7.6	25.5	1.12
C8	10 Jun 2019	19	12.13	85.28	4.5	33.63	7.6	25.5	0.88
C8	17 Jun 2019	1	17.89	61.99	8.9	33.69	8.4	24.3	11.64
C8	17 Jun 2019	2	17.89	61.83	8.9	33.69	8.4	24.3	11.87
C8	17 Jun 2019	3	17.87	64.42	8.8	33.69	8.4	24.3	11.42
C8	17 Jun 2019	4	17.81	64.57	8.2	33.70	8.4	24.3	9.34
C8	17 Jun 2019	5	16.87	70.55	7.3	33.78	8.4	24.6	6.62
C8	17 Jun 2019	6	15.56	76.35	6.4	33.76	8.4	24.9	4.83
C8	17 Jun 2019	7	14.08	77.94	5.6	33.75	8.4	25.2	3.92
C8	17 Jun 2019	8	13.37	81.13	5.6	33.63	8.3	25.3	3.26
C8	17 Jun 2019	9	13.25	81.74	5.7	33.62	8.3	25.3	3.03
C8	17 Jun 2019	10	13.05	81.66	5.6	33.63	8.3	25.3	3.11
C8	17 Jun 2019	11	12.66	81.90	5.4	33.63	8.3	25.4	3.16
C8	17 Jun 2019	12	12.51	81.72	5.3	33.62	8.3	25.4	3.36
C8	17 Jun 2019	13	12.46	81.63	5.2	33.62	8.2	25.4	3.50
C8	17 Jun 2019	14	12.41	81.94	5.2	33.62	8.2	25.4	3.44
C8	17 Jun 2019	15	12.39	82.26	5.1	33.62	8.2	25.4	3.27
C8	17 Jun 2019	16	12.35	82.49	5.0	33.63	8.2	25.5	3.12
C8	17 Jun 2019	17	12.22	84.33	4.6	33.66	8.2	25.5	2.15
C8	17 Jun 2019	18	12.12	84.98	4.3	33.66	8.2	25.5	1.23
C8	17 Jun 2019	19	12.10	84.66	4.2	33.66	8.2	25.5	0.80
C8	17 Jun 2019	20	12.12	84.41	4.3	33.66	8.2	25.5	0.66
C8	25 Jun 2019	1	16.83	70.64	7.2	33.69	8.2	24.5	5.22
C8	25 Jun 2019	2	15.32	74.19	6.0	33.77	8.2	25.0	4.27
C8	25 Jun 2019	3	14.33	79.56	5.4	33.68	8.2	25.1	3.64
C8	25 Jun 2019	4	13.54	81.33	5.1	33.70	8.2	25.3	3.39
C8	25 Jun 2019	5	13.30	82.74	5.0	33.65	8.2	25.3	2.92
C8	25 Jun 2019	6	13.20	83.02	5.0	33.64	8.1	25.3	2.64
C8	25 Jun 2019	7	13.20	82.98	5.0	33.64	8.1	25.3	2.66
C8	25 Jun 2019	8	13.08	83.14	4.9	33.66	8.1	25.3	2.69
C8	25 Jun 2019	9	12.82	83.52	4.8	33.66	8.1	25.4	2.43
C8	25 Jun 2019	10	12.55	84.18	4.7	33.67	8.1	25.4	2.00
C8	25 Jun 2019	11	12.41	85.29	4.7	33.64	8.1	25.5	1.49
C8	25 Jun 2019	12	12.09	86.24	4.6	33.70	8.1	25.6	1.22
C8	25 Jun 2019	13	11.88	86.83	4.6	33.66	8.1	25.6	0.80
C8	25 Jun 2019	14	11.83	86.89	4.6	33.66	8.1	25.6	0.65
C8	25 Jun 2019	15	11.80	86.96	4.6	33.66	8.1	25.6	0.55
C8	25 Jun 2019	16	11.79	86.98	4.6	33.66	8.1	25.6	0.54
C8	25 Jun 2019	17	11.78	86.98	4.6	33.66	8.1	25.6	0.53
C8	25 Jun 2019	18	11.78	86.98	4.6	33.67	8.1	25.6	0.51
C8	25 Jun 2019	19	11.78	86.96	4.6	33.67	8.0	25.6	0.51

