

**BROWN'S BAY PACKING COMPANY
BC ENV PERMIT 8124
RECEIVING ENVIRONMENT MONITORING PROGRAM
FOURTH QUARTER 2021**

PREPARED FOR:

*BROWN'S BAY PACKING COMPANY
15007 BROWN'S BAY ROAD
CAMPBELL RIVER, BC. V9H 1N9*

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Summary

Receiving environment monitoring for the fourth quarter of 2021 was completed in Discovery Passage for the Brown's Bay Packing Company effluent outfall. A total of six stations were sampled on November 29, 2021, including a reference station. Sampling occurred to fulfill receiving environment monitoring requirements included as a condition of the BC Ministry of Environment (BC ENV) discharge permit (Permit 8124), to ensure compliance with provincial water quality guidelines. Sampling procedures followed receiving environment monitoring methods outlined in the discharge permit by the British Columbia Ministry of Environment.

Depth profiles for pH, salinity, temperature, and dissolved oxygen were collected *in situ* at each station. This data was used to determine if a pycnocline was present and / or if the plume could be detected and to determine the appropriate sampling depth for the mid-depth water sample. No evidence of the plume was observed at any stations during sampling. For all stations, the mid-depth water sample was collected at 6 m as per the permit instructions. Field measurements of pH, salinity, temperature, dissolved oxygen and lab analysis results were consistent between stations, indicating that effluent from the Brown's Bay processing facility outfall is not having a measurable effect on the water quality parameters within the Discovery Passage receiving environment.

Lab analyses results of water samples collected to measure *Enterococci* counts, ammonia and nitrate concentration were collated and compared to applicable provincial water quality guidelines. All measured parameters at all stations were confirmed to be below water quality guidelines and / or permit specifications.

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1.0 Introduction

Brown's Bay Packing Company is a fish processing facility located north of the City of Campbell River, BC. The facility discharges treated effluent into Discovery Passage via an effluent pipe located on the northwest shore of Brown Bay. In November 2021, Mainstream Biological Consulting Inc. (MBC) conducted environmental monitoring in the receiving environment on behalf of Brown's Bay Packing Co. to satisfy the requirements of their provincial discharge permit issued under the *Environmental Management Act* (Permit #8124).

Permit requirements for the receiving environment monitoring program (REMP) specify that sampling must occur at least once per quarter. Quarters are defined as follows:

- Q1 (Jan 1 – Mar 31)
- Q2 (April 1 – Jun 30)
- Q3 (Jul 15 – Aug 31)
- Q4 (Oct 1 – Dec 31)

A minimum of 30 days must pass between quarterly samplings. In Q3, five rounds of weekly sampling must occur within 30 consecutive days. The quarterly sampling is to be done at different tide cycles such that flood, ebb and slack tides are sampled over the course of the year. An electronic report and data must be submitted to the BC Ministry of Environment (BC ENV).

This sampling event satisfies the fourth quarter sampling requirements with field work completed on November 29, 2021.

1.1 Sample Locations

Sampling was completed in Discovery Passage at station locations specified by the permit (Table 1; Figure 1). Sampling was conducted at the outfall terminus, 15 m in each cardinal direction and at a reference station 1700 m north of the outfall. These locations allow conditions to be monitored at the initial dilution zone (IDZ) determined by Great Pacific Engineering & Environment (2018).

Table 1. GPS coordinates of Brown's Bay Packing REMP sampling stations specified by Permit #8124.

Sample Station	EMS Site Number	Latitude	Longitude
Site 1 (outfall terminus)	E212103	50.16308	-125.37293
Site 2 (15 m north)	E309968	50.16319	-125.37280
Site 4 (15 m south)	E309950	50.16297	-125.37303
Site 6 (15 m east)	E309970	50.16298	-125.37273
Site 8 (15 m west)	E315370	50.16306	-125.37306
Site 10 (reference)	E309953	50.17775	-125.37900

