Appendix V5-7C

Hope Bay Belt Project:
2010 Regional Marine Baseline Report

TMAC RESOURCES

Hope Bay Mining Limited

HOPE BAY BELT PROJECT
2010 Regional Marine Baseline Report

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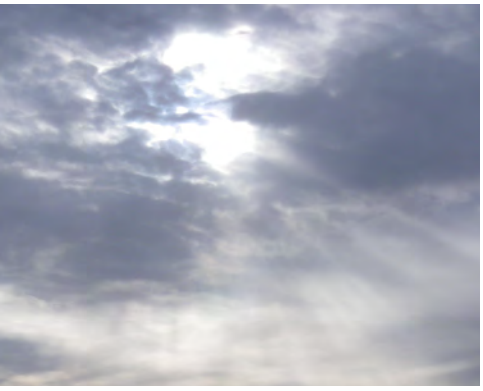

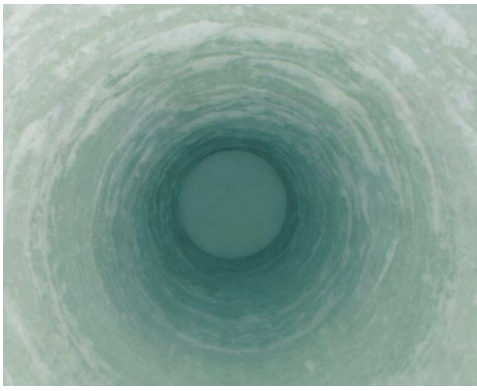

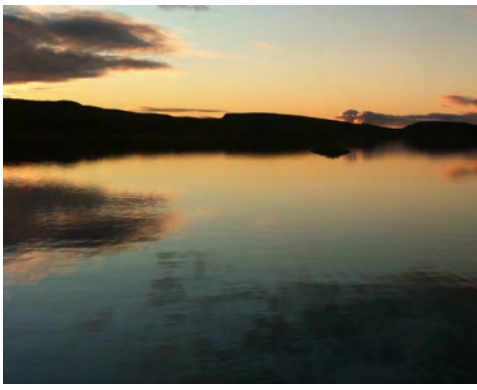

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December 2011

HOPE BAY BELT PROJECT
2010 REGIONAL MARINE BASELINE REPORT

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Prepared for:

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Hope Bay Mining Limited

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Engineers and Scientists

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Executive Summary

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Executive Summary

The 2010 Regional Marine Baseline work was conducted by Rescan Environmental Services Ltd. (Rescan) on behalf of Hope Bay Mining Limited (HBML), for the Hope Bay Belt Project. The Hope Bay Belt Property is located approximately 125 km southwest of Cambridge Bay, Nunavut, on the south shore of Melville Sound. The nearest communities are Omingmaktok (Bay Chimo; 75 km to the southwest of the property), Cambridge Bay, and Kingaok (Bathurst Inlet; 160 km to the southwest of the property).

The purpose of the regional marine studies was to support future Phase 2 development in the belt by providing baseline marine data that will be required for environmental impact assessment, permitting, and possibly environmental monitoring. The objective was to collect baseline oceanographic data along a portion of the marine shipping route used by marine vessels to service the Hope Bay Project. In June, five sites within a Regional Study Area (RSA) that included Melville Sound, northern Bathurst Inlet, and Coronation Gulf, were surveyed for water column structure (temperature, salinity, and dissolved oxygen), water quality, and phytoplankton biomass. In September, physical (temperature, salinity, and dissolved oxygen) and biological (phytoplankton biomass) oceanographic data were collected continuously along a 180 km surface seawater transect using a 'ship-of-opportunity' between the northeastern marine RSA boundary in Coronation Gulf and Roberts Bay.

The following text provides a summary of the results from the 2010 regional marine baseline work.

Under-Ice Regional Oceanographic Sampling

Physical Oceanography

During the June 2010 sampling, the marine RSA sampling sites had ice depths of approximately 1 m. The water column at all sites had broad pycnoclines, with warmer (0°C to 3.1°C) and less saline (25 to 26.5) water in the surface, and colder (-0.5°C to -0.7°C), saltier water (27.3 to 28.1) at depth. The difference between the surface and deeper waters was greater at the more enclosed sites (RSA1 and RSA2), than the sites near northern Bathurst Inlet (RSA3, RSA5 and RSA6). Surface temperatures at all sites (>1.5°C) were above freezing (-1.4°C), indicating the sea ice was melting during this period.

Dissolved oxygen concentrations ranged from 9.8 mg/L to 16.3 mg/L, and tracked thermohaline trends, with the greatest concentrations in surface and lowest concentrations towards the bottom. The near-surface waters (<6 m) were often supersaturated with dissolved oxygen (>100%), indicating that photosynthesis was active in the surface layer during this period. Dissolved oxygen concentrations at all sites at all depths were above the recommended marine Canadian Council for Ministers of the Environment (CCME) guideline for aquatic life (8 mg/L; CCME 2011).

Water Quality

The water samples collected in the marine RSA during June were slightly basic (pH: 7.8), with low nutrient and metal levels generally below analytical detection limits. Nitrate, total phosphorus, orthophosphate, and silicate generally exhibited depth gradients, with lower concentrations in the surface waters than at depth (40 m), indicative of phytoplankton growth and nutrient uptake. The surface depletion of nitrate and not orthophosphate suggests that phytoplankton growth was limited by nitrate availability in the surface waters. The lower surface silicate levels indicate diatoms were the dominant primary producers at the time of sampling. All water quality parameters were below CCME guidelines for the protection of marine aquatic life (CCME 2011).

Phytoplankton

Mean phytoplankton biomass (as chlorophyll *a*) was very low in the marine RSA during June, with all concentrations below 0.5 µg chl *a*/L. The highest mean biomass of 0.38 µg chl *a*/L occurred outside of Roberts Bay (RSA1) compared to the pooled mean of 0.08 µg chl *a*/L at the other sites. Phytoplankton biomass at most sites was probably limited by reduced under-ice light levels, and the low nutrient levels in the surface waters.

Open-Water Continuous Regional Oceanographic Sampling

On the return leg of a trip from Roberts Bay to Cambridge Bay on September 12, 2010, a 'ship of opportunity' provided the facility on which to continuously monitor properties of surface seawater between Cambridge Bay and Roberts Bay.

The dominant feature of this transect was a 30-km stretch of decreasing surface salinity (~22.5) through the constriction that separates Bathurst Inlet from Melville Sound. In the deeper water on the Bathurst Inlet side (west) of the constriction, a zone of slightly warmer, less saline surface seawater was observed. This water likely originated from southern Bathurst Inlet and moved into the western section of Melville Sound via wind-driven forcing and a smaller contribution of the Coriolis effect. Further east of the constriction towards Roberts Bay, the surface seawater tended to be of slightly higher salinity and lower temperature. In the northern section of Bathurst Inlet towards the marine RSA boundary, salinity increased and temperature decreased characteristic of the more marine influenced waters in Coronation Gulf. Over the whole transect, surface dissolved oxygen concentrations were relatively stable at between 10.5–11 mg/L.

Overall, surface phytoplankton biomass (as chl *a*) was extremely low and was consistent over the entire marine RSA transect. Biomass levels were generally at 0.2 µg chl *a*/L or less through the eastern portion of this transect, and increased slightly towards the Cook Burns Islands. Phytoplankton biomass remained in the range of 0.2–0.4 µg chl *a*/L in the open waters towards the marine RSA boundary. These levels of chlorophyll *a* in surface waters represented extremely low levels of phytoplankton biomass for a near coastal environment, and are consistent with the results from the discrete June samples.

Acknowledgements

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Acknowledgements

This report was prepared for Hope Bay Mining Ltd. (HBML) by Rescan Environmental Services Ltd. The 2010 marine fieldwork was conducted by Rescan scientists Katsky Venter (M.Sc.) and Damian Powers (M.Sc.). The report was written by Fiona Hodge (M.Sc.), David Crawford (Ph.D., M.Sc.), and Mike Henry (Ph.D) and reviewed by Mike Henry and Deborah Muggli (Ph.D., M.Sc., R.P.Bio.). The project was managed by Deborah Muggli.

Fieldwork was conducted with the enthusiastic and competent assistance of Brenden Greenley and Johnny Avalak.

Extensive support was provided by the HBML Environment and Social Responsibility (ESR) Department, the Health, Safety and Loss Prevention (HSLP) Department, and camp management, as well as Great Slave Helicopters, Braden Burry Expediting, and Nuna Logistics. Special thanks go to Northern Transportation Company Limited and the captain and crew of the M/V Kelly Ovayuak for their role in the 'ship-of-opportunity' RSA transect.

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HOPE BAY BELT PROJECT
2010 REGIONAL MARINE BASELINE REPORT

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Glossary and Abbreviations

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Glossary and Abbreviations

Terminology used in this document is defined where it is first used. The following list will assist readers who may choose to review only portions of the document.

Autotrophic	Organisms which manufacture their food via photosynthesis.
ALS	ALS Laboratory Group Ltd.
BC	British Columbia
$CaCO_3$	Calcium carbonate
CCME	Canadian Council of Ministers of the Environment
Coriolis Effect	In the fields of oceanography and meteorology, the Coriolis effect results in deflection of fluid (currents or winds) to the right in the northern hemisphere and to the left in the southern hemisphere. This is caused by the rotation of the earth and is strongest at the poles and weakest at the equator.
CTD	Conductivity, Temperature and Depth
DDI	Double de-ionized water
DO	Dissolved Oxygen
ESR	Environmental and Social Responsibility Department
GPS	Global Positioning System
HBML	Hope Bay Mining Limited
HSLP	Health, Safety and Loss Prevention Department
M/V	Marine Vessel
NC	Not Collected
NTU	Nephelometric Turbidity Units
Pycnocline	A section of the water column where the density increases rapidly with depth
QA/QC	Quality Assurance/Quality Control
RDL	Realized Detection Limit
Rescan	Rescan Environmental Services Ltd.
Salinity	No units, dimensionless. Salinity is defined on the Practical Salinity Scale (PSS) as the conductivity ratio of a sea water sample to a standard KCl solution. As PSS is a ratio, it has no units.
Ship of Opportunity	The use of volunteer ships for deployment of oceanographic or meteorological instrumentation, or for making scientific observations.
RSA	Regional Study Area
QA/QC	Quality Assurance and Quality Control
Thermohaline	Relating to temperature and salinity

TOC	Total Organic Carbon
TP	Total Phosphorus
TSS	Total Suspended Solids
UTM	Universal Transverse Mercator coordinate system

1. Introduction

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1. Introduction

The Hope Bay Belt (HBB) Property is located approximately 125 km southwest of Cambridge Bay, Nunavut, on the southern shore of Melville Sound (Figure 1-1). The nearest communities are Omingmaktok (75 km to the southwest of the property), Cambridge Bay, and Kingaok (Bathurst Inlet; 160 km to the southwest of the property).

The property consists of a greenstone belt running in a north/south direction, approximately 80 km long, with three main gold deposit areas. The Doris and Madrid deposits are located in the northern portion of the belt, and the Boston deposit is located in the southern end. The northern portion of the property consists of several watershed systems that drain into Roberts Bay, and a large river (Koignuk River) that drains into Hope Bay. Watersheds in the southern portion of the belt ultimately drain into the upper Koignuk, which drains into Hope Bay.

Hope Bay Mining Limited (HBML) is proceeding with the development of the Doris North Project. Required licences and permits are in place for the development of the Doris North Gold Mine, and construction of the Project commenced in 2010.

HBML plans to develop additional deposits in the belt, and planning for this Phase 2 Project development has commenced. Baseline studies to support the permitting of the Phase 2 Project were carried out in 2009, and were continued in 2010. The environmental baseline program conducted in 2010 was intended to fill in information gaps to support the permitting process for the Phase 2 Project. The site layout options considered for the 2010 Phase 2 environmental baseline program are shown in Figure 1-2.

Results from the 2010 Phase 2 Project environmental baseline program are being reported in a series of reports, as follows:

- 2010 Hydrology Baseline Report
- 2010 Freshwater Baseline Report
- 2010 Freshwater Fish and Fish Habitat Baseline Report
- 2010 Marine Baseline Report
- 2010 Marine Fish and Fish Habitat Baseline Report
- 2010 Marine Wildlife Baseline Report
- 2010 Terrain and Soils Baseline Report
- 2010 Ecosystems and Vegetation Baseline Report

In addition, numerous reports are being produced as part of the Doris North Project compliance requirements, and many of these reports cover the geographical areas of the proposed Phase 2 Project. Examples of Doris North Project compliance reports generated in 2010 that are relevant to the proposed Phase 2 Project include:

- 2010 Aquatic Effects Monitoring Program Report, Doris North Project
- 2010 Meteorology Compliance Report, Doris North Project

Figure 1-1

Hope Bay Belt Project Location

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PROJECT # **1009-002-17** GIS # **HB-15-038** *December 15 2011*

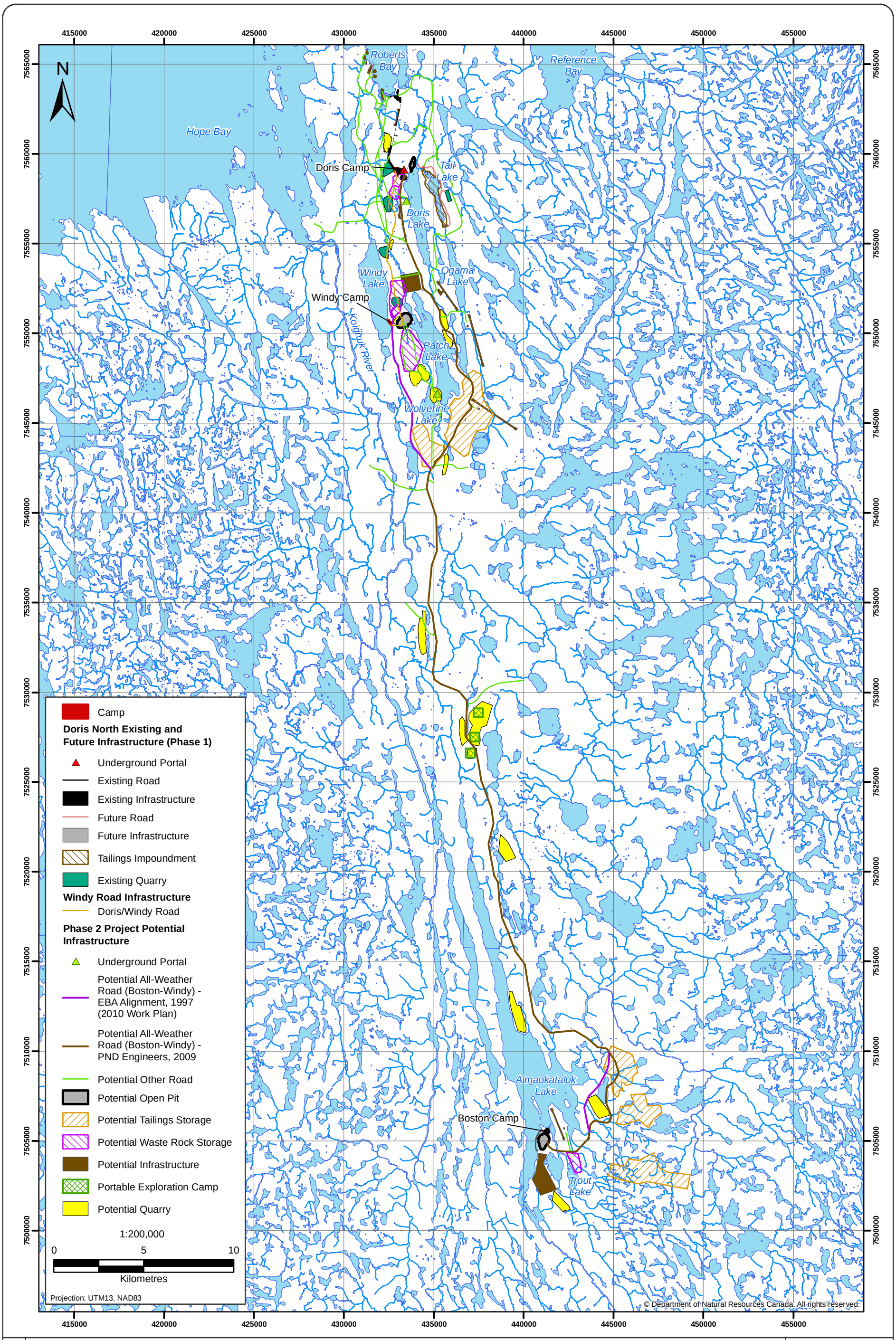

Figure 1-2

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Site Layout Options Considered for Phase 2 Baseline Program, 2010

Figure 1-2

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- 2010 Hydrology Compliance Report, Doris North Project
- 2010 Wildlife Mitigation and Monitoring Report, Doris North Project
- 2010 Air Quality Compliance Reports, Doris North Project

Archaeology work was also conducted in 2010 and is being reported separately.

This report presents the results from two regional oceanographic surveys conducted within a marine Regional Study Area (RSA) as part of the 2010 Phase 2 Project environmental baseline program. These surveys were designed to capture far-field, regional oceanographic information that included:

- physical oceanographic profiles and transects (temperature, salinity, and dissolved oxygen);
- water quality; and
- phytoplankton biomass.

In June 2010, discrete under-ice sampling was conducted at five sites within the marine RSA. This sampling was designed to capture the far-field water quality, water column structure, and primary producer biomass along a portion of the shipping route from Bathurst Inlet through Melville Sound into Roberts Bay. Under-ice sampling was conducted because of the accessibility of these sites by helicopter during winter; open-water sampling would have been limited by cost and feasibility since a marine sampling vessel suited to open-water conditions would have been required. Because only under-ice samples were collected, higher trophic levels were not surveyed as zooplankton sampling nets would become clogged with ice during net retrieval and benthic invertebrate samples are typically collected in mid-summer. Also, deep-water benthos communities are unlikely to be affected by shipping traffic.

In September 2010, continuous physical and biological oceanographic data were collected along the Roberts Bay-Cambridge Bay shipping route using a ‘ship-of-opportunity’ platform (aboard the M/V Kelly Ovayuak). The oceanographic data was collected passively using a conductivity, temperature, and depth (CTD) instrument fitted with a dissolved oxygen probe and a fluorometer. This survey was also designed to characterize far-field physical oceanographic features as well as far-field primary producer biomass.

2. Methods

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2. Methods

2.1 STUDY AREA

Oceanographic data were collected twice during 2010 in the marine RSA (Figure 2.1-1) to gain an understanding of the far-field regional marine environment from Roberts Bay to the southern portion of the Coronation Gulf. The surveys were largely focused within Melville Sound, which is a semi-enclosed sea bounded by the Kent Peninsula to the north, Elu Inlet to the east, mainland Nunavut to the south, and ultimately flows into Coronation Gulf via northern Bathurst Inlet. It is approximately 60 km long, 20 km at its widest point, with depths exceeding 100 m.

2.2 SAMPLING DESIGN

Two regional oceanographic surveys were conducted in 2010. The first survey was carried out in June and included discrete physical, chemical, and biological oceanographic sampling (Table 2.2-1; Figure 2.1-1). The second was a physical oceanographic survey conducted as part of a 'ship-of-opportunity' exercise aboard the marine vessel, M/V Kelly Ovayuak, where continuous salinity and temperature data were collected during a round-trip voyage from Roberts Bay to Cambridge Bay, Nunavut between September 9 and 12, 2010.

2.2.1 Under-Ice Regional Oceanographic Sampling

Discrete oceanographic sampling was conducted in the marine RSA during the late ice-covered season in June 2010. Six sampling sites were selected in central and western Melville Sound covering the area where Project-related shipping may occur. One of the planned sites (RSA4) was not sampled due to safety concerns from thin ice cover. The five sites that were successfully sampled are shown in Figure 2.1-1. These sites were accessed by helicopter, and the sampling crew consisted of a three-person team including the pilot. Table 2.2-1 provides a summary of the sampled parameters, replication, sampling dates, and sampling equipment used.

2.2.1.1 Physical Oceanography

The underlying water at the five sampling sites was accessed by drilling a 25-cm diameter hole through the ice. The ice thickness was recorded and the bottom depth measured using a weighted, metred line (up to 100 m). A vertical profile of temperature and salinity was then collected using an *in situ* CTD probe. The probe was lowered through the water column (at an approximate speed 0.5 m/s) on a cable to within a few metres of the sea floor (or to a maximum of 100 m). The data logged during this process was immediately transferred to a computer in the field. Data from the downcast was used for the interpretation in this report.

Salinity profiles were plotted from the acquired data to determine the pycnocline depth, from which water quality sampling depths were determined. Density (σ_t) was calculated from the acquired CTD data using the algorithm of Fofonoff and Millard Jr. (1983).

Following the CTD casts, vertical profiles of dissolved oxygen concentration and percent saturation were collected at 1 m intervals to a depth of 30 m using a calibrated YSI dissolved oxygen meter. This depth extended beyond the surface layer, but did not reach the sediment surface. All dissolved oxygen data was compared to the marine Canadian Council for Ministers of the Environment (CCME) guideline for the protection of aquatic life (CCME 2011).

2.2.1.2 Water Quality

Methodology

Under-ice water quality samples were collected in June 2010 following the CTD and dissolved oxygen casts. Depths of water quality sampling were determined by the position of the pycnocline in the water column (from the CTD profiles). Four depths were sampled: 1 m below the surface, 4 m above the pycnocline, 4 m below the pycnocline, and at middle depth of the deep layer

An adapted, 2.5 L Niskin sampling bottle was used to collect the water. This bottle was designed to 'trip' and collect discrete samples during freezing temperatures. To avoid metal contamination, the tripping mechanism used acid-cleaned silicone tubing within the interior of the bottle and the bottle was acid-cleaned at ALS Laboratory Group Ltd. (ALS), Burnaby, BC, prior to sampling. A dual rope system was used to achieve bottle closure and to ensure the collection of discrete samples.

Once at the surface, the sample bottles (acid-rinsed at analytic laboratory) were rinsed three times with water from the Niskin and then filled and preserved as required. The water samples were kept cold, but above the freezing (-1.4°C), and sent to ALS in Yellowknife on the first available flight from camp. Samples were then transferred to ALS, Burnaby where the lowest metal detection limits were available. Dissolved metals samples were filtered in the ALS laboratory to avoid contamination issues related to field filtration.

Detection limits were the lowest achievable by the laboratory. Realized detection limits (Table 2.2-2) were occasionally higher than the theoretical minimum due to interference from other parameters (e.g., sodium). Realized detection limit ranges are indicated on all relevant figures in this report.

QA/QC

A quality assurance and quality control program (QA/QC), including the use of replicates, blanks, and chain of custody forms, was incorporated into the design of this study to account for within site variability and ensure no contamination from sampling equipment or methodology.

Replicate samples accounted for 17% of water samples and were collected from a range of depths. An equipment, field and travel blank (12% of total samples) were also processed and submitted with the water samples. This allowed for the identification of potential sources of contamination (from equipment, field or travel handling) to the field samples.

Equipment blanks were collected in the field by first rinsing an acid-washed Niskin bottle with double de-ionized water (DDI water; provided by ALS) then filling the Niskin bottle with DDI water, allowing the water to sit for one minute (as would occur with a real sample), and then rinsing and filling the acid-washed analytical sampling bottles. Equipment blanks were preserved and handled the same as real samples.

Field blanks were processed in the field by opening the bottles provided by ALS (containing DDI water) and exposing the sample to air for one minute. The bottles were preserved and handled the same as the regular samples.

Travel blanks were provided by ALS and were never opened, but were otherwise handled in the same way as the regular samples.

All samples, including blanks, were recorded on a chain of custody form and sent to ALS Burnaby via ALS Yellowknife. Blanks were tested for the same parameters as regular water samples.