NA = not available

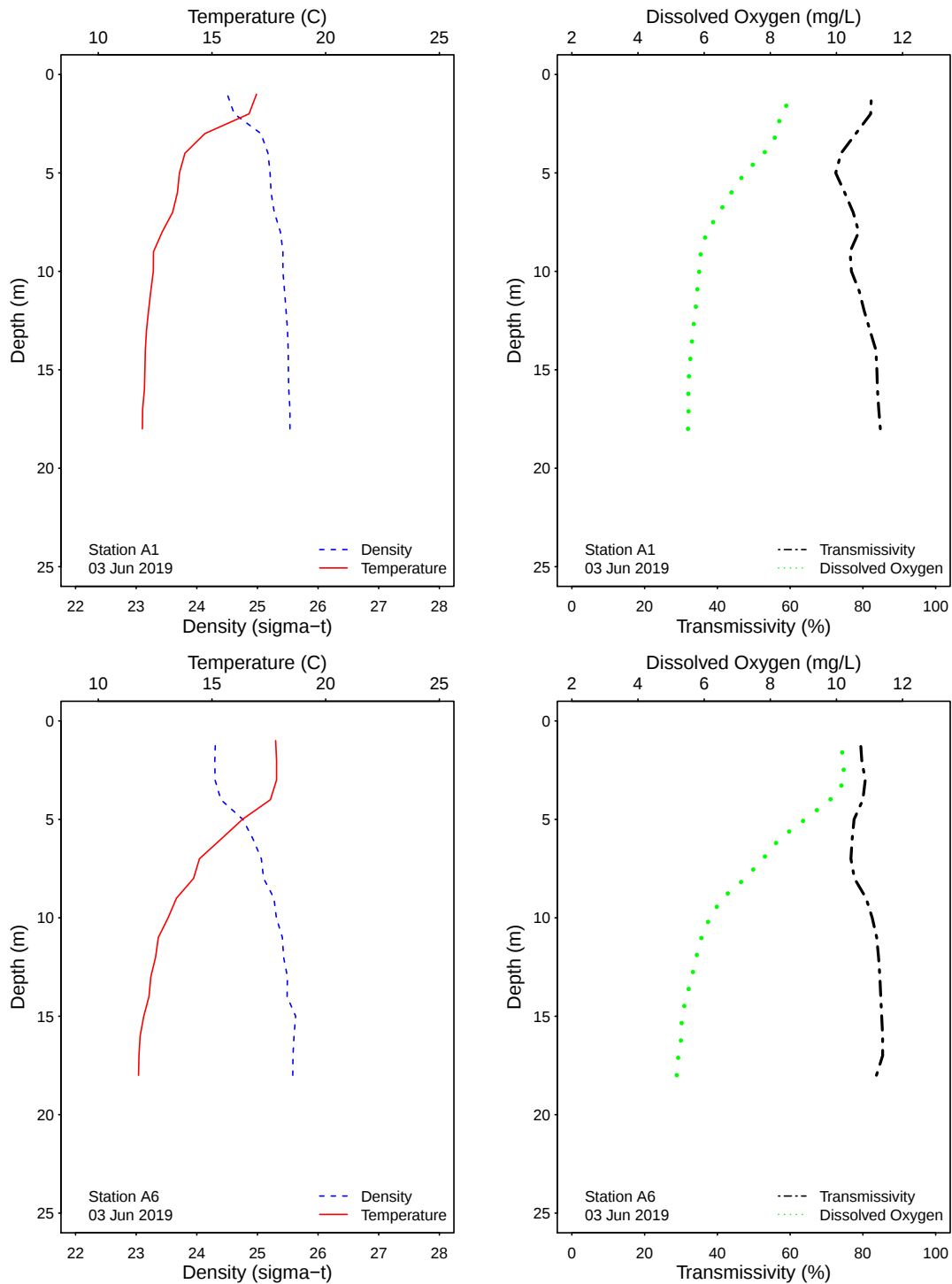


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

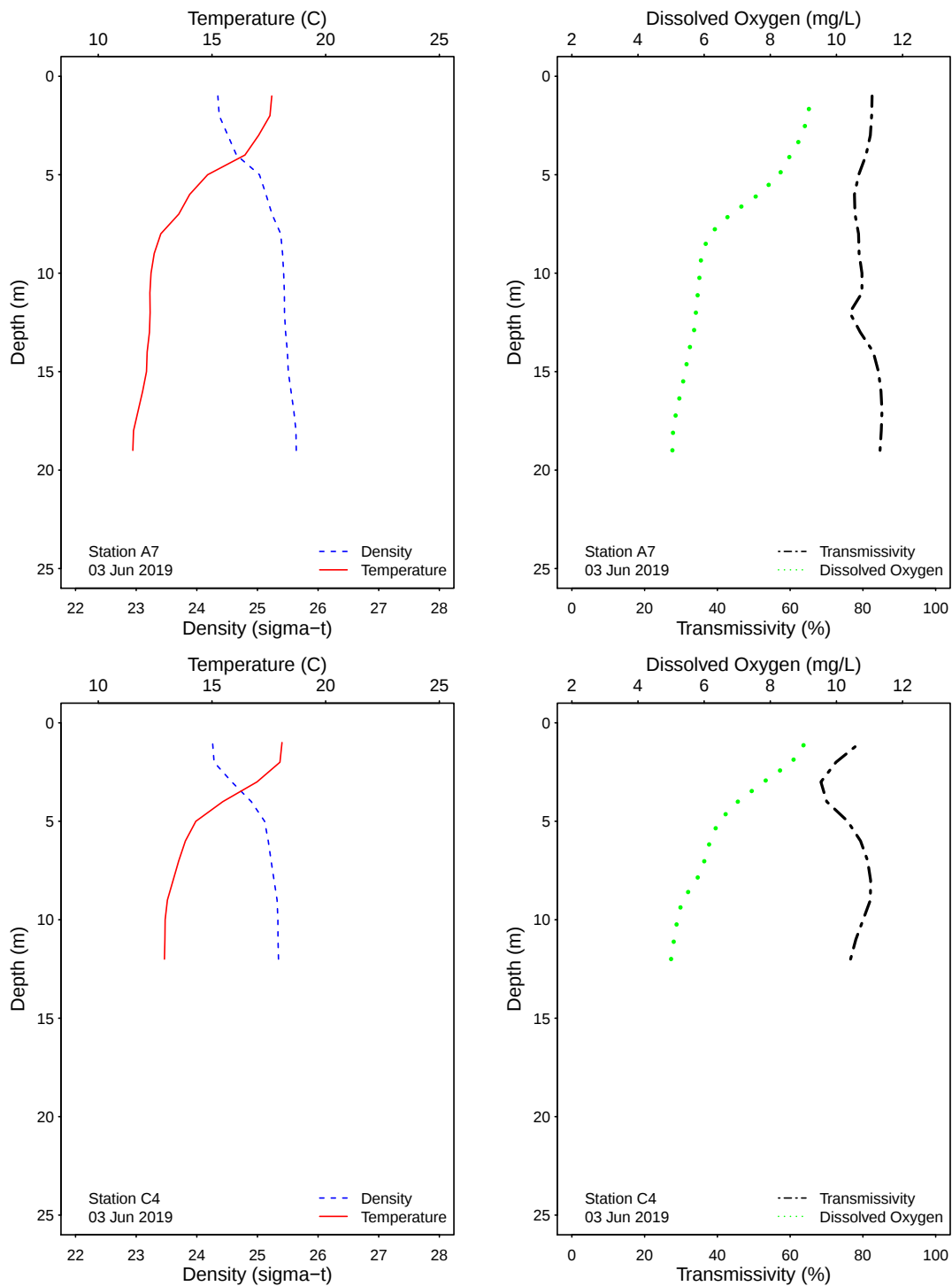


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

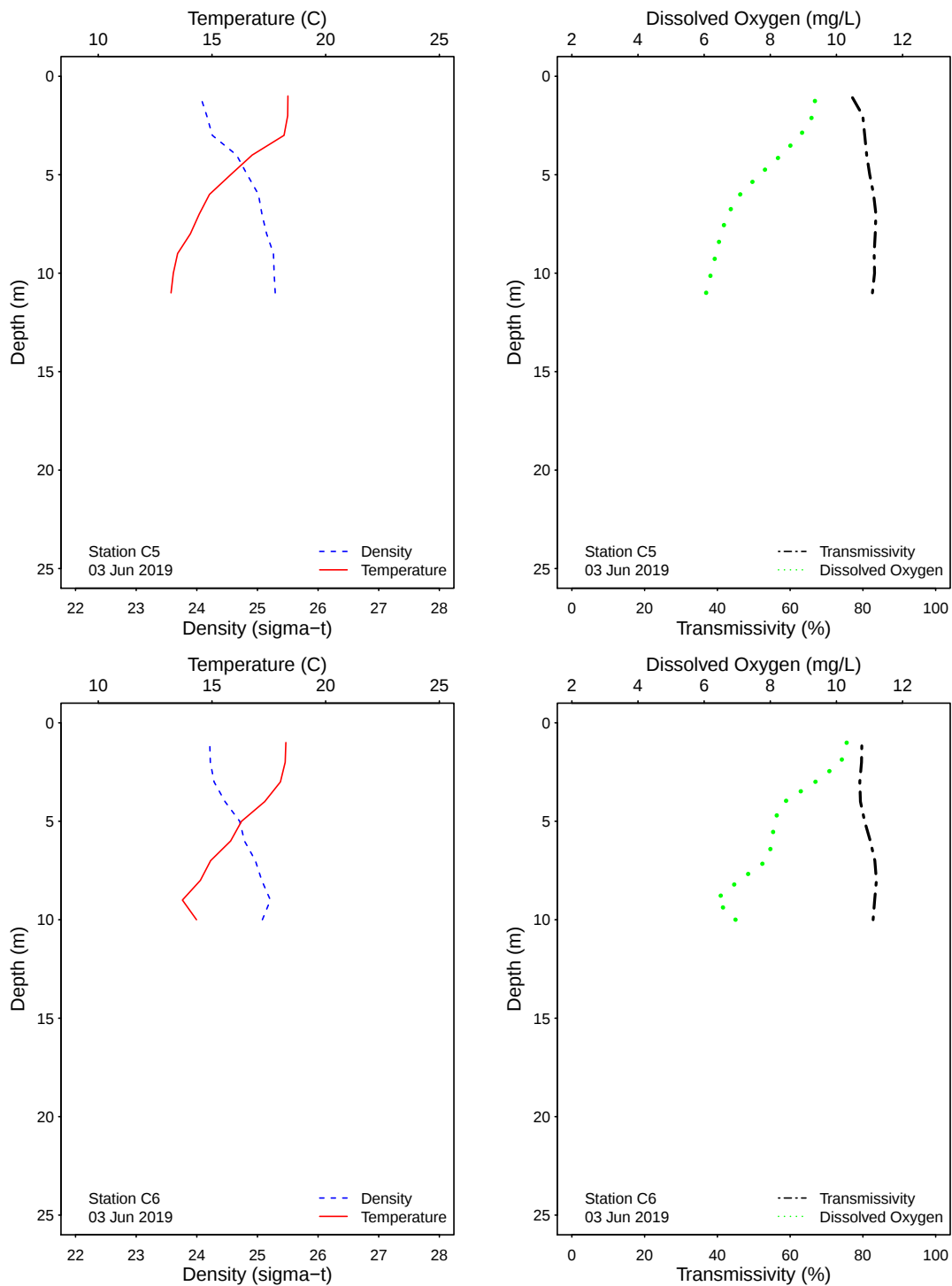


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

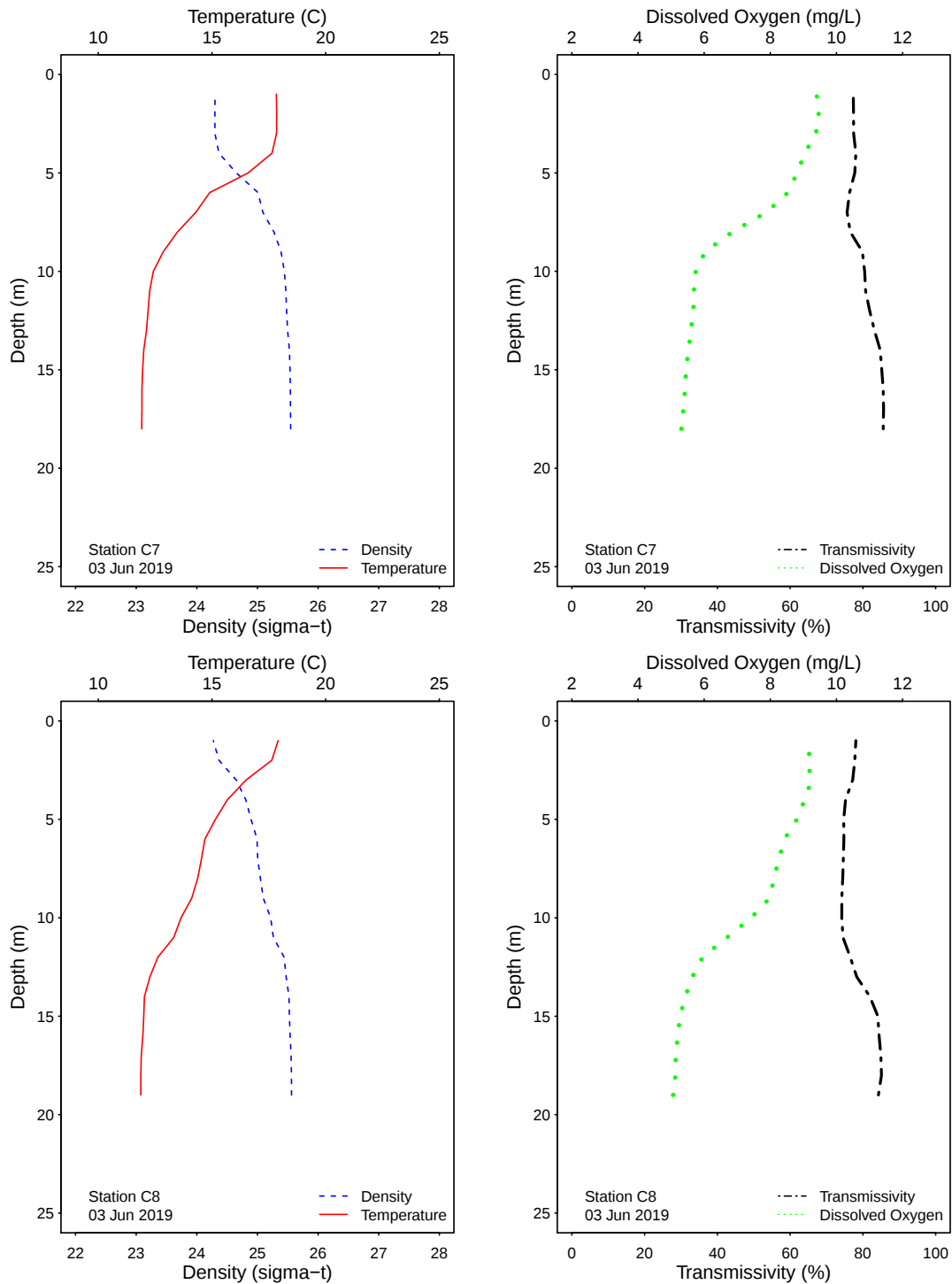


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

