



# **POINT LOMA OCEAN OUTFALL MONTHLY RECEIVING WATERS MONITORING REPORT**

## **POINT LOMA WASTEWATER TREATMENT PLANT**

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

## **FEBRUARY 2019**

Environmental Monitoring and Technical Services  
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**Public Utilities Department**

Environmental Monitoring & Technical Services Division

March 31, 2019

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 February 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 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,

A handwritten signature in blue ink, appearing to read "Peter S. Vroom".

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

TS/amw

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



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## 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 D7 was not sampled between February and October 2018, except for the recording of visual observations. This station became accessible again and has been successfully sampled since October 31, 2018.
- 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.
- Station D9 has been inaccessible since October 31, 2018 due to construction. Staff have continued to collect and report visual observations for this station.

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  $\geq 4$  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)<sup>[1]</sup>. 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

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<sup>[1]</sup>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.

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;
- (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*

- During February, one of the eight shore stations was out of compliance with one or more of the California Ocean Plan (Ocean Plan) water-contact standards as follows:
  - o The single sample maximum (SSM) standard for fecal coliform densities was exceeded at station D11 on February 4.
  - o The SSM standard that states total coliform densities shall not exceed 1000 CFU/100 mL when the fecal:total ratio exceeds 0.1 was exceeded at stations D11 on February 4.
  - o Per permit requirements, resamples were collected in response to SSM exceedances (see Table 2.8 for details).
- 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 (<http://www.sandiego.gov/mwwd/environment/oceanmonitor/reports/index.shtml>).

- 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. February 7, 11, 19, 25).
- During February, one of the kelp bed stations was out of compliance with one or more water-contact standards specified in the Ocean Plan.
  - o The SSM standard that states total coliform densities shall not exceed 1000 CFU/100 mL when the fecal:total ratio exceeds 0.1 was exceeded at station A6 on February 19.
- Water column temperatures ranged from 11.73 to 15.50°C during the month. The difference between surface and bottom waters ranged from 0.04 to 2.49°C, indicating that the water column was stratified at some of the kelp bed stations during the month.
- Chlorophyll *a* concentrations ranged from 0.22 to 4.85 µg/L during February, suggesting the absence of phytoplankton blooms during the month.
- Nothing of sewage origin was observed at any of the kelp stations.

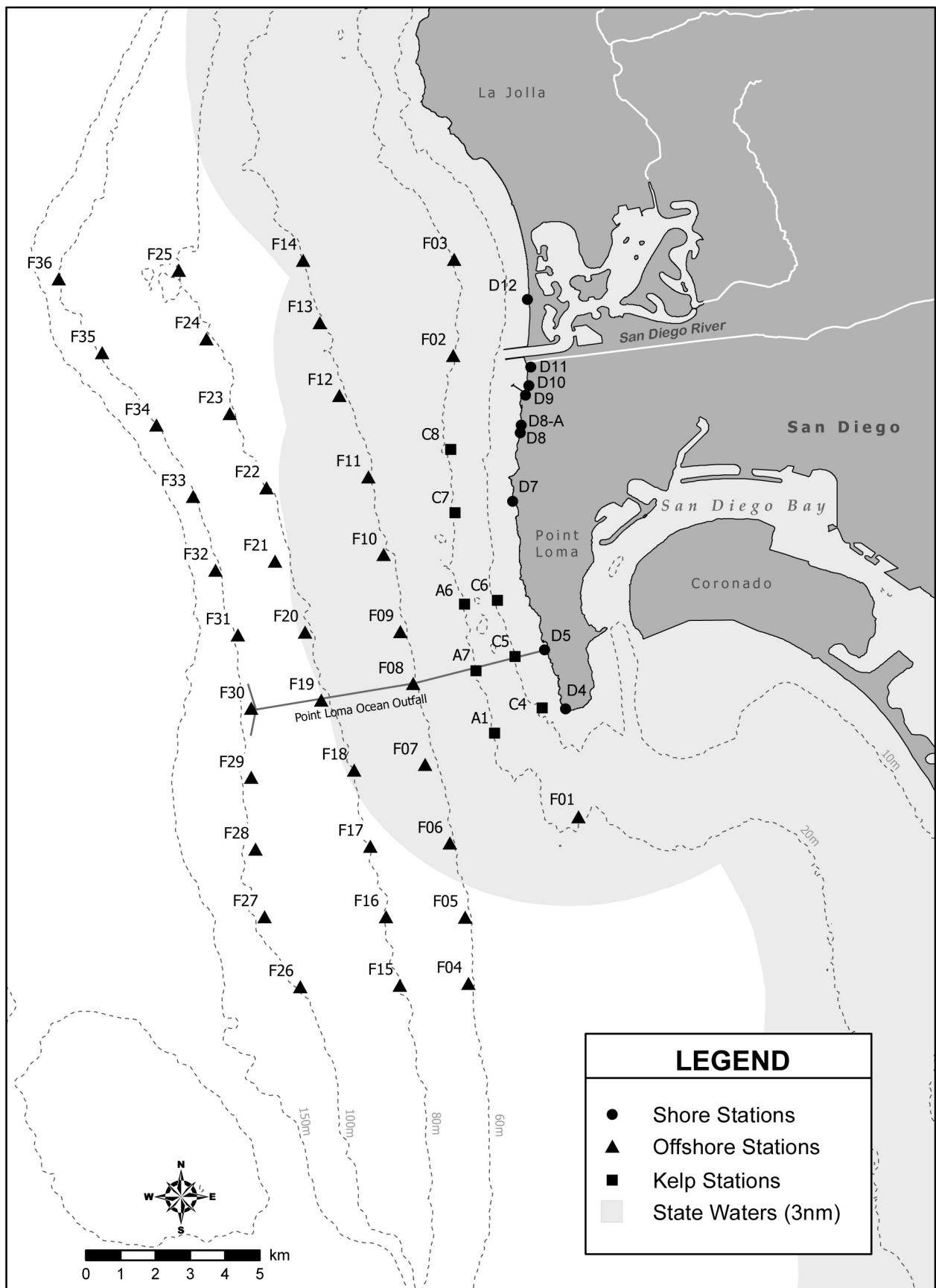
#### ***Offshore Stations***

- Due to unsafe weather conditions, quarterly sampling could not be conducted during February at the offshore stations as planned. Instead, sampling was completed in early March, with results to be included in the next monthly water quality report to be submitted by May 1, 2019.



## TABLES AND FIGURES





**Figure 1.1** Station Map



# 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 Feb 2019	6	9	7	47	ns	13	25	8
02 Feb 2019	7*	12*	9*	37*	ns	18*	15*	12*
03 Feb 2019	7*	12*	9*	37*	ns	18*	15*	12*
04 Feb 2019	9	13	10	52	ns	21	50	15
05 Feb 2019	9	13	10	52	ns	21	50	15
06 Feb 2019	9	13	10	52	ns	21	63	15
07 Feb 2019	9	13	10	52	ns	21	63	15
08 Feb 2019	6*	12*	9*	47*	ns	18*	80	17*
09 Feb 2019	6*	12*	9*	47*	ns	18*	80	17*
10 Feb 2019	6*	12*	9*	47*	ns	18*	80	17*
11 Feb 2019	6*	12*	9*	47*	ns	18*	80	17*
12 Feb 2019	6*	12*	9*	47*	ns	18*	80	17*
13 Feb 2019	5	10	6	25	ns	27	109	11
14 Feb 2019	5	10	6	25	ns	27	109	11
15 Feb 2019	5	10	6	25	ns	27	109	11
16 Feb 2019	4*	10*	6*	20*	ns	29*	116	12*
17 Feb 2019	4*	10*	6*	20*	ns	29*	116	12*
18 Feb 2019	4*	10*	6*	20*	ns	29*	116	12*
19 Feb 2019	4*	10*	6*	20*	ns	29*	116	12*
20 Feb 2019	5	11	8	35	ns	31	87	11
21 Feb 2019	5	11	8	35	ns	31	87	11
22 Feb 2019	6*	12*	8*	40*	ns	40*	140	9*
23 Feb 2019	6*	12*	8*	40*	ns	40*	140	9*
24 Feb 2019	6*	12*	8*	40*	ns	40*	140	9*
25 Feb 2019	6*	12*	8*	40*	ns	40*	140	9*
26 Feb 2019	6*	12*	8*	40*	ns	40*	140	9*
27 Feb 2019	5	9	8	22	ns	25	178	7
28 Feb 2019	5	9	8	22	ns	25	178	7

\* 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 Feb 2019	2	3	4	3	ns	3	6	3
02 Feb 2019	2*	3*	4*	3*	ns	4*	3*	3*
03 Feb 2019	2*	3*	4*	3*	ns	4*	3*	3*
04 Feb 2019	2	3	4	5	ns	4	10	3
05 Feb 2019	2	3	4	5	ns	4	10	3
06 Feb 2019	2	3	4	5	ns	4	10	3
07 Feb 2019	2	3	4	5	ns	4	10	3
08 Feb 2019	2*	3*	3*	7*	ns	4*	11	3*
09 Feb 2019	2*	3*	3*	7*	ns	4*	11	3*
10 Feb 2019	2*	3*	3*	7*	ns	4*	11	3*
11 Feb 2019	2*	3*	3*	7*	ns	4*	11	3*
12 Feb 2019	2*	3*	3*	7*	ns	4*	11	3*
13 Feb 2019	2	3	3	5	ns	5	14	3
14 Feb 2019	2	3	3	5	ns	5	14	3
15 Feb 2019	2	3	3	5	ns	5	14	3
16 Feb 2019	2*	2*	3*	5*	ns	4*	18	3*
17 Feb 2019	2*	2*	3*	5*	ns	4*	18	3*
18 Feb 2019	2*	2*	3*	5*	ns	4*	18	3*
19 Feb 2019	2*	2*	3*	5*	ns	4*	18	3*
20 Feb 2019	2	2	3	7	ns	4	12	3
21 Feb 2019	2	2	3	7	ns	4	12	3
22 Feb 2019	2*	2*	3*	9*	ns	4*	18	3*
23 Feb 2019	2*	2*	3*	9*	ns	4*	18	3*
24 Feb 2019	2*	2*	3*	9*	ns	4*	18	3*
25 Feb 2019	2*	2*	3*	9*	ns	4*	18	3*
26 Feb 2019	2*	2*	3*	9*	ns	4*	18	3*
27 Feb 2019	2	2	3	7	ns	4	20	3
28 Feb 2019	2	2	3	7	ns	4	20	3

\* 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 Feb 2019	3	2	2	4	ns	4	17	2
02 Feb 2019	4*	2*	2*	4*	ns	4*	11	2*
03 Feb 2019	4*	2*	2*	4*	ns	4*	7*	2*
04 Feb 2019	3	2	2	6	ns	8	9	2
05 Feb 2019	3	2	2	6	ns	8	9	2
06 Feb 2019	3	2	2	6	ns	8	9	2
07 Feb 2019	3	2	2	6	ns	8	9	2
08 Feb 2019	2*	3*	2*	6*	ns	9*	13*	2*
09 Feb 2019	2*	3*	2*	6*	ns	9*	13*	2*
10 Feb 2019	2*	3*	2*	6*	ns	9*	13*	2*
11 Feb 2019	2*	3*	2*	6*	ns	9*	13*	2*
12 Feb 2019	2*	3*	2*	6*	ns	9*	13*	2*
13 Feb 2019	2	3	2	5	ns	6	12	2
14 Feb 2019	2	3	2	5	ns	6	12	2
15 Feb 2019	2	3	2	5	ns	6	12	2
16 Feb 2019	2*	4*	2*	3*	ns	6*	9*	2*
17 Feb 2019	2*	4*	2*	3*	ns	6*	9*	2*
18 Feb 2019	2*	4*	2*	3*	ns	6*	9*	2*
19 Feb 2019	2*	4*	2*	3*	ns	6*	9*	2*
20 Feb 2019	2	3	2	5	ns	6	11	2
21 Feb 2019	2	3	2	5	ns	6	11	2
22 Feb 2019	2*	4*	2*	6*	ns	6*	9*	2*
23 Feb 2019	2*	4*	2*	6*	ns	6*	9*	2*
24 Feb 2019	2*	4*	2*	6*	ns	6*	9*	2*
25 Feb 2019	2*	4*	2*	6*	ns	6*	9*	2*
26 Feb 2019	2*	4*	2*	6*	ns	6*	9*	2*
27 Feb 2019	2	3	2	5	ns	5	14	2
28 Feb 2019	2	3	2	5	ns	5	14	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
04 Feb 2019	IC	IC	IC	IC	ns	IC	IC	IC
06 Feb 2019	ns	ns	ns	ns	ns	ns	IC	ns
13 Feb 2019	IC	IC	IC	IC	ns	IC	IC	IC
20 Feb 2019	IC	IC	IC	IC	ns	IC	IC	IC
27 Feb 2019	IC	IC	IC	IC	ns	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
04 Feb 2019	IC	IC	IC	IC	ns	IC	E	IC
06 Feb 2019	ns	ns	ns	ns	ns	ns	IC	ns
13 Feb 2019	IC	IC	IC	IC	ns	IC	IC	IC
20 Feb 2019	IC	IC	IC	IC	ns	IC	IC	IC
27 Feb 2019	IC	IC	IC	IC	ns	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
04 Feb 2019	IC	IC	IC	IC	ns	IC	IC	IC
13 Feb 2019	IC	IC	IC	IC	ns	IC	IC	IC
20 Feb 2019	IC	IC	IC	IC	ns	IC	IC	IC
27 Feb 2019	IC	IC	IC	IC	ns	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
04 Feb 2019	IC	IC	IC	IC	ns	IC	E	IC
06 Feb 2019	ns	ns	ns	ns	ns	ns	IC	ns
13 Feb 2019	IC	IC	IC	IC	ns	IC	IC	IC
20 Feb 2019	IC	IC	IC	IC	ns	IC	IC	IC
27 Feb 2019	IC	IC	IC	IC	ns	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* (Enter) 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	Enter	F:T
D4	04 Feb 2019	1014	20e	2e	2e	0.10
	13 Feb 2019	823	<2	<2	<2	1.00
	20 Feb 2019	752	20e	2e	2e	0.10
	27 Feb 2019	758	2e	<2	<2	1.00
D5	04 Feb 2019	1000	<20	<2	6e	0.10
	13 Feb 2019	800	4e	4e	8e	1.00
	20 Feb 2019	740	20e	<2	2e	0.10
	27 Feb 2019	744	<2	<2	2e	1.00
D7	04 Feb 2019	1047	<20	<2	<2	0.10
	13 Feb 2019	856	<2	<2	<2	1.00
	20 Feb 2019	816	20e	6e	<2	0.30
	27 Feb 2019	837	6e	<2	<2	0.33
D8-B	04 Feb 2019	1114	200e	52	18e	0.26
	13 Feb 2019	928	2e	<2	<2	1.00
	20 Feb 2019	843	320e	28e	16e	0.09
	27 Feb 2019	920	2e	<2	<2	1.00
D9	04 Feb 2019	1124	ns	ns	ns	ns
	13 Feb 2019	938	ns	ns	ns	ns
	20 Feb 2019	900	ns	ns	ns	ns
	27 Feb 2019	929	ns	ns	ns	ns
D10	04 Feb 2019	1129	40e	6e	86	0.15
	13 Feb 2019	958	120e	8e	2e	0.07
	20 Feb 2019	926	40e	2e	4e	0.05
	27 Feb 2019	949	4e	<2	<2	0.50
D11	04 Feb 2019	1144	6400	840	20e	0.13
	06 Feb 2019	907	200e	10e	ns	0.05
	13 Feb 2019	1024	520e	50	10e	0.10
	20 Feb 2019	948	<20	<2	20e	0.10
	27 Feb 2019	1010	600e	40e	62	0.07
D12	04 Feb 2019	1205	40e	2e	<2	0.05
	13 Feb 2019	1050	2e	<2	<2	1.00
	20 Feb 2019	1016	8e	<2	<2	0.25
	27 Feb 2019	1046	<2	<2	<2	1.00

ns = not sampled

ND = no data

**Comments**

Station	Date	Depth	Parameter	Comments
D11	02 Feb 2019			Resample
D9	04 Feb 2019			Site inaccessible due to construction
D11	06 Feb 2019			Resample
D9	13 Feb 2019			Site inaccessible due to construction
D9	20 Feb 2019			Site inaccessible due to construction
D9	27 Feb 2019			Site inaccessible due to construction

**Table 2.9**

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

Station	Date	Parameter	Value
D4	04 Feb 2019	Arrive Time	1014
D4	04 Feb 2019	Weather	Partly Cloudy
D4	04 Feb 2019	Wind Speed (kts)	4.6
D4	04 Feb 2019	Wind Dir	W
D4	04 Feb 2019	Animal Life	None
D4	04 Feb 2019	Floatables	None
D4	04 Feb 2019	Water Color	Green
D4	04 Feb 2019	Current Direction	N
D4	04 Feb 2019	Water Temp (C)	12
D4	04 Feb 2019	Wave Height Low (ft)	3
D4	04 Feb 2019	High Tide (ft)	5.6
D4	04 Feb 2019	High Tide Time	822
D4	04 Feb 2019	Low Tide (ft)	-0.7
D4	04 Feb 2019	Low Tide Time	1526
D4	04 Feb 2019	Comments	Kelp; Seagrass; Algae; Water clear
D4	13 Feb 2019	Arrive Time	823
D4	13 Feb 2019	Weather	Overcast
D4	13 Feb 2019	Wind Speed (kts)	0.2
D4	13 Feb 2019	Wind Dir	N
D4	13 Feb 2019	Animal Life	None
D4	13 Feb 2019	Floatables	None
D4	13 Feb 2019	Water Color	Green
D4	13 Feb 2019	Current Direction	N
D4	13 Feb 2019	Water Temp (C)	15
D4	13 Feb 2019	Wave Height Low (ft)	1
D4	13 Feb 2019	High Tide (ft)	4.4
D4	13 Feb 2019	High Tide Time	253
D4	13 Feb 2019	Low Tide (ft)	0.9
D4	13 Feb 2019	Low Tide Time	1041
D4	13 Feb 2019	Comments	Algae; Water clear
D4	20 Feb 2019	Arrive Time	752
D4	20 Feb 2019	Weather	Partly Cloudy
D4	20 Feb 2019	Wind Speed (kts)	5.6
D4	20 Feb 2019	Wind Dir	N
D4	20 Feb 2019	Animal Life	1 Seagull
D4	20 Feb 2019	Floatables	None
D4	20 Feb 2019	Water Color	Green
D4	20 Feb 2019	Current Direction	N
D4	20 Feb 2019	Water Temp (C)	12.8
D4	20 Feb 2019	Wave Height Low (ft)	2
D4	20 Feb 2019	High Tide (ft)	6.4
D4	20 Feb 2019	High Tide Time	910
D4	20 Feb 2019	Low Tide (ft)	0.5
D4	20 Feb 2019	Low Tide Time	308
D4	20 Feb 2019	Comments	Water clear
D4	27 Feb 2019	Arrive Time	758
D4	27 Feb 2019	Weather	Partly Cloudy
D4	27 Feb 2019	Wind Speed (kts)	3.3

Station	Date	Parameter	Value
D4	27 Feb 2019	Wind Dir	W
D4	27 Feb 2019	Animal Life	None
D4	27 Feb 2019	Floatables	None
D4	27 Feb 2019	Water Color	Green
D4	27 Feb 2019	Current Direction	N
D4	27 Feb 2019	Water Temp (C)	14.6
D4	27 Feb 2019	Wave Height Low (ft)	2
D4	27 Feb 2019	High Tide (ft)	4.4
D4	27 Feb 2019	High Tide Time	335
D4	27 Feb 2019	Low Tide (ft)	0.4
D4	27 Feb 2019	Low Tide Time	1128
D4	27 Feb 2019	Comments	Kelp; Seagrass; Algae; Water clear
D5	04 Feb 2019	Arrive Time	1000
D5	04 Feb 2019	Weather	Partly Cloudy
D5	04 Feb 2019	Wind Speed (kts)	3.3
D5	04 Feb 2019	Wind Dir	W
D5	04 Feb 2019	Animal Life	None
D5	04 Feb 2019	Floatables	None
D5	04 Feb 2019	Water Color	Green
D5	04 Feb 2019	Current Direction	N
D5	04 Feb 2019	Water Temp (C)	12
D5	04 Feb 2019	Wave Height Low (ft)	5
D5	04 Feb 2019	High Tide (ft)	5.6
D5	04 Feb 2019	High Tide Time	822
D5	04 Feb 2019	Low Tide (ft)	-0.7
D5	04 Feb 2019	Low Tide Time	1526
D5	04 Feb 2019	Comments	Kelp; Seagrass; Algae; Water clear
D5	13 Feb 2019	Arrive Time	800
D5	13 Feb 2019	Weather	Overcast
D5	13 Feb 2019	Wind Speed (kts)	3.3
D5	13 Feb 2019	Wind Dir	W
D5	13 Feb 2019	Animal Life	None
D5	13 Feb 2019	Floatables	None
D5	13 Feb 2019	Water Color	Green
D5	13 Feb 2019	Current Direction	N
D5	13 Feb 2019	Water Temp (C)	14.3
D5	13 Feb 2019	Wave Height Low (ft)	1
D5	13 Feb 2019	High Tide (ft)	4.4
D5	13 Feb 2019	High Tide Time	253
D5	13 Feb 2019	Low Tide (ft)	0.9
D5	13 Feb 2019	Low Tide Time	1041
D5	13 Feb 2019	Comments	Water clear
D5	20 Feb 2019	Arrive Time	740
D5	20 Feb 2019	Weather	Sunny
D5	20 Feb 2019	Wind Speed (kts)	2.9
D5	20 Feb 2019	Wind Dir	W
D5	20 Feb 2019	Animal Life	200 Cormorants; 4 Seagulls
D5	20 Feb 2019	Floatables	None
D5	20 Feb 2019	Water Color	Green
D5	20 Feb 2019	Current Direction	W
D5	20 Feb 2019	Water Temp (C)	11.5
D5	20 Feb 2019	Wave Height Low (ft)	1

Station	Date	Parameter	Value
D5	20 Feb 2019	High Tide (ft)	6.4
D5	20 Feb 2019	High Tide Time	910
D5	20 Feb 2019	Low Tide (ft)	0.5
D5	20 Feb 2019	Low Tide Time	308
D5	20 Feb 2019	Comments	Kelp; Seagrass; 1 Boat; Water clear
D5	27 Feb 2019	Arrive Time	744
D5	27 Feb 2019	Weather	Partly Cloudy
D5	27 Feb 2019	Wind Speed (kts)	3.2
D5	27 Feb 2019	Wind Dir	W
D5	27 Feb 2019	Animal Life	None
D5	27 Feb 2019	Floatables	None
D5	27 Feb 2019	Water Color	Green
D5	27 Feb 2019	Current Direction	N
D5	27 Feb 2019	Water Temp (C)	14.2
D5	27 Feb 2019	Wave Height Low (ft)	2
D5	27 Feb 2019	High Tide (ft)	4.4
D5	27 Feb 2019	High Tide Time	335
D5	27 Feb 2019	Low Tide (ft)	0.4
D5	27 Feb 2019	Low Tide Time	1128
D5	27 Feb 2019	Comments	Kelp; Seagrass; Algae; Water clear
D7	04 Feb 2019	Arrive Time	1047
D7	04 Feb 2019	Weather	Cloudy
D7	04 Feb 2019	Wind Speed (kts)	5.2
D7	04 Feb 2019	Wind Dir	W
D7	04 Feb 2019	Animal Life	None
D7	04 Feb 2019	Floatables	None
D7	04 Feb 2019	Water Color	Green
D7	04 Feb 2019	Current Direction	N
D7	04 Feb 2019	Water Temp (C)	12
D7	04 Feb 2019	Wave Height Low (ft)	4
D7	04 Feb 2019	High Tide (ft)	5.6
D7	04 Feb 2019	High Tide Time	822
D7	04 Feb 2019	Low Tide (ft)	-0.7
D7	04 Feb 2019	Low Tide Time	1526
D7	04 Feb 2019	Comments	Kelp; Seagrass; Algae; Water clear
D7	13 Feb 2019	Arrive Time	856
D7	13 Feb 2019	Weather	Overcast
D7	13 Feb 2019	Wind Speed (kts)	1.5
D7	13 Feb 2019	Wind Dir	W
D7	13 Feb 2019	Animal Life	None
D7	13 Feb 2019	Floatables	None
D7	13 Feb 2019	Water Color	Green
D7	13 Feb 2019	Current Direction	N
D7	13 Feb 2019	Water Temp (C)	15.3
D7	13 Feb 2019	Wave Height Low (ft)	1
D7	13 Feb 2019	High Tide (ft)	4.4
D7	13 Feb 2019	High Tide Time	253
D7	13 Feb 2019	Low Tide (ft)	0.9
D7	13 Feb 2019	Low Tide Time	1041
D7	13 Feb 2019	Comments	2 Surfers; Water clear
D7	20 Feb 2019	Arrive Time	816