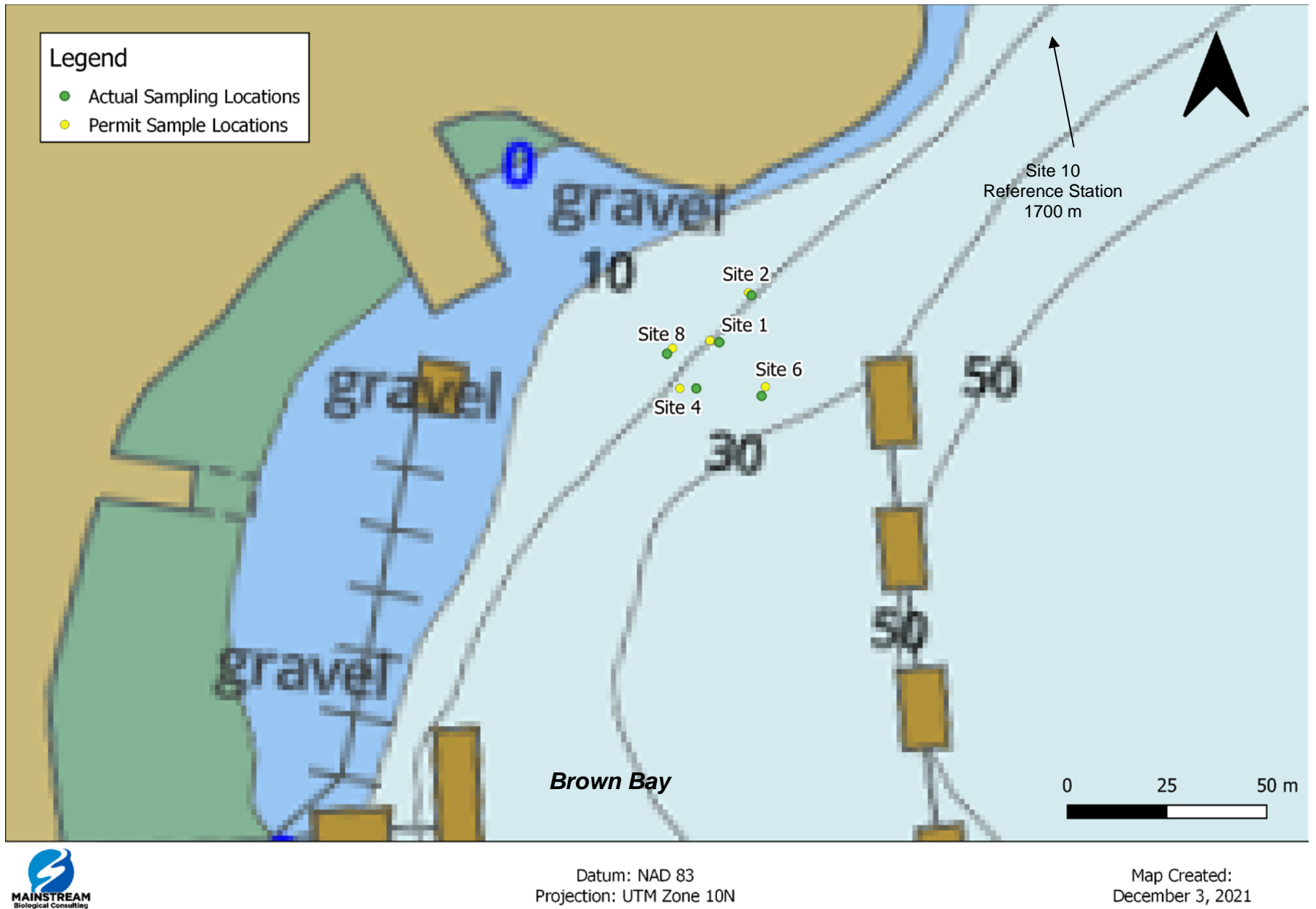


Figure 1. Brown's Bay Packing Co. receiving environment monitoring program sample stations for the fourth quarter of 2021 (November 29, 2021) shown in relation to the monitoring station locations included in the discharge permit (8124).

2.0 Methods

All *in situ* measurements and water sample collection were completed according to procedures outlined in the British Columbia Field Sampling Manual (2013 Edition) and as described in the discharge permit.

Field sampling was completed using a 17' whaler-style boat as a work platform. A three-person crew completed the required field activities. The prescribed sample stations were located using a handheld GPS unit. The boat operator ensured that the boat remained in position at the station so that *in situ* monitoring and water sample collection could be completed, repositioning as needed to the best of their abilities. Sampling was completed at all six stations while processing was taking place, and duplicate samples were collected for two grab samples. A trip blank was also included as a quality control measure.

In situ water quality data for water temperature, dissolved oxygen, pH, and salinity was collected using a YSI Professional Plus Quatro multi-parameter meter. The YSI meter was checked and calibrated in the office prior to the field sampling event. Measurements were collected at 1 m depth, then every 2 m down to 1 m above the seabed. Depths were determined using a depth sounder. Data was recorded on a field data sheet for each station and reviewed in the field to determine if the location of the effluent plume could be detected.

Three grab samples were collected at each station for lab analysis of total ammonia, nitrate-N and *Enterococci spp.* at depths of 1 m below surface, within the discharge plume or 6 m depth if the plume was not located, and 1 m above the seabed. Samples were collected using a horizontal Van Dorn water sampler, which allowed for discrete samples to be collected at the specified depths. A lead weight was secured 1 m below the Van Dorn sampler to ensure the bottle did not contact the bottom. The sampler was then lowered slowly to the bottom and stopped when the weight made contact. Two duplicate sample bottles were filled from the same Van Dorn volume as the original samples. Samples were collected and handled according to specifications provided by the laboratory (Bureau Veritas), who completed the laboratory analysis. The filled sample bottles were stored in clean coolers with ice packs during field sampling and maintained at the appropriate temperature for transportation to the lab.

If exceedances of applicable water quality guidelines were detected for any parameter analysed in the grab samples at Sites 2, 4, 6, or 8, the discharge permit stipulates that a second round of sampling must occur within 30 days and include additional sites 40 m in each direction from the outfall. There were no exceedances of the applicable water quality guidelines in any samples therefore no additional sampling was required.

A test for hydrogen peroxide was conducted for each grab sample with a LaMotte SMART3 colorimeter in the field. A correction factor was determined by scanning a sample of distilled water prior to entering the field. The correction factor was then subtracted from the field results to obtain the final result. The site performance objective (SPO) specified in the effluent discharge permit for hydrogen peroxide is 0.4 mg/L and additional sampling would be required if the final result exceeded the SPO. No samples exceeded the SPO during this monitoring event and therefore no additional hydrogen peroxide sampling was conducted.

3.0 Results

The results of field and lab measurements of the water quality in the receiving environment associated with the Brown's Bay Packing facility have been separated into two sections. The receiving environment field data is presented in Section 3.1 and Appendix 1 as supporting information for the determination of the presence or absence of a pycnocline during water sample collection periods. The lab analysis results for nitrogen compounds and *Enterococci spp.* in the grab samples collected from the receiving environment and reference stations are presented in Section 3.2 for comparison to applicable provincial water quality parameters. Field results for hydrogen peroxide testing are summarized in Section 3.2. Field sampling was completed on November 29, 2021 while processing was taking place at the plant. Tide conditions for the relevant sample period can be found in Table 2.

Table 2. Tides in Brown Bay receiving environment on November 29, 2021.

Date	Sample Period		Tidal Phase	Predicted Range (m)	
	Start	End		Start	End
November 29, 2021	08:00	12:30	Flood	2.0	4.27

3.1 In Situ Water Column Profile Data

Environmental data was collected at each station to create depth profiles for temperature, dissolved oxygen concentration, pH, and salinity. Data collected for each station is provided in tabular and chart format in Appendix 1.

The depth profiles for *in situ* water quality measurements did not show an obvious change through the water column, and the effluent plume could not be detected at any of the stations during the sampling event. Measurements of dissolved oxygen, pH, salinity and temperature remained consistent between stations, indicating that water at these locations is well mixed and effluent from the Brown's Bay Packing Co. is not measurably affecting water chemistry within Discovery Passage.

