



# **SOUTH BAY OCEAN OUTFALL MONTHLY RECEIVING WATERS MONITORING REPORT**

## **SOUTH BAY WATER RECLAMATION PLANT**

NPDES Permit No. CA0109045  
SDRWQCB Order No. R9-2013-0006

## **APRIL 2019**

Environmental Monitoring and Technical Services  
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Environmental Monitoring & Technical Services Division

May 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 April 2019 Monthly Receiving Waters Monitoring Report for the South Bay Ocean Outfall, South Bay Water Reclamation Plant as required per Order No. R9-2013-0006 as amended by Order Nos. R9-2014-0071 and R9-2017-0023, NPDES Permit No. CA0109045.

This report includes raw ocean monitoring data and summaries of water quality parameters and ocean conditions measured during the month for the South Bay outfall region. Also included are summaries of compliance with the bacterial water-contact standards specified in the California Ocean Plan. These data are also presented in the monthly report submitted by the International Boundary and Water Commission, U.S. Section for discharge from the South Bay International Wastewater Treatment Plant (Order No. R9-2014-0009 as amended Order Nos. R9-2014-0094 and R9-2017-0024, NPDES Permit No. CA0108928).

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



## INTRODUCTION

Monthly reports of water quality and ocean conditions from Playa Blanco, Mexico to Coronado, USA are submitted to the San Diego Regional Water Quality Control Board and U.S. EPA Region 9 in accordance with Order No. R9-2013-0006 as amended by Order Nos. R9-2014-0071 and R9-2017-0023, NPDES Permit No. CA0109045, for the South Bay Water Reclamation Plant (SBWRP), South Bay Ocean Outfall (SBOO). 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 SBWRP are presented in separate reports.

## MATERIALS AND METHODS

### *Shore Stations*

Water quality monitoring was conducted at 11 stations located along the shore from Playa Blanca, Mexico to Coronado, USA (see station locations map). Three sites are located south of the international border (stations S0, S2, S3), while eight sites are in the United States (stations S4–S6 and S8–S12).

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 total coliform, fecal coliform, and *Enterococcus* bacteria. Visual observations of water color and clarity, surf height, human or animal activity, and weather conditions were recorded at the time of sample collection. Wind speed and direction were measured using a hand-held anemometer with a compass.

### *Kelp Bed Stations*

Seven kelp bed and other nearshore stations (I19, I24, I25, I26, I32, I39, I40; collectively referred to as "kelp" stations herein) were sampled four times during the month according to NPDES permit specifications. Six stations (I19, I24, I25, I26, I32, I40) are located along the 9-m depth contour, and one (I39) is located along the 18-m depth contour. Three of these stations, I25, I26, and I39, were selected based on their proximity to suitable substrates for the Imperial Beach kelp bed (see station locations map); however, this kelp bed has been historically transient and variable in terms of size and density. Thus, these three stations are only occasionally located within an area where kelp is actually found.

The seven kelp stations are sampled on a weekly basis during the month. Routine monitoring at each kelp site consists of collecting seawater samples at three discrete depths for bacteriological analyses (total coliforms, fecal coliforms, and *Enterococcus* bacteria) and generating water column profiles of various physical/chemical parameters, including water temperature, salinity, density, dissolved oxygen, pH, chlorophyll *a*, and transmissivity. Visual observations of weather and water conditions are also recorded at all stations.

Seawater samples at the kelp bed stations are primarily 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 the various physical/chemical parameters were taken using a CTD. The CTD collected these physical/chemical data at a rate  $\geq$  4 scans per second. The data were then internally averaged using the CTD proprietary software, Seasoft, to create water column profiles equivalent

to one reading per meter. Additionally, CTD profile data for each water sample depth are presented with the bacteriological data.

### ***Offshore Stations***

Quarterly offshore water quality sampling is typically conducted over three days during February, May, August, and November for a total of 40 stations during each month (see station locations map). These offshore stations (I1–I40) are arranged in a grid surrounding the discharge site, and are generally located along the 9, 19, 28, 38, and 55-m depth contours. The seven offshore sites designated as kelp bed stations (described above) are included as part of the monthly offshore water quality sampling, however the data from these seven stations are reported within the kelp bed station section of the report with the other four days of kelp bed water quality sampling. Monitoring at all sites included measurements of various physical/chemical parameters, including water temperature, salinity, density, dissolved oxygen, pH, chlorophyll *a*, transmissivity, and chromomorphic dissolved organic matter (CDOM). Visual observations of weather and water conditions were also recorded at all stations. Seawater samples for the analysis of indicator bacteria, suspended solids, and oil and grease concentrations were collected at 28 of the stations.

At these offshore stations, water samples for bacteriological analyses were collected using a rosette sampler with Niskin bottles. Measurements of the physical/chemical parameters listed above were taken using a Sea-Bird CTD. Additionally, CTD profile data for depths closest to those at which bacteriological samples were collected were extracted from the CTD profiles and are 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 (Ocean Plan). The seven standards are defined as follows:

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

- (1) Total coliform density shall not exceed 1000 CFU/100 mL;
- (2) Fecal coliform density shall not exceed 200 CFU/100 mL;
- (3) *Enterococcus* density shall not exceed 35 CFU/100 mL.

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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.

### 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.

Compliance with the seven Ocean Plan standards are summarized below for the stations located in USA waters. In contrast, no such compliance summaries are presented for the three shore stations located in Mexican waters south of the International Border (i.e., S0, S2, and S3) since this region is not subject to the Ocean Plan standards.

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

### ➤ Shoreline Water Quality Sampling

- Because of site access restrictions in Mexico, the South Bay shoreline sampling is typically carried out on the same day each week (i.e., Tuesday) in order to coordinate sampling between the Mexican and USA based stations. Seawater samples at the three shore stations located south of the USA/Mexico border (i.e., stations S0, S2 and S3) are presently collected by the Comisión Internacional de Límites y Aguas (CILA) and transported to the IBWC for subsequent delivery to the City's Marine Microbiology Lab, while samples from the eight stations located in USA waters are sampled by City staff.
- During April, five of the eight shore stations located north of the border were out of compliance with various California Ocean Plan (Ocean Plan) water contact standards on one or more days as follows (these standards do not apply to stations located in Mexican waters):
  - The 30-day geometric mean standard for total coliform densities was exceeded at stations S4, S5, S10, and S11.
  - The 30-day geometric mean standard for fecal coliform densities was exceeded at stations S4, S5, S10, and S11.
  - The 30-day geometric mean standard for *Enterococcus* bacteria was exceeded at stations S4, S5, S6, S10, and S11.

- The SSM standard for fecal coliform densities was exceeded at stations S4 and S10.
  - The SSM standard for *Enterococcus* bacteria was exceeded at station S5.
  - 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 S4.
  - Per permit requirements, resamples were collected in response to these SSM exceedances (see Table 2.8 for details).
- Although the Ocean Plan standards do not apply to this station, bacteria densities exceeded one or more benchmark levels (i.e., total coliforms >10,000 CFU/100mL; fecal coliforms >400 CFU/100 mL; *Enterococcus* >104 CFU/100 mL; total >1000 CFU/100 mL & F:T ratio >0.1) in seawater samples collected at station S0 on one or more days during April.
- Historical analyses of Ocean Plan compliance rates for the South Bay outfall shore and kelp monitoring stations, combined with the results of satellite imagery data, suggest that outflows from the Tijuana River and Los Buenos Creek, as well as surface runoff during or after rain events (storms), are likely to be the cause of impacted water quality along the shore and in near shore recreational waters in the South Bay region. 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* for 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 Water Quality Sampling**

- The seven kelp bed water quality stations (I19, I24, I25, I26, I32, I39, I40) were sampled five times during the month (i.e. April 3, 8, 15, 23, 30).
- During April, two of seven stations were out of compliance with various Ocean Plan water contact standards on one or more days as follows:
  - The 30-day geometric mean standard for total coliform densities was exceeded at stations I19 and I40.
  - The 30-day geometric mean standard for fecal coliform densities was exceeded at stations I19 and I40.
  - The 30-day geometric mean standard for *Enterococcus* bacteria was exceeded at stations I19, and I40.
  - The SSM standard for fecal coliform densities was exceeded at station I19.
  - 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 I19.
- Water column temperatures ranged from 12.15 to 16.65°C. The difference between surface and bottom waters ranged from 0.31 to 3.75°C, indicating the water column was stratified at some of these sites during the month.
- Chlorophyll *a* concentrations ranged from 0.41 to 13.81 µg/L at the kelp bed stations, suggesting the presence of phytoplankton blooms during the month.
- Nothing of sewage origin was observed at any of the kelp stations.

➤ **Offshore Water Quality Sampling**

- Quarterly offshore water quality sampling was not conducted during April. The next quarterly sampling is scheduled for May 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 SBOO 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	S4	S5	S6	S8	S9	S10	S11	S12
01 Apr 2019	1228	7971	463	21*	10	3822	1391	58
02 Apr 2019	1258	6274	358	13	7	3368	1004	37
03 Apr 2019	1258	6274	358	13	7	3368	1004	37
04 Apr 2019	874	5838	494	21*	10	3238	865	42
05 Apr 2019	874	5838	494	21*	10	3238	865	42
06 Apr 2019	754	6051	494	21*	10	2760	723	42
07 Apr 2019	541	6534	494	21*	10	2270	688	42
08 Apr 2019	541	6534	494	21*	10	2270	688	42
09 Apr 2019	368	4188	331	21	7	1641	488	37
10 Apr 2019	368	4188	331	21	7	1641	488	37
11 Apr 2019	230	3662	444	38*	6	1234	634	53
12 Apr 2019	230	3662	444	38*	6	1234	634	53
13 Apr 2019	125	3109	444	38*	6	856	634	53
14 Apr 2019	125	3109	444	38*	6	856	634	53
15 Apr 2019	130	2533	444	38*	6	1008	634	53
16 Apr 2019	100	1479	226	41	12	415	398	31
17 Apr 2019	100	1252	226	41	12	415	398	31
18 Apr 2019	100	1252	226	41	12	415	398	31
19 Apr 2019	191	1293	123	30*	11	729	300	9
20 Apr 2019	191	1293	123	30*	11	729	300	9
21 Apr 2019	191	1293	78	30*	11	729	222	4*
22 Apr 2019	191	1293	78	30*	11	729	164	4*
23 Apr 2019	100	1448	53	18	8	314	127	5
24 Apr 2019	100	1448	53	18	8	314	127	5
25 Apr 2019	54	1028	18	8*	6	163	61	7*
26 Apr 2019	54	1028	18	8*	6	163	61	7*
27 Apr 2019	76	650	8*	8*	6*	82	20	7*
28 Apr 2019	76	343	8*	8*	6*	41	21*	7*
29 Apr 2019	76	343	8*	8*	6*	41	21*	7*
30 Apr 2019	76	256	8*	8*	6*	41	21*	7*

\* Geometric mean calculated using n<5

**Table 2.2**

Summary of compliance with the Ocean Plan's 30-day Geometric Mean standard for fecal coliform bacteria at the SBOO 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	S4	S5	S6	S8	S9	S10	S11	S12
01 Apr 2019	446	3217	57	13*	3	1298	238	16
02 Apr 2019	459	2278	49	9	2	1210	197	11
03 Apr 2019	459	2278	49	9	2	1210	197	11
04 Apr 2019	311	2005	71	13*	3	832	164	14
05 Apr 2019	311	2005	71	13*	3	832	164	14
06 Apr 2019	277	2251	71	13*	3	728	139	14
07 Apr 2019	208	2467	71	13*	3	586	126	14
08 Apr 2019	208	2467	71	13*	3	586	126	14
09 Apr 2019	131	1214	45	9	2	410	85	11
10 Apr 2019	131	1214	45	9	2	410	85	11
11 Apr 2019	73	965	71	13*	3	282	129	16
12 Apr 2019	73	965	71	13*	3	282	129	16
13 Apr 2019	35	729	71	13*	3	176	129	16
14 Apr 2019	35	729	71	13*	3	176	129	16
15 Apr 2019	37	514	71	13*	3	215	129	16
16 Apr 2019	25	277	45	12	5	120	85	11
17 Apr 2019	25	248	45	12	5	120	85	11
18 Apr 2019	25	248	45	12	5	120	85	11
19 Apr 2019	37	304	25	9*	7	155	67	4
20 Apr 2019	37	304	25	9*	7	155	67	4
21 Apr 2019	37	304	15	9*	7	155	51	2*
22 Apr 2019	37	304	15	9*	7	155	42	2*
23 Apr 2019	25	271	14	7	5	90	31	3
24 Apr 2019	25	271	14	7	5	90	31	3
25 Apr 2019	13	157	5	3*	5	48	14	3*
26 Apr 2019	13	157	5	3*	5	48	14	3*
27 Apr 2019	19	76	3*	3*	5*	29	4	3*
28 Apr 2019	19	28	3*	3*	5*	23	5*	3*
29 Apr 2019	19	28	3*	3*	5*	23	5*	3*
30 Apr 2019	19	17	3*	3*	5*	23	5*	3*

\* Geometric mean calculated using n<5

**Table 2.3**

Summary of compliance with the Ocean Plan's 30-day Geometric Mean standard for *Enterococcus* at the SBOO 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	S4	S5	S6	S8	S9	S10	S11	S12
01 Apr 2019	76	2054	27	8*	11	265	61	10
02 Apr 2019	77	1473	26	6	8	241	52	7
03 Apr 2019	77	1473	26	6	8	241	52	7
04 Apr 2019	99	866	44	8*	11	311	63	10
05 Apr 2019	99	866	44	8*	11	311	63	10
06 Apr 2019	99	1008	44	8*	11	311	63	10
07 Apr 2019	99	1244	44	8*	11	311	63	10
08 Apr 2019	99	1244	44	8*	11	311	63	10
09 Apr 2019	76	771	26	6	8	256	45	7
10 Apr 2019	76	771	26	6	8	256	45	7
11 Apr 2019	39	601	38	6*	10	167	56	10
12 Apr 2019	39	601	38	6*	10	167	56	10
13 Apr 2019	22	445	38	6*	10	112	56	10
14 Apr 2019	22	445	38	6*	10	112	56	10
15 Apr 2019	29	309	38	6*	10	154	56	10
16 Apr 2019	18	187	23	7	14	90	40	7
17 Apr 2019	18	171	23	7	14	90	40	7
18 Apr 2019	18	171	23	7	14	90	40	7
19 Apr 2019	16	206	21	8*	11	111	32	3
20 Apr 2019	16	206	21	8*	11	111	32	3
21 Apr 2019	16	206	21	8*	11	111	24	2*
22 Apr 2019	16	206	21	8*	11	111	23	2*
23 Apr 2019	11	169	14	6	8	67	23	2
24 Apr 2019	11	169	14	6	8	67	23	2
25 Apr 2019	6	99	6	3*	4	38	12	2*
26 Apr 2019	6	99	6	3*	4	38	12	2*
27 Apr 2019	8	50	4*	3*	5*	24	4	2*
28 Apr 2019	8	20	4*	3*	5*	13	5*	2*
29 Apr 2019	8	20	4*	3*	5*	13	5*	2*
30 Apr 2019	8	14	4*	3*	5*	12	5*	2*

\* Geometric mean calculated using n<5

**Table 2.4**

Summary of compliance at the SBOO 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	S4	S5	S6	S8	S9	S10	S11	S12
02 Apr 2019	IC	IC	IC	IC	IC	IC	IC	IC
04 Apr 2019	IC	ns	ns	ns	ns	ns	ns	ns
09 Apr 2019	IC	IC	IC	IC	IC	IC	IC	IC
16 Apr 2019	IC	IC	IC	IC	IC	IC	IC	IC
23 Apr 2019	IC	IC	IC	IC	IC	IC	IC	IC

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

**Table 2.5**

Summary of compliance at the SBOO 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	S4	S5	S6	S8	S9	S10	S11	S12
02 Apr 2019	E	IC	IC	IC	IC	E	IC	IC
04 Apr 2019	IC	ns	ns	ns	ns	IC	ns	ns
09 Apr 2019	IC	IC	IC	IC	IC	IC	IC	IC
16 Apr 2019	IC	IC	IC	IC	IC	IC	IC	IC
23 Apr 2019	IC	IC	IC	IC	IC	IC	IC	IC

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

**Table 2.6**

Summary of compliance at the SBOO 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	S4	S5	S6	S8	S9	S10	S11	S12
02 Apr 2019	IC	E	IC	IC	IC	IC	IC	IC
04 Apr 2019	ns	IC	ns	ns	ns	ns	ns	ns
09 Apr 2019	IC	IC	IC	IC	IC	IC	IC	IC
16 Apr 2019	IC	IC	IC	IC	IC	IC	IC	IC
23 Apr 2019	IC	IC	IC	IC	IC	IC	IC	IC

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

**Table 2.7**

Summary of compliance at the SBOO 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	S4	S5	S6	S8	S9	S10	S11	S12
02 Apr 2019	E	IC	IC	IC	IC	IC	IC	IC
04 Apr 2019	IC	ns	ns	ns	ns	ns	ns	ns
09 Apr 2019	IC	IC	IC	IC	IC	IC	IC	IC
16 Apr 2019	IC	IC	IC	IC	IC	IC	IC	IC
23 Apr 2019	IC	IC	IC	IC	IC	IC	IC	IC

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

**Table 2.8**

Summary of water quality parameters at the SBOO 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.

<b>Station</b>	<b>Date</b>	<b>Time</b>	<b>Total</b>	<b>Fecal</b>	<b>Enter</b>	<b>F:T</b>
S0	02 Apr 2019	1040	80e	12e	54	0.15
S0	09 Apr 2019	1120	4200	620	500	0.15
S0	16 Apr 2019	1135	>16000	3800e	2200e	0.24
S0	23 Apr 2019	1030	2000e	280e	220e	0.14
S0	30 Apr 2019	1135	3200e	400	820	0.12
S2	02 Apr 2019	1235	260e	48	2e	0.18
S2	09 Apr 2019	1235	<20	<2	<2	0.10
S2	16 Apr 2019	1245	<2	<2	<2	1.00
S2	23 Apr 2019	1452	<2	<2	<2	1.00
S2	30 Apr 2019	1110	60e	12e	6e	0.20
S3	02 Apr 2019	1155	220e	92	2e	0.42
S3	09 Apr 2019	1200	20e	6e	<2	0.30
S3	16 Apr 2019	1215	4e	<2	4e	0.50
S3	23 Apr 2019	1115	<2	<2	<2	1.00
S3	30 Apr 2019	1030	400	16e	30e	0.04
S4	02 Apr 2019	850	1600e	600	86	0.38
S4	04 Apr 2019	925	80e	14e	ns	0.17
S4	09 Apr 2019	840	500	80	12e	0.16
S4	16 Apr 2019	955	<20	2e	<2	0.10
S4	23 Apr 2019	1115	<2	<2	<2	1.00
S5	02 Apr 2019	1032	560	96	160e	0.17
S5	04 Apr 2019	823	ns	ns	12e	ns
S5	09 Apr 2019	949	120e	4e	4e	0.03
S5	16 Apr 2019	1100	<20	<2	<2	0.10
S5	23 Apr 2019	928	3200e	120e	36e	0.04
S6	02 Apr 2019	1046	60e	18e	24e	0.30
S6	09 Apr 2019	1020	<20	<2	<2	0.10
S6	16 Apr 2019	1112	<2	<2	<2	1.00
S6	23 Apr 2019	939	2e	<2	<2	1.00
S8	02 Apr 2019	1201	<2	<2	2e	1.00
S8	09 Apr 2019	1209	<20	<2	<2	0.10
S8	16 Apr 2019	1238	60e	10e	18e	0.17
S8	23 Apr 2019	841	2e	<2	<2	1.00
S9	02 Apr 2019	1236	2e	<2	<2	1.00
S9	09 Apr 2019	1243	<2	<2	<2	1.00
S9	16 Apr 2019	1322	160e	82	98	0.51
S9	23 Apr 2019	812	2e	2e	<2	1.00
S10	02 Apr 2019	844	840	560	100e	0.67
S10	04 Apr 2019	918	ns	8e	ns	ns
S10	09 Apr 2019	819	860	340e	44	0.40
S10	16 Apr 2019	1002	<2	<2	<2	1.00

<b>Station</b>	<b>Date</b>	<b>Time</b>	<b>Total</b>	<b>Fecal</b>	<b>Enter</b>	<b>F:T</b>
S10	23 Apr 2019	1109	<2	<2	<2	1.00
S11	02 Apr 2019	1040	20e	20e	14e	1.00
S11	09 Apr 2019	1011	<20	2e	2e	0.10
S11	16 Apr 2019	1107	6e	<2	<2	0.33
S11	23 Apr 2019	935	80e	6e	8e	0.07
S12	02 Apr 2019	1103	4e	<2	<2	0.50
S12	09 Apr 2019	1033	<20	4e	<2	0.20
S12	16 Apr 2019	1121	<2	<2	<2	1.00
S12	23 Apr 2019	950	12e	8e	2e	0.67

ns = not sampled

ND = no data

**Comments**

Station	Date	Depth	Parameter	Comments
S5	04 Apr 2019			Resample
S10	04 Apr 2019			Resample
S4	04 Apr 2019			Resample

**Table 2.9**

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

Station	Date	Parameter	Value
S0	02 Apr 2019	Arrive Time	1040
S0	02 Apr 2019	Weather	Sunny
S0	02 Apr 2019	Wind Speed (kts)	5.4
S0	02 Apr 2019	Wind Dir	SE
S0	02 Apr 2019	Animal Life	10 Shorebirds; 2 Dogs
S0	02 Apr 2019	Floatables	None
S0	02 Apr 2019	Water Color	Green
S0	02 Apr 2019	Current Direction	N
S0	02 Apr 2019	Water Temp (C)	17
S0	02 Apr 2019	Wave Height Low (ft)	4
S0	02 Apr 2019	High Tide (ft)	4.8
S0	02 Apr 2019	High Tide Time	817
S0	02 Apr 2019	Low Tide (ft)	-0.1
S0	02 Apr 2019	Low Tide Time	1450
S0	02 Apr 2019	Comments	Kelp; Algae; 2 Persons; Water clear; 0.5 L/s water flowing from storm drain
S0	09 Apr 2019	Arrive Time	1120
S0	09 Apr 2019	Weather	Cloudy
S0	09 Apr 2019	Wind Speed (kts)	3.2
S0	09 Apr 2019	Wind Dir	SW
S0	09 Apr 2019	Animal Life	20 Shorebirds; 3 Dogs
S0	09 Apr 2019	Floatables	None
S0	09 Apr 2019	Water Color	Green
S0	09 Apr 2019	Current Direction	S
S0	09 Apr 2019	Water Temp (C)	15
S0	09 Apr 2019	Wave Height Low (ft)	2
S0	09 Apr 2019	High Tide (ft)	3.1
S0	09 Apr 2019	High Tide Time	1248
S0	09 Apr 2019	Low Tide (ft)	0.1
S0	09 Apr 2019	Low Tide Time	637
S0	09 Apr 2019	Comments	3 Swimmers; Water turbid; 1 L/s water flowing from storm drain
S0	16 Apr 2019	Arrive Time	1135
S0	16 Apr 2019	Weather	Cloudy
S0	16 Apr 2019	Wind Speed (kts)	33
S0	16 Apr 2019	Wind Dir	NW
S0	16 Apr 2019	Animal Life	5 Shorebirds
S0	16 Apr 2019	Floatables	None
S0	16 Apr 2019	Water Color	Green
S0	16 Apr 2019	Current Direction	N
S0	16 Apr 2019	Water Temp (C)	16
S0	16 Apr 2019	Wave Height Low (ft)	2
S0	16 Apr 2019	High Tide (ft)	5.2
S0	16 Apr 2019	High Tide Time	727
S0	16 Apr 2019	Low Tide (ft)	-0.7
S0	16 Apr 2019	Low Tide Time	1403
S0	16 Apr 2019	Comments	Kelp; Algae; Water clear; 0.5 L/s water flowing from storm drain
S0	23 Apr 2019	Arrive Time	1030
S0	23 Apr 2019	Weather	Sunny

Station	Date	Parameter	Value
S0	23 Apr 2019	Wind Speed (kts)	4.2
S0	23 Apr 2019	Wind Dir	SE
S0	23 Apr 2019	Animal Life	10 Shorebirds
S0	23 Apr 2019	Floatables	None
S0	23 Apr 2019	Water Color	Green
S0	23 Apr 2019	Current Direction	N
S0	23 Apr 2019	Water Temp (C)	15
S0	23 Apr 2019	Wave Height Low (ft)	3
S0	23 Apr 2019	High Tide (ft)	3.2
S0	23 Apr 2019	High Tide Time	1331
S0	23 Apr 2019	Low Tide (ft)	-0.2
S0	23 Apr 2019	Low Tide Time	703
S0	23 Apr 2019	Comments	Kelp; Algae; 3 Persons; Water turbid; 0.5 L/s water flowing from storm drain
S0	30 Apr 2019	Arrive Time	1135
S0	30 Apr 2019	Weather	Heavy Rain
S0	30 Apr 2019	Wind Speed (kts)	0.7
S0	30 Apr 2019	Wind Dir	SW
S0	30 Apr 2019	Animal Life	5 Birds
S0	30 Apr 2019	Floatables	None
S0	30 Apr 2019	Water Color	Green
S0	30 Apr 2019	Current Direction	N
S0	30 Apr 2019	Water Temp (C)	13
S0	30 Apr 2019	Wave Height Low (ft)	3
S0	30 Apr 2019	High Tide (ft)	4.1
S0	30 Apr 2019	High Tide Time	712
S0	30 Apr 2019	Low Tide (ft)	0.4
S0	30 Apr 2019	Low Tide Time	1335
S0	30 Apr 2019	Comments	Water clear; 0.5 Lps flow from stormdrain; Rough sea
S2	02 Apr 2019	Arrive Time	1235
S2	02 Apr 2019	Weather	Sunny
S2	02 Apr 2019	Wind Speed (kts)	5.6
S2	02 Apr 2019	Wind Dir	SE
S2	02 Apr 2019	Animal Life	10 Shorebirds; 1 Dog
S2	02 Apr 2019	Floatables	None
S2	02 Apr 2019	Water Color	Green
S2	02 Apr 2019	Current Direction	N
S2	02 Apr 2019	Water Temp (C)	17
S2	02 Apr 2019	Wave Height Low (ft)	4
S2	02 Apr 2019	High Tide (ft)	4.8
S2	02 Apr 2019	High Tide Time	817
S2	02 Apr 2019	Low Tide (ft)	-0.1
S2	02 Apr 2019	Low Tide Time	1450
S2	02 Apr 2019	Comments	Kelp; Algae; 5 Persons; Water clear; No flow from storm drain
S2	09 Apr 2019	Arrive Time	1235
S2	09 Apr 2019	Weather	Cloudy
S2	09 Apr 2019	Wind Speed (kts)	1.7
S2	09 Apr 2019	Wind Dir	SW
S2	09 Apr 2019	Animal Life	20 Shorebirds; 6 Dogs
S2	09 Apr 2019	Floatables	None
S2	09 Apr 2019	Water Color	Green
S2	09 Apr 2019	Current Direction	S