Station	Date	Parameter	Value
D7	20 Feb 2019	Weather	Partly Cloudy
D7	20 Feb 2019	Wind Speed (kts)	8.3
D7	20 Feb 2019	Wind Dir	NW
D7	20 Feb 2019	Animal Life	10 Seagulls
D7	20 Feb 2019	Floatables	None
D7	20 Feb 2019	Water Color	Green
D7	20 Feb 2019	Current Direction	NW
D7	20 Feb 2019	Water Temp (C)	12.4
D7	20 Feb 2019	Wave Height Low (ft)	3
D7	20 Feb 2019	High Tide (ft)	6.4
D7	20 Feb 2019	High Tide Time	910
D7	20 Feb 2019	Low Tide (ft)	0.5
D7	20 Feb 2019	Low Tide Time	308
D7	20 Feb 2019	Comments	Kelp; Seagrass; Water clear
D7	27 Feb 2019	Arrive Time	837
D7	27 Feb 2019	Weather	Partly Cloudy
D7	27 Feb 2019	Wind Speed (kts)	1.5
D7	27 Feb 2019	Wind Dir	W
D7	27 Feb 2019	Animal Life	None
D7	27 Feb 2019	Floatables	None
D7	27 Feb 2019	Water Color	Green
D7	27 Feb 2019	Current Direction	N
D7	27 Feb 2019	Water Temp (C)	14.5
D7	27 Feb 2019	Wave Height Low (ft)	2
D7	27 Feb 2019	High Tide (ft)	4.4
D7	27 Feb 2019	High Tide Time	335
D7	27 Feb 2019	Low Tide (ft)	0.4
D7	27 Feb 2019	Low Tide Time	1128
D7	27 Feb 2019	Comments	Kelp; Seagrass; Algae; Water clear
D8-B	04 Feb 2019	Arrive Time	1114
D8-B	04 Feb 2019	Weather	Cloudy
D8-B	04 Feb 2019	Wind Speed (kts)	5.6
D8-B	04 Feb 2019	Wind Dir	W
D8-B	04 Feb 2019	Animal Life	None
D8-B	04 Feb 2019	Floatables	None
D8-B	04 Feb 2019	Water Color	Green
D8-B	04 Feb 2019	Current Direction	N
D8-B	04 Feb 2019	Water Temp (C)	12
D8-B	04 Feb 2019	Wave Height Low (ft)	4
D8-B	04 Feb 2019	High Tide (ft)	5.6
D8-B	04 Feb 2019	High Tide Time	822
D8-B	04 Feb 2019	Low Tide (ft)	-0.7
D8-B	04 Feb 2019	Low Tide Time	1526
D8-B	04 Feb 2019	Comments	Kelp; Seagrass; Algae; Water clear
D8-B	13 Feb 2019	Arrive Time	928
D8-B	13 Feb 2019	Weather	Cloudy
D8-B	13 Feb 2019	Wind Speed (kts)	1.7
D8-B	13 Feb 2019	Wind Dir	N
D8-B	13 Feb 2019	Animal Life	None
D8-B	13 Feb 2019	Floatables	None
D8-B	13 Feb 2019	Water Color	Green
D8-B	13 Feb 2019	Current Direction	E

Station	Date	Parameter	Value
D8-B	13 Feb 2019	Water Temp (C)	15
D8-B	13 Feb 2019	Wave Height Low (ft)	3
D8-B	13 Feb 2019	High Tide (ft)	4.4
D8-B	13 Feb 2019	High Tide Time	253
D8-B	13 Feb 2019	Low Tide (ft)	0.9
D8-B	13 Feb 2019	Low Tide Time	1041
D8-B	13 Feb 2019	Comments	2 Surfers; Water clear
D8-B	20 Feb 2019	Arrive Time	843
D8-B	20 Feb 2019	Weather	Partly Cloudy
D8-B	20 Feb 2019	Wind Speed (kts)	4.4
D8-B	20 Feb 2019	Wind Dir	N
D8-B	20 Feb 2019	Animal Life	1 Cormorant; 1 Grebe; 35 Seagulls
D8-B	20 Feb 2019	Floatables	None
D8-B	20 Feb 2019	Water Color	Brown
D8-B	20 Feb 2019	Current Direction	N
D8-B	20 Feb 2019	Water Temp (C)	14.2
D8-B	20 Feb 2019	Wave Height Low (ft)	1
D8-B	20 Feb 2019	High Tide (ft)	6.4
D8-B	20 Feb 2019	High Tide Time	910
D8-B	20 Feb 2019	Low Tide (ft)	0.5
D8-B	20 Feb 2019	Low Tide Time	308
D8-B	20 Feb 2019	Comments	Kelp; Seagrass; Water clear
D8-B	27 Feb 2019	Arrive Time	920
D8-B	27 Feb 2019	Weather	Partly Cloudy
D8-B	27 Feb 2019	Wind Speed (kts)	0.8
D8-B	27 Feb 2019	Wind Dir	W
D8-B	27 Feb 2019	Animal Life	None
D8-B	27 Feb 2019	Floatables	None
D8-B	27 Feb 2019	Water Color	Green
D8-B	27 Feb 2019	Current Direction	N
D8-B	27 Feb 2019	Water Temp (C)	15.4
D8-B	27 Feb 2019	Wave Height Low (ft)	3
D8-B	27 Feb 2019	High Tide (ft)	4.4
D8-B	27 Feb 2019	High Tide Time	335
D8-B	27 Feb 2019	Low Tide (ft)	0.4
D8-B	27 Feb 2019	Low Tide Time	1128
D8-B	27 Feb 2019	Comments	Algae; 1 Person; Water clear
D9	04 Feb 2019	Arrive Time	1124
D9	04 Feb 2019	Weather	Cloudy
D9	04 Feb 2019	Wind Speed (kts)	4.3
D9	04 Feb 2019	Wind Dir	W
D9	04 Feb 2019	Animal Life	None
D9	04 Feb 2019	Floatables	None
D9	04 Feb 2019	Water Color	Green
D9	04 Feb 2019	Current Direction	N
D9	04 Feb 2019	Water Temp (C)	0
D9	04 Feb 2019	Wave Height Low (ft)	3
D9	04 Feb 2019	High Tide (ft)	5.6
D9	04 Feb 2019	High Tide Time	822
D9	04 Feb 2019	Low Tide (ft)	-0.7
D9	04 Feb 2019	Low Tide Time	1526
D9	04 Feb 2019	Comments	Water clear; Site inaccessible due construction

Station	Date	Parameter	Value
D9	13 Feb 2019	Arrive Time	938
D9	13 Feb 2019	Weather	Cloudy
D9	13 Feb 2019	Wind Speed (kts)	0.1
D9	13 Feb 2019	Wind Dir	N
D9	13 Feb 2019	Animal Life	None
D9	13 Feb 2019	Floatables	None
D9	13 Feb 2019	Water Color	Green
D9	13 Feb 2019	Current Direction	N
D9	13 Feb 2019	Water Temp (C)	0
D9	13 Feb 2019	Wave Height Low (ft)	1
D9	13 Feb 2019	High Tide (ft)	4.4
D9	13 Feb 2019	High Tide Time	253
D9	13 Feb 2019	Low Tide (ft)	0.9
D9	13 Feb 2019	Low Tide Time	1041
D9	13 Feb 2019	Comments	Water clear; Site inaccessible due to construction
D9	20 Feb 2019	Arrive Time	900
D9	20 Feb 2019	Weather	Partly Cloudy
D9	20 Feb 2019	Wind Speed (kts)	3.6
D9	20 Feb 2019	Wind Dir	W
D9	20 Feb 2019	Animal Life	5 Seagulls
D9	20 Feb 2019	Floatables	None
D9	20 Feb 2019	Water Color	Green
D9	20 Feb 2019	Current Direction	W
D9	20 Feb 2019	Water Temp (C)	0
D9	20 Feb 2019	Wave Height Low (ft)	1
D9	20 Feb 2019	High Tide (ft)	6.4
D9	20 Feb 2019	High Tide Time	910
D9	20 Feb 2019	Low Tide (ft)	0.5
D9	20 Feb 2019	Low Tide Time	308
D9	20 Feb 2019	Comments	Water clear; Site inaccessible due to construction
D9	27 Feb 2019	Arrive Time	929
D9	27 Feb 2019	Weather	Partly Cloudy
D9	27 Feb 2019	Wind Speed (kts)	0.5
D9	27 Feb 2019	Wind Dir	W
D9	27 Feb 2019	Animal Life	None
D9	27 Feb 2019	Floatables	None
D9	27 Feb 2019	Water Color	Green
D9	27 Feb 2019	Current Direction	W
D9	27 Feb 2019	Water Temp (C)	0
D9	27 Feb 2019	Wave Height Low (ft)	2
D9	27 Feb 2019	High Tide (ft)	4.4
D9	27 Feb 2019	High Tide Time	335
D9	27 Feb 2019	Low Tide (ft)	0.4
D9	27 Feb 2019	Low Tide Time	1128
D9	27 Feb 2019	Comments	Site inaccessible due to construction
D10	04 Feb 2019	Arrive Time	1129
D10	04 Feb 2019	Weather	Drizzle
D10	04 Feb 2019	Wind Speed (kts)	6.8
D10	04 Feb 2019	Wind Dir	W
D10	04 Feb 2019	Animal Life	None
D10	04 Feb 2019	Floatables	None

Station	Date	Parameter	Value
D10	04 Feb 2019	Water Color	Green
D10	04 Feb 2019	Current Direction	N
D10	04 Feb 2019	Water Temp (C)	11
D10	04 Feb 2019	Wave Height Low (ft)	4
D10	04 Feb 2019	High Tide (ft)	5.6
D10	04 Feb 2019	High Tide Time	822
D10	04 Feb 2019	Low Tide (ft)	-0.7
D10	04 Feb 2019	Low Tide Time	1526
D10	04 Feb 2019	Comments	Kelp; Seagrass; Water clear
D10	13 Feb 2019	Arrive Time	958
D10	13 Feb 2019	Weather	Cloudy
D10	13 Feb 2019	Wind Speed (kts)	2.1
D10	13 Feb 2019	Wind Dir	SE
D10	13 Feb 2019	Animal Life	None
D10	13 Feb 2019	Floatables	None
D10	13 Feb 2019	Water Color	Green
D10	13 Feb 2019	Current Direction	N
D10	13 Feb 2019	Water Temp (C)	15
D10	13 Feb 2019	Wave Height Low (ft)	2
D10	13 Feb 2019	High Tide (ft)	4.4
D10	13 Feb 2019	High Tide Time	253
D10	13 Feb 2019	Low Tide (ft)	0.9
D10	13 Feb 2019	Low Tide Time	1041
D10	13 Feb 2019	Comments	11 Persons; 7 Surfers; Water clear
D10	20 Feb 2019	Arrive Time	926
D10	20 Feb 2019	Weather	Partly Cloudy
D10	20 Feb 2019	Wind Speed (kts)	9.1
D10	20 Feb 2019	Wind Dir	W
D10	20 Feb 2019	Animal Life	1 Pelican; 30 Seagulls
D10	20 Feb 2019	Floatables	Foam
D10	20 Feb 2019	Water Color	Green
D10	20 Feb 2019	Current Direction	W
D10	20 Feb 2019	Water Temp (C)	15.1
D10	20 Feb 2019	Wave Height Low (ft)	2
D10	20 Feb 2019	High Tide (ft)	6.4
D10	20 Feb 2019	High Tide Time	910
D10	20 Feb 2019	Low Tide (ft)	0.5
D10	20 Feb 2019	Low Tide Time	308
D10	20 Feb 2019	Comments	Kelp; Seagrass; 14 Surfers; Water clear
D10	27 Feb 2019	Arrive Time	949
D10	27 Feb 2019	Weather	Partly Cloudy
D10	27 Feb 2019	Wind Speed (kts)	4.8
D10	27 Feb 2019	Wind Dir	W
D10	27 Feb 2019	Animal Life	None
D10	27 Feb 2019	Floatables	None
D10	27 Feb 2019	Water Color	Green
D10	27 Feb 2019	Current Direction	N
D10	27 Feb 2019	Water Temp (C)	15.7
D10	27 Feb 2019	Wave Height Low (ft)	4
D10	27 Feb 2019	High Tide (ft)	4.4
D10	27 Feb 2019	High Tide Time	335
D10	27 Feb 2019	Low Tide (ft)	0.4

Station	Date	Parameter	Value
D10	27 Feb 2019	Low Tide Time	1128
D10	27 Feb 2019	Comments	Kelp; Seagrass; 2 Persons; 6 Surfers; Water clear
D11	04 Feb 2019	Arrive Time	1144
D11	04 Feb 2019	Weather	Moderate Rain
D11	04 Feb 2019	Wind Speed (kts)	6.6
D11	04 Feb 2019	Wind Dir	W
D11	04 Feb 2019	Animal Life	2 Dogs
D11	04 Feb 2019	Floatables	None
D11	04 Feb 2019	Water Color	Green
D11	04 Feb 2019	Current Direction	N
D11	04 Feb 2019	Water Temp (C)	12
D11	04 Feb 2019	Wave Height Low (ft)	4
D11	04 Feb 2019	High Tide (ft)	5.6
D11	04 Feb 2019	High Tide Time	822
D11	04 Feb 2019	Low Tide (ft)	-0.7
D11	04 Feb 2019	Low Tide Time	1526
D11	04 Feb 2019	Comments	Kelp; Seagrass; 3 Persons; Water clear
D11	06 Feb 2019	Arrive Time	907
D11	06 Feb 2019	Weather	Partly Cloudy
D11	06 Feb 2019	Wind Speed (kts)	2.1
D11	06 Feb 2019	Wind Dir	W
D11	06 Feb 2019	Animal Life	1 Dog
D11	06 Feb 2019	Floatables	None
D11	06 Feb 2019	Water Color	Green
D11	06 Feb 2019	Current Direction	W
D11	06 Feb 2019	Water Temp (C)	14
D11	06 Feb 2019	Wave Height Low (ft)	3
D11	06 Feb 2019	High Tide (ft)	5.3
D11	06 Feb 2019	High Tide Time	923
D11	06 Feb 2019	Low Tide (ft)	1.5
D11	06 Feb 2019	Low Tide Time	325
D11	06 Feb 2019	Comments	Resample; Kelp; Seagrass; 4 Persons; 7 Surfers; Water clear
D11	13 Feb 2019	Arrive Time	1024
D11	13 Feb 2019	Weather	Cloudy
D11	13 Feb 2019	Wind Speed (kts)	7.3
D11	13 Feb 2019	Wind Dir	S
D11	13 Feb 2019	Animal Life	None
D11	13 Feb 2019	Floatables	None
D11	13 Feb 2019	Water Color	Green
D11	13 Feb 2019	Current Direction	N
D11	13 Feb 2019	Water Temp (C)	15.1
D11	13 Feb 2019	Wave Height Low (ft)	2
D11	13 Feb 2019	High Tide (ft)	2.6
D11	13 Feb 2019	High Tide Time	1704
D11	13 Feb 2019	Low Tide (ft)	0.9
D11	13 Feb 2019	Low Tide Time	1041
D11	13 Feb 2019	Comments	Kelp; Seagrass; Algae; 4 Persons; 9 Surfers; Water clear
D11	20 Feb 2019	Arrive Time	948
D11	20 Feb 2019	Weather	Sunny
D11	20 Feb 2019	Wind Speed (kts)	5.9
D11	20 Feb 2019	Wind Dir	W

Station	Date	Parameter	Value
D11	20 Feb 2019	Animal Life	1 Dog
D11	20 Feb 2019	Floatables	None
D11	20 Feb 2019	Water Color	Green
D11	20 Feb 2019	Current Direction	W
D11	20 Feb 2019	Water Temp (C)	16.1
D11	20 Feb 2019	Wave Height Low (ft)	2
D11	20 Feb 2019	High Tide (ft)	6.4
D11	20 Feb 2019	High Tide Time	910
D11	20 Feb 2019	Low Tide (ft)	-1.4
D11	20 Feb 2019	Low Tide Time	1558
D11	20 Feb 2019	Comments	Kelp; Seagrass; Debris; 12 Surfers; Water clear
D11	27 Feb 2019	Arrive Time	1010
D11	27 Feb 2019	Weather	Sunny
D11	27 Feb 2019	Wind Speed (kts)	2.7
D11	27 Feb 2019	Wind Dir	W
D11	27 Feb 2019	Animal Life	3 Dogs
D11	27 Feb 2019	Floatables	None
D11	27 Feb 2019	Water Color	Green
D11	27 Feb 2019	Current Direction	N
D11	27 Feb 2019	Water Temp (C)	15.8
D11	27 Feb 2019	Wave Height Low (ft)	3
D11	27 Feb 2019	High Tide (ft)	4.4
D11	27 Feb 2019	High Tide Time	335
D11	27 Feb 2019	Low Tide (ft)	0.4
D11	27 Feb 2019	Low Tide Time	1128
D11	27 Feb 2019	Comments	2 Persons; 11 Surfers; Water clear
D12	04 Feb 2019	Arrive Time	1205
D12	04 Feb 2019	Weather	Partly Cloudy
D12	04 Feb 2019	Wind Speed (kts)	6.8
D12	04 Feb 2019	Wind Dir	W
D12	04 Feb 2019	Animal Life	None
D12	04 Feb 2019	Floatables	None
D12	04 Feb 2019	Water Color	Green
D12	04 Feb 2019	Current Direction	N
D12	04 Feb 2019	Water Temp (C)	12
D12	04 Feb 2019	Wave Height Low (ft)	4
D12	04 Feb 2019	High Tide (ft)	5.6
D12	04 Feb 2019	High Tide Time	822
D12	04 Feb 2019	Low Tide (ft)	-0.7
D12	04 Feb 2019	Low Tide Time	1526
D12	04 Feb 2019	Comments	Kelp; Seagrass; Water clear
D12	13 Feb 2019	Arrive Time	1050
D12	13 Feb 2019	Weather	Cloudy
D12	13 Feb 2019	Wind Speed (kts)	12.3
D12	13 Feb 2019	Wind Dir	S
D12	13 Feb 2019	Animal Life	None
D12	13 Feb 2019	Floatables	None
D12	13 Feb 2019	Water Color	Green
D12	13 Feb 2019	Current Direction	N
D12	13 Feb 2019	Water Temp (C)	17
D12	13 Feb 2019	Wave Height Low (ft)	3
D12	13 Feb 2019	High Tide (ft)	2.6

Station	Date	Parameter	Value
D12	13 Feb 2019	High Tide Time	1704
D12	13 Feb 2019	Low Tide (ft)	0.9
D12	13 Feb 2019	Low Tide Time	1041
D12	13 Feb 2019	Comments	6 Persons; 9 Surfers; Water clear
D12	20 Feb 2019	Arrive Time	1016
D12	20 Feb 2019	Weather	Partly Cloudy
D12	20 Feb 2019	Wind Speed (kts)	5.4
D12	20 Feb 2019	Wind Dir	N
D12	20 Feb 2019	Animal Life	1 Seagull
D12	20 Feb 2019	Floatables	None
D12	20 Feb 2019	Water Color	Green
D12	20 Feb 2019	Current Direction	N
D12	20 Feb 2019	Water Temp (C)	16.8
D12	20 Feb 2019	Wave Height Low (ft)	2
D12	20 Feb 2019	High Tide (ft)	6.4
D12	20 Feb 2019	High Tide Time	910
D12	20 Feb 2019	Low Tide (ft)	-1.4
D12	20 Feb 2019	Low Tide Time	1558
D12	20 Feb 2019	Comments	1 Person; 11 Surfers; 1 Fisherman; Water clear
D12	27 Feb 2019	Arrive Time	1046
D12	27 Feb 2019	Weather	Sunny
D12	27 Feb 2019	Wind Speed (kts)	4.8
D12	27 Feb 2019	Wind Dir	W
D12	27 Feb 2019	Animal Life	None
D12	27 Feb 2019	Floatables	None
D12	27 Feb 2019	Water Color	Green
D12	27 Feb 2019	Current Direction	N
D12	27 Feb 2019	Water Temp (C)	15.8
D12	27 Feb 2019	Wave Height Low (ft)	3
D12	27 Feb 2019	High Tide (ft)	4.4
D12	27 Feb 2019	High Tide Time	335
D12	27 Feb 2019	Low Tide (ft)	0.4
D12	27 Feb 2019	Low Tide Time	1128
D12	27 Feb 2019	Comments	8 Persons; Water clear



# 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 Feb 2019	17*	17*	22*	3*	5*	3*	14*	5*
02 Feb 2019	17*	17*	22*	3*	5*	3*	14*	5*
03 Feb 2019	17*	17*	22*	3*	5*	3*	14*	5*
04 Feb 2019	17*	17*	22*	3*	5*	3*	14*	5*
05 Feb 2019	17*	17*	22*	3*	5*	3*	14*	5*
06 Feb 2019	24*	14*	24*	3*	6*	2*	15*	5*
07 Feb 2019	37*	13*	26*	5*	5*	2*	12*	6*
08 Feb 2019	37*	13*	26*	5*	5*	2*	12*	6*
09 Feb 2019	37*	13*	26*	5*	5*	2*	12*	6*
10 Feb 2019	37*	13*	26*	5*	5*	2*	12*	6*
11 Feb 2019	38	10	24	5	4	2	8	6
12 Feb 2019	38	10	24	5	4	2	8	6
13 Feb 2019	69*	10*	45*	5*	3*	2*	6*	5*
14 Feb 2019	69*	10*	45*	5*	3*	2*	6*	5*
15 Feb 2019	69*	10*	45*	5*	3*	2*	6*	5*
16 Feb 2019	69*	10*	45*	5*	3*	2*	6*	5*
17 Feb 2019	69*	10*	45*	5*	3*	2*	6*	5*
18 Feb 2019	69*	10*	45*	5*	3*	2*	6*	5*
19 Feb 2019	95	23	64	7	3	3	9	6
20 Feb 2019	95	23	64	7	3	3	9	6
21 Feb 2019	95	23	64	7	3	3	9	6
22 Feb 2019	44*	16*	34*	10*	3*	3*	5*	6*
23 Feb 2019	44*	16*	34*	10*	3*	3*	5*	6*
24 Feb 2019	44*	16*	34*	10*	3*	3*	5*	6*
25 Feb 2019	50	13	39	7	4	3	6	8
26 Feb 2019	50	13	39	7	4	3	6	8
27 Feb 2019	111*	20*	57*	10*	4*	3*	8*	11*
28 Feb 2019	111*	20*	57*	10*	4*	3*	8*	11*

\* 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 Feb 2019	6*	4*	7*	2*	3*	2*	3*	2*
02 Feb 2019	6*	4*	7*	2*	3*	2*	3*	2*
03 Feb 2019	6*	4*	7*	2*	3*	2*	3*	2*
04 Feb 2019	6*	4*	7*	2*	3*	2*	3*	2*
05 Feb 2019	6*	4*	7*	2*	3*	2*	3*	2*
06 Feb 2019	9*	5*	9*	2*	3*	2*	3*	2*
07 Feb 2019	12*	5*	7*	2*	3*	2*	3*	2*
08 Feb 2019	12*	5*	7*	2*	3*	2*	3*	2*
09 Feb 2019	12*	5*	7*	2*	3*	2*	3*	2*
10 Feb 2019	12*	5*	7*	2*	3*	2*	3*	2*
11 Feb 2019	13	4	8	2	3	2	3	2
12 Feb 2019	13	4	8	2	3	2	3	2
13 Feb 2019	20*	5*	11*	2*	2*	2*	2*	2*
14 Feb 2019	20*	5*	11*	2*	2*	2*	2*	2*
15 Feb 2019	20*	5*	11*	2*	2*	2*	2*	2*
16 Feb 2019	20*	5*	11*	2*	2*	2*	2*	2*
17 Feb 2019	20*	5*	11*	2*	2*	2*	2*	2*
18 Feb 2019	20*	5*	11*	2*	2*	2*	2*	2*
19 Feb 2019	24	9	15	3	2	2	3	2
20 Feb 2019	24	9	15	3	2	2	3	2
21 Feb 2019	24	9	15	3	2	2	3	2
22 Feb 2019	14*	8*	9*	3*	2*	2*	3*	2*
23 Feb 2019	14*	8*	9*	3*	2*	2*	3*	2*
24 Feb 2019	14*	8*	9*	3*	2*	2*	3*	2*
25 Feb 2019	10	6	9	3	2	2	3	2
26 Feb 2019	10	6	9	3	2	2	3	2
27 Feb 2019	15*	8*	11*	3*	2*	2*	3*	2*
28 Feb 2019	15*	8*	11*	3*	2*	2*	3*	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 Feb 2019	6*	3*	4*	2*	2*	3*	2*	2*
02 Feb 2019	6*	3*	4*	2*	2*	3*	2*	2*
03 Feb 2019	6*	3*	4*	2*	2*	3*	2*	2*
04 Feb 2019	6*	3*	4*	2*	2*	3*	2*	2*
05 Feb 2019	6*	3*	4*	2*	2*	3*	2*	2*
06 Feb 2019	8*	3*	5*	2*	2*	3*	2*	2*
07 Feb 2019	9*	3*	4*	2*	2*	3*	2*	2*
08 Feb 2019	9*	3*	4*	2*	2*	3*	2*	2*
09 Feb 2019	9*	3*	4*	2*	2*	3*	2*	2*
10 Feb 2019	9*	3*	4*	2*	2*	3*	2*	2*
11 Feb 2019	7	3	4	2	2	3	2	2
12 Feb 2019	7	3	4	2	2	3	2	2
13 Feb 2019	9*	3*	4*	2*	2*	2*	2*	2*
14 Feb 2019	9*	3*	4*	2*	2*	2*	2*	2*
15 Feb 2019	9*	3*	4*	2*	2*	2*	2*	2*
16 Feb 2019	9*	3*	4*	2*	2*	2*	2*	2*
17 Feb 2019	9*	3*	4*	2*	2*	2*	2*	2*
18 Feb 2019	9*	3*	4*	2*	2*	2*	2*	2*
19 Feb 2019	10	5	5	2	2	2	2	2
20 Feb 2019	10	5	5	2	2	2	2	2
21 Feb 2019	10	5	5	2	2	2	2	2
22 Feb 2019	5*	5*	3*	2*	2*	2*	2*	2*
23 Feb 2019	5*	5*	3*	2*	2*	2*	2*	2*
24 Feb 2019	5*	5*	3*	2*	2*	2*	2*	2*
25 Feb 2019	5	4	3	2	2	2	2	2
26 Feb 2019	5	4	3	2	2	2	2	2
27 Feb 2019	6*	5*	3*	2*	2*	2*	2*	2*
28 Feb 2019	6*	5*	3*	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
07 Feb 2019	IC							
11 Feb 2019	IC							
19 Feb 2019	IC							
25 Feb 2019	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
07 Feb 2019	IC							
11 Feb 2019	IC							
19 Feb 2019	IC							
25 Feb 2019	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
07 Feb 2019	IC							
11 Feb 2019	IC							
19 Feb 2019	IC							
25 Feb 2019	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
07 Feb 2019	IC							
11 Feb 2019	IC							
19 Feb 2019	IC	E	IC	IC	IC	IC	IC	IC
25 Feb 2019	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* (Enter) 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	Enter	F:T	Temp	XMS	DO	Sal	pH
A1	07 Feb 2019	802	1	2e	<2	<2	1.00	15.3	80.93	7.9	33.53	8.2
A1	07 Feb 2019	802	12	240e	44	18e	0.18	15.0	82.43	7.4	33.61	8.2
A1	07 Feb 2019	802	18	160e	42	12e	0.26	14.9	80.79	7.3	33.61	8.2
A1	11 Feb 2019	800	1	6e	<2	2e	0.33	14.9	83.69	7.8	33.57	8.2
A1	11 Feb 2019	800	12	14e	6e	<2	0.43	14.9	83.42	7.6	33.58	8.2
A1	11 Feb 2019	800	18	100e	30e	<2	0.30	14.4	79.03	7.0	33.62	8.1
A1	19 Feb 2019	750	1	58	6e	6e	0.10	13.9	82.96	7.1	33.47	8.1
A1	19 Feb 2019	750	12	440	68	16e	0.15	11.8	86.83	5.2	33.64	7.9
A1	19 Feb 2019	750	18	540	68	32e	0.13	11.7	86.43	5.3	33.66	7.9
A1	25 Feb 2019	820	1	<200	<2	<2	0.01	13.4	81.00	8.1	33.46	8.1
A1	25 Feb 2019	820	12	12e	2e	<2	0.17	13.1	81.93	7.0	33.55	8.1
A1	25 Feb 2019	820	18	32e	4e	4e	0.12	12.4	82.04	6.5	33.63	8.0
A6	07 Feb 2019	831	1	<2	<2	<2	1.00	15.2	78.22	8.0	33.41	8.2
A6	07 Feb 2019	831	12	8e	2e	<2	0.25	15.3	81.24	7.5	33.61	8.2
A6	07 Feb 2019	831	18	20e	8e	8e	0.40	15.2	81.24	7.4	33.61	8.2
A6	11 Feb 2019	828	1	<2	2e	<2	1.00	14.9	82.40	8.0	33.56	8.2
A6	11 Feb 2019	828	12	2e	<2	<2	1.00	14.9	82.10	7.9	33.57	8.2
A6	11 Feb 2019	828	18	6e	4e	<2	0.67	14.9	82.38	7.6	33.57	8.2
A6	19 Feb 2019	817	1	<200	66	10e	0.33	14.4	79.26	8.0	33.46	8.2
A6	19 Feb 2019	817	12	640	140e	18e	0.22	14.2	82.45	7.6	33.48	8.1
A6	19 Feb 2019	817	18	1500	320e	60	0.21	11.9	86.57	5.4	33.62	8.0
A6	25 Feb 2019	843	1	<2	<2	<2	1.00	13.7	79.86	8.8	33.50	8.2
A6	25 Feb 2019	843	12	4e	4e	<2	1.00	13.3	77.79	7.5	33.52	8.1
A6	25 Feb 2019	843	18	12e	<2	<2	0.17	13.0	80.70	6.9	33.57	8.1
A7	07 Feb 2019	815	1	18e	<2	<2	0.11	15.1	79.53	8.0	33.45	8.2
A7	07 Feb 2019	815	12	<20	6e	<2	0.30	15.3	81.82	7.5	33.61	8.2
A7	07 Feb 2019	815	18	60	4e	2e	0.07	15.3	80.96	7.4	33.61	8.2
A7	11 Feb 2019	816	1	2e	2e	<2	1.00	15.0	82.93	7.9	33.57	8.2
A7	11 Feb 2019	816	12	32e	24e	<2	0.75	15.0	83.36	7.7	33.58	8.2
A7	11 Feb 2019	816	18	22e	<2	<2	0.09	14.9	80.33	7.5	33.58	8.2
A7	19 Feb 2019	804	1	10e	<2	<2	0.20	14.4	83.01	7.9	33.49	8.1
A7	19 Feb 2019	804	12	150	18e	4e	0.12	13.8	84.97	7.0	33.55	8.1
A7	19 Feb 2019	804	18	600	120e	24e	0.20	12.4	86.39	5.8	33.62	8.0
A7	25 Feb 2019	831	1	2e	<2	<2	1.00	13.4	81.29	8.2	33.53	8.1
A7	25 Feb 2019	831	12	2e	<2	<2	1.00	13.3	81.18	8.0	33.54	8.1
A7	25 Feb 2019	831	18	200e	22e	4e	0.11	12.1	84.84	5.7	33.65	8.0