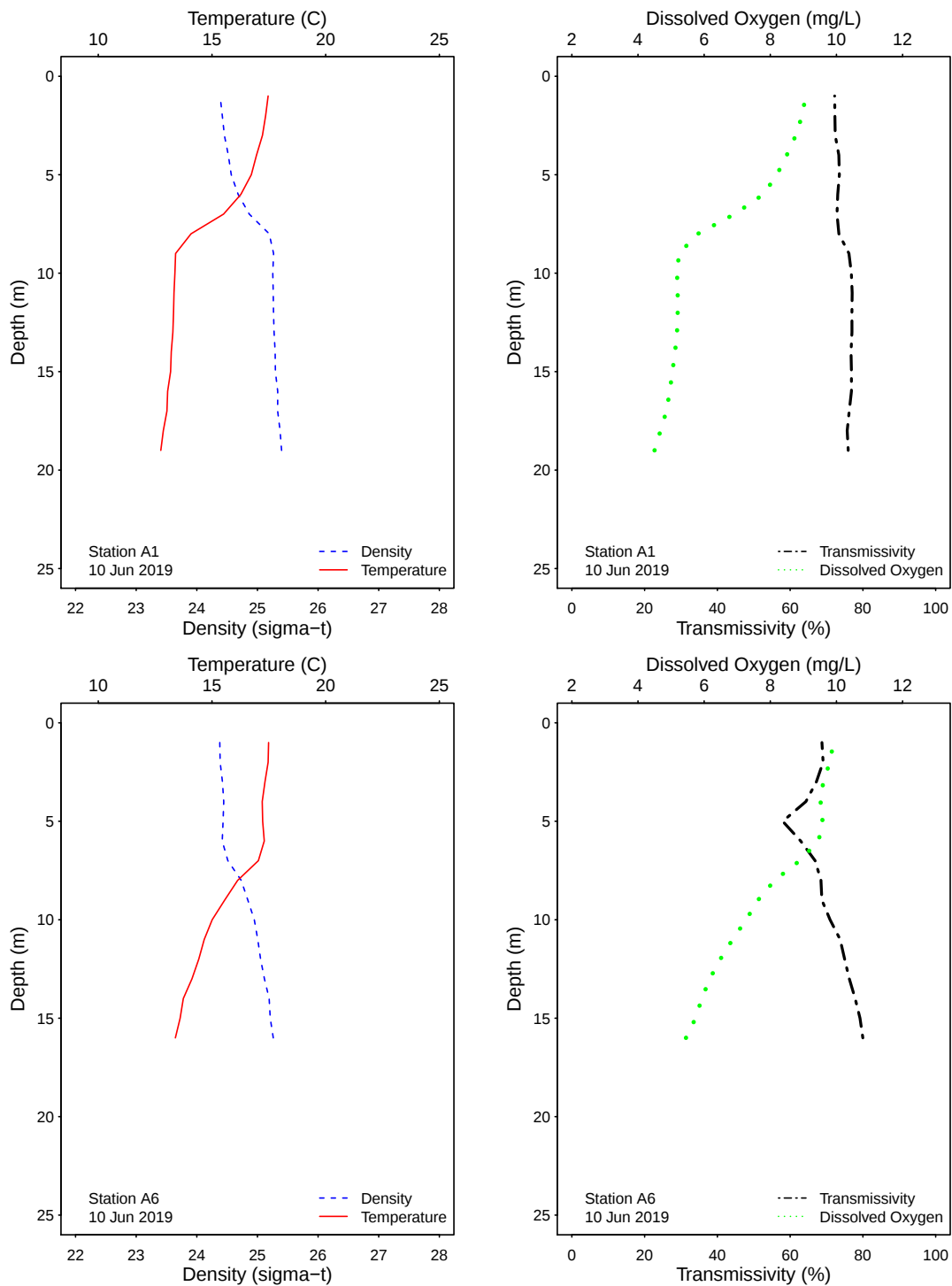


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

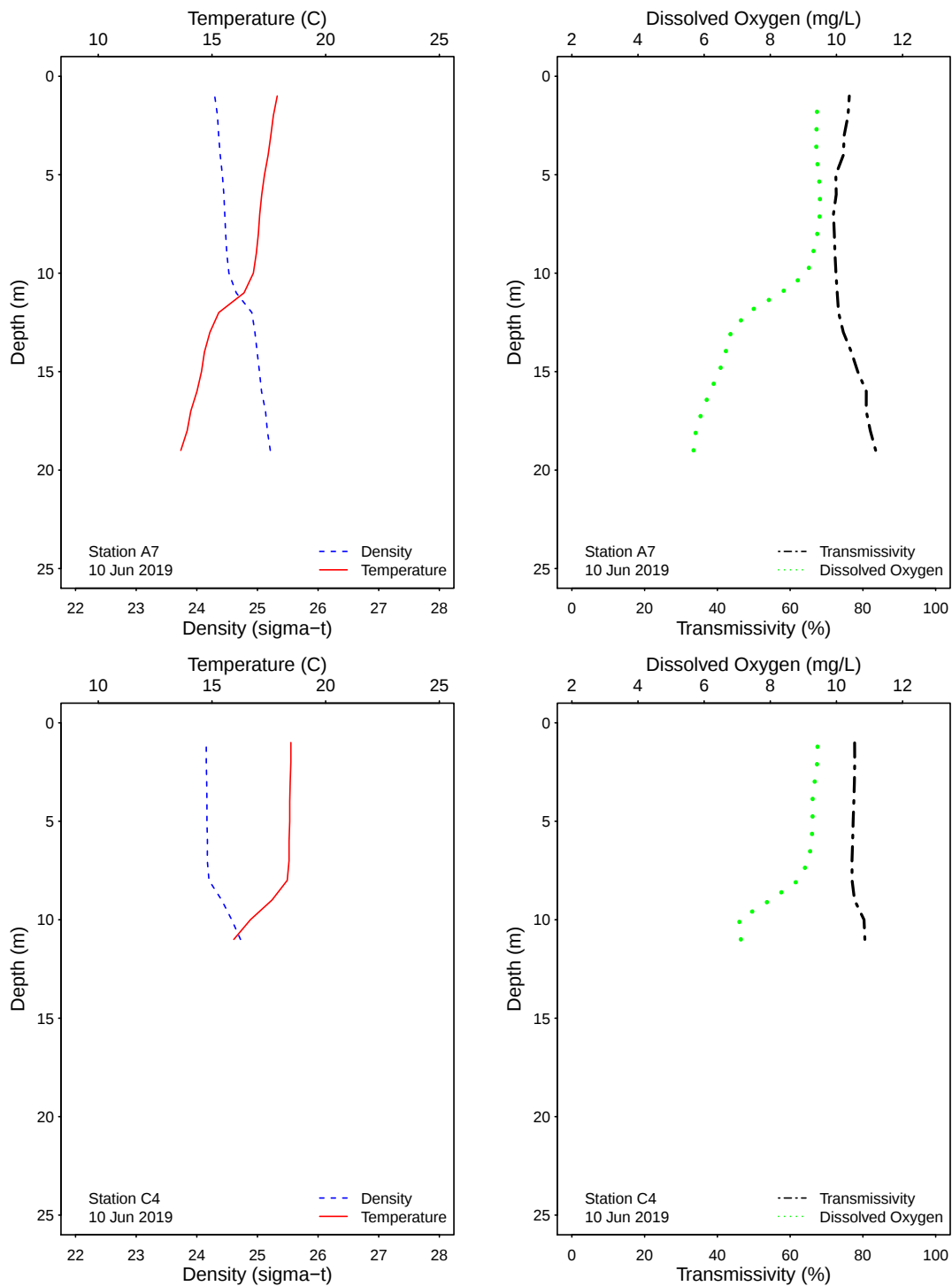


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

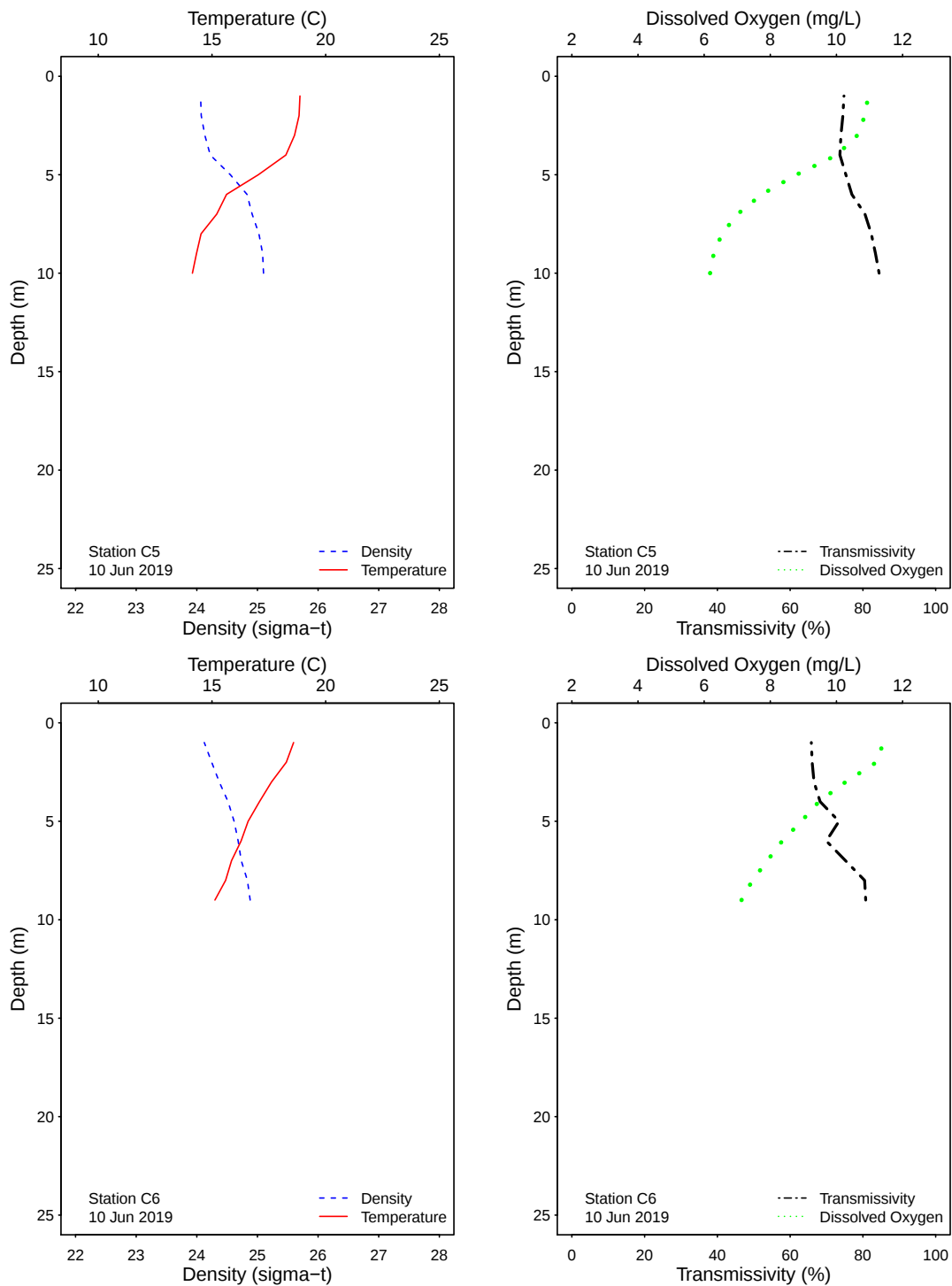


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

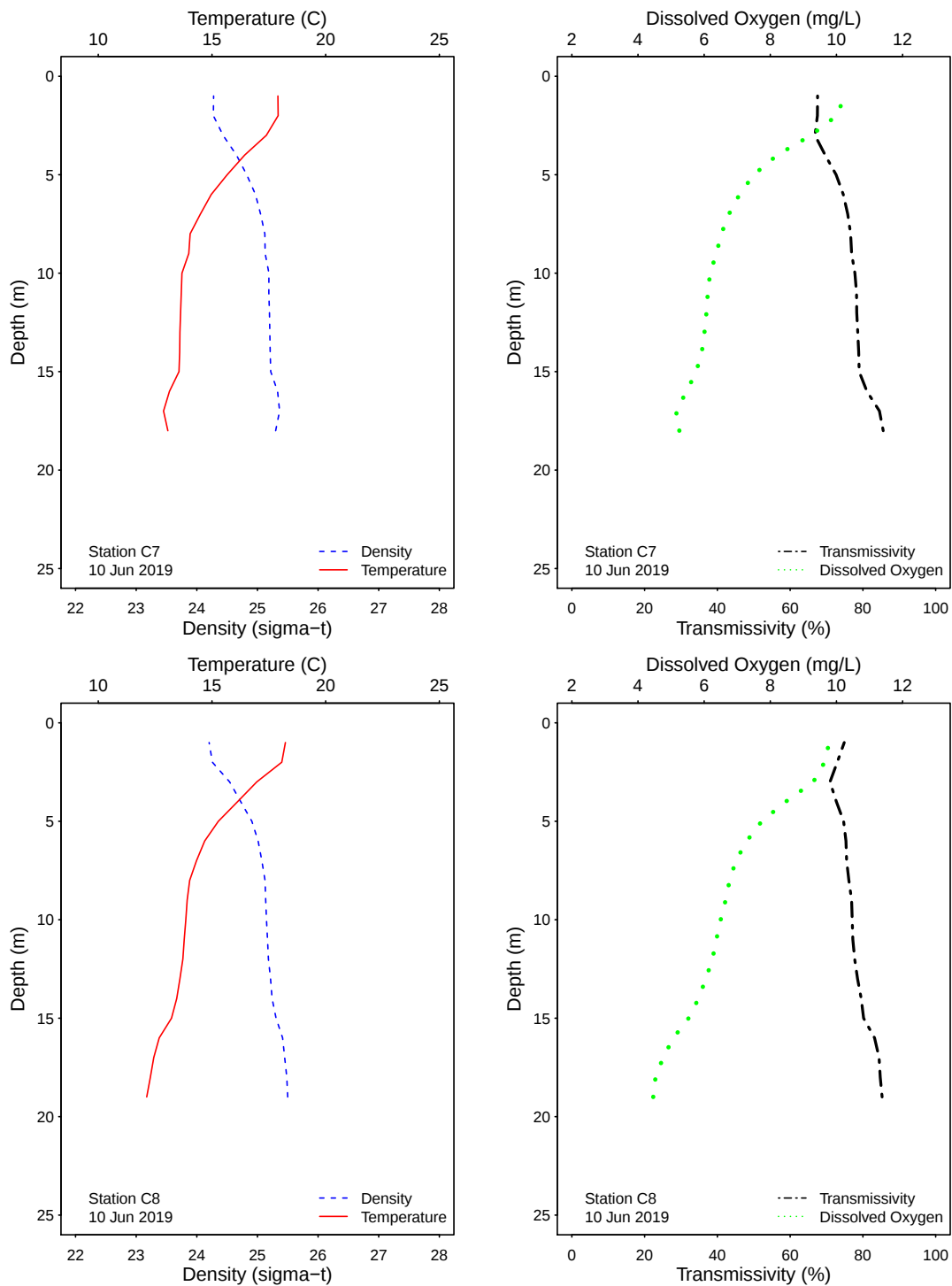


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

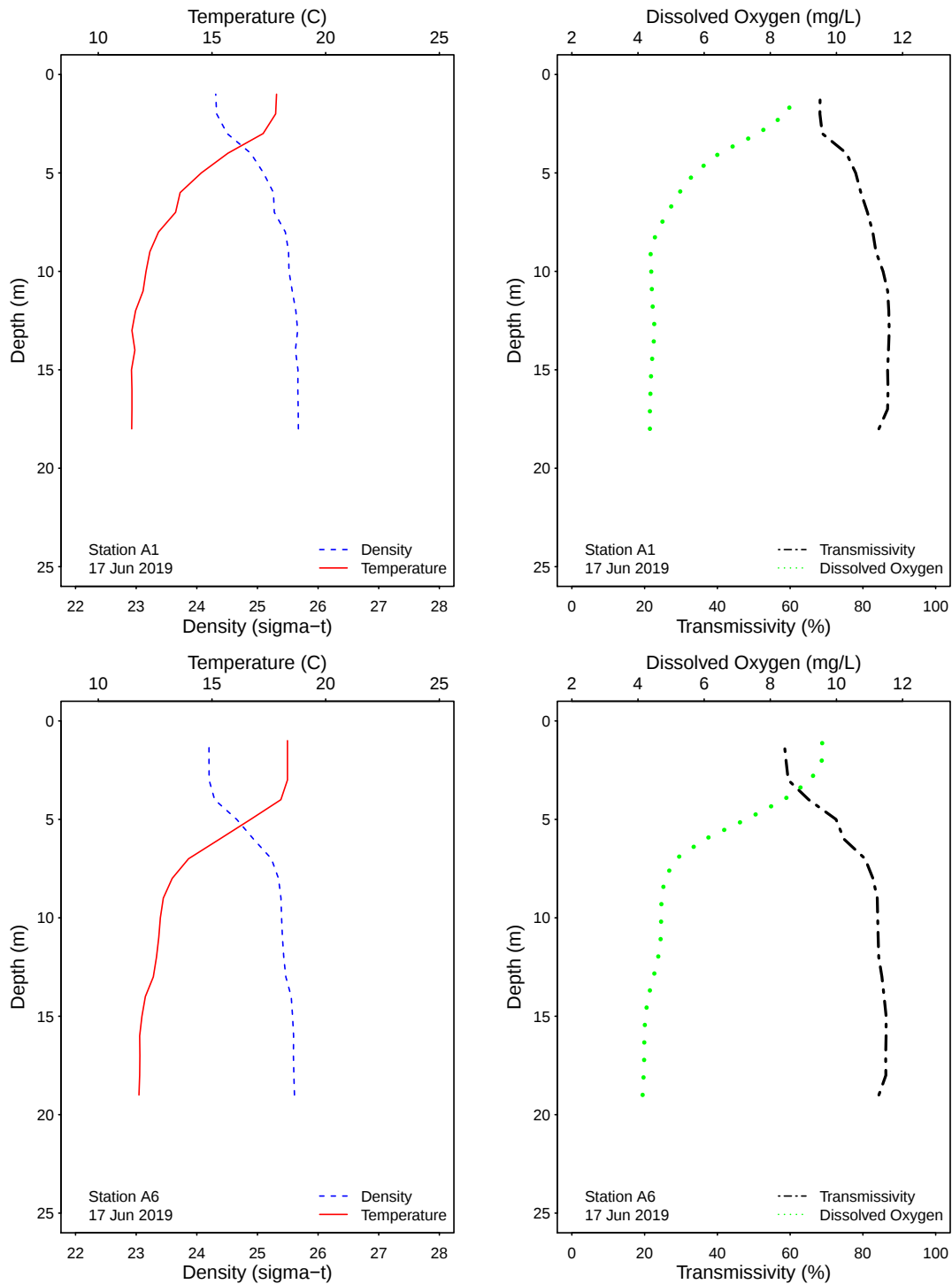