Station	Date	Parameter	Value
S2	09 Apr 2019	Water Temp (C)	16
S2	09 Apr 2019	Wave Height Low (ft)	2
S2	09 Apr 2019	High Tide (ft)	3.1
S2	09 Apr 2019	High Tide Time	1248
S2	09 Apr 2019	Low Tide (ft)	1.8
S2	09 Apr 2019	Low Tide Time	1739
S2	09 Apr 2019	Comments	Kelp; 3 Swimmers; Water turbid; No flow from storm drain
S2	16 Apr 2019	Arrive Time	1245
S2	16 Apr 2019	Weather	Cloudy
S2	16 Apr 2019	Wind Speed (kts)	3.2
S2	16 Apr 2019	Wind Dir	NW
S2	16 Apr 2019	Animal Life	15 Shorebirds; 3 Dogs
S2	16 Apr 2019	Floatables	None
S2	16 Apr 2019	Water Color	Green
S2	16 Apr 2019	Current Direction	N
S2	16 Apr 2019	Water Temp (C)	15
S2	16 Apr 2019	Wave Height Low (ft)	2
S2	16 Apr 2019	High Tide (ft)	5.2
S2	16 Apr 2019	High Tide Time	727
S2	16 Apr 2019	Low Tide (ft)	-0.7
S2	16 Apr 2019	Low Tide Time	1403
S2	16 Apr 2019	Comments	Kelp; Algae; 2 Persons; Water clear; No flow from storm drain
S2	23 Apr 2019	Arrive Time	1452
S2	23 Apr 2019	Weather	Sunny
S2	23 Apr 2019	Wind Speed (kts)	4.3
S2	23 Apr 2019	Wind Dir	SE
S2	23 Apr 2019	Animal Life	20 Shorebirds; 2 Dogs
S2	23 Apr 2019	Floatables	None
S2	23 Apr 2019	Water Color	Green
S2	23 Apr 2019	Current Direction	N
S2	23 Apr 2019	Water Temp (C)	16
S2	23 Apr 2019	Wave Height Low (ft)	3
S2	23 Apr 2019	High Tide (ft)	3.2
S2	23 Apr 2019	High Tide Time	1331
S2	23 Apr 2019	Low Tide (ft)	2.2
S2	23 Apr 2019	Low Tide Time	1808
S2	23 Apr 2019	Comments	Kelp; Algae; 6 Persons; Water turbid; No flow from storm drain
S2	30 Apr 2019	Arrive Time	1110
S2	30 Apr 2019	Weather	Heavy Rain
S2	30 Apr 2019	Wind Speed (kts)	0.9
S2	30 Apr 2019	Wind Dir	SW
S2	30 Apr 2019	Animal Life	5 Birds; 5 Dogs
S2	30 Apr 2019	Floatables	None
S2	30 Apr 2019	Water Color	Green
S2	30 Apr 2019	Current Direction	N
S2	30 Apr 2019	Water Temp (C)	13
S2	30 Apr 2019	Wave Height Low (ft)	3
S2	30 Apr 2019	High Tide (ft)	4.1
S2	30 Apr 2019	High Tide Time	712
S2	30 Apr 2019	Low Tide (ft)	0.4
S2	30 Apr 2019	Low Tide Time	1335
S2	30 Apr 2019	Comments	Water clear; No flow from stormdrain; Rough sea

Station	Date	Parameter	Value
S3	02 Apr 2019	Arrive Time	1155
S3	02 Apr 2019	Weather	Sunny
S3	02 Apr 2019	Wind Speed (kts)	5.4
S3	02 Apr 2019	Wind Dir	SE
S3	02 Apr 2019	Animal Life	10 Shorebirds; 1 Dog
S3	02 Apr 2019	Floatables	None
S3	02 Apr 2019	Water Color	Green
S3	02 Apr 2019	Current Direction	N
S3	02 Apr 2019	Water Temp (C)	17
S3	02 Apr 2019	Wave Height Low (ft)	4
S3	02 Apr 2019	High Tide (ft)	4.8
S3	02 Apr 2019	High Tide Time	817
S3	02 Apr 2019	Low Tide (ft)	-0.1
S3	02 Apr 2019	Low Tide Time	1450
S3	02 Apr 2019	Comments	Kelp; Algae; 5 Persons; Water clear; No flow from storm drain
S3	09 Apr 2019	Arrive Time	1200
S3	09 Apr 2019	Weather	Cloudy
S3	09 Apr 2019	Wind Speed (kts)	1.8
S3	09 Apr 2019	Wind Dir	SW
S3	09 Apr 2019	Animal Life	20 Shorebirds; 6 Dogs
S3	09 Apr 2019	Floatables	None
S3	09 Apr 2019	Water Color	Green
S3	09 Apr 2019	Current Direction	S
S3	09 Apr 2019	Water Temp (C)	16
S3	09 Apr 2019	Wave Height Low (ft)	2
S3	09 Apr 2019	High Tide (ft)	3.1
S3	09 Apr 2019	High Tide Time	1248
S3	09 Apr 2019	Low Tide (ft)	0.1
S3	09 Apr 2019	Low Tide Time	637
S3	09 Apr 2019	Comments	20 Swimmers; Water turbid; No flow from storm drain
S3	16 Apr 2019	Arrive Time	1215
S3	16 Apr 2019	Weather	Cloudy
S3	16 Apr 2019	Wind Speed (kts)	3.1
S3	16 Apr 2019	Wind Dir	NW
S3	16 Apr 2019	Animal Life	20 Shorebirds
S3	16 Apr 2019	Floatables	None
S3	16 Apr 2019	Water Color	Green
S3	16 Apr 2019	Current Direction	N
S3	16 Apr 2019	Water Temp (C)	15
S3	16 Apr 2019	Wave Height Low (ft)	2
S3	16 Apr 2019	High Tide (ft)	5.2
S3	16 Apr 2019	High Tide Time	727
S3	16 Apr 2019	Low Tide (ft)	-0.7
S3	16 Apr 2019	Low Tide Time	1403
S3	16 Apr 2019	Comments	Kelp; Algae; 30 Persons; Water clear; No flow from storm drain
S3	23 Apr 2019	Arrive Time	1115
S3	23 Apr 2019	Weather	Sunny
S3	23 Apr 2019	Wind Speed (kts)	4.2
S3	23 Apr 2019	Wind Dir	SE
S3	23 Apr 2019	Animal Life	10 Shorebirds; 2 Dogs
S3	23 Apr 2019	Floatables	None

Station	Date	Parameter	Value
S3	23 Apr 2019	Water Color	Green
S3	23 Apr 2019	Current Direction	N
S3	23 Apr 2019	Water Temp (C)	16
S3	23 Apr 2019	Wave Height Low (ft)	3
S3	23 Apr 2019	High Tide (ft)	3.2
S3	23 Apr 2019	High Tide Time	1331
S3	23 Apr 2019	Low Tide (ft)	-0.2
S3	23 Apr 2019	Low Tide Time	703
S3	23 Apr 2019	Comments	Kelp; Algae; 20 Persons; Water turbid; No flow from storm drain
S3	30 Apr 2019	Arrive Time	1030
S3	30 Apr 2019	Weather	Heavy Rain
S3	30 Apr 2019	Wind Speed (kts)	0.8
S3	30 Apr 2019	Wind Dir	SW
S3	30 Apr 2019	Animal Life	5 Birds
S3	30 Apr 2019	Floatables	None
S3	30 Apr 2019	Water Color	Green
S3	30 Apr 2019	Current Direction	N
S3	30 Apr 2019	Water Temp (C)	13
S3	30 Apr 2019	Wave Height Low (ft)	3
S3	30 Apr 2019	High Tide (ft)	4.1
S3	30 Apr 2019	High Tide Time	712
S3	30 Apr 2019	Low Tide (ft)	0.4
S3	30 Apr 2019	Low Tide Time	1335
S3	30 Apr 2019	Comments	Water clear; No flow from stormdrain; Rough sea
S4	02 Apr 2019	Arrive Time	850
S4	02 Apr 2019	Weather	Sunny
S4	02 Apr 2019	Wind Speed (kts)	8.7
S4	02 Apr 2019	Wind Dir	S
S4	02 Apr 2019	Animal Life	None
S4	02 Apr 2019	Floatables	None
S4	02 Apr 2019	Water Color	Green
S4	02 Apr 2019	Current Direction	N
S4	02 Apr 2019	Water Temp (C)	16.2
S4	02 Apr 2019	Wave Height Low (ft)	2
S4	02 Apr 2019	High Tide (ft)	4.8
S4	02 Apr 2019	High Tide Time	817
S4	02 Apr 2019	Low Tide (ft)	-0.1
S4	02 Apr 2019	Low Tide Time	1450
S4	02 Apr 2019	Comments	Seagrass; Water clear
S4	04 Apr 2019	Arrive Time	925
S4	04 Apr 2019	Weather	Cloudy
S4	04 Apr 2019	Wind Speed (kts)	2.4
S4	04 Apr 2019	Wind Dir	W
S4	04 Apr 2019	Animal Life	100 Birds
S4	04 Apr 2019	Floatables	Foam
S4	04 Apr 2019	Water Color	Green
S4	04 Apr 2019	Current Direction	N
S4	04 Apr 2019	Water Temp (C)	17.2
S4	04 Apr 2019	Wave Height Low (ft)	2
S4	04 Apr 2019	High Tide (ft)	4.8
S4	04 Apr 2019	High Tide Time	921
S4	04 Apr 2019	Low Tide (ft)	0.5

Station	Date	Parameter	Value
S4	04 Apr 2019	Low Tide Time	325
S4	04 Apr 2019	Comments	Resample; Water clear
S4	09 Apr 2019	Arrive Time	840
S4	09 Apr 2019	Weather	Partly Cloudy
S4	09 Apr 2019	Wind Speed (kts)	4.8
S4	09 Apr 2019	Wind Dir	NE
S4	09 Apr 2019	Animal Life	150 Grebes; 5 Pelicans; 60 Seagulls
S4	09 Apr 2019	Floatables	Foam
S4	09 Apr 2019	Water Color	Green
S4	09 Apr 2019	Current Direction	NE
S4	09 Apr 2019	Water Temp (C)	17
S4	09 Apr 2019	Wave Height Low (ft)	3
S4	09 Apr 2019	High Tide (ft)	3.1
S4	09 Apr 2019	High Tide Time	1248
S4	09 Apr 2019	Low Tide (ft)	0.1
S4	09 Apr 2019	Low Tide Time	637
S4	09 Apr 2019	Comments	Kelp; Seagrass; Debris; Water clear
S4	16 Apr 2019	Arrive Time	955
S4	16 Apr 2019	Weather	Cloudy
S4	16 Apr 2019	Wind Speed (kts)	6.6
S4	16 Apr 2019	Wind Dir	W
S4	16 Apr 2019	Animal Life	None
S4	16 Apr 2019	Floatables	None
S4	16 Apr 2019	Water Color	Green
S4	16 Apr 2019	Current Direction	N
S4	16 Apr 2019	Water Temp (C)	16
S4	16 Apr 2019	Wave Height Low (ft)	4
S4	16 Apr 2019	High Tide (ft)	5.2
S4	16 Apr 2019	High Tide Time	727
S4	16 Apr 2019	Low Tide (ft)	-0.7
S4	16 Apr 2019	Low Tide Time	1403
S4	16 Apr 2019	Comments	Kelp; Debris; Water clear
S4	23 Apr 2019	Arrive Time	1115
S4	23 Apr 2019	Weather	Sunny
S4	23 Apr 2019	Wind Speed (kts)	6.9
S4	23 Apr 2019	Wind Dir	SW
S4	23 Apr 2019	Animal Life	None
S4	23 Apr 2019	Floatables	None
S4	23 Apr 2019	Water Color	Green
S4	23 Apr 2019	Current Direction	N
S4	23 Apr 2019	Water Temp (C)	17
S4	23 Apr 2019	Wave Height Low (ft)	4
S4	23 Apr 2019	High Tide (ft)	3.2
S4	23 Apr 2019	High Tide Time	1331
S4	23 Apr 2019	Low Tide (ft)	-0.2
S4	23 Apr 2019	Low Tide Time	703
S4	23 Apr 2019	Comments	Water clear
S5	02 Apr 2019	Arrive Time	1032
S5	02 Apr 2019	Weather	Sunny
S5	02 Apr 2019	Wind Speed (kts)	6.9
S5	02 Apr 2019	Wind Dir	S

Station	Date	Parameter	Value
S5	02 Apr 2019	Animal Life	None
S5	02 Apr 2019	Floatables	None
S5	02 Apr 2019	Water Color	Green
S5	02 Apr 2019	Current Direction	N
S5	02 Apr 2019	Water Temp (C)	18.1
S5	02 Apr 2019	Wave Height Low (ft)	2
S5	02 Apr 2019	High Tide (ft)	4.8
S5	02 Apr 2019	High Tide Time	817
S5	02 Apr 2019	Low Tide (ft)	-0.1
S5	02 Apr 2019	Low Tide Time	1450
S5	02 Apr 2019	Comments	Kelp; Seagrass; Debris; 1 Jogger; Water clear
S5	04 Apr 2019	Arrive Time	823
S5	04 Apr 2019	Weather	Cloudy
S5	04 Apr 2019	Wind Speed (kts)	2.9
S5	04 Apr 2019	Wind Dir	E
S5	04 Apr 2019	Animal Life	None
S5	04 Apr 2019	Floatables	None
S5	04 Apr 2019	Water Color	Green
S5	04 Apr 2019	Current Direction	N
S5	04 Apr 2019	Water Temp (C)	16.6
S5	04 Apr 2019	Wave Height Low (ft)	3
S5	04 Apr 2019	High Tide (ft)	4.8
S5	04 Apr 2019	High Tide Time	921
S5	04 Apr 2019	Low Tide (ft)	0.5
S5	04 Apr 2019	Low Tide Time	325
S5	04 Apr 2019	Comments	Resample; Debris; Water clear
S5	09 Apr 2019	Arrive Time	949
S5	09 Apr 2019	Weather	Partly Cloudy
S5	09 Apr 2019	Wind Speed (kts)	5.2
S5	09 Apr 2019	Wind Dir	S
S5	09 Apr 2019	Animal Life	3 Grebes; 7 Seagulls
S5	09 Apr 2019	Floatables	Film
S5	09 Apr 2019	Water Color	Green
S5	09 Apr 2019	Current Direction	S
S5	09 Apr 2019	Water Temp (C)	19.2
S5	09 Apr 2019	Wave Height Low (ft)	4
S5	09 Apr 2019	High Tide (ft)	3.1
S5	09 Apr 2019	High Tide Time	1248
S5	09 Apr 2019	Low Tide (ft)	0.1
S5	09 Apr 2019	Low Tide Time	637
S5	09 Apr 2019	Comments	Kelp; Seagrass; Debris; Water clear
S5	16 Apr 2019	Arrive Time	1100
S5	16 Apr 2019	Weather	Cloudy
S5	16 Apr 2019	Wind Speed (kts)	7
S5	16 Apr 2019	Wind Dir	W
S5	16 Apr 2019	Animal Life	2 Plovers
S5	16 Apr 2019	Floatables	None
S5	16 Apr 2019	Water Color	Green
S5	16 Apr 2019	Current Direction	N
S5	16 Apr 2019	Water Temp (C)	16.9
S5	16 Apr 2019	Wave Height Low (ft)	3
S5	16 Apr 2019	High Tide (ft)	5.2

Station	Date	Parameter	Value
S5	16 Apr 2019	High Tide Time	727
S5	16 Apr 2019	Low Tide (ft)	-0.7
S5	16 Apr 2019	Low Tide Time	1403
S5	16 Apr 2019	Comments	Kelp; Seagrass; Debris; Water clear
S5	23 Apr 2019	Arrive Time	928
S5	23 Apr 2019	Weather	Overcast
S5	23 Apr 2019	Wind Speed (kts)	4.6
S5	23 Apr 2019	Wind Dir	W
S5	23 Apr 2019	Animal Life	None
S5	23 Apr 2019	Floatables	None
S5	23 Apr 2019	Water Color	Green
S5	23 Apr 2019	Current Direction	N
S5	23 Apr 2019	Water Temp (C)	16.5
S5	23 Apr 2019	Wave Height Low (ft)	2
S5	23 Apr 2019	High Tide (ft)	3.2
S5	23 Apr 2019	High Tide Time	1331
S5	23 Apr 2019	Low Tide (ft)	-0.2
S5	23 Apr 2019	Low Tide Time	703
S5	23 Apr 2019	Comments	Kelp; Seagrass; 2 Persons; Water clear
S6	02 Apr 2019	Arrive Time	1046
S6	02 Apr 2019	Weather	Sunny
S6	02 Apr 2019	Wind Speed (kts)	6.9
S6	02 Apr 2019	Wind Dir	S
S6	02 Apr 2019	Animal Life	1 Dog
S6	02 Apr 2019	Floatables	None
S6	02 Apr 2019	Water Color	Green
S6	02 Apr 2019	Current Direction	N
S6	02 Apr 2019	Water Temp (C)	17.1
S6	02 Apr 2019	Wave Height Low (ft)	3
S6	02 Apr 2019	High Tide (ft)	4.8
S6	02 Apr 2019	High Tide Time	817
S6	02 Apr 2019	Low Tide (ft)	-0.1
S6	02 Apr 2019	Low Tide Time	1450
S6	02 Apr 2019	Comments	Seagrass; 1 Person; Water clear
S6	09 Apr 2019	Arrive Time	1020
S6	09 Apr 2019	Weather	Partly Cloudy
S6	09 Apr 2019	Wind Speed (kts)	5.4
S6	09 Apr 2019	Wind Dir	E
S6	09 Apr 2019	Animal Life	1 Dog; 1 Grebe
S6	09 Apr 2019	Floatables	Foam
S6	09 Apr 2019	Water Color	Green
S6	09 Apr 2019	Current Direction	E
S6	09 Apr 2019	Water Temp (C)	18.8
S6	09 Apr 2019	Wave Height Low (ft)	2
S6	09 Apr 2019	High Tide (ft)	3.1
S6	09 Apr 2019	High Tide Time	1248
S6	09 Apr 2019	Low Tide (ft)	0.1
S6	09 Apr 2019	Low Tide Time	637
S6	09 Apr 2019	Comments	Kelp; Seagrass; Debris; 4 Persons; Water clear
S6	16 Apr 2019	Arrive Time	1112
S6	16 Apr 2019	Weather	Cloudy

Station	Date	Parameter	Value
S6	16 Apr 2019	Wind Speed (kts)	7.1
S6	16 Apr 2019	Wind Dir	W
S6	16 Apr 2019	Animal Life	None
S6	16 Apr 2019	Floatables	None
S6	16 Apr 2019	Water Color	Green
S6	16 Apr 2019	Current Direction	N
S6	16 Apr 2019	Water Temp (C)	16.4
S6	16 Apr 2019	Wave Height Low (ft)	4
S6	16 Apr 2019	High Tide (ft)	5.2
S6	16 Apr 2019	High Tide Time	727
S6	16 Apr 2019	Low Tide (ft)	-0.7
S6	16 Apr 2019	Low Tide Time	1403
S6	16 Apr 2019	Comments	Kelp; Water clear
S6	23 Apr 2019	Arrive Time	939
S6	23 Apr 2019	Weather	Overcast
S6	23 Apr 2019	Wind Speed (kts)	2.9
S6	23 Apr 2019	Wind Dir	SW
S6	23 Apr 2019	Animal Life	None
S6	23 Apr 2019	Floatables	None
S6	23 Apr 2019	Water Color	Green
S6	23 Apr 2019	Current Direction	N
S6	23 Apr 2019	Water Temp (C)	16
S6	23 Apr 2019	Wave Height Low (ft)	3
S6	23 Apr 2019	High Tide (ft)	3.2
S6	23 Apr 2019	High Tide Time	1331
S6	23 Apr 2019	Low Tide (ft)	-0.2
S6	23 Apr 2019	Low Tide Time	703
S6	23 Apr 2019	Comments	Seagrass; Water clear
S8	02 Apr 2019	Arrive Time	1201
S8	02 Apr 2019	Weather	Sunny
S8	02 Apr 2019	Wind Speed (kts)	7.2
S8	02 Apr 2019	Wind Dir	S
S8	02 Apr 2019	Animal Life	None
S8	02 Apr 2019	Floatables	None
S8	02 Apr 2019	Water Color	Green
S8	02 Apr 2019	Current Direction	N
S8	02 Apr 2019	Water Temp (C)	19.1
S8	02 Apr 2019	Wave Height Low (ft)	2
S8	02 Apr 2019	High Tide (ft)	4.8
S8	02 Apr 2019	High Tide Time	817
S8	02 Apr 2019	Low Tide (ft)	-0.1
S8	02 Apr 2019	Low Tide Time	1450
S8	02 Apr 2019	Comments	14 Persons; Water clear
S8	09 Apr 2019	Arrive Time	1209
S8	09 Apr 2019	Weather	Partly Cloudy
S8	09 Apr 2019	Wind Speed (kts)	5
S8	09 Apr 2019	Wind Dir	E
S8	09 Apr 2019	Animal Life	4 Grebes; 1 Seagull
S8	09 Apr 2019	Floatables	None
S8	09 Apr 2019	Water Color	Green
S8	09 Apr 2019	Current Direction	E
S8	09 Apr 2019	Water Temp (C)	21.5

Station	Date	Parameter	Value
S8	09 Apr 2019	Wave Height Low (ft)	3
S8	09 Apr 2019	High Tide (ft)	3.1
S8	09 Apr 2019	High Tide Time	1248
S8	09 Apr 2019	Low Tide (ft)	1.8
S8	09 Apr 2019	Low Tide Time	1739
S8	09 Apr 2019	Comments	Kelp; Seagrass; 7 Persons; Water clear
S8	16 Apr 2019	Arrive Time	1238
S8	16 Apr 2019	Weather	Cloudy
S8	16 Apr 2019	Wind Speed (kts)	5.9
S8	16 Apr 2019	Wind Dir	W
S8	16 Apr 2019	Animal Life	45 Plovers; 4 Seagulls
S8	16 Apr 2019	Floatables	None
S8	16 Apr 2019	Water Color	Green
S8	16 Apr 2019	Current Direction	N
S8	16 Apr 2019	Water Temp (C)	17.2
S8	16 Apr 2019	Wave Height Low (ft)	2
S8	16 Apr 2019	High Tide (ft)	5.2
S8	16 Apr 2019	High Tide Time	727
S8	16 Apr 2019	Low Tide (ft)	-0.7
S8	16 Apr 2019	Low Tide Time	1403
S8	16 Apr 2019	Comments	Kelp; 2 Swimmers; Water clear
S8	23 Apr 2019	Arrive Time	841
S8	23 Apr 2019	Weather	Overcast
S8	23 Apr 2019	Wind Speed (kts)	3.3
S8	23 Apr 2019	Wind Dir	S
S8	23 Apr 2019	Animal Life	None
S8	23 Apr 2019	Floatables	None
S8	23 Apr 2019	Water Color	Green
S8	23 Apr 2019	Current Direction	N
S8	23 Apr 2019	Water Temp (C)	16.2
S8	23 Apr 2019	Wave Height Low (ft)	2
S8	23 Apr 2019	High Tide (ft)	3.2
S8	23 Apr 2019	High Tide Time	1331
S8	23 Apr 2019	Low Tide (ft)	-0.2
S8	23 Apr 2019	Low Tide Time	703
S8	23 Apr 2019	Comments	Kelp; Water clear
S9	02 Apr 2019	Arrive Time	1236
S9	02 Apr 2019	Weather	Partly Cloudy
S9	02 Apr 2019	Wind Speed (kts)	3.6
S9	02 Apr 2019	Wind Dir	S
S9	02 Apr 2019	Animal Life	None
S9	02 Apr 2019	Floatables	None
S9	02 Apr 2019	Water Color	Green
S9	02 Apr 2019	Current Direction	N
S9	02 Apr 2019	Water Temp (C)	17.9
S9	02 Apr 2019	Wave Height Low (ft)	2
S9	02 Apr 2019	High Tide (ft)	4.8
S9	02 Apr 2019	High Tide Time	817
S9	02 Apr 2019	Low Tide (ft)	-0.1
S9	02 Apr 2019	Low Tide Time	1450
S9	02 Apr 2019	Comments	Seagrass; 12 Persons; 2 Swimmers; Water clear

Station	Date	Parameter	Value
S9	09 Apr 2019	Arrive Time	1243
S9	09 Apr 2019	Weather	Sunny
S9	09 Apr 2019	Wind Speed (kts)	4.8
S9	09 Apr 2019	Wind Dir	E
S9	09 Apr 2019	Animal Life	7 Cormorants; 1 Grebe; 1 Seagull
S9	09 Apr 2019	Floatables	None
S9	09 Apr 2019	Water Color	Green
S9	09 Apr 2019	Current Direction	E
S9	09 Apr 2019	Water Temp (C)	22.1
S9	09 Apr 2019	Wave Height Low (ft)	2
S9	09 Apr 2019	High Tide (ft)	3.1
S9	09 Apr 2019	High Tide Time	1248
S9	09 Apr 2019	Low Tide (ft)	1.8
S9	09 Apr 2019	Low Tide Time	1739
S9	09 Apr 2019	Comments	Seagrass; 20 Persons; 1 Surfer; Water clear
S9	16 Apr 2019	Arrive Time	1322
S9	16 Apr 2019	Weather	Cloudy
S9	16 Apr 2019	Wind Speed (kts)	5.2
S9	16 Apr 2019	Wind Dir	W
S9	16 Apr 2019	Animal Life	None
S9	16 Apr 2019	Floatables	None
S9	16 Apr 2019	Water Color	Green
S9	16 Apr 2019	Current Direction	N
S9	16 Apr 2019	Water Temp (C)	17.2
S9	16 Apr 2019	Wave Height Low (ft)	2
S9	16 Apr 2019	High Tide (ft)	5.2
S9	16 Apr 2019	High Tide Time	727
S9	16 Apr 2019	Low Tide (ft)	-0.7
S9	16 Apr 2019	Low Tide Time	1403
S9	16 Apr 2019	Comments	7 Persons; Water clear
S9	23 Apr 2019	Arrive Time	812
S9	23 Apr 2019	Weather	Overcast
S9	23 Apr 2019	Wind Speed (kts)	1.5
S9	23 Apr 2019	Wind Dir	NW
S9	23 Apr 2019	Animal Life	35 Birds
S9	23 Apr 2019	Floatables	None
S9	23 Apr 2019	Water Color	Green
S9	23 Apr 2019	Current Direction	N
S9	23 Apr 2019	Water Temp (C)	16.5
S9	23 Apr 2019	Wave Height Low (ft)	1
S9	23 Apr 2019	High Tide (ft)	3.2
S9	23 Apr 2019	High Tide Time	1331
S9	23 Apr 2019	Low Tide (ft)	-0.2
S9	23 Apr 2019	Low Tide Time	703
S9	23 Apr 2019	Comments	2 Joggers; 1 Surfer; Water clear
S10	02 Apr 2019	Arrive Time	844
S10	02 Apr 2019	Weather	Sunny
S10	02 Apr 2019	Wind Speed (kts)	2.1
S10	02 Apr 2019	Wind Dir	S
S10	02 Apr 2019	Animal Life	None
S10	02 Apr 2019	Floatables	None
S10	02 Apr 2019	Water Color	Green

Station	Date	Parameter	Value
S10	02 Apr 2019	Current Direction	N
S10	02 Apr 2019	Water Temp (C)	17.1
S10	02 Apr 2019	Wave Height Low (ft)	3
S10	02 Apr 2019	High Tide (ft)	4.8
S10	02 Apr 2019	High Tide Time	817
S10	02 Apr 2019	Low Tide (ft)	-0.1
S10	02 Apr 2019	Low Tide Time	1450
S10	02 Apr 2019	Comments	Water clear
S10	04 Apr 2019	Arrive Time	918
S10	04 Apr 2019	Weather	Cloudy
S10	04 Apr 2019	Wind Speed (kts)	4.6
S10	04 Apr 2019	Wind Dir	SW
S10	04 Apr 2019	Animal Life	None
S10	04 Apr 2019	Floatables	None
S10	04 Apr 2019	Water Color	Green
S10	04 Apr 2019	Current Direction	N
S10	04 Apr 2019	Water Temp (C)	17.3
S10	04 Apr 2019	Wave Height Low (ft)	3
S10	04 Apr 2019	High Tide (ft)	4.8
S10	04 Apr 2019	High Tide Time	921
S10	04 Apr 2019	Low Tide (ft)	0.5
S10	04 Apr 2019	Low Tide Time	325
S10	04 Apr 2019	Comments	Resample; Water clear
S10	09 Apr 2019	Arrive Time	819
S10	09 Apr 2019	Weather	Sunny
S10	09 Apr 2019	Wind Speed (kts)	5.2
S10	09 Apr 2019	Wind Dir	NE
S10	09 Apr 2019	Animal Life	6 Cormorants; 2 Grebes
S10	09 Apr 2019	Floatables	None
S10	09 Apr 2019	Water Color	Grey
S10	09 Apr 2019	Current Direction	NE
S10	09 Apr 2019	Water Temp (C)	18.3
S10	09 Apr 2019	Wave Height Low (ft)	3
S10	09 Apr 2019	High Tide (ft)	3.1
S10	09 Apr 2019	High Tide Time	1248
S10	09 Apr 2019	Low Tide (ft)	0.1
S10	09 Apr 2019	Low Tide Time	637
S10	09 Apr 2019	Comments	Kelp; Seagrass; Debris; Sewage-like odor; Water clear
S10	16 Apr 2019	Arrive Time	1002
S10	16 Apr 2019	Weather	Cloudy
S10	16 Apr 2019	Wind Speed (kts)	6.3
S10	16 Apr 2019	Wind Dir	W
S10	16 Apr 2019	Animal Life	1000 Cormorants
S10	16 Apr 2019	Floatables	None
S10	16 Apr 2019	Water Color	Green
S10	16 Apr 2019	Current Direction	N
S10	16 Apr 2019	Water Temp (C)	16.5
S10	16 Apr 2019	Wave Height Low (ft)	3
S10	16 Apr 2019	High Tide (ft)	5.2
S10	16 Apr 2019	High Tide Time	727
S10	16 Apr 2019	Low Tide (ft)	-0.7
S10	16 Apr 2019	Low Tide Time	1403