Station	Date	Time	Depth	Total	Fecal	Enteric	F:T	Temp	XMS	DO	Sal	pH
C4	07 Feb 2019	945	1	6e	<2	<2	0.33	15.0	62.79	7.9	33.31	8.2
C4	07 Feb 2019	945	3	20e	<2	<2	0.10	15.0	64.59	7.8	33.32	8.2
C4	07 Feb 2019	945	9	<20	2e	2e	0.10	15.2	72.50	7.0	33.51	8.2
C4	11 Feb 2019	944	1	<2	<2	<2	1.00	14.9	64.32	8.3	33.54	8.2
C4	11 Feb 2019	944	3	4e	2e	<2	0.50	14.8	64.19	8.3	33.54	8.2
C4	11 Feb 2019	944	9	<20	4e	<2	0.20	14.8	53.30	8.3	33.54	8.2
C4	19 Feb 2019	926	1	4e	<2	<2	0.50	14.2	79.15	7.7	33.46	8.1
C4	19 Feb 2019	926	3	2e	2e	<2	1.00	14.1	81.95	7.7	33.47	8.1
C4	19 Feb 2019	926	9	120	16e	2e	0.13	12.8	84.09	6.0	33.58	8.0
C4	25 Feb 2019	959	1	<2	<2	<2	1.00	13.5	81.40	8.2	33.42	8.1
C4	25 Feb 2019	959	3	<2	<2	<2	1.00	13.5	81.14	8.1	33.43	8.1
C4	25 Feb 2019	959	9	<2	<2	<2	1.00	13.4	84.92	7.2	33.52	8.1
C5	07 Feb 2019	935	1	2e	<2	<2	1.00	15.3	77.67	7.7	33.52	8.2
C5	07 Feb 2019	935	3	2e	<2	<2	1.00	15.3	77.11	7.7	33.52	8.2
C5	07 Feb 2019	935	9	2e	<2	<2	1.00	15.3	72.98	7.4	33.54	8.2
C5	11 Feb 2019	935	1	2e	<2	<2	1.00	15.0	75.27	8.2	33.54	8.2
C5	11 Feb 2019	935	3	<2	<2	<2	1.00	15.0	74.66	8.2	33.55	8.2
C5	11 Feb 2019	935	9	<2	<2	<2	1.00	14.9	72.65	8.1	33.55	8.2
C5	19 Feb 2019	914	1	<2	<2	<2	1.00	14.3	76.72	8.0	33.43	8.2
C5	19 Feb 2019	914	3	4e	<2	<2	0.50	14.2	76.78	7.9	33.43	8.2
C5	19 Feb 2019	914	9	16e	<2	<2	0.12	14.1	77.42	7.4	33.47	8.1
C5	25 Feb 2019	949	1	<2	<2	<2	1.00	13.8	85.03	9.7	33.55	8.3
C5	25 Feb 2019	949	3	<2	<2	<2	1.00	13.7	85.02	9.6	33.55	8.3
C5	25 Feb 2019	949	9	18e	<2	<2	0.11	13.0	86.47	6.9	33.59	8.1
C6	07 Feb 2019	918	1	2e	<2	<2	1.00	15.3	79.13	7.7	33.49	8.2
C6	07 Feb 2019	918	3	<2	<2	<2	1.00	15.3	78.42	7.6	33.49	8.2
C6	07 Feb 2019	918	9	6e	2e	<2	0.33	15.5	78.21	7.4	33.57	8.2
C6	11 Feb 2019	921	1	2e	<2	<2	1.00	15.0	77.74	8.0	33.55	8.2
C6	11 Feb 2019	921	3	<2	<2	<2	1.00	15.0	77.14	8.0	33.55	8.2
C6	11 Feb 2019	921	9	2e	<2	<2	1.00	15.0	76.18	7.8	33.56	8.2
C6	19 Feb 2019	903	1	4e	<2	<2	0.50	14.3	78.18	8.0	33.46	8.2
C6	19 Feb 2019	903	3	4e	<2	<2	0.50	14.3	79.19	8.0	33.47	8.2
C6	19 Feb 2019	903	9	<2	<2	<2	1.00	14.3	79.69	7.6	33.49	8.2
C6	25 Feb 2019	937	1	<2	<2	<2	1.00	13.8	82.34	8.9	33.50	8.2
C6	25 Feb 2019	937	3	<2	<2	<2	1.00	13.8	83.24	8.9	33.51	8.2
C6	25 Feb 2019	937	9	6e	<2	2e	0.33	12.9	84.83	6.9	33.58	8.1
C7	07 Feb 2019	846	1	8e	<2	<2	0.25	15.0	77.00	8.1	33.35	8.2
C7	07 Feb 2019	846	12	2e	<2	<2	1.00	15.5	80.16	7.8	33.58	8.2
C7	07 Feb 2019	846	18	6e	<2	<2	0.33	15.4	80.90	7.5	33.60	8.2
C7	11 Feb 2019	847	1	<2	<2	<2	1.00	15.0	81.75	8.0	33.57	8.2
C7	11 Feb 2019	847	12	<2	<2	2e	1.00	15.0	81.93	7.7	33.59	8.2

Station	Date	Time	Depth	Total	Fecal	Enteric	F:T	Temp	XMS	DO	Sal	pH
C7	11 Feb 2019	847	18	2e	<2	<2	1.00	14.7	81.42	7.3	33.61	8.2
C7	19 Feb 2019	832	1	<2	<2	<2	1.00	14.5	80.47	8.2	33.41	8.2
C7	19 Feb 2019	832	12	2e	<2	<2	1.00	14.4	83.96	7.5	33.52	8.1
C7	19 Feb 2019	832	18	120	22e	4e	0.18	12.3	83.42	5.6	33.62	8.0
C7	25 Feb 2019	902	1	2e	<2	<2	1.00	13.6	77.39	8.2	33.41	8.2
C7	25 Feb 2019	902	12	4e	<2	<2	0.50	13.5	78.93	7.8	33.49	8.1
C7	25 Feb 2019	902	18	<20	2e	4e	0.10	12.9	84.35	6.5	33.47	8.0
C8	07 Feb 2019	859	1	20e	2e	<2	0.10	15.1	74.78	8.1	33.28	8.2
C8	07 Feb 2019	859	12	4e	<2	<2	0.50	15.4	80.14	7.8	33.56	8.2
C8	07 Feb 2019	859	18	10e	<2	<2	0.20	15.4	79.88	7.8	33.56	8.2
C8	11 Feb 2019	900	1	<2	<2	<2	1.00	15.0	79.08	8.1	33.50	8.2
C8	11 Feb 2019	900	12	<2	<2	<2	1.00	14.8	84.48	7.4	33.62	8.2
C8	11 Feb 2019	900	18	8e	<2	<2	0.25	14.6	78.81	7.2	33.61	8.2
C8	19 Feb 2019	843	1	<2	<2	<2	1.00	14.4	75.50	8.1	33.32	8.2
C8	19 Feb 2019	843	12	2e	<2	<2	1.00	14.5	83.62	7.6	33.53	8.1
C8	19 Feb 2019	843	18	36e	6e	2e	0.17	13.2	85.11	6.3	33.60	8.0
C8	25 Feb 2019	915	1	4e	<2	<2	0.50	13.7	77.56	8.4	33.35	8.2
C8	25 Feb 2019	915	12	2e	<2	<2	1.00	13.5	78.25	7.8	33.50	8.1
C8	25 Feb 2019	915	18	62	2e	<2	0.03	12.1	85.38	5.7	33.65	8.0

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	07 Feb 2019	Depth (m)	19
A1	07 Feb 2019	Arrive Time	802
A1	07 Feb 2019	Depart Time	808
A1	07 Feb 2019	Air Temp (C)	10
A1	07 Feb 2019	Weather	Haze
A1	07 Feb 2019	Visibility (mi)	14
A1	07 Feb 2019	Wind Speed (kts)	8
A1	07 Feb 2019	Wind Dir	E
A1	07 Feb 2019	Water Color	Greenish-Blue
A1	07 Feb 2019	Wave Ht Low (ft)	2
A1	07 Feb 2019	Wave Period (sec)	7
A1	07 Feb 2019	Sea State	Light chop
A1	07 Feb 2019	High Tide (ft)	5.03
A1	07 Feb 2019	High Tide Time	953
A1	07 Feb 2019	Low Tide (ft)	1.49
A1	07 Feb 2019	Low Tide Time	358
A1	07 Feb 2019	Comments	none
A1	11 Feb 2019	Depth (m)	18
A1	11 Feb 2019	Arrive Time	800
A1	11 Feb 2019	Depart Time	808
A1	11 Feb 2019	Air Temp (C)	10
A1	11 Feb 2019	Weather	Haze
A1	11 Feb 2019	Visibility (mi)	13
A1	11 Feb 2019	Wind Speed (kts)	9
A1	11 Feb 2019	Wind Dir	E
A1	11 Feb 2019	Water Color	Greenish-Blue
A1	11 Feb 2019	Wave Ht Low (ft)	6
A1	11 Feb 2019	Wave Period (sec)	7
A1	11 Feb 2019	Sea State	Confused swell
A1	11 Feb 2019	High Tide (ft)	2.93
A1	11 Feb 2019	High Tide Time	1249
A1	11 Feb 2019	Low Tide (ft)	1.68
A1	11 Feb 2019	Low Tide Time	728
A1	11 Feb 2019	Comments	none
A1	19 Feb 2019	Depth (m)	20
A1	19 Feb 2019	Arrive Time	750
A1	19 Feb 2019	Depart Time	756
A1	19 Feb 2019	Air Temp (C)	8
A1	19 Feb 2019	Weather	Partly Cloudy
A1	19 Feb 2019	Visibility (mi)	15
A1	19 Feb 2019	Wind Speed (kts)	8
A1	19 Feb 2019	Wind Dir	E
A1	19 Feb 2019	Water Color	Brownish-Green
A1	19 Feb 2019	Wave Ht Low (ft)	5
A1	19 Feb 2019	Wave Period (sec)	11
A1	19 Feb 2019	Sea State	Light chop
A1	19 Feb 2019	High Tide (ft)	6.59
A1	19 Feb 2019	High Tide Time	824
A1	19 Feb 2019	Low Tide (ft)	-1.68

Station	Date	Parameter	Value
A1	19 Feb 2019	Low Tide Time	1519
A1	19 Feb 2019	Comments	none
A1	25 Feb 2019	Depth (m)	18
A1	25 Feb 2019	Arrive Time	820
A1	25 Feb 2019	Depart Time	823
A1	25 Feb 2019	Air Temp (C)	11
A1	25 Feb 2019	Weather	Clear
A1	25 Feb 2019	Visibility (mi)	5
A1	25 Feb 2019	Wind Speed (kts)	8
A1	25 Feb 2019	Wind Dir	E
A1	25 Feb 2019	Water Color	Greenish-Blue
A1	25 Feb 2019	Wave Ht Low (ft)	3
A1	25 Feb 2019	Wave Period (sec)	11
A1	25 Feb 2019	Sea State	Calm
A1	25 Feb 2019	High Tide (ft)	2.86
A1	25 Feb 2019	High Tide Time	1418
A1	25 Feb 2019	Low Tide (ft)	0.88
A1	25 Feb 2019	Low Tide Time	821
A1	25 Feb 2019	Comments	Kelp
A6	07 Feb 2019	Depth (m)	18
A6	07 Feb 2019	Arrive Time	831
A6	07 Feb 2019	Depart Time	836
A6	07 Feb 2019	Air Temp (C)	11
A6	07 Feb 2019	Weather	Haze
A6	07 Feb 2019	Visibility (mi)	14
A6	07 Feb 2019	Wind Speed (kts)	7
A6	07 Feb 2019	Wind Dir	NE
A6	07 Feb 2019	Water Color	Greenish-Blue
A6	07 Feb 2019	Wave Ht Low (ft)	2
A6	07 Feb 2019	Wave Period (sec)	7
A6	07 Feb 2019	Sea State	Light chop
A6	07 Feb 2019	High Tide (ft)	5.03
A6	07 Feb 2019	High Tide Time	953
A6	07 Feb 2019	Low Tide (ft)	1.49
A6	07 Feb 2019	Low Tide Time	358
A6	07 Feb 2019	Comments	Kelp
A6	11 Feb 2019	Depth (m)	18
A6	11 Feb 2019	Arrive Time	828
A6	11 Feb 2019	Depart Time	835
A6	11 Feb 2019	Air Temp (C)	10
A6	11 Feb 2019	Weather	Haze
A6	11 Feb 2019	Visibility (mi)	13
A6	11 Feb 2019	Wind Speed (kts)	9
A6	11 Feb 2019	Wind Dir	NE
A6	11 Feb 2019	Water Color	Greenish-Blue
A6	11 Feb 2019	Wave Ht Low (ft)	6
A6	11 Feb 2019	Wave Period (sec)	7
A6	11 Feb 2019	Sea State	Confused swell
A6	11 Feb 2019	High Tide (ft)	2.93
A6	11 Feb 2019	High Tide Time	1249
A6	11 Feb 2019	Low Tide (ft)	1.68
A6	11 Feb 2019	Low Tide Time	728

Station	Date	Parameter	Value
A6	11 Feb 2019	Comments	none
A6	19 Feb 2019	Depth (m)	19
A6	19 Feb 2019	Arrive Time	817
A6	19 Feb 2019	Depart Time	820
A6	19 Feb 2019	Air Temp (C)	8
A6	19 Feb 2019	Weather	Partly Cloudy
A6	19 Feb 2019	Visibility (mi)	15
A6	19 Feb 2019	Wind Speed (kts)	5
A6	19 Feb 2019	Wind Dir	E
A6	19 Feb 2019	Water Color	Brownish-Green
A6	19 Feb 2019	Wave Ht Low (ft)	5
A6	19 Feb 2019	Wave Period (sec)	11
A6	19 Feb 2019	Sea State	Light chop
A6	19 Feb 2019	High Tide (ft)	6.59
A6	19 Feb 2019	High Tide Time	824
A6	19 Feb 2019	Low Tide (ft)	-1.68
A6	19 Feb 2019	Low Tide Time	1519
A6	19 Feb 2019	Comments	none
A6	25 Feb 2019	Depth (m)	18
A6	25 Feb 2019	Arrive Time	843
A6	25 Feb 2019	Depart Time	851
A6	25 Feb 2019	Air Temp (C)	12
A6	25 Feb 2019	Weather	Clear
A6	25 Feb 2019	Visibility (mi)	5
A6	25 Feb 2019	Wind Speed (kts)	6
A6	25 Feb 2019	Wind Dir	E
A6	25 Feb 2019	Water Color	Greenish-Blue
A6	25 Feb 2019	Wave Ht Low (ft)	3
A6	25 Feb 2019	Wave Period (sec)	11
A6	25 Feb 2019	Sea State	Light chop
A6	25 Feb 2019	High Tide (ft)	2.86
A6	25 Feb 2019	High Tide Time	1418
A6	25 Feb 2019	Low Tide (ft)	0.88
A6	25 Feb 2019	Low Tide Time	821
A6	25 Feb 2019	Comments	Kelp
A7	07 Feb 2019	Depth (m)	18
A7	07 Feb 2019	Arrive Time	815
A7	07 Feb 2019	Depart Time	820
A7	07 Feb 2019	Air Temp (C)	10
A7	07 Feb 2019	Weather	Haze
A7	07 Feb 2019	Visibility (mi)	14
A7	07 Feb 2019	Wind Speed (kts)	9
A7	07 Feb 2019	Wind Dir	NE
A7	07 Feb 2019	Water Color	Greenish-Blue
A7	07 Feb 2019	Wave Ht Low (ft)	2
A7	07 Feb 2019	Wave Period (sec)	7
A7	07 Feb 2019	Sea State	Light chop
A7	07 Feb 2019	High Tide (ft)	5.03
A7	07 Feb 2019	High Tide Time	953
A7	07 Feb 2019	Low Tide (ft)	1.49
A7	07 Feb 2019	Low Tide Time	358
A7	07 Feb 2019	Comments	none

Station	Date	Parameter	Value
A7	11 Feb 2019	Depth (m)	18
A7	11 Feb 2019	Arrive Time	816
A7	11 Feb 2019	Depart Time	822
A7	11 Feb 2019	Air Temp (C)	10
A7	11 Feb 2019	Weather	Haze
A7	11 Feb 2019	Visibility (mi)	13
A7	11 Feb 2019	Wind Speed (kts)	5
A7	11 Feb 2019	Wind Dir	NE
A7	11 Feb 2019	Water Color	Greenish-Blue
A7	11 Feb 2019	Wave Ht Low (ft)	6
A7	11 Feb 2019	Wave Period (sec)	7
A7	11 Feb 2019	Sea State	Confused swell
A7	11 Feb 2019	High Tide (ft)	2.93
A7	11 Feb 2019	High Tide Time	1249
A7	11 Feb 2019	Low Tide (ft)	1.68
A7	11 Feb 2019	Low Tide Time	728
A7	11 Feb 2019	Comments	none
A7	19 Feb 2019	Depth (m)	19
A7	19 Feb 2019	Arrive Time	804
A7	19 Feb 2019	Depart Time	807
A7	19 Feb 2019	Air Temp (C)	8
A7	19 Feb 2019	Weather	Partly Cloudy
A7	19 Feb 2019	Visibility (mi)	15
A7	19 Feb 2019	Wind Speed (kts)	7
A7	19 Feb 2019	Wind Dir	NE
A7	19 Feb 2019	Water Color	Brownish-Green
A7	19 Feb 2019	Wave Ht Low (ft)	5
A7	19 Feb 2019	Wave Period (sec)	11
A7	19 Feb 2019	Sea State	Light chop
A7	19 Feb 2019	High Tide (ft)	6.59
A7	19 Feb 2019	High Tide Time	824
A7	19 Feb 2019	Low Tide (ft)	-1.68
A7	19 Feb 2019	Low Tide Time	1519
A7	19 Feb 2019	Comments	none
A7	25 Feb 2019	Depth (m)	18
A7	25 Feb 2019	Arrive Time	831
A7	25 Feb 2019	Depart Time	834
A7	25 Feb 2019	Air Temp (C)	12
A7	25 Feb 2019	Weather	Clear
A7	25 Feb 2019	Visibility (mi)	5
A7	25 Feb 2019	Wind Speed (kts)	6
A7	25 Feb 2019	Wind Dir	SE
A7	25 Feb 2019	Water Color	Greenish-Blue
A7	25 Feb 2019	Wave Ht Low (ft)	3
A7	25 Feb 2019	Wave Period (sec)	11
A7	25 Feb 2019	Sea State	Light chop
A7	25 Feb 2019	High Tide (ft)	2.86
A7	25 Feb 2019	High Tide Time	1418
A7	25 Feb 2019	Low Tide (ft)	0.88
A7	25 Feb 2019	Low Tide Time	821
A7	25 Feb 2019	Comments	Kelp

Station	Date	Parameter	Value
C4	07 Feb 2019	Depth (m)	12
C4	07 Feb 2019	Arrive Time	945
C4	07 Feb 2019	Depart Time	949
C4	07 Feb 2019	Air Temp (C)	12
C4	07 Feb 2019	Weather	Haze
C4	07 Feb 2019	Visibility (mi)	14
C4	07 Feb 2019	Wind Speed (kts)	8
C4	07 Feb 2019	Wind Dir	N
C4	07 Feb 2019	Water Color	Green
C4	07 Feb 2019	Wave Ht Low (ft)	2
C4	07 Feb 2019	Wave Period (sec)	7
C4	07 Feb 2019	Sea State	Light chop
C4	07 Feb 2019	High Tide (ft)	5.03
C4	07 Feb 2019	High Tide Time	953
C4	07 Feb 2019	Low Tide (ft)	1.49
C4	07 Feb 2019	Low Tide Time	358
C4	07 Feb 2019	Comments	Lobster floats; Kelp
C4	11 Feb 2019	Depth (m)	12
C4	11 Feb 2019	Arrive Time	944
C4	11 Feb 2019	Depart Time	948
C4	11 Feb 2019	Air Temp (C)	11
C4	11 Feb 2019	Weather	Haze
C4	11 Feb 2019	Visibility (mi)	13
C4	11 Feb 2019	Wind Speed (kts)	9
C4	11 Feb 2019	Wind Dir	E
C4	11 Feb 2019	Water Color	Greenish-Blue
C4	11 Feb 2019	Wave Ht Low (ft)	6
C4	11 Feb 2019	Wave Period (sec)	7
C4	11 Feb 2019	Sea State	Confused swell
C4	11 Feb 2019	High Tide (ft)	2.93
C4	11 Feb 2019	High Tide Time	1249
C4	11 Feb 2019	Low Tide (ft)	1.68
C4	11 Feb 2019	Low Tide Time	728
C4	11 Feb 2019	Comments	Kelp
C4	19 Feb 2019	Depth (m)	12
C4	19 Feb 2019	Arrive Time	926
C4	19 Feb 2019	Depart Time	929
C4	19 Feb 2019	Air Temp (C)	9
C4	19 Feb 2019	Weather	Partly Cloudy
C4	19 Feb 2019	Visibility (mi)	15
C4	19 Feb 2019	Wind Speed (kts)	5
C4	19 Feb 2019	Wind Dir	SE
C4	19 Feb 2019	Water Color	Brownish-Green
C4	19 Feb 2019	Wave Ht Low (ft)	5
C4	19 Feb 2019	Wave Period (sec)	11
C4	19 Feb 2019	Sea State	Light chop
C4	19 Feb 2019	High Tide (ft)	6.59
C4	19 Feb 2019	High Tide Time	824
C4	19 Feb 2019	Low Tide (ft)	-1.68
C4	19 Feb 2019	Low Tide Time	1519
C4	19 Feb 2019	Comments	none
C4	25 Feb 2019	Depth (m)	11