3.2 Grab Sample Data

Analytical results provided by Bureau Veritas (Report C086815) are presented in the following sections relative to applicable provincial water quality guidelines and original lab reports are in Appendix 2. Water samples were collected at three depths:

- Surface – 1 m depth
- Mid – within the effluent plume if detected (did not occur) or at 6 m in depth if the plume was not evident
- Bottom – 1 m above the seabed

As the depth profiles did not show the presence of a pycnocline and the effluent plume was not evident, all mid-depth water samples were collected at 6 m.

Quality assurance procedures completed during the Brown's Bay Packing Co. November 29, 2021 REMP included lab analysis of a trip blank and two duplicates. Results of these analyses are provided within the respective sections for each parameter.

3.2.1 Receiving Environment Nutrients

As per permit requirements, grab samples were analysed for total ammonia and nitrate-N. Applicable water quality guidelines for these parameters are included in Table 3.

There are no BC Ministry of Environment (MOE) water quality guidelines for acute exposure to nitrate for marine aquatic life. The Canadian Council of Ministers of the Environment (CCME) guideline is 1500 mg/L for acute exposure to nitrate, so a comparison to the chronic threshold (3.7 mg/L) was made. All nitrate concentrations from November 29, 2021 were 0.406 mg/L or below (Table 3), well below the BC WQG chronic and CCME acute and chronic thresholds for exposure to nitrate, indicating no concern for aquatic life related to this nutrient. Results at all sampling stations were similar, and comparable to those obtained at the reference station (Station 10).

Provincial guidelines for total ammonia are dependent on salinity, temperature, and pH. For the range of these parameters encountered on November 29, 2021, the acute ammonia threshold would be 13.71 mg/L. Results for total ammonia concentration at all monitoring locations were below the acute and chronic guidelines and were comparable to the reference station. Results for both duplicate samples were comparable to their corresponding sample.

3.2.2 Hydrogen Peroxide (H₂O₂)

Permit specifications for Brown's Bay Packing Co. require H₂O₂ to be below 0.4 mg/L in the receiving environment, measured at the 15m IDZ stations. Additional sampling is required if the permit specifications are exceeded and there are no provincial water quality guidelines for H₂O₂. The lower limit for accurately detecting H₂O₂ was 0.02 mg/L and sampled sites were below 0.02 mg/L. Hydrogen peroxide results are summarized in Table 4 with none of the samples exceeding the permit threshold.

3.2.3 Enterococci

Water quality guidelines applicable to the Brown's Bay Packing Co. receiving environment for *Enterococci* bacteria and lab results for the collected water samples are presented in Table 5. Results at most stations indicated *Enterococci* levels below the detection level of <1.0. All samples collected during the 2021 second quarter monitoring event were well below the water quality guideline for recreation. Lab analysis results of the field duplicates produced similar results between samples.

Table 3. Summary of nutrient lab results from Brown's Bay Packing outfall REMP collected on November 29, 2021 for the fourth quarter receiving environment monitoring required under the discharge permit for the Brown's Bay Packing Company outfall.

Station	Depth	Nutrients	
		Nitrate (N) mg/L	Total Ammonia (N) mg/L
1	surface (1 m)	0.392	0.069
	mid (6 m)	0.397	0.071
	Bottom (24 m)	0.399	0.068
	Bottom Dup 1	0.396	0.060
2	surface (1 m)	0.402	0.068
	mid (6 m)	0.406	0.074
	Bottom (26 m)	0.404	0.068
	Bottom Dup 2	0.400	0.067
4	surface (1 m)	0.405	0.064
	mid (6 m)	0.408	0.066
	Bottom (26 m)	0.404	0.071
6	surface (1 m)	0.403	0.062
	mid (6 m)	0.404	0.071
	Bottom (29 m)	0.404	0.064
8	surface (1 m)	0.403	0.064
	mid (6 m)	0.405	0.054
	Bottom (24 m)	0.403	0.057
10	surface (1 m)	0.403	0.065
	mid (6 m)	0.400	0.063
	Bottom (28 m)	0.400	0.062
	Maximum	0.406	0.074
	Minimum	0.392	0.054
	RDL	0.020	0.0050
	Trip Blank	<0.020	<0.0050
	BC WQG acute	None proposed	13.7 ¹
	BC WQG chronic (30-day average)	3.7 ²	1.86 ¹
	CCME WQG acute	1500	None proposed
	CCME WQG chronic	200	None proposed

¹MOE 2009. Based on salinity of 20 g/kg, pH 7.45, and temperature 9.1°C, as documented during in situ depth profiling.

²Interim guideline

WQG = water quality guidelines for exposure to marine aquatic life

RDL = reportable detection limit

Table 4. Field results for H₂O₂ (mg/L) from samples collected on November 29, 2021 for the fourth quarter receiving environment monitoring required under the discharge permit for the Brown's Bay Packing Company outfall.

Station	Depth	H₂O₂ (mg/L)
1	Surface (1 m)	<0.02
	Mid (6 m)	<0.02
	Bottom (24 m)	<0.02
	Bottom Dup 1	<0.02
2	Surface (1 m)	<0.02
	Mid (6 m)	<0.02
	Bottom (26 m)	<0.02
	Bottom Dup 2	<0.02
4	Surface (1 m)	<0.02
	Mid (6 m)	<0.02
	Bottom (26 m)	<0.02
6	Surface (1 m)	<0.02
	Mid (6 m)	<0.02
	Bottom (29 m)	<0.02
8	Surface (1 m)	<0.02
	Mid (6 m)	<0.02
	Bottom (24 m)	<0.02
10	Surface (1 m)	<0.02
	Mid (6 m)	<0.02
	Bottom (28 m)	<0.02
Reportable detection limit		0.02

Table 5. Lab results of *Enterococci* counts (CFU/100 ml) from samples collected on November 29, 2021 for the fourth quarter receiving environment monitoring for Brown's Bay Packing outfall.