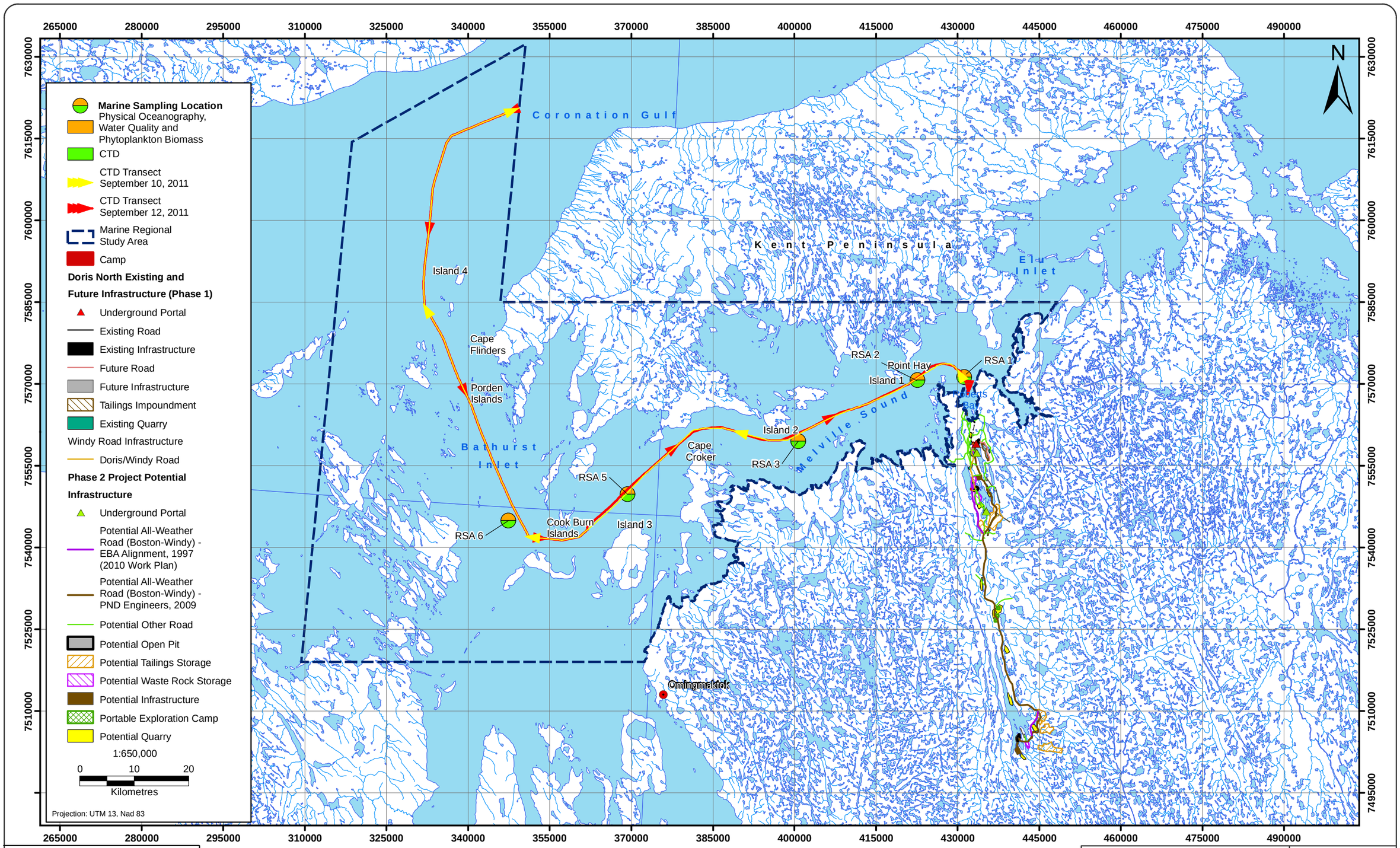

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Figure 2.1-1

Marine Sampling Locations, Hope Bay Belt Project, 2010

Table 2.2-1. Summary of the Regional Marine Baseline Sampling Program, Hope Bay Belt Project, June 2010

Monitoring Parameter	Location	Sample Replication and Depths	Sampling Dates	Sampling Device
Marine Physical Oceanography				
Salinity/Temperature, Dissolved Oxygen (DO) profiles	Melville Sound (CTD, 5 sites; DO, 5 sites)	n = 1/site	June	Conductivity-Temperature-Depth (CTD) probe; DO meter
Marine Water Quality				
Physical, anions, nutrients, total and dissolved metals, total organic carbon (TOC)	Melville Sound (5 sites)	n = 1/site @ 1 m below the surface, 4 m above pycnocline, 4 m below pycnocline, mid-deep layer + 17% replication	June	2.5 L Niskin sampling bottle
Phytoplankton Biomass				
Biomass (chl *a*)	Melville Sound (5 sites)	n = 3/site @ 1 m below ice layer	June	2.5 L Niskin sampling bottle

Table 2.2-2. Water Quality Parameters and Detection Limits for Regional Marine Baseline Samples, Hope Bay Belt Project, June 2010

Parameter	Units	Detection Limit	Parameter	Units	Detection Limit
Physical Tests			**Total and Dissolved Metals *(continued)***		
pH	pH	0.1	Copper (Cu)	mg/L	0.001
Total Suspended Solids	mg/L	3	Gallium (Ga)	mg/L	0.0005
Turbidity	NTU	0.1	Iron (Fe)	mg/L	0.05
Anions			Lead (Pb)	mg/L	0.001
Bromide (Br)	mg/L	5.0	Lithium (Li)	mg/L	0.02
Chloride (Cl)	mg/L	50	Magnesium (Mg)	mg/L	1.0
Fluoride (F)	mg/L	0.03 – 0.075	Manganese (Mn)	mg/L	0.0005
Sulphate (SO_4)	mg/L	50	Mercury (Hg)	mg/L	0.00001
Nutrients			Molybdenum (Mo)	mg/L	0.002
Ammonia (as N)	mg/L	0.005 – 0.01	Nickel (Ni)	mg/L	0.0005
Nitrate + Nitrite (as N)	mg/L	0.006	Phosphorus (P)	mg/L	1.0
Nitrate (as N)	mg/L	0.006	Potassium (K)	mg/L	20
Nitrite (as N)	mg/L	0.002	Rhenium (Re)	mg/L	0.0005
Ortho Phosphate (as P)	mg/L	0.001	Rubidium (Rb)	mg/L	0.005
Total Phosphorus	mg/L	0.002	Selenium (Se)	mg/L	0.002
Silicate (as SiO_2)	mg/L	0.005 – 1.0	Silicon (Si)	mg/L	0.5
Organic Carbon			Silver (Ag)	mg/L	0.0002
Total Organic Carbon	mg/L	0.5	Sodium (Na)	mg/L	20
Total and Dissolved Metals			Strontium (Sr)	mg/L	0.05
Aluminum (Al)	mg/L	0.005	Tellurium (Te)	mg/L	0.0005
Antimony (Sb)	mg/L	0.0005	Thallium (Tl)	mg/L	0.0005
Arsenic (As)	mg/L	0.002	Thorium (Th)	mg/L	0.0005

(continued)

Table 2.2-2. Water Quality Parameters and Detection Limits for Regional Marine Baseline Samples, Hope Bay Belt Project, June 2010 (completed)

Parameter	Units	Detection Limit	Parameter	Units	Detection Limit
Barium (Ba)	mg/L	0.001	Tin (Sn)	mg/L	0.001
Beryllium (Be)	mg/L	0.0005	Titanium (Ti)	mg/L	0.005
Bismuth (Bi)	mg/L	0.0005	Tungsten (W)	mg/L	0.001
Boron (B)	mg/L	0.1	Uranium (U)	mg/L	0.0005
Cadmium (Cd)	mg/L	0.00012	Vanadium (V)	mg/L	0.0005
Calcium (Ca)	mg/L	0.5	Yttrium (Y)	mg/L	0.0005
Cesium (Cs)	mg/L	0.0005	Zinc (Zn)	mg/L	0.005
Chromium (Cr)	mg/L	0.001	Zirconium (Zr)	mg/L	0.0005
Cobalt (Co)	mg/L	0.0005			

CCME Guidelines

All water quality data were compared to the marine CCME guidelines for the protection of aquatic life. Marine CCME guidelines are also shown in all figures were applicable.

2.2.1.3 Phytoplankton

Water samples were collected and analyzed for phytoplankton biomass (as chlorophyll *a*) at five sites in the marine RSA during June 2010. Triplicate samples were gathered from 1 m below the sea ice using a 2.5 L Niskin water sampler. All samples were transferred into 1 L plastic bottles and stored in a cool, dark cooler until being returned to camp later in the day. Once at camp, the samples were filtered onto 0.45 µm nitrocellulose filters, which were wrapped in aluminum foil and stored frozen. The biomass samples were hand carried to Vancouver, BC, to ensure they remained frozen, and sent to ALS (Burnaby, BC) for chlorophyll *a* analysis.

2.2.2 Open-Water Continuous Regional Oceanographic Sampling

Physical (temperature, salinity and dissolved oxygen) and biological (phytoplankton biomass) information was collected continuously along a round-trip transect from Roberts Bay to Cambridge Bay, Nunavut during September 2010 (Figure 2.1-1). The oceanographic data were collected using a ship-of-opportunity platform aboard the marine vessel, M/V Kelly Ovayuak. This tugboat transported provisions between Roberts Bay and Cambridge Bay in 2010, and left Roberts Bay on the 9th of September 2010, returning from Cambridge Bay on the 11th of September 2010.

The oceanographic data was collected using a conductivity, temperature, and depth (CTD; RBR-620) instrument fitted with a dissolved oxygen probe and a fluorometer. A fluorometer measures the concentration of chlorophyll *a* in aquatic and marine systems, which is a proxy for phytoplankton biomass. The CTD was placed into a 10 L plastic bucket and was continuously bathed with seawater drawn from a seawater intake system aboard the vessel. The intake water was drawn from approximately 2 m depth, and therefore the CTD results represented the surface oceanographic features along the round-trip transect from Roberts Bay to Cambridge Bay. The CTD was an internally, continuously logging system and the data acquisition rate was set to 1 datum acquisition per minute. Similarly, a GPS device (Garmin C60 GPS) was used to acquire the UTM coordinates along the transect, and the tracking system of this device was set to acquire UTM coordinates once per minute. Both devices were initialized synchronously prior to the vessel leaving Roberts Bay on September 9, 2010.

Because each device collected data synchronously on a minute by minute basis, each CTD timestamp could be assigned a corresponding UTM coordinate from the GPS.

During the initial leg of the voyage from Roberts Bay to Cambridge Bay, the shipboard seawater pump was accidentally turned off and the water bathing the CTD was not properly flushed. Therefore, the data from this transect was compromised and was not used. All data obtained during the return journey from Cambridge Bay to Roberts Bay were deemed accurate and were included in this report.

3. Results

3. Results

3.1 UNDER-ICE REGIONAL OCEANOGRAPHIC SAMPLING

3.1.1 Physical Oceanography

3.1.1.1 Snow and Ice Cover

Measurements of snow and ice thickness were conducted at five sites along the marine RSA during June 2010. Ice thickness ranged between 0.8 m (RSA6) and 1.1 m (RSA1 and RSA5) (Table 3.1-1). There was no snow cover at any of the sites.

Table 3.1-1. Snow and Ice Cover at Regional Marine Sites, Hope Bay Belt Project, June 2010

Site	Ice Depth (m)	Snow Depth (m)	Water Column Depth (m)
RSA1	1.1	0	>100
RSA2	1.0	0	~85
RSA3	1.0	0	82
RSA4		no data due to weak ice in 10 km radius	
RSA5	1.1	0	>100
RSA6	0.8	0	>100

3.1.1.2 Water Column Structure

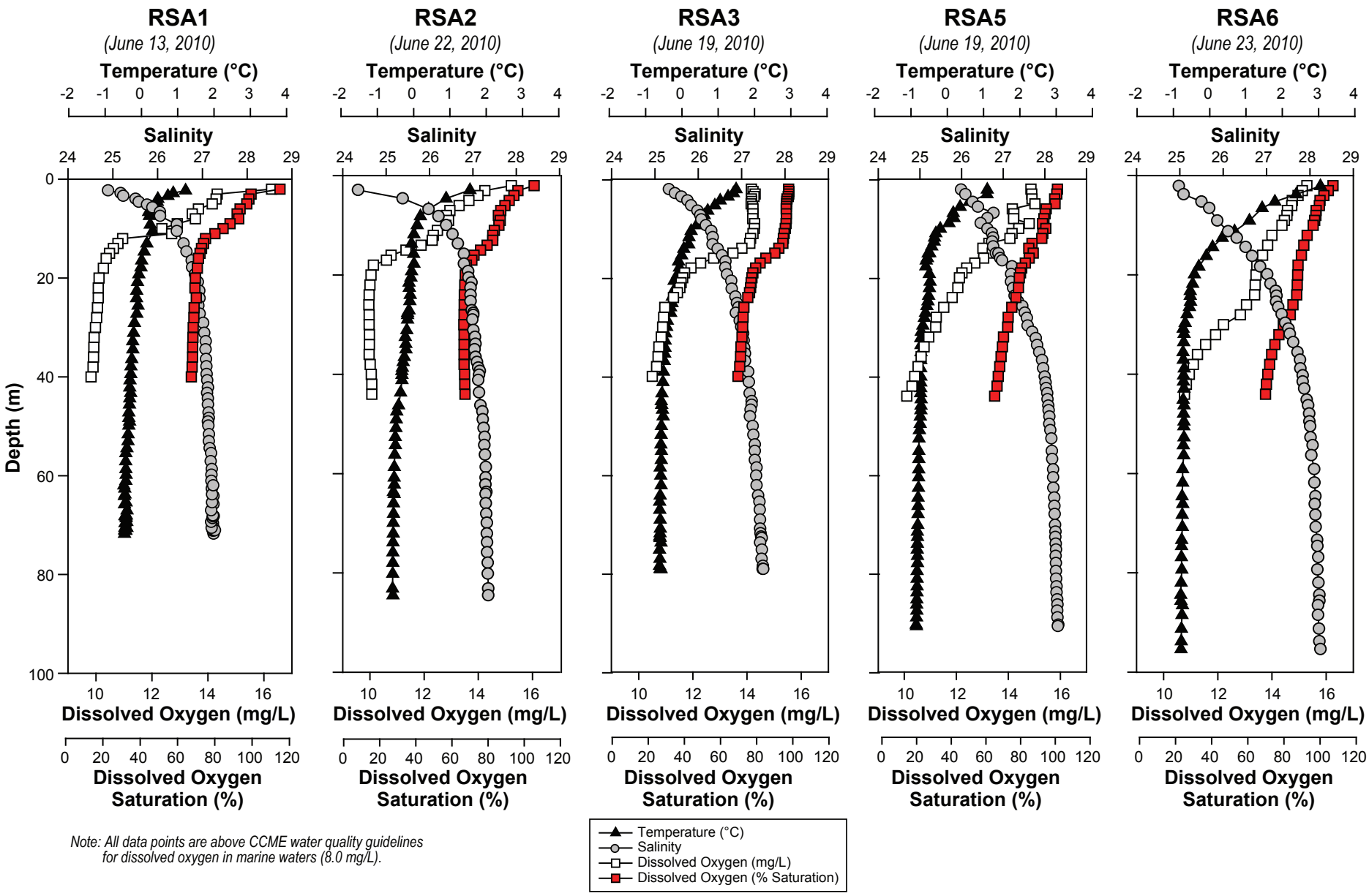
Conductivity, temperature, and depth (CTD) casts were conducted at five sites in the marine RSA during June 2010. Depth profiles of salinity and temperature from these casts are shown in Figure 3.1-1. The full dataset is provided in Appendix 3.1-1.

All sites had broad pycnoclines, with warmer and less saline waters in the surface, and colder, saltier water at depth. The difference in surface and deeper waters was greater in the more enclosed sites, RSA1 and RSA2, than the sites closer to Bathurst Inlet (RSA3, RSA5 and RSA6).

Stable mixed surface layers were not observed at any of the sites. The surface layers had variable salinities and temperatures, with salinities starting at 24.4 and increasing with depth and temperatures starting at 1.6°C and declining with depth. The exception to this was at RSA6, the site closest to Bathurst Inlet, which had a higher surface temperature than any other site at 3.1°C.

The temperatures in the surface water were all above the freezing temperature of seawater (-1.4°C at a salinity of 27), indicating the sea ice was melting at this time of year. Water salinities and temperatures were typically isohaline and isothermal below the pycnocline, with deep water salinities and temperatures of approximately 27.3 to 28.1 and -0.5°C to -0.7°C. Salinities and temperatures in the deep water below the pycnocline tended to be higher at more enclosed sites (RSA1, RSA2 and RSA3) than at the sites closer to Bathurst Inlet (RSA5 and RSA6).

The patterns observed in temperature and salinity in the marine RSA likely reflected the timing of sampling. During long June days, solar radiation both reduces surface salinities by melting the sea ice, and warms surface waters under the ice. This creates depth gradients in temperature and salinity in the under-ice surface layer.



Note: All data points are above CCME water quality guidelines for dissolved oxygen in marine waters (8.0 mg/L).

Figure 3.1-1

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Temperature, Salinity and Dissolved Oxygen Profiles at Regional Marine Sites, Hope Bay Belt Project, June 2010

Figure 3.1-1

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3.1.1.3 Dissolved Oxygen

Profiles of dissolved oxygen concentration and saturation were collected from five sites in the marine RSA (RSA1, RSA2, RSA3, RSA5, RSA6) during June. Profiles are presented in Figure 3.1-1 and the raw data are provided in Appendix 3.1-2.

Dissolved oxygen concentrations ranged from 9.8 mg/L to 16.3 mg/L, and tracked vertical thermohaline trends, with the greatest concentrations in surface waters and lowest concentrations at bottom depths. The near-surface depths (<6 m) were often supersaturated with dissolved oxygen (>100%), indicating that photosynthesis was active in the surface layer during this period. Dissolved oxygen concentrations in the more enclosed sites, RSA1 and RSA2, had very stable dissolved oxygen concentrations below the pycnocline (at approximately 67% saturation). Site RSA3 showed a strong gradient in vertical dissolved oxygen concentrations compared to the two more open sites, RSA5 and RSA6, which showed generally consistent declines with depth. This indicates there was stronger mixing towards Bathurst Inlet, which was likely given the presence of the numerous smaller islands in this area.

Dissolved oxygen concentrations at all sites at all depths was above the recommended marine CCME guideline for aquatic life (8 mg/L; CCME 2011).

3.1.2 Water Quality

Under-ice water quality samples were collected from five sites in the marine RSA (RSA1, RSA2, RSA3, RSA5 and RSA6) during June 2010. Samples were collected from the surface, above the pycnocline, below the pycnocline, and from the deep water. Profiles of water quality parameters are shown in Figures 3.1-2 to 3.1-6 and all water quality data and realized detection limits are presented in Appendix 3.1-3.

3.1.2.1 Physical Parameters

The pH levels were similar at all sites and at all depths, averaging 7.8 pH units (Figure 3.1-2). pH was stable with depth at all sites. The exception was RSA6 where the deep waters had a slightly lower pH than all other water samples (pH 7.5); however, these samples had higher variability.

3.1.2.2 Suspended Material

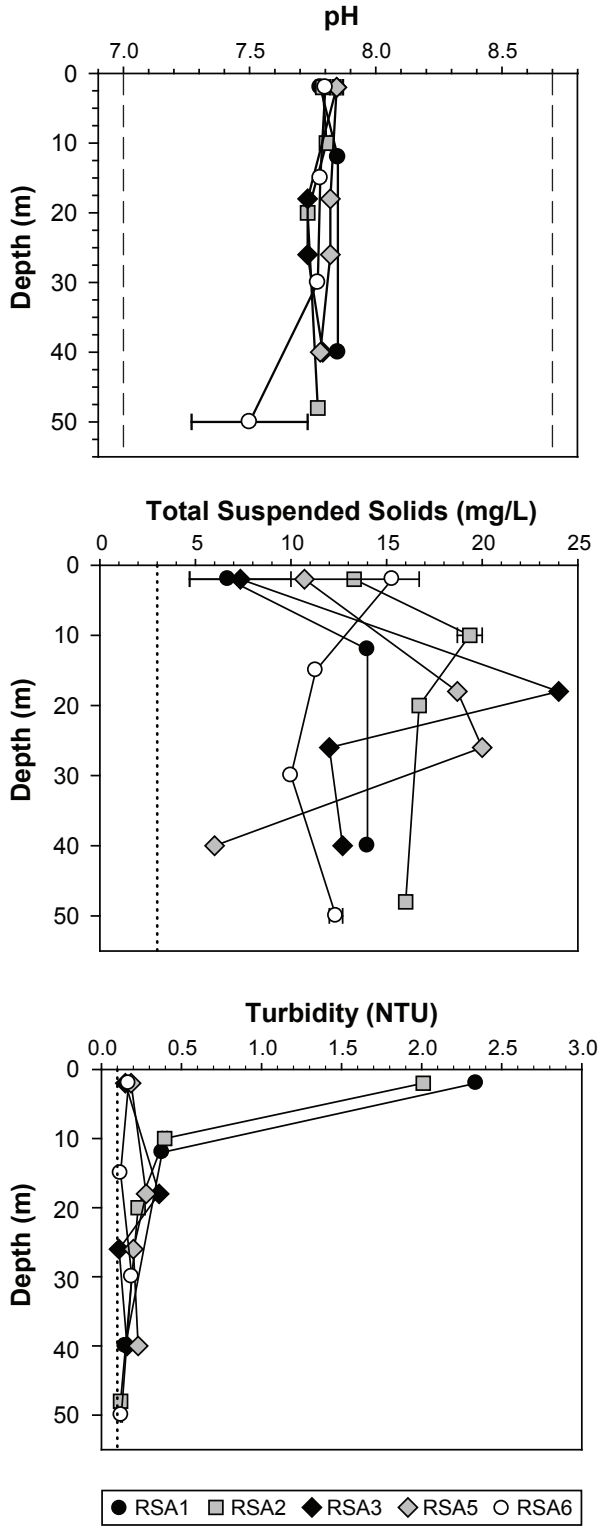
Concentrations of total suspended solids (TSS) were quite high, although variable, in the RSA, ranging from below 6.0 mg/L to 24.0 mg/L (Figure 3.1-2). There was no clear difference between sites, and although TSS often varied dramatically with depth, there was no consistent pattern.

Turbidity was low at all sites and depths, averaging 0.38 NTU (Figure 3.1-2). Surface turbidity levels at sites RSA1 and RSA2 were high, reaching 2.01 NTU and 2.34 NTU, and may reflect the higher primary production that could have been occurring during this time.

3.1.2.3 Nutrients and Total Organic Carbon (TOC)

Overall, nutrient levels were low and similar between sites (Figure 3.1-3). Total ammonia concentrations were mostly below analytical detection (<0.005 mg/L and 0.01 mg/L). Exceptions to this were sites RSA1 and RSA 2 above the pycnocline, which ranged from 0.0181 mg/L to 0.0391 mg/L.

Nitrate, total phosphorus, orthophosphate, and silicate generally exhibited depth gradients, with lower concentrations in surface waters, indicative of phytoplankton growth and nutrient uptake. The trend was most evident for nitrate, which was below detection (0.006 mg/L) in surface samples at all sites. This surface depletion suggests that phytoplankton growth was likely limited by nitrate availability in



Notes: Error bars represent standard error of the mean of duplicate samples.
Dotted lines represent analytical detection limits (pH: 0.1 pH units, total suspended solids: 3 mg/L, turbidity: 0.1 NTU).
Values below the analytical detection limit are plotted at half the detection limit.
Dashed lines represent the marine CCME water quality guideline (pH 7.0–8.7).
CCME guidelines for total suspended solids and turbidity are dependent upon background levels.