Station	Date	Parameter	Value
C4	25 Feb 2019	Arrive Time	959
C4	25 Feb 2019	Depart Time	1001
C4	25 Feb 2019	Air Temp (C)	13
C4	25 Feb 2019	Weather	Haze
C4	25 Feb 2019	Visibility (mi)	9
C4	25 Feb 2019	Wind Speed (kts)	3
C4	25 Feb 2019	Wind Dir	SE
C4	25 Feb 2019	Water Color	Green
C4	25 Feb 2019	Wave Ht Low (ft)	3
C4	25 Feb 2019	Wave Period (sec)	11
C4	25 Feb 2019	Sea State	Light chop
C4	25 Feb 2019	High Tide (ft)	2.86
C4	25 Feb 2019	High Tide Time	1418
C4	25 Feb 2019	Low Tide (ft)	0.88
C4	25 Feb 2019	Low Tide Time	821
C4	25 Feb 2019	Comments	Kelp
C5	07 Feb 2019	Depth (m)	11
C5	07 Feb 2019	Arrive Time	935
C5	07 Feb 2019	Depart Time	938
C5	07 Feb 2019	Air Temp (C)	12
C5	07 Feb 2019	Weather	Haze
C5	07 Feb 2019	Visibility (mi)	14
C5	07 Feb 2019	Wind Speed (kts)	6
C5	07 Feb 2019	Wind Dir	N
C5	07 Feb 2019	Water Color	Greenish-Blue
C5	07 Feb 2019	Wave Ht Low (ft)	2
C5	07 Feb 2019	Wave Period (sec)	7
C5	07 Feb 2019	Sea State	Light chop
C5	07 Feb 2019	High Tide (ft)	5.03
C5	07 Feb 2019	High Tide Time	953
C5	07 Feb 2019	Low Tide (ft)	1.49
C5	07 Feb 2019	Low Tide Time	358
C5	07 Feb 2019	Comments	none
C5	11 Feb 2019	Depth (m)	10
C5	11 Feb 2019	Arrive Time	935
C5	11 Feb 2019	Depart Time	937
C5	11 Feb 2019	Air Temp (C)	11
C5	11 Feb 2019	Weather	Haze
C5	11 Feb 2019	Visibility (mi)	13
C5	11 Feb 2019	Wind Speed (kts)	5
C5	11 Feb 2019	Wind Dir	NE
C5	11 Feb 2019	Water Color	Greenish-Blue
C5	11 Feb 2019	Wave Ht Low (ft)	6
C5	11 Feb 2019	Wave Period (sec)	7
C5	11 Feb 2019	Sea State	Confused swell
C5	11 Feb 2019	High Tide (ft)	2.93
C5	11 Feb 2019	High Tide Time	1249
C5	11 Feb 2019	Low Tide (ft)	1.68
C5	11 Feb 2019	Low Tide Time	728
C5	11 Feb 2019	Comments	Kelp
C5	19 Feb 2019	Depth (m)	10
C5	19 Feb 2019	Arrive Time	914

Station	Date	Parameter	Value
C5	19 Feb 2019	Depart Time	918
C5	19 Feb 2019	Air Temp (C)	9
C5	19 Feb 2019	Weather	Partly Cloudy
C5	19 Feb 2019	Visibility (mi)	15
C5	19 Feb 2019	Wind Speed (kts)	1
C5	19 Feb 2019	Wind Dir	SE
C5	19 Feb 2019	Water Color	Brownish-Green
C5	19 Feb 2019	Wave Ht Low (ft)	5
C5	19 Feb 2019	Wave Period (sec)	11
C5	19 Feb 2019	Sea State	Light chop
C5	19 Feb 2019	High Tide (ft)	6.59
C5	19 Feb 2019	High Tide Time	824
C5	19 Feb 2019	Low Tide (ft)	-1.68
C5	19 Feb 2019	Low Tide Time	1519
C5	19 Feb 2019	Comments	none
C5	25 Feb 2019	Depth (m)	10
C5	25 Feb 2019	Arrive Time	949
C5	25 Feb 2019	Depart Time	951
C5	25 Feb 2019	Air Temp (C)	13
C5	25 Feb 2019	Weather	Haze
C5	25 Feb 2019	Visibility (mi)	8
C5	25 Feb 2019	Wind Speed (kts)	4
C5	25 Feb 2019	Wind Dir	S
C5	25 Feb 2019	Water Color	Green
C5	25 Feb 2019	Wave Ht Low (ft)	3
C5	25 Feb 2019	Wave Period (sec)	11
C5	25 Feb 2019	Sea State	Light chop
C5	25 Feb 2019	High Tide (ft)	2.86
C5	25 Feb 2019	High Tide Time	1418
C5	25 Feb 2019	Low Tide (ft)	0.88
C5	25 Feb 2019	Low Tide Time	821
C5	25 Feb 2019	Comments	Kelp
C6	07 Feb 2019	Depth (m)	9
C6	07 Feb 2019	Arrive Time	918
C6	07 Feb 2019	Depart Time	928
C6	07 Feb 2019	Air Temp (C)	12
C6	07 Feb 2019	Weather	Haze
C6	07 Feb 2019	Visibility (mi)	14
C6	07 Feb 2019	Wind Speed (kts)	6
C6	07 Feb 2019	Wind Dir	SE
C6	07 Feb 2019	Water Color	Greenish-Blue
C6	07 Feb 2019	Wave Ht Low (ft)	2
C6	07 Feb 2019	Wave Period (sec)	7
C6	07 Feb 2019	Sea State	Light chop
C6	07 Feb 2019	High Tide (ft)	5.03
C6	07 Feb 2019	High Tide Time	953
C6	07 Feb 2019	Low Tide (ft)	1.49
C6	07 Feb 2019	Low Tide Time	358
C6	07 Feb 2019	Comments	none
C6	11 Feb 2019	Depth (m)	9
C6	11 Feb 2019	Arrive Time	921
C6	11 Feb 2019	Depart Time	925

Station	Date	Parameter	Value
C6	11 Feb 2019	Air Temp (C)	12
C6	11 Feb 2019	Weather	Haze
C6	11 Feb 2019	Visibility (mi)	13
C6	11 Feb 2019	Wind Speed (kts)	6
C6	11 Feb 2019	Wind Dir	SE
C6	11 Feb 2019	Water Color	Greenish-Blue
C6	11 Feb 2019	Wave Ht Low (ft)	6
C6	11 Feb 2019	Wave Period (sec)	7
C6	11 Feb 2019	Sea State	Confused swell
C6	11 Feb 2019	High Tide (ft)	2.93
C6	11 Feb 2019	High Tide Time	1249
C6	11 Feb 2019	Low Tide (ft)	1.68
C6	11 Feb 2019	Low Tide Time	728
C6	11 Feb 2019	Comments	Kelp
C6	19 Feb 2019	Depth (m)	10
C6	19 Feb 2019	Arrive Time	903
C6	19 Feb 2019	Depart Time	906
C6	19 Feb 2019	Air Temp (C)	10
C6	19 Feb 2019	Weather	Partly Cloudy
C6	19 Feb 2019	Visibility (mi)	15
C6	19 Feb 2019	Wind Speed (kts)	1
C6	19 Feb 2019	Wind Dir	NE
C6	19 Feb 2019	Water Color	Brownish-Green
C6	19 Feb 2019	Wave Ht Low (ft)	5
C6	19 Feb 2019	Wave Period (sec)	11
C6	19 Feb 2019	Sea State	Light chop
C6	19 Feb 2019	High Tide (ft)	6.59
C6	19 Feb 2019	High Tide Time	824
C6	19 Feb 2019	Low Tide (ft)	-1.68
C6	19 Feb 2019	Low Tide Time	1519
C6	19 Feb 2019	Comments	none
C6	25 Feb 2019	Depth (m)	10
C6	25 Feb 2019	Arrive Time	937
C6	25 Feb 2019	Depart Time	939
C6	25 Feb 2019	Air Temp (C)	13
C6	25 Feb 2019	Weather	Haze
C6	25 Feb 2019	Visibility (mi)	8
C6	25 Feb 2019	Wind Speed (kts)	3
C6	25 Feb 2019	Wind Dir	SE
C6	25 Feb 2019	Water Color	Green
C6	25 Feb 2019	Wave Ht Low (ft)	3
C6	25 Feb 2019	Wave Period (sec)	11
C6	25 Feb 2019	Sea State	Light chop
C6	25 Feb 2019	High Tide (ft)	2.86
C6	25 Feb 2019	High Tide Time	1418
C6	25 Feb 2019	Low Tide (ft)	0.88
C6	25 Feb 2019	Low Tide Time	821
C6	25 Feb 2019	Comments	Kelp
C7	07 Feb 2019	Depth (m)	20
C7	07 Feb 2019	Arrive Time	846
C7	07 Feb 2019	Depart Time	852
C7	07 Feb 2019	Air Temp (C)	11

Station	Date	Parameter	Value
C7	07 Feb 2019	Weather	Haze
C7	07 Feb 2019	Visibility (mi)	14
C7	07 Feb 2019	Wind Speed (kts)	5
C7	07 Feb 2019	Wind Dir	E
C7	07 Feb 2019	Water Color	Greenish-Blue
C7	07 Feb 2019	Wave Ht Low (ft)	2
C7	07 Feb 2019	Wave Period (sec)	7
C7	07 Feb 2019	Sea State	Light chop
C7	07 Feb 2019	High Tide (ft)	5.03
C7	07 Feb 2019	High Tide Time	953
C7	07 Feb 2019	Low Tide (ft)	1.49
C7	07 Feb 2019	Low Tide Time	358
C7	07 Feb 2019	Comments	Hundreds of cormorants and a few seagulls on station upon arrival
C7	11 Feb 2019	Depth (m)	18
C7	11 Feb 2019	Arrive Time	847
C7	11 Feb 2019	Depart Time	851
C7	11 Feb 2019	Air Temp (C)	11
C7	11 Feb 2019	Weather	Haze
C7	11 Feb 2019	Visibility (mi)	13
C7	11 Feb 2019	Wind Speed (kts)	8
C7	11 Feb 2019	Wind Dir	SE
C7	11 Feb 2019	Water Color	Greenish-Blue
C7	11 Feb 2019	Wave Ht Low (ft)	6
C7	11 Feb 2019	Wave Period (sec)	7
C7	11 Feb 2019	Sea State	Confused swell
C7	11 Feb 2019	High Tide (ft)	2.93
C7	11 Feb 2019	High Tide Time	1249
C7	11 Feb 2019	Low Tide (ft)	1.68
C7	11 Feb 2019	Low Tide Time	728
C7	11 Feb 2019	Comments	none
C7	19 Feb 2019	Depth (m)	19
C7	19 Feb 2019	Arrive Time	832
C7	19 Feb 2019	Depart Time	835
C7	19 Feb 2019	Air Temp (C)	9
C7	19 Feb 2019	Weather	Partly Cloudy
C7	19 Feb 2019	Visibility (mi)	15
C7	19 Feb 2019	Wind Speed (kts)	4
C7	19 Feb 2019	Wind Dir	E
C7	19 Feb 2019	Water Color	Brownish-Green
C7	19 Feb 2019	Wave Ht Low (ft)	5
C7	19 Feb 2019	Wave Period (sec)	11
C7	19 Feb 2019	Sea State	Light chop
C7	19 Feb 2019	High Tide (ft)	6.59
C7	19 Feb 2019	High Tide Time	824
C7	19 Feb 2019	Low Tide (ft)	-1.68
C7	19 Feb 2019	Low Tide Time	1519
C7	19 Feb 2019	Comments	none
C7	25 Feb 2019	Depth (m)	18
C7	25 Feb 2019	Arrive Time	902
C7	25 Feb 2019	Depart Time	906
C7	25 Feb 2019	Air Temp (C)	12
C7	25 Feb 2019	Weather	Clear

Station	Date	Parameter	Value
C7	25 Feb 2019	Visibility (mi)	5
C7	25 Feb 2019	Wind Speed (kts)	8
C7	25 Feb 2019	Wind Dir	E
C7	25 Feb 2019	Water Color	Greenish-Blue
C7	25 Feb 2019	Wave Ht Low (ft)	3
C7	25 Feb 2019	Wave Period (sec)	11
C7	25 Feb 2019	Sea State	Light chop
C7	25 Feb 2019	High Tide (ft)	2.86
C7	25 Feb 2019	High Tide Time	1418
C7	25 Feb 2019	Low Tide (ft)	0.88
C7	25 Feb 2019	Low Tide Time	821
C7	25 Feb 2019	Comments	Kelp
C8	07 Feb 2019	Depth (m)	20
C8	07 Feb 2019	Arrive Time	859
C8	07 Feb 2019	Depart Time	903
C8	07 Feb 2019	Air Temp (C)	11
C8	07 Feb 2019	Weather	Haze
C8	07 Feb 2019	Visibility (mi)	14
C8	07 Feb 2019	Wind Speed (kts)	6
C8	07 Feb 2019	Wind Dir	E
C8	07 Feb 2019	Water Color	Greenish-Blue
C8	07 Feb 2019	Wave Ht Low (ft)	2
C8	07 Feb 2019	Wave Period (sec)	7
C8	07 Feb 2019	Sea State	Light chop
C8	07 Feb 2019	High Tide (ft)	5.03
C8	07 Feb 2019	High Tide Time	953
C8	07 Feb 2019	Low Tide (ft)	1.49
C8	07 Feb 2019	Low Tide Time	358
C8	07 Feb 2019	Comments	Hundreds of cormorants, a few gulls, and a few pelicans on station upon arrival
C8	11 Feb 2019	Depth (m)	19
C8	11 Feb 2019	Arrive Time	900
C8	11 Feb 2019	Depart Time	902
C8	11 Feb 2019	Air Temp (C)	12
C8	11 Feb 2019	Weather	Haze
C8	11 Feb 2019	Visibility (mi)	13
C8	11 Feb 2019	Wind Speed (kts)	5
C8	11 Feb 2019	Wind Dir	E
C8	11 Feb 2019	Water Color	Greenish-Blue
C8	11 Feb 2019	Wave Ht Low (ft)	6
C8	11 Feb 2019	Wave Period (sec)	7
C8	11 Feb 2019	Sea State	Confused swell
C8	11 Feb 2019	High Tide (ft)	2.93
C8	11 Feb 2019	High Tide Time	1249
C8	11 Feb 2019	Low Tide (ft)	1.68
C8	11 Feb 2019	Low Tide Time	728
C8	11 Feb 2019	Comments	Lobster floats
C8	19 Feb 2019	Depth (m)	20
C8	19 Feb 2019	Arrive Time	843
C8	19 Feb 2019	Depart Time	848
C8	19 Feb 2019	Air Temp (C)	9
C8	19 Feb 2019	Weather	Partly Cloudy

Station	Date	Parameter	Value
C8	19 Feb 2019	Visibility (mi)	15
C8	19 Feb 2019	Wind Speed (kts)	6
C8	19 Feb 2019	Wind Dir	NE
C8	19 Feb 2019	Water Color	Brownish-Green
C8	19 Feb 2019	Wave Ht Low (ft)	5
C8	19 Feb 2019	Wave Period (sec)	11
C8	19 Feb 2019	Sea State	Light chop
C8	19 Feb 2019	High Tide (ft)	6.59
C8	19 Feb 2019	High Tide Time	824
C8	19 Feb 2019	Low Tide (ft)	-1.68
C8	19 Feb 2019	Low Tide Time	1519
C8	19 Feb 2019	Comments	none
C8	25 Feb 2019	Depth (m)	19
C8	25 Feb 2019	Arrive Time	915
C8	25 Feb 2019	Depart Time	917
C8	25 Feb 2019	Air Temp (C)	13
C8	25 Feb 2019	Weather	Haze
C8	25 Feb 2019	Visibility (mi)	7
C8	25 Feb 2019	Wind Speed (kts)	5
C8	25 Feb 2019	Wind Dir	SE
C8	25 Feb 2019	Water Color	Greenish-Blue
C8	25 Feb 2019	Wave Ht Low (ft)	3
C8	25 Feb 2019	Wave Period (sec)	11
C8	25 Feb 2019	Sea State	Light chop
C8	25 Feb 2019	High Tide (ft)	2.86
C8	25 Feb 2019	High Tide Time	1418
C8	25 Feb 2019	Low Tide (ft)	0.88
C8	25 Feb 2019	Low Tide Time	821
C8	25 Feb 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 ( $\sigma\text{-t}$ )	Chlor ( $\mu\text{g/L}$ )
A1	07 Feb 2019	1	15.31	80.93	7.9	33.53	8.2	24.8	0.84
A1	07 Feb 2019	2	15.30	80.94	7.9	33.53	8.2	24.8	0.85
A1	07 Feb 2019	3	15.30	81.05	7.9	33.53	8.2	24.8	0.82
A1	07 Feb 2019	4	15.31	80.77	7.9	33.53	8.2	24.8	0.93
A1	07 Feb 2019	5	15.34	80.70	7.8	33.54	8.2	24.8	0.92
A1	07 Feb 2019	6	15.36	81.27	7.7	33.57	8.2	24.8	0.85
A1	07 Feb 2019	7	15.30	82.75	7.6	33.61	8.2	24.8	0.71
A1	07 Feb 2019	8	15.30	83.12	7.6	33.61	8.2	24.8	0.64
A1	07 Feb 2019	9	15.29	83.18	7.5	33.61	8.2	24.8	0.73
A1	07 Feb 2019	10	15.12	82.93	7.4	33.62	8.2	24.9	0.60
A1	07 Feb 2019	11	15.05	82.61	7.4	33.61	8.2	24.9	0.59
A1	07 Feb 2019	12	15.03	82.43	7.4	33.61	8.2	24.9	0.53
A1	07 Feb 2019	13	15.02	82.20	7.3	33.61	8.2	24.9	0.53
A1	07 Feb 2019	14	14.99	81.82	7.2	33.61	8.2	24.9	0.53
A1	07 Feb 2019	15	14.96	81.83	7.3	33.61	8.2	24.9	0.51
A1	07 Feb 2019	16	14.92	81.84	7.3	33.61	8.2	24.9	0.52
A1	07 Feb 2019	17	14.92	80.97	7.2	33.61	8.2	24.9	0.54
A1	07 Feb 2019	18	14.92	80.79	7.3	33.61	8.2	24.9	0.54
A1	07 Feb 2019	19	14.94	81.19	7.3	33.61	8.2	24.9	0.57
A1	11 Feb 2019	1	14.90	83.69	7.8	33.57	8.2	24.9	0.89
A1	11 Feb 2019	2	14.95	83.45	7.8	33.58	8.2	24.9	0.92
A1	11 Feb 2019	3	14.96	83.41	7.8	33.57	8.2	24.9	1.00
A1	11 Feb 2019	4	14.97	83.25	7.8	33.57	8.2	24.9	1.09
A1	11 Feb 2019	5	14.97	83.27	7.8	33.57	8.2	24.9	1.17
A1	11 Feb 2019	6	14.97	83.31	7.8	33.57	8.2	24.9	1.23
A1	11 Feb 2019	7	14.97	83.43	7.8	33.57	8.2	24.9	1.30
A1	11 Feb 2019	8	14.96	83.46	7.8	33.58	8.2	24.9	1.31
A1	11 Feb 2019	9	14.96	83.51	7.8	33.58	8.2	24.9	1.34
A1	11 Feb 2019	10	14.96	83.34	7.7	33.58	8.2	24.9	1.30
A1	11 Feb 2019	11	14.95	83.35	7.7	33.58	8.2	24.9	1.31
A1	11 Feb 2019	12	14.93	83.42	7.6	33.58	8.2	24.9	1.26
A1	11 Feb 2019	13	14.89	83.46	7.5	33.59	8.2	24.9	1.16
A1	11 Feb 2019	14	14.79	83.44	7.3	33.60	8.2	24.9	0.99
A1	11 Feb 2019	15	14.73	83.23	7.2	33.60	8.2	25.0	0.94
A1	11 Feb 2019	16	14.58	82.37	7.0	33.61	8.1	25.0	0.82
A1	11 Feb 2019	17	14.60	80.81	7.1	33.60	8.1	25.0	0.79
A1	11 Feb 2019	18	14.43	79.03	7.0	33.62	8.1	25.0	0.79
A1	19 Feb 2019	1	13.88	82.96	7.1	33.47	8.1	25.0	0.47
A1	19 Feb 2019	2	13.47	82.93	6.6	33.58	8.1	25.2	0.45
A1	19 Feb 2019	3	12.36	84.09	5.9	33.65	8.0	25.5	0.34
A1	19 Feb 2019	4	12.22	86.55	5.6	33.62	8.0	25.5	0.25
A1	19 Feb 2019	5	12.09	87.91	5.5	33.63	8.0	25.5	0.23
A1	19 Feb 2019	6	11.94	87.46	5.4	33.63	7.9	25.5	0.22
A1	19 Feb 2019	7	11.93	87.02	5.4	33.62	7.9	25.5	0.22
A1	19 Feb 2019	8	11.93	86.81	5.4	33.64	7.9	25.5	0.23
A1	19 Feb 2019	9	11.86	86.55	5.3	33.64	7.9	25.6	0.23
A1	19 Feb 2019	10	11.86	86.50	5.2	33.63	7.9	25.6	0.22
A1	19 Feb 2019	11	11.86	86.89	5.2	33.64	7.9	25.6	0.23

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (μg/L)
A1	19 Feb 2019	12	11.85	86.83	5.2	33.64	7.9	25.6	0.23
A1	19 Feb 2019	13	11.82	86.65	5.2	33.64	7.9	25.6	0.24
A1	19 Feb 2019	14	11.78	86.58	5.2	33.65	7.9	25.6	0.24
A1	19 Feb 2019	15	11.77	86.51	5.2	33.65	7.9	25.6	0.24
A1	19 Feb 2019	16	11.76	86.38	5.2	33.65	7.9	25.6	0.24
A1	19 Feb 2019	17	11.75	86.28	5.2	33.66	7.9	25.6	0.29
A1	19 Feb 2019	18	11.73	86.43	5.3	33.66	7.9	25.6	0.26
A1	19 Feb 2019	19	11.73	85.16	5.2	33.66	7.9	25.6	0.24
A1	25 Feb 2019	1	13.41	81.00	8.1	33.46	8.1	25.1	1.10
A1	25 Feb 2019	2	13.41	80.96	8.1	33.46	8.1	25.1	1.09
A1	25 Feb 2019	3	13.42	80.76	8.1	33.46	8.1	25.1	1.30
A1	25 Feb 2019	4	13.42	80.55	8.0	33.46	8.1	25.1	1.37
A1	25 Feb 2019	5	13.41	80.89	7.9	33.47	8.1	25.1	1.45
A1	25 Feb 2019	6	13.40	81.14	7.8	33.47	8.1	25.1	1.62
A1	25 Feb 2019	7	13.25	81.70	7.4	33.53	8.1	25.2	1.76
A1	25 Feb 2019	8	13.21	82.26	7.2	33.53	8.1	25.2	1.83
A1	25 Feb 2019	9	13.18	82.32	7.2	33.54	8.1	25.2	1.90
A1	25 Feb 2019	10	13.14	82.01	7.1	33.55	8.1	25.2	2.13
A1	25 Feb 2019	11	13.12	81.96	7.1	33.55	8.1	25.2	2.25
A1	25 Feb 2019	12	13.11	81.93	7.0	33.55	8.1	25.3	1.96
A1	25 Feb 2019	13	13.04	82.03	6.9	33.57	8.1	25.3	1.98
A1	25 Feb 2019	14	13.03	82.20	6.9	33.56	8.1	25.3	2.01
A1	25 Feb 2019	15	12.97	82.03	6.8	33.57	8.0	25.3	2.03
A1	25 Feb 2019	16	12.96	81.92	6.8	33.57	8.0	25.3	2.12
A1	25 Feb 2019	17	12.90	82.18	6.6	33.59	8.0	25.3	2.09
A1	25 Feb 2019	18	12.45	82.04	6.5	33.63	8.0	25.4	1.86
A6	07 Feb 2019	1	15.16	78.22	8.0	33.41	8.2	24.7	0.83
A6	07 Feb 2019	2	15.16	78.28	8.0	33.41	8.2	24.7	0.93
A6	07 Feb 2019	3	15.23	78.08	8.0	33.43	8.2	24.7	1.12
A6	07 Feb 2019	4	15.31	78.28	8.0	33.47	8.2	24.7	1.35
A6	07 Feb 2019	5	15.40	79.03	7.9	33.51	8.2	24.7	1.32
A6	07 Feb 2019	6	15.47	80.37	7.8	33.56	8.2	24.8	1.01
A6	07 Feb 2019	7	15.46	81.76	7.7	33.59	8.2	24.8	0.84
A6	07 Feb 2019	8	15.43	82.30	7.7	33.60	8.2	24.8	0.71
A6	07 Feb 2019	9	15.42	82.80	7.6	33.60	8.2	24.8	0.70
A6	07 Feb 2019	10	15.37	82.60	7.5	33.60	8.2	24.8	0.66
A6	07 Feb 2019	11	15.32	82.10	7.5	33.61	8.2	24.8	0.54
A6	07 Feb 2019	12	15.30	81.24	7.5	33.61	8.2	24.8	0.53
A6	07 Feb 2019	13	15.28	80.15	7.4	33.61	8.2	24.8	0.61
A6	07 Feb 2019	14	15.26	80.52	7.5	33.61	8.2	24.8	0.55
A6	07 Feb 2019	15	15.24	80.91	7.4	33.61	8.2	24.8	0.55
A6	07 Feb 2019	16	15.22	81.16	7.4	33.61	8.2	24.9	0.54
A6	07 Feb 2019	17	15.22	81.17	7.5	33.61	8.2	24.9	0.57
A6	07 Feb 2019	18	15.23	81.24	7.4	33.61	8.2	24.8	0.55
A6	07 Feb 2019	19	15.23	81.44	7.4	33.61	8.2	24.9	0.59
A6	11 Feb 2019	1	14.92	82.40	8.0	33.56	8.2	24.9	0.82
A6	11 Feb 2019	2	14.93	82.24	8.0	33.56	8.2	24.9	0.89
A6	11 Feb 2019	3	14.94	82.30	8.0	33.56	8.2	24.9	1.00
A6	11 Feb 2019	4	14.95	82.14	8.0	33.56	8.2	24.9	1.14
A6	11 Feb 2019	5	14.97	82.29	8.0	33.56	8.2	24.9	1.28
A6	11 Feb 2019	6	14.98	82.31	7.9	33.56	8.2	24.9	1.45
A6	11 Feb 2019	7	14.98	82.27	8.0	33.57	8.2	24.9	1.57