Station	Date	Parameter	Value
S10	16 Apr 2019	Comments	Kelp; Debris; Water clear
S10	23 Apr 2019	Arrive Time	1109
S10	23 Apr 2019	Weather	Sunny
S10	23 Apr 2019	Wind Speed (kts)	6.9
S10	23 Apr 2019	Wind Dir	W
S10	23 Apr 2019	Animal Life	None
S10	23 Apr 2019	Floatables	None
S10	23 Apr 2019	Water Color	Green
S10	23 Apr 2019	Current Direction	N
S10	23 Apr 2019	Water Temp (C)	16.9
S10	23 Apr 2019	Wave Height Low (ft)	2
S10	23 Apr 2019	High Tide (ft)	3.2
S10	23 Apr 2019	High Tide Time	1331
S10	23 Apr 2019	Low Tide (ft)	-0.2
S10	23 Apr 2019	Low Tide Time	703
S10	23 Apr 2019	Comments	Water clear
S11	02 Apr 2019	Arrive Time	1040
S11	02 Apr 2019	Weather	Sunny
S11	02 Apr 2019	Wind Speed (kts)	7.4
S11	02 Apr 2019	Wind Dir	SW
S11	02 Apr 2019	Animal Life	None
S11	02 Apr 2019	Floatables	None
S11	02 Apr 2019	Water Color	Green
S11	02 Apr 2019	Current Direction	N
S11	02 Apr 2019	Water Temp (C)	17.1
S11	02 Apr 2019	Wave Height Low (ft)	2
S11	02 Apr 2019	High Tide (ft)	4.8
S11	02 Apr 2019	High Tide Time	817
S11	02 Apr 2019	Low Tide (ft)	-0.1
S11	02 Apr 2019	Low Tide Time	1450
S11	02 Apr 2019	Comments	Water clear
S11	09 Apr 2019	Arrive Time	1011
S11	09 Apr 2019	Weather	Partly Cloudy
S11	09 Apr 2019	Wind Speed (kts)	6.4
S11	09 Apr 2019	Wind Dir	W
S11	09 Apr 2019	Animal Life	7 Grebes
S11	09 Apr 2019	Floatables	Foam
S11	09 Apr 2019	Water Color	Green
S11	09 Apr 2019	Current Direction	W
S11	09 Apr 2019	Water Temp (C)	18.2
S11	09 Apr 2019	Wave Height Low (ft)	4
S11	09 Apr 2019	High Tide (ft)	3.1
S11	09 Apr 2019	High Tide Time	1248
S11	09 Apr 2019	Low Tide (ft)	0.1
S11	09 Apr 2019	Low Tide Time	637
S11	09 Apr 2019	Comments	Kelp; Seagrass; 1 Jogger; Water clear
S11	16 Apr 2019	Arrive Time	1107
S11	16 Apr 2019	Weather	Cloudy
S11	16 Apr 2019	Wind Speed (kts)	7.3
S11	16 Apr 2019	Wind Dir	W
S11	16 Apr 2019	Animal Life	None

Station	Date	Parameter	Value
S11	16 Apr 2019	Floatables	None
S11	16 Apr 2019	Water Color	Green
S11	16 Apr 2019	Current Direction	N
S11	16 Apr 2019	Water Temp (C)	17
S11	16 Apr 2019	Wave Height Low (ft)	4
S11	16 Apr 2019	High Tide (ft)	5.2
S11	16 Apr 2019	High Tide Time	727
S11	16 Apr 2019	Low Tide (ft)	-0.7
S11	16 Apr 2019	Low Tide Time	1403
S11	16 Apr 2019	Comments	Kelp; Water clear
S11	23 Apr 2019	Arrive Time	935
S11	23 Apr 2019	Weather	Overcast
S11	23 Apr 2019	Wind Speed (kts)	5.6
S11	23 Apr 2019	Wind Dir	SW
S11	23 Apr 2019	Animal Life	2 Dogs
S11	23 Apr 2019	Floatables	None
S11	23 Apr 2019	Water Color	Green
S11	23 Apr 2019	Current Direction	N
S11	23 Apr 2019	Water Temp (C)	15.1
S11	23 Apr 2019	Wave Height Low (ft)	3
S11	23 Apr 2019	High Tide (ft)	3.2
S11	23 Apr 2019	High Tide Time	1331
S11	23 Apr 2019	Low Tide (ft)	-0.2
S11	23 Apr 2019	Low Tide Time	703
S11	23 Apr 2019	Comments	2 Persons; Water clear
S12	02 Apr 2019	Arrive Time	1103
S12	02 Apr 2019	Weather	Sunny
S12	02 Apr 2019	Wind Speed (kts)	8.3
S12	02 Apr 2019	Wind Dir	S
S12	02 Apr 2019	Animal Life	None
S12	02 Apr 2019	Floatables	None
S12	02 Apr 2019	Water Color	Green
S12	02 Apr 2019	Current Direction	N
S12	02 Apr 2019	Water Temp (C)	17.2
S12	02 Apr 2019	Wave Height Low (ft)	3
S12	02 Apr 2019	High Tide (ft)	4.8
S12	02 Apr 2019	High Tide Time	817
S12	02 Apr 2019	Low Tide (ft)	-0.1
S12	02 Apr 2019	Low Tide Time	1450
S12	02 Apr 2019	Comments	1 Jogger; 2 Persons; Water clear
S12	09 Apr 2019	Arrive Time	1033
S12	09 Apr 2019	Weather	Partly Cloudy
S12	09 Apr 2019	Wind Speed (kts)	2.7
S12	09 Apr 2019	Wind Dir	NE
S12	09 Apr 2019	Animal Life	25 Cormorants; 4 Dogs; 1 Seagull
S12	09 Apr 2019	Floatables	Foam
S12	09 Apr 2019	Water Color	Green
S12	09 Apr 2019	Current Direction	NE
S12	09 Apr 2019	Water Temp (C)	17.9
S12	09 Apr 2019	Wave Height Low (ft)	2
S12	09 Apr 2019	High Tide (ft)	3.1
S12	09 Apr 2019	High Tide Time	1248

Station	Date	Parameter	Value
S12	09 Apr 2019	Low Tide (ft)	0.1
S12	09 Apr 2019	Low Tide Time	637
S12	09 Apr 2019	Comments	Kelp; Seagrass; 9 Persons; 3 Surfers; Water clear
S12	16 Apr 2019	Arrive Time	1121
S12	16 Apr 2019	Weather	Cloudy
S12	16 Apr 2019	Wind Speed (kts)	7.7
S12	16 Apr 2019	Wind Dir	W
S12	16 Apr 2019	Animal Life	2 Dogs
S12	16 Apr 2019	Floatables	None
S12	16 Apr 2019	Water Color	Green
S12	16 Apr 2019	Current Direction	N
S12	16 Apr 2019	Water Temp (C)	17.8
S12	16 Apr 2019	Wave Height Low (ft)	3
S12	16 Apr 2019	High Tide (ft)	5.2
S12	16 Apr 2019	High Tide Time	727
S12	16 Apr 2019	Low Tide (ft)	-0.7
S12	16 Apr 2019	Low Tide Time	1403
S12	16 Apr 2019	Comments	Kelp; 7 Persons; Water clear
S12	23 Apr 2019	Arrive Time	950
S12	23 Apr 2019	Weather	Overcast
S12	23 Apr 2019	Wind Speed (kts)	4.6
S12	23 Apr 2019	Wind Dir	S
S12	23 Apr 2019	Animal Life	None
S12	23 Apr 2019	Floatables	None
S12	23 Apr 2019	Water Color	Green
S12	23 Apr 2019	Current Direction	N
S12	23 Apr 2019	Water Temp (C)	16.4
S12	23 Apr 2019	Wave Height Low (ft)	4
S12	23 Apr 2019	High Tide (ft)	3.2
S12	23 Apr 2019	High Tide Time	1331
S12	23 Apr 2019	Low Tide (ft)	-0.2
S12	23 Apr 2019	Low Tide Time	703
S12	23 Apr 2019	Comments	Kelp; 1 Person; 1 Surfer; 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 SBOO 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	I19	I24	I25	I26	I32	I39	I40
01 Apr 2019	1922*	287*	92*	14*	5*	50*	3905*
02 Apr 2019	1922*	287*	92*	14*	5*	50*	3905*
03 Apr 2019	1768*	443*	186*	14*	3*	57*	1090*
04 Apr 2019	1768*	443*	186*	14*	3*	57*	1090*
05 Apr 2019	1768*	443*	186*	14*	3*	57*	1090*
06 Apr 2019	1768*	443*	186*	14*	3*	57*	1090*
07 Apr 2019	1768*	443*	186*	14*	3*	57*	1090*
08 Apr 2019	651	224	75	10	3	29	342
09 Apr 2019	651	224	75	10	3	29	342
10 Apr 2019	323*	99*	26*	7*	3*	24*	172*
11 Apr 2019	323*	99*	26*	7*	3*	24*	172*
12 Apr 2019	323*	99*	26*	7*	3*	24*	172*
13 Apr 2019	323*	99*	26*	7*	3*	24*	172*
14 Apr 2019	323*	99*	26*	7*	3*	24*	172*
15 Apr 2019	130	45	15	6	3	15	75
16 Apr 2019	130	45	15	6	3	15	75
17 Apr 2019	104*	48*	7*	3*	2*	4*	39*
18 Apr 2019	104*	48*	7*	3*	2*	4*	39*
19 Apr 2019	104*	48*	7*	3*	2*	4*	39*
20 Apr 2019	104*	48*	7*	3*	2*	4*	39*
21 Apr 2019	104*	48*	7*	3*	2*	4*	39*
22 Apr 2019	104*	48*	7*	3*	2*	4*	39*
23 Apr 2019	62	51	5	3	2	3	22
24 Apr 2019	25*	21*	5*	3*	2*	3*	6*
25 Apr 2019	25*	21*	5*	3*	2*	3*	6*
26 Apr 2019	25*	21*	5*	3*	2*	3*	6*
27 Apr 2019	25*	21*	5*	3*	2*	3*	6*
28 Apr 2019	25*	21*	5*	3*	2*	3*	6*
29 Apr 2019	25*	21*	5*	3*	2*	3*	6*
30 Apr 2019	37	28	9	5	3	2	9

\* 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 SBOO 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	I19	I24	I25	I26	I32	I39	I40
01 Apr 2019	285*	41*	20*	3*	2*	13*	1206*
02 Apr 2019	285*	41*	20*	3*	2*	13*	1206*
03 Apr 2019	284*	70*	32*	3*	2*	12*	222*
04 Apr 2019	284*	70*	32*	3*	2*	12*	222*
05 Apr 2019	284*	70*	32*	3*	2*	12*	222*
06 Apr 2019	284*	70*	32*	3*	2*	12*	222*
07 Apr 2019	284*	70*	32*	3*	2*	12*	222*
08 Apr 2019	112	40	18	3	2	8	87
09 Apr 2019	112	40	18	3	2	8	87
10 Apr 2019	69*	15*	7*	2*	2*	8*	41*
11 Apr 2019	69*	15*	7*	2*	2*	8*	41*
12 Apr 2019	69*	15*	7*	2*	2*	8*	41*
13 Apr 2019	69*	15*	7*	2*	2*	8*	41*
14 Apr 2019	69*	15*	7*	2*	2*	8*	41*
15 Apr 2019	34	10	6	2	2	6	23
16 Apr 2019	34	10	6	2	2	6	23
17 Apr 2019	30*	11*	3*	2*	2*	2*	15*
18 Apr 2019	30*	11*	3*	2*	2*	2*	15*
19 Apr 2019	30*	11*	3*	2*	2*	2*	15*
20 Apr 2019	30*	11*	3*	2*	2*	2*	15*
21 Apr 2019	30*	11*	3*	2*	2*	2*	15*
22 Apr 2019	30*	11*	3*	2*	2*	2*	15*
23 Apr 2019	17	8	3	2	2	2	10
24 Apr 2019	8*	4*	3*	2*	2*	2*	3*
25 Apr 2019	8*	4*	3*	2*	2*	2*	3*
26 Apr 2019	8*	4*	3*	2*	2*	2*	3*
27 Apr 2019	8*	4*	3*	2*	2*	2*	3*
28 Apr 2019	8*	4*	3*	2*	2*	2*	3*
29 Apr 2019	8*	4*	3*	2*	2*	2*	3*
30 Apr 2019	9	5	4	2	2	2	3

\* 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 SBOO 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	I19	I24	I25	I26	I32	I39	I40
01 Apr 2019	35*	11*	8*	2*	3*	4*	356*
02 Apr 2019	35*	11*	8*	2*	3*	4*	356*
03 Apr 2019	59*	12*	11*	2*	3*	4*	53*
04 Apr 2019	59*	12*	11*	2*	3*	4*	53*
05 Apr 2019	59*	12*	11*	2*	3*	4*	53*
06 Apr 2019	59*	12*	11*	2*	3*	4*	53*
07 Apr 2019	59*	12*	11*	2*	3*	4*	53*
08 Apr 2019	30	9	8	2	3	4	28
09 Apr 2019	30	9	8	2	3	4	28
10 Apr 2019	18*	4*	3*	2*	2*	4*	17*
11 Apr 2019	18*	4*	3*	2*	2*	4*	17*
12 Apr 2019	18*	4*	3*	2*	2*	4*	17*
13 Apr 2019	18*	4*	3*	2*	2*	4*	17*
14 Apr 2019	18*	4*	3*	2*	2*	4*	17*
15 Apr 2019	11	3	3	2	2	3	11
16 Apr 2019	11	3	3	2	2	3	11
17 Apr 2019	12*	4*	3*	2*	2*	2*	9*
18 Apr 2019	12*	4*	3*	2*	2*	2*	9*
19 Apr 2019	12*	4*	3*	2*	2*	2*	9*
20 Apr 2019	12*	4*	3*	2*	2*	2*	9*
21 Apr 2019	12*	4*	3*	2*	2*	2*	9*
22 Apr 2019	12*	4*	3*	2*	2*	2*	9*
23 Apr 2019	9	4	3	2	2	2	7
24 Apr 2019	5*	3*	3*	2*	2*	2*	2*
25 Apr 2019	5*	3*	3*	2*	2*	2*	2*
26 Apr 2019	5*	3*	3*	2*	2*	2*	2*
27 Apr 2019	5*	3*	3*	2*	2*	2*	2*
28 Apr 2019	5*	3*	3*	2*	2*	2*	2*
29 Apr 2019	5*	3*	3*	2*	2*	2*	2*
30 Apr 2019	6	3	3	2	2	2	3

\* Geometric mean calculated using n<5

**Table 3.4**

Summary of compliance at the SBOO 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	I19	I24	I25	I26	I32	I39	I40
03 Apr 2019	IC						
08 Apr 2019	IC						
15 Apr 2019	IC						
23 Apr 2019	IC						
30 Apr 2019	IC						

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

**Table 3.5**

Summary of compliance at the SBOO 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	I19	I24	I25	I26	I32	I39	I40
03 Apr 2019	E	IC	IC	IC	IC	IC	IC
08 Apr 2019	IC						
15 Apr 2019	IC						
23 Apr 2019	IC						
30 Apr 2019	IC						

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

**Table 3.6**

Summary of compliance at the SBOO 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	I19	I24	I25	I26	I32	I39	I40
03 Apr 2019	IC						
08 Apr 2019	IC						
15 Apr 2019	IC						
23 Apr 2019	IC						
30 Apr 2019	IC						

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

**Table 3.7**

Summary of compliance at the SBOO 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	I19	I24	I25	I26	I32	I39	I40
03 Apr 2019	E	IC	IC	IC	IC	IC	IC
08 Apr 2019	IC						
15 Apr 2019	IC						
23 Apr 2019	IC						
30 Apr 2019	IC						

IC = In Compliance

E = Exceedance

ns = not sampled

ND = no data

**Table 3.8**

Summary of water quality parameters at the SBOO 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
I19	03 Apr 2019	1107	2	480	120	8e	0.25	16.1	68.21	9.6	33.56	8.2
I19	03 Apr 2019	1107	6	2000e	400	100e	0.20	15.8	66.30	9.4	33.56	8.2
I19	03 Apr 2019	1107	11	1300	520	100e	0.40	15.8	68.66	9.3	33.57	8.2
I19	08 Apr 2019	1043	2	26e	4e	<2	0.15	14.9	67.55	8.1	33.62	8.1
I19	08 Apr 2019	1043	6	6e	<2	<2	0.33	13.7	68.33	7.1	33.63	8.0
I19	08 Apr 2019	1043	11	4e	<2	<2	0.50	13.0	57.80	5.9	33.63	7.9
I19	15 Apr 2019	1026	2	4e	<2	<2	0.50	14.8	66.95	8.3	33.61	8.1
I19	15 Apr 2019	1026	6	2e	<2	<2	1.00	14.1	63.82	8.0	33.62	8.0
I19	15 Apr 2019	1026	11	4e	<2	<2	0.50	12.8	70.61	6.3	33.63	7.9
I19	23 Apr 2019	846	2	<2	<2	<2	1.00	14.6	67.31	8.0	33.60	8.1
I19	23 Apr 2019	846	6	<20	<2	2e	0.10	13.0	50.85	6.4	33.60	8.0
I19	23 Apr 2019	846	11	<2	<2	4e	1.00	12.7	50.96	6.2	33.61	7.9
I19	30 Apr 2019	844	2	460	44	14e	0.10	16.4	66.79	8.3	33.49	8.2
I19	30 Apr 2019	844	6	50	4e	8e	0.08	16.3	76.81	8.6	33.62	8.2
I19	30 Apr 2019	844	11	14e	6e	2e	0.43	15.9	74.21	8.1	33.64	8.2
I24	03 Apr 2019	1127	2	<2	<2	<2	1.00	16.0	73.27	9.7	33.61	8.2
I24	03 Apr 2019	1127	6	240e	50	8e	0.21	15.6	68.69	9.8	33.57	8.2
I24	03 Apr 2019	1127	11	52	<2	2e	0.04	14.4	62.49	9.5	33.59	8.2
I24	08 Apr 2019	1104	2	36e	8e	4e	0.22	15.9	64.91	8.2	33.59	8.1
I24	08 Apr 2019	1104	6	6e	<2	<2	0.33	14.3	67.22	7.8	33.63	8.1
I24	08 Apr 2019	1104	11	<2	<2	<2	1.00	13.7	63.61	6.7	33.57	7.9
I24	15 Apr 2019	1050	2	<2	<2	<2	1.00	15.2	74.35	8.6	33.63	8.1
I24	15 Apr 2019	1050	6	<2	<2	<2	1.00	13.6	75.37	7.4	33.65	8.0
I24	15 Apr 2019	1050	11	<2	<2	<2	1.00	13.3	79.36	7.2	33.61	8.0
I24	23 Apr 2019	910	2	180e	2e	6e	0.01	15.4	64.56	8.2	33.54	8.1
I24	23 Apr 2019	910	6	8e	<2	4e	0.25	13.6	77.12	7.0	33.60	8.0
I24	23 Apr 2019	910	11	<2	<2	<2	1.00	13.2	81.72	6.7	33.62	8.0
I24	30 Apr 2019	906	2	220e	24e	10e	0.11	16.4	68.89	8.4	33.49	8.2
I24	30 Apr 2019	906	6	46	<2	6e	0.04	16.1	81.02	8.6	33.60	8.2
I24	30 Apr 2019	906	11	6e	<2	<2	0.33	15.8	80.67	8.4	33.62	8.2
I25	03 Apr 2019	1137	2	<2	2e	<2	1.00	15.9	71.73	9.7	33.59	8.2
I25	03 Apr 2019	1137	6	160e	48	18e	0.30	15.5	68.91	9.8	33.60	8.2
I25	03 Apr 2019	1137	9	36e	2e	6e	0.06	14.6	68.69	9.7	33.60	8.2
I25	08 Apr 2019	1112	2	<2	<2	<2	1.00	15.5	64.48	8.2	33.64	8.1
I25	08 Apr 2019	1112	6	2e	<2	<2	1.00	13.2	71.68	6.4	33.61	7.9
I25	08 Apr 2019	1112	9	2e	<2	<2	1.00	13.2	71.41	6.3	33.62	7.9

Station	Date	Time	Depth	Total	Fecal	Enteric	F:T	Temp	XMS	DO	Sal	pH
I25	15 Apr 2019	1058	2	<2	<2	<2	1.00	14.7	74.55	8.3	33.63	8.1
I25	15 Apr 2019	1058	6	<2	<2	<2	1.00	13.3	78.78	7.2	33.63	8.0
I25	15 Apr 2019	1058	9	<2	<2	<2	1.00	13.2	80.99	7.2	33.61	8.0
I25	23 Apr 2019	919	2	<2	<2	<2	1.00	14.8	70.26	8.4	33.64	8.1
I25	23 Apr 2019	919	6	<2	<2	<2	1.00	13.4	74.07	6.9	33.69	8.0
I25	23 Apr 2019	919	9	<2	<2	<2	1.00	12.7	83.80	6.5	33.64	8.0
I25	30 Apr 2019	913	2	340e	28e	16e	0.08	16.3	70.22	8.6	33.53	8.2
I25	30 Apr 2019	913	6	20e	<2	4e	0.10	16.0	81.86	8.6	33.59	8.2
I25	30 Apr 2019	913	9	4e	2e	<2	0.50	16.0	81.28	8.5	33.60	8.2
I26	03 Apr 2019	1147	2	<2	<2	<2	1.00	16.5	75.11	9.1	33.61	8.2
I26	03 Apr 2019	1147	6	<2	<2	<2	1.00	16.0	72.09	9.0	33.59	8.2
I26	03 Apr 2019	1147	9	14e	2e	<2	0.14	15.5	69.87	9.2	33.59	8.2
I26	08 Apr 2019	1126	2	<2	<2	<2	1.00	14.7	73.79	8.2	33.67	8.1
I26	08 Apr 2019	1126	6	<2	<2	<2	1.00	13.3	70.63	6.9	33.61	8.0
I26	08 Apr 2019	1126	9	2e	<2	<2	1.00	13.2	70.52	6.4	33.62	7.9
I26	15 Apr 2019	1110	2	<2	<2	<2	1.00	14.9	74.68	8.3	33.62	8.1
I26	15 Apr 2019	1110	6	<2	<2	<2	1.00	14.0	74.78	7.9	33.61	8.1
I26	15 Apr 2019	1110	9	<2	<2	<2	1.00	13.1	80.78	7.1	33.62	8.0
I26	23 Apr 2019	926	2	<2	<2	<2	1.00	15.5	68.40	8.4	33.58	8.1
I26	23 Apr 2019	926	6	<2	<2	<2	1.00	13.3	75.51	7.0	33.63	8.0
I26	23 Apr 2019	926	9	<2	<2	<2	1.00	12.7	82.48	6.3	33.62	8.0
I26	30 Apr 2019	921	2	160e	8e	12e	0.05	16.4	73.04	8.6	33.54	8.2
I26	30 Apr 2019	921	6	76	4e	4e	0.05	16.4	76.31	8.6	33.61	8.2
I26	30 Apr 2019	921	9	30e	<2	<2	0.07	15.8	77.30	8.1	33.65	8.2
I32	03 Apr 2019	1159	2	<2	<2	<2	1.00	16.2	67.06	9.2	33.59	8.2
I32	03 Apr 2019	1159	6	<2	<2	<2	1.00	16.0	65.95	9.6	33.58	8.2
I32	03 Apr 2019	1159	9	2e	<2	<2	1.00	16.0	65.65	9.0	33.57	8.2
I32	08 Apr 2019	1137	2	<2	<2	<2	1.00	15.1	60.96	8.0	33.63	8.0
I32	08 Apr 2019	1137	6	2e	<2	<2	1.00	13.5	63.18	6.9	33.62	8.0
I32	08 Apr 2019	1137	9	4e	<2	<2	0.50	13.3	62.05	6.3	33.62	7.9
I32	15 Apr 2019	1124	2	<2	<2	<2	1.00	15.4	72.21	9.0	33.63	8.1
I32	15 Apr 2019	1124	6	<2	<2	<2	1.00	15.0	69.19	8.6	33.63	8.1
I32	15 Apr 2019	1124	9	<2	<2	<2	1.00	14.9	66.08	8.5	33.65	8.1
I32	23 Apr 2019	942	2	<2	<2	<2	1.00	14.8	67.29	8.3	33.67	8.1
I32	23 Apr 2019	942	6	<2	<2	<2	1.00	13.0	69.21	6.7	33.60	8.0
I32	23 Apr 2019	942	9	<2	<2	<2	1.00	12.9	52.16	6.4	33.61	8.0
I32	30 Apr 2019	932	2	<20	2e	2e	0.10	16.5	71.26	8.7	33.59	8.2
I32	30 Apr 2019	932	6	<20	<2	<2	0.10	16.4	73.55	8.8	33.61	8.2
I32	30 Apr 2019	932	9	20e	<2	<2	0.10	16.1	60.58	8.5	33.63	8.2
I39	03 Apr 2019	1043	2	<2	<2	<2	1.00	15.6	78.85	8.9	33.60	8.2
I39	03 Apr 2019	1043	12	<2	<2	<2	1.00	15.0	78.85	8.4	33.59	8.2