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pH, Turbidity and Total Suspended Solids at Regional Marine Sites, Hope Bay Belt Project, June 2010

Figure 3.1-2

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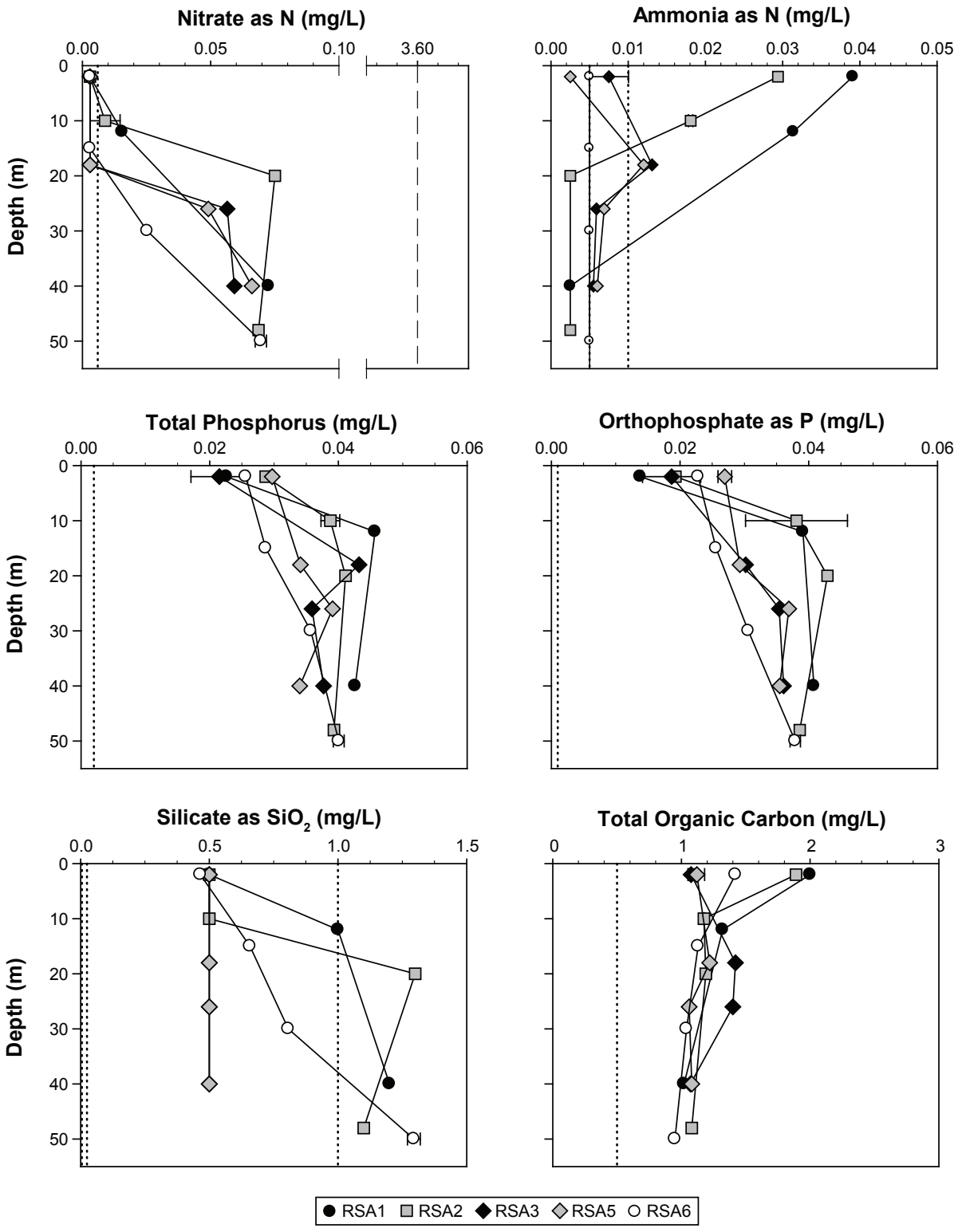

Notes: Error bars represent standard error of the mean of duplicate samples.
Dotted lines represent analytical detection limits (nitrate as N: 0.006 mg/L; ammonia as N: 0.005 or 0.01 mg/L; total phosphorus: 0.002 mg/L; orthophosphate: 0.001 mg/L; silicate: 0.005 or 0.025 or 1.0 mg/L; total organic carbon: 0.5 mg/L).
Values below the analytical detection limit are plotted at half the detection limit.
Dashed line represents the marine CCME water quality guideline for nitrate as N (3.6 mg/L).

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Nutrient and Total Organic Carbon Concentrations at Regional Marine Sites, Hope Bay Belt Project, June 2010

Figure 3.1-3

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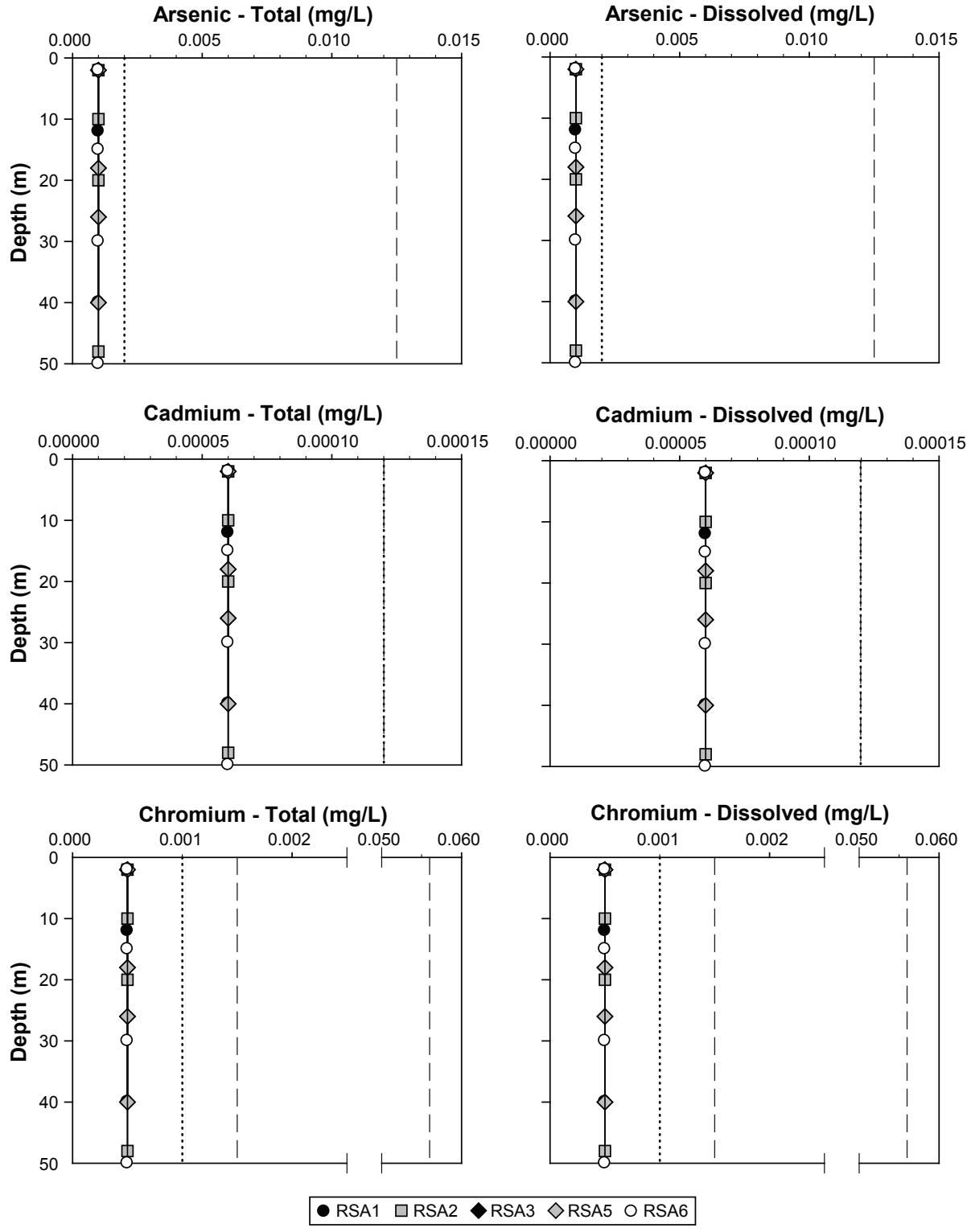

Notes: Error bars represent standard error of the mean of duplicate samples.
Dotted lines represent analytical detection limits (arsenic: 0.002 mg/L; cadmium: 0.00012 mg/L; chromium: 0.001 mg/L).
Values below the analytical detection limit are plotted at half the detection limit.
Dashed lines represent the marine CCME water quality guidelines (arsenic: 0.0125 mg/L; cadmium: 0.00012 mg/L; hexavalent chromium: 0.0015 mg/L; trivalent chromium: 0.056 mg/L).

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Arsenic, Cadmium and Chromium Concentrations at Regional Marine Sites, Hope Bay Belt Project, June 2010

Figure 3.1-4

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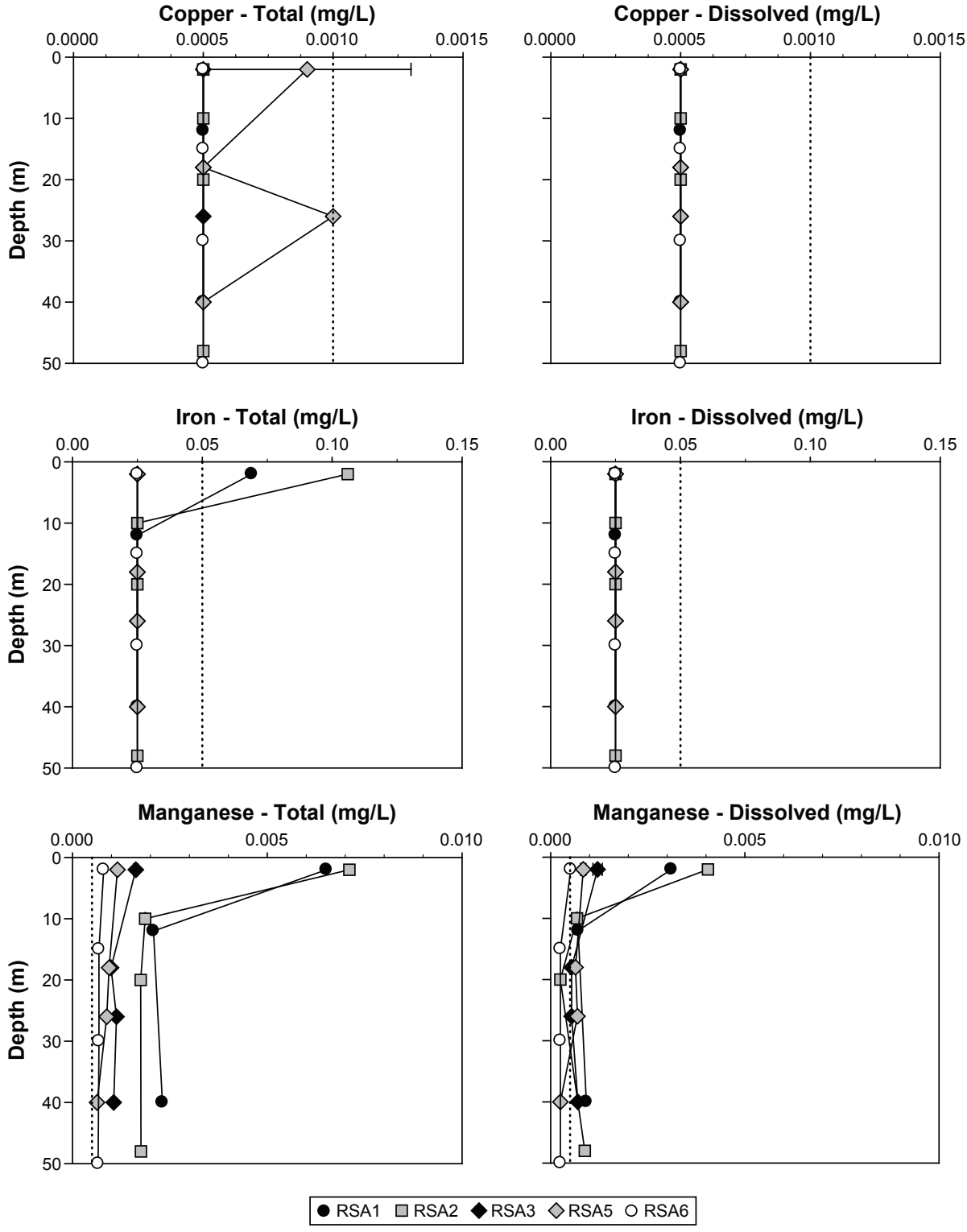

Notes: Error bars represent standard error of the mean of duplicate samples.
Dotted lines represent analytical detection limits (copper: 0.001 mg/L; iron: 0.05 mg/L; manganese: 0.0005 mg/L).
Values below the analytical detection limit are plotted at half the detection limit.

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Copper, Iron and Manganese Concentrations at Regional Marine Sites, Hope Bay Belt Project, June 2010

Figure 3.1-5

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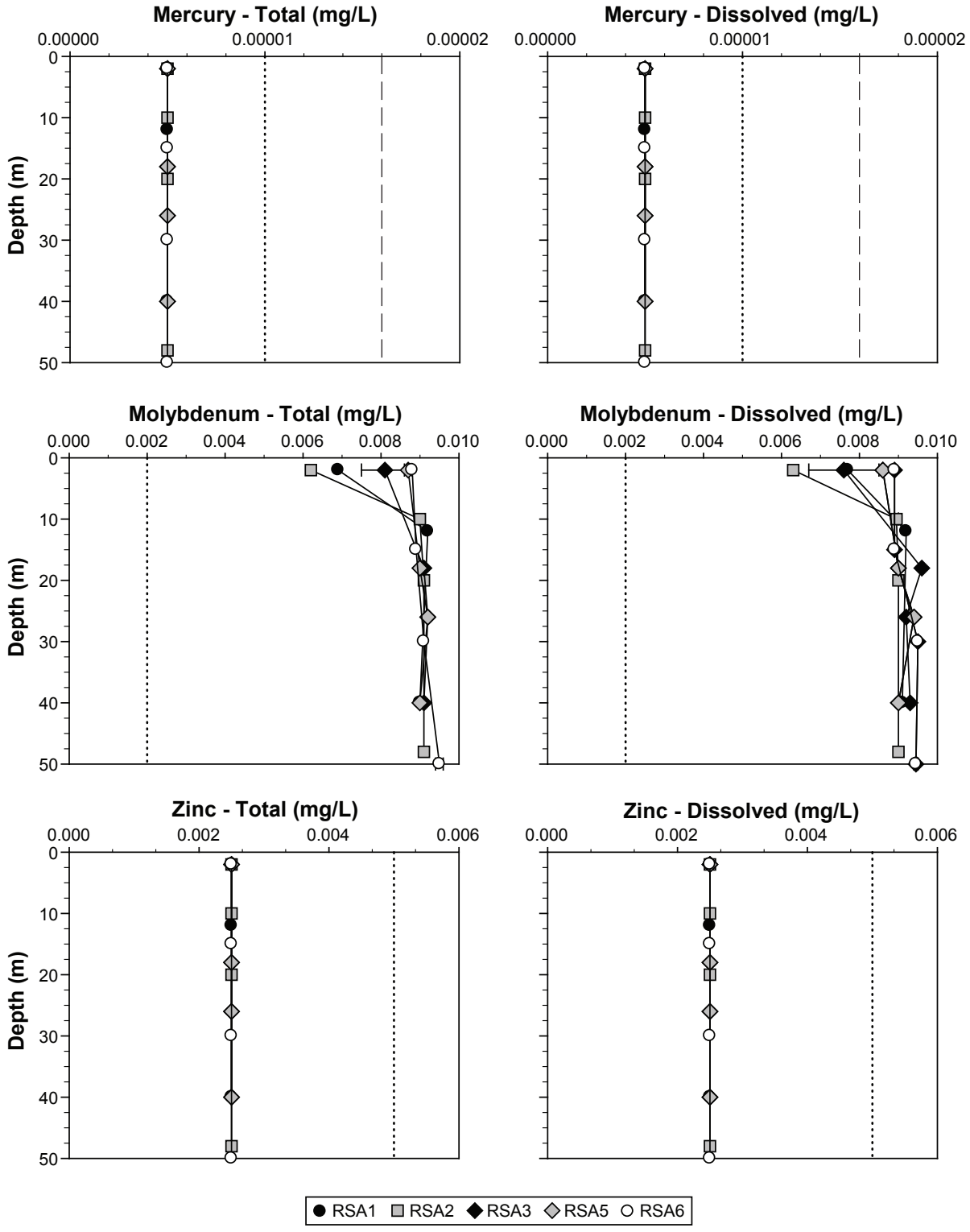

Notes: Error bars represent standard error of the mean of duplicate samples.
Dotted lines represent analytical detection limits (mercury: 0.00001 mg/L; molybdenum: 0.002 mg/L; zinc: 0.005 mg/L).
Values below the analytical detection limit are plotted at half the detection limit.
Dashed line represents the marine CCME water quality guidelines for inorganic mercury (0.000016 mg/L).

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Mercury, Molybdenum and Zinc Concentrations at Regional Marine Sites, Hope Bay Belt Project, June 2010

Figure 3.1-6

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the surface waters. Phosphorus was always above its analytical detection limit, with surface concentrations averaging 0.026 mg/L, and increasing deeper into the water column to a maximum of 0.046 mg/L. Bioavailable orthophosphate made up the majority of the total phosphorus pool, further suggesting that the primary production in this area was controlled by nitrogen availability. Surface concentrations of silicate were lower than deeper in the water column for sites RSA1, RSA2, and RSA6. Sites RSA3 and RSA4 were below the analytical detection limit (1.0 mg/L) throughout the water column for silicate. Silicate in surface waters was likely drawn down by silica-frustuled diatoms.

Total organic carbon (TOC) concentrations tended to be stable down the water column, generally between 1.0 and 1.5 mg/L. Exceptions were at the more enclosed sites RSA1 and RSA2, which had higher surface TOC concentrations of 1.9 mg/L and 2.0 mg/L, respectively. This pattern matches the higher surface turbidities found at these sites, and suggests higher phytoplankton growth at these locations.

3.1.2.4 Metals

Overall, the five sites in the marine RSA had low concentrations of total and dissolved metals (Figures 3.1-4 to 3.1-6). Average concentrations of total and dissolved arsenic, cadmium, chromium, copper, iron, mercury and zinc were at or below the analytical detection limits for all sites and all depths. Exceptions to this were iron concentrations in the surface samples from RSA1 and RSA2, which were 0.069 mg/L and 0.106 mg/L, respectively.

Surface waters at RSA1 and RSA2, the two more enclosed sites, had higher concentrations of total iron and total and dissolved manganese than other sites. Trends in molybdenum concentrations were more similar to those seen in nutrients than in the other metals. Molybdenum concentrations tended to be lowest in the surface waters, particularly in the more enclosed sites, suggesting phytoplankton uptake or dilution from melting sea ice.

3.1.2.5 Comparison with CCME Water Quality Guidelines

All water quality data collected in the marine RSA were compared to the CCME water quality guidelines for the protection of marine aquatic life (2011). All water quality parameters were below their respective guideline concentration.

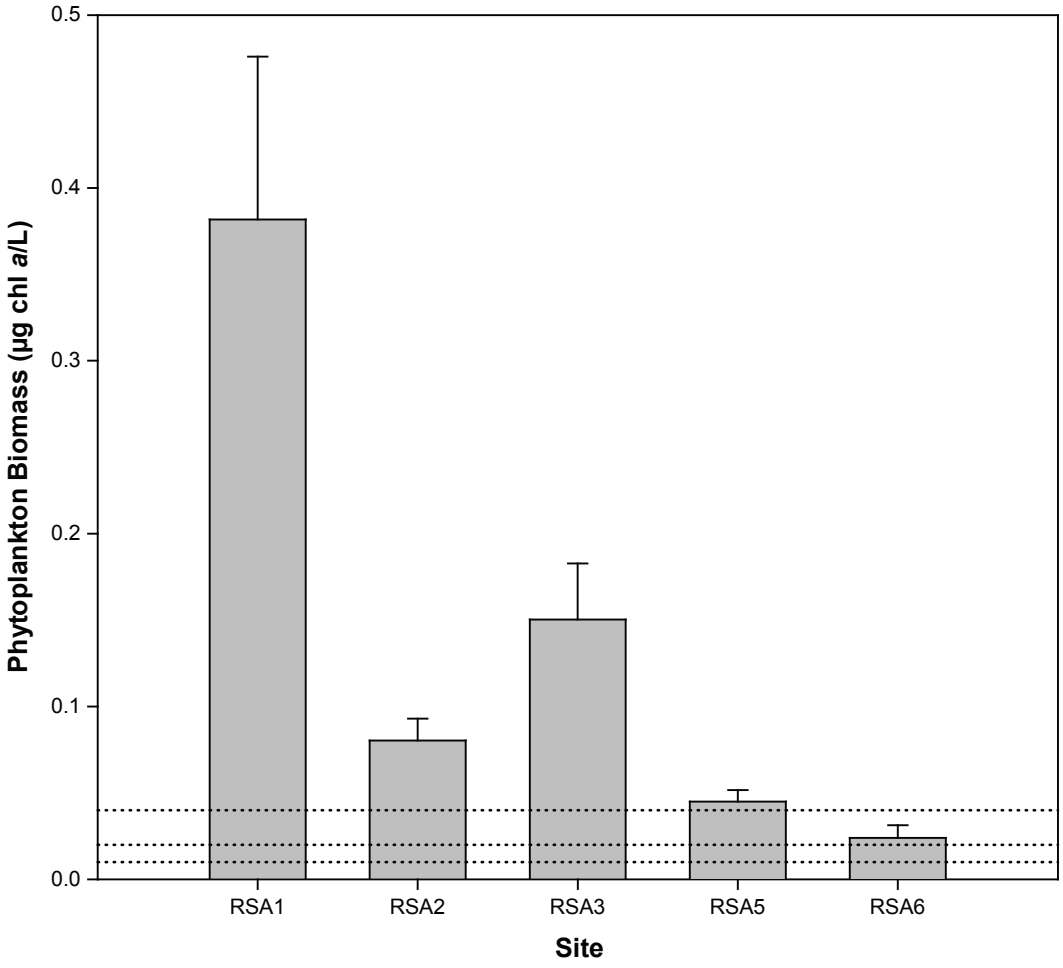
3.1.2.6 Quality Assurance/Quality Control (QA/QC)

Analytical results for travel, field, and equipment blanks collected as part of the 2010 marine water quality sampling program are presented in Appendix 3.1-3. Analytical results for blank samples were below detection limits for every water quality parameter.

3.1.3 Phytoplankton

Phytoplankton are free-floating autotrophic algae that play an important role in marine systems as primary producers and prey for higher trophic levels. Phytoplankton biomass (as chlorophyll *a*) samples were collected from surface water at five sites in the marine RSA. Chlorophyll *a* results are shown in Figure 3.1-7, and the raw data are provided in Appendix 3.1-4.

Overall, mean phytoplankton biomass (as chlorophyll *a*) was very low in the marine RSA, with all concentrations below 0.5 µg chl *a*/L. RSA1, the closest site to Roberts Bay, had the highest mean biomass (0.38 µg chl *a*/L) compared to the other sites (total mean: 0.08 µg chl *a*/L). Phytoplankton biomass at most sites was probably limited by reduced under-ice light levels, and the low nutrient levels in the surface waters.



Notes: Error bars represent standard error of the mean of triplicate samples.
Dotted lines represent analytical detection limits (0.01, 0.02 and 0.04 µg chl a/L).
No replicates were below analytical detection limits.

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Phytoplankton Biomass (as chlorophyll *a*) at Regional Marine Sites, Hope Bay Belt Project, June 2010

Figure 3.1-7

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3.1.4 Summary

A summary of the under-ice regional oceanographic sampling during June is presented in Table 3.1-2.