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (μg/L)
A6	11 Feb 2019	8	14.96	82.18	7.9	33.57	8.2	24.9	1.57
A6	11 Feb 2019	9	14.96	82.27	7.9	33.57	8.2	24.9	1.59
A6	11 Feb 2019	10	14.96	82.23	8.0	33.56	8.2	24.9	1.55
A6	11 Feb 2019	11	14.96	82.16	7.9	33.56	8.2	24.9	1.53
A6	11 Feb 2019	12	14.95	82.10	7.9	33.57	8.2	24.9	1.41
A6	11 Feb 2019	13	14.95	82.33	7.9	33.57	8.2	24.9	1.31
A6	11 Feb 2019	14	14.95	82.49	7.8	33.57	8.2	24.9	1.29
A6	11 Feb 2019	15	14.94	82.38	7.8	33.57	8.2	24.9	1.21
A6	11 Feb 2019	16	14.93	82.30	7.7	33.57	8.2	24.9	1.14
A6	11 Feb 2019	17	14.93	82.26	7.7	33.57	8.2	24.9	1.05
A6	11 Feb 2019	18	14.92	82.38	7.6	33.57	8.2	24.9	0.99
A6	11 Feb 2019	19	14.91	81.82	7.6	33.57	8.2	24.9	0.89
A6	11 Feb 2019	20	14.91	81.11	7.6	33.57	8.2	24.9	0.87
A6	19 Feb 2019	1	14.37	79.26	8.0	33.46	8.2	24.9	0.68
A6	19 Feb 2019	2	14.37	81.60	8.0	33.46	8.2	24.9	0.67
A6	19 Feb 2019	3	14.37	81.22	8.0	33.46	8.2	24.9	0.69
A6	19 Feb 2019	4	14.37	81.87	8.0	33.46	8.2	24.9	0.78
A6	19 Feb 2019	5	14.37	81.80	8.0	33.46	8.2	24.9	0.80
A6	19 Feb 2019	6	14.37	81.84	8.0	33.46	8.2	24.9	0.84
A6	19 Feb 2019	7	14.37	81.89	7.9	33.46	8.2	24.9	0.87
A6	19 Feb 2019	8	14.37	81.90	7.9	33.46	8.2	24.9	0.94
A6	19 Feb 2019	9	14.37	81.89	7.8	33.46	8.2	24.9	0.86
A6	19 Feb 2019	10	14.32	82.02	7.8	33.48	8.2	24.9	0.84
A6	19 Feb 2019	11	14.28	82.36	7.7	33.48	8.1	25.0	0.80
A6	19 Feb 2019	12	14.24	82.45	7.6	33.48	8.1	25.0	0.90
A6	19 Feb 2019	13	14.22	82.89	7.4	33.48	8.1	25.0	0.78
A6	19 Feb 2019	14	13.79	83.39	6.9	33.56	8.1	25.1	0.73
A6	19 Feb 2019	15	12.86	84.42	6.2	33.45	8.1	25.2	0.52
A6	19 Feb 2019	16	12.58	86.02	5.8	33.43	8.0	25.3	0.43
A6	19 Feb 2019	17	12.13	86.53	5.6	33.60	8.0	25.5	0.36
A6	19 Feb 2019	18	11.88	86.57	5.4	33.62	8.0	25.5	0.30
A6	25 Feb 2019	1	13.70	79.86	8.8	33.50	8.2	25.1	1.86
A6	25 Feb 2019	2	13.70	79.87	8.8	33.50	8.2	25.1	2.03
A6	25 Feb 2019	3	13.70	79.89	8.8	33.50	8.2	25.1	2.33
A6	25 Feb 2019	4	13.66	79.97	8.6	33.50	8.2	25.1	2.49
A6	25 Feb 2019	5	13.51	79.86	8.2	33.52	8.2	25.1	2.71
A6	25 Feb 2019	6	13.42	80.11	8.0	33.52	8.1	25.2	2.82
A6	25 Feb 2019	7	13.35	78.55	7.8	33.52	8.1	25.2	3.06
A6	25 Feb 2019	8	13.36	73.21	7.8	33.52	8.1	25.2	3.54
A6	25 Feb 2019	9	13.34	72.44	7.6	33.52	8.1	25.2	3.81
A6	25 Feb 2019	10	13.30	74.07	7.6	33.52	8.1	25.2	4.15
A6	25 Feb 2019	11	13.29	78.62	7.6	33.52	8.1	25.2	3.87
A6	25 Feb 2019	12	13.28	77.79	7.5	33.52	8.1	25.2	3.07
A6	25 Feb 2019	13	13.25	78.53	7.5	33.53	8.1	25.2	2.96
A6	25 Feb 2019	14	13.25	79.07	7.4	33.53	8.1	25.2	3.23
A6	25 Feb 2019	15	13.23	80.14	7.4	33.53	8.1	25.2	2.86
A6	25 Feb 2019	16	13.20	80.39	7.3	33.53	8.1	25.2	2.60
A6	25 Feb 2019	17	13.19	80.47	7.2	33.54	8.1	25.2	2.41
A6	25 Feb 2019	18	13.02	80.70	6.9	33.57	8.1	25.3	2.23
A6	25 Feb 2019	19	12.77	81.20	6.6	33.58	8.0	25.3	1.85
A7	07 Feb 2019	1	15.14	79.53	8.0	33.45	8.2	24.7	0.82
A7	07 Feb 2019	2	15.14	79.25	7.9	33.45	8.2	24.7	0.87

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (μg/L)
A7	07 Feb 2019	3	15.14	79.25	7.9	33.45	8.2	24.7	1.01
A7	07 Feb 2019	4	15.15	79.14	7.9	33.45	8.2	24.7	1.06
A7	07 Feb 2019	5	15.19	79.79	7.9	33.46	8.2	24.7	1.05
A7	07 Feb 2019	6	15.27	79.67	7.9	33.49	8.2	24.8	1.21
A7	07 Feb 2019	7	15.44	80.60	7.7	33.58	8.2	24.8	1.02
A7	07 Feb 2019	8	15.45	82.20	7.6	33.59	8.2	24.8	0.91
A7	07 Feb 2019	9	15.42	82.27	7.6	33.60	8.2	24.8	0.79
A7	07 Feb 2019	10	15.41	82.81	7.6	33.60	8.2	24.8	0.77
A7	07 Feb 2019	11	15.36	82.49	7.5	33.61	8.2	24.8	0.69
A7	07 Feb 2019	12	15.35	81.82	7.5	33.61	8.2	24.8	0.64
A7	07 Feb 2019	13	15.35	82.45	7.5	33.61	8.2	24.8	0.62
A7	07 Feb 2019	14	15.33	82.07	7.5	33.61	8.2	24.8	0.61
A7	07 Feb 2019	15	15.33	79.72	7.5	33.61	8.2	24.8	0.63
A7	07 Feb 2019	16	15.31	81.12	7.4	33.61	8.2	24.8	0.60
A7	07 Feb 2019	17	15.30	81.81	7.4	33.61	8.2	24.8	0.57
A7	07 Feb 2019	18	15.28	80.96	7.4	33.61	8.2	24.8	0.55
A7	07 Feb 2019	19	15.25	79.37	7.3	33.61	8.2	24.8	0.55
A7	11 Feb 2019	1	14.97	82.93	7.9	33.57	8.2	24.9	0.79
A7	11 Feb 2019	2	14.97	83.00	7.9	33.57	8.2	24.9	0.86
A7	11 Feb 2019	3	14.97	82.92	7.9	33.57	8.2	24.9	0.94
A7	11 Feb 2019	4	14.98	83.01	7.8	33.57	8.2	24.9	1.05
A7	11 Feb 2019	5	14.98	83.20	7.8	33.57	8.2	24.9	1.14
A7	11 Feb 2019	6	14.98	83.22	7.8	33.58	8.2	24.9	1.19
A7	11 Feb 2019	7	14.98	83.28	7.9	33.58	8.2	24.9	1.25
A7	11 Feb 2019	8	14.98	83.40	7.8	33.58	8.2	24.9	1.28
A7	11 Feb 2019	9	14.98	83.28	7.8	33.58	8.2	24.9	1.31
A7	11 Feb 2019	10	14.98	83.41	7.8	33.58	8.2	24.9	1.26
A7	11 Feb 2019	11	14.98	83.34	7.8	33.58	8.2	24.9	1.26
A7	11 Feb 2019	12	14.98	83.36	7.7	33.58	8.2	24.9	1.20
A7	11 Feb 2019	13	14.96	83.34	7.7	33.58	8.2	24.9	1.11
A7	11 Feb 2019	14	14.95	83.28	7.6	33.58	8.2	24.9	1.11
A7	11 Feb 2019	15	14.95	82.53	7.6	33.58	8.2	24.9	1.06
A7	11 Feb 2019	16	14.94	82.16	7.7	33.58	8.2	24.9	1.05
A7	11 Feb 2019	17	14.93	81.91	7.6	33.58	8.2	24.9	0.97
A7	11 Feb 2019	18	14.91	80.33	7.5	33.58	8.2	24.9	0.92
A7	19 Feb 2019	1	14.40	83.01	7.9	33.49	8.1	24.9	0.67
A7	19 Feb 2019	2	14.40	82.44	7.9	33.49	8.1	24.9	0.68
A7	19 Feb 2019	3	14.40	82.72	7.9	33.49	8.1	24.9	0.76
A7	19 Feb 2019	4	14.39	83.30	7.8	33.49	8.1	24.9	0.78
A7	19 Feb 2019	5	14.39	83.34	7.8	33.49	8.1	24.9	0.82
A7	19 Feb 2019	6	14.38	83.51	7.7	33.50	8.1	24.9	0.90
A7	19 Feb 2019	7	14.37	83.60	7.7	33.50	8.1	24.9	0.86
A7	19 Feb 2019	8	14.37	83.79	7.7	33.50	8.1	25.0	1.02
A7	19 Feb 2019	9	14.34	83.97	7.6	33.51	8.1	25.0	0.88
A7	19 Feb 2019	10	14.20	84.19	7.4	33.52	8.1	25.0	0.76
A7	19 Feb 2019	11	14.09	84.53	7.3	33.53	8.1	25.0	0.73
A7	19 Feb 2019	12	13.84	84.97	7.0	33.55	8.1	25.1	0.67
A7	19 Feb 2019	13	13.54	85.46	6.8	33.57	8.1	25.2	0.56
A7	19 Feb 2019	14	13.32	85.59	6.6	33.57	8.1	25.2	0.51
A7	19 Feb 2019	15	13.16	85.89	6.5	33.58	8.1	25.3	0.46
A7	19 Feb 2019	16	13.09	86.22	6.4	33.58	8.0	25.3	0.50
A7	19 Feb 2019	17	12.69	86.30	6.1	33.61	8.0	25.4	0.45
A7	19 Feb 2019	18	12.42	86.39	5.8	33.62	8.0	25.4	0.36

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (μg/L)
A7	19 Feb 2019	19	12.15	86.86	5.6	33.62	8.0	25.5	0.31
A7	19 Feb 2019	20	12.15	86.85	5.6	33.61	8.0	25.5	0.30
A7	25 Feb 2019	1	13.44	81.29	8.2	33.53	8.1	25.2	0.99
A7	25 Feb 2019	2	13.45	79.42	8.3	33.53	8.2	25.2	1.01
A7	25 Feb 2019	3	13.44	79.42	8.2	33.54	8.2	25.2	1.14
A7	25 Feb 2019	4	13.43	81.25	8.2	33.54	8.1	25.2	1.36
A7	25 Feb 2019	5	13.41	81.26	8.2	33.54	8.1	25.2	1.73
A7	25 Feb 2019	6	13.38	81.03	8.1	33.54	8.1	25.2	2.06
A7	25 Feb 2019	7	13.36	81.03	8.1	33.53	8.1	25.2	1.97
A7	25 Feb 2019	8	13.37	80.92	8.1	33.53	8.1	25.2	2.07
A7	25 Feb 2019	9	13.34	80.99	8.1	33.54	8.1	25.2	2.30
A7	25 Feb 2019	10	13.32	81.00	8.1	33.54	8.1	25.2	2.32
A7	25 Feb 2019	11	13.31	81.01	8.0	33.54	8.1	25.2	2.36
A7	25 Feb 2019	12	13.31	81.18	8.0	33.54	8.1	25.2	2.53
A7	25 Feb 2019	13	13.32	81.11	8.0	33.54	8.1	25.2	2.59
A7	25 Feb 2019	14	13.27	80.94	7.8	33.55	8.1	25.2	2.50
A7	25 Feb 2019	15	12.98	81.32	7.2	33.59	8.1	25.3	2.61
A7	25 Feb 2019	16	12.59	82.12	6.5	33.64	8.1	25.4	2.10
A7	25 Feb 2019	17	12.21	83.78	5.9	33.65	8.0	25.5	1.50
A7	25 Feb 2019	18	12.12	84.84	5.7	33.65	8.0	25.5	1.26
C4	07 Feb 2019	1	14.97	62.79	7.9	33.31	8.2	24.7	0.35
C4	07 Feb 2019	2	14.98	63.02	7.8	33.32	8.2	24.7	0.40
C4	07 Feb 2019	3	14.97	64.59	7.8	33.32	8.2	24.7	0.48
C4	07 Feb 2019	4	14.98	65.67	7.8	33.33	8.2	24.7	0.53
C4	07 Feb 2019	5	14.99	67.26	7.7	33.34	8.2	24.7	0.51
C4	07 Feb 2019	6	15.02	68.26	7.6	33.35	8.2	24.7	0.49
C4	07 Feb 2019	7	15.08	69.37	7.5	33.38	8.2	24.7	0.51
C4	07 Feb 2019	8	15.12	71.41	7.4	33.41	8.2	24.7	0.44
C4	07 Feb 2019	9	15.18	72.50	7.0	33.51	8.2	24.8	0.42
C4	07 Feb 2019	10	15.09	70.83	6.9	33.58	8.2	24.9	0.43
C4	07 Feb 2019	11	15.07	67.34	6.9	33.58	8.2	24.9	0.44
C4	07 Feb 2019	12	15.12	67.97	6.9	33.52	8.1	24.8	0.43
C4	11 Feb 2019	1	14.86	64.32	8.3	33.54	8.2	24.9	0.46
C4	11 Feb 2019	2	14.86	64.09	8.3	33.54	8.2	24.9	0.50
C4	11 Feb 2019	3	14.85	64.19	8.3	33.54	8.2	24.9	0.58
C4	11 Feb 2019	4	14.84	63.70	8.2	33.54	8.2	24.9	0.62
C4	11 Feb 2019	5	14.83	62.29	8.3	33.54	8.2	24.9	0.65
C4	11 Feb 2019	6	14.83	62.63	8.3	33.54	8.2	24.9	0.68
C4	11 Feb 2019	7	14.78	61.06	8.3	33.54	8.2	24.9	0.67
C4	11 Feb 2019	8	14.75	57.31	8.2	33.54	8.2	24.9	0.65
C4	11 Feb 2019	9	14.75	53.30	8.3	33.54	8.2	24.9	0.65
C4	11 Feb 2019	10	14.76	56.92	8.3	33.54	8.2	24.9	0.64
C4	19 Feb 2019	1	14.15	79.15	7.7	33.46	8.1	25.0	0.41
C4	19 Feb 2019	2	14.15	79.74	7.7	33.47	8.1	25.0	0.41
C4	19 Feb 2019	3	14.14	81.95	7.7	33.47	8.1	25.0	0.42
C4	19 Feb 2019	4	14.13	82.53	7.5	33.47	8.1	25.0	0.44
C4	19 Feb 2019	5	13.71	82.52	7.0	33.55	8.1	25.1	0.46
C4	19 Feb 2019	6	13.20	83.48	6.4	33.57	8.1	25.2	0.42
C4	19 Feb 2019	7	12.98	84.13	6.2	33.58	8.1	25.3	0.39
C4	19 Feb 2019	8	12.87	84.49	6.1	33.58	8.0	25.3	0.39
C4	19 Feb 2019	9	12.83	84.09	6.0	33.58	8.0	25.3	0.40

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (μg/L)
C4	19 Feb 2019	10	12.77	83.32	5.9	33.60	8.0	25.4	0.38
C4	19 Feb 2019	11	12.69	82.50	5.9	33.60	8.0	25.4	0.37
C4	25 Feb 2019	1	13.50	81.40	8.2	33.42	8.1	25.1	1.03
C4	25 Feb 2019	2	13.47	81.14	8.1	33.43	8.1	25.1	1.02
C4	25 Feb 2019	3	13.47	81.14	8.1	33.43	8.1	25.1	1.14
C4	25 Feb 2019	4	13.48	81.32	8.1	33.44	8.1	25.1	1.13
C4	25 Feb 2019	5	13.49	82.09	8.0	33.46	8.1	25.1	1.13
C4	25 Feb 2019	6	13.49	82.90	8.0	33.48	8.1	25.1	1.02
C4	25 Feb 2019	7	13.48	83.26	7.8	33.48	8.1	25.1	0.98
C4	25 Feb 2019	8	13.42	84.34	7.5	33.51	8.1	25.2	0.93
C4	25 Feb 2019	9	13.37	84.92	7.2	33.52	8.1	25.2	0.76
C4	25 Feb 2019	10	13.31	85.51	7.0	33.53	8.1	25.2	0.62
C5	07 Feb 2019	1	15.34	77.67	7.7	33.52	8.2	24.8	0.32
C5	07 Feb 2019	2	15.33	77.28	7.7	33.52	8.2	24.8	0.31
C5	07 Feb 2019	3	15.31	77.11	7.7	33.52	8.2	24.8	0.32
C5	07 Feb 2019	4	15.29	76.41	7.7	33.51	8.2	24.8	0.37
C5	07 Feb 2019	5	15.28	76.42	7.7	33.51	8.2	24.8	0.40
C5	07 Feb 2019	6	15.25	75.63	7.7	33.50	8.2	24.8	0.44
C5	07 Feb 2019	7	15.25	74.54	7.6	33.51	8.2	24.8	0.46
C5	07 Feb 2019	8	15.27	74.28	7.6	33.52	8.2	24.8	0.49
C5	07 Feb 2019	9	15.32	72.98	7.4	33.54	8.2	24.8	0.46
C5	07 Feb 2019	10	15.35	72.13	7.3	33.56	8.2	24.8	0.49
C5	07 Feb 2019	11	15.40	69.93	7.2	33.59	8.2	24.8	0.50
C5	11 Feb 2019	1	14.99	75.27	8.2	33.54	8.2	24.9	0.45
C5	11 Feb 2019	2	14.99	75.49	8.2	33.55	8.2	24.9	0.51
C5	11 Feb 2019	3	14.98	74.66	8.2	33.55	8.2	24.9	0.55
C5	11 Feb 2019	4	14.98	74.71	8.1	33.55	8.2	24.9	0.63
C5	11 Feb 2019	5	14.96	73.88	8.1	33.55	8.2	24.9	0.73
C5	11 Feb 2019	6	14.96	73.97	8.1	33.54	8.2	24.9	0.76
C5	11 Feb 2019	7	14.95	73.45	8.1	33.55	8.2	24.9	0.75
C5	11 Feb 2019	8	14.95	72.86	8.1	33.55	8.2	24.9	0.74
C5	11 Feb 2019	9	14.95	72.65	8.1	33.55	8.2	24.9	0.70
C5	11 Feb 2019	10	14.95	71.04	8.1	33.55	8.2	24.9	0.69
C5	19 Feb 2019	1	14.26	76.72	8.0	33.43	8.2	24.9	0.43
C5	19 Feb 2019	2	14.25	76.80	8.0	33.43	8.2	24.9	0.43
C5	19 Feb 2019	3	14.25	76.78	7.9	33.43	8.2	24.9	0.45
C5	19 Feb 2019	4	14.20	76.56	7.9	33.43	8.2	24.9	0.50
C5	19 Feb 2019	5	14.17	76.49	7.8	33.43	8.2	24.9	0.56
C5	19 Feb 2019	6	14.16	76.54	7.8	33.44	8.2	24.9	0.55
C5	19 Feb 2019	7	14.14	76.40	7.6	33.45	8.1	25.0	0.54
C5	19 Feb 2019	8	14.13	76.83	7.5	33.45	8.1	25.0	0.51
C5	19 Feb 2019	9	14.10	77.42	7.4	33.47	8.1	25.0	0.47
C5	19 Feb 2019	10	14.10	77.52	7.4	33.47	8.1	25.0	0.45
C5	19 Feb 2019	11	14.10	79.61	7.3	33.47	8.1	25.0	0.45
C5	25 Feb 2019	1	13.77	85.03	9.7	33.55	8.3	25.1	0.58
C5	25 Feb 2019	2	13.72	85.14	9.6	33.55	8.3	25.1	0.61
C5	25 Feb 2019	3	13.71	85.02	9.6	33.55	8.3	25.1	0.67
C5	25 Feb 2019	4	13.68	85.01	9.6	33.55	8.3	25.1	0.72
C5	25 Feb 2019	5	13.66	84.85	9.5	33.55	8.3	25.1	0.78
C5	25 Feb 2019	6	13.62	84.99	9.4	33.55	8.3	25.1	0.82

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (μg/L)
C5	25 Feb 2019	7	13.55	85.26	8.9	33.56	8.2	25.2	0.82
C5	25 Feb 2019	8	13.24	85.69	7.8	33.59	8.2	25.3	0.88
C5	25 Feb 2019	9	12.96	86.47	6.9	33.59	8.1	25.3	0.78
C5	25 Feb 2019	10	12.85	86.35	6.9	33.60	8.1	25.3	0.74
C6	07 Feb 2019	1	15.27	79.13	7.7	33.49	8.2	24.7	0.39
C6	07 Feb 2019	2	15.27	78.67	7.6	33.49	8.2	24.8	0.39
C6	07 Feb 2019	3	15.27	78.42	7.6	33.49	8.2	24.8	0.42
C6	07 Feb 2019	4	15.27	78.71	7.6	33.49	8.2	24.8	0.45
C6	07 Feb 2019	5	15.30	78.33	7.6	33.51	8.2	24.8	0.47
C6	07 Feb 2019	6	15.33	78.46	7.6	33.52	8.2	24.8	0.51
C6	07 Feb 2019	7	15.37	78.59	7.5	33.53	8.2	24.8	0.47
C6	07 Feb 2019	8	15.46	78.74	7.4	33.56	8.2	24.8	0.47
C6	07 Feb 2019	9	15.47	78.21	7.4	33.57	8.2	24.8	0.48
C6	07 Feb 2019	10	15.47	78.01	7.4	33.57	8.2	24.8	0.46
C6	11 Feb 2019	1	15.03	77.74	8.0	33.55	8.2	24.9	0.46
C6	11 Feb 2019	2	15.02	77.37	8.0	33.55	8.2	24.9	0.50
C6	11 Feb 2019	3	15.02	77.14	8.0	33.55	8.2	24.9	0.59
C6	11 Feb 2019	4	14.98	76.22	8.0	33.55	8.2	24.9	0.73
C6	11 Feb 2019	5	14.98	76.13	8.0	33.55	8.2	24.9	0.78
C6	11 Feb 2019	6	14.99	76.90	7.8	33.56	8.2	24.9	0.73
C6	11 Feb 2019	7	14.99	76.94	7.9	33.56	8.2	24.9	0.68
C6	11 Feb 2019	8	14.99	76.56	7.8	33.56	8.2	24.9	0.64
C6	11 Feb 2019	9	14.99	76.18	7.8	33.56	8.2	24.9	0.57
C6	19 Feb 2019	1	14.31	78.18	8.0	33.46	8.2	24.9	0.41
C6	19 Feb 2019	2	14.31	79.34	8.0	33.47	8.2	24.9	0.41
C6	19 Feb 2019	3	14.31	79.19	8.0	33.47	8.2	24.9	0.45
C6	19 Feb 2019	4	14.31	79.46	8.0	33.47	8.2	24.9	0.49
C6	19 Feb 2019	5	14.30	79.46	7.9	33.47	8.2	24.9	0.54
C6	19 Feb 2019	6	14.30	79.33	7.9	33.47	8.2	24.9	0.54
C6	19 Feb 2019	7	14.30	79.35	7.9	33.47	8.2	24.9	0.55
C6	19 Feb 2019	8	14.29	79.32	7.8	33.47	8.2	24.9	0.56
C6	19 Feb 2019	9	14.26	79.69	7.6	33.49	8.2	25.0	0.51
C6	19 Feb 2019	10	14.24	80.42	7.4	33.49	8.1	25.0	0.44
C6	19 Feb 2019	11	14.23	81.23	7.4	33.50	8.1	25.0	0.41
C6	25 Feb 2019	1	13.80	82.34	8.9	33.50	8.2	25.1	0.93
C6	25 Feb 2019	2	13.80	82.79	8.8	33.50	8.2	25.1	0.95
C6	25 Feb 2019	3	13.81	83.24	8.9	33.51	8.2	25.1	0.94
C6	25 Feb 2019	4	13.79	83.50	8.8	33.51	8.2	25.1	0.95
C6	25 Feb 2019	5	13.73	83.58	8.3	33.51	8.2	25.1	1.10
C6	25 Feb 2019	6	13.35	83.12	7.6	33.57	8.1	25.2	1.13
C6	25 Feb 2019	7	13.32	81.01	7.2	33.54	8.1	25.2	1.00
C6	25 Feb 2019	8	13.06	86.39	6.9	33.59	8.1	25.3	0.90
C6	25 Feb 2019	9	12.94	84.83	6.9	33.58	8.1	25.3	0.77
C7	07 Feb 2019	1	15.02	77.00	8.1	33.35	8.2	24.7	0.90
C7	07 Feb 2019	2	15.01	77.06	8.1	33.34	8.2	24.7	0.99
C7	07 Feb 2019	3	15.03	76.86	8.2	33.35	8.2	24.7	1.17
C7	07 Feb 2019	4	15.20	76.85	8.1	33.41	8.2	24.7	1.26
C7	07 Feb 2019	5	15.40	77.41	7.9	33.52	8.2	24.7	1.24
C7	07 Feb 2019	6	15.47	79.12	7.8	33.56	8.2	24.8	1.08
C7	07 Feb 2019	7	15.48	79.59	7.8	33.57	8.2	24.8	1.03