Station	Depth	<i>Enterococcus spp.</i> (CFU/100mL)
1	Surface (1 m)	<1.0
	Mid (6 m)	<1.0
	Bottom (24 m)	<1.0
	Bottom Dup 1	<1.0
2	Surface (1 m)	<1.0
	Mid (6 m)	<1.0
	Bottom (26 m)	<1.0
	Bottom Dup 2	<1.0
4	Surface (1 m)	<1.0
	Mid (6 m)	<1.0
	Bottom (26 m)	<1.0
6	Surface (1 m)	<1.0
	Mid (6 m)	<1.0
	Bottom (29 m)	<1.0
8	Surface (1 m)	<1.0
	Mid (6 m)	<1.0
	Bottom (24 m)	<1.0
10	Surface (1 m)	<1.0
	Mid (6 m)	<1.0
	Bottom (28 m)	<1.0
	maximum	<1.0
	minimum	<1.0
	Reportable Detection Limit	1.0
	Recreational WQG (single sample) ³	≤ 70
	Recreational WQG (5 sample minimum) ³	Geometric mean ≤ 35

WQG = Water Quality Guideline

³British Columbia Ministry of Environment and Climate Change Strategy 2019

4.0 Discussion and Conclusions

Total ammonia and nitrate concentrations in the receiving environment were below water quality guidelines at all stations. Nutrient concentrations at sample stations were comparable to the reference station. Field duplicates for nutrient concentration were comparable to their corresponding sample indicating consistent sampling procedure.

Lab analysis results for *Enterococci* for all sample stations were below guidelines for recreational contact. Hydrogen peroxide concentration were measured at all sites, including reference station. The stations measured below the site performance objective.

The field blank lab analysis results for nutrients (Ammonia and Nitrate) were below reportable detection limits and the field duplicates were comparable to their corresponding sample for all parameters.

Results from sampling on November 29, 2021 indicate that effluent from the Brown's Bay processing facility has not caused induced changes in *Enterococci* counts, nitrogen compounds or hydrogen peroxide concentration in the receiving environment when compared to background levels. All water quality results in the receiving environment samples were well below guidelines for the protection of marine aquatic life.

5.0 References

British Columbia Ministry of Environment and Climate Change Strategy. 2019. B.C. Recreational Water Quality Guidelines: Guideline Summary. Water Quality Guideline Series, WQG-02. Prov. B.C., Victoria B.C.

Canadian Council of Ministers of the Environment (CCME). 2012. Water Quality Guidelines for the Protection of Aquatic Life.

Great Pacific Engineering & Environment. 2018. Brown's Bay Packing: Dilution Modelling Study.

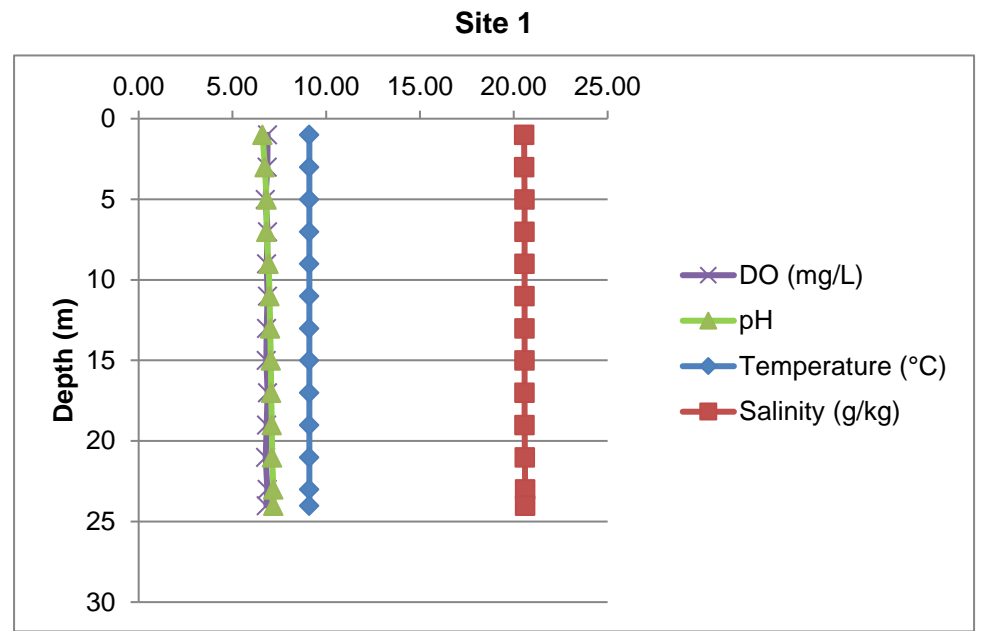
Ministry of Environment (MOE). 2009. Water Quality Guidelines for Nitrogen (Nitrate, Nitrite, and Ammonia). Overview Report Update.

Province of British Columbia. 2013. British Columbia Field Sampling Manual Part E. Water and Wastewater Sampling. Victoria, BC, Canada. 148 pp.

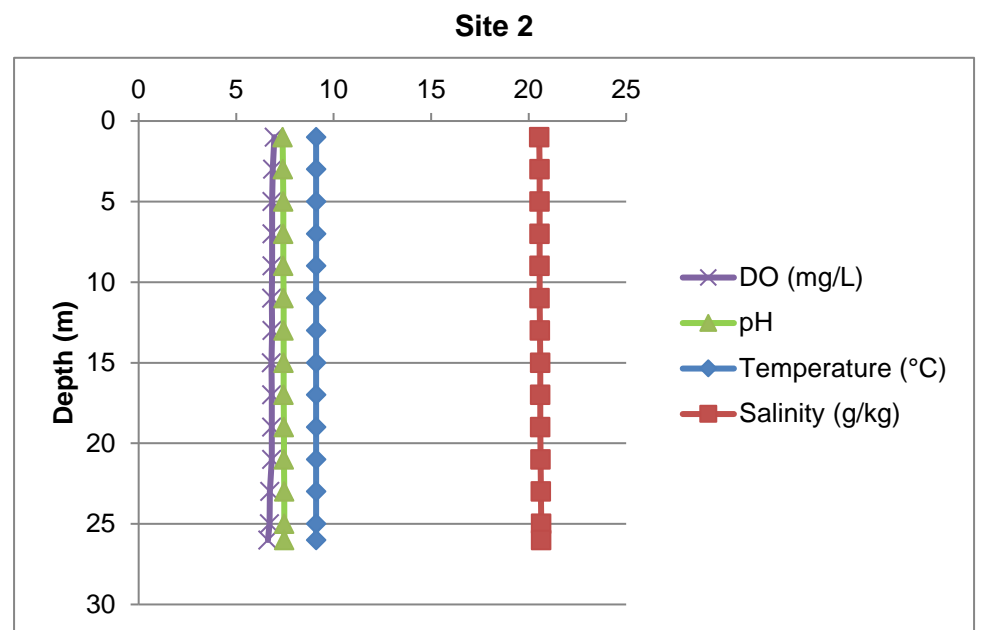
WWW Tide and Current Predictor. 2021. Brown Bay, Reference: Chart Datum.
<http://tbone.biol.sc.edu/tide/tideshow.cgi>