Station	Date	Time	Depth	Total	Fecal	Enteric	F:T	Temp	XMS	DO	Sal	pH
I39	03 Apr 2019	1043	18	12e	<2	<2	0.17	14.0	71.27	8.7	33.61	8.1
I39	08 Apr 2019	1023	2	<2	<2	<2	1.00	16.4	78.07	9.1	33.61	8.2
I39	08 Apr 2019	1023	12	<2	<2	<2	1.00	14.8	81.44	8.4	33.60	8.1
I39	08 Apr 2019	1023	18	<2	<2	<2	1.00	12.9	79.31	6.6	33.62	8.0
I39	15 Apr 2019	1006	2	<2	<2	<2	1.00	15.3	74.28	8.3	33.59	8.1
I39	15 Apr 2019	1006	12	<2	<2	<2	1.00	12.9	82.96	7.0	33.61	8.0
I39	15 Apr 2019	1006	18	<2	<2	<2	1.00	12.6	82.85	6.2	33.63	7.9
I39	23 Apr 2019	823	2	<2	<2	<2	1.00	15.3	73.98	8.2	33.65	8.1
I39	23 Apr 2019	823	12	<2	<2	<2	1.00	12.2	84.28	5.9	33.63	7.9
I39	23 Apr 2019	823	18	2e	<2	<2	1.00	12.2	84.44	5.6	33.64	7.9
I39	30 Apr 2019	824	2	2e	<2	<2	1.00	15.8	82.40	8.7	33.56	8.1
I39	30 Apr 2019	824	12	<2	<2	<2	1.00	15.7	80.20	8.7	33.61	8.1
I39	30 Apr 2019	824	18	<2	<2	<2	1.00	14.6	77.09	7.7	33.67	8.1
I40	03 Apr 2019	1119	2	96	<2	<2	0.02	16.1	69.91	8.9	33.58	8.2
I40	03 Apr 2019	1119	6	28e	<2	<2	0.07	15.9	71.03	9.5	33.60	8.2
I40	03 Apr 2019	1119	9	60	14e	2e	0.23	15.7	69.26	9.2	33.59	8.2
I40	08 Apr 2019	1055	2	<2	<2	<2	1.00	15.4	63.59	8.3	33.62	8.1
I40	08 Apr 2019	1055	6	4e	<2	<2	0.50	14.4	56.28	7.6	33.63	8.0
I40	08 Apr 2019	1055	9	4e	<2	<2	0.50	13.6	46.58	6.4	33.64	7.9
I40	15 Apr 2019	1039	2	<2	<2	<2	1.00	15.5	72.15	8.4	33.65	8.1
I40	15 Apr 2019	1039	6	<2	<2	<2	1.00	13.6	74.43	7.1	33.61	8.0
I40	15 Apr 2019	1039	9	4e	2e	<2	0.50	12.8	53.83	6.0	33.64	7.9
I40	23 Apr 2019	901	2	<2	<2	<2	1.00	13.9	69.85	7.4	33.62	8.0
I40	23 Apr 2019	901	6	<2	<2	<2	1.00	12.8	80.95	6.5	33.64	8.0
I40	23 Apr 2019	901	9	<2	<2	<2	1.00	12.8	60.85	6.2	33.62	8.0
I40	30 Apr 2019	855	2	120e	12e	16e	0.10	16.4	64.45	8.3	33.44	8.1
I40	30 Apr 2019	855	6	40	6e	2e	0.15	16.2	80.57	8.5	33.62	8.2
I40	30 Apr 2019	855	9	6e	<2	2e	0.33	16.2	80.37	8.5	33.61	8.2

ns = not sampled

ND = no data

**Table 3.9**

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

Station	Date	Parameter	Value
I19	03 Apr 2019	Depth (m)	11
I19	03 Apr 2019	Arrive Time	1107
I19	03 Apr 2019	Depart Time	1111
I19	03 Apr 2019	Air Temp (C)	16
I19	03 Apr 2019	Weather	Partly Cloudy
I19	03 Apr 2019	Visibility (mi)	15
I19	03 Apr 2019	Wind Speed (kts)	3
I19	03 Apr 2019	Wind Dir	S
I19	03 Apr 2019	Water Color	Green
I19	03 Apr 2019	Wave Ht Low (ft)	4
I19	03 Apr 2019	Wave Period (sec)	13
I19	03 Apr 2019	Sea State	Light chop
I19	03 Apr 2019	High Tide (ft)	4.86
I19	03 Apr 2019	High Tide Time	849
I19	03 Apr 2019	Low Tide (ft)	-0.07
I19	03 Apr 2019	Low Tide Time	1514
I19	03 Apr 2019	Comments	none
I19	08 Apr 2019	Depth (m)	10
I19	08 Apr 2019	Arrive Time	1043
I19	08 Apr 2019	Depart Time	1047
I19	08 Apr 2019	Air Temp (C)	17
I19	08 Apr 2019	Weather	Haze
I19	08 Apr 2019	Visibility (mi)	8
I19	08 Apr 2019	Wind Speed (kts)	4
I19	08 Apr 2019	Wind Dir	SE
I19	08 Apr 2019	Water Color	Green
I19	08 Apr 2019	Wave Ht Low (ft)	5
I19	08 Apr 2019	Wave Period (sec)	13
I19	08 Apr 2019	Sea State	Light chop
I19	08 Apr 2019	High Tide (ft)	3.57
I19	08 Apr 2019	High Tide Time	1151
I19	08 Apr 2019	Low Tide (ft)	0.02
I19	08 Apr 2019	Low Tide Time	548
I19	08 Apr 2019	Comments	none
I19	15 Apr 2019	Depth (m)	9
I19	15 Apr 2019	Arrive Time	1026
I19	15 Apr 2019	Depart Time	1028
I19	15 Apr 2019	Air Temp (C)	15
I19	15 Apr 2019	Weather	Partly Cloudy
I19	15 Apr 2019	Visibility (mi)	6
I19	15 Apr 2019	Wind Speed (kts)	3
I19	15 Apr 2019	Wind Dir	SW
I19	15 Apr 2019	Water Color	Green
I19	15 Apr 2019	Wave Ht Low (ft)	2
I19	15 Apr 2019	Wave Period (sec)	11
I19	15 Apr 2019	Sea State	Light chop
I19	15 Apr 2019	High Tide (ft)	4.99
I19	15 Apr 2019	High Tide Time	631
I19	15 Apr 2019	Low Tide (ft)	-0.64

Station	Date	Parameter	Value
I19	15 Apr 2019	Low Tide Time	1323
I19	15 Apr 2019	Comments	none
I19	23 Apr 2019	Depth (m)	11
I19	23 Apr 2019	Arrive Time	848
I19	23 Apr 2019	Depart Time	852
I19	23 Apr 2019	Air Temp (C)	15
I19	23 Apr 2019	Weather	Haze
I19	23 Apr 2019	Visibility (mi)	5
I19	23 Apr 2019	Wind Speed (kts)	3
I19	23 Apr 2019	Wind Dir	SW
I19	23 Apr 2019	Water Color	Brownish-Green
I19	23 Apr 2019	Wave Ht Low (ft)	3
I19	23 Apr 2019	Wave Period (sec)	9
I19	23 Apr 2019	Sea State	Calm
I19	23 Apr 2019	High Tide (ft)	3.17
I19	23 Apr 2019	High Tide Time	1331
I19	23 Apr 2019	Low Tide (ft)	-0.19
I19	23 Apr 2019	Low Tide Time	703
I19	23 Apr 2019	Comments	none
I19	30 Apr 2019	Depth (m)	12
I19	30 Apr 2019	Arrive Time	844
I19	30 Apr 2019	Depart Time	849
I19	30 Apr 2019	Air Temp (C)	15
I19	30 Apr 2019	Weather	Drizzle
I19	30 Apr 2019	Visibility (mi)	6
I19	30 Apr 2019	Wind Speed (kts)	2
I19	30 Apr 2019	Wind Dir	E
I19	30 Apr 2019	Water Color	Green
I19	30 Apr 2019	Wave Ht Low (ft)	4
I19	30 Apr 2019	Wave Period (sec)	13
I19	30 Apr 2019	Sea State	Light chop
I19	30 Apr 2019	High Tide (ft)	6.33
I19	30 Apr 2019	High Tide Time	2106
I19	30 Apr 2019	Low Tide (ft)	-0.71
I19	30 Apr 2019	Low Tide Time	405
I19	30 Apr 2019	Comments	none
I24	03 Apr 2019	Depth (m)	11
I24	03 Apr 2019	Arrive Time	1127
I24	03 Apr 2019	Depart Time	1131
I24	03 Apr 2019	Air Temp (C)	16
I24	03 Apr 2019	Weather	Partly Cloudy
I24	03 Apr 2019	Visibility (mi)	15
I24	03 Apr 2019	Wind Speed (kts)	2
I24	03 Apr 2019	Wind Dir	S
I24	03 Apr 2019	Water Color	Green
I24	03 Apr 2019	Wave Ht Low (ft)	4
I24	03 Apr 2019	Wave Period (sec)	13
I24	03 Apr 2019	Sea State	Light chop
I24	03 Apr 2019	High Tide (ft)	4.86
I24	03 Apr 2019	High Tide Time	849
I24	03 Apr 2019	Low Tide (ft)	-0.07
I24	03 Apr 2019	Low Tide Time	1514

Station	Date	Parameter	Value
I24	03 Apr 2019	Comments	none
I24	08 Apr 2019	Depth (m)	10
I24	08 Apr 2019	Arrive Time	1104
I24	08 Apr 2019	Depart Time	1108
I24	08 Apr 2019	Air Temp (C)	17
I24	08 Apr 2019	Weather	Haze
I24	08 Apr 2019	Visibility (mi)	8
I24	08 Apr 2019	Wind Speed (kts)	3
I24	08 Apr 2019	Wind Dir	SE
I24	08 Apr 2019	Water Color	Green
I24	08 Apr 2019	Wave Ht Low (ft)	5
I24	08 Apr 2019	Wave Period (sec)	13
I24	08 Apr 2019	Sea State	Light chop
I24	08 Apr 2019	High Tide (ft)	3.57
I24	08 Apr 2019	High Tide Time	1151
I24	08 Apr 2019	Low Tide (ft)	0.02
I24	08 Apr 2019	Low Tide Time	548
I24	08 Apr 2019	Comments	none
I24	15 Apr 2019	Depth (m)	9
I24	15 Apr 2019	Arrive Time	1050
I24	15 Apr 2019	Depart Time	1051
I24	15 Apr 2019	Air Temp (C)	15
I24	15 Apr 2019	Weather	Partly Cloudy
I24	15 Apr 2019	Visibility (mi)	6
I24	15 Apr 2019	Wind Speed (kts)	3
I24	15 Apr 2019	Wind Dir	SW
I24	15 Apr 2019	Water Color	Green
I24	15 Apr 2019	Wave Ht Low (ft)	2
I24	15 Apr 2019	Wave Period (sec)	11
I24	15 Apr 2019	Sea State	Light chop
I24	15 Apr 2019	High Tide (ft)	4.99
I24	15 Apr 2019	High Tide Time	631
I24	15 Apr 2019	Low Tide (ft)	-0.64
I24	15 Apr 2019	Low Tide Time	1323
I24	15 Apr 2019	Comments	none
I24	23 Apr 2019	Depth (m)	4
I24	23 Apr 2019	Arrive Time	910
I24	23 Apr 2019	Depart Time	913
I24	23 Apr 2019	Air Temp (C)	15
I24	23 Apr 2019	Weather	Haze
I24	23 Apr 2019	Visibility (mi)	5
I24	23 Apr 2019	Wind Speed (kts)	2
I24	23 Apr 2019	Wind Dir	SW
I24	23 Apr 2019	Water Color	Brownish-Green
I24	23 Apr 2019	Wave Ht Low (ft)	3
I24	23 Apr 2019	Wave Period (sec)	9
I24	23 Apr 2019	Sea State	Calm
I24	23 Apr 2019	High Tide (ft)	3.17
I24	23 Apr 2019	High Tide Time	1331
I24	23 Apr 2019	Low Tide (ft)	-0.19
I24	23 Apr 2019	Low Tide Time	703
I24	23 Apr 2019	Comments	none

Station	Date	Parameter	Value
I24	30 Apr 2019	Depth (m)	11
I24	30 Apr 2019	Arrive Time	906
I24	30 Apr 2019	Depart Time	910
I24	30 Apr 2019	Air Temp (C)	15
I24	30 Apr 2019	Weather	Drizzle
I24	30 Apr 2019	Visibility (mi)	6
I24	30 Apr 2019	Wind Speed (kts)	4
I24	30 Apr 2019	Wind Dir	E
I24	30 Apr 2019	Water Color	Green
I24	30 Apr 2019	Wave Ht Low (ft)	4
I24	30 Apr 2019	Wave Period (sec)	13
I24	30 Apr 2019	Sea State	Light chop
I24	30 Apr 2019	High Tide (ft)	6.33
I24	30 Apr 2019	High Tide Time	2106
I24	30 Apr 2019	Low Tide (ft)	-0.71
I24	30 Apr 2019	Low Tide Time	405
I24	30 Apr 2019	Comments	none
I25	03 Apr 2019	Depth (m)	10
I25	03 Apr 2019	Arrive Time	1137
I25	03 Apr 2019	Depart Time	1140
I25	03 Apr 2019	Air Temp (C)	16
I25	03 Apr 2019	Weather	Partly Cloudy
I25	03 Apr 2019	Visibility (mi)	15
I25	03 Apr 2019	Wind Speed (kts)	6
I25	03 Apr 2019	Wind Dir	S
I25	03 Apr 2019	Water Color	Green
I25	03 Apr 2019	Wave Ht Low (ft)	4
I25	03 Apr 2019	Wave Period (sec)	13
I25	03 Apr 2019	Sea State	Light chop
I25	03 Apr 2019	High Tide (ft)	4.86
I25	03 Apr 2019	High Tide Time	849
I25	03 Apr 2019	Low Tide (ft)	-0.07
I25	03 Apr 2019	Low Tide Time	1514
I25	03 Apr 2019	Comments	none
I25	08 Apr 2019	Depth (m)	10
I25	08 Apr 2019	Arrive Time	1112
I25	08 Apr 2019	Depart Time	1116
I25	08 Apr 2019	Air Temp (C)	17
I25	08 Apr 2019	Weather	Haze
I25	08 Apr 2019	Visibility (mi)	8
I25	08 Apr 2019	Wind Speed (kts)	10
I25	08 Apr 2019	Wind Dir	SE
I25	08 Apr 2019	Water Color	Green
I25	08 Apr 2019	Wave Ht Low (ft)	5
I25	08 Apr 2019	Wave Period (sec)	13
I25	08 Apr 2019	Sea State	Light chop
I25	08 Apr 2019	High Tide (ft)	3.57
I25	08 Apr 2019	High Tide Time	1151
I25	08 Apr 2019	Low Tide (ft)	0.02
I25	08 Apr 2019	Low Tide Time	548
I25	08 Apr 2019	Comments	none

Station	Date	Parameter	Value
I25	15 Apr 2019	Depth (m)	9
I25	15 Apr 2019	Arrive Time	1058
I25	15 Apr 2019	Depart Time	1100
I25	15 Apr 2019	Air Temp (C)	15
I25	15 Apr 2019	Weather	Partly Cloudy
I25	15 Apr 2019	Visibility (mi)	6
I25	15 Apr 2019	Wind Speed (kts)	5
I25	15 Apr 2019	Wind Dir	SW
I25	15 Apr 2019	Water Color	Green
I25	15 Apr 2019	Wave Ht Low (ft)	2
I25	15 Apr 2019	Wave Period (sec)	11
I25	15 Apr 2019	Sea State	Light chop
I25	15 Apr 2019	High Tide (ft)	4.99
I25	15 Apr 2019	High Tide Time	631
I25	15 Apr 2019	Low Tide (ft)	-0.64
I25	15 Apr 2019	Low Tide Time	1323
I25	15 Apr 2019	Comments	none
I25	23 Apr 2019	Depth (m)	9
I25	23 Apr 2019	Arrive Time	919
I25	23 Apr 2019	Depart Time	922
I25	23 Apr 2019	Air Temp (C)	15
I25	23 Apr 2019	Weather	Haze
I25	23 Apr 2019	Visibility (mi)	5
I25	23 Apr 2019	Wind Speed (kts)	2
I25	23 Apr 2019	Wind Dir	SE
I25	23 Apr 2019	Water Color	Brownish-Green
I25	23 Apr 2019	Wave Ht Low (ft)	3
I25	23 Apr 2019	Wave Period (sec)	9
I25	23 Apr 2019	Sea State	Calm
I25	23 Apr 2019	High Tide (ft)	3.17
I25	23 Apr 2019	High Tide Time	1331
I25	23 Apr 2019	Low Tide (ft)	-0.19
I25	23 Apr 2019	Low Tide Time	703
I25	23 Apr 2019	Comments	none
I25	30 Apr 2019	Depth (m)	9
I25	30 Apr 2019	Arrive Time	913
I25	30 Apr 2019	Depart Time	917
I25	30 Apr 2019	Air Temp (C)	16
I25	30 Apr 2019	Weather	Drizzle
I25	30 Apr 2019	Visibility (mi)	6
I25	30 Apr 2019	Wind Speed (kts)	4
I25	30 Apr 2019	Wind Dir	E
I25	30 Apr 2019	Water Color	Green
I25	30 Apr 2019	Wave Ht Low (ft)	4
I25	30 Apr 2019	Wave Period (sec)	13
I25	30 Apr 2019	Sea State	Light chop
I25	30 Apr 2019	High Tide (ft)	6.33
I25	30 Apr 2019	High Tide Time	2106
I25	30 Apr 2019	Low Tide (ft)	-0.71
I25	30 Apr 2019	Low Tide Time	405
I25	30 Apr 2019	Comments	none
I26	03 Apr 2019	Depth (m)	9

Station	Date	Parameter	Value
I26	03 Apr 2019	Arrive Time	1147
I26	03 Apr 2019	Depart Time	1150
I26	03 Apr 2019	Air Temp (C)	16
I26	03 Apr 2019	Weather	Partly Cloudy
I26	03 Apr 2019	Visibility (mi)	15
I26	03 Apr 2019	Wind Speed (kts)	7
I26	03 Apr 2019	Wind Dir	S
I26	03 Apr 2019	Water Color	Green
I26	03 Apr 2019	Wave Ht Low (ft)	4
I26	03 Apr 2019	Wave Period (sec)	13
I26	03 Apr 2019	Sea State	Light chop
I26	03 Apr 2019	High Tide (ft)	4.86
I26	03 Apr 2019	High Tide Time	849
I26	03 Apr 2019	Low Tide (ft)	-0.07
I26	03 Apr 2019	Low Tide Time	1514
I26	03 Apr 2019	Comments	none
I26	08 Apr 2019	Depth (m)	10
I26	08 Apr 2019	Arrive Time	1126
I26	08 Apr 2019	Depart Time	1129
I26	08 Apr 2019	Air Temp (C)	17
I26	08 Apr 2019	Weather	Haze
I26	08 Apr 2019	Visibility (mi)	8
I26	08 Apr 2019	Wind Speed (kts)	5
I26	08 Apr 2019	Wind Dir	S
I26	08 Apr 2019	Water Color	Green
I26	08 Apr 2019	Wave Ht Low (ft)	5
I26	08 Apr 2019	Wave Period (sec)	13
I26	08 Apr 2019	Sea State	Light chop
I26	08 Apr 2019	High Tide (ft)	3.57
I26	08 Apr 2019	High Tide Time	1151
I26	08 Apr 2019	Low Tide (ft)	0.02
I26	08 Apr 2019	Low Tide Time	548
I26	08 Apr 2019	Comments	none
I26	15 Apr 2019	Depth (m)	9
I26	15 Apr 2019	Arrive Time	1110
I26	15 Apr 2019	Depart Time	1113
I26	15 Apr 2019	Air Temp (C)	16
I26	15 Apr 2019	Weather	Partly Cloudy
I26	15 Apr 2019	Visibility (mi)	6
I26	15 Apr 2019	Wind Speed (kts)	4
I26	15 Apr 2019	Wind Dir	SW
I26	15 Apr 2019	Water Color	Green
I26	15 Apr 2019	Wave Ht Low (ft)	2
I26	15 Apr 2019	Wave Period (sec)	11
I26	15 Apr 2019	Sea State	Light chop
I26	15 Apr 2019	High Tide (ft)	4.99
I26	15 Apr 2019	High Tide Time	631
I26	15 Apr 2019	Low Tide (ft)	-0.64
I26	15 Apr 2019	Low Tide Time	1323
I26	15 Apr 2019	Comments	none
I26	23 Apr 2019	Depth (m)	9
I26	23 Apr 2019	Arrive Time	928

Station	Date	Parameter	Value
I26	23 Apr 2019	Depart Time	938
I26	23 Apr 2019	Air Temp (C)	15
I26	23 Apr 2019	Weather	Haze
I26	23 Apr 2019	Visibility (mi)	5
I26	23 Apr 2019	Wind Speed (kts)	6
I26	23 Apr 2019	Wind Dir	SW
I26	23 Apr 2019	Water Color	Brownish-Green
I26	23 Apr 2019	Wave Ht Low (ft)	3
I26	23 Apr 2019	Wave Period (sec)	9
I26	23 Apr 2019	Sea State	Calm
I26	23 Apr 2019	High Tide (ft)	3.17
I26	23 Apr 2019	High Tide Time	1331
I26	23 Apr 2019	Low Tide (ft)	-0.19
I26	23 Apr 2019	Low Tide Time	703
I26	23 Apr 2019	Comments	none
I26	30 Apr 2019	Depth (m)	9
I26	30 Apr 2019	Arrive Time	921
I26	30 Apr 2019	Depart Time	928
I26	30 Apr 2019	Air Temp (C)	16
I26	30 Apr 2019	Weather	Drizzle
I26	30 Apr 2019	Visibility (mi)	6
I26	30 Apr 2019	Wind Speed (kts)	2
I26	30 Apr 2019	Wind Dir	SE
I26	30 Apr 2019	Water Color	Green
I26	30 Apr 2019	Wave Ht Low (ft)	4
I26	30 Apr 2019	Wave Period (sec)	13
I26	30 Apr 2019	Sea State	Light chop
I26	30 Apr 2019	High Tide (ft)	6.33
I26	30 Apr 2019	High Tide Time	2106
I26	30 Apr 2019	Low Tide (ft)	-0.71
I26	30 Apr 2019	Low Tide Time	405
I26	30 Apr 2019	Comments	none
I32	03 Apr 2019	Depth (m)	10
I32	03 Apr 2019	Arrive Time	1159
I32	03 Apr 2019	Depart Time	1204
I32	03 Apr 2019	Air Temp (C)	16
I32	03 Apr 2019	Weather	Partly Cloudy
I32	03 Apr 2019	Visibility (mi)	15
I32	03 Apr 2019	Wind Speed (kts)	8
I32	03 Apr 2019	Wind Dir	S
I32	03 Apr 2019	Water Color	Green
I32	03 Apr 2019	Wave Ht Low (ft)	4
I32	03 Apr 2019	Wave Period (sec)	13
I32	03 Apr 2019	Sea State	Light chop
I32	03 Apr 2019	High Tide (ft)	4.86
I32	03 Apr 2019	High Tide Time	849
I32	03 Apr 2019	Low Tide (ft)	-0.07
I32	03 Apr 2019	Low Tide Time	1514
I32	03 Apr 2019	Comments	none
I32	08 Apr 2019	Depth (m)	10
I32	08 Apr 2019	Arrive Time	1137
I32	08 Apr 2019	Depart Time	1141

Station	Date	Parameter	Value
I32	08 Apr 2019	Air Temp (C)	17
I32	08 Apr 2019	Weather	Haze
I32	08 Apr 2019	Visibility (mi)	8
I32	08 Apr 2019	Wind Speed (kts)	10
I32	08 Apr 2019	Wind Dir	SE
I32	08 Apr 2019	Water Color	Green
I32	08 Apr 2019	Wave Ht Low (ft)	5
I32	08 Apr 2019	Wave Period (sec)	13
I32	08 Apr 2019	Sea State	Light chop
I32	08 Apr 2019	High Tide (ft)	3.57
I32	08 Apr 2019	High Tide Time	1151
I32	08 Apr 2019	Low Tide (ft)	0.02
I32	08 Apr 2019	Low Tide Time	548
I32	08 Apr 2019	Comments	none
I32	15 Apr 2019	Depth (m)	10
I32	15 Apr 2019	Arrive Time	1124
I32	15 Apr 2019	Depart Time	1128
I32	15 Apr 2019	Air Temp (C)	15
I32	15 Apr 2019	Weather	Partly Cloudy
I32	15 Apr 2019	Visibility (mi)	6
I32	15 Apr 2019	Wind Speed (kts)	5
I32	15 Apr 2019	Wind Dir	S
I32	15 Apr 2019	Water Color	Green
I32	15 Apr 2019	Wave Ht Low (ft)	2
I32	15 Apr 2019	Wave Period (sec)	11
I32	15 Apr 2019	Sea State	Light chop
I32	15 Apr 2019	High Tide (ft)	4.99
I32	15 Apr 2019	High Tide Time	631
I32	15 Apr 2019	Low Tide (ft)	-0.64
I32	15 Apr 2019	Low Tide Time	1323
I32	15 Apr 2019	Comments	none
I32	23 Apr 2019	Depth (m)	11
I32	23 Apr 2019	Arrive Time	942
I32	23 Apr 2019	Depart Time	949
I32	23 Apr 2019	Air Temp (C)	15
I32	23 Apr 2019	Weather	Haze
I32	23 Apr 2019	Visibility (mi)	5
I32	23 Apr 2019	Wind Speed (kts)	5
I32	23 Apr 2019	Wind Dir	SW
I32	23 Apr 2019	Water Color	Brownish-Green
I32	23 Apr 2019	Wave Ht Low (ft)	3
I32	23 Apr 2019	Wave Period (sec)	9
I32	23 Apr 2019	Sea State	Calm
I32	23 Apr 2019	High Tide (ft)	3.17
I32	23 Apr 2019	High Tide Time	1331
I32	23 Apr 2019	Low Tide (ft)	-0.19
I32	23 Apr 2019	Low Tide Time	703
I32	23 Apr 2019	Comments	none
I32	30 Apr 2019	Depth (m)	11
I32	30 Apr 2019	Arrive Time	932
I32	30 Apr 2019	Depart Time	939
I32	30 Apr 2019	Air Temp (C)	16

Station	Date	Parameter	Value
I32	30 Apr 2019	Weather	Drizzle
I32	30 Apr 2019	Visibility (mi)	6
I32	30 Apr 2019	Wind Speed (kts)	0
I32	30 Apr 2019	Wind Dir	
I32	30 Apr 2019	Water Color	Green
I32	30 Apr 2019	Wave Ht Low (ft)	4
I32	30 Apr 2019	Wave Period (sec)	13
I32	30 Apr 2019	Sea State	Light chop
I32	30 Apr 2019	High Tide (ft)	6.33
I32	30 Apr 2019	High Tide Time	2106
I32	30 Apr 2019	Low Tide (ft)	-0.71
I32	30 Apr 2019	Low Tide Time	405
I32	30 Apr 2019	Comments	none
I39	03 Apr 2019	Depth (m)	20
I39	03 Apr 2019	Arrive Time	1043
I39	03 Apr 2019	Depart Time	1048
I39	03 Apr 2019	Air Temp (C)	16
I39	03 Apr 2019	Weather	Partly Cloudy
I39	03 Apr 2019	Visibility (mi)	15
I39	03 Apr 2019	Wind Speed (kts)	2
I39	03 Apr 2019	Wind Dir	W
I39	03 Apr 2019	Water Color	Greenish-Blue
I39	03 Apr 2019	Wave Ht Low (ft)	4
I39	03 Apr 2019	Wave Period (sec)	13
I39	03 Apr 2019	Sea State	Light chop
I39	03 Apr 2019	High Tide (ft)	4.86
I39	03 Apr 2019	High Tide Time	849
I39	03 Apr 2019	Low Tide (ft)	-0.07
I39	03 Apr 2019	Low Tide Time	1514
I39	03 Apr 2019	Comments	none
I39	08 Apr 2019	Depth (m)	19
I39	08 Apr 2019	Arrive Time	1023
I39	08 Apr 2019	Depart Time	1028
I39	08 Apr 2019	Air Temp (C)	17
I39	08 Apr 2019	Weather	Haze
I39	08 Apr 2019	Visibility (mi)	8
I39	08 Apr 2019	Wind Speed (kts)	3
I39	08 Apr 2019	Wind Dir	S
I39	08 Apr 2019	Water Color	Greenish-Blue
I39	08 Apr 2019	Wave Ht Low (ft)	5
I39	08 Apr 2019	Wave Period (sec)	13
I39	08 Apr 2019	Sea State	Light chop
I39	08 Apr 2019	High Tide (ft)	3.57
I39	08 Apr 2019	High Tide Time	1151
I39	08 Apr 2019	Low Tide (ft)	0.02
I39	08 Apr 2019	Low Tide Time	548
I39	08 Apr 2019	Comments	none
I39	15 Apr 2019	Depth (m)	18
I39	15 Apr 2019	Arrive Time	1006
I39	15 Apr 2019	Depart Time	1008
I39	15 Apr 2019	Air Temp (C)	15
I39	15 Apr 2019	Weather	Continuous layer of clouds

Station	Date	Parameter	Value
I39	15 Apr 2019	Visibility (mi)	6
I39	15 Apr 2019	Wind Speed (kts)	1
I39	15 Apr 2019	Wind Dir	SW
I39	15 Apr 2019	Water Color	Greenish-Blue
I39	15 Apr 2019	Wave Ht Low (ft)	2
I39	15 Apr 2019	Wave Period (sec)	11
I39	15 Apr 2019	Sea State	Light chop
I39	15 Apr 2019	High Tide (ft)	4.99
I39	15 Apr 2019	High Tide Time	631
I39	15 Apr 2019	Low Tide (ft)	-0.64
I39	15 Apr 2019	Low Tide Time	1323
I39	15 Apr 2019	Comments	none
I39	23 Apr 2019	Depth (m)	19
I39	23 Apr 2019	Arrive Time	823
I39	23 Apr 2019	Depart Time	827
I39	23 Apr 2019	Air Temp (C)	15
I39	23 Apr 2019	Weather	Haze
I39	23 Apr 2019	Visibility (mi)	5
I39	23 Apr 2019	Wind Speed (kts)	4
I39	23 Apr 2019	Wind Dir	S
I39	23 Apr 2019	Water Color	Brownish-Green
I39	23 Apr 2019	Wave Ht Low (ft)	3
I39	23 Apr 2019	Wave Period (sec)	9
I39	23 Apr 2019	Sea State	Calm
I39	23 Apr 2019	High Tide (ft)	3.17
I39	23 Apr 2019	High Tide Time	1331
I39	23 Apr 2019	Low Tide (ft)	-0.19
I39	23 Apr 2019	Low Tide Time	703
I39	23 Apr 2019	Comments	none
I39	30 Apr 2019	Depth (m)	19
I39	30 Apr 2019	Arrive Time	824
I39	30 Apr 2019	Depart Time	831
I39	30 Apr 2019	Air Temp (C)	14
I39	30 Apr 2019	Weather	Drizzle
I39	30 Apr 2019	Visibility (mi)	6
I39	30 Apr 2019	Wind Speed (kts)	3
I39	30 Apr 2019	Wind Dir	E
I39	30 Apr 2019	Water Color	Green
I39	30 Apr 2019	Wave Ht Low (ft)	4
I39	30 Apr 2019	Wave Period (sec)	13
I39	30 Apr 2019	Sea State	Light chop
I39	30 Apr 2019	High Tide (ft)	6.33
I39	30 Apr 2019	High Tide Time	2106
I39	30 Apr 2019	Low Tide (ft)	-0.71
I39	30 Apr 2019	Low Tide Time	405
I39	30 Apr 2019	Comments	none
I40	03 Apr 2019	Depth (m)	10
I40	03 Apr 2019	Arrive Time	1119
I40	03 Apr 2019	Depart Time	1122
I40	03 Apr 2019	Air Temp (C)	16
I40	03 Apr 2019	Weather	Partly Cloudy
I40	03 Apr 2019	Visibility (mi)	15