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (μg/L)
C7	07 Feb 2019	8	15.49	79.54	7.8	33.58	8.2	24.8	1.03
C7	07 Feb 2019	9	15.50	79.85	7.8	33.58	8.2	24.8	0.93
C7	07 Feb 2019	10	15.49	79.83	7.7	33.58	8.2	24.8	0.88
C7	07 Feb 2019	11	15.48	79.91	7.7	33.58	8.2	24.8	0.82
C7	07 Feb 2019	12	15.46	80.16	7.8	33.58	8.2	24.8	0.76
C7	07 Feb 2019	13	15.46	80.40	7.7	33.58	8.2	24.8	0.80
C7	07 Feb 2019	14	15.46	80.74	7.7	33.58	8.2	24.8	0.84
C7	07 Feb 2019	15	15.45	81.01	7.7	33.59	8.2	24.8	0.72
C7	07 Feb 2019	16	15.45	81.19	7.6	33.59	8.2	24.8	0.69
C7	07 Feb 2019	17	15.43	81.14	7.6	33.59	8.2	24.8	0.65
C7	07 Feb 2019	18	15.40	80.90	7.5	33.60	8.2	24.8	0.54
C7	07 Feb 2019	19	15.40	80.28	7.6	33.60	8.2	24.8	0.52
C7	11 Feb 2019	1	14.98	81.75	8.0	33.57	8.2	24.9	0.93
C7	11 Feb 2019	2	14.98	81.79	8.0	33.57	8.2	24.9	0.97
C7	11 Feb 2019	3	14.97	81.70	8.0	33.57	8.2	24.9	1.01
C7	11 Feb 2019	4	14.97	81.68	7.9	33.57	8.2	24.9	1.08
C7	11 Feb 2019	5	14.98	81.71	8.0	33.57	8.2	24.9	1.23
C7	11 Feb 2019	6	15.00	81.80	8.0	33.57	8.2	24.9	1.38
C7	11 Feb 2019	7	15.00	81.71	7.9	33.57	8.2	24.9	1.48
C7	11 Feb 2019	8	15.00	81.61	7.9	33.57	8.2	24.9	1.57
C7	11 Feb 2019	9	15.01	81.70	7.9	33.57	8.2	24.9	1.64
C7	11 Feb 2019	10	15.00	81.74	8.0	33.57	8.2	24.9	1.69
C7	11 Feb 2019	11	15.00	81.78	7.9	33.57	8.2	24.9	1.56
C7	11 Feb 2019	12	14.96	81.93	7.7	33.59	8.2	24.9	1.38
C7	11 Feb 2019	13	14.94	82.84	7.7	33.59	8.2	24.9	1.35
C7	11 Feb 2019	14	14.83	83.36	7.5	33.61	8.2	24.9	1.13
C7	11 Feb 2019	15	14.82	83.41	7.4	33.61	8.2	24.9	0.97
C7	11 Feb 2019	16	14.80	83.35	7.4	33.61	8.2	24.9	0.88
C7	11 Feb 2019	17	14.76	83.20	7.4	33.61	8.2	24.9	0.89
C7	11 Feb 2019	18	14.70	81.42	7.3	33.61	8.2	25.0	0.76
C7	19 Feb 2019	1	14.54	80.47	8.2	33.41	8.2	24.8	0.72
C7	19 Feb 2019	2	14.54	79.23	8.2	33.41	8.2	24.8	0.76
C7	19 Feb 2019	3	14.54	80.11	8.1	33.41	8.2	24.8	0.82
C7	19 Feb 2019	4	14.54	80.55	8.1	33.42	8.2	24.9	0.89
C7	19 Feb 2019	5	14.54	80.72	8.2	33.43	8.2	24.9	0.93
C7	19 Feb 2019	6	14.54	80.92	8.2	33.43	8.2	24.9	0.97
C7	19 Feb 2019	7	14.54	81.05	8.2	33.44	8.2	24.9	0.97
C7	19 Feb 2019	8	14.54	81.26	8.2	33.44	8.2	24.9	0.97
C7	19 Feb 2019	9	14.55	81.32	8.1	33.44	8.2	24.9	0.97
C7	19 Feb 2019	10	14.57	81.73	7.8	33.48	8.2	24.9	0.96
C7	19 Feb 2019	11	14.50	83.27	7.6	33.52	8.2	24.9	1.00
C7	19 Feb 2019	12	14.39	83.96	7.5	33.52	8.1	25.0	0.90
C7	19 Feb 2019	13	14.26	84.12	7.3	33.53	8.1	25.0	0.75
C7	19 Feb 2019	14	14.19	84.81	7.2	33.53	8.1	25.0	0.65
C7	19 Feb 2019	15	14.06	77.55	6.9	33.55	8.1	25.1	0.59
C7	19 Feb 2019	16	13.68	75.87	6.4	33.59	8.1	25.2	0.51
C7	19 Feb 2019	17	12.83	80.98	6.0	33.65	8.0	25.4	0.46
C7	19 Feb 2019	18	12.33	83.42	5.6	33.62	8.0	25.5	0.37
C7	19 Feb 2019	19	12.32	83.83	5.6	33.61	8.0	25.4	0.35
C7	25 Feb 2019	1	13.64	77.39	8.2	33.41	8.2	25.0	2.05
C7	25 Feb 2019	2	13.63	77.40	8.2	33.41	8.2	25.0	2.02
C7	25 Feb 2019	3	13.63	77.44	8.2	33.41	8.2	25.0	2.18

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (μg/L)
C7	25 Feb 2019	4	13.63	77.39	8.2	33.42	8.2	25.0	2.57
C7	25 Feb 2019	5	13.63	77.61	8.2	33.42	8.2	25.0	2.86
C7	25 Feb 2019	6	13.63	77.46	8.1	33.42	8.2	25.0	2.92
C7	25 Feb 2019	7	13.63	77.78	8.2	33.42	8.2	25.0	3.13
C7	25 Feb 2019	8	13.63	77.72	8.1	33.42	8.2	25.0	3.06
C7	25 Feb 2019	9	13.62	78.07	8.1	33.44	8.2	25.1	3.25
C7	25 Feb 2019	10	13.59	78.94	8.0	33.48	8.2	25.1	3.76
C7	25 Feb 2019	11	13.54	79.06	7.8	33.49	8.1	25.1	3.74
C7	25 Feb 2019	12	13.53	78.93	7.8	33.49	8.1	25.1	3.75
C7	25 Feb 2019	13	13.52	79.09	7.8	33.49	8.1	25.1	3.95
C7	25 Feb 2019	14	13.47	79.49	7.6	33.50	8.1	25.1	3.46
C7	25 Feb 2019	15	13.37	80.07	7.4	33.52	8.1	25.2	3.38
C7	25 Feb 2019	16	13.12	81.49	7.0	33.57	8.1	25.3	2.74
C7	25 Feb 2019	17	12.46	83.42	6.4	33.68	8.0	25.5	2.38
C7	25 Feb 2019	18	12.92	84.35	6.5	33.47	8.0	25.2	1.68
C8	07 Feb 2019	1	15.06	74.78	8.1	33.28	8.2	24.6	0.83
C8	07 Feb 2019	2	15.05	74.70	8.2	33.28	8.2	24.6	0.86
C8	07 Feb 2019	3	15.18	74.73	8.2	33.31	8.2	24.6	1.13
C8	07 Feb 2019	4	15.47	76.32	8.2	33.47	8.2	24.7	1.45
C8	07 Feb 2019	5	15.47	80.18	8.1	33.52	8.2	24.7	1.54
C8	07 Feb 2019	6	15.40	80.51	8.1	33.51	8.2	24.7	1.49
C8	07 Feb 2019	7	15.38	78.50	8.1	33.52	8.2	24.7	1.49
C8	07 Feb 2019	8	15.40	77.11	8.0	33.54	8.2	24.8	1.35
C8	07 Feb 2019	9	15.41	78.79	7.9	33.55	8.2	24.8	1.36
C8	07 Feb 2019	10	15.42	79.50	7.8	33.55	8.2	24.8	1.20
C8	07 Feb 2019	11	15.42	79.79	7.8	33.55	8.2	24.8	1.14
C8	07 Feb 2019	12	15.42	80.14	7.8	33.56	8.2	24.8	1.11
C8	07 Feb 2019	13	15.43	80.37	7.8	33.56	8.2	24.8	1.13
C8	07 Feb 2019	14	15.43	80.51	7.8	33.56	8.2	24.8	1.10
C8	07 Feb 2019	15	15.43	80.31	7.8	33.56	8.2	24.8	1.04
C8	07 Feb 2019	16	15.43	80.16	7.8	33.56	8.2	24.8	1.07
C8	07 Feb 2019	17	15.43	80.12	7.8	33.56	8.2	24.8	1.02
C8	07 Feb 2019	18	15.44	79.88	7.8	33.56	8.2	24.8	1.01
C8	07 Feb 2019	19	15.44	79.03	7.8	33.56	8.2	24.8	0.99
C8	07 Feb 2019	20	15.44	76.80	7.8	33.56	8.2	24.8	0.98
C8	11 Feb 2019	1	14.99	79.08	8.1	33.50	8.2	24.8	1.20
C8	11 Feb 2019	2	14.99	79.26	8.1	33.51	8.2	24.8	1.40
C8	11 Feb 2019	3	14.99	79.24	8.1	33.52	8.2	24.8	1.47
C8	11 Feb 2019	4	15.00	79.54	8.1	33.52	8.2	24.8	1.69
C8	11 Feb 2019	5	15.01	80.22	8.0	33.53	8.2	24.8	1.81
C8	11 Feb 2019	6	15.01	80.98	8.0	33.55	8.2	24.8	1.85
C8	11 Feb 2019	7	15.01	81.54	7.9	33.55	8.2	24.9	1.83
C8	11 Feb 2019	8	15.01	82.12	7.8	33.57	8.2	24.9	1.68
C8	11 Feb 2019	9	15.01	83.27	7.7	33.60	8.2	24.9	1.50
C8	11 Feb 2019	10	15.01	83.66	7.7	33.59	8.2	24.9	1.45
C8	11 Feb 2019	11	14.89	84.73	7.5	33.62	8.2	24.9	1.25
C8	11 Feb 2019	12	14.81	84.48	7.4	33.62	8.2	24.9	1.13
C8	11 Feb 2019	13	14.77	84.02	7.3	33.62	8.2	25.0	1.22
C8	11 Feb 2019	14	14.68	82.82	7.3	33.62	8.2	25.0	1.05
C8	11 Feb 2019	15	14.64	82.01	7.3	33.61	8.2	25.0	1.02
C8	11 Feb 2019	16	14.63	81.07	7.2	33.61	8.2	25.0	0.97
C8	11 Feb 2019	17	14.62	80.24	7.2	33.61	8.2	25.0	0.97
C8	11 Feb 2019	18	14.62	78.81	7.2	33.61	8.2	25.0	1.05

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (μg/L)
C8	11 Feb 2019	19	14.62	76.37	7.2	33.61	8.2	25.0	1.08
C8	19 Feb 2019	1	14.44	75.50	8.1	33.32	8.2	24.8	0.76
C8	19 Feb 2019	2	14.45	75.84	8.1	33.33	8.2	24.8	0.82
C8	19 Feb 2019	3	14.45	75.88	8.1	33.33	8.2	24.8	0.88
C8	19 Feb 2019	4	14.46	76.49	8.1	33.34	8.2	24.8	0.96
C8	19 Feb 2019	5	14.48	77.39	8.2	33.36	8.2	24.8	1.08
C8	19 Feb 2019	6	14.49	78.21	8.2	33.38	8.2	24.8	1.11
C8	19 Feb 2019	7	14.51	78.97	8.2	33.39	8.2	24.8	1.04
C8	19 Feb 2019	8	14.54	79.53	8.0	33.41	8.2	24.8	1.02
C8	19 Feb 2019	9	14.56	81.66	7.7	33.50	8.2	24.9	1.03
C8	19 Feb 2019	10	14.51	83.27	7.6	33.53	8.1	24.9	1.01
C8	19 Feb 2019	11	14.49	83.38	7.6	33.53	8.1	24.9	1.03
C8	19 Feb 2019	12	14.47	83.62	7.6	33.53	8.1	25.0	0.91
C8	19 Feb 2019	13	14.34	83.41	7.5	33.55	8.1	25.0	0.84
C8	19 Feb 2019	14	14.28	84.13	7.4	33.55	8.1	25.0	0.78
C8	19 Feb 2019	15	14.21	84.73	7.2	33.55	8.1	25.0	0.83
C8	19 Feb 2019	16	13.84	85.24	6.8	33.59	8.1	25.1	0.63
C8	19 Feb 2019	17	13.41	85.54	6.5	33.60	8.1	25.2	0.53
C8	19 Feb 2019	18	13.18	85.11	6.3	33.60	8.0	25.3	0.47
C8	19 Feb 2019	19	13.02	83.77	6.2	33.60	8.0	25.3	0.42
C8	19 Feb 2019	20	12.96	82.45	6.1	33.59	8.0	25.3	0.43
C8	25 Feb 2019	1	13.71	77.56	8.4	33.35	8.2	25.0	2.07
C8	25 Feb 2019	2	13.71	77.39	8.4	33.36	8.2	25.0	2.16
C8	25 Feb 2019	3	13.71	77.60	8.4	33.35	8.2	25.0	2.23
C8	25 Feb 2019	4	13.72	77.40	8.4	33.36	8.2	25.0	2.42
C8	25 Feb 2019	5	13.75	77.57	8.3	33.41	8.2	25.0	3.01
C8	25 Feb 2019	6	13.74	77.43	8.2	33.45	8.2	25.0	3.93
C8	25 Feb 2019	7	13.72	77.68	8.2	33.45	8.2	25.0	3.94
C8	25 Feb 2019	8	13.70	77.94	8.2	33.45	8.2	25.1	4.06
C8	25 Feb 2019	9	13.64	77.66	8.1	33.47	8.2	25.1	4.41
C8	25 Feb 2019	10	13.59	77.75	8.0	33.49	8.1	25.1	4.85
C8	25 Feb 2019	11	13.57	77.84	8.0	33.49	8.1	25.1	4.74
C8	25 Feb 2019	12	13.50	78.25	7.8	33.50	8.1	25.1	4.22
C8	25 Feb 2019	13	13.47	78.76	7.7	33.50	8.1	25.1	3.58
C8	25 Feb 2019	14	13.46	79.45	7.5	33.50	8.1	25.1	3.36
C8	25 Feb 2019	15	13.19	80.47	7.2	33.55	8.1	25.2	3.29
C8	25 Feb 2019	16	13.00	80.90	6.7	33.57	8.1	25.3	2.90
C8	25 Feb 2019	17	12.62	82.46	6.1	33.62	8.0	25.4	2.32
C8	25 Feb 2019	18	12.12	85.38	5.7	33.65	8.0	25.5	1.50
C8	25 Feb 2019	19	12.23	85.75	5.8	33.61	8.0	25.5	1.27