Table 3.1-2. Summary of 2010 Regional Marine Baseline Results, June 2010

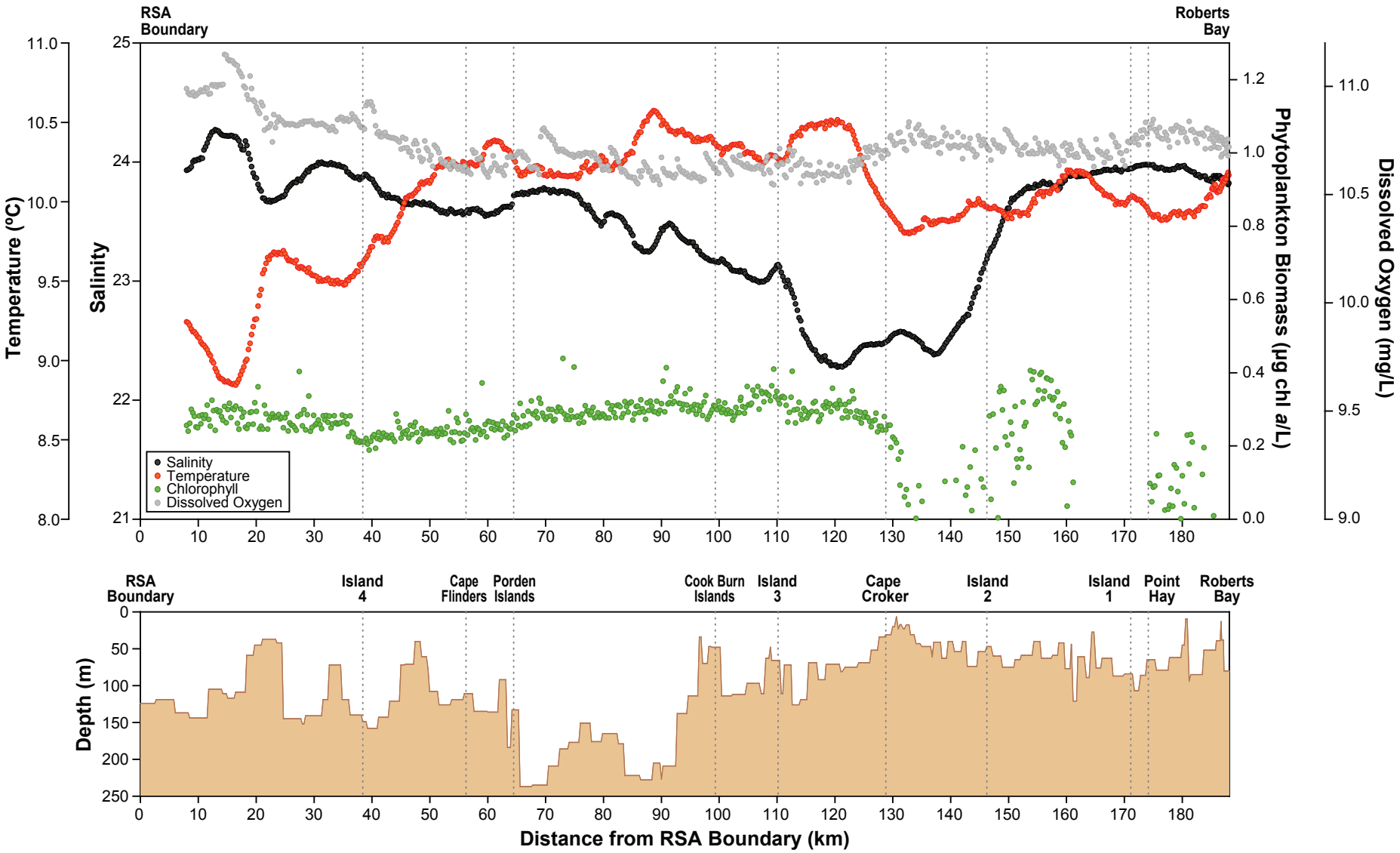
				Physical Oceanography		Water Quality		Primary production
Melville Sound Site	Snow Depth (m)	Ice Depth (m)	Max Depth (m)	Water Column Structure	Dissolved Oxygen CCME Guideline Exceedances*	General description	Parameters that exceed CCME Guidelines	Phytoplankton (chl *a*)
RSA1	0	1.1	>100	Broad pycnocline, dissolved oxygen levels variable in surface and stable below pycnocline	None	Slightly basic, higher surface turbidity, higher surface nitrogen as ammonia and TOC, higher surface metals than other sites	None	Chl *a* concentrations over twice as high as any other site
RSA2	0	1	~ 85	Broad pycnocline, Dissolved oxygen levels variable in surface and stable but lower below pycnocline	None	Slightly basic, higher surface turbidity, higher surface nitrogen as ammonia and TOC, higher surface metals than other sites	None	Low chl *a* concentrations
RSA3	0	1	82	Broad pycnocline, dissolved oxygen levels stable above and below pycnocline	None	Slightly basic, low nutrient and metal concentrations	None	Low chl *a* concentrations
RSA5	0	1.1	>100	Broad pycnocline, dissolved oxygen levels declining with depth with no clear stable zones	None	Slightly basic, low nutrient and metal concentrations	None	Low chl *a* concentrations
RSA6	0	0.8	>100	Broad pycnocline, dissolved oxygen levels declining with depth with no clear stable zones	None	Slightly basic, low nutrient and metal concentrations	None	Lowest chl *a* concentrations

** The CCME recommended minimum concentration of DO in marine waters is 8.0 mg/L*
Sampling could not be conducted at site RSA4 due to safety concerns over weak ice.

3.2 OPEN-WATER CONTINUOUS REGIONAL OCEANOGRAPHIC SAMPLING

On the return leg of a trip from Roberts Bay to Cambridge Bay, a 'ship of opportunity' provided the facility on which to continuously monitor properties of surface seawater between Cambridge Bay and Roberts Bay (Figure 2.1-1). This was accomplished using automated instrumentation (CTD fitted with dissolved oxygen and fluorometric probes). Figure 3.2–1 shows the data obtained from this transect of approximately 180 km, over a period of approximately 12 hours on the 12th of September 2010. All raw data is provided in Appendix 3.2-1.

The dominant feature of this transect was a 30-km stretch of decreasing surface salinity (~22.5), through the constriction near Cape Croker that separates Bathurst Inlet from Melville Sound



Note: Vertical exaggeration between depth and distance is 152:1 in lower plot
Refer to Figure 2.1-1 for transect route.

Figure 3.2-1

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Temperature, Salinity, Dissolved Oxygen, Phytoplankton Biomass (as chl *a*), and Bathymetry along the Marine RSA Transect, Hope Bay Belt Project, September 2010

Figure 3.2-1

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(Figure 3.2-1). The salinity decrease was accompanied by an increase in temperature of approximately 0.5°C over the slightly deeper water on the western side of Cape Croker. The higher temperature, lower salinity surface seawater probably represented the wind-driven input of near surface, more brackish water from Bathurst Inlet into Melville Sound through the narrows at Cape Croker. The Coriolis effect probably contributed slightly to the eastward movement of Bathurst Inlet water into western Melville Sound. The surface seawater was slightly more saline (23–24) and colder (~10°C) in central Melville Sound than the waters in northern Bathurst Inlet between the Cook Burn Islands and the Porden Islands. North of Cape Flinders towards the RSA boundary, the salinity increased and temperature decreased characteristic of the more marine influenced waters of Coronation Gulf.

Surface dissolved oxygen was also slightly lower in the zone between Island 3 and Cape Croker, but overall, dissolved oxygen was relatively stable between 10.5 and 11.0 mg/L. Northward towards the marine RSA boundary, the dissolved oxygen concentrations were highest, and increased with increasing salinity and decreasing temperature. At these temperatures and salinities, the dissolved oxygen level represented a saturation of the order of 110% throughout the transect.

Through the eastern portion of this transect, surface phytoplankton biomass (chlorophyll *a*) was extremely low at 0.2 µg chl *a*/L or less; this could represent either a very low production environment, or one where phytoplankton production occurred at depth. Deep chlorophyll maxima (regions deeper in the water column where phytoplankton can access nutrients with sufficient light to photosynthesize) are characteristic of some parts of the Arctic where fresher surface waters have constrained mixing and the supply of nutrients from below. Towards the Cook Burn Islands, chlorophyll was slightly higher in the range of 0.2–0.4 µg chl *a*/L, and remained at this level in the open waters towards the marine RSA boundary. Even at 0.2–0.4 µg chl *a*/L, these represent extremely low levels of phytoplankton biomass in surface waters for a near coastal environment. There were no apparent regions of enhanced phytoplankton biomass along the frontal boundaries (e.g., at Island 2 or Island 3) of this transect.

References

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References

Definitions of the acronyms and abbreviations used in this reference list can be found in the Glossary and Abbreviations section.

CCME. 2011. Canadian Water Quality Guidelines for the Protection of Aquatic Life: Summary Table. Updated January 2011. In: *Canadian Environmental Quality Guidelines, 1999*. Canadian Council of Ministers of the Environment: Winnipeg, MB.

Fofonoff, P. and C. Millard Jr. 1983. Algorithms for computation of fundamental properties of seawater. *Unesco Technical Papers in Marine Science*. Vol. 44, pp. 53.

Appendix 3.1-1

Temperature and Salinity Profile Data from Regional Marine Sites, Hope Bay Belt Project, June 2010

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Appendix 3.1-1. Temperature and Salinity Profile Data from Regional Marine Sites, Hope Bay Belt Project, June 2010

RSA1		
13-Jun-10		
Depth (m)	Temperature (˚C)	Salinity
2.2604	1.1498	24.8967
2.7975	0.8179	25.1754
3.3811	0.676	25.2348
3.9791	0.4078	25.5101
4.5735	0.3924	25.5811
5.1456	0.3194	25.7656
5.7143	0.2469	25.8851
6.6152	0.1576	26.052
7.4327	0.1807	26.0548
9.1727	0.2017	26.4295
10.4941	0.2677	26.4301
13.0051	0.113	26.5804
14.6492	0.0399	26.6464
16.4377	-0.0283	26.7603
17.8538	-0.0459	26.7718
19.2387	-0.1025	26.8371
20.8035	-0.1397	26.8982
22.5689	-0.1603	26.9332
24.0798	-0.163	26.9375
25.5761	-0.1265	26.9115
27.2379	-0.1569	26.9403
29.0903	-0.2231	27.02
31.1094	-0.242	27.0431
32.8012	-0.2695	27.0753
34.4438	-0.2653	27.0724
36.3915	-0.2933	27.0826
37.8657	-0.3148	27.0897
39.4298	-0.3198	27.0952
40.6903	-0.3415	27.1075
42.1362	-0.3464	27.1278
43.2486	-0.324	27.1051
44.3586	-0.3485	27.1223
45.5842	-0.3561	27.1268
47.1954	-0.3742	27.1384
48.2987	-0.3729	27.1453
49.0316	-0.3502	27.1275
49.8597	-0.3721	27.1353
51.6057	-0.3889	27.1472
53.0132	-0.3944	27.1452
54.4338	-0.4241	27.1665
55.4225	-0.4527	27.1966
57.0742	-0.4553	27.1856
58.648	-0.4518	27.2116
59.8227	-0.4447	27.2042
61.0461	-0.4527	27.2026
62.6104	-0.4806	27.2129
64.1034	-0.4925	27.2484
65.7747	-0.4868	27.2502
68.1964	-0.4751	27.2544
69.634	-0.4735	27.2377
70.5354	-0.4753	27.2517
71.1184	-0.4537	27.2354
71.7744	-0.4876	27.2521

RSA2		
22-Jun-10		
Depth (m)	Temperature (˚C)	Salinity
2.9035	1.5197	24.3545
4.5744	0.86	25.3813
6.7336	0.3736	25.9779
8.158	0.1488	26.207
9.9594	0.0598	26.3851
11.7859	-0.0336	26.5299
13.662	-0.1007	26.6558
15.7352	-0.0407	26.7923
17.7461	-0.0292	26.798
19.2499	-0.0976	26.8927
20.5153	-0.1139	26.9003
21.5145	-0.1659	26.9682
22.5715	-0.1589	26.9464
23.9939	-0.1352	26.9476
25.2666	-0.1466	26.9466
27.1302	-0.1672	26.9768
27.6387	-0.209	27.0111
28.0593	-0.2071	27.0102
28.9782	-0.2073	26.9872
31.1003	-0.2319	27.0114
32.4653	-0.2712	27.0494
33.8631	-0.2574	27.0613
34.9724	-0.2524	27.0399
36.4966	-0.2971	27.0621
37.5176	-0.3308	27.0973
38.641	-0.3517	27.1261
39.3314	-0.3691	27.1605
40.1022	-0.3653	27.1425
41.1486	-0.3638	27.1246
43.6621	-0.4024	27.1439
46.2482	-0.4577	27.1775
47.4793	-0.5083	27.2198
49.058	-0.5194	27.2294
50.8015	-0.5295	27.2508
52.6065	-0.5485	27.2712
54.237	-0.5453	27.2652
56.1877	-0.5624	27.282
58.6518	-0.5758	27.2999
60.7887	-0.5769	27.2924
62.1676	-0.5742	27.2918
63.6909	-0.601	27.311
64.0916	-0.578	27.2937
65.9662	-0.5963	27.3004
68.1019	-0.5968	27.3077
69.9348	-0.6059	27.3243
72.0624	-0.6042	27.324
73.8477	-0.6112	27.3281
75.8625	-0.6143	27.3315
77.9729	-0.6171	27.3425
80.1791	-0.6213	27.3469
83.1457	-0.622	27.354
84.5327	-0.6121	27.3545

RSA3		
19-Jun-10		
Depth (m)	Temperature (˚C)	Salinity
2.0235	1.4491	25.3189
2.8469	1.3744	25.4596
3.5323	1.2267	25.6097
4.3149	1.0069	25.7499
5.3238	0.8576	25.8322
6.392	0.6644	25.9846
7.3058	0.565	26.0484
8.1648	0.539	26.0707
9.3386	0.3547	26.1747
10.4913	0.1983	26.303
11.7545	0.1395	26.3368
13.2138	0.1315	26.3325
14.1421	-0.0031	26.451
15.4487	-0.0633	26.5481
16.6746	-0.1481	26.631
17.9099	-0.1245	26.6222
19.3323	-0.1732	26.6652
20.6187	-0.2709	26.7622
22.2309	-0.2502	26.774
23.8217	-0.3205	26.8592
25.1347	-0.3311	26.8952
25.9994	-0.3695	26.9294
27.1064	-0.3688	26.8696
28.7135	-0.4601	26.9604
29.975	-0.4772	26.9929
31.2859	-0.5054	27.0385
32.7372	-0.5184	27.0489
34.2045	-0.522	27.0617
35.3633	-0.5342	27.0801
36.8717	-0.5455	27.0817
39.0469	-0.5693	27.1545
41.1523	-0.5832	27.1696
43.4267	-0.6071	27.1887
45.0176	-0.6286	27.2348
45.7852	-0.6163	27.2307
46.784	-0.5933	27.2109
48.1099	-0.5737	27.1959
50.0693	-0.6233	27.2555
51.8464	-0.6309	27.272
53.8222	-0.6393	27.306
55.132	-0.6244	27.3063
56.9693	-0.6254	27.305
58.507	-0.6553	27.3476
60.1404	-0.6429	27.3361
62.0888	-0.6291	27.3454
64.1688	-0.6574	27.3829
65.4311	-0.6705	27.4149
67.0836	-0.6662	27.4218
69.0852	-0.6571	27.4278
70.928	-0.6529	27.4288
71.8661	-0.6619	27.4403
72.531	-0.6697	27.4505
72.8364	-0.6585	27.467
73.7327	-0.633	27.4286
75.1876	-0.6746	27.4711
77.0395	-0.6629	27.4632
78.4846	-0.6758	27.4923
79.1016	-0.6586	27.4938
79.1106	-0.6428	27.4855
79.1166	-0.6349	27.4993

Appendix 3.1-1. Temperature and Salinity Profile Data from Regional Marine Sites, Hope Bay Belt Project, June 2010

RSA5		
19-Jun-10		
Depth (m)	Temperature (˚C)	Salinity
2.1177	1.1437	25.9933
3.0616	1.1341	26.0946
4.6093	0.625	26.2671
5.596	0.3584	26.3976
6.8371	0.1622	26.7707
7.8891	0.1853	26.6207
8.9006	0.0407	26.4626
10.0501	-0.2127	26.6235
10.944	-0.337	26.7354
11.844	-0.3766	26.76
12.6396	-0.388	26.7374
13.6557	-0.457	26.7623
15.0281	-0.5177	26.8286
15.0576	-0.5601	26.89
16.0029	-0.5834	26.9299
16.4865	-0.6177	26.9744
17.6868	-0.6302	27.2128
19.2478	-0.527	27.1954
20.7953	-0.5029	27.1893
22.086	-0.5239	27.2421
23.6556	-0.5486	27.2779
24.7741	-0.5671	27.3581
25.7335	-0.5992	27.4604
27.0806	-0.6363	27.5238
28.1481	-0.6694	27.5709
29.712	-0.7139	27.5915
30.9664	-0.7599	27.6984
32.2569	-0.7748	27.7857
33.643	-0.7678	27.8182
35.1128	-0.7665	27.8698
36.6869	-0.7739	27.9389
38.3583	-0.7766	27.9629
40.0568	-0.7717	27.9996
41.2372	-0.7749	28.0208
42.3965	-0.7731	28.0343
43.4126	-0.7771	28.0593
44.644	-0.764	28.0667
45.9272	-0.7684	28.0847
46.888	-0.7704	28.0959
48.1383	-0.7861	28.1103
49.649	-0.7891	28.1084
50.9202	-0.813	28.1322
52.6114	-0.8234	28.1591
55.1385	-0.8279	28.1725
56.7848	-0.8301	28.1794
58.8622	-0.8318	28.2014
60.4881	-0.8364	28.2024
62.6055	-0.8422	28.2066
64.6089	-0.8509	28.2297
66.2949	-0.854	28.2343
67.9696	-0.8508	28.2406
70.1575	-0.8604	28.2485
71.5301	-0.872	28.2603
72.6227	-0.8661	28.2557
73.9824	-0.8698	28.2664
75.1613	-0.8748	28.2721
76.4546	-0.866	28.2625
77.8997	-0.8688	28.27
79.5317	-0.8773	28.2699
81.0785	-0.8774	28.2758
82.6463	-0.8801	28.2844
83.8567	-0.8821	28.286
85.2912	-0.8876	28.3006
86.3147	-0.8919	28.3083
87.5685	-0.8882	28.2993
88.9269	-0.8954	28.3064
90.408	-0.9076	28.3262
90.7099	-0.9	28.316

RSA6		
23-Jun-10		
Depth (m)	Temperature (˚C)	Salinity
2.0705	3.0897	24.9782
3.7578	2.4249	25.0897
5.2233	1.8307	25.4989
6.5168	1.4765	25.6792
9.0453	1.1244	25.8648
11.2064	0.7152	26.1143
12.5139	0.3736	26.3158
14.3643	0.1053	26.5192
16.1767	-0.0655	26.6701
18.3045	-0.2745	26.8508
19.8544	-0.3986	27.015
21.7686	-0.4438	27.0888
23.2288	-0.5112	27.2137
24.1738	-0.5117	27.2308
25.3626	-0.5061	27.2238
26.4481	-0.5351	27.2701
27.8975	-0.601	27.3485
29.6385	-0.654	27.4313
30.8004	-0.7071	27.5081
31.8495	-0.6833	27.5385
33.5261	-0.6923	27.6147
35.545	-0.7119	27.7122
37.0558	-0.7056	27.7737
38.8241	-0.6778	27.7827
40.2164	-0.699	27.834
41.4525	-0.7023	27.8356
42.8676	-0.6845	27.87
45.1056	-0.7097	27.9268
46.2294	-0.684	27.9605
47.8961	-0.6969	27.9865
49.5007	-0.6866	27.9895
50.4498	-0.6888	28.0072
52.6786	-0.6871	28.0162
54.2695	-0.7062	28.0634
56.3	-0.6952	28.0355
59.0987	-0.7238	28.1009
61.7941	-0.725	28.1054
64.5432	-0.7394	28.1266
66.1151	-0.7197	28.1116
68.3096	-0.7356	28.1276
70.7512	-0.7308	28.1339
73.3537	-0.7488	28.1669
74.5999	-0.7513	28.1742
76.8483	-0.7582	28.1911
79.3304	-0.746	28.1735
81.9807	-0.7633	28.1978
84.4052	-0.7735	28.2197
85.6291	-0.7703	28.2192
86.5117	-0.7272	28.188
88.4817	-0.7411	28.19
91.2482	-0.7569	28.2119
93.7655	-0.7603	28.2214
95.3486	-0.7673	28.2441

Appendix 3.1-2

Dissolved Oxygen Concentrations from Regional Marine Sites, Hope Bay Belt Project, June 2010

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Appendix 3.1-2. Dissolved Oxygen Concentrations from Regional Marine Sites, Hope Bay Belt Project, June 2010

RSA1			
21-Jun-10			
Depth (m)	Temp (˚C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen Saturation (%)
2	0.6	16.27	113.6
3	-0.1	14.33	98.1
4	-0.4	14.29	96.9
5	-0.6	14.15	95.8
6	-0.6	13.66	92.2
7	-0.6	13.44	90.6
8	-0.6	13.55	91.5
9	-0.7	12.90	86.8
10	-0.7	12.35	83.1
11	-0.7	12.70	78.7
12	-0.7	10.95	73.7
13	-0.7	10.78	72.6
14	-0.7	10.62	71.5
15	-0.6	10.48	70.7
16	-0.6	10.36	69.9
18	-0.6	10.26	69.3
20	-0.6	10.11	68.2
22	-0.6	10.08	68.0
24	-0.7	10.08	68.7
26	-0.7	10.05	67.6
28	-0.7	10.02	67.4
30	-0.7	9.98	67.1
32	-0.7	9.93	66.9
34	-0.7	9.92	66.8
36	-0.7	9.91	66.7
38	-0.7	9.89	66.5
40	-0.7	9.82	66.1

Snow depth: 0 m
Ice thickness: 1.1 m
Max depth: >100 m

RSA2			
21-Jun-10			
Depth (m)	Temp (˚C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen Saturation (%)
2	-0.4	15.22	105.9
3	-0.3	14.24	96.9
4	-0.5	13.99	94.7
5	-0.6	13.65	92.1
6	-0.6	13.29	89.7
7	-0.6	12.95	87.4
8	-0.6	12.82	86.1
9	-0.6	12.90	87.1
10	-0.6	12.80	86.4
11	-0.6	12.49	83.9
12	-0.6	12.34	83.0
13	-0.6	12.30	83.0
14	-0.7	11.89	79.9
15	-0.7	11.33	76.2
16	-0.7	10.78	72.6
17	-0.7	10.61	71.4
18	-0.6	10.13	68.4
20	-0.6	10.04	67.8
22	-0.6	10.00	67.5
24	-0.6	9.97	67.3
26	-0.6	9.96	67.2
28	-0.7	9.97	67.1
30	-0.7	9.97	67.0
32	-0.7	9.98	67.1
34	-0.7	9.98	67.1
36	-0.7	9.97	67.1
38	-0.8	10.01	67.1
40	-0.8	10.05	67.4
42	-0.8	10.07	67.5
44	-0.8	10.07	67.6

Snow depth: 0 m
Ice thickness: 1.0 m
Max depth: ~85 m

RSA3			
19-Jun-10			
Depth (m)	Temp (˚C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen Saturation (%)
2	0.3	14.16	98.0
2.5	0.2	14.22	98.2
3	0.1	14.30	98.1
3.5	0.0	14.26	97.8
4	0.0	14.16	97.1
4.5	-0.1	14.17	97.0
5	-0.1	14.15	96.9
5.5	-0.2	14.20	96.8
6	-0.2	14.22	96.7
7	-0.3	14.22	96.8
8	-0.3	14.21	96.8
9	-0.4	14.28	96.6
10	-0.5	14.27	96.2
11	-0.6	14.22	95.6
12	-0.7	14.13	95.1
13	-0.7	14.10	94.8
14	-0.8	13.81	92.6
15	-0.8	13.48	90.4
16	-0.9	12.77	85.4
17	-0.9	12.29	82.2
18	-0.9	11.93	79.8
19	-0.9	11.69	78.2
20	-0.9	11.62	77.7
21	-0.9	11.56	77.3
22	-0.9	11.52	77.0
23	-0.9	11.43	76.4
24	-0.9	11.28	75.4
26	-0.9	10.96	73.3
28	-1.0	10.92	72.8
30	-1.0	10.88	72.6
32	-1.0	10.83	72.2
34	-1.0	10.74	71.6
36	-1.0	10.71	71.4
38	-1.0	10.66	71.0
40	-1.0	10.50	70.0