Station	Date	Parameter	Value
I40	03 Apr 2019	Wind Speed (kts)	2
I40	03 Apr 2019	Wind Dir	SW
I40	03 Apr 2019	Water Color	Green
I40	03 Apr 2019	Wave Ht Low (ft)	4
I40	03 Apr 2019	Wave Period (sec)	13
I40	03 Apr 2019	Sea State	Light chop
I40	03 Apr 2019	High Tide (ft)	4.86
I40	03 Apr 2019	High Tide Time	849
I40	03 Apr 2019	Low Tide (ft)	-0.07
I40	03 Apr 2019	Low Tide Time	1514
I40	03 Apr 2019	Comments	none
I40	08 Apr 2019	Depth (m)	10
I40	08 Apr 2019	Arrive Time	1055
I40	08 Apr 2019	Depart Time	1101
I40	08 Apr 2019	Air Temp (C)	18
I40	08 Apr 2019	Weather	Haze
I40	08 Apr 2019	Visibility (mi)	8
I40	08 Apr 2019	Wind Speed (kts)	8
I40	08 Apr 2019	Wind Dir	SE
I40	08 Apr 2019	Water Color	Green
I40	08 Apr 2019	Wave Ht Low (ft)	5
I40	08 Apr 2019	Wave Period (sec)	13
I40	08 Apr 2019	Sea State	Light chop
I40	08 Apr 2019	High Tide (ft)	3.57
I40	08 Apr 2019	High Tide Time	1151
I40	08 Apr 2019	Low Tide (ft)	0.02
I40	08 Apr 2019	Low Tide Time	548
I40	08 Apr 2019	Comments	none
I40	15 Apr 2019	Depth (m)	9
I40	15 Apr 2019	Arrive Time	1039
I40	15 Apr 2019	Depart Time	1041
I40	15 Apr 2019	Air Temp (C)	15
I40	15 Apr 2019	Weather	Partly Cloudy
I40	15 Apr 2019	Visibility (mi)	6
I40	15 Apr 2019	Wind Speed (kts)	2
I40	15 Apr 2019	Wind Dir	SW
I40	15 Apr 2019	Water Color	Green
I40	15 Apr 2019	Wave Ht Low (ft)	2
I40	15 Apr 2019	Wave Period (sec)	11
I40	15 Apr 2019	Sea State	Light chop
I40	15 Apr 2019	High Tide (ft)	4.99
I40	15 Apr 2019	High Tide Time	631
I40	15 Apr 2019	Low Tide (ft)	-0.64
I40	15 Apr 2019	Low Tide Time	1323
I40	15 Apr 2019	Comments	none
I40	23 Apr 2019	Depth (m)	10
I40	23 Apr 2019	Arrive Time	901
I40	23 Apr 2019	Depart Time	905
I40	23 Apr 2019	Air Temp (C)	15
I40	23 Apr 2019	Weather	Haze
I40	23 Apr 2019	Visibility (mi)	5
I40	23 Apr 2019	Wind Speed (kts)	3

Station	Date	Parameter	Value
I40	23 Apr 2019	Wind Dir	SW
I40	23 Apr 2019	Water Color	Brownish-Green
I40	23 Apr 2019	Wave Ht Low (ft)	3
I40	23 Apr 2019	Wave Period (sec)	9
I40	23 Apr 2019	Sea State	Calm
I40	23 Apr 2019	High Tide (ft)	3.17
I40	23 Apr 2019	High Tide Time	1331
I40	23 Apr 2019	Low Tide (ft)	-0.19
I40	23 Apr 2019	Low Tide Time	703
I40	23 Apr 2019	Comments	none
I40	30 Apr 2019	Depth (m)	12
I40	30 Apr 2019	Arrive Time	855
I40	30 Apr 2019	Depart Time	902
I40	30 Apr 2019	Air Temp (C)	15
I40	30 Apr 2019	Weather	Drizzle
I40	30 Apr 2019	Visibility (mi)	6
I40	30 Apr 2019	Wind Speed (kts)	4
I40	30 Apr 2019	Wind Dir	E
I40	30 Apr 2019	Water Color	Green
I40	30 Apr 2019	Wave Ht Low (ft)	4
I40	30 Apr 2019	Wave Period (sec)	13
I40	30 Apr 2019	Sea State	Light chop
I40	30 Apr 2019	High Tide (ft)	6.33
I40	30 Apr 2019	High Tide Time	2106
I40	30 Apr 2019	Low Tide (ft)	-0.71
I40	30 Apr 2019	Low Tide Time	405
I40	30 Apr 2019	Comments	none

**Table 3.10**

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

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (μg/L)
I19	03 Apr 2019	1	16.02	67.41	9.6	33.55	8.2	24.6	1.50
I19	03 Apr 2019	2	16.07	68.21	9.6	33.56	8.2	24.6	1.36
I19	03 Apr 2019	3	15.84	64.95	9.6	33.56	8.2	24.7	2.67
I19	03 Apr 2019	4	15.79	64.66	9.6	33.56	8.2	24.7	4.71
I19	03 Apr 2019	5	15.79	65.40	9.5	33.55	8.2	24.7	5.52
I19	03 Apr 2019	6	15.77	66.30	9.4	33.56	8.2	24.7	5.67
I19	03 Apr 2019	7	15.76	66.92	9.4	33.56	8.2	24.7	5.36
I19	03 Apr 2019	8	15.77	68.04	9.4	33.56	8.2	24.7	5.34
I19	03 Apr 2019	9	15.78	67.84	9.3	33.56	8.2	24.7	5.07
I19	03 Apr 2019	10	15.79	68.66	9.3	33.57	8.2	24.7	4.85
I19	08 Apr 2019	1	15.46	66.30	8.2	33.57	8.1	24.8	0.66
I19	08 Apr 2019	2	14.95	67.55	8.1	33.62	8.1	24.9	0.72
I19	08 Apr 2019	3	14.41	68.65	8.0	33.65	8.0	25.1	0.87
I19	08 Apr 2019	4	14.09	70.23	7.8	33.62	8.0	25.1	1.45
I19	08 Apr 2019	5	13.95	70.09	7.5	33.62	8.0	25.1	2.53
I19	08 Apr 2019	6	13.74	68.33	7.1	33.63	8.0	25.2	4.03
I19	08 Apr 2019	7	13.41	70.70	6.8	33.64	8.0	25.3	7.11
I19	08 Apr 2019	8	13.19	67.03	6.6	33.63	7.9	25.3	10.83
I19	08 Apr 2019	9	13.14	63.71	6.2	33.62	7.9	25.3	12.93
I19	08 Apr 2019	10	13.03	57.80	5.9	33.63	7.9	25.3	13.81
I19	15 Apr 2019	1	14.75	67.36	8.3	33.62	8.1	25.0	1.96
I19	15 Apr 2019	2	14.78	66.95	8.3	33.61	8.1	24.9	2.04
I19	15 Apr 2019	3	14.75	67.78	8.2	33.63	8.1	25.0	2.00
I19	15 Apr 2019	4	14.25	66.78	8.1	33.63	8.1	25.1	2.52
I19	15 Apr 2019	5	14.13	66.32	8.0	33.62	8.0	25.1	3.00
I19	15 Apr 2019	6	14.08	63.82	8.0	33.62	8.0	25.1	3.30
I19	15 Apr 2019	7	13.85	61.18	7.6	33.63	8.0	25.2	3.48
I19	15 Apr 2019	8	13.10	65.46	6.9	33.66	8.0	25.3	3.25
I19	15 Apr 2019	9	12.93	71.99	6.5	33.63	8.0	25.3	3.08
I19	15 Apr 2019	10	12.81	70.61	6.3	33.63	7.9	25.4	2.93
I19	23 Apr 2019	1	14.96	66.12	8.2	33.37	8.1	24.7	3.13
I19	23 Apr 2019	2	14.61	67.31	8.0	33.60	8.1	25.0	3.36
I19	23 Apr 2019	3	14.08	68.04	7.7	33.64	8.1	25.1	3.66
I19	23 Apr 2019	4	13.42	69.60	7.1	33.65	8.0	25.3	4.15
I19	23 Apr 2019	5	13.00	57.76	6.6	33.61	8.0	25.3	4.42
I19	23 Apr 2019	6	13.01	50.85	6.4	33.60	8.0	25.3	4.68
I19	23 Apr 2019	7	12.78	52.83	6.3	33.61	8.0	25.4	4.88
I19	23 Apr 2019	8	12.75	52.62	6.2	33.61	7.9	25.4	4.62
I19	23 Apr 2019	9	12.73	52.16	6.2	33.61	7.9	25.4	4.70
I19	23 Apr 2019	10	12.71	50.96	6.2	33.61	7.9	25.4	4.39
I19	30 Apr 2019	1	16.42	66.93	8.3	33.49	8.2	24.5	3.33
I19	30 Apr 2019	2	16.41	66.79	8.3	33.49	8.2	24.5	4.02
I19	30 Apr 2019	3	16.41	66.83	8.3	33.51	8.2	24.5	3.87
I19	30 Apr 2019	4	16.41	68.63	8.3	33.55	8.2	24.5	3.31
I19	30 Apr 2019	5	16.38	72.64	8.6	33.60	8.2	24.6	2.60
I19	30 Apr 2019	6	16.33	76.81	8.6	33.62	8.2	24.6	2.25
I19	30 Apr 2019	7	16.32	76.33	8.6	33.62	8.2	24.6	2.18

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (µg/L)
I19	30 Apr 2019	8	16.28	76.44	8.5	33.62	8.2	24.6	2.19
I19	30 Apr 2019	9	16.21	77.35	8.5	33.62	8.2	24.6	2.32
I19	30 Apr 2019	10	15.93	74.21	8.1	33.64	8.2	24.7	2.92
I24	03 Apr 2019	1	16.18	71.57	9.6	33.60	8.2	24.6	0.93
I24	03 Apr 2019	2	16.02	73.27	9.7	33.61	8.2	24.7	1.09
I24	03 Apr 2019	3	15.94	71.84	9.8	33.60	8.2	24.7	1.36
I24	03 Apr 2019	4	15.79	70.11	9.8	33.59	8.2	24.7	2.21
I24	03 Apr 2019	5	15.68	69.37	9.9	33.57	8.2	24.7	3.26
I24	03 Apr 2019	6	15.64	68.69	9.8	33.57	8.2	24.7	4.22
I24	03 Apr 2019	7	15.54	70.82	9.6	33.59	8.2	24.8	4.70
I24	03 Apr 2019	8	15.24	69.72	9.6	33.61	8.2	24.8	5.44
I24	03 Apr 2019	9	15.25	68.41	9.5	33.59	8.2	24.8	5.83
I24	03 Apr 2019	10	14.44	64.57	9.5	33.62	8.2	25.0	6.04
I24	03 Apr 2019	11	14.43	62.49	9.5	33.59	8.2	25.0	5.93
I24	08 Apr 2019	1	16.10	65.37	8.3	33.57	8.1	24.6	0.74
I24	08 Apr 2019	2	15.91	64.91	8.2	33.59	8.1	24.7	0.83
I24	08 Apr 2019	3	15.56	63.70	8.3	33.60	8.1	24.8	1.15
I24	08 Apr 2019	4	15.30	64.34	8.2	33.63	8.1	24.9	1.41
I24	08 Apr 2019	5	14.77	66.00	8.0	33.64	8.1	25.0	2.30
I24	08 Apr 2019	6	14.29	67.22	7.8	33.63	8.1	25.1	3.85
I24	08 Apr 2019	7	13.80	67.46	7.2	33.65	8.0	25.2	5.78
I24	08 Apr 2019	8	13.47	66.28	6.6	33.62	8.0	25.2	5.17
I24	08 Apr 2019	9	13.46	64.01	6.4	33.61	7.9	25.2	4.43
I24	08 Apr 2019	10	13.47	63.82	6.5	33.61	7.9	25.2	4.12
I24	08 Apr 2019	11	13.70	63.61	6.7	33.57	7.9	25.1	3.77
I24	15 Apr 2019	1	15.58	76.25	8.6	33.63	8.1	24.8	1.04
I24	15 Apr 2019	2	15.24	74.35	8.6	33.63	8.1	24.9	1.25
I24	15 Apr 2019	3	14.96	72.06	8.5	33.63	8.1	24.9	1.70
I24	15 Apr 2019	4	14.69	71.89	8.3	33.63	8.1	25.0	2.00
I24	15 Apr 2019	5	14.12	73.59	7.9	33.63	8.1	25.1	1.98
I24	15 Apr 2019	6	13.59	75.37	7.4	33.65	8.0	25.2	1.92
I24	15 Apr 2019	7	13.33	78.60	7.2	33.61	8.0	25.3	1.96
I24	15 Apr 2019	8	13.27	79.39	7.1	33.61	8.0	25.3	2.04
I24	15 Apr 2019	9	13.25	79.46	7.2	33.61	8.0	25.3	2.13
I24	15 Apr 2019	10	13.25	79.50	7.1	33.61	8.0	25.3	2.08
I24	15 Apr 2019	11	13.26	79.36	7.2	33.61	8.0	25.3	2.11
I24	23 Apr 2019	1	15.36	64.20	8.2	33.51	8.1	24.7	2.40
I24	23 Apr 2019	2	15.45	64.56	8.2	33.54	8.1	24.8	2.71
I24	23 Apr 2019	3	15.23	65.37	7.8	33.67	8.1	24.9	3.45
I24	23 Apr 2019	4	14.08	67.71	7.4	33.66	8.1	25.1	2.96
I24	23 Apr 2019	5	13.74	72.07	7.2	33.63	8.0	25.2	2.22
I24	23 Apr 2019	6	13.65	77.12	7.0	33.60	8.0	25.2	1.89
I24	23 Apr 2019	7	13.35	81.12	6.8	33.65	8.0	25.3	1.65
I24	23 Apr 2019	8	13.20	81.72	6.7	33.62	8.0	25.3	1.40
I24	23 Apr 2019	9	13.33	81.76	6.8	33.61	8.0	25.2	1.37
I24	23 Apr 2019	10	13.19	81.72	6.7	33.62	8.0	25.3	1.32
I24	30 Apr 2019	1	16.42	68.61	8.4	33.48	8.2	24.5	2.78
I24	30 Apr 2019	2	16.42	68.89	8.4	33.49	8.2	24.5	2.91
I24	30 Apr 2019	3	16.28	71.71	8.5	33.58	8.2	24.6	2.38
I24	30 Apr 2019	4	16.22	72.11	8.6	33.56	8.2	24.6	1.91

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (µg/L)
I24	30 Apr 2019	5	16.14	79.25	8.5	33.60	8.2	24.6	1.76
I24	30 Apr 2019	6	16.11	81.02	8.6	33.60	8.2	24.6	1.61
I24	30 Apr 2019	7	16.13	81.46	8.6	33.59	8.2	24.6	1.60
I24	30 Apr 2019	8	16.06	81.80	8.6	33.60	8.2	24.7	1.56
I24	30 Apr 2019	9	16.03	81.58	8.5	33.60	8.2	24.7	1.65
I24	30 Apr 2019	10	15.81	80.67	8.4	33.62	8.2	24.7	1.79
I25	03 Apr 2019	1	15.97	72.33	9.8	33.58	8.2	24.7	1.17
I25	03 Apr 2019	2	15.93	71.73	9.7	33.59	8.2	24.7	1.28
I25	03 Apr 2019	3	15.85	71.76	9.8	33.59	8.2	24.7	1.82
I25	03 Apr 2019	4	15.70	69.23	9.9	33.57	8.2	24.7	2.87
I25	03 Apr 2019	5	15.67	68.38	9.8	33.57	8.3	24.7	3.74
I25	03 Apr 2019	6	15.46	68.91	9.8	33.60	8.2	24.8	4.61
I25	03 Apr 2019	7	15.27	69.04	9.6	33.60	8.2	24.8	5.12
I25	03 Apr 2019	8	14.70	68.25	9.6	33.61	8.2	25.0	5.36
I25	03 Apr 2019	9	14.64	68.69	9.7	33.60	8.2	25.0	5.19
I25	08 Apr 2019	1	15.69	65.73	8.3	33.60	8.1	24.7	0.70
I25	08 Apr 2019	2	15.47	64.48	8.2	33.64	8.1	24.8	0.73
I25	08 Apr 2019	3	14.86	65.90	7.9	33.65	8.1	25.0	1.37
I25	08 Apr 2019	4	13.46	68.13	7.1	33.65	8.0	25.3	5.15
I25	08 Apr 2019	5	13.19	69.61	6.5	33.62	7.9	25.3	5.95
I25	08 Apr 2019	6	13.17	71.68	6.4	33.61	7.9	25.3	5.60
I25	08 Apr 2019	7	13.16	71.56	6.4	33.62	7.9	25.3	5.03
I25	08 Apr 2019	8	13.15	71.49	6.3	33.62	7.9	25.3	4.58
I25	08 Apr 2019	9	13.16	71.41	6.3	33.62	7.9	25.3	4.23
I25	15 Apr 2019	1	14.96	75.94	8.3	33.60	8.1	24.9	1.30
I25	15 Apr 2019	2	14.68	74.55	8.3	33.63	8.1	25.0	1.45
I25	15 Apr 2019	3	14.59	72.89	8.2	33.62	8.1	25.0	1.87
I25	15 Apr 2019	4	14.43	72.09	8.1	33.63	8.1	25.0	2.34
I25	15 Apr 2019	5	14.18	72.53	7.8	33.64	8.1	25.1	2.67
I25	15 Apr 2019	6	13.26	78.78	7.2	33.63	8.0	25.3	2.12
I25	15 Apr 2019	7	13.20	80.83	7.1	33.61	8.0	25.3	1.84
I25	15 Apr 2019	8	13.19	80.99	7.2	33.61	8.0	25.3	1.64
I25	23 Apr 2019	1	15.27	70.59	8.6	33.59	8.1	24.8	2.74
I25	23 Apr 2019	2	14.76	70.26	8.4	33.64	8.1	25.0	3.56
I25	23 Apr 2019	3	14.53	66.51	8.1	33.63	8.1	25.0	5.15
I25	23 Apr 2019	4	14.38	66.80	7.9	33.62	8.1	25.0	4.80
I25	23 Apr 2019	5	14.30	70.25	7.7	33.61	8.1	25.1	3.95
I25	23 Apr 2019	6	13.44	74.07	6.9	33.69	8.0	25.3	3.45
I25	23 Apr 2019	7	12.72	80.38	6.4	33.64	8.0	25.4	2.28
I25	23 Apr 2019	8	12.90	83.57	6.5	33.59	8.0	25.3	1.58
I25	23 Apr 2019	9	12.73	83.80	6.5	33.64	8.0	25.4	1.46
I25	30 Apr 2019	1	16.42	69.29	8.5	33.48	8.2	24.5	2.32
I25	30 Apr 2019	2	16.32	70.22	8.6	33.53	8.2	24.5	2.24
I25	30 Apr 2019	3	16.20	79.00	8.6	33.56	8.2	24.6	1.71
I25	30 Apr 2019	4	16.09	81.55	8.6	33.59	8.2	24.6	1.43
I25	30 Apr 2019	5	16.06	81.89	8.7	33.60	8.2	24.7	1.30
I25	30 Apr 2019	6	16.04	81.86	8.6	33.59	8.2	24.7	1.32
I25	30 Apr 2019	7	16.01	81.58	8.6	33.60	8.2	24.7	1.35
I25	30 Apr 2019	8	15.99	81.39	8.6	33.60	8.2	24.7	1.31
I25	30 Apr 2019	9	15.98	81.28	8.5	33.60	8.2	24.7	1.28

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (µg/L)
I26	03 Apr 2019	1	16.65	75.08	9.2	33.59	8.2	24.5	0.88
I26	03 Apr 2019	2	16.54	75.11	9.1	33.61	8.2	24.6	0.93
I26	03 Apr 2019	3	16.18	74.06	9.1	33.60	8.2	24.6	1.20
I26	03 Apr 2019	4	16.12	73.34	9.2	33.59	8.2	24.6	1.67
I26	03 Apr 2019	5	16.05	71.62	9.2	33.59	8.2	24.7	2.60
I26	03 Apr 2019	6	15.98	72.09	9.0	33.59	8.2	24.7	3.27
I26	03 Apr 2019	7	15.79	72.56	9.0	33.60	8.2	24.7	3.44
I26	03 Apr 2019	8	15.54	71.53	9.1	33.59	8.2	24.8	3.64
I26	03 Apr 2019	9	15.54	69.87	9.2	33.59	8.2	24.8	3.43
I26	08 Apr 2019	1	15.34	68.32	8.5	33.60	8.1	24.8	0.49
I26	08 Apr 2019	2	14.68	73.79	8.2	33.67	8.1	25.0	0.59
I26	08 Apr 2019	3	14.10	77.13	8.0	33.62	8.0	25.1	0.80
I26	08 Apr 2019	4	13.52	75.24	7.5	33.63	8.0	25.2	1.69
I26	08 Apr 2019	5	13.33	72.11	7.2	33.62	8.0	25.3	3.13
I26	08 Apr 2019	6	13.26	70.63	6.9	33.61	8.0	25.3	4.94
I26	08 Apr 2019	7	13.17	71.75	6.6	33.62	7.9	25.3	4.85
I26	08 Apr 2019	8	13.16	72.24	6.5	33.61	7.9	25.3	4.13
I26	08 Apr 2019	9	13.16	70.52	6.4	33.62	7.9	25.3	3.64
I26	15 Apr 2019	1	15.38	74.95	8.5	33.61	8.1	24.8	1.17
I26	15 Apr 2019	2	14.88	74.68	8.3	33.62	8.1	24.9	1.36
I26	15 Apr 2019	3	14.52	73.95	8.2	33.62	8.1	25.0	1.64
I26	15 Apr 2019	4	14.30	75.00	8.1	33.61	8.1	25.0	1.88
I26	15 Apr 2019	5	14.21	75.31	8.0	33.61	8.1	25.1	2.15
I26	15 Apr 2019	6	14.00	74.78	7.9	33.61	8.1	25.1	2.71
I26	15 Apr 2019	7	13.58	74.35	7.4	33.66	8.0	25.2	2.91
I26	15 Apr 2019	8	13.03	80.24	7.1	33.62	8.0	25.3	2.13
I26	15 Apr 2019	9	13.08	80.78	7.1	33.62	8.0	25.3	1.99
I26	23 Apr 2019	1	15.60	66.64	8.7	33.47	8.1	24.7	3.11
I26	23 Apr 2019	2	15.46	68.40	8.4	33.58	8.1	24.8	3.39
I26	23 Apr 2019	3	14.39	69.20	8.1	33.67	8.1	25.1	4.44
I26	23 Apr 2019	4	13.84	70.17	7.7	33.64	8.1	25.2	4.41
I26	23 Apr 2019	5	13.64	72.54	7.4	33.62	8.1	25.2	3.76
I26	23 Apr 2019	6	13.28	75.51	7.0	33.63	8.0	25.3	3.08
I26	23 Apr 2019	7	12.76	78.60	6.4	33.64	8.0	25.4	2.17
I26	23 Apr 2019	8	12.69	82.10	6.2	33.62	8.0	25.4	1.53
I26	23 Apr 2019	9	12.70	82.48	6.3	33.62	8.0	25.4	1.30
I26	30 Apr 2019	1	16.47	72.64	8.6	33.52	8.2	24.5	1.65
I26	30 Apr 2019	2	16.45	73.04	8.6	33.54	8.2	24.5	1.96
I26	30 Apr 2019	3	16.42	74.04	8.6	33.57	8.2	24.6	2.19
I26	30 Apr 2019	4	16.41	74.79	8.6	33.60	8.2	24.6	2.34
I26	30 Apr 2019	5	16.42	75.63	8.6	33.60	8.2	24.6	2.34
I26	30 Apr 2019	6	16.42	76.31	8.6	33.61	8.2	24.6	2.34
I26	30 Apr 2019	7	16.40	76.48	8.5	33.62	8.2	24.6	2.43
I26	30 Apr 2019	8	16.21	76.80	8.4	33.63	8.2	24.6	2.47
I26	30 Apr 2019	9	15.81	77.30	8.1	33.65	8.2	24.8	2.35
I32	03 Apr 2019	1	16.43	67.75	8.8	33.58	8.2	24.6	1.18
I32	03 Apr 2019	2	16.25	67.06	9.2	33.59	8.2	24.6	1.66
I32	03 Apr 2019	3	16.21	66.24	9.5	33.58	8.2	24.6	2.29
I32	03 Apr 2019	4	16.14	65.06	9.8	33.58	8.2	24.6	3.82

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (µg/L)
I32	03 Apr 2019	5	16.09	64.39	10.0	33.57	8.3	24.6	5.27
I32	03 Apr 2019	6	16.02	65.95	9.6	33.58	8.2	24.6	5.81
I32	03 Apr 2019	7	16.00	65.85	9.1	33.57	8.2	24.6	5.35
I32	03 Apr 2019	8	15.98	65.62	9.0	33.58	8.2	24.7	5.20
I32	03 Apr 2019	9	15.97	65.65	9.0	33.57	8.2	24.7	5.12
I32	03 Apr 2019	10	15.95	65.96	9.1	33.58	8.2	24.7	5.12
I32	08 Apr 2019	1	15.30	61.59	8.1	33.61	8.0	24.8	0.62
I32	08 Apr 2019	2	15.06	60.96	8.0	33.63	8.0	24.9	0.70
I32	08 Apr 2019	3	14.49	57.27	8.0	33.64	8.0	25.0	1.35
I32	08 Apr 2019	4	14.16	55.18	7.9	33.63	8.0	25.1	3.71
I32	08 Apr 2019	5	13.76	59.19	7.4	33.64	8.0	25.2	6.49
I32	08 Apr 2019	6	13.52	63.18	6.9	33.62	8.0	25.2	6.87
I32	08 Apr 2019	7	13.39	64.78	6.5	33.62	7.9	25.2	5.49
I32	08 Apr 2019	8	13.32	65.06	6.4	33.62	7.9	25.3	3.79
I32	08 Apr 2019	9	13.32	62.05	6.3	33.62	7.9	25.3	3.32
I32	08 Apr 2019	10	13.29	51.36	6.3	33.62	7.9	25.3	3.30
I32	15 Apr 2019	1	15.51	72.04	8.9	33.63	8.1	24.8	1.20
I32	15 Apr 2019	2	15.41	72.21	9.0	33.63	8.1	24.8	1.24
I32	15 Apr 2019	3	15.31	70.40	8.8	33.63	8.1	24.9	1.49
I32	15 Apr 2019	4	15.20	69.59	8.7	33.63	8.1	24.9	1.68
I32	15 Apr 2019	5	15.05	69.26	8.7	33.63	8.1	24.9	2.40
I32	15 Apr 2019	6	15.03	69.19	8.6	33.63	8.1	24.9	2.90
I32	15 Apr 2019	7	15.03	69.25	8.6	33.63	8.1	24.9	3.33
I32	15 Apr 2019	8	15.03	69.41	8.6	33.63	8.1	24.9	3.50
I32	15 Apr 2019	9	14.89	66.08	8.5	33.65	8.1	25.0	3.48
I32	15 Apr 2019	10	14.60	59.18	8.4	33.64	8.1	25.0	3.37
I32	23 Apr 2019	1	15.56	67.19	8.4	33.62	8.1	24.8	2.38
I32	23 Apr 2019	2	14.82	67.29	8.3	33.67	8.1	25.0	2.87
I32	23 Apr 2019	3	14.25	67.26	8.0	33.63	8.1	25.1	3.70
I32	23 Apr 2019	4	13.27	65.92	7.2	33.65	8.0	25.3	4.07
I32	23 Apr 2019	5	13.00	68.57	6.7	33.61	8.0	25.3	3.48
I32	23 Apr 2019	6	12.98	69.21	6.7	33.60	8.0	25.3	3.27
I32	23 Apr 2019	7	12.91	66.64	6.6	33.62	8.0	25.3	3.32
I32	23 Apr 2019	8	12.82	57.70	6.5	33.61	8.0	25.3	3.16
I32	23 Apr 2019	9	12.88	52.16	6.4	33.61	8.0	25.3	3.00
I32	23 Apr 2019	10	12.82	47.63	6.4	33.61	8.0	25.4	2.82
I32	30 Apr 2019	1	16.57	71.53	8.6	33.58	8.2	24.5	1.59
I32	30 Apr 2019	2	16.53	71.26	8.7	33.59	8.2	24.5	1.73
I32	30 Apr 2019	3	16.49	71.71	8.8	33.60	8.2	24.6	2.31
I32	30 Apr 2019	4	16.46	72.94	8.9	33.60	8.2	24.6	2.69
I32	30 Apr 2019	5	16.44	73.59	8.9	33.60	8.2	24.6	2.94
I32	30 Apr 2019	6	16.39	73.55	8.8	33.61	8.2	24.6	3.03
I32	30 Apr 2019	7	16.33	72.37	8.8	33.61	8.2	24.6	3.03
I32	30 Apr 2019	8	16.32	67.53	8.7	33.60	8.2	24.6	3.15
I32	30 Apr 2019	9	16.07	60.58	8.5	33.63	8.2	24.7	3.56
I32	30 Apr 2019	10	15.73	52.33	8.5	33.60	8.2	24.7	4.00
I39	03 Apr 2019	1	15.58	79.01	8.9	33.59	8.2	24.8	0.59
I39	03 Apr 2019	2	15.56	78.85	8.9	33.60	8.2	24.8	0.62
I39	03 Apr 2019	3	15.47	78.74	8.9	33.59	8.2	24.8	0.71
I39	03 Apr 2019	4	15.36	78.47	8.8	33.60	8.2	24.8	0.82