NA = not available

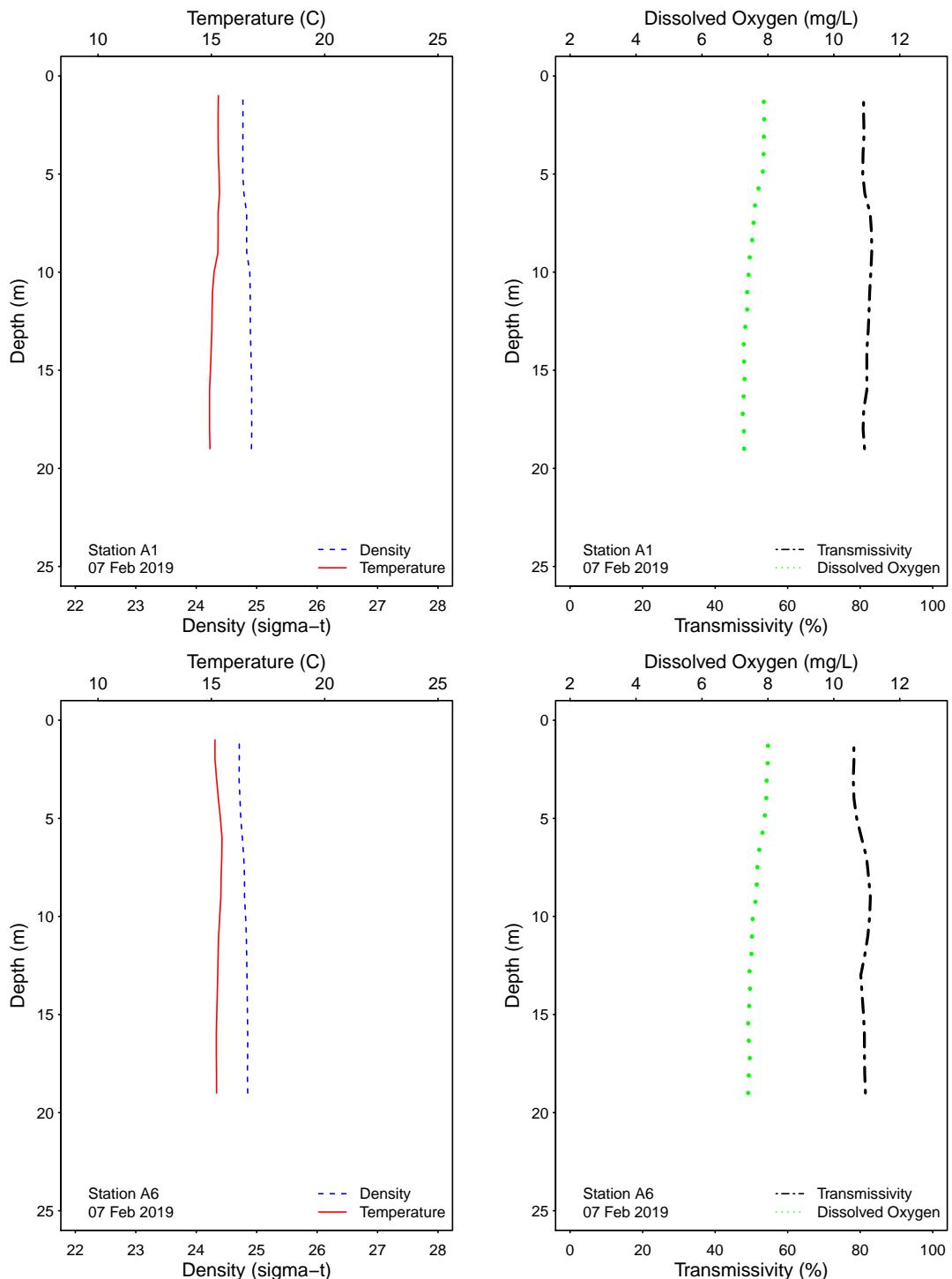


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

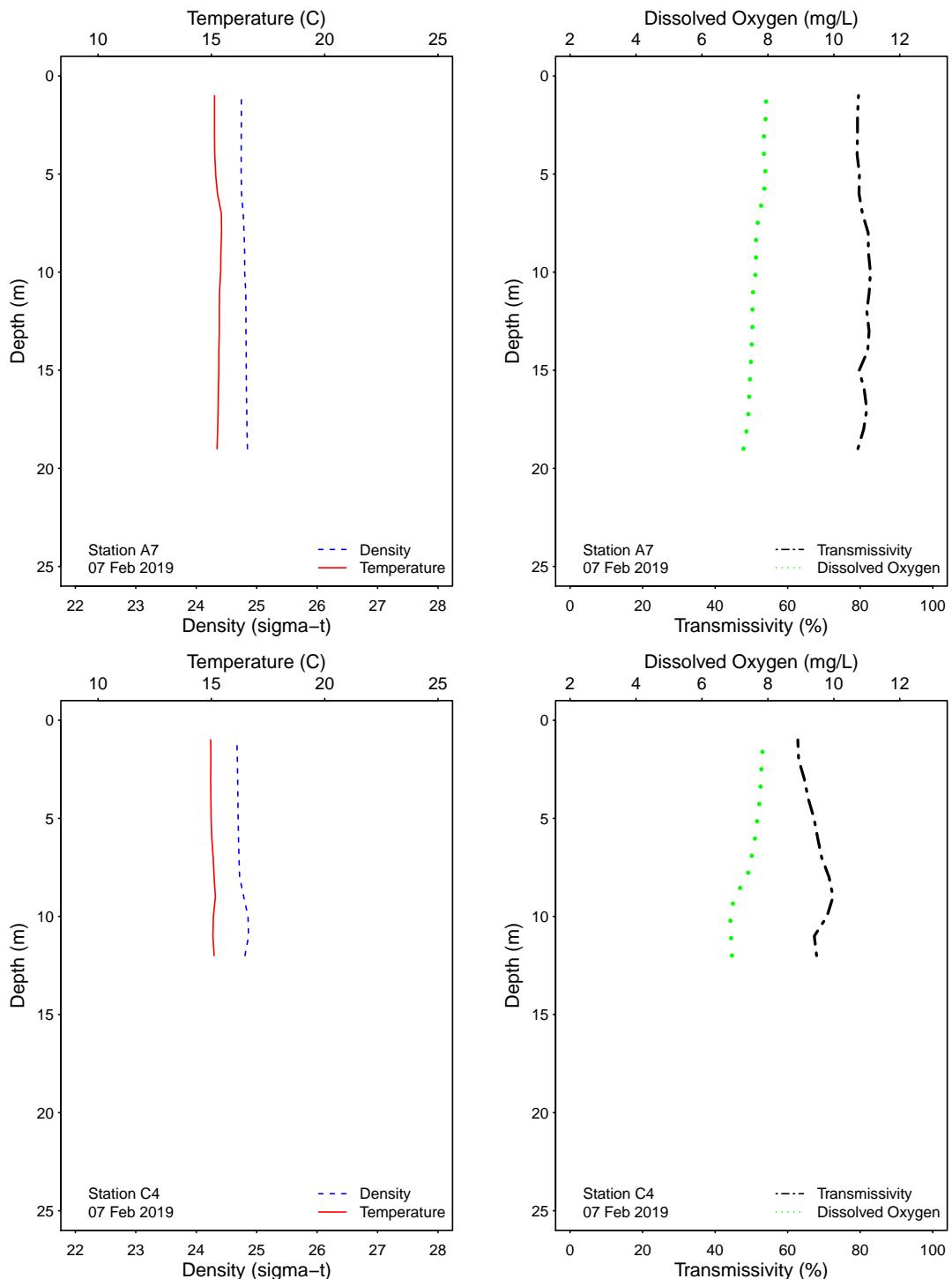


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

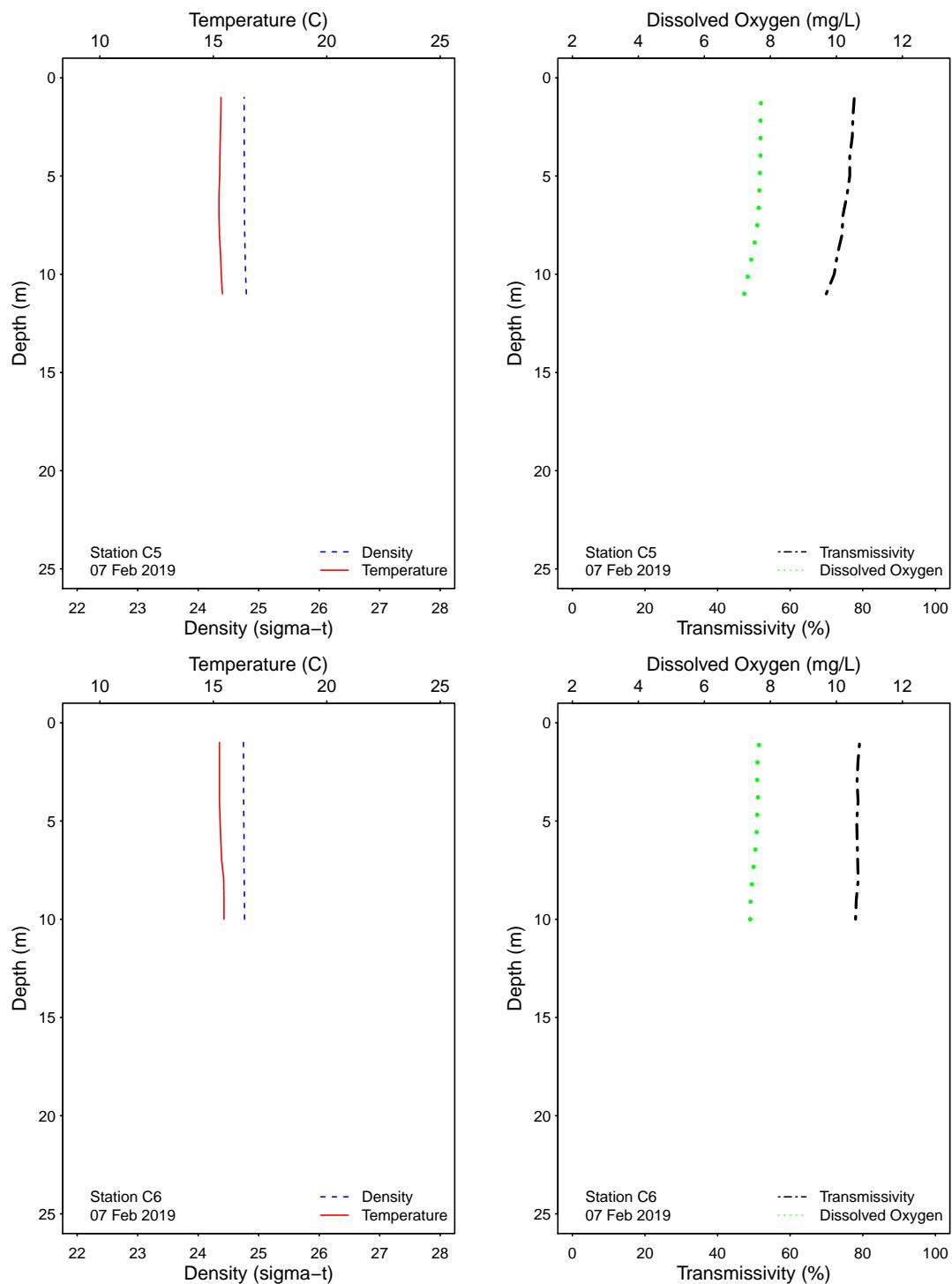


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

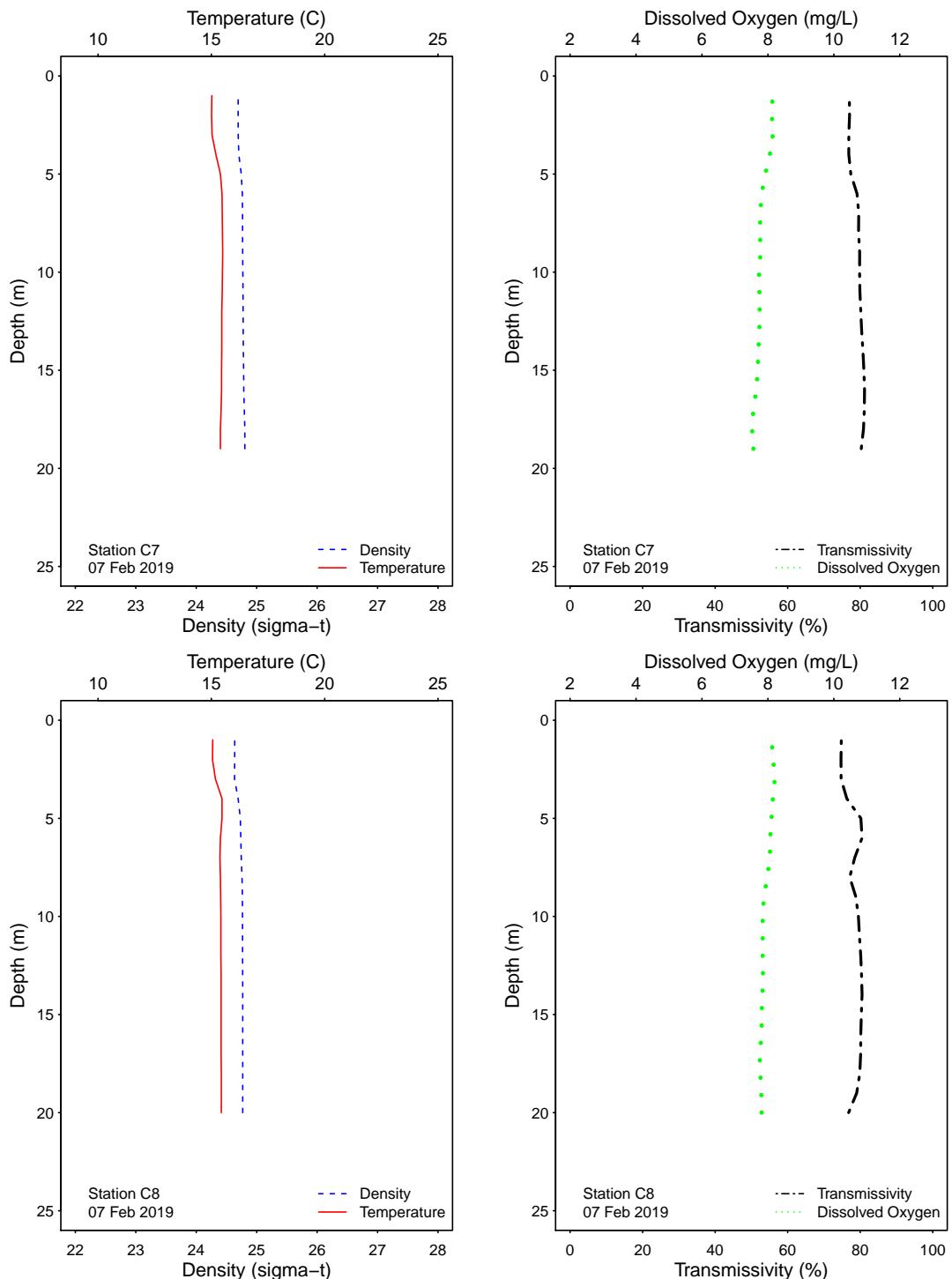


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

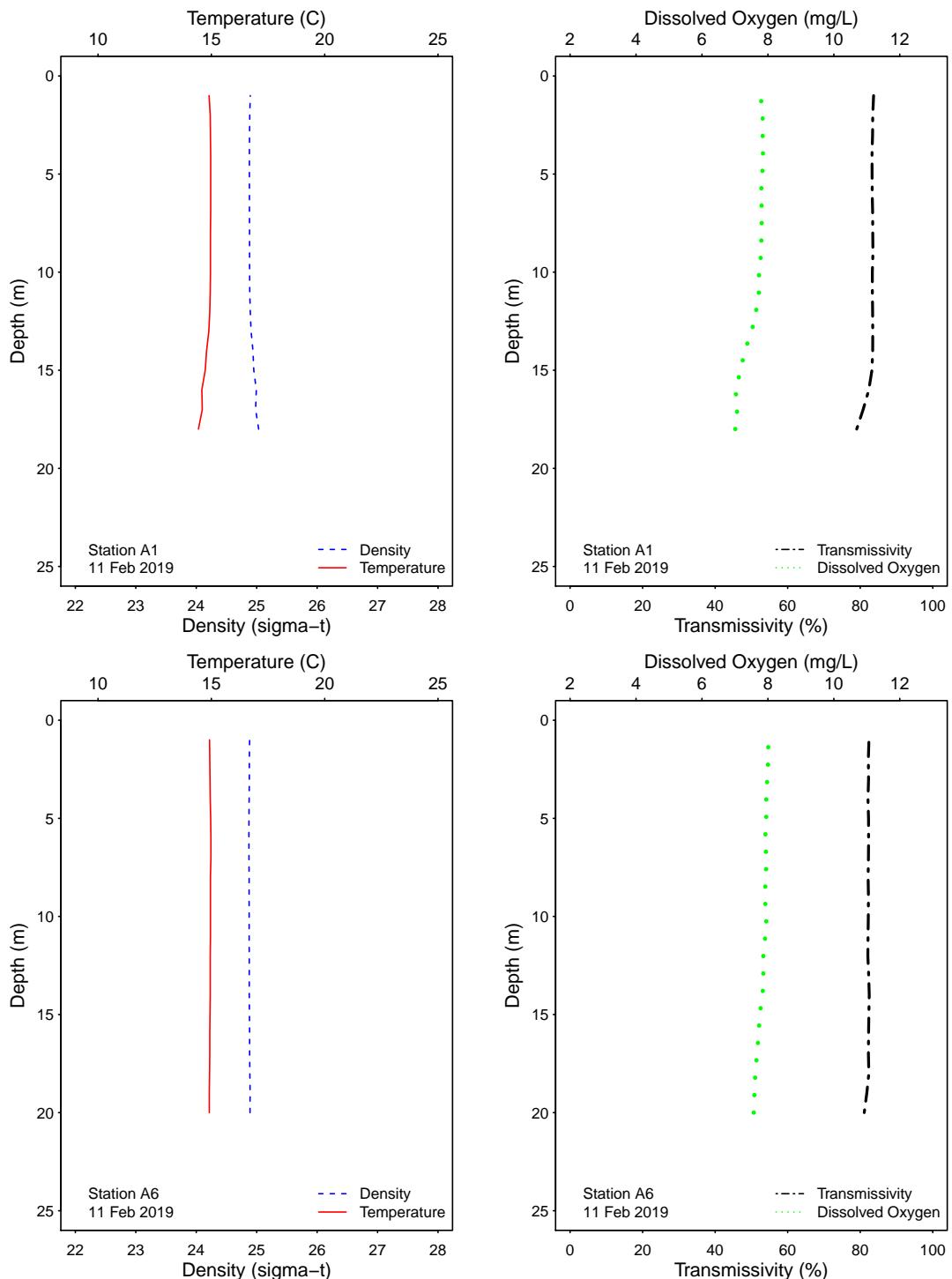


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

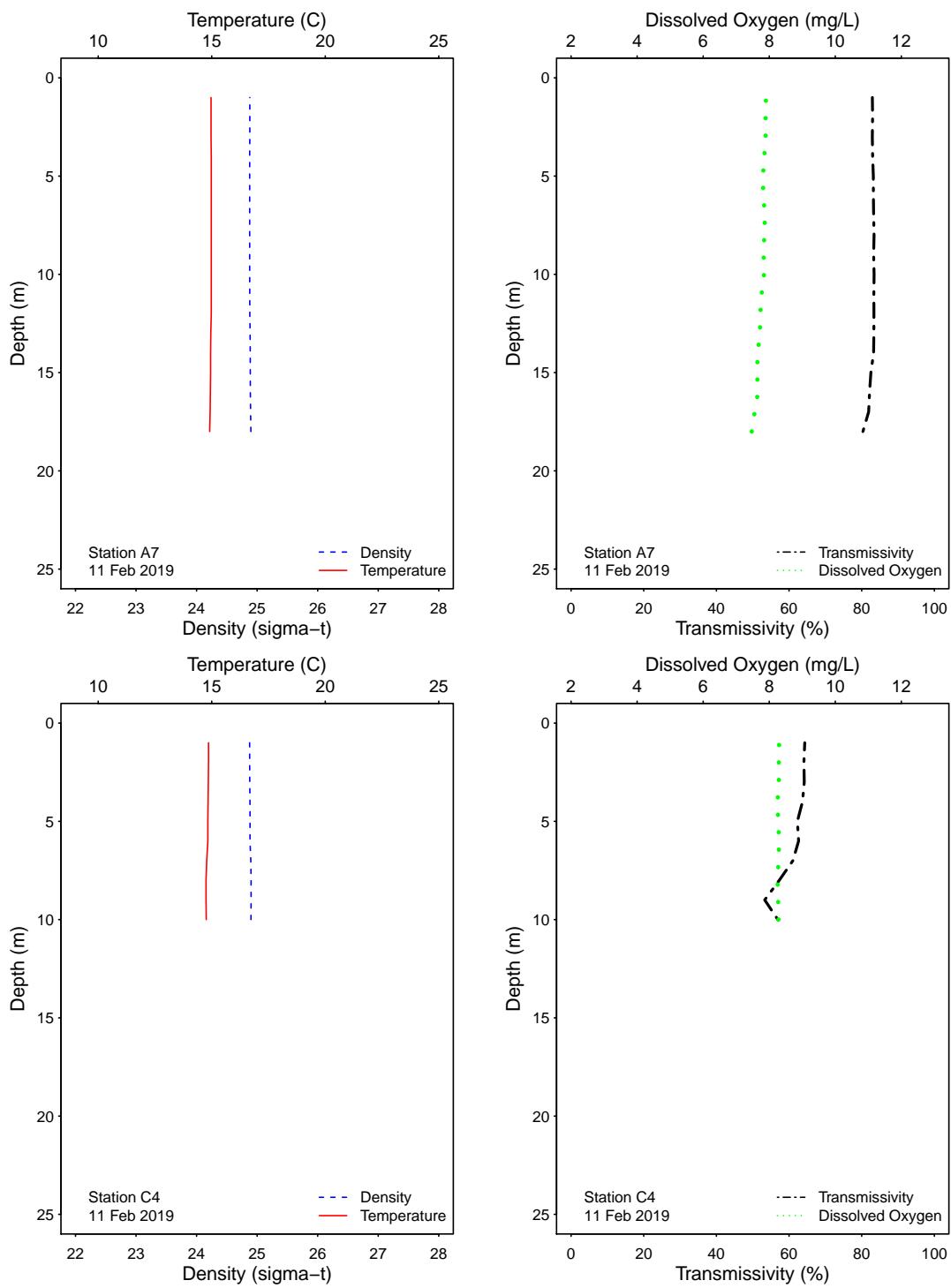


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

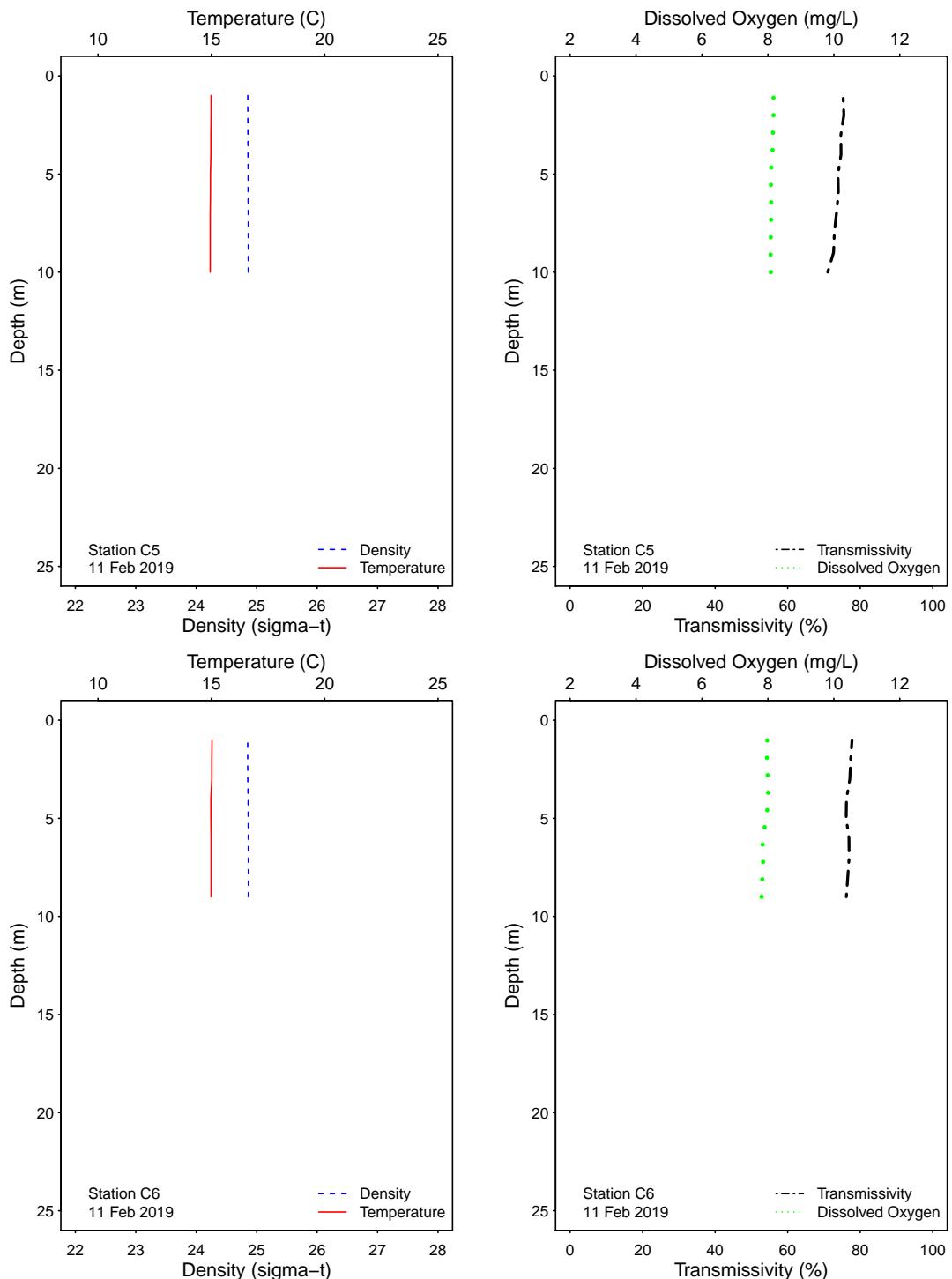


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

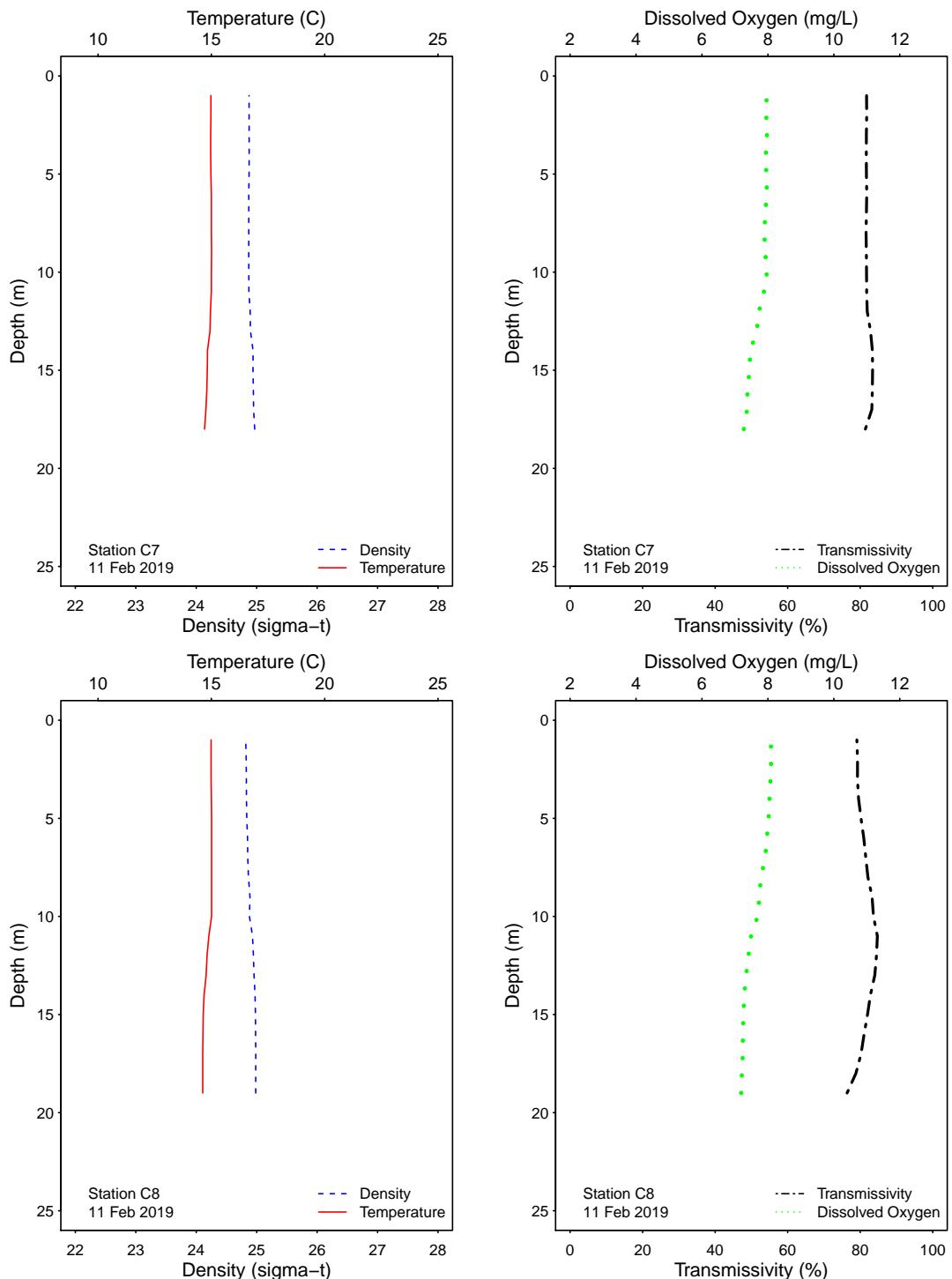


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

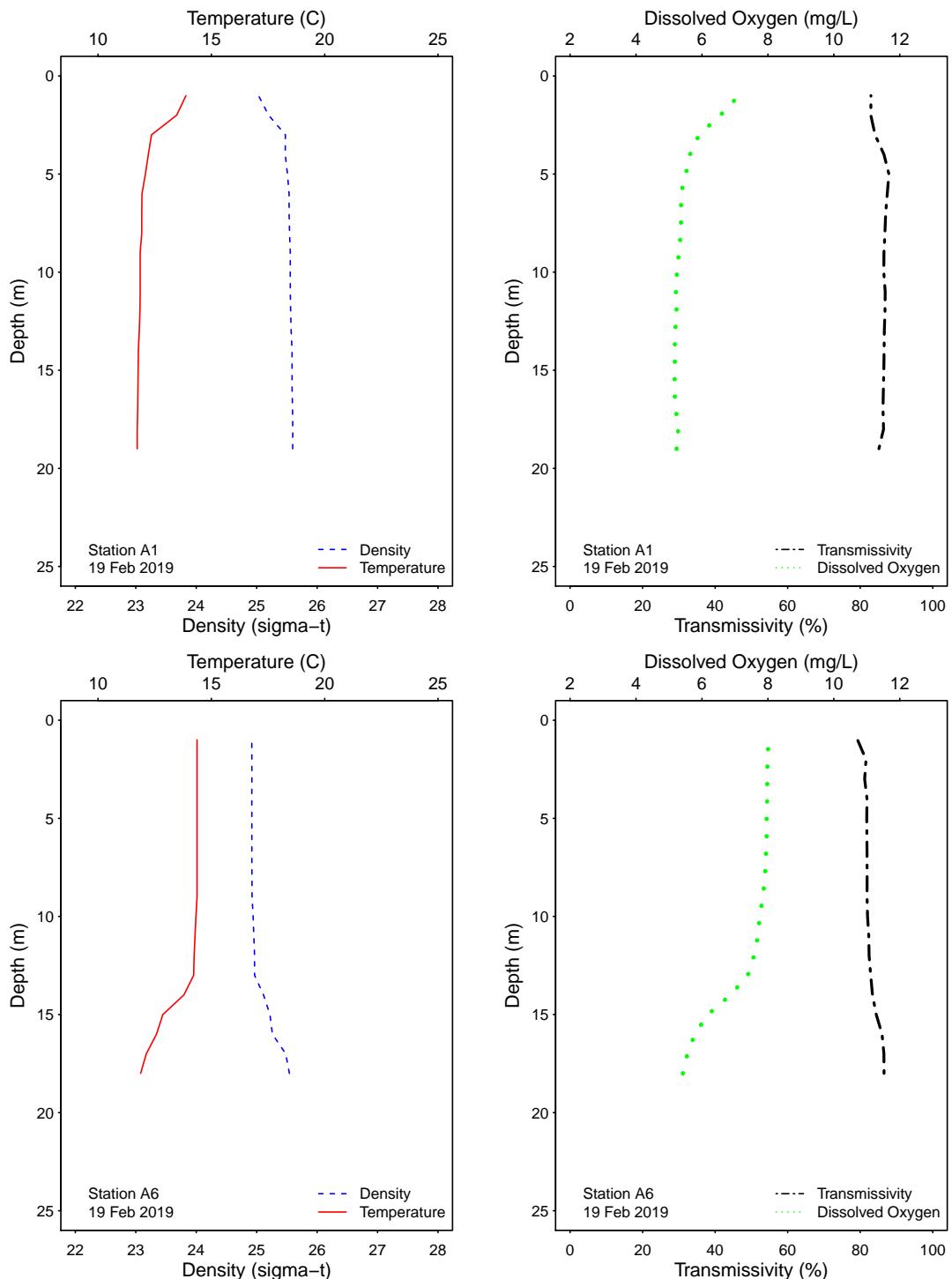


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

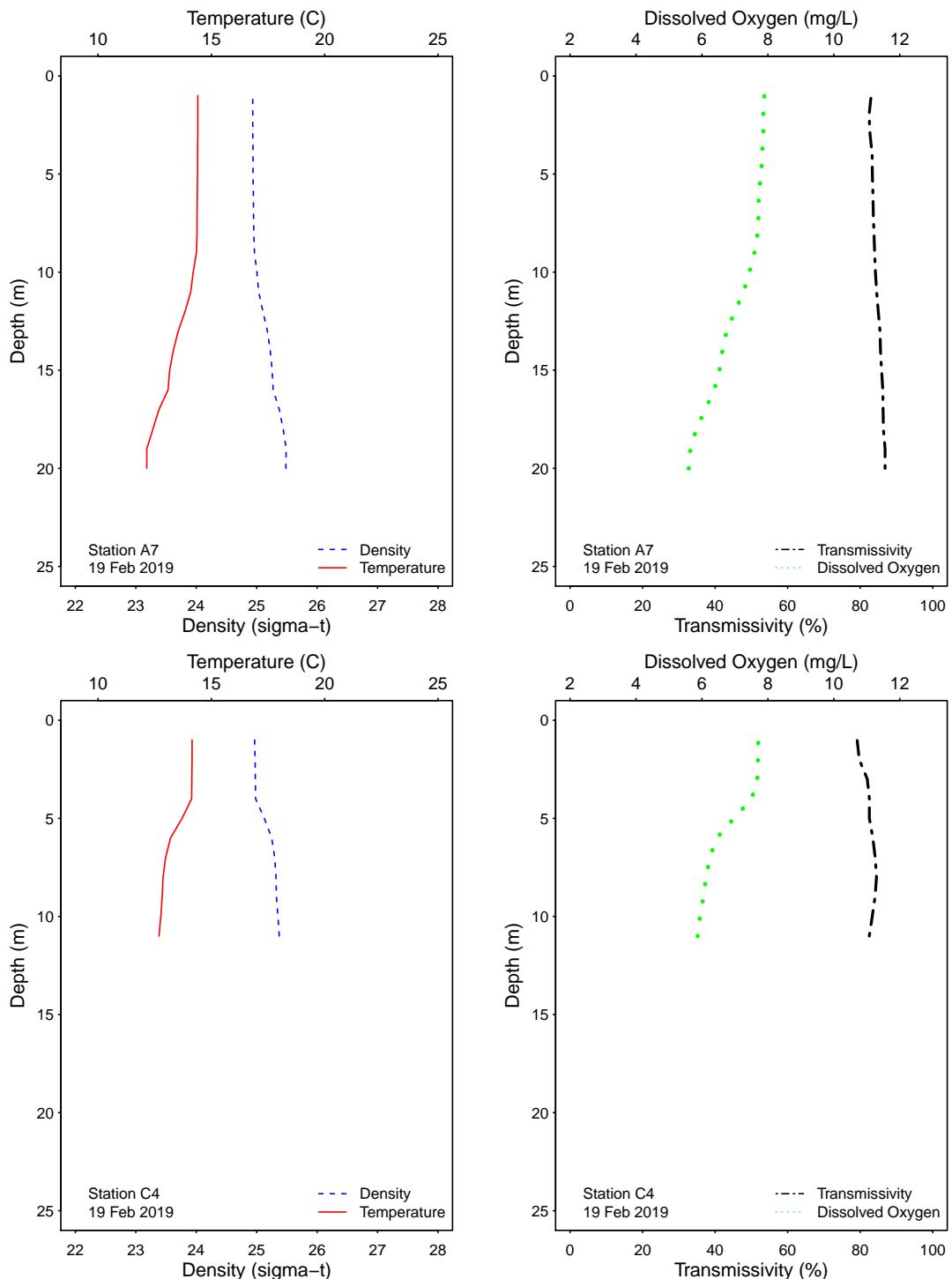


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

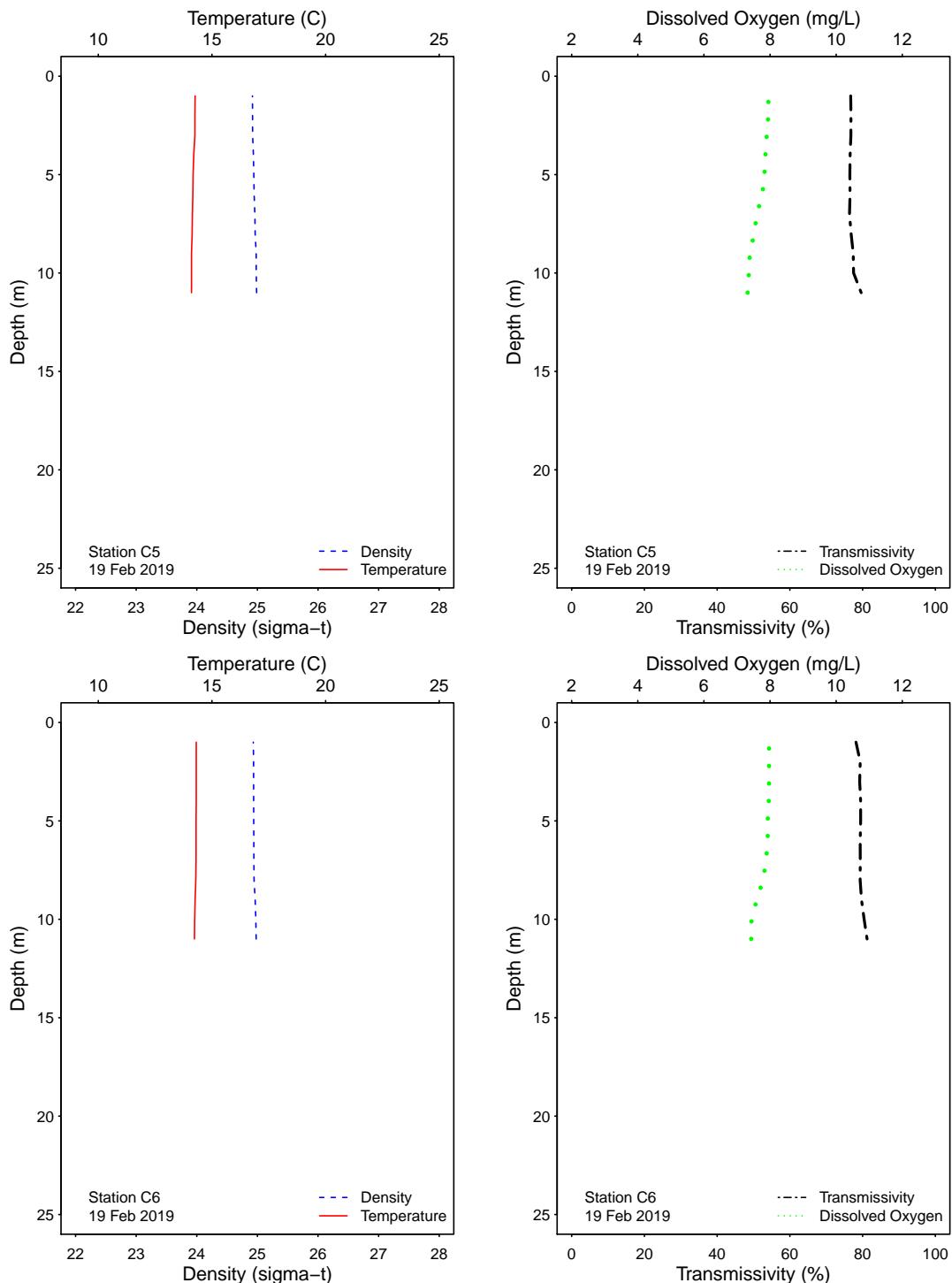


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

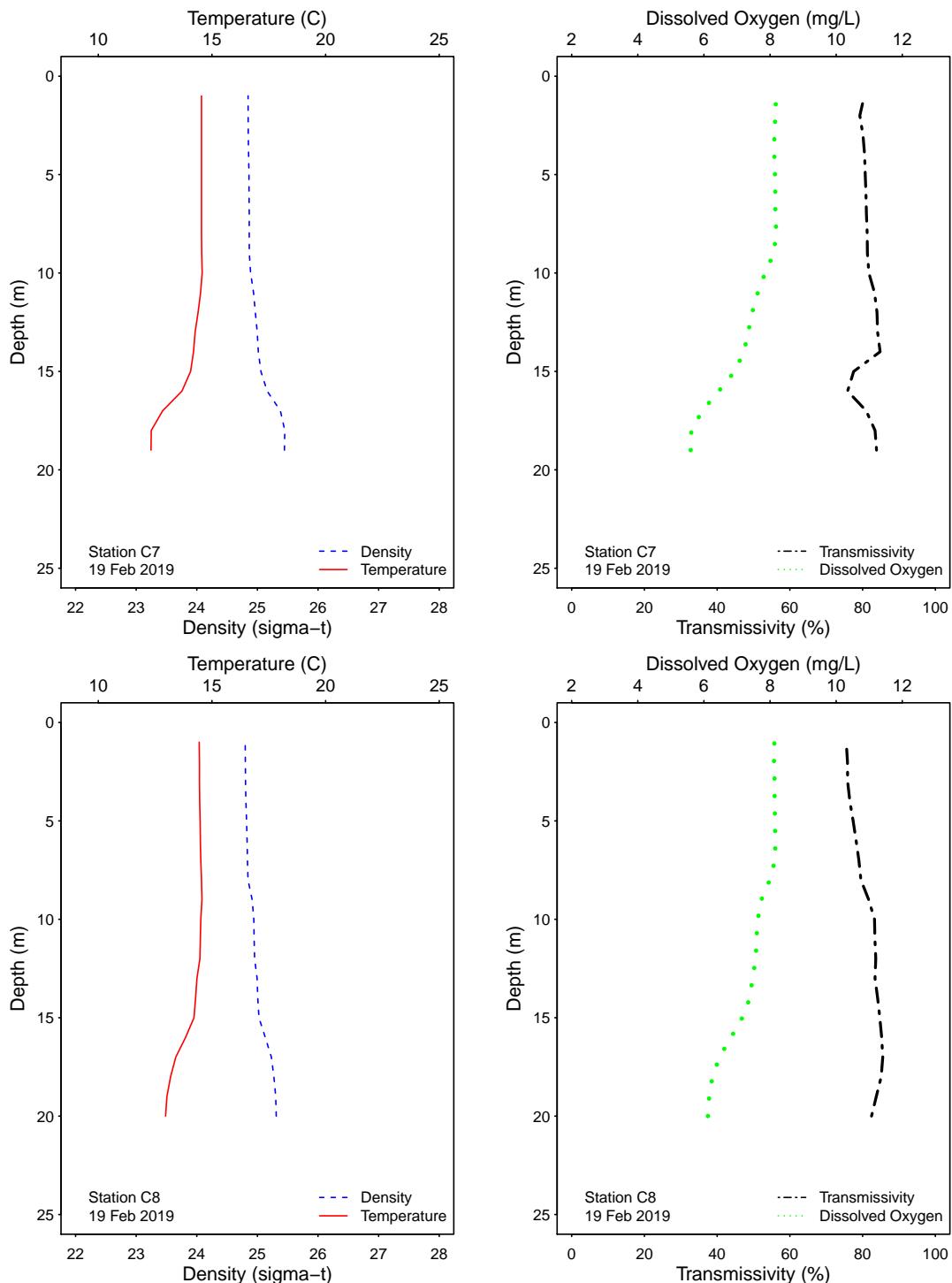


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

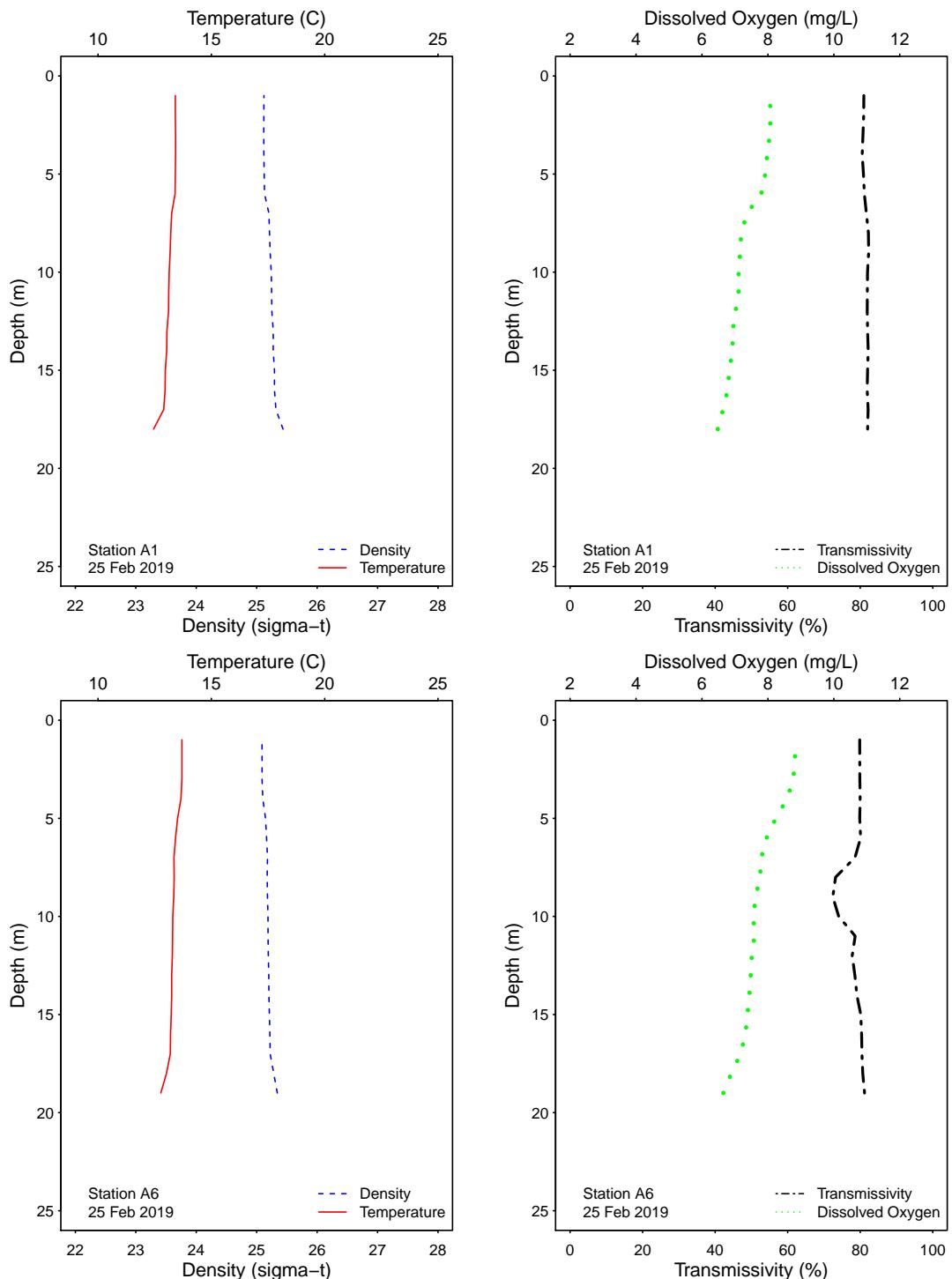


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

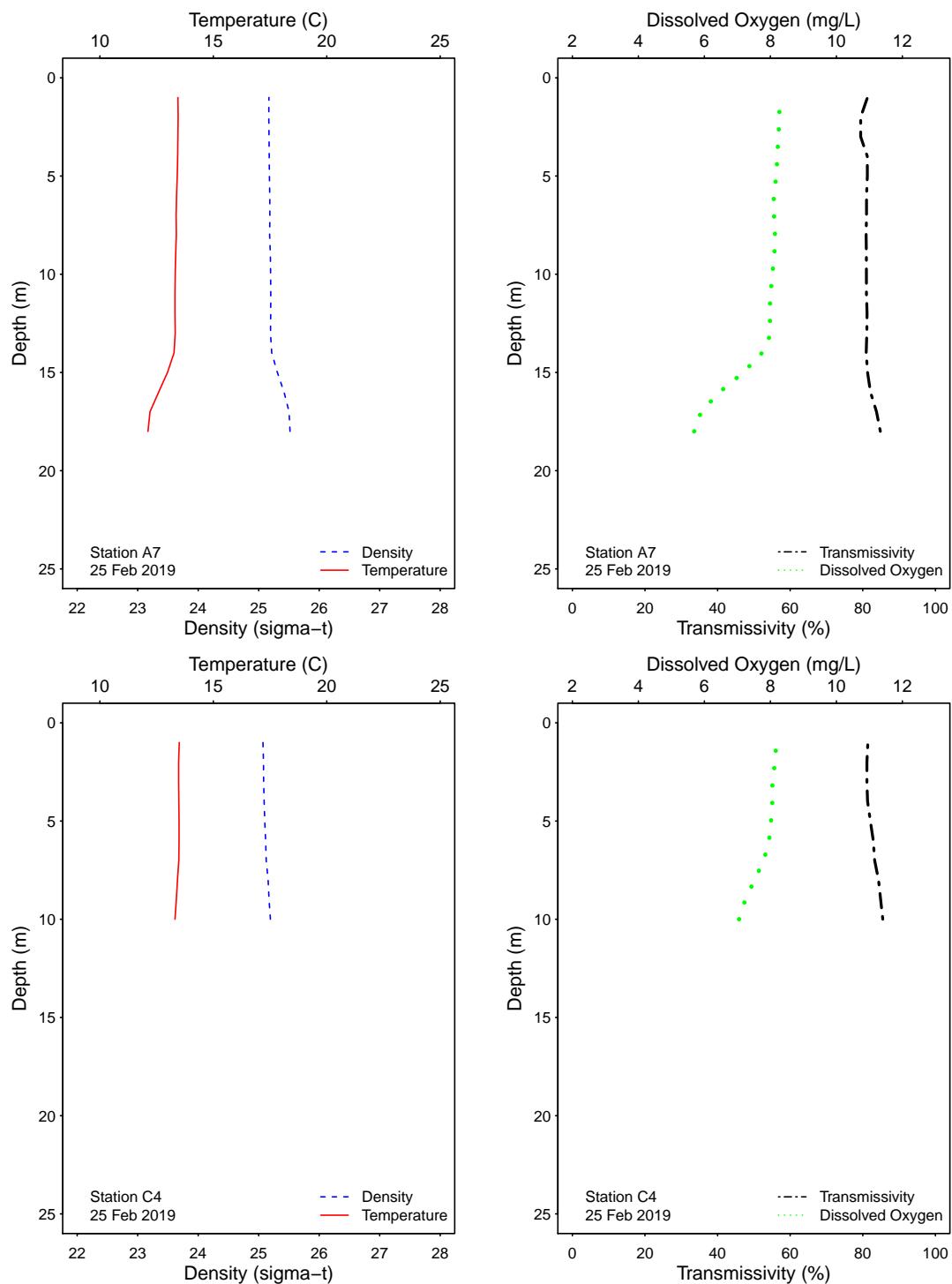


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

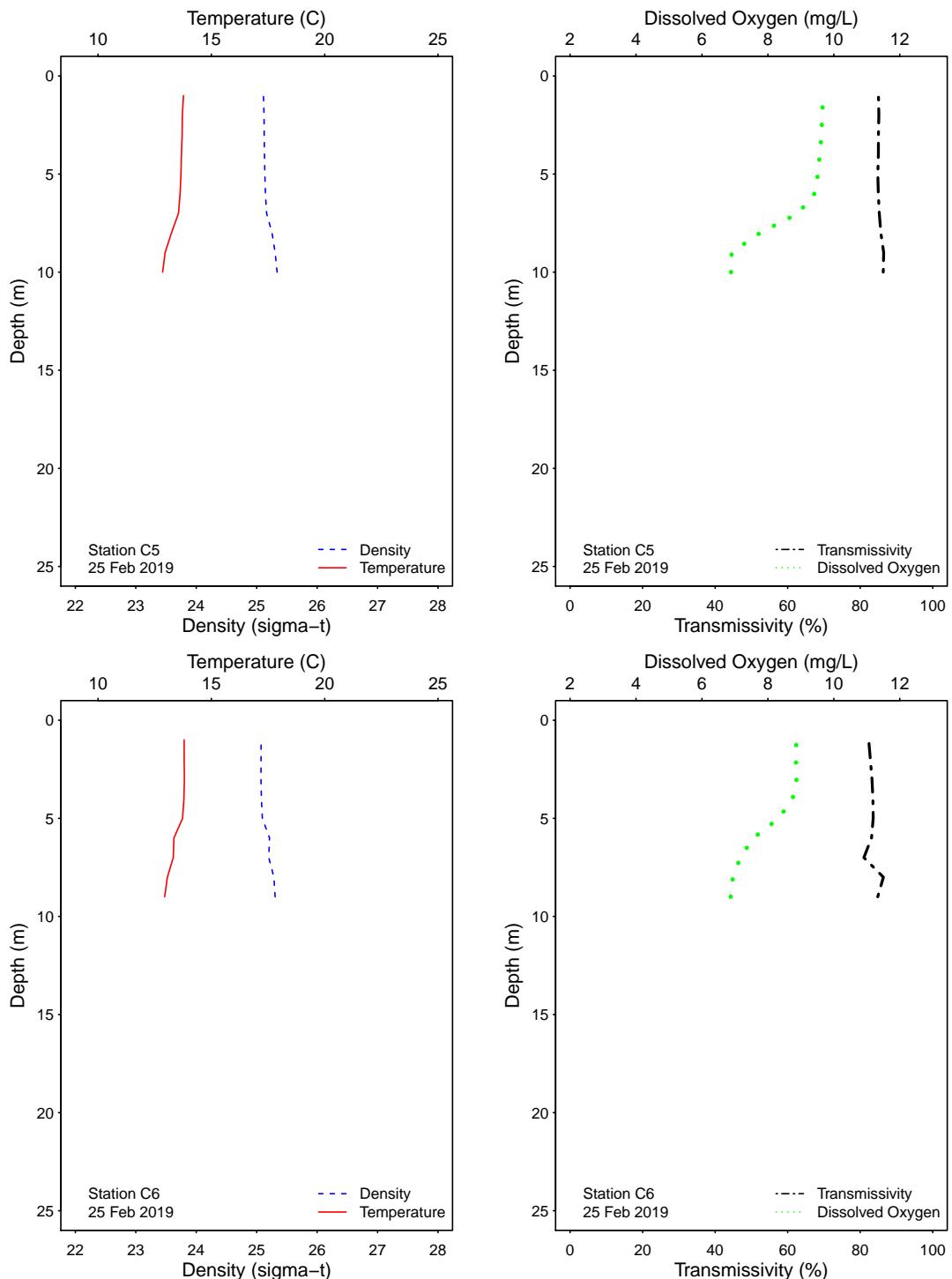