Snow depth: 0 m
Ice thickness: 1.0 m
Max depth: 82 m

RSA4			
22-Jun-10			
Depth (m)	Temp (˚C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen Saturation (%)

Note: no data could be collected due to weak ice in 10 km radius

Appendix 3.1-2. Dissolved Oxygen Concentrations from Regional Marine Sites, Hope Bay Belt Project, June 2010

RSA5			
19-Jun-10			
Depth (m)	Temp (˚C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen Saturation (%)
2	-0.5	14.87	103.3
3	-0.2	14.90	102.9
4	-0.2	14.91	101.7
5	-0.4	15.02	101.9
6	-0.2	14.15	96.8
7	-0.5	14.21	96.2
8	-0.6	14.20	95.5
9	-0.7	14.80	94.7
10	-0.8	14.40	96.6
11	-0.8	14.14	94.9
12	-0.8	14.06	94.3
13	-0.9	13.25	88.6
14	-1.0	13.02	86.8
15	-1.0	13.38	89.3
16	-1.0	13.05	87.0
17	-1.0	12.71	84.8
18	-1.0	12.40	82.7
19	-0.8	12.22	82.0
20	-0.8	12.12	81.3
22	-0.8	12.06	80.8
24	-0.8	11.84	79.4
26	-0.9	11.52	77.0
28	-1.0	11.23	74.9
30	-1.1	11.21	74.6
32	-1.1	10.94	72.2
34	-1.1	10.76	71.6
36	-1.1	10.65	70.8
38	-1.1	10.53	70.0
40	-1.1	10.40	69.2
42	-1.1	10.30	68.5
44	-1.1	10.10	67.1

Snow depth: 0 m
Ice thickness: 1.1 m
Max depth: >100 m

RSA6			
23-Jun-10			
Depth (m)	Temp (˚C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen Saturation (%)
2	1.3	15.29	108.8
3	0.7	15.12	106.2
4	0.3	14.96	103.7
5	0.1	14.75	101.6
6	0.0	14.73	101.2
7	-0.2	14.57	99.4
8	-0.3	14.55	99.3
9	-0.3	14.46	98.6
10	-0.3	14.37	97.8
12	-0.6	14.00	94.5
14	-0.9	13.84	92.6
16	-1.0	13.65	91.3
18	-1.1	13.44	89.4
20	-1.1	13.41	89.2
22	-1.1	13.38	89.0
24	-1.2	13.36	88.7
26	-1.2	13.06	86.6
28	-1.2	12.83	85.1
30	-1.3	12.21	81.3
32	-1.3	11.92	78.8
34	-1.2	11.55	76.6
36	-1.2	11.25	74.8
38	-1.2	11.10	73.7
40	-1.2	10.95	72.7
42	-1.2	10.84	71.9
44	-1.2	10.77	71.4

Snow depth: 0 m
Ice thickness: 0.8 m
Max depth: >100 m

Appendix 3.1-3

Water Quality Data from Regional Marine Sites, Hope Bay Belt Project, June 2010

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Appendix 3.1-3. Water Quality Data from Regional Marine Sites, Hope Bay Belt Project, June 2010

Station				RSA1			RSA2					RSA3					RSA5					RSA6						BLANK	BLANK	BLANK
Date Sampled				21-JUN-10			22-JUN-10					21-JUN-10					21-JUN-10					23-JUN-10						22-JUN-10	23-JUN-10	23-JUN-10
Depth Zone			CCME Guidelines for the Protection of Aquatic Life	Surface	Below Pycnocline	Deep	Surface	Above Pycnocline	Above Pycnocline	Below Pycnocline	Deep	Surface	Surface	Above Pycnocline	Below Pycnocline	Deep	Surface	Surface	Above Pycnocline	Below Pycnocline	Deep	Surface	Above Pycnocline	Below Pycnocline	Deep	Deep		Equipment Blank	Field Blank	Travel Blank
Replicate				1	1	1	1	1	2	1	1	1	2	1	1	1	1	2	1	1	1	1	1	1	1	2		1	1	1
Depth (m)				2	12	40	2	10	10	20	48	2	2	18	26	40	2	2	18	26	40	2	15	30	50	50		-	-	-
ALS Sample ID	Units	RDL[a]	(Marine)[b]	L901015-1	L901015-2	L901015-3	L901015-13	L901015-14	L901015-15	L901015-16	L901015-17	L901015-8	L901015-9	L901015-10	L901015-11	L901015-12	L901015-4	L901015-5	L901015-6	L901015-7	L901015-19	L902060-1	L902060-2	L902060-3	L902060-4	L902060-5	RDL[a] for Blanks	L901015-18	L902060-7	L902060-6
Physical Tests																														
pH	pH	0.1	7.0 - 8.7	7.78	7.85	7.85	7.79	7.82	7.79	7.73	7.77	7.86	7.83	7.73	7.73	7.79	7.82	7.87	7.82	7.82	7.78	7.80	7.78	7.77	7.73	7.27	0.1	5.98	5.70	5.73
Total Suspended Solids	mg/L	3		6.7	14.0	14.0	13.3	18.7	20.0	16.7	16.0	10.0	4.7	24.0	12.0	12.7	4.7	16.7	18.7	20.0	6.0	15.3	11.3	10.0	12.7	12.0	3	<3.0	<3.0	<3.0
Turbidity	NTU	0.1		2.34	0.38	0.15	2.01	0.41	0.38	0.23	0.12	0.14	0.16	0.36	0.11	0.16	0.19	0.18	0.28	0.20	0.23	0.17	0.12	0.19	0.12	0.13	0.1	<0.10	<0.10	<0.10
Anions																														
Bromide (Br)	mg/L	5.0		14.3	40.4	38.0	23.6	40.3	40.3	40.0	38.3	20.6	31.2	41.7	41.3	40.8	39.3	38.7	40.5	42.3	41.4	27.9	32.9	34.3	33.9	33.9	0.1	<0.050	<0.050	<0.050
Chloride (Cl)	mg/L	50		6430	15500	15000	9750	15300	15200	15400	15500	8640	12200	15500	15600	15500	14900	14900	15500	15900	16000	14100	15600	16000	16300	16200	1	<0.50	<0.50	<0.50
Fluoride (F)	mg/L	0.03 - 0.075		0.765	1.07	1.11	0.775	0.983	0.985	1.03	1.23	0.750	0.798	0.945	0.978	1.02	1.08	1.12	1.08	1.07	1.10	0.784	0.856	0.886	0.896	0.905	0.02	<0.020	<0.020	<0.020
Nutrients																														
Ammonia as N	mg/L	0.005 - 0.01		0.0391	0.0314	<0.0050	0.0294	0.0179	0.0183	<0.0050	<0.0050	0.0093	0.0057	0.0131	0.0059	0.0055	<0.0050	<0.0050	0.0120	0.0069	0.0060	<0.010	<0.010	<0.010	<0.010	<0.010	0.005 - 0.01	<0.0050	<0.010	<0.010
Nitrate+Nitrite-N	mg/L	0.0060		<0.0060	0.0155	0.0726	<0.0060	0.0147	<0.0060	0.0751	0.0687	<0.0060	<0.0060	<0.0060	0.0565	0.0593	<0.0060	<0.0060	<0.0060	0.0491	0.0661	<0.0060	<0.0060	0.0282	0.0738	0.0691	0.006	<0.0060	<0.0060	<0.0060
Nitrate-N	mg/L	0.0060	3.6	<0.0060	0.0155	0.0726	<0.0060	0.0147	<0.0060	0.0751	0.0687	<0.0060	<0.0060	<0.0060	0.0565	0.0593	<0.0060	<0.0060	<0.0060	0.0491	0.0661	<0.0060	<0.0060	0.0253	0.0718	0.0674	0.005 - 0.006	<0.0060	<0.0050	<0.0050
Nitrite-N	mg/L	0.0020		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0029	0.0020	<0.0020	0.002	<0.0020	<0.0010	<0.0010
Ortho Phosphate as P	mg/L	0.0010		0.0138	0.0391	0.0408	0.0193	0.0437	0.0325	0.0429	0.0386	0.0155	0.0219	0.0302	0.0354	0.0361	0.0277	0.0262	0.0293	0.0369	0.0355	0.0228	0.0256	0.0306	0.0387	0.0371	0.001	<0.0010	<0.0010	<0.0010
Total Phosphate as P	mg/L	0.0020		0.0226	0.0457	0.0426	0.0287	0.0402	0.0373	0.0411	0.0393	0.0171	0.0259	0.0432	0.0359	0.0377	0.0300	0.0294	0.0341	0.0391	0.0340	0.0256	0.0287	0.0357	0.0409	0.0392	0.002	<0.0020	<0.0020	<0.0020
Silicate (as SiO_2)	mg/L	0.005 - 1		<1.0	1.0	1.2	<1.0	<1.0	<1.0	1.3	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.465	0.658	0.807	1.32	1.27	0.005 - 1	<1.0	<0.0050	<0.0050
Sulfate (SO_4)	mg/L	50		894	2180	2110	1370	2160	2140	2160	2170	1190	1700	2190	2200	2180	2100	2090	2180	2230	2240	1910	2120	2180	2220	2200	0.5	<0.50	<0.50	<0.50
Organic / Inorganic Carbon																														
Total Organic Carbon	mg/L	0.5		2.00	1.32	1.02	1.89	1.17	1.18	1.19	1.08	1.05	1.10	1.42	1.40	1.07	1.06	1.18	1.22	1.06	1.08	1.42	1.13	1.04	0.95	0.95	0.5	<0.50	<0.50	<0.50
Total Metals																														
Aluminum (Al)	mg/L	0.0050		0.0289	<0.0050	<0.0050	0.0510	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0093	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.003	<0.0030	<0.0030	<0.0030
Antimony (Sb)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00001	<0.000010	<0.000010	<0.000010
Arsenic (As)	mg/L	0.0020	0.0125	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.00005	<0.000050	<0.000050	<0.000050
Barium (Ba)	mg/L	0.0010		0.0096	0.0120	0.0115	0.0087	0.0117	0.0125	0.0128	0.0115	0.0098	0.0113	0.0110	0.0109	0.0108	0.0110	0.0109	0.0111	0.0105	0.0099	0.0101	0.0091	0.0093	0.0107	0.0106	0.001	<0.00010	<0.00010	<0.00010
Beryllium (Be)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000005	<0.0000050	<0.0000050	<0.0000050
Bismuth (Bi)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00005	<0.000050	<0.000050	<0.000050
Boron (B)	mg/L	0.10		2.63	3.51	3.47	2.45	3.44	3.49	3.50	3.48	2.95	3.37	3.52	3.60	3.52	3.32	3.26	3.40	3.55	3.50	3.27	3.38	3.39	3.56	3.56	0.005	<0.0050	<0.0050	<0.0050
Cadmium (Cd)	mg/L	0.00012	0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	0.000005	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)	mg/L	0.50		232	330	321	214	311	311	310	318	264	299	313	325	304	302	309	326	325	322	328	343	339	353	351	0.05	<0.050	<0.050	<0.050
Cesium (Cs)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000005	<0.0000050	<0.0000050	<0.0000050
Chromium (Cr)	mg/L	0.0010	0.056[c]	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0005	<0.00050	<0.00050	<0.00050
Cobalt (Co)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00005	<0.000050	<0.000050	<0.000050
Copper (Cu)	mg/L	0.0010		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0013	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0005	<0.00050	<0.00050	<0.00050
Gallium (Ga)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00005	<0.000050	<0.000050	<0.000050
Iron (Fe)	mg/L	0.050		0.069	<0.050	<0.050	0.106	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.03	<0.030	<0.030	<0.030
Lead (Pb)	mg/L	0.0010		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00005	<0.000050	<0.000050	<0.000050
Lithium (Li)	mg/L	0.020		0.103	0.145	0.144	0.098	0.141	0.143	0.142	0.140	0.121	0.136	0.145	0.147	0.146	0.139	0.136	0.142	0.145	0.149	0.137	0.138	0.140	0.145	0.145	0.0002	<0.00020	<0.00020	<0.00020
Magnesium (Mg)	mg/L	1.0		748	1040	1030	697	995	997	992	1030	858	962	1010	1050	979	971	1000	1050	1050	1030	1030	1070	1070	1100	1080	0.1	<0.10	<0.10	<0.10
Manganese (Mn)	mg/L	0.00050		0.00652	0.00208	0.00231	0.00711	0.00188	0.00185	0.00175	0.00176	0.00157	0.00168	0.00099	0.00113	0.00106	0.00115	0.00116	0.00094	0.00088	0.00063	0.00080	0.00068	0.00068	0.00066	0.00066	0.0002	<0.00020	<0.00020	<0.00020
Mercury (Hg)	mg/L	0.000010	0.000016[d]	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.00001	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)	mg/L	0.0020		0.0069	0.0092	0.0090	0.0062	0.0090	0.0090	0.0091	0.0091	0.0075	0.0087	0.0091	0.0092	0.0091	0.0088	0.0086	0.0090	0.0092	0.0090	0.0088	0.0089	0.0091	0.0094	0.0096	0.00005	<0.00050	<0.00050	<0.00050
Nickel (Ni)	mg/L	0.00050		0.00072	0.00054	0.00056	0.00061	<0.00050	<0.00050	0.00069	0.00051	<0.00050	<0.00050	0.00066	0.00062	0.00062	0.00052	0.00066	0.00056	0.00059	0.00058	0.00062	0.00084	0.00065	0.00103	0.00067	0.0002	<0.00020	<0.00020	<0.00020
Phosphorus (P)	mg/L	1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.3	<0.30	<0.30	<0.30
Potassium (K)	mg/L	20		223	323	319	210	309	306	307	316	266	295	310	325	302	301	308	322	324	318	319	342	337	354	347	2	<2.0	<2.0	<2.0
Rhenium (Re)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000005	<0.0000050	<0.0000050	<0.0000050
Rubidium (Rb)	mg/L	0.0050		0.0648	0.0914	0.0914	0.0617	0.0898	0.0937	0.0924	0.0912	0.0772	0.0875	0.0913	0.0921	0.0916	0.0887	0.0869	0.0906	0.0928	0.0928	0.0857	0.0892	0.0912	0.0950	0.0959	0.00002	<0.000020	<0.000020	<0.000020
Selenium (Se)	mg/L	0.0020		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0002	<0.00020	<0.00020	<0.00020
Silicon (Si)	mg/L	0.50		<0.50	0.69	0.67	<0.50	<0.50	0.55	0.70	0.55	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.62	0.51	0.05	<0.050	<0.050	<0.050
Silver (Ag)	mg/L	0.00020		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.000005	<0.0000050	<0.0000050	<0.0000050
Sodium (Na)	mg/L	20		5650	8580	8470	5520	7980	7960	7950	8190	6960	7770	8060	8380	7770	7910	8080	8460	8440	8280	8600	9000	8850	9220	8990	2	<2.0	<2.0	<2.0
Strontium (Sr)	mg/L	0.050		4.28	6.18	6.10	4.07	5.88	5.84	5.86	6.00	5.00	5.59	5.81	6.09	5.72	5.70	5.83	6.12	6.13	6.02	6.26	6.62	6.52	6.84	6.65	0.00005	<0.000050	<0.000050	<0.000050
Tellurium (Te)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00001	<0.000010	<0.000010	<0.000010
Thallium (Tl)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000002	<0.0000020	<0.0000020	<0.0000020
Thorium (Th)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000005	<0.0000050	<0.0000050	<0.0000050
Tin (Sn)	mg/L	0.0010		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0002	<0.00020	<0.00020	<0.00020
Titanium (Ti)	mg/L	0.0050		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0002	<0.00020	<0.00020	<0.00020
Tungsten (W)	mg/L	0.0010		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00001	<0.000010	<0.000010	<0.000010
Uranium (U)	mg/L	0.00050		0.00184	0.00259	0.00261	0.00179	0.00248	0.00255	0.00265	0.00257	0.00221	0.00242	0.00252	0.00258	0.00254	0.00256	0.00246	0.00261	0.00258	0.00271	0.00253	0.00258	0.00264	0.00270	0.00268	0.000002	<0.0000020	<0.0000020	<0.0000020
Vanadium (V)	mg/L	0.00050		0.00065	0.00088	0.00084	0.00074	0.00081	0.00084	0.00084	0.00089	0.00070	0.00075	0.00088	0.00085	0.00084	0.00086	0.00082	0.00085	0.00090	0.00093	0.00084	0.00093	0.00097	0.00095	0.00096	0.00005	<0.000050	<0.000050	<0.000050
Yttrium (Y)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000005	<0.0000050	<0.0000050	<0.0000050
Zinc (Zn)	mg/L	0.0050		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.003	<0.0030	<0.0030	<0.0030
Zirconium (Zr)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00005	<0.000050	<0.000050	<0.000050

Shaded cells indicate values that exceed CCME guidelines for the protection of marine aquatic life

a) RDL = Realized Detection Limit

b) Canadian water quality guidelines for the protection of marine aquatic life, Canadian Council of Ministers of the Environment, Updated December 2007

c) Interim guideline

d) Guideline refers to inorganic mercury

Appendix 3.1-3. Water Quality Data from Regional Marine Sites, Hope Bay Belt Project, June 2010

Station				RSA1			RSA2					RSA3					RSA5					RSA6						BLANK	BLANK	BLANK
Date Sampled				21-JUN-10			22-JUN-10					21-JUN-10					21-JUN-10					23-JUN-10						22-JUN-10	23-JUN-10	23-JUN-10
Depth Zone			CCME Guidelines for the Protection of Aquatic Life	Surface	Below Pycnocline	Deep	Surface	Above Pycnocline	Above Pycnocline	Below Pycnocline	Deep	Surface	Surface	Above Pycnocline	Below Pycnocline	Deep	Surface	Surface	Above Pycnocline	Below Pycnocline	Deep	Surface	Above Pycnocline	Below Pycnocline	Deep	Deep		Equipment Blank	Field Blank	Travel Blank
Replicate				1	1	1	1	1	2	1	1	1	2	1	1	1	1	2	1	1	1	1	1	1	1	2		1	1	1
Depth (m)				2	12	40	2	10	10	20	48	2	2	18	26	40	2	2	18	26	40	2	15	30	50	50		-	-	-
ALS Sample ID	Units	RDL[a]	[b]	L901015-1	L901015-2	L901015-3	L901015-13	L901015-14	L901015-15	L901015-16	L901015-17	L901015-8	L901015-9	L901015-10	L901015-11	L901015-12	L901015-4	L901015-5	L901015-6	L901015-7	L901015-19	L902060-1	L902060-2	L902060-3	L902060-4	L902060-5	RDL[a] for Blanks	L901015-18	L902060-7	L902060-6
Dissolved Metals																														
Aluminum (Al)	mg/L	0.0050		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.003	<0.0030	<0.0030	<0.0030
Antimony (Sb)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00001	<0.000010	<0.000010	<0.000010
Arsenic (As)	mg/L	0.0020	0.0125	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.00005	<0.000050	<0.000050	<0.000050
Barium (Ba)	mg/L	0.0010		0.0100	0.0122	0.0116	0.0092	0.0119	0.0119	0.0130	0.0111	0.0084	0.0113	0.0108	0.0112	0.0109	0.0109	0.0108	0.0110	0.0105	0.0104	0.0104	0.0090	0.0096	0.0104	0.0103	0.0001	<0.00010	<0.00010	<0.00010
Beryllium (Be)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000005	<0.0000050	<0.0000050	<0.0000050
Bismuth (Bi)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00005	<0.000050	<0.000050	<0.000050
Boron (B)	mg/L	0.10		2.98	3.59	3.52	2.44	3.42	3.46	3.55	3.46	2.59	3.29	3.55	3.57	3.61	3.31	3.25	3.45	3.55	3.57	3.34	3.35	3.58	3.53	3.51	0.005	<0.050	<0.050	<0.050
Cadmium (Cd)	mg/L	0.00012	0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	0.000005	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)	mg/L	0.50		287	328	319	213	312	308	315	321	228	299	319	319	320	301	314	318	318	327	331	350	364	350	362	0.05	<0.050	<0.050	<0.050
Cesium (Cs)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000005	<0.0000050	<0.0000050	<0.0000050
Chromium (Cr)	mg/L	0.0010	0.056[c]	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0005	<0.00050	<0.00050	<0.00050
Cobalt (Co)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00005	<0.000050	<0.000050	<0.000050
Copper (Cu)	mg/L	0.0010		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0005	<0.00050	<0.00050	<0.00050
Gallium (Ga)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00005	<0.000050	<0.000050	<0.000050
Iron (Fe)	mg/L	0.050		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.03	<0.030	<0.030	<0.030
Lead (Pb)	mg/L	0.0010		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00005	<0.000050	<0.000050	<0.000050
Lithium (Li)	mg/L	0.020		0.123	0.149	0.145	0.100	0.142	0.143	0.143	0.143	0.105	0.137	0.146	0.147	0.146	0.136	0.137	0.142	0.144	0.143	0.137	0.136	0.146	0.145	0.144	0.0002	<0.00020	<0.00020	<0.00020
Magnesium (Mg)	mg/L	1.0		913	1040	1010	691	997	984	1000	1030	742	952	994	1010	1030	964	1020	1030	1020	1050	1040	1080	1130	1090	1120	0.1	<0.10	<0.10	<0.10
Manganese (Mn)	mg/L	0.00050		0.00311	0.00071	0.00092	0.00405	0.00067	0.00069	<0.00050	0.00088	0.00109	0.00133	0.00054	0.00054	0.00070	0.00091	0.00077	0.00064	0.00069	<0.00050	0.00052	<0.00050	<0.00050	<0.00050	<0.00050	0.0002	<0.00020	<0.00020	<0.00020
Mercury (Hg)	mg/L	0.000010	0.000016[d]	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.00001	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)	mg/L	0.0020		0.0077	0.0092	0.0091	0.0063	0.0089	0.0090	0.0090	0.0090	0.0067	0.0085	0.0096	0.0092	0.0093	0.0086	0.0086	0.0090	0.0094	0.0090	0.0089	0.0089	0.0095	0.0094	0.0095	0.00005	<0.000050	<0.000050	<0.000050
Nickel (Ni)	mg/L	0.00050		0.00059	0.00105	0.00058	0.00053	<0.00050	<0.00050	0.00058	0.00062	<0.00050	<0.00050	<0.00050	0.00057	0.00051	0.00084	0.00061	<0.00050	0.00076	0.00061	0.00063	0.00065	0.00064	0.00073	0.00065	0.0002	<0.00020	<0.00020	<0.00020
Phosphorus (P)	mg/L	1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.3	<0.30	<0.30	<0.30
Potassium (K)	mg/L	20		267	325	315	209	309	307	311	321	230	292	314	316	321	297	313	317	317	327	322	349	366	349	362	2	<2.0	<2.0	<2.0
Rhenium (Re)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000005	<0.0000050	<0.0000050	<0.0000050
Rubidium (Rb)	mg/L	0.0050		0.0753	0.0931	0.0915	0.0627	0.0907	0.0913	0.0939	0.0921	0.0677	0.0857	0.0923	0.0918	0.0934	0.0866	0.0859	0.0912	0.0940	0.0944	0.0892	0.0897	0.0959	0.0948	0.0956	0.00002	<0.000020	<0.000020	<0.000020
Selenium (Se)	mg/L	0.0020		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0002	<0.00020	<0.00020	<0.00020
Silicon (Si)	mg/L	0.50		0.51	0.67	0.65	<0.50	0.50	0.50	0.74	0.61	<0.50	<0.50	<0.50	0.52	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.58	0.51	0.05	<0.050	<0.050	<0.050
Silver (Ag)	mg/L	0.00020		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.000005	<0.0000050	<0.0000050	<0.0000050
Sodium (Na)	mg/L	20		6840	8560	8360	5500	8020	7910	8070	8280	6010	7630	8140	8160	8250	7860	8310	8270	8340	8470	8630	9210	9510	9060	9280	2	<2.0	<2.0	<2.0
Strontium (Sr)	mg/L	0.050		5.22	6.18	6.00	4.04	5.89	5.83	5.92	6.07	4.33	5.52	5.89	5.94	6.10	5.65	6.00	6.00	5.99	6.15	6.30	6.79	7.09	6.71	6.91	0.00005	<0.000050	<0.000050	<0.000050
Tellurium (Te)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00001	<0.000010	<0.000010	<0.000010
Thallium (Tl)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000002	<0.0000020	<0.0000020	<0.0000020
Thorium (Th)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000005	<0.0000050	<0.0000050	<0.0000050
Tin (Sn)	mg/L	0.0010		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0002	<0.00020	<0.00020	<0.00020
Titanium (Ti)	mg/L	0.0050		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0002	<0.00020	<0.00020	<0.00020
Tungsten (W)	mg/L	0.0010		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00001	<0.000010	<0.000010	<0.000010
Uranium (U)	mg/L	0.00050		0.00219	0.00257	0.00268	0.00178	0.00252	0.00262	0.00261	0.00264	0.00185	0.00241	0.00257	0.00260	0.00263	0.00252	0.00247	0.00258	0.00263	0.00260	0.00256	0.00258	0.00271	0.00272	0.00264	0.000002	<0.0000020	<0.0000020	<0.0000020
Vanadium (V)	mg/L	0.00050		0.00062	0.00087	0.00086	<0.00050	0.00079	0.00078	0.00088	0.00087	0.00062	0.00073	0.00080	0.00087	0.00087	0.00080	0.00079	0.00080	0.00087	0.00092	0.00080	0.00089	0.00093	0.00097	0.00095	0.00005	<0.000050	<0.000050	<0.000050
Yttrium (Y)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000005	<0.0000050	<0.0000050	<0.0000050
Zinc (Zn)	mg/L	0.0050		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.003	<0.0030	<0.0030	<0.0030
Zirconium (Zr)	mg/L	0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00005	<0.000050	<0.000050	<0.000050