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (µg/L)
I39	03 Apr 2019	5	15.32	79.09	8.7	33.59	8.2	24.8	0.94
I39	03 Apr 2019	6	15.23	79.25	8.6	33.59	8.2	24.8	1.08
I39	03 Apr 2019	7	15.20	79.18	8.6	33.59	8.2	24.8	1.21
I39	03 Apr 2019	8	15.08	79.19	8.5	33.60	8.2	24.9	1.48
I39	03 Apr 2019	9	15.03	79.08	8.5	33.59	8.2	24.9	1.75
I39	03 Apr 2019	10	14.98	78.85	8.4	33.59	8.2	24.9	1.93
I39	03 Apr 2019	11	14.96	78.84	8.4	33.59	8.2	24.9	2.18
I39	03 Apr 2019	12	14.98	78.85	8.4	33.59	8.2	24.9	2.11
I39	03 Apr 2019	13	14.88	78.71	8.3	33.61	8.2	24.9	2.24
I39	03 Apr 2019	14	14.80	78.30	8.4	33.60	8.1	24.9	2.76
I39	03 Apr 2019	15	14.53	76.21	8.4	33.61	8.1	25.0	3.78
I39	03 Apr 2019	16	14.23	73.11	8.6	33.62	8.1	25.1	5.05
I39	03 Apr 2019	17	14.03	71.76	8.7	33.61	8.1	25.1	5.93
I39	03 Apr 2019	18	13.97	71.27	8.7	33.61	8.1	25.1	5.95
I39	08 Apr 2019	1	16.65	78.13	9.1	33.61	8.2	24.5	0.41
I39	08 Apr 2019	2	16.41	78.07	9.1	33.61	8.2	24.6	0.45
I39	08 Apr 2019	3	16.20	77.99	9.1	33.62	8.2	24.6	0.53
I39	08 Apr 2019	4	16.07	78.04	9.1	33.60	8.2	24.7	0.63
I39	08 Apr 2019	5	15.85	78.44	9.0	33.60	8.2	24.7	0.73
I39	08 Apr 2019	6	15.77	79.17	9.0	33.59	8.1	24.7	0.84
I39	08 Apr 2019	7	15.72	79.78	8.9	33.59	8.1	24.7	0.94
I39	08 Apr 2019	8	15.66	79.97	8.8	33.59	8.1	24.7	1.12
I39	08 Apr 2019	9	15.56	80.10	8.8	33.59	8.1	24.8	1.21
I39	08 Apr 2019	10	15.45	80.68	8.7	33.59	8.1	24.8	1.29
I39	08 Apr 2019	11	15.21	81.14	8.6	33.60	8.1	24.8	1.46
I39	08 Apr 2019	12	14.84	81.44	8.4	33.60	8.1	24.9	1.73
I39	08 Apr 2019	13	14.61	81.12	8.3	33.61	8.1	25.0	2.01
I39	08 Apr 2019	14	14.36	80.93	8.2	33.60	8.1	25.0	2.22
I39	08 Apr 2019	15	14.18	80.93	8.0	33.60	8.1	25.1	2.48
I39	08 Apr 2019	16	13.80	80.88	7.6	33.61	8.0	25.2	2.75
I39	08 Apr 2019	17	13.27	80.20	7.0	33.65	8.0	25.3	2.57
I39	08 Apr 2019	18	12.90	79.31	6.6	33.62	8.0	25.3	2.37
I39	15 Apr 2019	1	15.36	74.48	8.3	33.59	8.1	24.8	1.20
I39	15 Apr 2019	2	15.35	74.28	8.3	33.59	8.1	24.8	1.32
I39	15 Apr 2019	3	15.15	73.86	8.2	33.62	8.1	24.9	1.54
I39	15 Apr 2019	4	14.47	78.07	8.1	33.61	8.1	25.0	1.76
I39	15 Apr 2019	5	14.37	78.45	8.1	33.60	8.1	25.0	1.84
I39	15 Apr 2019	6	14.12	77.60	7.8	33.62	8.1	25.1	2.32
I39	15 Apr 2019	7	13.74	76.41	7.6	33.61	8.0	25.2	3.22
I39	15 Apr 2019	8	13.48	78.52	7.4	33.64	8.0	25.2	3.44
I39	15 Apr 2019	9	13.31	79.56	7.3	33.62	8.0	25.3	3.20
I39	15 Apr 2019	10	13.17	80.43	7.3	33.61	8.0	25.3	2.99
I39	15 Apr 2019	11	13.03	81.64	7.1	33.61	8.0	25.3	2.84
I39	15 Apr 2019	12	12.91	82.96	7.0	33.61	8.0	25.3	2.55
I39	15 Apr 2019	13	12.88	83.33	6.8	33.61	8.0	25.3	2.30
I39	15 Apr 2019	14	12.84	83.15	6.7	33.62	8.0	25.4	2.36
I39	15 Apr 2019	15	12.71	83.48	6.5	33.63	8.0	25.4	2.21
I39	15 Apr 2019	16	12.65	83.81	6.3	33.63	7.9	25.4	1.80
I39	15 Apr 2019	17	12.64	83.41	6.2	33.62	7.9	25.4	1.61
I39	15 Apr 2019	18	12.60	82.85	6.2	33.63	7.9	25.4	1.47
I39	23 Apr 2019	1	15.48	74.20	8.5	33.63	8.1	24.8	2.27
I39	23 Apr 2019	2	15.27	73.98	8.2	33.65	8.1	24.9	2.66

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (µg/L)
I39	23 Apr 2019	3	14.79	74.42	7.6	33.65	8.1	25.0	3.01
I39	23 Apr 2019	4	13.47	78.54	6.9	33.68	8.0	25.3	2.52
I39	23 Apr 2019	5	13.05	82.30	6.7	33.62	8.0	25.3	1.96
I39	23 Apr 2019	6	13.21	82.97	6.6	33.62	8.0	25.3	1.85
I39	23 Apr 2019	7	12.60	83.37	6.4	33.63	8.0	25.4	1.82
I39	23 Apr 2019	8	12.56	83.59	6.4	33.62	7.9	25.4	1.83
I39	23 Apr 2019	9	12.50	83.74	6.3	33.62	7.9	25.4	1.69
I39	23 Apr 2019	10	12.33	84.24	6.1	33.63	7.9	25.5	1.63
I39	23 Apr 2019	11	12.24	84.55	6.0	33.63	7.9	25.5	1.47
I39	23 Apr 2019	12	12.21	84.28	5.9	33.63	7.9	25.5	1.43
I39	23 Apr 2019	13	12.20	84.24	5.8	33.63	7.9	25.5	1.39
I39	23 Apr 2019	14	12.18	84.22	5.8	33.64	7.9	25.5	1.36
I39	23 Apr 2019	15	12.15	84.36	5.7	33.64	7.9	25.5	1.19
I39	23 Apr 2019	16	12.15	84.36	5.6	33.64	7.9	25.5	1.08
I39	23 Apr 2019	17	12.15	84.30	5.6	33.64	7.9	25.5	1.04
I39	23 Apr 2019	18	12.15	84.44	5.6	33.64	7.9	25.5	1.03
I39	30 Apr 2019	1	15.80	82.35	8.6	33.50	8.1	24.6	0.79
I39	30 Apr 2019	2	15.81	82.40	8.7	33.56	8.1	24.7	0.86
I39	30 Apr 2019	3	15.80	82.34	8.7	33.57	8.1	24.7	0.93
I39	30 Apr 2019	4	15.80	82.14	8.6	33.59	8.1	24.7	1.03
I39	30 Apr 2019	5	15.80	82.29	8.7	33.59	8.1	24.7	1.08
I39	30 Apr 2019	6	15.79	82.27	8.7	33.59	8.1	24.7	1.15
I39	30 Apr 2019	7	15.77	81.88	8.6	33.59	8.1	24.7	1.31
I39	30 Apr 2019	8	15.77	81.82	8.7	33.59	8.1	24.7	1.38
I39	30 Apr 2019	9	15.75	81.46	8.7	33.60	8.1	24.7	1.52
I39	30 Apr 2019	10	15.73	80.91	8.7	33.60	8.1	24.7	1.74
I39	30 Apr 2019	11	15.70	80.57	8.6	33.61	8.1	24.7	1.84
I39	30 Apr 2019	12	15.67	80.20	8.7	33.61	8.1	24.8	2.00
I39	30 Apr 2019	13	15.66	79.93	8.7	33.61	8.1	24.8	2.14
I39	30 Apr 2019	14	15.66	79.70	8.6	33.61	8.1	24.8	2.20
I39	30 Apr 2019	15	15.65	79.18	8.6	33.61	8.1	24.8	2.26
I39	30 Apr 2019	16	15.56	78.65	8.5	33.62	8.1	24.8	2.50
I39	30 Apr 2019	17	15.37	77.86	8.3	33.62	8.1	24.8	2.83
I39	30 Apr 2019	18	14.59	77.09	7.7	33.67	8.1	25.0	3.25
I40	03 Apr 2019	1	16.37	70.37	8.9	33.52	8.2	24.5	1.05
I40	03 Apr 2019	2	16.15	69.91	8.9	33.58	8.2	24.6	1.25
I40	03 Apr 2019	3	16.05	69.60	9.2	33.59	8.2	24.7	1.77
I40	03 Apr 2019	4	16.01	69.74	9.5	33.60	8.2	24.7	2.81
I40	03 Apr 2019	5	15.95	70.78	9.6	33.60	8.2	24.7	3.59
I40	03 Apr 2019	6	15.86	71.03	9.5	33.60	8.2	24.7	4.13
I40	03 Apr 2019	7	15.76	70.80	9.4	33.59	8.2	24.7	4.68
I40	03 Apr 2019	8	15.76	69.22	9.3	33.60	8.2	24.7	4.70
I40	03 Apr 2019	9	15.74	69.26	9.2	33.59	8.2	24.7	4.67
I40	03 Apr 2019	10	15.61	66.16	9.2	33.59	8.2	24.8	4.79
I40	08 Apr 2019	1	15.67	64.55	8.2	33.60	8.1	24.7	0.81
I40	08 Apr 2019	2	15.42	63.59	8.3	33.62	8.1	24.8	0.96
I40	08 Apr 2019	3	15.14	62.55	8.1	33.65	8.1	24.9	1.48
I40	08 Apr 2019	4	14.82	60.98	8.1	33.61	8.0	24.9	4.00
I40	08 Apr 2019	5	14.63	60.90	7.8	33.63	8.0	25.0	6.81
I40	08 Apr 2019	6	14.37	56.28	7.6	33.63	8.0	25.0	9.18
I40	08 Apr 2019	7	14.27	58.65	7.5	33.62	8.0	25.1	9.40
I40	08 Apr 2019	8	14.06	57.74	7.2	33.63	8.0	25.1	9.14

Station	Date	Depth (m)	Temp (°C)	XMS (%)	DO (mg/L)	Sal (ppt)	pH	Dens (σ-t)	Chlor (µg/L)
I40	08 Apr 2019	9	13.55	46.58	6.4	33.64	7.9	25.2	10.22
I40	08 Apr 2019	10	13.66	34.63	6.4	33.60	7.9	25.2	8.84
I40	15 Apr 2019	1	15.61	72.70	8.6	33.63	8.1	24.8	0.85
I40	15 Apr 2019	2	15.48	72.15	8.4	33.65	8.1	24.8	0.91
I40	15 Apr 2019	3	14.81	70.77	8.0	33.66	8.1	25.0	1.13
I40	15 Apr 2019	4	14.06	69.00	7.6	33.63	8.0	25.1	1.38
I40	15 Apr 2019	5	13.81	69.72	7.3	33.63	8.0	25.2	1.50
I40	15 Apr 2019	6	13.63	74.43	7.1	33.61	8.0	25.2	1.52
I40	15 Apr 2019	7	13.33	71.24	6.7	33.64	8.0	25.3	1.80
I40	15 Apr 2019	8	13.04	69.12	6.5	33.63	8.0	25.3	2.63
I40	15 Apr 2019	9	12.84	53.83	6.0	33.64	7.9	25.4	3.56
I40	15 Apr 2019	10	12.59	43.13	5.8	33.63	7.9	25.4	3.90
I40	23 Apr 2019	1	13.98	68.09	7.5	33.61	8.0	25.1	2.02
I40	23 Apr 2019	2	13.87	69.85	7.4	33.62	8.0	25.1	2.06
I40	23 Apr 2019	3	13.91	71.31	7.3	33.62	8.0	25.1	2.15
I40	23 Apr 2019	4	13.40	72.44	7.0	33.65	8.0	25.3	1.79
I40	23 Apr 2019	5	13.37	74.78	6.8	33.61	8.0	25.2	1.47
I40	23 Apr 2019	6	12.84	80.95	6.5	33.64	8.0	25.4	1.31
I40	23 Apr 2019	7	12.79	78.90	6.4	33.62	8.0	25.4	1.21
I40	23 Apr 2019	8	12.76	67.98	6.4	33.62	8.0	25.4	1.40
I40	23 Apr 2019	9	12.75	60.85	6.2	33.62	8.0	25.4	1.93
I40	23 Apr 2019	10	12.75	55.50	6.2	33.62	8.0	25.4	2.35
I40	30 Apr 2019	1	16.40	64.21	8.2	33.43	8.1	24.5	2.49
I40	30 Apr 2019	2	16.41	64.45	8.3	33.44	8.1	24.5	2.69
I40	30 Apr 2019	3	16.46	66.29	8.5	33.56	8.2	24.5	2.56
I40	30 Apr 2019	4	16.43	76.58	8.5	33.58	8.2	24.6	2.22
I40	30 Apr 2019	5	16.35	79.00	8.6	33.61	8.2	24.6	1.97
I40	30 Apr 2019	6	16.21	80.57	8.5	33.62	8.2	24.6	1.75
I40	30 Apr 2019	7	16.17	80.95	8.5	33.61	8.2	24.6	1.80
I40	30 Apr 2019	8	16.18	80.27	8.5	33.61	8.2	24.6	1.90
I40	30 Apr 2019	9	16.17	80.37	8.5	33.61	8.2	24.6	1.96
I40	30 Apr 2019	10	16.15	79.99	8.6	33.61	8.2	24.6	2.01