Appendix 1 - Brown's Bay REMP Depth Profiles: Fourth Quarter November 29, 2021

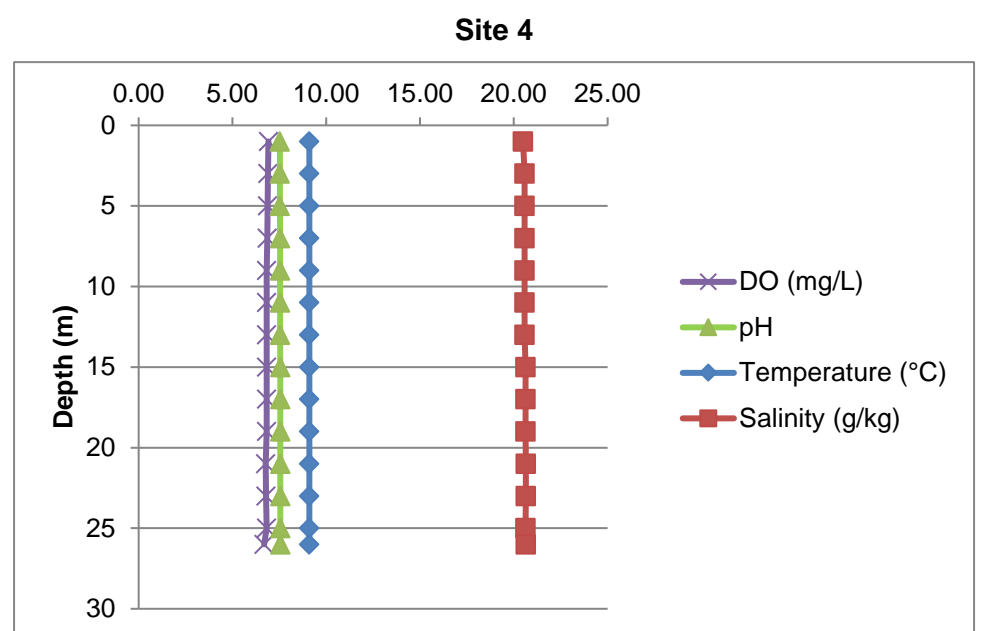
Site 1				
Sample Depth (m)	DO (mg/L)	Sal (g/kg)	Temp (°C)	pH
1	6.87	20.55	9.1	6.61
3	6.86	20.56	9.1	6.73
5	6.76	20.58	9.1	6.82
7	6.88	20.58	9.1	6.81
9	6.82	20.57	9.1	6.93
11	6.87	20.58	9.1	6.98
13	6.83	20.58	9.1	7.02
15	6.80	20.58	9.1	7.04
17	6.87	20.58	9.1	7.07
19	6.83	20.58	9.1	7.09
21	6.77	20.59	9.1	7.12
23	6.86	20.60	9.1	7.18
24	6.80	20.60	9.1	7.19



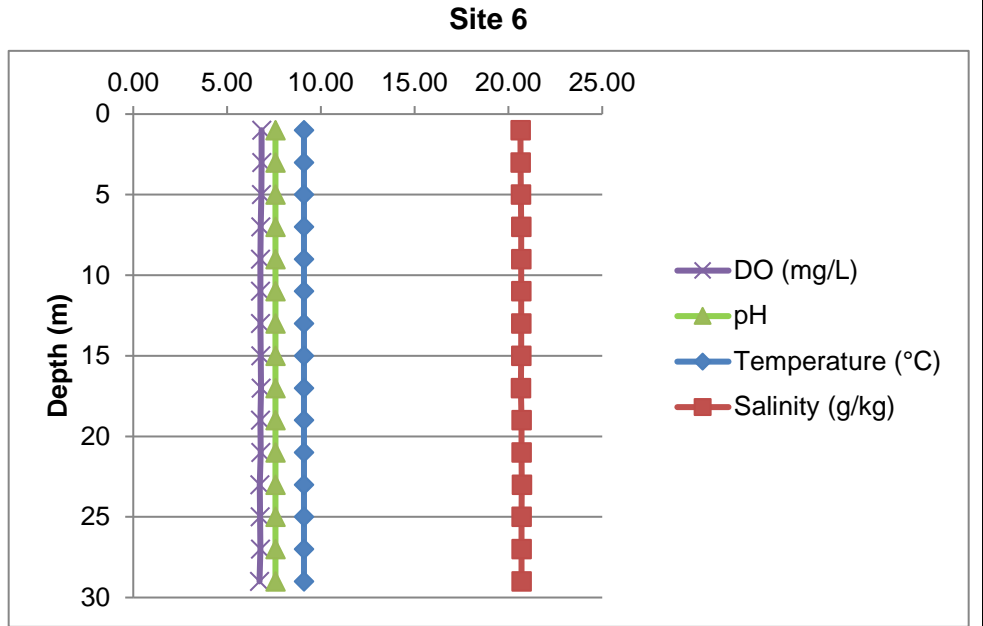
Site 2				
Sample Depth (m)	DO (mg/L)	Sal (g/kg)	Temp (°C)	pH
1	6.96	20.54	9.1	7.38
3	6.88	20.56	9.1	7.4
5	6.85	20.56	9.1	7.41
7	6.85	20.57	9.1	7.42
9	6.85	20.57	9.1	7.42
11	6.83	20.57	9.1	7.43
13	6.84	20.58	9.1	7.43
15	6.81	20.59	9.1	7.44
17	6.82	20.59	9.1	7.44
19	6.83	20.60	9.1	7.45
21	6.83	20.61	9.1	7.45
23	6.73	20.63	9.1	7.46
25	6.71	20.64	9.1	7.46
26	6.63	20.65	9.1	7.47