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

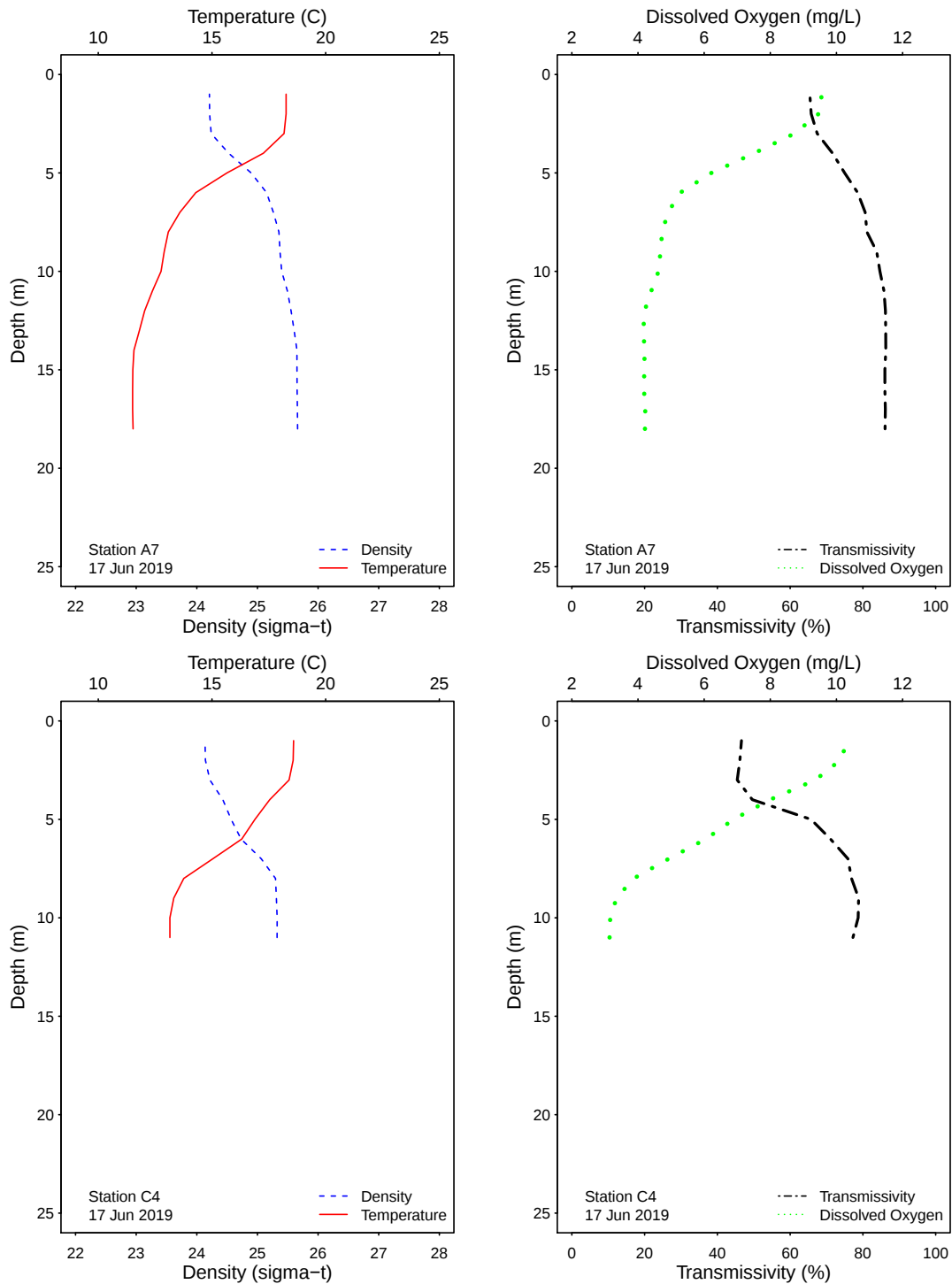


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

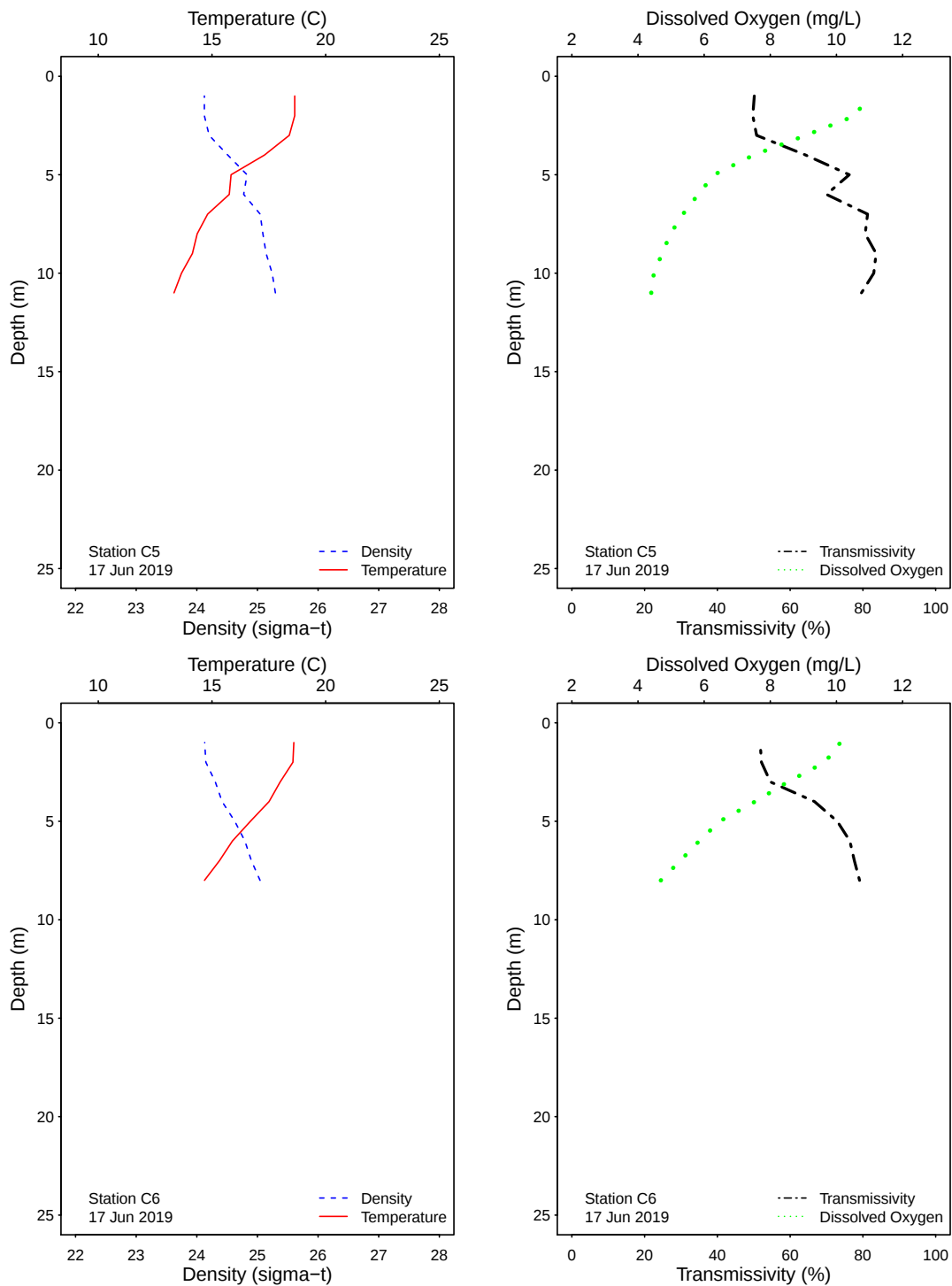


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

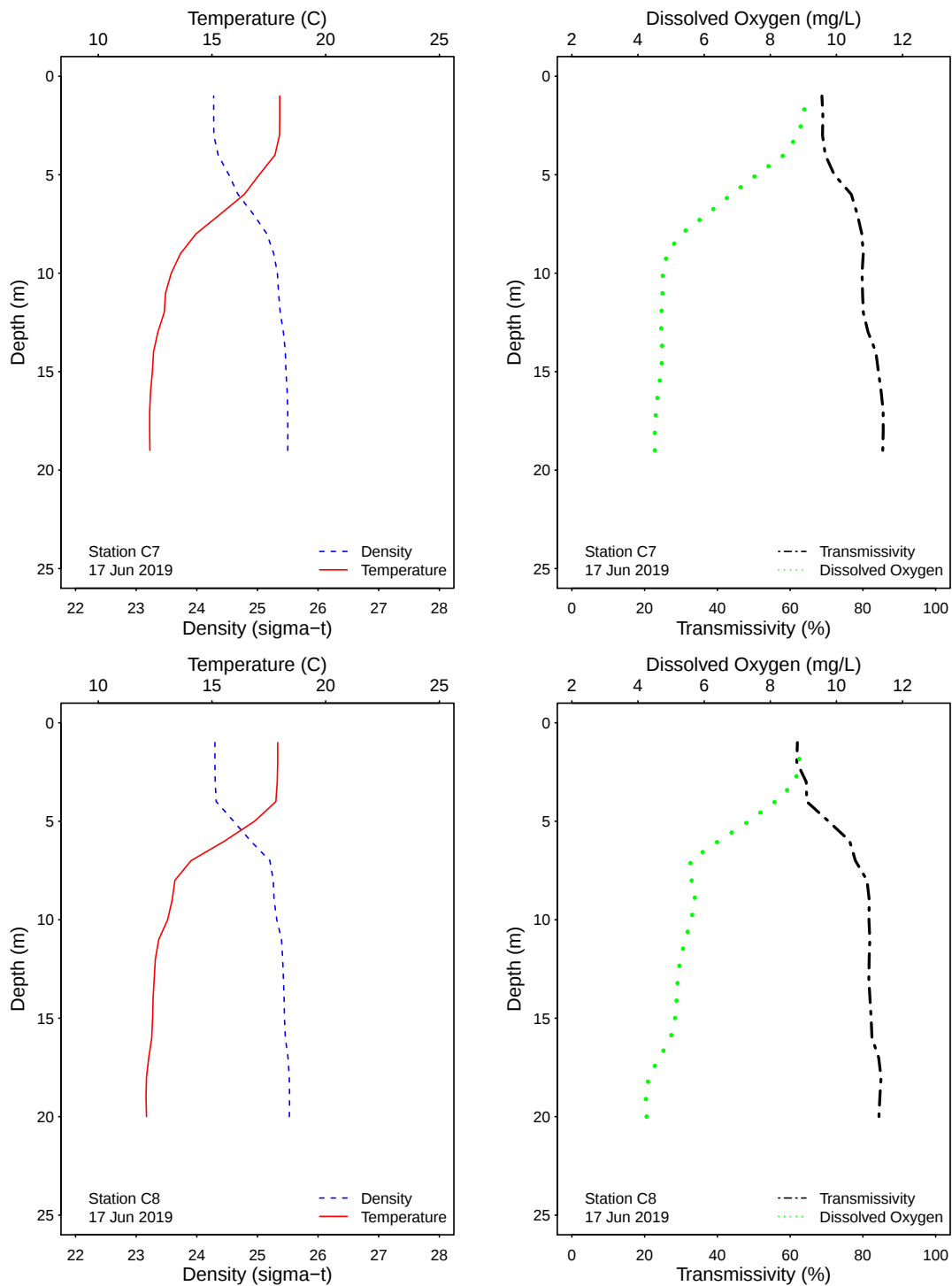


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

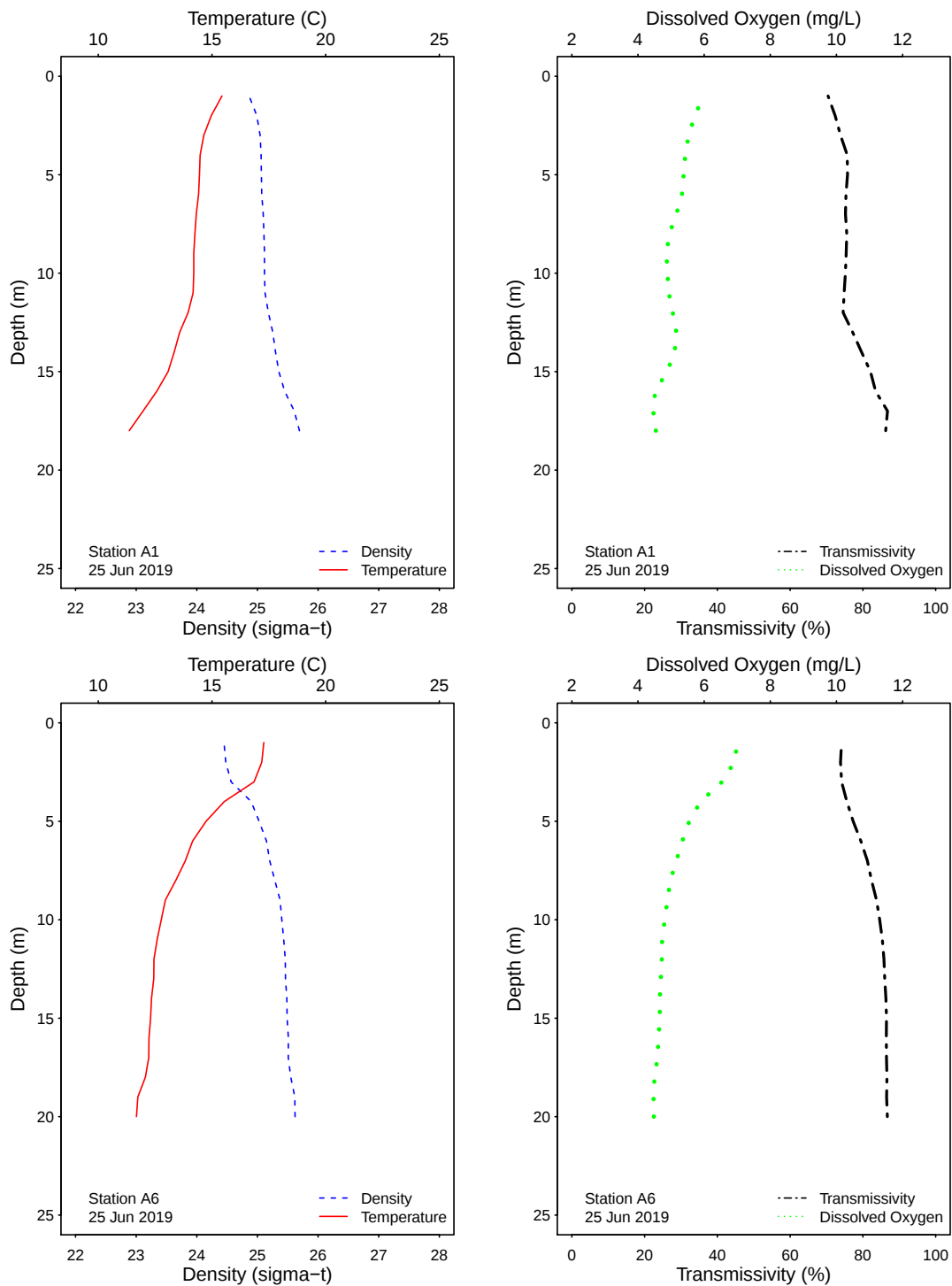