Shaded cells indicate values that exceed CCME guidelines for the protection of marine aquatic life

a) RDL = Realized Detection Limit

b) Canadian water quality guidelines for the protection of marine aquatic life, Canadian Council of Ministers of the Environment, Updated December 2007

c) Interim guideline

d) Guideline refers to inorganic mercury

Appendix 3.1-4

Phytoplankton Biomass (as chl *a*) from Regional Marine Sites, Hope Bay Belt Project, June 2010

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Appendix 3.1-4. Phytoplankton Biomass (as chl *a*) from Regional Marine Sites, Hope Bay Belt Project, June 2010

	RSA1		
Depth	Surface	Surface	Surface
Replicate	1	2	3
Date Sampled	21-Jun-10	21-Jun-10	21-Jun-10
Chlorophyll *a* (µg/L)	0.564	0.332	0.249

	RSA2		
Depth	Surface	Surface	Surface
Replicate	1	2	3
Date Sampled	22-Jun-10	22-Jun-10	22-Jun-10
Chlorophyll *a* (µg/L)	0.098	0.087	0.056

	RSA3		
Depth	Surface	Surface	Surface
Replicate	1	2	3
Date Sampled	21-Jun-10	21-Jun-10	21-Jun-10
Chlorophyll *a* (µg/L)	0.096	0.147	0.208

	RSA4
Depth	
Replicate	No data could be collected due to weak ice
Date Sampled	
Chlorophyll *a* (µg/L)	

	RSA5		
Depth	Surface	Surface	Surface
Replicate	1	2	3
Date Sampled	21-Jun-10	21-Jun-10	21-Jun-10
Chlorophyll *a* (µg/L)	0.036	0.041	0.058

	RSA6		
Depth	Surface	Surface	Surface
Replicate	1	2	3
Date Sampled	23-Jun-10	23-Jun-10	23-Jun-10
Chlorophyll *a* (µg/L)	0.023	0.012	0.037

** all samples were taken at 1 m below the ice.*

Appendix 3.2-1

Temperature, Salinity, Dissolved Oxygen, and Phytoplankton Biomass (as chl *a*) Data along the RSA Marine Transect, Hope Bay Belt Project, September 2010

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Appendix 3.2-1. Temperature, Salinity, Dissolved Oxygen, and Phytoplankton Biomass (as chl*a*) Data along the RSA Marine Transect, Hope Bay Belt Project, September 2010

Date/Time	Distance from RSA moving towards Roberts Bay (km)	Water Depth (m)	Temperature (˚C)	Chlorophyll *a* (µg/L)	Salinity	Dissolved Oxygen (mg/L)	Dissolved Oxygen Saturation (%)
Sept. 12_00:00:00	7.96	137	9.24	0.26	23.93	10.99	111.6
Sept. 12_00:01:00	8.23	137	9.24	0.24	23.94	10.97	111.4
Sept. 12_00:02:00	8.51	144	9.22	0.26	23.94	10.96	111.3
Sept. 12_00:03:00	8.78	144	9.20	0.30	23.96	10.96	111.2
Sept. 12_00:04:00	9.06	144	9.18	0.29	24.00	10.97	111.4
Sept. 12_00:05:00	9.33	144	9.18	0.28	24.01	10.95	111.2
Sept. 12_00:06:00	9.60	144	9.17	0.25	24.01	10.96	111.2
Sept. 12_00:07:00	9.88	144	9.15	0.25	24.02	10.97	111.2
Sept. 12_00:08:00	10.15	144	9.14	0.28	24.02	10.97	111.3
Sept. 12_00:09:00	10.43	144	9.12	0.26	24.03	10.98	111.3
Sept. 12_00:10:00	10.70	144	9.10	0.28	24.03	10.98	111.2
Sept. 12_00:11:00	10.98	144	9.10	0.27	24.10	10.98	111.2
Sept. 12_00:12:00	11.25	144	9.08	0.28	24.13	10.99	111.4
Sept. 12_00:13:00	11.53	144	9.07	0.31	24.16	10.99	111.4
Sept. 12_00:14:00	11.80	105	9.04	0.27	24.20	10.96	111.1
Sept. 12_00:15:00	12.07	105	9.03	0.25	24.22	10.97	111.1
Sept. 12_00:16:00	12.35	105	9.00	0.32	24.25	11.01	111.4
Sept. 12_00:17:00	12.62	105	8.98	0.30	24.26	11.00	111.3
Sept. 12_00:18:00	12.90	105	8.95	0.24	24.27	11.01	111.3
Sept. 12_00:19:00	13.17	105	8.93	0.30	24.26	11.00	111.2
Sept. 12_00:20:00	13.45	105	8.90	0.29	24.26	11.01	111.2
Sept. 12_00:21:00	13.72	105	8.89	0.30	24.24	11.01	111.1
Sept. 12_00:22:00	13.99	105	8.88	0.28	24.23	11.00	111.1
Sept. 12_00:23:00	14.27	111	8.88	0.27	24.22	11.01	111.1
Sept. 12_00:24:00	14.54	111	8.87	0.31	24.22	11.15	112.5
Sept. 12_00:25:00	14.82	111	8.87	0.26	24.22	11.14	112.4
Sept. 12_00:26:00	15.09	117	8.87	0.30	24.22	11.12	112.3
Sept. 12_00:27:00	15.37	117	8.86	0.32	24.22	11.12	112.2
Sept. 12_00:28:00	15.64	117	8.85	0.28	24.22	11.12	112.2
Sept. 12_00:29:00	15.92	117	8.85	0.30	24.22	11.12	112.1
Sept. 12_00:30:00	16.19	117	8.85	0.30	24.21	11.10	112.0
Sept. 12_00:31:00	16.46	109	8.84	0.31	24.21	11.10	111.9
Sept. 12_00:32:00	16.74	109	8.86	0.26	24.19	11.09	111.9
Sept. 12_00:33:00	17.01	109	8.88	0.24	24.18	11.07	111.7
Sept. 12_00:34:00	17.29	109	8.91	0.30	24.14	11.06	111.6
Sept. 12_00:35:00	17.56	109	8.93	0.28	24.10	11.04	111.5
Sept. 12_00:36:00	17.84	109	8.96	0.29	24.10	11.00	111.1
Sept. 12_00:37:00	18.11	109	8.99	0.25	24.18	10.99	111.2
Sept. 12_00:38:00	18.39	59	9.01	0.25	24.14	10.96	110.9
Sept. 12_00:39:00	18.66	59	9.07	0.26	24.07	10.94	110.8
Sept. 12_00:40:00	18.93	59	9.11	0.29	24.02	11.05	111.9
Sept. 12_00:41:00	19.21	59	9.16	0.29	23.96	10.99	111.5
Sept. 12_00:42:00	19.48	59	9.21	0.26	23.91	10.94	111.0
Sept. 12_00:43:00	19.76	45	9.26	0.32	23.87	10.93	111.0
Sept. 12_00:44:00	20.03	45	9.26	0.29	23.86	10.90	110.8
Sept. 12_00:45:00	20.31	45	9.34	0.36	23.81	10.89	110.8
Sept. 12_00:46:00	20.58	45	9.41	0.25	23.77	10.87	110.8
Sept. 12_00:47:00	20.85	45	9.45	0.25	23.76	10.93	111.4
Sept. 12_00:48:00	21.13	37	9.55	0.25	23.70	10.91	111.4
Sept. 12_00:49:00	21.40	37	9.57	0.31	23.69	10.80	110.3
Sept. 12_00:50:00	21.68	37	9.61	0.29	23.67	10.85	111.0
Sept. 12_00:51:00	21.95	37	9.65	0.25	23.67	10.81	110.6
Sept. 12_00:52:00	22.23	37	9.64	0.27	23.68	10.81	110.6
Sept. 12_00:53:00	22.50	37	9.66	0.28	23.66	10.83	110.8
Sept. 12_00:54:00	22.78	37	9.67	0.29	23.67	10.74	110.0
Sept. 12_00:55:00	23.05	37	9.68	0.28	23.67	10.87	111.3
Sept. 12_00:56:00	23.32	37	9.68	0.28	23.68	10.81	110.7
Sept. 12_00:57:00	23.60	42	9.67	0.28	23.69	10.83	110.9
Sept. 12_00:58:00	23.87	42	9.68	0.29	23.70	10.86	111.2
Sept. 12_00:59:00	24.15	42	9.67	0.27	23.70	10.84	111.1
Sept. 12_01:00:00	24.42	42	9.67	0.28	23.71	10.84	111.0
Sept. 12_01:01:00	24.70	145	9.69	0.25	23.71	10.83	111.0
Sept. 12_01:02:00	24.97	145	9.67	0.28	23.73	10.82	110.9
Sept. 12_01:03:00	25.25	145	9.65	0.29	23.76	10.83	110.9
Sept. 12_01:04:00	25.52	145	9.63	0.24	23.78	10.83	110.8
Sept. 12_01:05:00	25.79	145	9.63	0.26	23.80	10.82	110.8
Sept. 12_01:06:00	26.07	145	9.63	0.26	23.81	10.83	110.8
Sept. 12_01:07:00	26.34	145	9.62	0.26	23.82	10.82	110.8
Sept. 12_01:08:00	26.62	145	9.62	0.25	23.83	10.82	110.8
Sept. 12_01:09:00	26.89	145	9.63	0.24	23.83	10.82	110.8
Sept. 12_01:10:00	27.17	145	9.59	0.28	23.85	10.82	110.7
Sept. 12_01:11:00	27.44	145	9.58	0.40	23.85	10.82	110.7
Sept. 12_01:12:00	27.71	145	9.59	0.29	23.84	10.83	110.8
Sept. 12_01:13:00	27.99	152	9.59	0.25	23.87	10.83	110.8
Sept. 12_01:14:00	28.26	152	9.58	0.30	23.89	10.84	110.9
Sept. 12_01:15:00	28.54	141	9.57	0.24	23.91	10.84	110.9

Appendix 3.2-1. Temperature, Salinity, Dissolved Oxygen, and Phytoplankton Biomass (as chl*a*) Data along the RSA Marine Transect, Hope Bay Belt Project, September 2010

Date/Time	Distance from RSA moving towards Roberts Bay (km)	Water Depth (m)	Temperature (˚C)	Chlorophyll *a* (µg/L)	Salinity	Dissolved Oxygen (mg/L)	Dissolved Oxygen Saturation (%)
Sept. 12_01:16:00	28.81	141	9.56	0.28	23.93	10.84	110.9
Sept. 12_01:17:00	29.09	141	9.58	0.34	23.92	10.84	110.9
Sept. 12_01:18:00	29.36	141	9.55	0.24	23.95	10.84	110.9
Sept. 12_01:19:00	29.64	141	9.54	0.25	23.96	10.84	110.9
Sept. 12_01:20:00	29.91	141	9.53	0.28	23.96	10.82	110.7
Sept. 12_01:21:00	30.18	141	9.53	0.26	23.97	10.82	110.7
Sept. 12_01:22:00	30.46	141	9.53	0.26	23.97	10.82	110.6
Sept. 12_01:23:00	30.73	141	9.50	0.27	23.99	10.83	110.7
Sept. 12_01:24:00	31.01	141	9.51	0.26	23.99	10.82	110.7
Sept. 12_01:25:00	31.28	141	9.50	0.25	24.00	10.83	110.7
Sept. 12_01:26:00	31.56	119	9.50	0.28	23.99	10.82	110.6
Sept. 12_01:27:00	31.83	119	9.51	0.27	23.98	10.82	110.6
Sept. 12_01:28:00	32.11	119	9.50	0.28	23.98	10.81	110.5
Sept. 12_01:29:00	32.38	119	9.52	0.26	23.98	10.81	110.5
Sept. 12_01:30:00	32.65	72	9.51	0.28	23.98	10.80	110.4
Sept. 12_01:31:00	32.93	72	9.49	0.25	23.99	10.80	110.4
Sept. 12_01:32:00	33.20	72	9.50	0.26	23.98	10.81	110.5
Sept. 12_01:33:00	33.48	72	9.48	0.28	23.98	10.80	110.3
Sept. 12_01:34:00	33.75	72	9.50	0.26	23.97	10.79	110.3
Sept. 12_01:35:00	34.03	72	9.50	0.26	23.97	10.85	110.9
Sept. 12_01:36:00	34.30	72	9.48	0.26	23.98	10.85	110.8
Sept. 12_01:37:00	34.57	72	9.49	0.26	23.96	10.86	110.9
Sept. 12_01:38:00	34.85	119	9.49	0.28	23.96	10.85	110.9
Sept. 12_01:39:00	35.12	119	9.48	0.27	23.96	10.84	110.7
Sept. 12_01:40:00	35.40	119	9.48	0.28	23.95	10.85	110.8
Sept. 12_01:41:00	35.67	119	9.51	0.26	23.92	10.85	110.9
Sept. 12_01:42:00	35.95	119	9.50	0.22	23.91	10.84	110.7
Sept. 12_01:43:00	36.22	140	9.52	0.28	23.89	10.84	110.8
Sept. 12_01:44:00	36.50	140	9.53	0.24	23.89	10.87	111.1
Sept. 12_01:45:00	36.77	140	9.53	0.23	23.87	10.85	110.9
Sept. 12_01:46:00	37.04	140	9.55	0.22	23.87	10.86	111.0
Sept. 12_01:47:00	37.32	140	9.56	0.21	23.87	10.84	110.9
Sept. 12_01:48:00	37.59	140	9.56	0.21	23.87	10.84	110.8
Sept. 12_01:49:00	37.87	140	9.60	0.21	23.85	10.82	110.7
Sept. 12_01:50:00	38.14	140	9.59	0.21	23.87	10.81	110.6
Sept. 12_01:51:00	38.42	149	9.61	0.21	23.87	10.81	110.7
Sept. 12_01:52:00	38.69	149	9.63	0.21	23.89	10.80	110.7
Sept. 12_01:53:00	38.97	149	9.64	0.22	23.89	10.91	111.8
Sept. 12_01:54:00	39.24	158	9.66	0.20	23.88	10.93	112.0
Sept. 12_01:55:00	39.51	158	9.69	0.19	23.86	10.92	112.0
Sept. 12_01:56:00	39.79	158	9.71	0.21	23.86	10.93	112.1
Sept. 12_01:57:00	40.06	158	9.72	0.22	23.85	10.91	111.9
Sept. 12_01:58:00	40.34	158	9.76	0.23	23.82	10.88	111.8
Sept. 12_01:59:00	40.61	158	9.78	0.19	23.80	10.82	111.1
Sept. 12_02:00:00	40.89	158	9.78	0.22	23.78	10.78	110.8
Sept. 12_02:01:00	41.16	143	9.77	0.24	23.77	10.79	110.8
Sept. 12_02:02:00	41.43	143	9.78	0.22	23.74	10.77	110.6
Sept. 12_02:03:00	41.71	143	9.78	0.22	23.72	10.77	110.6
Sept. 12_02:04:00	41.98	143	9.75	0.23	23.73	10.78	110.6
Sept. 12_02:05:00	42.26	143	9.75	0.22	23.72	10.79	110.7
Sept. 12_02:06:00	42.53	143	9.77	0.23	23.70	10.77	110.6
Sept. 12_02:07:00	42.81	143	9.75	0.22	23.73	10.77	110.5
Sept. 12_02:08:00	43.08	121	9.78	0.22	23.70	10.76	110.5
Sept. 12_02:09:00	43.36	121	9.79	0.23	23.70	10.76	110.5
Sept. 12_02:10:00	43.63	121	9.81	0.22	23.70	10.76	110.6
Sept. 12_02:11:00	43.90	121	9.83	0.21	23.70	10.76	110.6
Sept. 12_02:12:00	44.18	121	9.85	0.29	23.69	10.76	110.6
Sept. 12_02:13:00	44.45	121	9.87	0.27	23.69	10.75	110.6
Sept. 12_02:14:00	44.73	121	9.91	0.25	23.67	10.74	110.6
Sept. 12_02:15:00	45.00	72	9.92	0.22	23.67	10.71	110.3
Sept. 12_02:16:00	45.28	72	9.96	0.23	23.65	10.76	110.9
Sept. 12_02:17:00	45.55	72	9.99	0.24	23.65	10.71	110.5
Sept. 12_02:18:00	45.83	71	10.02	0.23	23.64	10.76	111.0
Sept. 12_02:19:00	46.10	71	10.02	0.24	23.66	10.71	110.6
Sept. 12_02:20:00	46.37	71	10.04	0.22	23.64	10.70	110.4
Sept. 12_02:21:00	46.65	71	10.04	0.26	23.65	10.70	110.5
Sept. 12_02:22:00	46.92	71	10.04	0.23	23.64	10.67	110.2
Sept. 12_02:23:00	47.20	71	10.05	0.25	23.66	10.73	110.8
Sept. 12_02:24:00	47.47	40	10.06	0.26	23.66	10.75	111.0
Sept. 12_02:25:00	47.75	40	10.07	0.24	23.66	10.73	110.9
Sept. 12_02:26:00	48.02	40	10.08	0.21	23.66	10.70	110.6
Sept. 12_02:27:00	48.29	40	10.11	0.22	23.65	10.67	110.3
Sept. 12_02:28:00	48.57	61	10.12	0.25	23.64	10.65	110.2
Sept. 12_02:29:00	48.84	61	10.11	0.23	23.66	10.66	110.3
Sept. 12_02:30:00	49.12	61	10.12	0.24	23.65	10.75	111.1
Sept. 12_02:31:00	49.39	61	10.13	0.24	23.64	10.71	110.8

Appendix 3.2-1. Temperature, Salinity, Dissolved Oxygen, and Phytoplankton Biomass (as chl*a*) Data along the RSA Marine Transect, Hope Bay Belt Project, September 2010

Date/Time	Distance from RSA moving towards Roberts Bay (km)	Water Depth (m)	Temperature (˚C)	Chlorophyll *a* (µg/L)	Salinity	Dissolved Oxygen (mg/L)	Dissolved Oxygen Saturation (%)
Sept. 12_02:32:00	49.67	77	10.13	0.23	23.64	10.70	110.7
Sept. 12_02:33:00	49.94	108	10.12	0.23	23.65	10.66	110.2
Sept. 12_02:34:00	50.22	108	10.13	0.24	23.63	10.68	110.5
Sept. 12_02:35:00	50.49	108	10.16	0.23	23.64	10.63	110.0
Sept. 12_02:36:00	50.76	108	10.17	0.24	23.62	10.73	111.1
Sept. 12_02:37:00	51.04	108	10.21	0.24	23.61	10.72	111.1
Sept. 12_02:38:00	51.31	108	10.22	0.23	23.60	10.71	111.0
Sept. 12_02:39:00	51.59	126	10.22	0.23	23.59	10.69	110.8
Sept. 12_02:40:00	51.86	126	10.23	0.25	23.58	10.66	110.5
Sept. 12_02:41:00	52.14	126	10.22	0.23	23.59	10.65	110.3
Sept. 12_02:42:00	52.41	126	10.23	0.24	23.57	10.65	110.3
Sept. 12_02:43:00	52.69	126	10.25	0.23	23.58	10.65	110.4
Sept. 12_02:44:00	52.96	126	10.26	0.25	23.56	10.63	110.3
Sept. 12_02:45:00	53.23	126	10.27	0.30	23.58	10.63	110.3
Sept. 12_02:46:00	53.51	126	10.21	0.22	23.60	10.62	110.0
Sept. 12_02:47:00	53.78	119	10.22	0.24	23.59	10.65	110.3
Sept. 12_02:48:00	54.06	119	10.23	0.21	23.58	10.65	110.4
Sept. 12_02:49:00	54.33	119	10.24	0.24	23.57	10.63	110.2
Sept. 12_02:50:00	54.61	119	10.23	0.28	23.57	10.63	110.1
Sept. 12_02:51:00	54.88	119	10.22	0.26	23.58	10.62	110.0
Sept. 12_02:52:00	55.15	119	10.23	0.23	23.58	10.63	110.1
Sept. 12_02:53:00	55.43	119	10.22	0.21	23.59	10.62	110.0
Sept. 12_02:54:00	55.70	119	10.25	0.21	23.56	10.61	110.0
Sept. 12_02:55:00	55.98	111	10.25	0.23	23.57	10.63	110.2
Sept. 12_02:56:00	56.25	111	10.24	0.29	23.58	10.61	110.0
Sept. 12_02:57:00	56.53	111	10.22	0.23	23.60	10.61	110.0
Sept. 12_02:58:00	56.80	111	10.24	0.27	23.57	10.60	109.9
Sept. 12_02:59:00	57.08	111	10.25	0.24	23.60	10.59	109.8
Sept. 12_03:00:00	57.35	111	10.24	0.25	23.60	10.71	111.0
Sept. 12_03:01:00	57.62	135	10.23	0.24	23.60	10.69	110.8
Sept. 12_03:02:00	57.90	135	10.22	0.22	23.60	10.69	110.8
Sept. 12_03:03:00	58.17	135	10.23	0.25	23.61	10.66	110.5
Sept. 12_03:04:00	58.45	135	10.24	0.24	23.59	10.66	110.5
Sept. 12_03:05:00	58.72	135	10.24	0.23	23.59	10.67	110.6
Sept. 12_03:06:00	59.00	135	10.27	0.37	23.57	10.64	110.3
Sept. 12_03:07:00	59.27	135	10.30	0.24	23.57	10.61	110.2
Sept. 12_03:08:00	59.55	135	10.34	0.26	23.54	10.60	110.1
Sept. 12_03:09:00	59.82	135	10.35	0.22	23.56	10.59	110.1
Sept. 12_03:10:00	60.09	136	10.37	0.27	23.55	10.58	110.0
Sept. 12_03:11:00	60.37	136	10.36	0.27	23.56	10.61	110.2
Sept. 12_03:12:00	60.64	136	10.38	0.25	23.56	10.62	110.4
Sept. 12_03:13:00	60.92	136	10.38	0.26	23.56	10.68	111.0
Sept. 12_03:14:00	61.19	136	10.39	0.24	23.56	10.64	110.7
Sept. 12_03:15:00	61.47	136	10.38	0.26	23.59	10.64	110.6
Sept. 12_03:16:00	61.74	136	10.38	0.26	23.58	10.61	110.3
Sept. 12_03:17:00	62.01	92	10.38	0.25	23.60	10.61	110.3
Sept. 12_03:18:00	62.29	92	10.37	0.24	23.61	10.62	110.4
Sept. 12_03:19:00	62.56	92	10.35	0.27	23.62	10.60	110.2
Sept. 12_03:20:00	62.84	92	10.33	0.22	23.62	10.59	110.0
Sept. 12_03:21:00	63.11	92	10.33	0.25	23.62	10.63	110.5
Sept. 12_03:22:00	63.39	184	10.33	0.23	23.63	10.67	110.9
Sept. 12_03:23:00	63.66	184	10.32	0.25	23.62	10.67	110.9
Sept. 12_03:24:00	63.94	184	10.31	0.25	23.62	10.68	110.9
Sept. 12_03:25:00	64.21	133	10.29	0.26	23.64	10.67	110.8
Sept. 12_03:26:00	64.48	133	10.27	0.28	23.72	10.67	110.8
Sept. 12_03:27:00	64.76	133	10.25	0.24	23.72	10.68	110.8
Sept. 12_03:28:00	65.03	133	10.21	0.28	23.73	10.69	110.8
Sept. 12_03:29:00	65.31	133	10.19	0.25	23.73	10.70	110.9
Sept. 12_03:30:00	65.58	237	10.16	0.32	23.73	10.69	110.7
Sept. 12_03:31:00	65.86	237	10.16	0.25	23.74	10.70	110.8
Sept. 12_03:32:00	66.13	237	10.18	0.28	23.73	10.67	110.6
Sept. 12_03:33:00	66.41	237	10.17	0.26	23.74	10.68	110.7
Sept. 12_03:34:00	66.68	237	10.19	0.25	23.73	10.67	110.6
Sept. 12_03:35:00	66.95	237	10.20	0.29	23.73	10.66	110.5
Sept. 12_03:36:00	67.23	237	10.19	0.26	23.75	10.63	110.2
Sept. 12_03:37:00	67.50	237	10.20	0.32	23.75	10.62	110.1
Sept. 12_03:38:00	67.78	235	10.20	0.29	23.76	10.63	110.2
Sept. 12_03:39:00	68.05	235	10.22	0.28	23.75	10.63	110.2
Sept. 12_03:40:00	68.33	235	10.22	0.29	23.75	10.62	110.2
Sept. 12_03:41:00	68.60	235	10.23	0.28	23.75	10.62	110.1
Sept. 12_03:42:00	68.87	235	10.21	0.33	23.77	10.59	109.9
Sept. 12_03:43:00	69.15	235	10.22	0.32	23.77	10.77	111.7
Sept. 12_03:44:00	69.42	235	10.21	0.29	23.76	10.80	112.0
Sept. 12_03:45:00	69.70	235	10.17	0.28	23.78	10.81	112.0
Sept. 12_03:46:00	69.97	235	10.17	0.27	23.77	10.79	111.8
Sept. 12_03:47:00	70.25	235	10.16	0.28	23.77	10.78	111.7