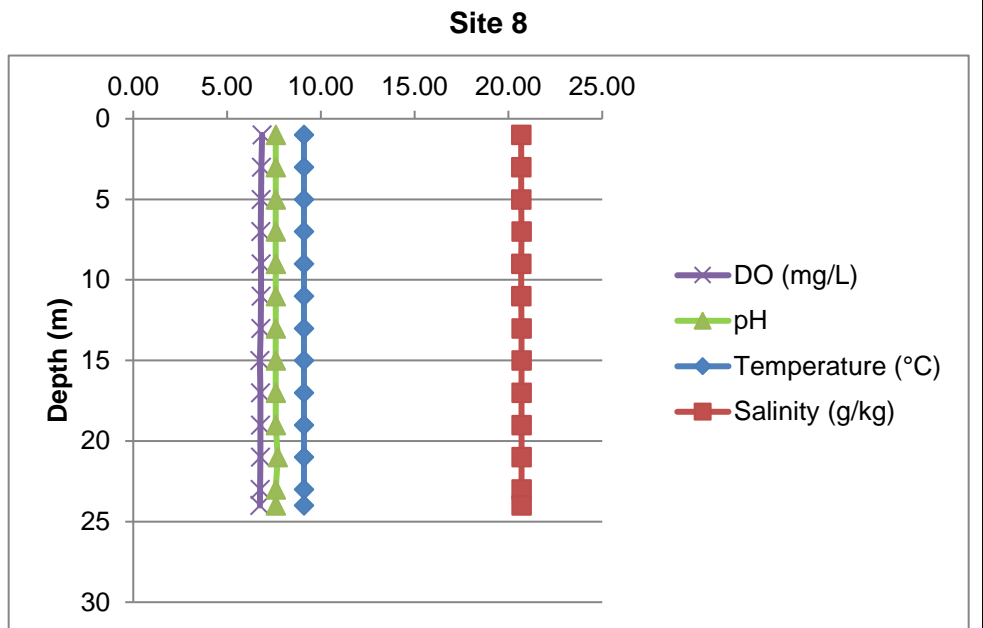
Site 4				
Sample Depth (m)	DO (mg/L)	Sal (g/kg)	Temp (°C)	pH
1	6.92	20.49	9.1	7.53
3	6.89	20.57	9.1	7.53
5	6.88	20.57	9.1	7.53
7	6.86	20.58	9.1	7.54
9	6.83	20.58	9.1	7.54
11	6.83	20.58	9.1	7.54
13	6.83	20.58	9.1	7.54
15	6.83	20.62	9.1	7.55
17	6.82	20.63	9.1	7.55
19	6.83	20.63	9.1	7.55
21	6.77	20.64	9.1	7.55
23	6.79	20.64	9.1	7.55
25	6.82	20.63	9.1	7.55
26	6.69	20.64	9.1	7.55



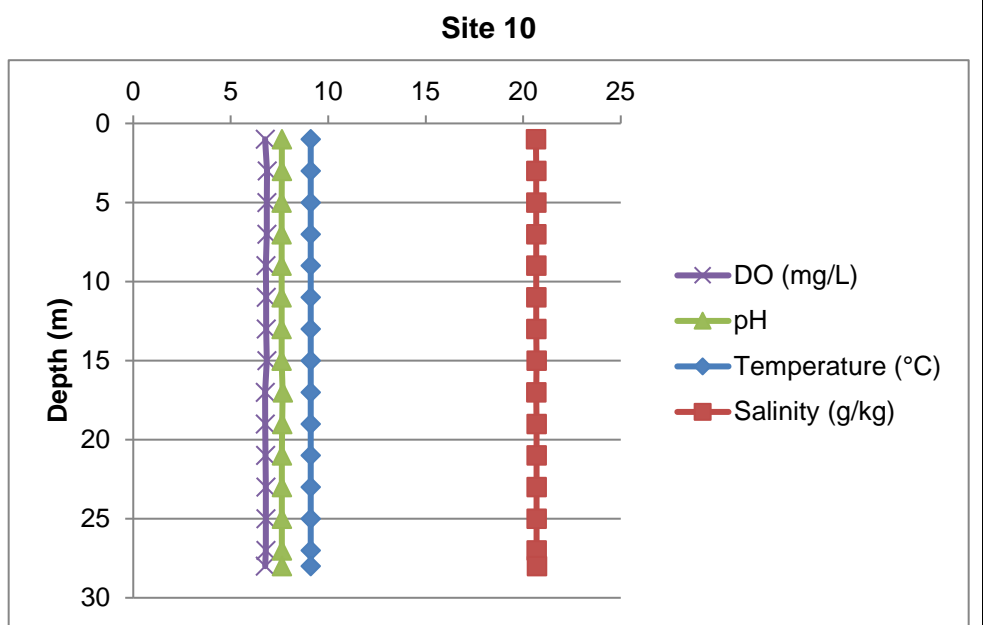
Site 6				
Sample Depth (m)	DO (mg/L)	Sal (g/kg)	Temp (°C)	pH
1	6.84	20.64	9.1	7.58
3	6.84	20.65	9.1	7.58
5	6.82	20.67	9.1	7.58
7	6.80	20.68	9.1	7.58
9	6.77	20.68	9.1	7.58
11	6.77	20.68	9.1	7.58
13	6.78	20.68	9.1	7.58
15	6.80	20.68	9.1	7.58
17	6.81	20.66	9.1	7.58
19	6.78	20.69	9.1	7.58
21	6.80	20.70	9.1	7.58
23	6.75	20.71	9.1	7.58
25	6.76	20.70	9.1	7.58
27	6.77	20.70	9.1	7.58
29	6.73	20.70	9.1	7.58