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

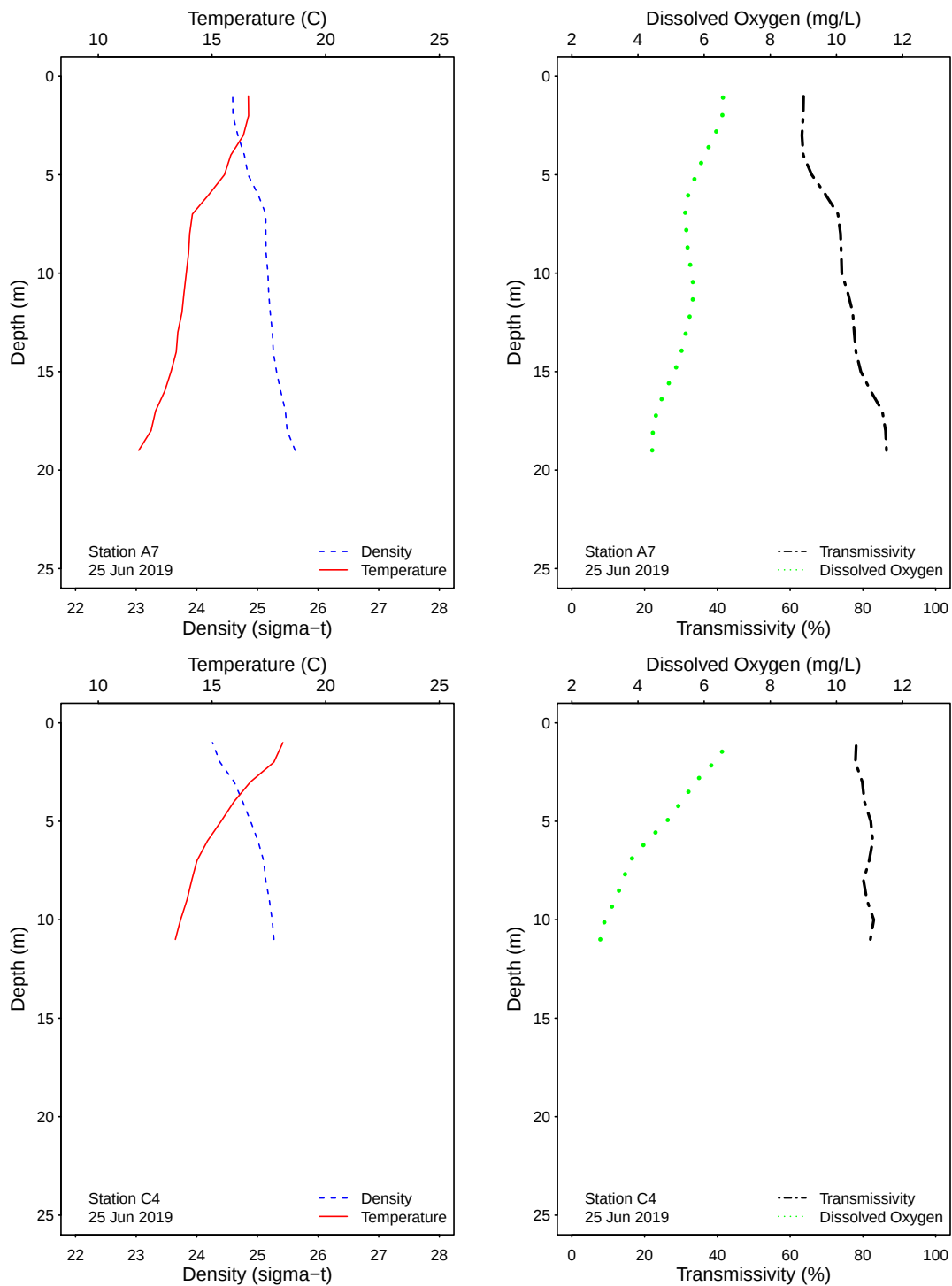


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

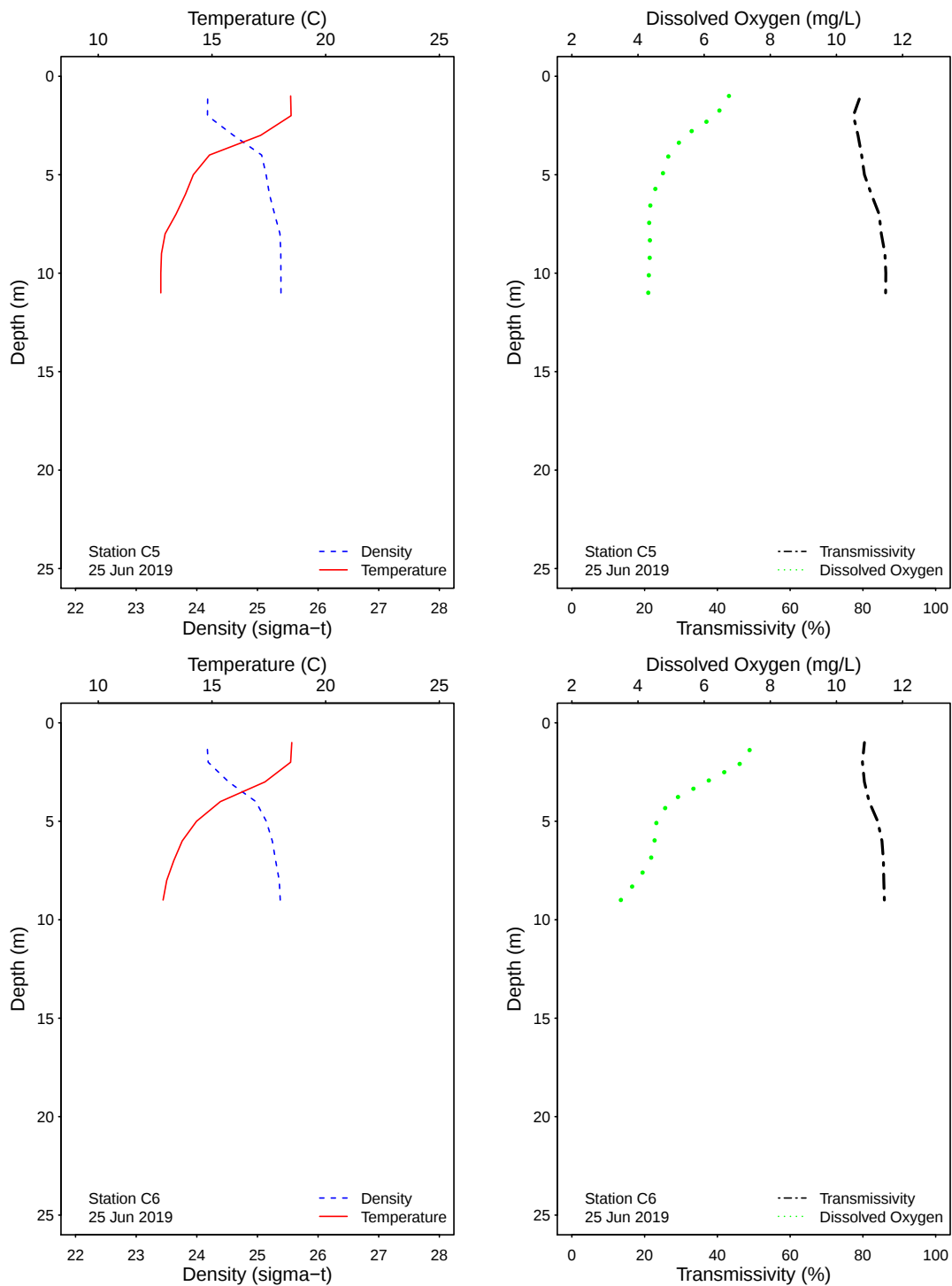


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

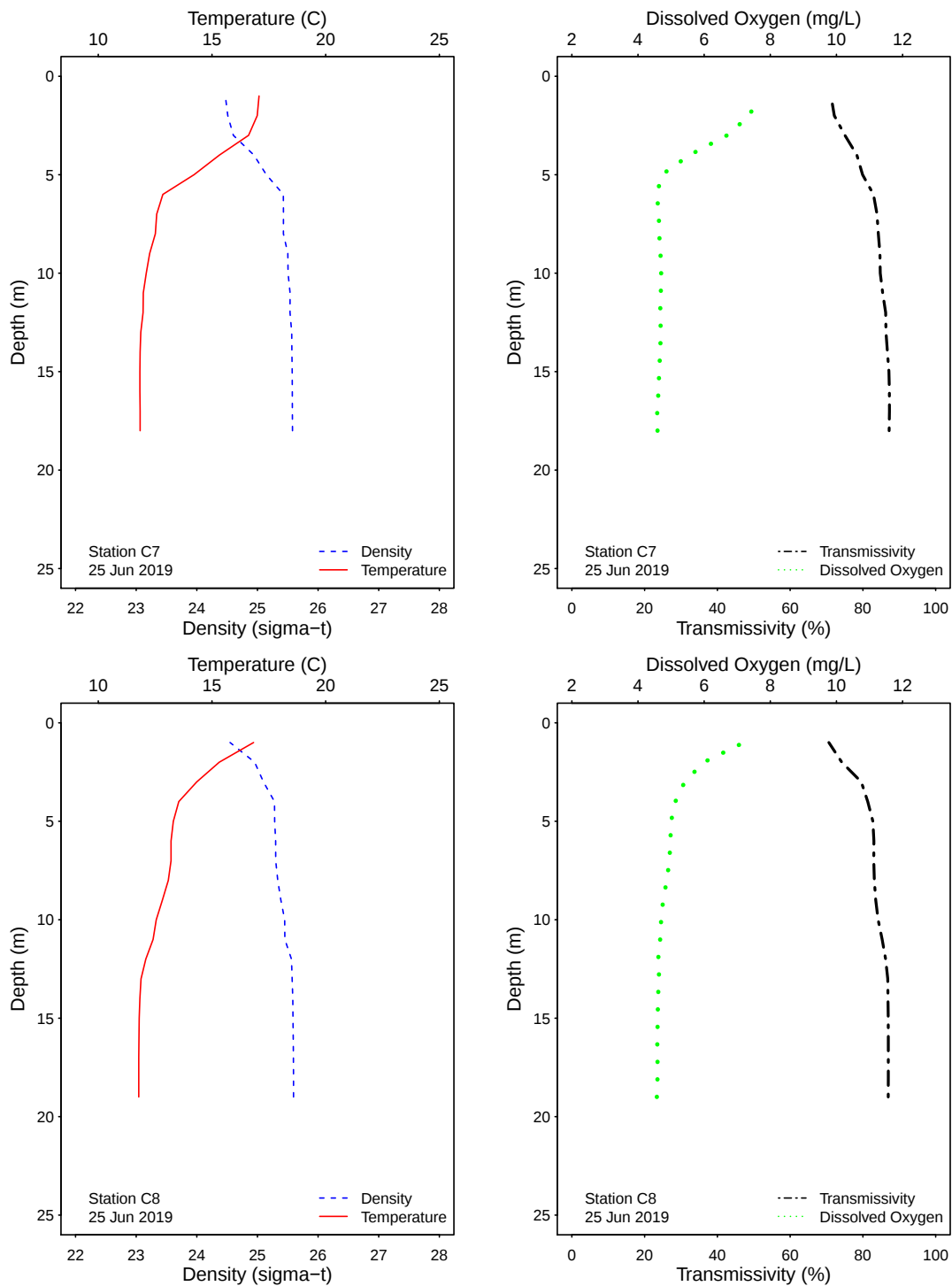


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

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APPENDIX A

Quality Assurance

Table A.1