Appendix 3.2-1. Temperature, Salinity, Dissolved Oxygen, and Phytoplankton Biomass (as chl*a*) Data along the RSA Marine Transect, Hope Bay Belt Project, September 2010

Date/Time	Distance from RSA moving towards Roberts Bay (km)	Water Depth (m)	Temperature (˚C)	Chlorophyll *a* (µg/L)	Salinity	Dissolved Oxygen (mg/L)	Dissolved Oxygen Saturation (%)
Sept. 12_03:48:00	70.52	209	10.17	0.30	23.76	10.77	111.6
Sept. 12_03:49:00	70.80	209	10.19	0.28	23.74	10.77	111.6
Sept. 12_03:50:00	71.07	209	10.18	0.30	23.76	10.75	111.4
Sept. 12_03:51:00	71.34	209	10.16	0.27	23.77	10.75	111.4
Sept. 12_03:52:00	71.62	209	10.16	0.27	23.75	10.73	111.2
Sept. 12_03:53:00	71.89	209	10.17	0.29	23.75	10.71	111.0
Sept. 12_03:54:00	72.17	209	10.18	0.31	23.74	10.70	110.9
Sept. 12_03:55:00	72.44	186	10.17	0.30	23.75	10.71	110.9
Sept. 12_03:56:00	72.72	186	10.16	0.29	23.75	10.70	110.9
Sept. 12_03:57:00	72.99	186	10.16	0.44	23.75	10.71	110.9
Sept. 12_03:58:00	73.27	186	10.16	0.29	23.75	10.70	110.8
Sept. 12_03:59:00	73.54	186	10.16	0.27	23.74	10.70	110.8
Sept. 12_04:00:00	73.81	186	10.16	0.28	23.75	10.69	110.7
Sept. 12_04:01:00	74.09	177	10.16	0.27	23.74	10.68	110.7
Sept. 12_04:02:00	74.36	177	10.16	0.30	23.73	10.68	110.6
Sept. 12_04:03:00	74.64	177	10.16	0.28	23.73	10.68	110.7
Sept. 12_04:04:00	74.91	177	10.17	0.42	23.72	10.67	110.5
Sept. 12_04:05:00	75.19	177	10.17	0.28	23.72	10.68	110.6
Sept. 12_04:06:00	75.46	177	10.15	0.28	23.72	10.68	110.6
Sept. 12_04:07:00	75.73	177	10.16	0.26	23.70	10.69	110.7
Sept. 12_04:08:00	76.01	151	10.18	0.28	23.68	10.68	110.6
Sept. 12_04:09:00	76.28	151	10.22	0.29	23.65	10.69	110.8
Sept. 12_04:10:00	76.56	151	10.21	0.26	23.64	10.68	110.7
Sept. 12_04:11:00	76.83	151	10.23	0.31	23.63	10.69	110.9
Sept. 12_04:12:00	77.11	151	10.25	0.29	23.60	10.69	110.9
Sept. 12_04:13:00	77.38	151	10.20	0.30	23.64	10.69	110.7
Sept. 12_04:14:00	77.66	151	10.19	0.28	23.61	10.69	110.7
Sept. 12_04:15:00	77.93	176	10.21	0.29	23.58	10.68	110.6
Sept. 12_04:16:00	78.20	176	10.21	0.30	23.57	10.69	110.8
Sept. 12_04:17:00	78.48	176	10.23	0.28	23.54	10.69	110.7
Sept. 12_04:18:00	78.75	176	10.23	0.28	23.52	10.66	110.4
Sept. 12_04:19:00	79.03	176	10.23	0.29	23.51	10.66	110.5
Sept. 12_04:20:00	79.30	176	10.24	0.28	23.50	10.65	110.3
Sept. 12_04:21:00	79.58	176	10.29	0.28	23.46	10.63	110.3
Sept. 12_04:22:00	79.85	165	10.28	0.29	23.49	10.61	110.0
Sept. 12_04:23:00	80.13	165	10.25	0.28	23.50	10.61	110.0
Sept. 12_04:24:00	80.40	165	10.26	0.28	23.55	10.62	110.1
Sept. 12_04:25:00	80.67	165	10.23	0.32	23.56	10.63	110.2
Sept. 12_04:26:00	80.95	165	10.22	0.28	23.56	10.61	109.9
Sept. 12_04:27:00	81.22	165	10.20	0.30	23.57	10.72	111.0
Sept. 12_04:28:00	81.50	165	10.20	0.31	23.57	10.69	110.7
Sept. 12_04:29:00	81.77	165	10.23	0.29	23.56	10.70	110.9
Sept. 12_04:30:00	82.05	165	10.24	0.28	23.55	10.69	110.8
Sept. 12_04:31:00	82.32	165	10.23	0.31	23.55	10.67	110.6
Sept. 12_04:32:00	82.59	179	10.24	0.31	23.55	10.65	110.4
Sept. 12_04:33:00	82.87	179	10.24	0.31	23.54	10.62	110.1
Sept. 12_04:34:00	83.14	179	10.24	0.28	23.53	10.60	109.9
Sept. 12_04:35:00	83.42	179	10.25	0.29	23.51	10.61	110.0
Sept. 12_04:36:00	83.69	222	10.26	0.32	23.49	10.61	109.9
Sept. 12_04:37:00	83.97	222	10.29	0.31	23.46	10.59	109.9
Sept. 12_04:38:00	84.24	222	10.30	0.29	23.45	10.58	109.7
Sept. 12_04:39:00	84.52	222	10.30	0.32	23.43	10.58	109.7
Sept. 12_04:40:00	84.79	222	10.32	0.32	23.40	10.58	109.7
Sept. 12_04:41:00	85.06	222	10.31	0.27	23.38	10.57	109.6
Sept. 12_04:42:00	85.34	222	10.37	0.29	23.32	10.58	109.8
Sept. 12_04:43:00	85.61	222	10.40	0.31	23.30	10.56	109.7
Sept. 12_04:44:00	85.89	222	10.42	0.31	23.29	10.55	109.6
Sept. 12_04:45:00	86.16	222	10.44	0.29	23.28	10.61	110.2
Sept. 12_04:46:00	86.44	228	10.44	0.33	23.28	10.58	110.0
Sept. 12_04:47:00	86.71	228	10.48	0.30	23.25	10.61	110.3
Sept. 12_04:48:00	86.99	228	10.50	0.29	23.25	10.65	110.8
Sept. 12_04:49:00	87.26	228	10.51	0.27	23.25	10.64	110.7
Sept. 12_04:50:00	87.53	228	10.51	0.32	23.25	10.63	110.6
Sept. 12_04:51:00	87.81	228	10.54	0.30	23.24	10.60	110.4
Sept. 12_04:52:00	88.08	228	10.55	0.32	23.25	10.61	110.5
Sept. 12_04:53:00	88.36	228	10.56	0.31	23.27	10.58	110.2
Sept. 12_04:54:00	88.63	205	10.57	0.29	23.28	10.57	110.1
Sept. 12_04:55:00	88.91	205	10.57	0.29	23.31	10.58	110.3
Sept. 12_04:56:00	89.18	205	10.56	0.32	23.34	10.58	110.3
Sept. 12_04:57:00	89.45	205	10.55	0.29	23.37	10.57	110.1
Sept. 12_04:58:00	89.73	205	10.53	0.30	23.40	10.55	109.9
Sept. 12_04:59:00	90.00	227	10.48	0.32	23.44	10.67	111.1
Sept. 12_05:00:00	90.28	209	10.51	0.38	23.43	10.62	110.6
Sept. 12_05:01:00	90.55	209	10.49	0.29	23.46	10.60	110.4
Sept. 12_05:02:00	90.83	209	10.49	0.41	23.46	10.60	110.4
Sept. 12_05:03:00	91.10	209	10.47	0.31	23.47	10.59	110.2

Appendix 3.2-1. Temperature, Salinity, Dissolved Oxygen, and Phytoplankton Biomass (as chl*a*) Data along the RSA Marine Transect, Hope Bay Belt Project, September 2010

Date/Time	Distance from RSA moving towards Roberts Bay (km)	Water Depth (m)	Temperature (˚C)	Chlorophyll *a* (µg/L)	Salinity	Dissolved Oxygen (mg/L)	Dissolved Oxygen Saturation (%)
Sept. 12_05:04:00	91.38	209	10.45	0.32	23.48	10.60	110.3
Sept. 12_05:05:00	91.65	209	10.45	0.34	23.48	10.59	110.2
Sept. 12_05:06:00	91.92	209	10.44	0.32	23.47	10.58	110.1
Sept. 12_05:07:00	92.20	209	10.44	0.32	23.44	10.58	110.0
Sept. 12_05:08:00	92.47	209	10.42	0.35	23.44	10.59	110.2
Sept. 12_05:09:00	92.75	138	10.44	0.36	23.41	10.66	110.9
Sept. 12_05:10:00	93.02	138	10.44	0.32	23.39	10.63	110.5
Sept. 12_05:11:00	93.30	138	10.44	0.32	23.37	10.61	110.4
Sept. 12_05:12:00	93.57	138	10.45	0.30	23.36	10.60	110.3
Sept. 12_05:13:00	93.85	138	10.44	0.31	23.35	10.61	110.3
Sept. 12_05:14:00	94.12	138	10.42	0.34	23.34	10.59	110.1
Sept. 12_05:15:00	94.39	138	10.42	0.31	23.33	10.60	110.1
Sept. 12_05:16:00	94.67	114	10.42	0.29	23.32	10.58	110.0
Sept. 12_05:17:00	94.94	114	10.42	0.36	23.33	10.58	110.0
Sept. 12_05:18:00	95.22	114	10.41	0.31	23.32	10.58	109.9
Sept. 12_05:19:00	95.49	114	10.38	0.30	23.33	10.60	110.0
Sept. 12_05:20:00	95.77	114	10.39	0.31	23.29	10.59	109.9
Sept. 12_05:21:00	96.04	114	10.38	0.29	23.29	10.58	109.8
Sept. 12_05:22:00	96.31	114	10.40	0.31	23.26	10.57	109.8
Sept. 12_05:23:00	96.59	34	10.38	0.30	23.25	10.58	109.8
Sept. 12_05:24:00	96.86	34	10.39	0.31	23.22	10.56	109.6
Sept. 12_05:25:00	97.14	70	10.39	0.28	23.22	10.57	109.7
Sept. 12_05:26:00	97.41	70	10.39	0.32	23.20	10.57	109.6
Sept. 12_05:27:00	97.69	70	10.40	0.34	23.19	10.69	110.9
Sept. 12_05:28:00	97.96	70	10.39	0.27	23.19	10.67	110.7
Sept. 12_05:29:00	98.24	47	10.41	0.28	23.18	10.66	110.6
Sept. 12_05:30:00	98.51	47	10.41	0.29	23.17	10.64	110.5
Sept. 12_05:31:00	98.78	48	10.39	0.30	23.17	10.64	110.4
Sept. 12_05:32:00	99.06	48	10.37	0.31	23.17	10.62	110.1
Sept. 12_05:33:00	99.33	48	10.37	0.31	23.16	10.62	110.1
Sept. 12_05:34:00	99.61	48	10.35	0.30	23.16	10.60	109.9
Sept. 12_05:35:00	99.88	48	10.35	0.32	23.16	10.60	109.8
Sept. 12_05:36:00	100.16	48	10.34	0.31	23.17	10.65	110.3
Sept. 12_05:37:00	100.43	114	10.30	0.29	23.18	10.66	110.3
Sept. 12_05:38:00	100.71	114	10.31	0.30	23.18	10.65	110.3
Sept. 12_05:39:00	100.98	114	10.33	0.32	23.15	10.64	110.3
Sept. 12_05:40:00	101.25	114	10.34	0.29	23.14	10.63	110.1
Sept. 12_05:41:00	101.53	114	10.33	0.30	23.14	10.61	109.9
Sept. 12_05:42:00	101.80	114	10.34	0.29	23.12	10.61	109.9
Sept. 12_05:43:00	102.08	114	10.35	0.29	23.10	10.59	109.7
Sept. 12_05:44:00	102.35	112	10.36	0.27	23.09	10.67	110.6
Sept. 12_05:45:00	102.63	112	10.36	0.28	23.09	10.66	110.4
Sept. 12_05:46:00	102.90	112	10.36	0.30	23.08	10.66	110.4
Sept. 12_05:47:00	103.17	112	10.35	0.29	23.08	10.65	110.3
Sept. 12_05:48:00	103.45	112	10.36	0.29	23.08	10.68	110.7
Sept. 12_05:49:00	103.66	112	10.35	0.32	23.09	10.68	110.6
Sept. 12_05:50:00	103.75	112	10.36	0.33	23.08	10.64	110.3
Sept. 12_05:51:00	104.04	112	10.34	0.31	23.08	10.64	110.2
Sept. 12_05:52:00	104.35	112	10.30	0.29	23.08	10.63	110.0
Sept. 12_05:53:00	104.48	112	10.31	0.30	23.06	10.63	110.0
Sept. 12_05:54:00	104.82	97	10.31	0.36	23.04	10.64	110.1
Sept. 12_05:55:00	105.03	97	10.31	0.31	23.03	10.62	109.9
Sept. 12_05:56:00	105.39	97	10.30	0.31	23.03	10.63	109.9
Sept. 12_05:57:00	105.59	97	10.31	0.32	23.02	10.62	109.8
Sept. 12_05:58:00	105.82	97	10.31	0.35	23.01	10.62	109.9
Sept. 12_05:59:00	106.08	97	10.28	0.34	23.02	10.62	109.8
Sept. 12_06:00:00	106.43	97	10.28	0.34	23.00	10.63	109.9
Sept. 12_06:01:00	106.66	97	10.27	0.36	23.00	10.62	109.8
Sept. 12_06:02:00	106.90	97	10.27	0.30	22.99	10.63	109.9
Sept. 12_06:03:00	107.28	111	10.25	0.35	23.00	10.62	109.7
Sept. 12_06:04:00	107.41	111	10.25	0.34	22.99	10.63	109.8
Sept. 12_06:05:00	107.71	111	10.24	0.32	22.99	10.59	109.4
Sept. 12_06:06:00	108.06	63	10.26	0.35	23.01	10.65	110.1
Sept. 12_06:07:00	108.33	63	10.27	0.34	23.01	10.67	110.3
Sept. 12_06:08:00	108.58	63	10.28	0.34	23.03	10.61	109.7
Sept. 12_06:09:00	108.84	48	10.29	0.32	23.05	10.60	109.7
Sept. 12_06:10:00	109.06	66	10.29	0.36	23.07	10.55	109.1
Sept. 12_06:11:00	109.42	66	10.29	0.41	23.09	10.54	109.1
Sept. 12_06:12:00	109.70	66	10.29	0.33	23.10	10.67	110.4
Sept. 12_06:13:00	109.95	66	10.28	0.35	23.13	10.64	110.0
Sept. 12_06:14:00	110.19	66	10.27	0.33	23.14	10.63	110.0
Sept. 12_06:15:00	110.43	66	10.27	0.31	23.12	10.71	110.8
Sept. 12_06:16:00	110.73	111	10.26	0.33	23.07	10.65	110.1
Sept. 12_06:17:00	110.99	111	10.26	0.33	23.04	10.64	110.0
Sept. 12_06:18:00	111.28	72	10.26	0.33	23.00	10.59	109.4
Sept. 12_06:19:00	111.55	72	10.28	0.31	22.95	10.58	109.3

Appendix 3.2-1. Temperature, Salinity, Dissolved Oxygen, and Phytoplankton Biomass (as chl*a*) Data along the RSA Marine Transect, Hope Bay Belt Project, September 2010

Date/Time	Distance from RSA moving towards Roberts Bay (km)	Water Depth (m)	Temperature (˚C)	Chlorophyll *a* (µg/L)	Salinity	Dissolved Oxygen (mg/L)	Dissolved Oxygen Saturation (%)
Sept. 12_06:20:00	111.86	72	10.31	0.27	23.00	10.65	110.2
Sept. 12_06:21:00	112.13	72	10.35	0.29	22.97	10.71	110.8
Sept. 12_06:22:00	112.40	72	10.38	0.33	22.93	10.61	109.9
Sept. 12_06:23:00	112.62	126	10.41	0.40	22.90	10.68	110.6
Sept. 12_06:24:00	112.96	126	10.41	0.30	22.86	10.70	110.8
Sept. 12_06:25:00	113.19	126	10.41	0.26	22.81	10.63	110.1
Sept. 12_06:26:00	113.50	126	10.43	0.30	22.75	10.64	110.1
Sept. 12_06:27:00	113.78	126	10.44	0.32	22.69	10.64	110.2
Sept. 12_06:28:00	114.08	119	10.42	0.29	22.67	10.55	109.2
Sept. 12_06:29:00	114.28	119	10.47	0.27	22.59	10.66	110.4
Sept. 12_06:30:00	114.59	119	10.46	0.30	22.55	10.59	109.6
Sept. 12_06:31:00	114.93	119	10.46	0.29	22.53	10.64	110.1
Sept. 12_06:32:00	115.15	119	10.47	0.28	22.51	10.60	109.7
Sept. 12_06:33:00	115.46	69	10.48	0.28	22.48	10.59	109.6
Sept. 12_06:34:00	115.67	69	10.48	0.29	22.46	10.63	110.0
Sept. 12_06:35:00	115.96	69	10.49	0.29	22.43	10.59	109.6
Sept. 12_06:36:00	116.27	69	10.48	0.32	22.42	10.58	109.5
Sept. 12_06:37:00	116.60	69	10.46	0.32	22.42	10.59	109.5
Sept. 12_06:38:00	116.81	69	10.48	0.29	22.38	10.55	109.2
Sept. 12_06:39:00	117.15	92	10.48	0.27	22.37	10.61	109.7
Sept. 12_06:40:00	117.34	92	10.49	0.27	22.34	10.65	110.1
Sept. 12_06:41:00	117.65	92	10.49	0.28	22.33	10.60	109.6
Sept. 12_06:42:00	117.99	92	10.49	0.31	22.36	10.57	109.3
Sept. 12_06:43:00	118.27	92	10.46	0.30	22.37	10.60	109.6
Sept. 12_06:44:00	118.48	71	10.50	0.32	22.33	10.59	109.6
Sept. 12_06:45:00	118.80	71	10.50	0.31	22.32	10.59	109.5
Sept. 12_06:46:00	119.09	71	10.48	0.32	22.32	10.63	109.9
Sept. 12_06:47:00	119.30	71	10.51	0.29	22.29	10.64	110.0
Sept. 12_06:48:00	119.57	71	10.50	0.36	22.29	10.59	109.6
Sept. 12_06:49:00	119.87	71	10.50	0.31	22.29	10.59	109.5
Sept. 12_06:50:00	120.16	71	10.49	0.31	22.29	10.58	109.4
Sept. 12_06:51:00	120.44	71	10.52	0.30	22.28	10.63	109.9
Sept. 12_06:52:00	120.75	71	10.50	0.32	22.28	10.58	109.4
Sept. 12_06:53:00	121.05	81	10.50	0.31	22.28	10.59	109.5
Sept. 12_06:54:00	121.26	81	10.50	0.28	22.28	10.61	109.7
Sept. 12_06:55:00	121.77	75	10.47	0.31	22.29	10.62	109.8
Sept. 12_06:56:00	121.86	75	10.47	0.30	22.30	10.61	109.6
Sept. 12_06:57:00	122.18	75	10.46	0.28	22.31	10.59	109.4
Sept. 12_06:58:00	122.44	75	10.48	0.32	22.31	10.56	109.1
Sept. 12_06:59:00	122.67	75	10.46	0.29	22.34	10.65	110.1
Sept. 12_07:00:00	122.99	75	10.44	0.35	22.35	10.63	109.8
Sept. 12_07:01:00	123.23	75	10.42	0.33	22.37	10.61	109.6
Sept. 12_07:02:00	123.48	75	10.39	0.28	22.40	10.66	110.0
Sept. 12_07:03:00	123.76	75	10.36	0.29	22.41	10.63	109.7
Sept. 12_07:04:00	124.12	69	10.33	0.27	22.42	10.66	110.0
Sept. 12_07:05:00	124.37	69	10.29	0.29	22.44	10.64	109.7
Sept. 12_07:06:00	124.58	69	10.26	0.26	22.45	10.64	109.5
Sept. 12_07:07:00	124.97	69	10.23	0.28	22.46	10.67	109.8
Sept. 12_07:08:00	125.23	69	10.20	0.29	22.46	10.72	110.2
Sept. 12_07:09:00	125.53	69	10.17	0.28	22.46	10.70	110.0
Sept. 12_07:10:00	125.68	69	10.16	0.28	22.46	10.67	109.6
Sept. 12_07:11:00	126.00	69	10.13	0.27	22.47	10.72	110.1
Sept. 12_07:12:00	126.28	52	10.11	0.25	22.47	10.70	109.8
Sept. 12_07:13:00	126.57	52	10.10	0.27	22.46	10.69	109.7
Sept. 12_07:14:00	126.92	52	10.08	0.27	22.47	10.64	109.2
Sept. 12_07:15:00	127.09	52	10.06	0.29	22.47	10.73	110.0
Sept. 12_07:16:00	127.37	52	10.05	0.24	22.47	10.71	109.7
Sept. 12_07:17:00	127.66	34	10.02	0.25	22.47	10.70	109.6
Sept. 12_07:18:00	127.95	34	10.01	0.25	22.47	10.68	109.3
Sept. 12_07:19:00	128.22	34	9.99	0.24	22.47	10.67	109.2
Sept. 12_07:20:00	128.53	34	9.97	0.28	22.48	10.70	109.5
Sept. 12_07:21:00	128.79	31	9.96	0.24	22.49	10.70	109.5
Sept. 12_07:22:00	129.16	31	9.95	0.26	22.50	10.69	109.3
Sept. 12_07:23:00	129.50	31	9.93	0.26	22.52	10.76	110.0
Sept. 12_07:24:00	129.67	31	9.92	0.20	22.53	10.77	110.1
Sept. 12_07:25:00	129.98	20.2	9.90	0.22	22.55	10.75	109.8
Sept. 12_07:26:00	130.30	20.2	9.89	0.22	22.56	10.73	109.6
Sept. 12_07:27:00	130.62	6.9	9.87	0.21	22.56	10.73	109.6
Sept. 12_07:28:00	130.95	23	9.86	0.16	22.57	10.78	110.1
Sept. 12_07:29:00	131.25	17.4	9.84	0.09	22.57	10.79	110.1
Sept. 12_07:30:00	131.40	17.4	9.83	0.18	22.57	10.74	109.6
Sept. 12_07:31:00	131.84	23	9.81	-0.06	22.57	10.74	109.6
Sept. 12_07:32:00	132.01	23	9.80	0.06	22.56	10.71	109.2
Sept. 12_07:33:00	132.32	17.8	9.80	0.08	22.56	10.70	109.2
Sept. 12_07:34:00	132.64	17.8	9.81	0.04	22.55	10.81	110.3
Sept. 12_07:35:00	132.79	17.8	9.80	-0.09	22.55	10.83	110.5