NA = not available

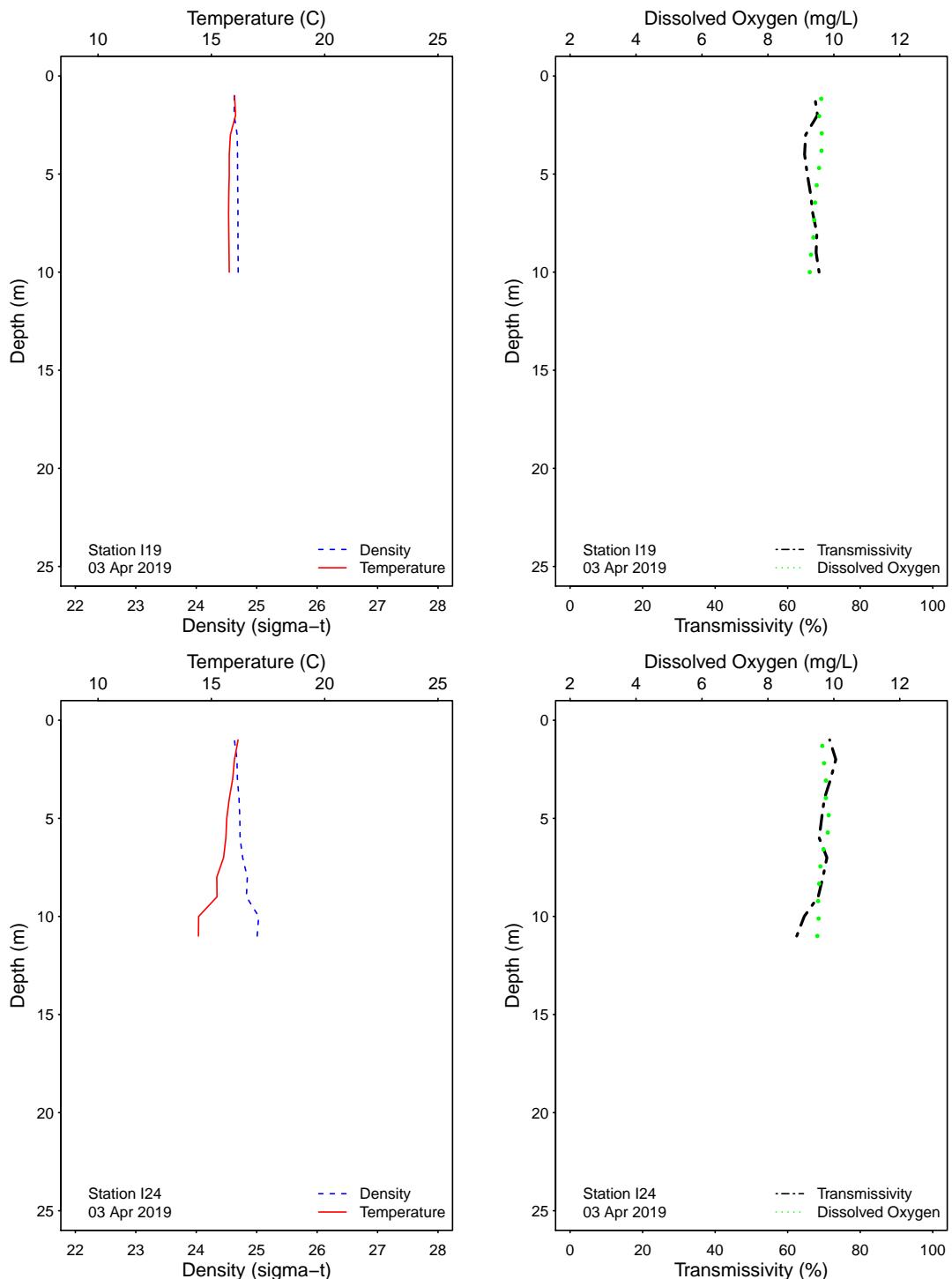


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

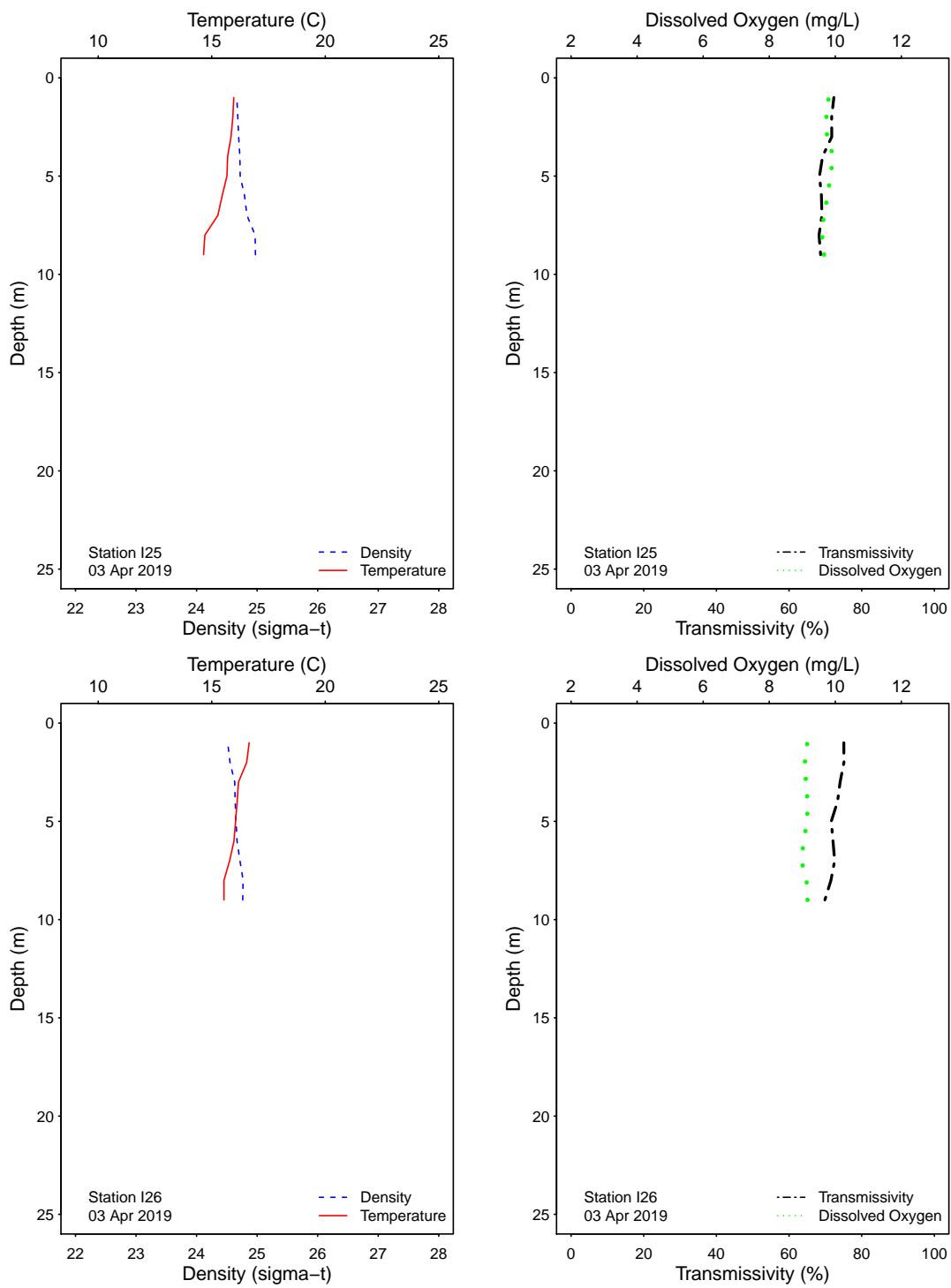


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

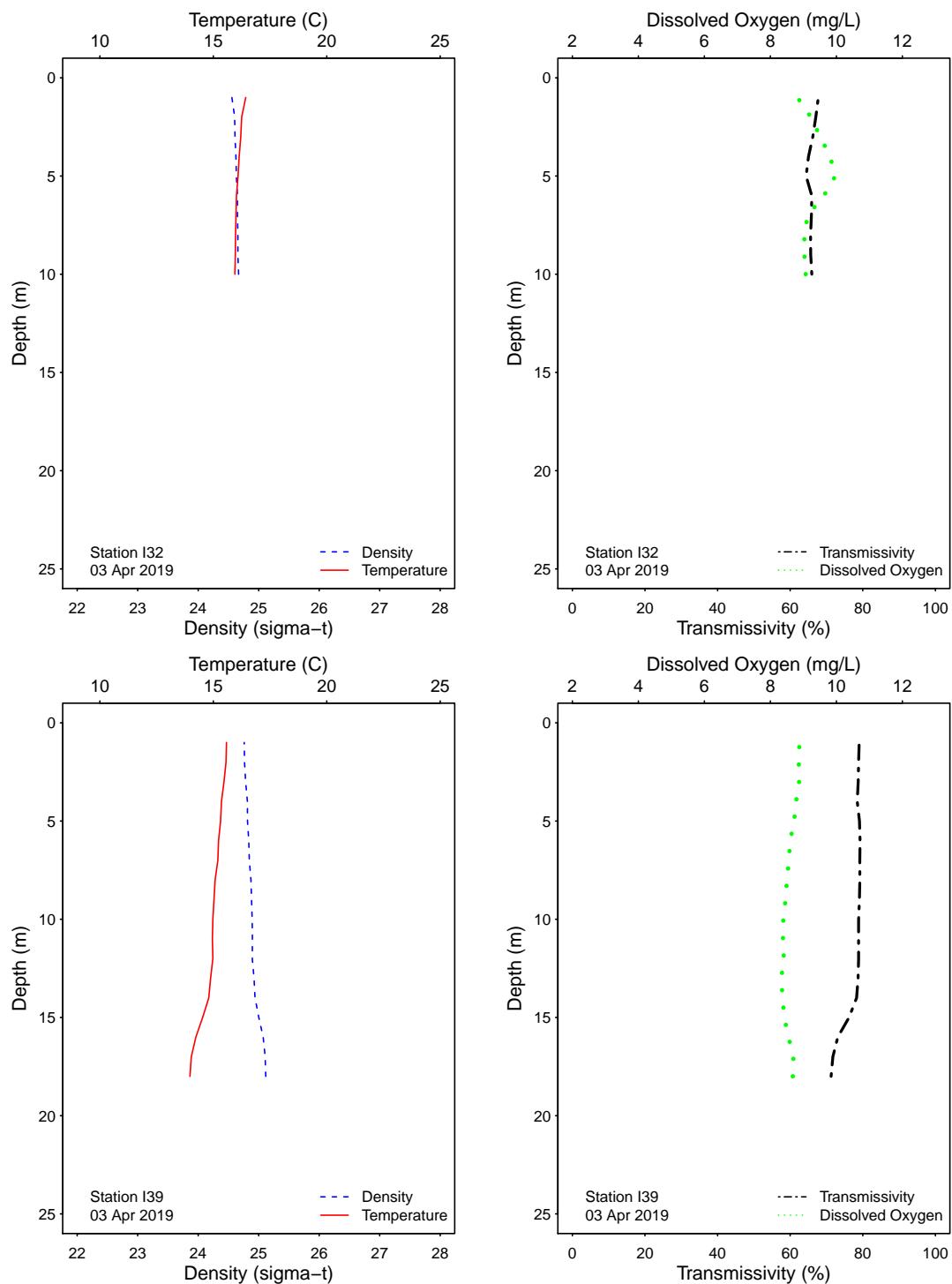


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

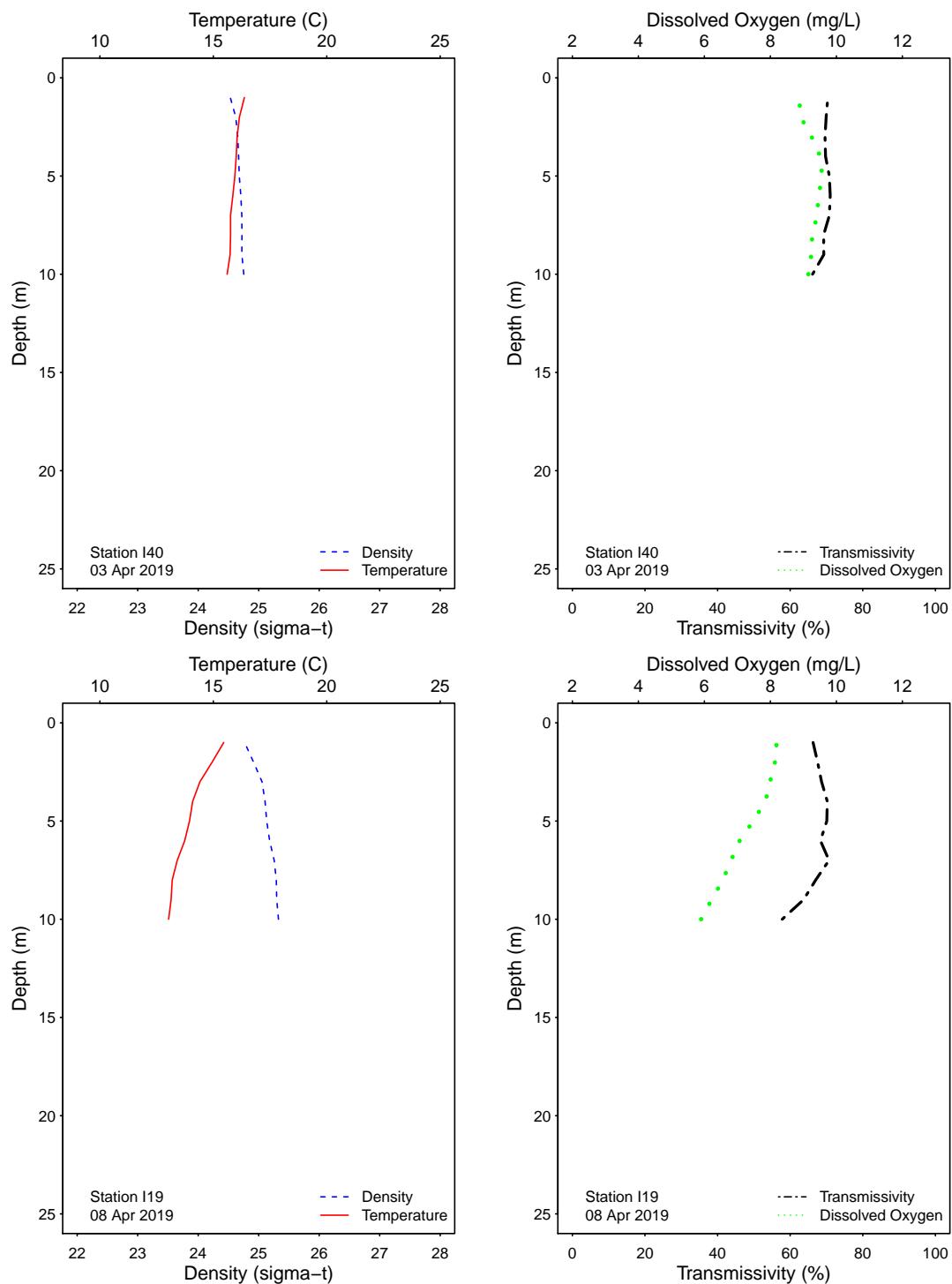


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

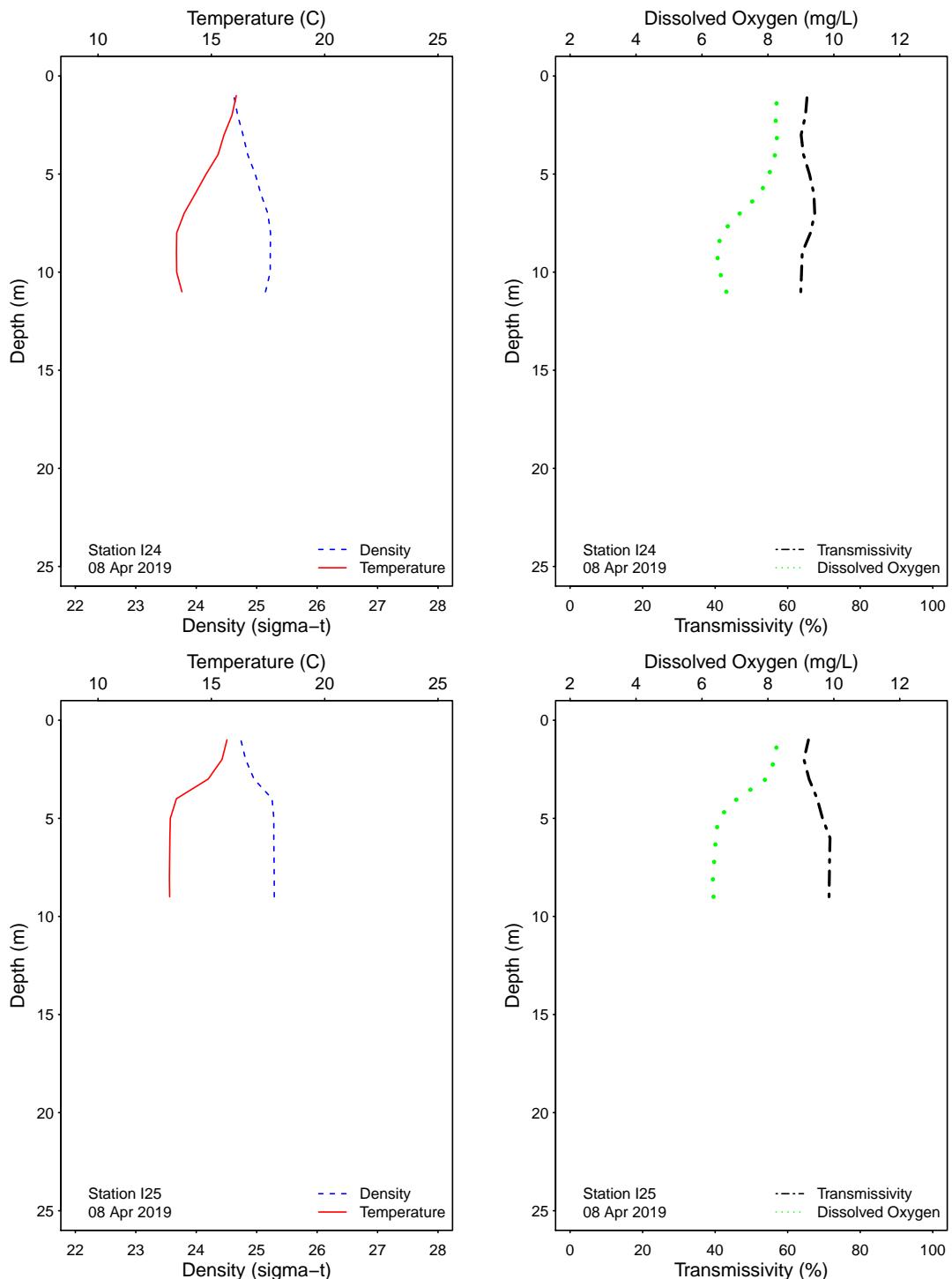


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

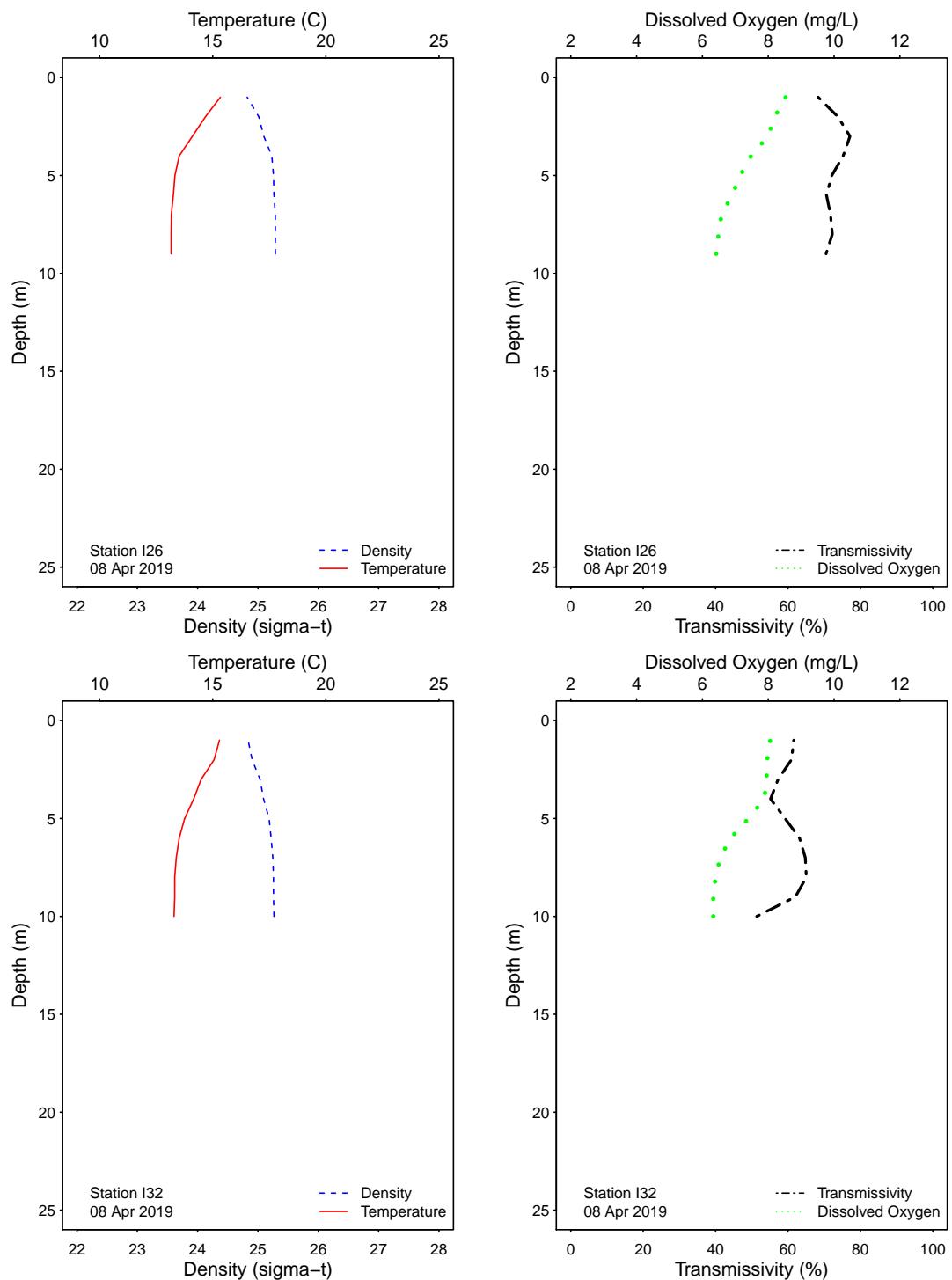


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

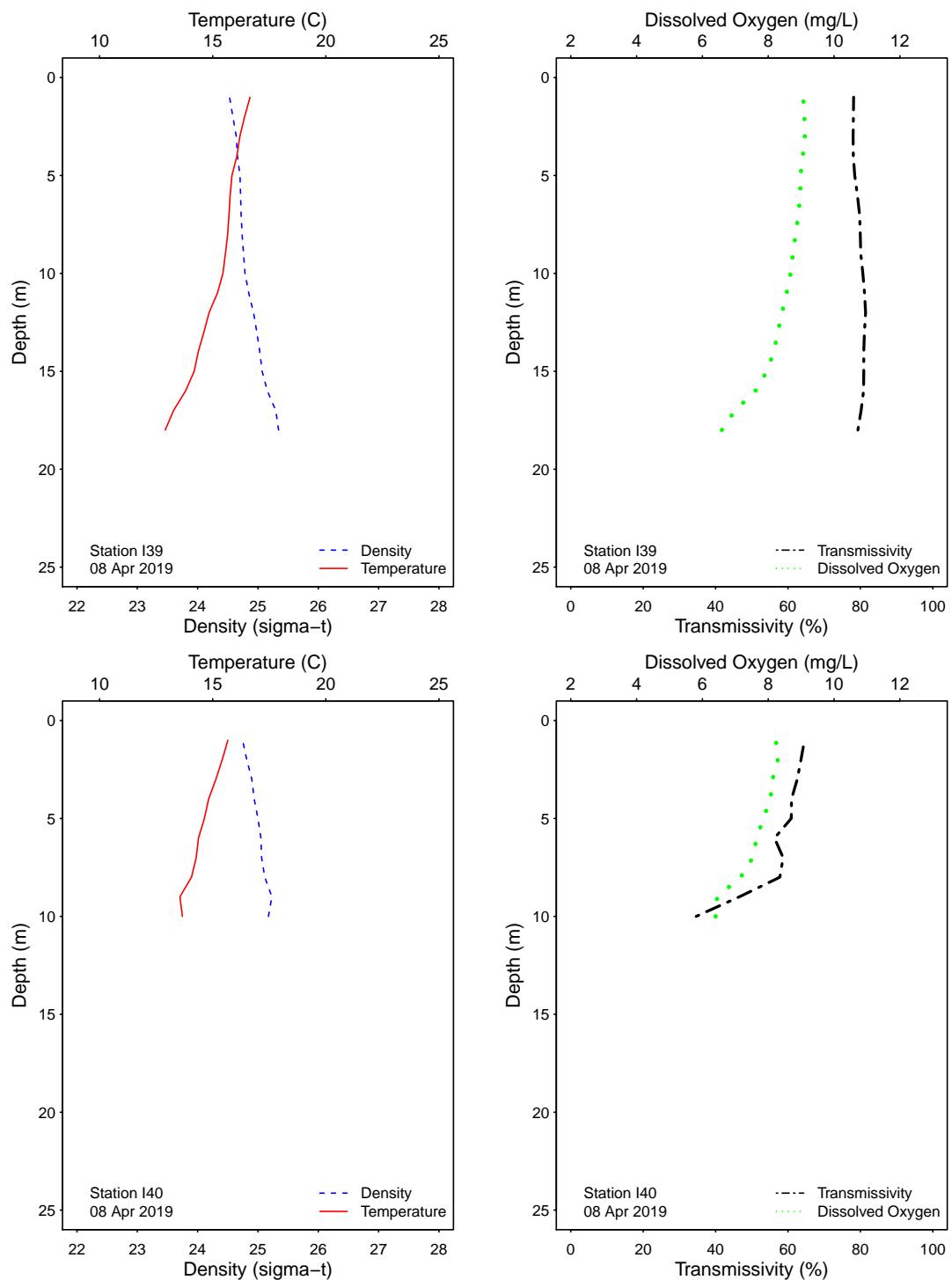


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

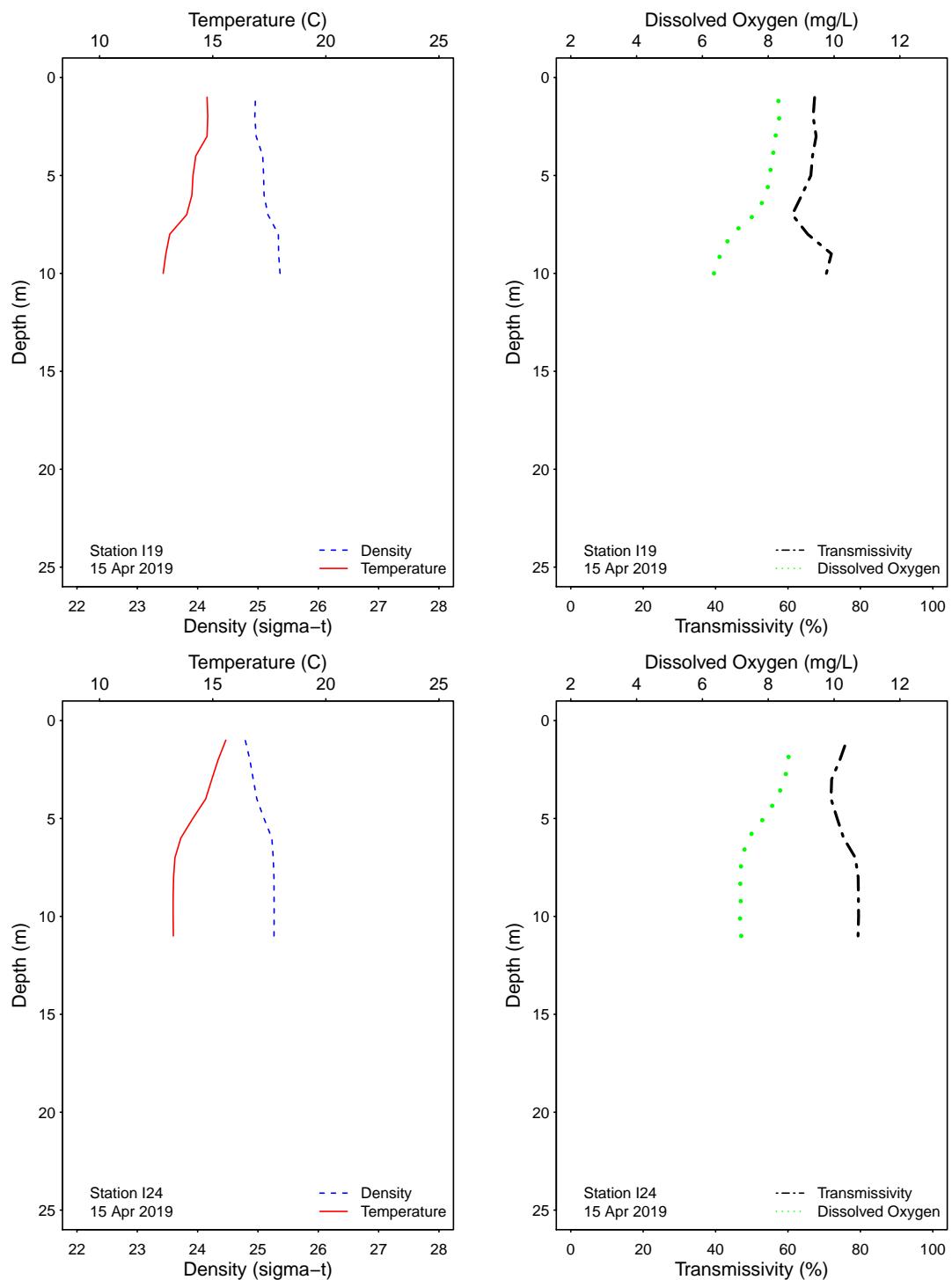


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

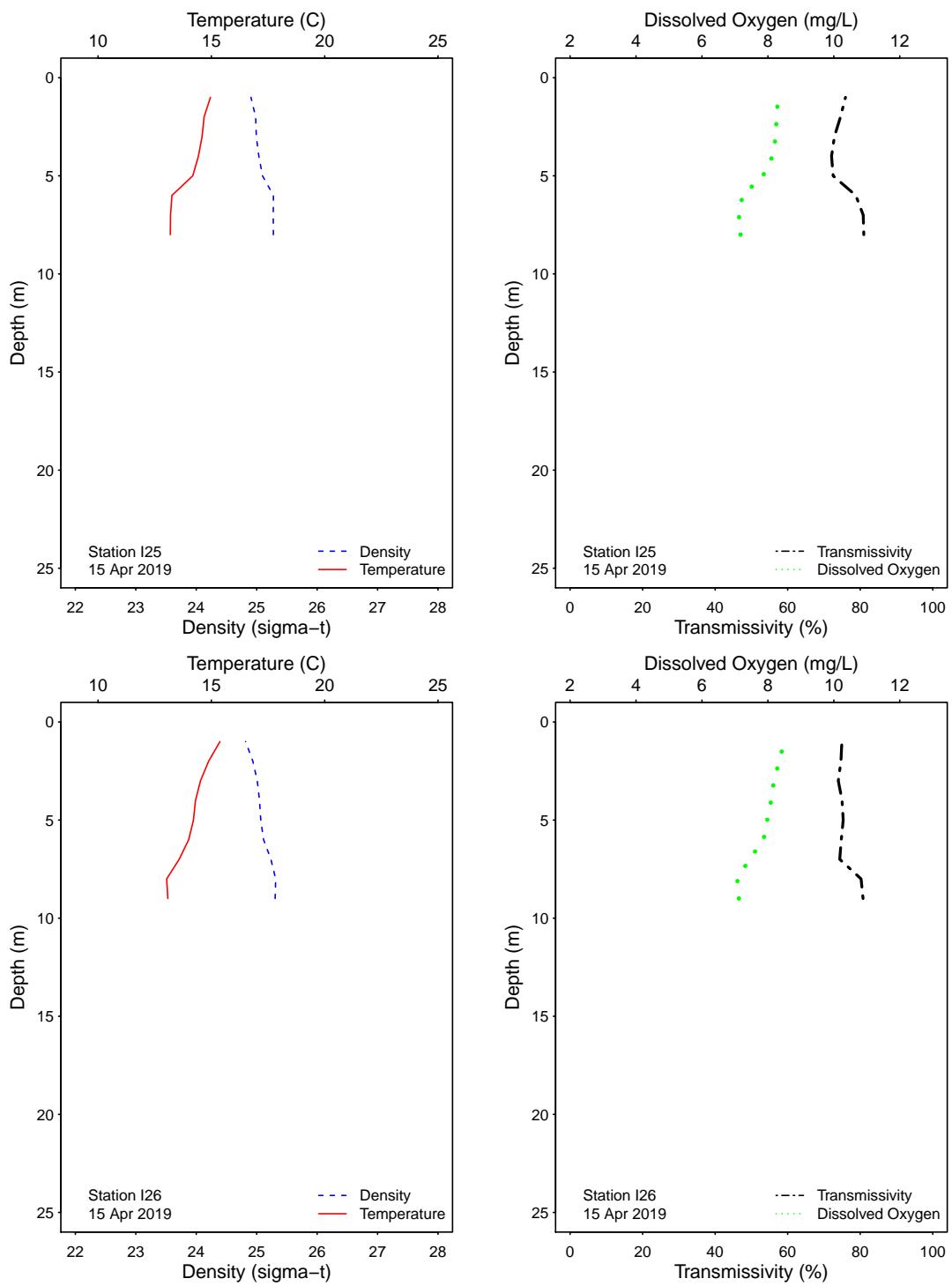


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

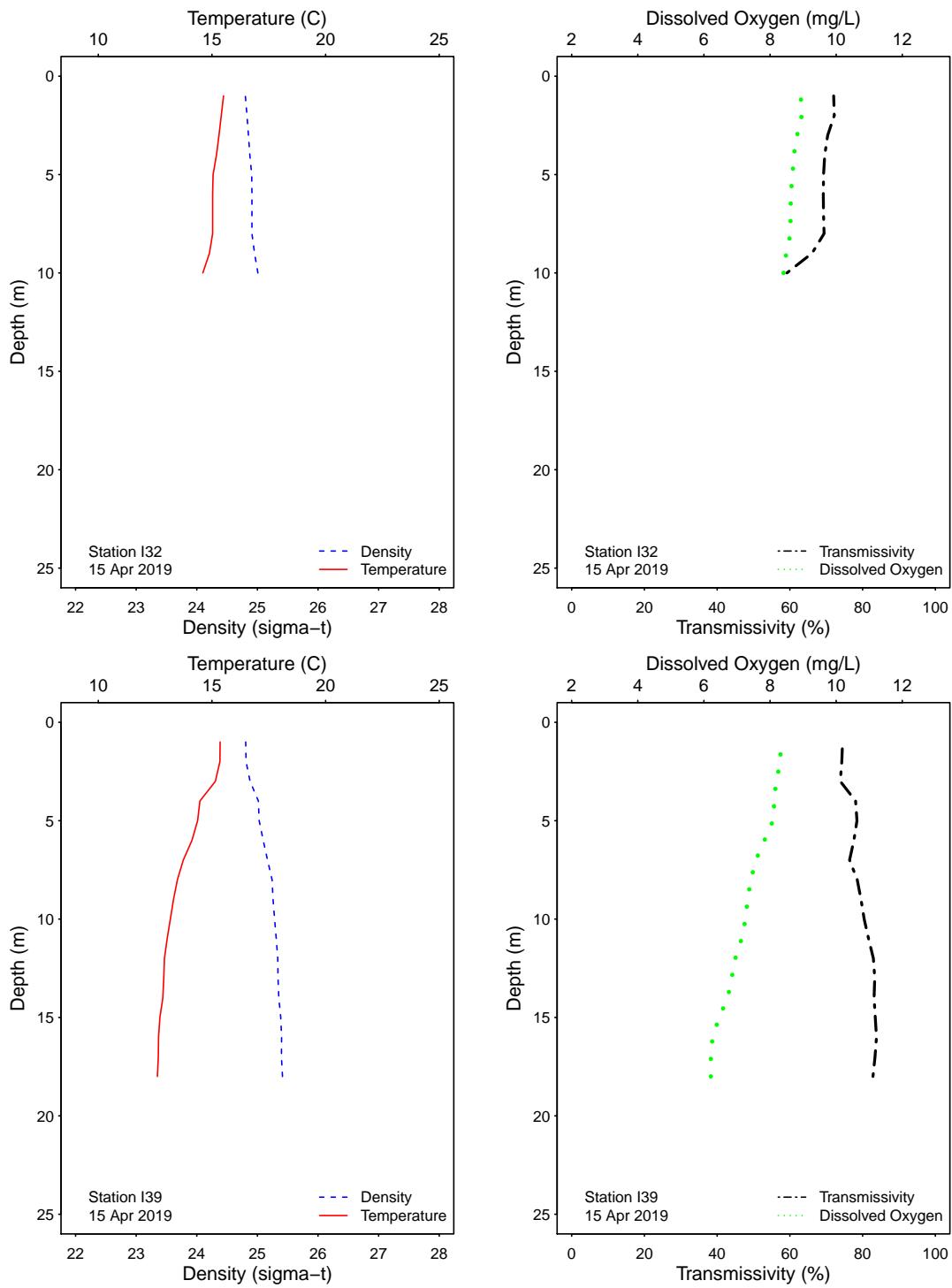


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

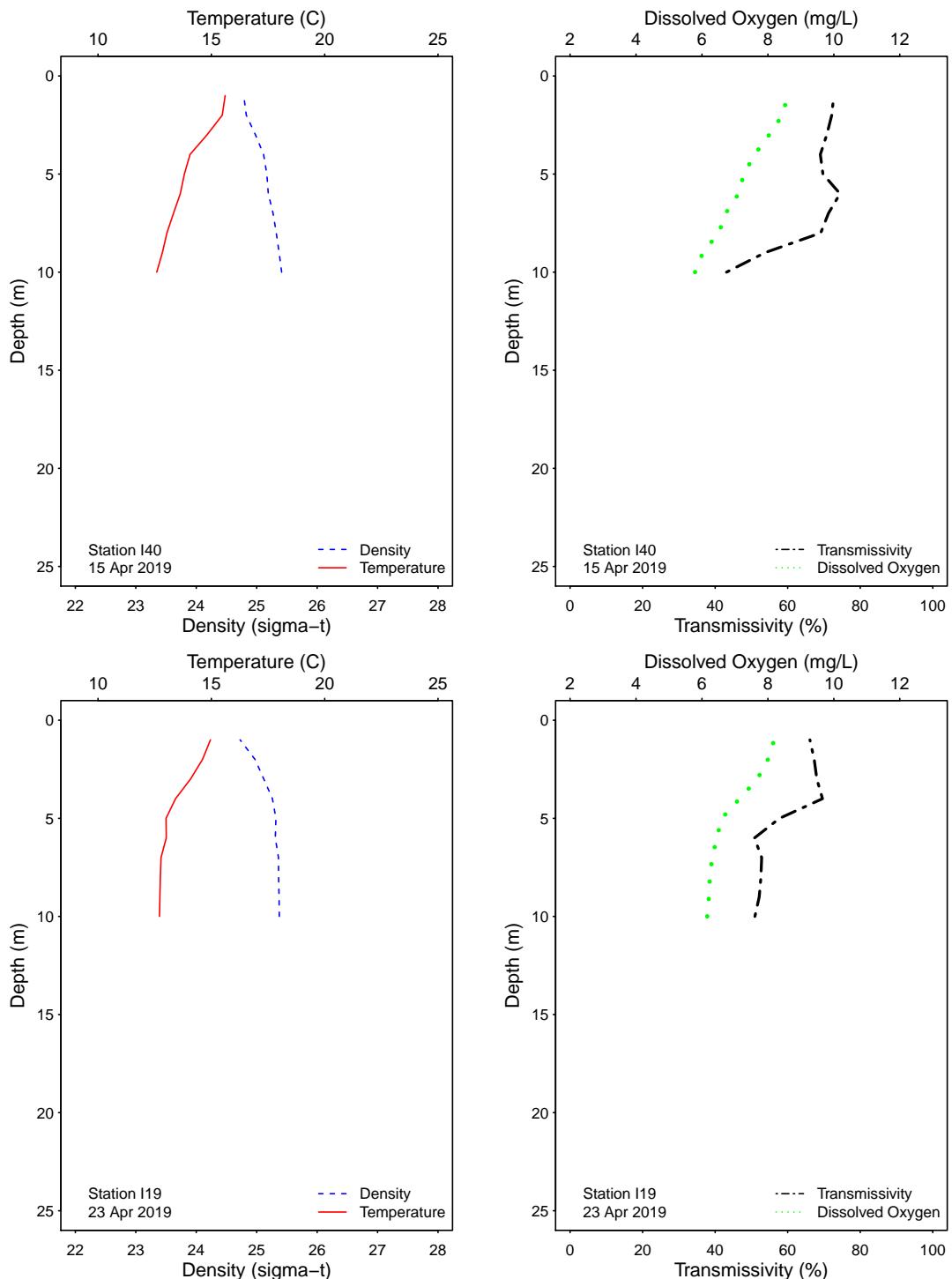


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

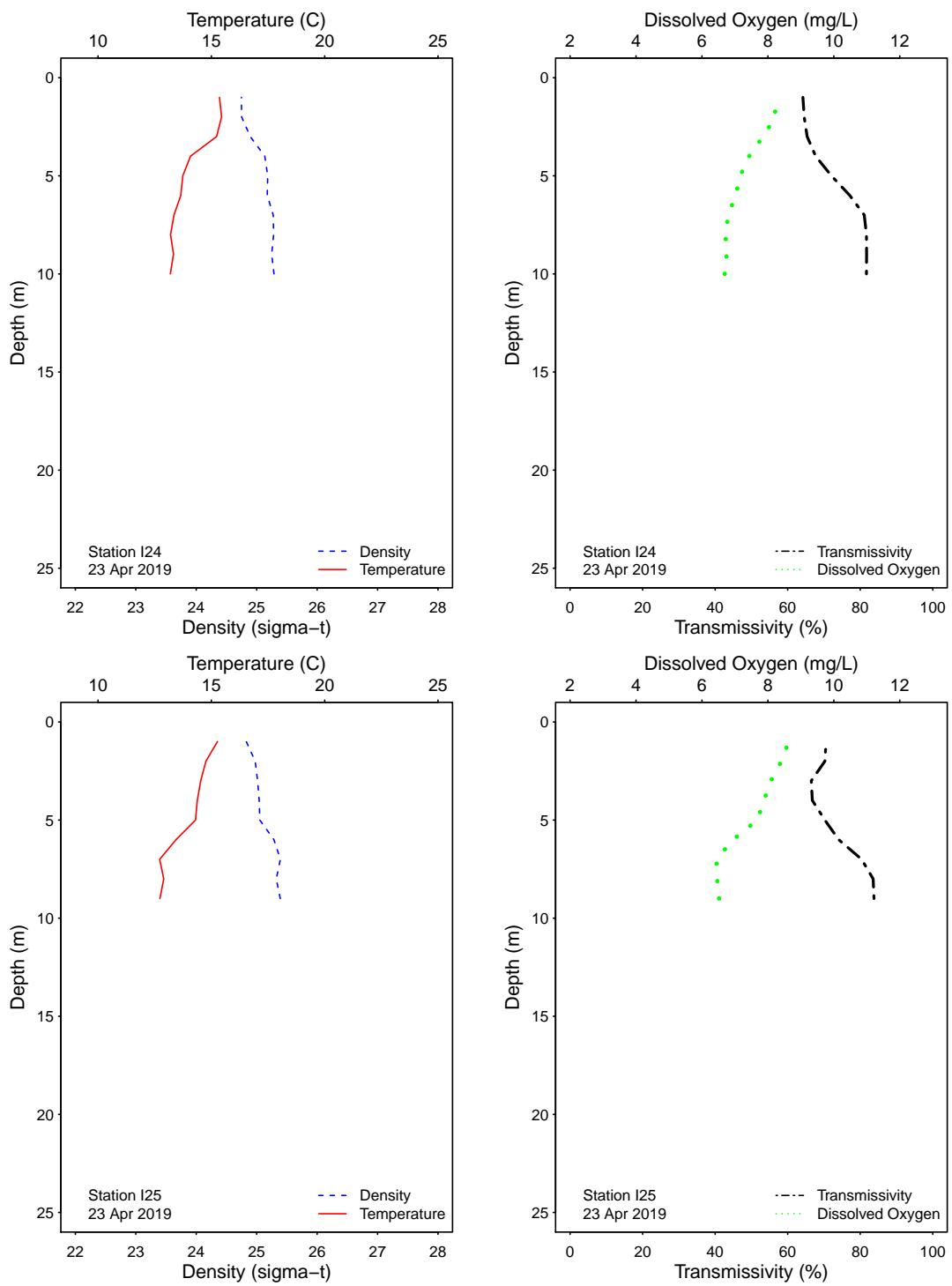


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

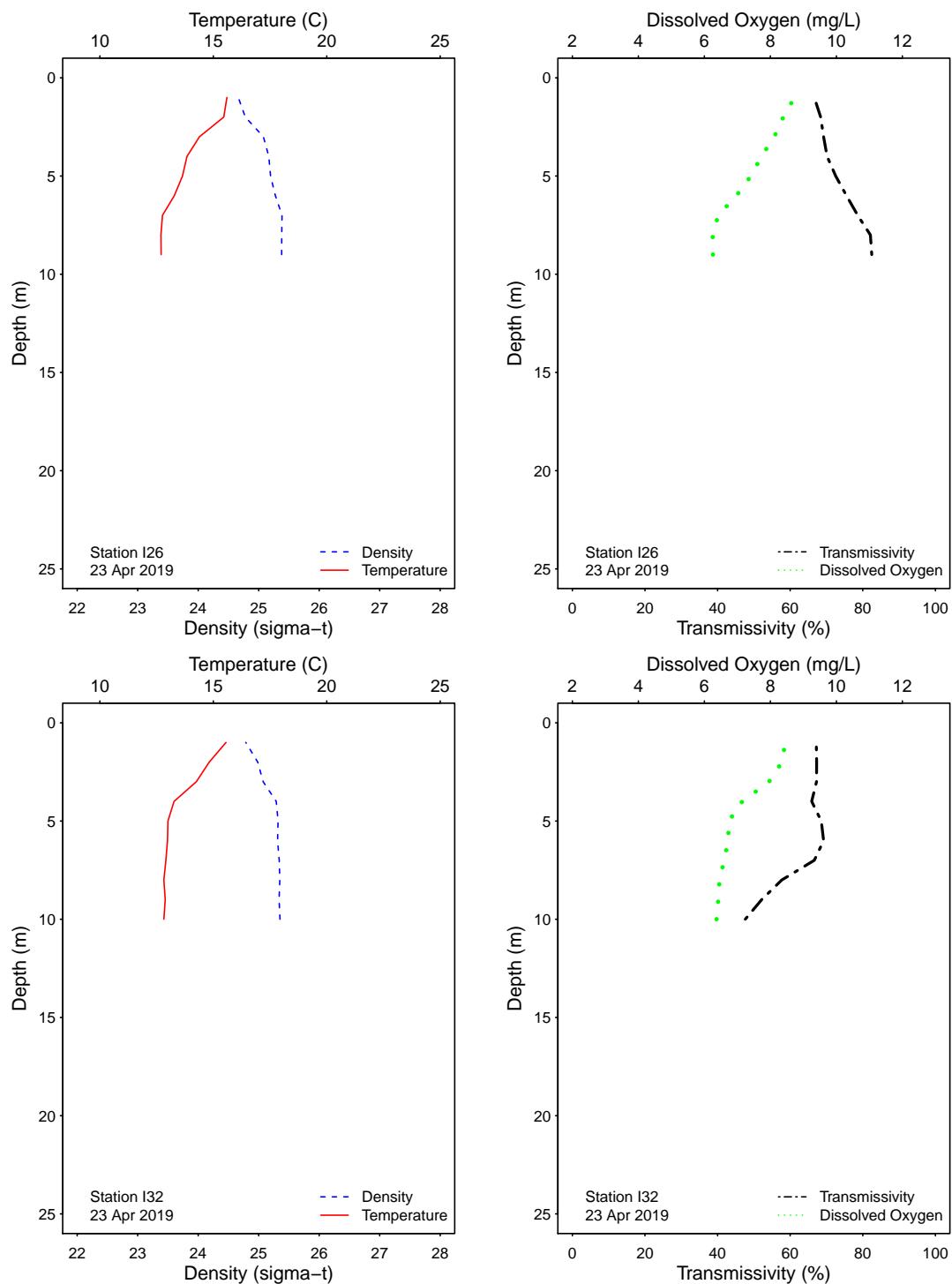


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

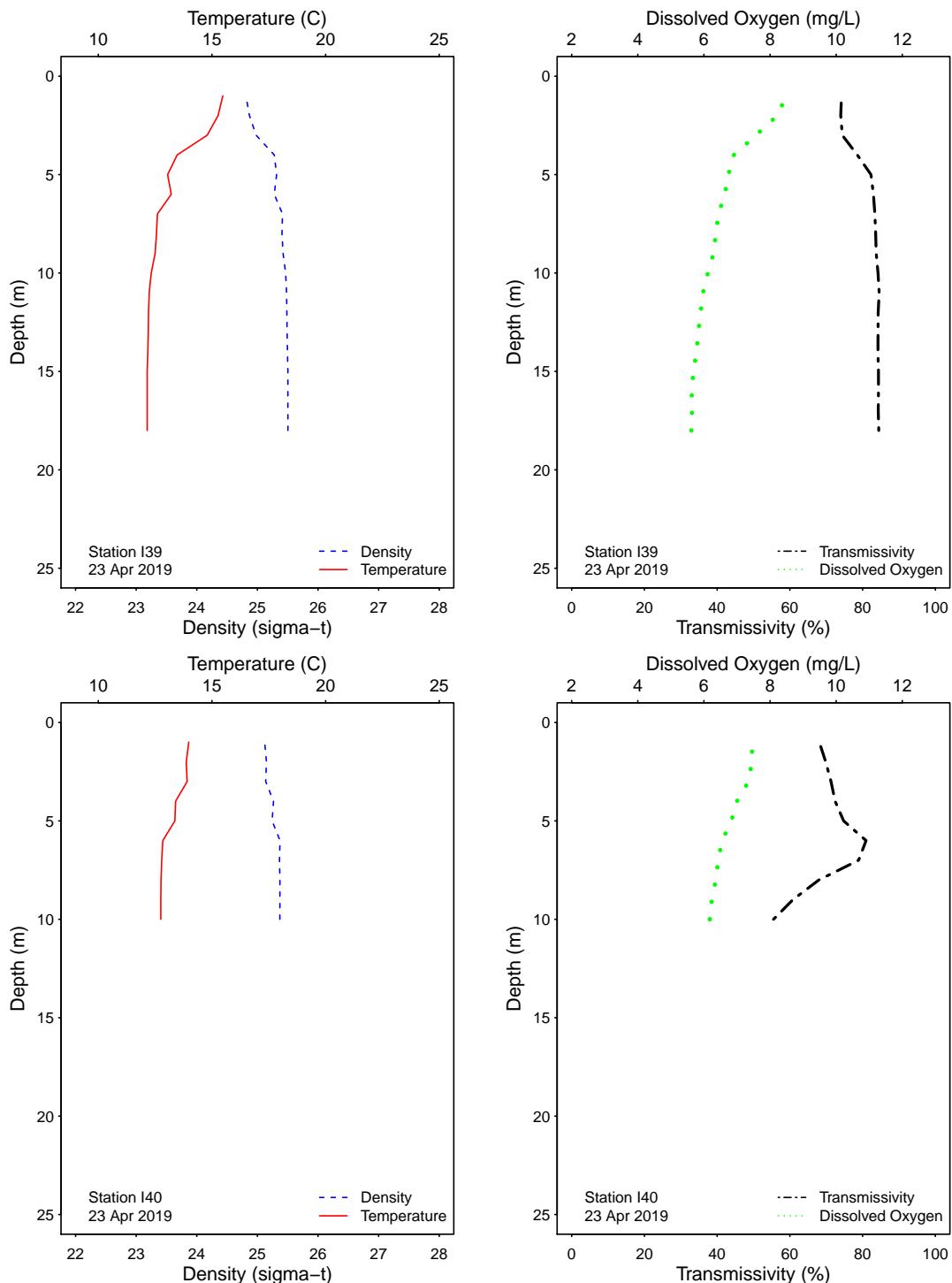


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

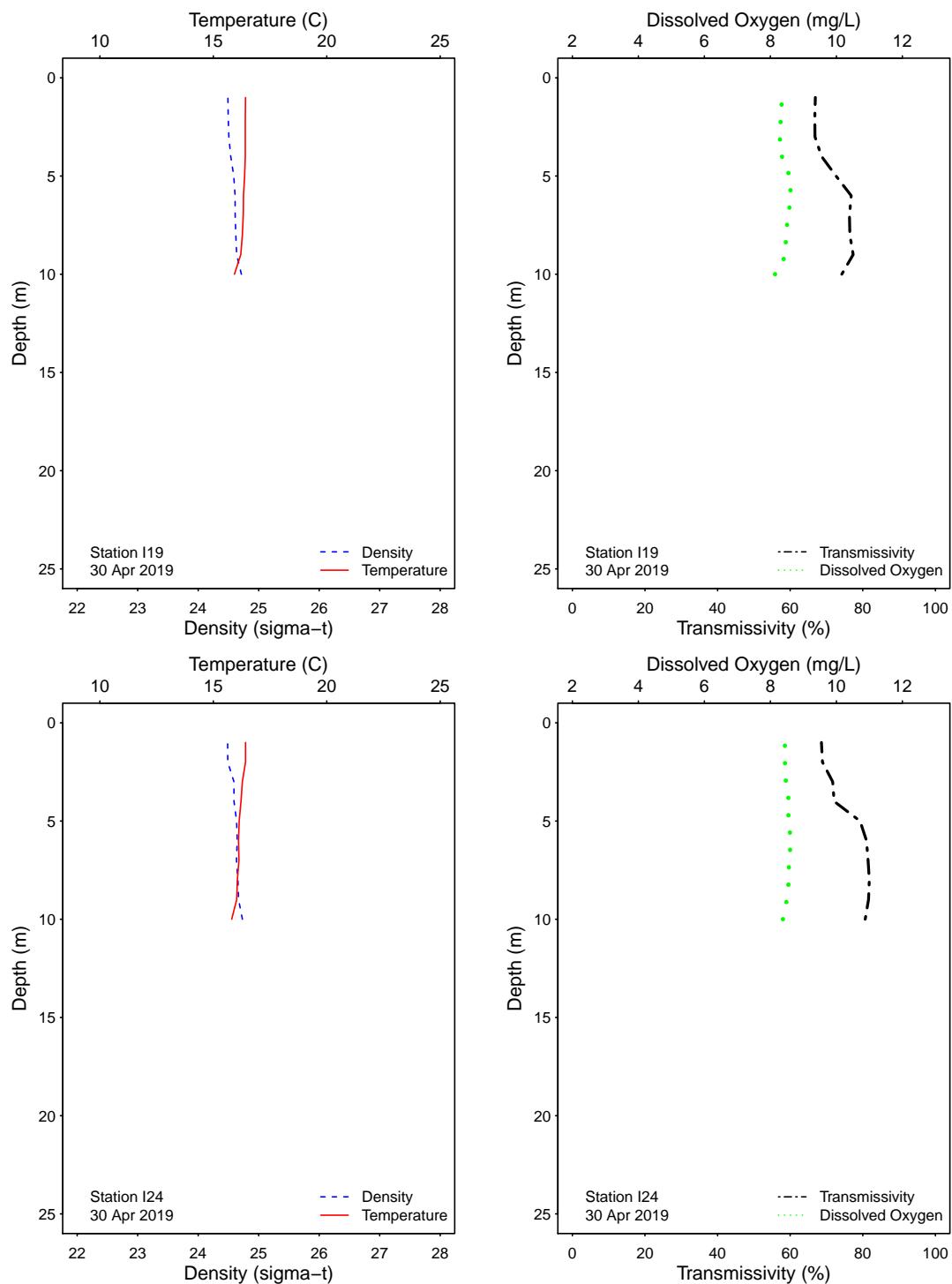