Site 8				
Sample Depth (m)	DO (mg/L)	Sal (g/kg)	Temp (°C)	pH
1	6.87	20.68	9.1	7.60
3	6.83	20.68	9.1	7.60
5	6.81	20.68	9.1	7.60
7	6.80	20.69	9.1	7.59
9	6.81	20.68	9.1	7.60
11	6.81	20.68	9.1	7.60
13	6.80	20.69	9.1	7.60
15	6.75	20.69	9.1	7.59
17	6.78	20.69	9.1	7.60
19	6.77	20.69	9.1	7.60
21	6.78	20.70	9.1	7.70
23	6.76	20.69	9.1	7.60
24	6.75	20.70	9.1	7.60



Site 10				
Sample Depth (m)	DO (mg/L)	Sal (g/kg)	Temp (°C)	pH
1	6.76	20.65	9.1	7.62
3	6.86	20.66	9.1	7.62
5	6.85	20.66	9.1	7.61
7	6.85	20.67	9.1	7.61
9	6.8	20.67	9.1	7.61
11	6.81	20.67	9.1	7.61
13	6.82	20.67	9.1	7.61
15	6.85	20.68	9.1	7.61
17	6.76	20.67	9.1	7.66
19	6.77	20.68	9.1	7.63
21	6.78	20.68	9.1	7.62
23	6.8	20.68	9.1	7.62
25	6.8	20.68	9.1	7.62
27	6.8	20.68	9.1	7.62
28	6.77	20.69	9.1	7.62



Appendix 2 – Bureau Veritas Lab Results



Confirmation of Sample Receipt

Bureau Veritas Job Number: C195642

Job Received: 2021/11/30 09:15

Final Report Due: 2021/12/07 18:00

Disposal Date: 2022/01/09

Invoice Information

Attn: MONICA STEWARDSON
 MAINSTREAM BIOLOGICAL CONSULTING INC.
 1310 MARWALK CRES
 CAMPBELL RIVER, BC, V9W 5X1
 Email to:
 monica@mainstreambio.ca

Report Information

Attn: MONICA STEWARDSON
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 Email to:
 monica@mainstreambio.ca

Project Information

Quote #: B90411
 PO/AFE#:
 Project #: MISC 312
 Site Location: BBP BC ENV
 Sampled By: MS

Analytical Summary

A: Due On 2021/12/07 18:00

Lab ID	Client Sample ID	Sampling Date/Time	Matrix	Ammonia-N Unpreserved LowLevel Sea Water ⁽¹⁾	Enterococcus spp.	Nitrate + Nitrite (N)	Nitrite (N) by CFA	Nitrogen - Nitrate (as N)	Set Number
COC# w43508									
AMF192	1-S	2021/11/29 08:20	SeaWater	A	A	A	A	A	1
AMF193	1-M	2021/11/29 08:25	SeaWater	A	A	A	A	A	1
AMF194	1-B	2021/11/29 08:30	SeaWater	A	A	A	A	A	1
AMF195	2-S	2021/11/29 08:50	SeaWater	A	A	A	A	A	1
AMF196	2-M	2021/11/29 08:55	SeaWater	A	A	A	A	A	1
AMF197	2-B	2021/11/29 09:00	SeaWater	A	A	A	A	A	1
AMF198	4-S	2021/11/29 09:20	SeaWater	A	A	A	A	A	1
AMF199	4-M	2021/11/29 09:25	SeaWater	A	A	A	A	A	1
AMF200	4-B	2021/11/29 09:35	SeaWater	A	A	A	A	A	1
AMF201	6-S	2021/11/29 09:55	SeaWater	A	A	A	A	A	1
AMF202	6-M	2021/11/29 10:00	SeaWater	A	A	A	A	A	1
AMF203	6-B	2021/11/29 10:05	SeaWater	A	A	A	A	A	1
AMF204	8-S	2021/11/29 10:25	SeaWater	A	A	A	A	A	1
AMF205	8-M	2021/11/29 10:30	SeaWater	A	A	A	A	A	1
AMF206	8-B	2021/11/29 10:35	SeaWater	A	A	A	A	A	1
AMF207	10-S	2021/11/29 12:10	SeaWater	A	A	A	A	A	1
AMF208	10-M	2021/11/29 12:15	SeaWater	A	A	A	A	A	1
AMF209	10-B	2021/11/29 12:20	SeaWater	A	A	A	A	A	1
AMF210	FIELD BLANK	2021/11/29 11:25	SeaWater	A	A	A	A	A	1



Confirmation of Sample Receipt

Bureau Veritas Job Number: C195642

Job Received: 2021/11/30 09:15

Final Report Due: 2021/12/07 18:00

Disposal Date: 2022/01/09

A: Due On 2021/12/07 18:00

Lab ID	Client Sample ID	Sampling Date/Time	Matrix	Ammonia-N Unpreserved LowLevel Sea Water ⁽¹⁾	Enterococcus spp.	Nitrate + Nitrite (N)	Nitrite (N) by CFA	Nitrogen - Nitrate (as N)	Set Number
COC# w43508									
AMF211	FD-1	2021/11/29 08:30	SeaWater	A	A	A	A	A	1
AMF212	TRIP BLANK	2021/11/29	SeaWater	A		A	A	A	2
AMF213	FD-2	2021/11/29 09:00	SeaWater	A	A	A	A	A	1

Include Criteria on CofA: No

⁽¹⁾ Test Location: Bureau Veritas Calgary (Ammonia-N Unpreserved LowLevel Sea Water)

Sample Inspection Observations & Comments

of Samples Received: 22

Details: Sample(s) received in good condition.

Additional Notes

- Unless special storage arrangements are made, all samples will be disposed 30 days after receipt. Additional fees may be applied for extended storage.
- Additional fees may be applied for the disposal of hazardous samples.

The contents of this report are subject to change. For up to date information, please refer to the Customer Portal.