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.

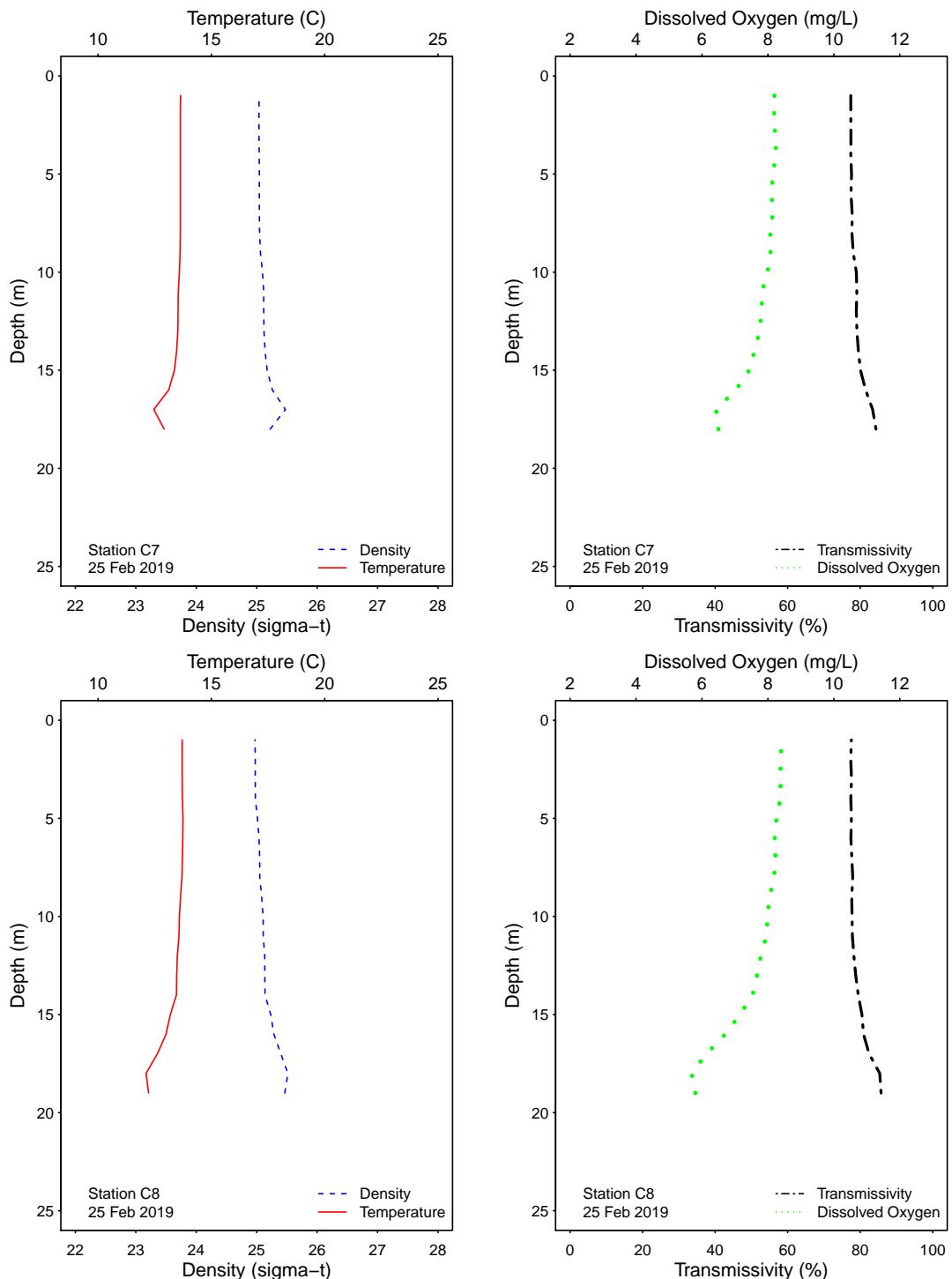


Figure 3.1: Graphics of CTD profile data from the PLOO kelp stations for each sample date.



# **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* (Enter) are reported as CFU/100 mL.

<b>Station</b>	<b>Date</b>	<b>Depth</b>	<b>Analyst</b>	<b>Procedure</b>	<b>Total</b>	<b>Fecal</b>	<b>Enter</b>
A7	07 Feb 2019	18	AR	LAB DUPLICATE	62	10e	2e
A7	11 Feb 2019	18	JT	LAB DUPLICATE	12e	4e	<2
A7	19 Feb 2019	18	AE	LAB DUPLICATE	640	40e	ns
A7	19 Feb 2019	18	JLT	LAB DUPLICATE	ns	ns	16e
A7	25 Feb 2019	18	AE	LAB DUPLICATE	<200	24e	4e
C7	07 Feb 2019	18	AR	LAB DUPLICATE	10e	<2	2e
C7	11 Feb 2019	18	AE	LAB DUPLICATE	<2	<2	<2
C7	19 Feb 2019	18	AE	LAB DUPLICATE	120	22e	ns
C7	19 Feb 2019	18	JLT	LAB DUPLICATE	ns	ns	6e
C7	25 Feb 2019	18	AE	LAB DUPLICATE	38e	2e	<2
C8	07 Feb 2019	12	AR	LAB DUPLICATE	4e	<2	<2
C8	11 Feb 2019	12	AE	LAB DUPLICATE	<2	<2	<2
C8	19 Feb 2019	12	AE	LAB DUPLICATE	2e	<2	ns
C8	19 Feb 2019	12	JLT	LAB DUPLICATE	ns	ns	2e
C8	25 Feb 2019	12	JLT	LAB DUPLICATE	4e	<2	<2
D12	04 Feb 2019		AE	FIELD DUPLICATE	<20	<2	2e
D12	04 Feb 2019		AE	LAB DUPLICATE	20e	2e	8e
D12	13 Feb 2019		JLT	FIELD DUPLICATE	2e	<2	<2
D12	13 Feb 2019		JLT	LAB DUPLICATE	<2	<2	<2
D12	20 Feb 2019		AR	FIELD DUPLICATE	2e	2e	<2
D12	20 Feb 2019		AR	LAB DUPLICATE	16e	2e	2e
D12	27 Feb 2019		AR	FIELD DUPLICATE	<2	<2	<2
D12	27 Feb 2019		AR	LAB DUPLICATE	<2	<2	<2

ns = not sampled

ND = no data