Appendix 3.2-1. Temperature, Salinity, Dissolved Oxygen, and Phytoplankton Biomass (as chl*a*) Data along the RSA Marine Transect, Hope Bay Belt Project, September 2010

Date/Time	Distance from RSA moving towards Roberts Bay (km)	Water Depth (m)	Temperature (˚C)	Chlorophyll *a* (µg/L)	Salinity	Dissolved Oxygen (mg/L)	Dissolved Oxygen Saturation (%)
Sept. 12_07:36:00	133.06	31	9.80	-0.20	22.54	10.77	109.9
Sept. 12_07:37:00	133.35	31	9.81	-0.42	22.53	10.75	109.6
Sept. 12_07:38:00	133.67	31	9.81	-0.50	22.53	10.74	109.5
Sept. 12_07:39:00	133.99	43	9.82	0.00	22.52	10.80	110.2
Sept. 12_07:40:00	134.15	43	9.83	-0.19	22.51	10.81	110.2
Sept. 12_07:41:00	134.49	43	9.83	0.09	22.50	10.82	110.4
Sept. 12_07:42:00	134.66	43	9.83	-0.36	22.49	10.77	109.9
Sept. 12_07:43:00	135.03	47	9.84	0.05	22.47	10.79	110.1
Sept. 12_07:44:00	135.30	47	9.89	-0.54	22.44	10.74	109.6
Sept. 12_07:45:00	135.52	47	9.90	-0.37	22.43	10.77	110.0
Sept. 12_07:46:00	135.77	47	9.89	-0.27	22.43	10.72	109.5
Sept. 12_07:47:00	136.06	47	9.88	-0.55	22.42	10.75	109.7
Sept. 12_07:48:00	136.38	47	9.86	-0.62	22.41	10.72	109.4
Sept. 12_07:49:00	136.52	47	9.86	-0.62	22.41	10.76	109.8
Sept. 12_07:50:00	136.81	61	9.85	-0.31	22.40	10.76	109.7
Sept. 12_07:51:00	137.10	41	9.88	-0.41	22.38	10.76	109.8
Sept. 12_07:52:00	137.37	41	9.86	-0.35	22.39	10.73	109.4
Sept. 12_07:53:00	137.67	41	9.87	-0.10	22.39	10.73	109.5
Sept. 12_07:54:00	137.94	41	9.88	-0.25	22.39	10.69	109.1
Sept. 12_07:55:00	138.22	41	9.88	-0.24	22.41	10.69	109.1
Sept. 12_07:56:00	138.47	63	9.89	-0.07	22.43	10.74	109.7
Sept. 12_07:57:00	138.72	63	9.88	-0.10	22.44	10.81	110.3
Sept. 12_07:58:00	139.00	63	9.88	0.10	22.47	10.77	110.0
Sept. 12_07:59:00	139.28	63	9.88	-0.41	22.48	10.78	110.1
Sept. 12_08:00:00	139.58	40	9.88	-0.55	22.51	10.72	109.5
Sept. 12_08:01:00	139.87	40	9.88	-0.41	22.53	10.71	109.4
Sept. 12_08:02:00	140.14	40	9.88	-0.58	22.55	10.77	110.0
Sept. 12_08:03:00	140.29	40	9.89	-0.56	22.56	10.72	109.6
Sept. 12_08:04:00	140.66	54	9.88	-0.48	22.58	10.73	109.6
Sept. 12_08:05:00	140.93	54	9.89	0.11	22.60	10.72	109.6
Sept. 12_08:06:00	141.22	54	9.89	-0.17	22.62	10.79	110.3
Sept. 12_08:07:00	141.37	54	9.91	-0.07	22.64	10.72	109.6
Sept. 12_08:08:00	141.75	54	9.91	-0.01	22.66	10.73	109.7
Sept. 12_08:09:00	142.04	40	9.92	0.20	22.67	10.67	109.1
Sept. 12_08:10:00	142.19	40	9.92	-0.02	22.69	10.77	110.2
Sept. 12_08:11:00	142.59	40	9.94	0.06	22.70	10.72	109.8
Sept. 12_08:12:00	142.85	74	9.96	0.09	22.72	10.71	109.8
Sept. 12_08:13:00	143.09	74	10.00	-0.23	22.71	10.73	110.0
Sept. 12_08:14:00	143.36	74	9.99	0.14	22.77	10.76	110.3
Sept. 12_08:15:00	143.63	74	9.98	0.02	22.81	10.71	109.8
Sept. 12_08:16:00	143.90	74	9.98	-0.08	22.86	10.70	109.8
Sept. 12_08:17:00	144.21	74	9.98	0.19	22.90	10.67	109.5
Sept. 12_08:18:00	144.51	74	9.99	-0.06	22.94	10.68	109.7
Sept. 12_08:19:00	144.76	54	10.02	-0.38	22.95	10.77	110.6
Sept. 12_08:20:00	144.99	54	10.00	-0.37	23.01	10.75	110.4
Sept. 12_08:21:00	145.27	54	9.98	0.11	23.07	10.73	110.2
Sept. 12_08:22:00	145.65	54	9.99	0.09	23.10	10.75	110.5
Sept. 12_08:23:00	145.95	54	9.97	-0.03	23.15	10.73	110.3
Sept. 12_08:24:00	146.23	47	9.97	-0.35	23.19	10.72	110.2
Sept. 12_08:25:00	146.39	47	9.96	-0.30	23.22	10.71	110.1
Sept. 12_08:26:00	146.72	47	9.96	0.28	23.25	10.70	110.0
Sept. 12_08:27:00	146.96	47	9.96	0.05	23.27	10.66	109.6
Sept. 12_08:28:00	147.32	60	9.96	0.29	23.29	10.75	110.5
Sept. 12_08:29:00	147.55	60	9.97	-0.06	23.32	10.73	110.4
Sept. 12_08:30:00	147.79	60	9.96	0.19	23.35	10.73	110.4
Sept. 12_08:31:00	148.17	60	9.95	0.00	23.38	10.71	110.2
Sept. 12_08:32:00	148.41	60	9.95	0.35	23.43	10.72	110.3
Sept. 12_08:33:00	148.64	60	9.94	0.36	23.46	10.72	110.3
Sept. 12_08:34:00	148.94	75	9.94	0.30	23.50	10.70	110.1
Sept. 12_08:35:00	149.18	75	9.92	0.35	23.54	10.71	110.2
Sept. 12_08:36:00	149.43	75	9.91	0.22	23.58	10.80	111.1
Sept. 12_08:37:00	149.82	75	9.89	0.20	23.61	10.79	111.0
Sept. 12_08:38:00	150.07	75	9.93	-0.35	23.61	10.78	111.0
Sept. 12_08:39:00	150.33	75	9.92	0.26	23.66	10.77	110.9
Sept. 12_08:40:00	150.56	75	9.89	0.23	23.69	10.75	110.7
Sept. 12_08:41:00	150.90	75	9.94	0.10	23.68	10.74	110.6
Sept. 12_08:42:00	151.12	65	9.94	0.31	23.70	10.74	110.6
Sept. 12_08:43:00	151.38	65	9.94	0.16	23.71	10.73	110.6
Sept. 12_08:44:00	151.61	65	9.94	0.14	23.72	10.70	110.3
Sept. 12_08:45:00	151.97	65	9.91	0.19	23.74	10.68	110.1
Sept. 12_08:46:00	152.22	59	9.93	0.16	23.74	10.68	110.1
Sept. 12_08:47:00	152.48	59	9.93	0.32	23.76	10.72	110.4
Sept. 12_08:48:00	152.72	59	9.93	0.25	23.77	10.72	110.4
Sept. 12_08:49:00	152.98	59	9.93	0.26	23.78	10.73	110.6
Sept. 12_08:50:00	153.37	59	9.91	-0.13	23.79	10.69	110.2
Sept. 12_08:51:00	153.53	59	9.95	0.14	23.78	10.69	110.2

Appendix 3.2-1. Temperature, Salinity, Dissolved Oxygen, and Phytoplankton Biomass (as chl*a*) Data along the RSA Marine Transect, Hope Bay Belt Project, September 2010

Date/Time	Distance from RSA moving towards Roberts Bay (km)	Water Depth (m)	Temperature (°C)	Chlorophyll *a* (µg/L)	Salinity	Dissolved Oxygen (mg/L)	Dissolved Oxygen Saturation (%)
Sept. 12_08:52:00	153.76	59	9.97	0.41	23.78	10.69	110.3
Sept. 12_08:53:00	154.06	59	9.99	0.38	23.78	10.70	110.4
Sept. 12_08:54:00	154.38	40	10.02	0.40	23.78	10.69	110.4
Sept. 12_08:55:00	154.60	40	9.99	0.31	23.81	10.76	111.1
Sept. 12_08:56:00	154.94	40	10.05	0.32	23.80	10.69	110.5
Sept. 12_08:57:00	155.17	40	10.05	0.35	23.80	10.74	111.0
Sept. 12_08:58:00	155.41	40	10.06	0.40	23.80	10.71	110.8
Sept. 12_08:59:00	155.65	63	10.06	0.40	23.82	10.71	110.7
Sept. 12_09:00:00	155.98	63	10.03	0.33	23.83	10.69	110.5
Sept. 12_09:01:00	156.21	63	10.06	0.35	23.82	10.70	110.6
Sept. 12_09:02:00	156.55	63	10.06	0.38	23.82	10.74	111.0
Sept. 12_09:03:00	156.76	63	10.06	0.38	23.81	10.72	110.8
Sept. 12_09:04:00	157.10	63	10.05	0.33	23.82	10.70	110.6
Sept. 12_09:05:00	157.34	63	10.07	0.38	23.81	10.70	110.7
Sept. 12_09:06:00	157.60	59	10.08	0.33	23.80	10.72	110.9
Sept. 12_09:07:00	157.86	59	10.09	0.33	23.80	10.71	110.8
Sept. 12_09:08:00	158.09	59	10.10	0.29	23.80	10.69	110.6
Sept. 12_09:09:00	158.45	59	10.07	0.35	23.81	10.68	110.4
Sept. 12_09:10:00	158.69	42	10.13	0.31	23.77	10.63	110.1
Sept. 12_09:11:00	158.92	42	10.13	0.27	23.78	10.66	110.3
Sept. 12_09:12:00	159.30	42	10.16	0.21	23.82	10.72	111.1
Sept. 12_09:13:00	159.55	42	10.15	0.31	23.84	10.66	110.4
Sept. 12_09:14:00	159.77	77	10.16	0.20	23.84	10.74	111.3
Sept. 12_09:15:00	160.13	77	10.20	0.04	23.88	10.70	111.1
Sept. 12_09:16:00	160.37	77	10.18	0.27	23.89	10.68	110.8
Sept. 12_09:17:00	160.62	77	10.20	0.24	23.88	10.73	111.3
Sept. 12_09:18:00	160.84	44	10.19	0.23	23.88	10.71	111.1
Sept. 12_09:19:00	161.15	121	10.18	0.10	23.89	10.68	110.8
Sept. 12_09:20:00	161.50	121	10.17	-0.04	23.89	10.67	110.7
Sept. 12_09:21:00	161.75	121	10.19	-0.43	23.88	10.69	110.9
Sept. 12_09:22:00	161.97	61	10.19	-0.22	23.88	10.67	110.7
Sept. 12_09:23:00	162.33	61	10.19	-0.35	23.88	10.75	111.5
Sept. 12_09:24:00	162.55	61	10.18	-0.62	23.89	10.73	111.3
Sept. 12_09:25:00	162.85	61	10.19	-0.15	23.88	10.72	111.2
Sept. 12_09:26:00	163.07	61	10.17	-0.57	23.89	10.70	111.0
Sept. 12_09:27:00	163.44	89	10.18	-0.62	23.89	10.70	110.9
Sept. 12_09:28:00	163.67	89	10.17	-0.62	23.89	10.69	110.8
Sept. 12_09:29:00	163.92	89	10.16	0.00	23.89	10.67	110.6
Sept. 12_09:30:00	164.38	27.6	10.14	0.00	23.90	10.67	110.6
Sept. 12_09:31:00	164.50	27.6	10.12	0.00	23.91	10.67	110.5
Sept. 12_09:32:00	164.74	27.6	10.11	0.00	23.91	10.63	110.1
Sept. 12_09:33:00	165.11	76	10.10	0.00	23.91	10.75	111.4
Sept. 12_09:34:00	165.35	76	10.09	-0.62	23.92	10.71	110.8
Sept. 12_09:35:00	165.59	76	10.09	0.00	23.92	10.70	110.7
Sept. 12_09:36:00	165.90	76	10.08	0.00	23.92	10.70	110.7
Sept. 12_09:37:00	166.16	63	10.07	-0.62	23.92	10.68	110.6
Sept. 12_09:38:00	166.52	63	10.04	0.00	23.94	10.65	110.1
Sept. 12_09:39:00	166.74	63	10.05	0.00	23.93	10.68	110.4
Sept. 12_09:40:00	167.01	63	10.04	0.00	23.94	10.70	110.6
Sept. 12_09:41:00	167.24	63	10.03	0.00	23.93	10.67	110.3
Sept. 12_09:42:00	167.58	63	10.04	-0.62	23.93	10.67	110.3
Sept. 12_09:43:00	167.80	63	10.03	-0.62	23.93	10.77	111.4
Sept. 12_09:44:00	168.05	87	10.02	-0.62	23.93	10.77	111.3
Sept. 12_09:45:00	168.44	87	9.98	0.00	23.95	10.74	110.9
Sept. 12_09:46:00	168.72	87	10.00	-0.62	23.93	10.72	110.8
Sept. 12_09:47:00	168.99	87	9.99	-0.62	23.93	10.72	110.8
Sept. 12_09:48:00	169.22	87	9.98	-0.62	23.93	10.69	110.4
Sept. 12_09:49:00	169.45	87	9.99	-0.62	23.92	10.69	110.4
Sept. 12_09:50:00	169.72	87	9.99	-0.54	23.94	10.66	110.1
Sept. 12_09:51:00	170.09	84	9.98	-0.62	23.95	10.63	109.8
Sept. 12_09:52:00	170.35	84	9.99	-0.62	23.94	10.70	110.6
Sept. 12_09:53:00	170.61	84	10.01	-0.62	23.94	10.74	111.0
Sept. 12_09:54:00	170.84	84	10.02	-0.59	23.94	10.74	111.0
Sept. 12_09:55:00	171.11	84	10.03	-0.62	23.95	10.75	111.1
Sept. 12_09:56:00	171.37	84	10.04	-0.59	23.95	10.76	111.3
Sept. 12_09:57:00	171.73	107	10.03	-0.62	23.96	10.74	111.1
Sept. 12_09:58:00	171.98	107	10.02	-0.62	23.96	10.77	111.4
Sept. 12_09:59:00	172.23	107	10.01	-0.62	23.97	10.76	111.2
Sept. 12_10:00:00	172.46	107	10.01	-0.45	23.97	10.73	110.9
Sept. 12_10:01:00	172.80	86	10.01	-0.31	23.97	10.79	111.6
Sept. 12_10:02:00	173.05	86	9.99	-0.50	23.97	10.76	111.2
Sept. 12_10:03:00	173.31	86	9.98	-0.20	23.98	10.80	111.6
Sept. 12_10:04:00	173.65	86	9.97	-0.55	23.98	10.83	111.9
Sept. 12_10:05:00	173.91	65	9.96	-0.06	23.98	10.78	111.3
Sept. 12_10:06:00	174.13	65	9.94	-0.06	23.98	10.73	110.8
Sept. 12_10:07:00	174.39	65	9.93	0.10	23.98	10.81	111.5

Appendix 3.2-1. Temperature, Salinity, Dissolved Oxygen, and Phytoplankton Biomass (as chl*a*) Data along the RSA Marine Transect, Hope Bay Belt Project, September 2010

Date/Time	Distance from RSA moving towards Roberts Bay (km)	Water Depth (m)	Temperature (°C)	Chlorophyll *a* (µg/L)	Salinity	Dissolved Oxygen (mg/L)	Dissolved Oxygen Saturation (%)
Sept. 12_10:08:00	174.73	65	9.92	0.05	23.97	10.83	111.7
Sept. 12_10:09:00	174.98	65	9.90	0.09	23.98	10.85	111.9
Sept. 12_10:10:00	175.24	65	9.91	0.09	23.95	10.80	111.4
Sept. 12_10:11:00	175.54	79	9.91	0.23	23.95	10.79	111.3
Sept. 12_10:12:00	175.82	79	9.92	0.12	23.94	10.77	111.1
Sept. 12_10:13:00	176.08	79	9.89	0.12	23.95	10.81	111.4
Sept. 12_10:14:00	176.35	79	9.88	-0.30	23.95	10.76	110.9
Sept. 12_10:15:00	176.62	79	9.89	-0.28	23.95	10.76	110.9
Sept. 12_10:16:00	177.01	79	9.90	0.02	23.93	10.79	111.2
Sept. 12_10:17:00	177.28	79	9.89	-0.01	23.94	10.77	111.0
Sept. 12_10:18:00	177.54	79	9.89	0.03	23.93	10.75	110.8
Sept. 12_10:19:00	177.80	62	9.90	0.04	23.93	10.72	110.5
Sept. 12_10:20:00	178.05	62	9.92	0.08	23.94	10.80	111.4
Sept. 12_10:21:00	178.34	62	9.93	0.03	23.94	10.79	111.4
Sept. 12_10:22:00	178.61	62	9.94	0.15	23.94	10.80	111.5
Sept. 12_10:23:00	178.98	62	9.93	0.14	23.95	10.82	111.6
Sept. 12_10:24:00	179.23	62	9.91	0.08	23.97	10.74	110.8
Sept. 12_10:25:00	179.49	62	9.94	-0.23	23.95	10.81	111.6
Sept. 12_10:26:00	179.76	62	9.92	0.00	23.96	10.79	111.3
Sept. 12_10:27:00	180.01	45	9.92	0.12	23.96	10.80	111.5
Sept. 12_10:28:00	180.36	45	9.90	0.04	23.97	10.79	111.2
Sept. 12_10:29:00	180.60	9.9	9.93	-0.32	23.95	10.76	111.0
Sept. 12_10:30:00	180.86	9.9	9.93	0.23	23.94	10.74	110.9
Sept. 12_10:31:00	181.17	94	9.94	0.15	23.93	10.84	111.8
Sept. 12_10:32:00	181.47	85	9.93	0.23	23.92	10.80	111.4
Sept. 12_10:33:00	181.72	85	9.92	0.21	23.92	10.80	111.4
Sept. 12_10:34:00	182.06	85	9.91	0.03	23.91	10.79	111.2
Sept. 12_10:35:00	182.33	85	9.94	-0.31	23.89	10.75	110.9
Sept. 12_10:36:00	182.57	85	9.95	-0.36	23.89	10.74	110.8
Sept. 12_10:37:00	182.84	85	9.95	-0.24	23.89	10.78	111.2
Sept. 12_10:38:00	183.09	85	9.97	-0.02	23.87	10.78	111.3
Sept. 12_10:39:00	183.47	85	9.97	0.12	23.88	10.78	111.3
Sept. 12_10:40:00	183.74	52	9.97	0.19	23.88	10.77	111.2
Sept. 12_10:41:00	183.97	52	9.97	0.00	23.88	10.71	110.6
Sept. 12_10:42:00	184.20	52	10.02	-0.62	23.85	10.81	111.6
Sept. 12_10:43:00	184.51	52	10.03	-0.15	23.85	10.80	111.6
Sept. 12_10:44:00	184.74	52	10.04	-0.24	23.84	10.76	111.2
Sept. 12_10:45:00	184.93	52	10.03	-0.17	23.86	10.71	110.7
Sept. 12_10:46:00	185.13	52	10.08	-0.17	23.83	10.77	111.5
Sept. 12_10:47:00	185.23	52	10.09	-0.10	23.83	10.79	111.7
Sept. 12_10:48:00	185.42	52	10.08	0.01	23.88	10.74	111.2
Sept. 12_10:49:00	185.55	52	10.11	-0.15	23.86	10.72	111.0
Sept. 12_10:50:00	185.67	52	10.11	-0.08	23.86	10.78	111.6
Sept. 12_10:51:00	185.76	52	10.07	-0.62	23.88	10.75	111.2
Sept. 12_10:52:00	185.90	39	10.06	-0.62	23.88	10.78	111.6
Sept. 12_10:53:00	186.05	39	10.06	-0.53	23.88	10.72	110.8
Sept. 12_10:54:00	186.21	39	10.07	-0.62	23.88	10.76	111.4
Sept. 12_10:55:00	186.36	39	10.07	-0.62	23.88	10.71	110.8
Sept. 12_10:56:00	186.48	39	10.06	-0.62	23.88	10.75	111.2
Sept. 12_10:57:00	186.54	39	10.09	-0.62	23.86	10.76	111.4
Sept. 12_10:58:00	186.70	13.3	10.09	-0.62	23.87	10.67	110.5
Sept. 12_10:59:00	186.79	38	10.10	-0.62	23.86	10.76	111.4
Sept. 12_11:00:00	186.89	38	10.13	-0.62	23.85	10.68	110.7
Sept. 12_11:01:00	186.99	38	10.14	0.00	23.84	10.75	111.4
Sept. 12_11:02:00	187.10	38	10.11	-0.62	23.87	10.74	111.2
Sept. 12_11:03:00	187.20	80	10.13	0.00	23.85	10.73	111.2
Sept. 12_11:04:00	187.30	80	10.12	0.00	23.85	10.73	111.2
Sept. 12_11:05:00	187.39	80	10.15	0.00	23.84	10.69	110.8
Sept. 12_11:06:00	187.49	80	10.14	-0.62	23.85	10.75	111.4
Sept. 12_11:07:00	187.60	80	10.14	-0.62	23.85	10.73	111.2
Sept. 12_11:08:00	187.72	80	10.16	0.00	23.83	10.71	111.0
Sept. 12_11:09:00	187.84	80	10.17	0.00	23.82	10.75	111.5
Sept. 12_11:10:00	187.94	80	10.18	0.00	23.81	10.68	110.7
Sept. 12_11:11:00	188.03	80	10.17	0.00	23.82	10.72	111.1
Sept. 12_11:12:00	188.12	80	10.16	0.00	23.82	10.74	111.3