Confirmation of Sample Receipt

Bureau Veritas Job Number: C195642

Job Received: 2021/11/30 09:15

Final Report Due: 2021/12/07 18:00

Disposal Date: 2022/01/09

Sample Set Listing

Set 1 (21 Samples)	Set 2 (1 Sample)
1-S	TRIP BLANK
1-M	
1-B	
2-S	
2-M	
2-B	
4-S	
4-M	
4-B	
6-S	
6-M	
6-B	
8-S	
8-M	
8-B	
10-S	
10-M	
10-B	
FIELD BLANK	
FD-1	
FD-2	

Parameter Summary

Package/Test	Parameter	RDL	Unit	Set 1	Set 2
Ammonia-N Unpreserved LowLevel Sea Water	Total Ammonia (N)	0.005	mg/L	X	X
Enterococcus spp.	Enterococcus spp.	1	CFU/100mL	X	
Nitrate + Nitrite (N)	Nitrate plus Nitrite (N)	0.02	mg/L	X	X
Nitrite (N) by CFA	Nitrite (N)	0.005	mg/L	X	X
Nitrogen - Nitrate (as N)	Nitrate (N)	0.02	mg/L	X	X

**RDLs are subject to change based on interferences present at the time of analysis.*



Custody Tracking Form



W43508

Please use this form for custody tracking when submitting the work instructions via eCOC (electronic Chain of Custody). Please ensure your form has a barcode or a Bureau Veritas eCOC confirmation number in the top right hand side. This number links your electronic submission to your samples. This form should be placed in the cooler with your samples.

First Sample: 1-5
Last Sample: FD-2
Sample Count: 22

Relinquished By			Received By				
Emily Cicon	<i>ECicon</i>	Date	2021/11/29	ALFRED NGAI	<i>Alfred Ngai</i>	Date	2021/11/30
		Time (24 HR)	14:00			Time (24 HR)	09:15
		Date				Date	
		Time (24 HR)				Time (24 HR)	
		Date				Date	
		Time (24 HR)				Time (24 HR)	

Unless otherwise agreed to, submissions and use of services are governed by Bureau Veritas' standard terms and conditions which can be found at www.bvna.com.

Triage Information

Sampled By (Print) # of Coolers/Pkgs:

Rush Immediate Test Food Residue
 Micro Food Chemistry

*** LABORATORY USE ONLY ***

Received At

Lab Comments:

Labeled By

Verified By

Custody Seal		Cooling Media	Temperature °C		
Present (Y/N)	Intact (Y/N)	Present (Y/N)	1	2	3
Y	Y	Y	(see ACTR)		
Drinking Water Metals Preservation Check Done (Circle) YES NO					



C195642_COC

COR FCD-00383/3

Page 1 of 1



eCOC: W43508



Results Required By: 5 Days

Expected Arrival:

Submitted By:

Submitted To:

Invoice Information

Attn: MONICA STEWARDSON
MAINSTREAM BIOLOGICAL CONSULTING INC.
1310 MARWALK CRES
CAMPBELL RIVER, BC, V9W 5X1
Email to:
monica@mainstreambio.ca

Report Information

Attn: MONICA STEWARDSON
MAINSTREAM BIOLOGICAL CONSULTING INC.
1310 MARWALK CRES
CAMPBELL RIVER, BC, V9W 5X1
Email to:
monica@mainstreambio.ca

Project Information

Quote #: B90411
PO/AFE#:
Project #: MISC 312
Site Location: BBP BC ENV

Analytical Summary



C195642_COC

A: 5 Days

2021/11/29

Client Sample ID	Clnt Ref	Sampling Date/Time	Matrix	#Cont	Ammonia-N Unpreserved Low Level	Enterococcus spp.	Nitrate + Nitrite (N)	Nitrite (N) by CFA	Nitrogen - Nitrate (as N)	Set Number
1-S		8:20	SEA WATER	1	A	A	A	A	A	1
1-M		8:25	SEA WATER	1	A	A	A	A	A	1
1-B		8:30	SEA WATER	1	A	A	A	A	A	1
2-S		8:50	SEA WATER	1	A	A	A	A	A	1
2-M		8:55	SEA WATER	1	A	A	A	A	A	1
2-B		9:00	SEA WATER	1	A	A	A	A	A	1
4-S		9:20	SEA WATER	1	A	A	A	A	A	1
4-M		9:25	SEA WATER	1	A	A	A	A	A	1
4-B		9:35	SEA WATER	1	A	A	A	A	A	1
6-S		9:55	SEA WATER	1	A	A	A	A	A	1
6-M		10:00	SEA WATER	1	A	A	A	A	A	1
6-B		10:05	SEA WATER	1	A	A	A	A	A	1
8-S		10:25	SEA WATER	1	A	A	A	A	A	1
8-M		10:30	SEA WATER	1	A	A	A	A	A	1
8-B		10:35	SEA WATER	1	A	A	A	A	A	1
10-S		12:10	SEA WATER	1	A	A	A	A	A	1
10-M		12:15	SEA WATER	1	A	A	A	A	A	1
10-B		12:20	SEA WATER	1	A	A	A	A	A	1
FIELD BLANK		11:25	WATER	1	A	A	A	A	A	1
FD-1		8:30	SEA WATER	1	A	A	A	A	A	1

★ Not submitted electronically due to system outage.

Received in Burnaby by ALFRED NGAI

2021/11/30 @ 09:15

Temp: see ACTR CS: YES.



eCOC: W43508



Results Required By: 5 Days

Expected Arrival:

Submitted By:

Submitted To:

A: 5 Days

Client Sample ID	Clnt Ref	Sampling Date/Time	Matrix	#Cont	Ammonia-N Unpreserved Low Level	Enterococcus spp.	Nitrate + Nitrite (N)	Nitrite (N) by CFA	Nitrogen - Nitrate (as N)	Set Number
TRIP BLANK		—	WATER	1	A		A	A	A	2
FD-2		9:00	SEA WATER	1	A	A	A	A	A	1

Deadlines are estimates only and are subject to change. Please refer to your Job Confirmation report for final due dates.

Submission Information

of Samples: 22



C195642_COC

Sample Set Listing

Set 1 (21 samples)	Set 2 (1 sample)
1-S	TRIP BLANK
1-M	
1-B	
2-S	
2-M	
2-B	
4-S	
4-M	
4-B	
6-S	
6-M	
6-B	
8-S	
8-M	
8-B	
10-S	
10-M	
10-B	
FIELD BLANK	
FD-1	
FD-2	