Summary of bacteriological quality assurance field and lab duplicate sample analyses at selected PLOO stations. Densities of total coliform (Total), fecal coliform (Fecal), and *Enterococcus* (Entero) are reported as CFU/100 mL.

Station	Date	Depth	Analyst	Procedure	Total	Fecal	Entero
A7	03 Jun 2019	18	JF	LAB DUPLICATE	<2	<2	<2
A7	10 Jun 2019	18	JLT	LAB DUPLICATE	2e	<2	2e
A7	17 Jun 2019	18	AR	LAB DUPLICATE	<20	<2	<2
A7	25 Jun 2019	18	AE	LAB DUPLICATE	60e	4e	<2
C7	03 Jun 2019	18	AR	LAB DUPLICATE	<2	<2	<2
C7	10 Jun 2019	18	JLT	LAB DUPLICATE	<2	<2	<2
C7	17 Jun 2019	18	AR	LAB DUPLICATE	<20	<2	<2
C7	25 Jun 2019	18	AE	LAB DUPLICATE	6e	<2	<2
C8	03 Jun 2019	12	JT	LAB DUPLICATE	<2	<2	<2
C8	10 Jun 2019	12	JLT	LAB DUPLICATE	<2	<2	<2
C8	17 Jun 2019	12	AR	LAB DUPLICATE	<2	<2	<2
C8	25 Jun 2019	12	AE	LAB DUPLICATE	<2	<2	<2
D12	06 Jun 2019		JF	FIELD DUPLICATE	<2	<2	<2
D12	06 Jun 2019		JF	LAB DUPLICATE	<2	<2	<2
D12	12 Jun 2019		AR	FIELD DUPLICATE	<2	<2	<2
D12	12 Jun 2019		AR	LAB DUPLICATE	<2	<2	2e
D12	20 Jun 2019		JF	FIELD DUPLICATE	<20	<2	<2
D12	20 Jun 2019		JF	LAB DUPLICATE	<2	<2	<2
D12	26 Jun 2019		JF	FIELD DUPLICATE	<2	<2	<2
D12	26 Jun 2019		JF	LAB DUPLICATE	<2	<2	<2

ns = not sampled

ND = no data

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