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

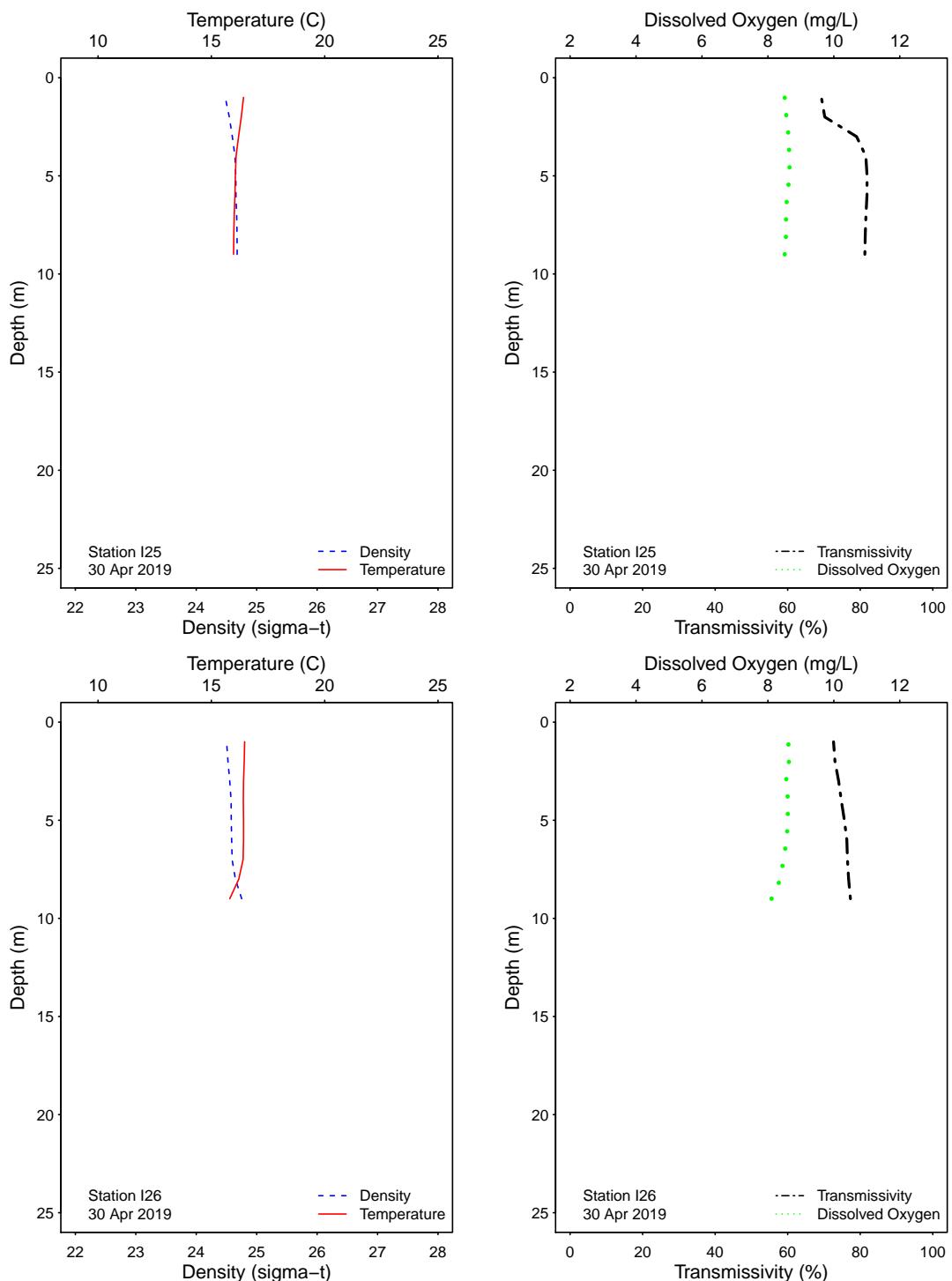


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

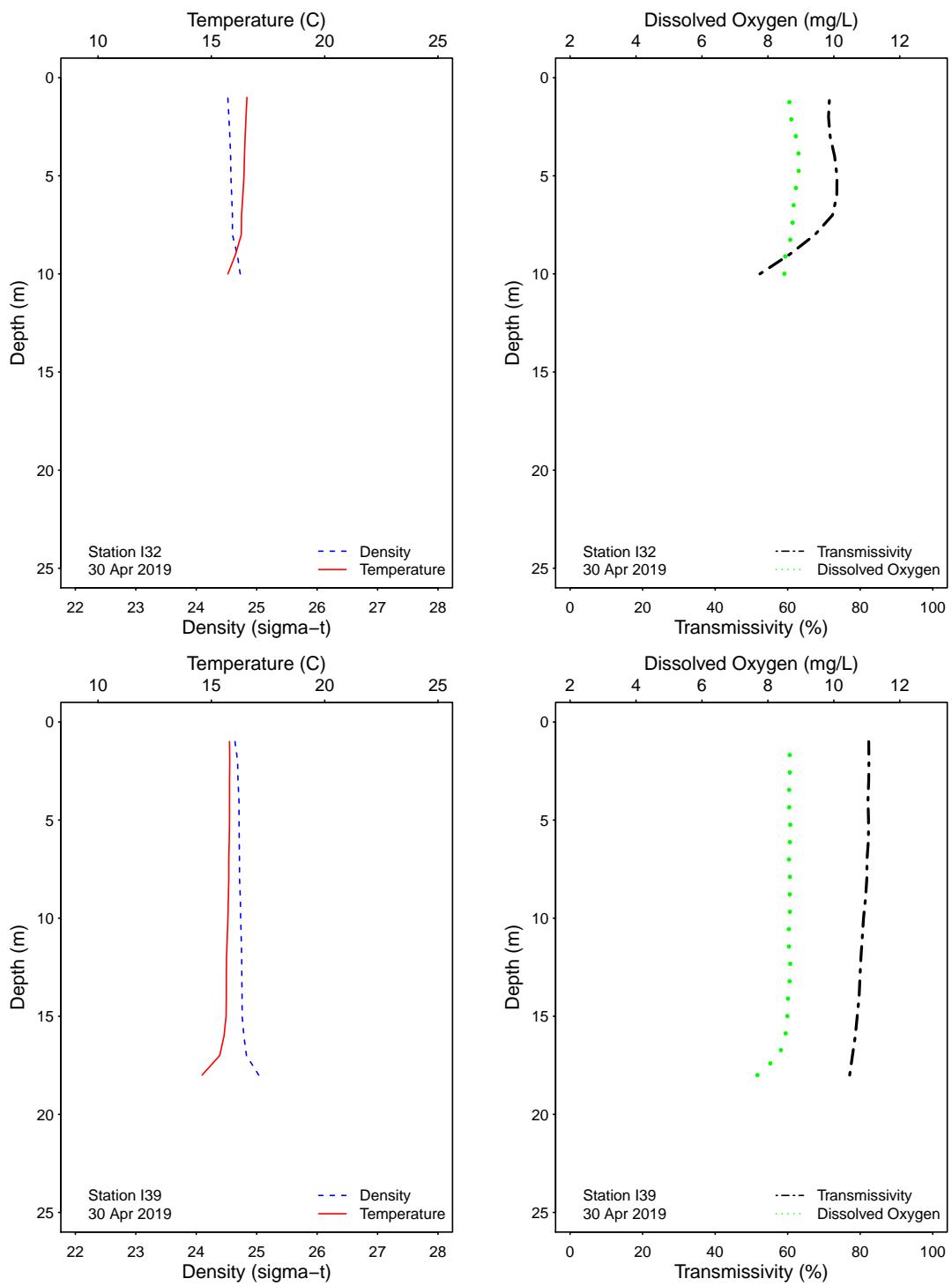


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

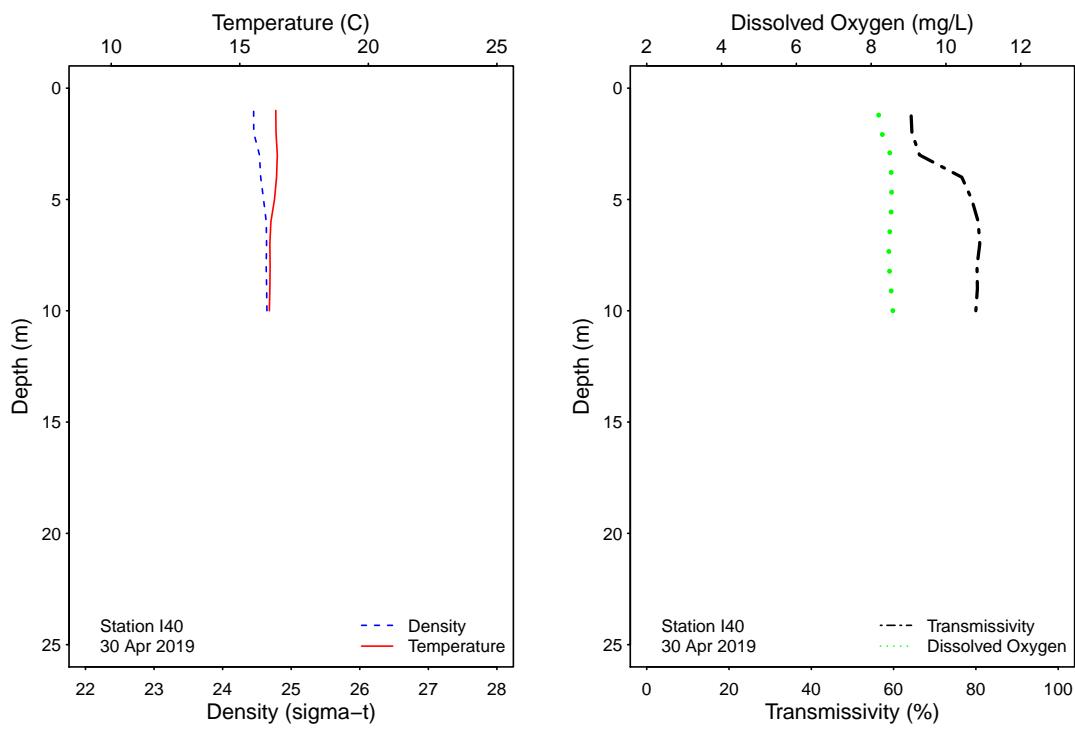


Figure 3.1: Graphics of CTD profile data from the SBOO kelp stations for each sample date.

# **APPENDIX A**

## Quality Assurance



**Table A.1**

Summary of bacteriological quality assurance field and lab duplicate sample analyses at selected SBOO 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>
I19	03 Apr 2019	6	JLT	LAB DUPLICATE	3000e	48	120
I19	08 Apr 2019	6	AE	LAB DUPLICATE	6e	2e	<2
I19	15 Apr 2019	6	JLT	LAB DUPLICATE	<2	<2	<2
I19	23 Apr 2019	6	AE	LAB DUPLICATE	<20	<2	2e
I19	30 Apr 2019	6	AR	LAB DUPLICATE	40e	8e	2e
I40	03 Apr 2019	6	JLT	LAB DUPLICATE	40	2e	2e
I40	08 Apr 2019	6	JLT	LAB DUPLICATE	<2	2e	<2
I40	15 Apr 2019	6	AE	LAB DUPLICATE	<2	<2	<2
I40	23 Apr 2019	6	JLT	LAB DUPLICATE	<2	<2	<2
I40	30 Apr 2019	6	AR	LAB DUPLICATE	60e	2e	6e
S12	02 Apr 2019		JLT	FIELD DUPLICATE	8e	<2	<2
S12	02 Apr 2019		JLT	LAB DUPLICATE	4e	<2	<2
S12	09 Apr 2019		AR	FIELD DUPLICATE	40e	6e	6e
S12	09 Apr 2019		AR	LAB DUPLICATE	<20	6e	2e
S12	16 Apr 2019		AE	FIELD DUPLICATE	<2	<2	<2
S12	16 Apr 2019		AE	LAB DUPLICATE	<2	<2	<2
S12	23 Apr 2019		JLT	FIELD DUPLICATE	18e	2e	<2
S12	23 Apr 2019		JLT	LAB DUPLICATE	12e	12e	<2

ns = not sampled

ND = no data

