

# Halifax Harbour Water Quality Monitoring Project Survey Summary #145

**Survey Date:** 17 December 2007  
**Nature of Survey:** Complete Survey  
**Report File (this document):** HHWQMP\_report145\_071217.doc  
**Data File:** HHWQMP\_data145\_071217.xls  
**Data Return:**  
 Profile: 90%  
 Bacteria: 98%  
 Chemical: 100%  
**Overall: 95%**

### Sample Notes:

Dissolved oxygen data at stations AYC, B2, C3, C5, C6, D2, D3, E2, F1 and SYC, failed quality check. The data is plotted here but has been deleted from the data file. Other profiled parameters seem unaffected.

EE2 - 10 m fecal coliform sample bottle was broken in transit.

A CTD cast was taken at the LOBO buoy location (44.6291 N, 63.5915 W) at 16:16.

### QA/QC samples:

Chemical Analysis		B2 - 10m	
Detectable Parameter	Units	reference sample	QA/QC
Ammonia (as N)	mg/L	<0.05	<0.05
Total Suspended Solids	mg/L	2.3	5.6
Copper	ug/L	0.3	0.4
Iron	ug/L	12	9
Zinc	ug/L	<1	1

### Fecal Coliform (MPN/100ml)

Site	H1-10m	EE1-1m	DYC-10m	B2-10m
Reference	63	2500	8	0
QA/QC	71	2000	27	0

### Comments:

**General:** A major storm passed through the area the day before the survey. There were ENE winds approaching 50 km/hr that switched to NNW at about 2:00 AM. This was accompanied by a storm surge of approximately 0.7 m during the night and approximately 40 mm of precipitation, presumably mostly as snowfall as the mean temperature remained below zero. The harbour water properties are very uniform, with only slight horizontal or vertical variation, there is virtually no freshwater signature except in protected coves, e.g. Herring Cove (HC) and Dartmouth Yacht Club (DYC). The fecal coliform levels are quite high and there is no obvious displacement up or down harbour in either the 1 or 10 m bacteria distributions. Consistent with the water properties, the fecal coliform distribution is everywhere more vertically uniform than is typical.

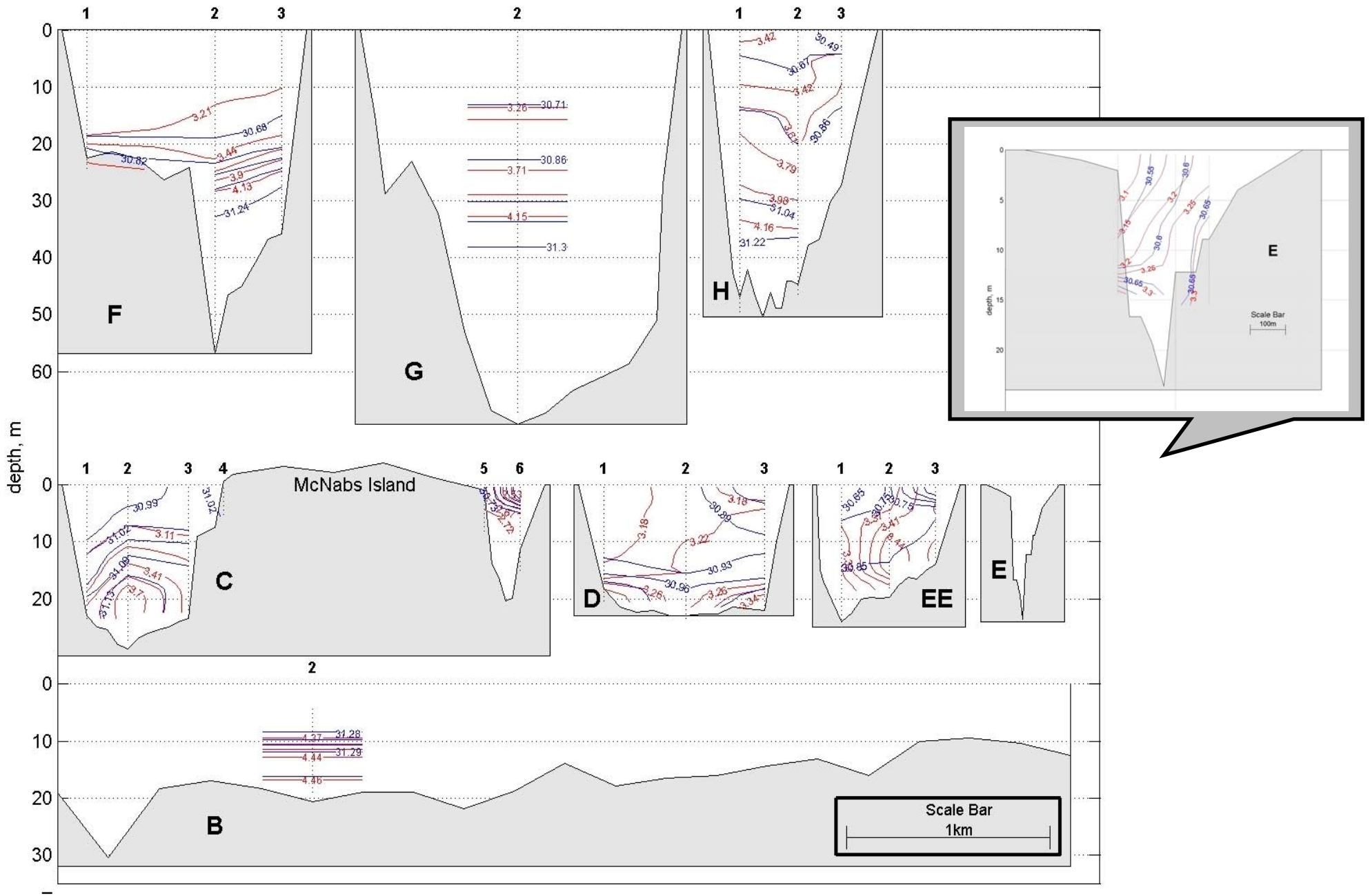
**Fluorescence:** The fluorescence values are low and vertically uniform with maximums of less than 2 mg/m<sup>3</sup> everywhere.

**TSS:** TSS values are low, generally between 0.5 and 2 mg/L. The highest value in the 1 m sample in the Outer Harbour was 2.3 mg/L. There is no clear spatial pattern.

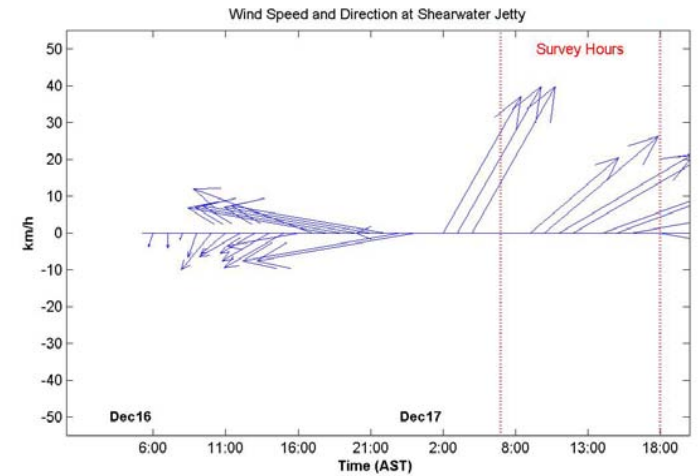
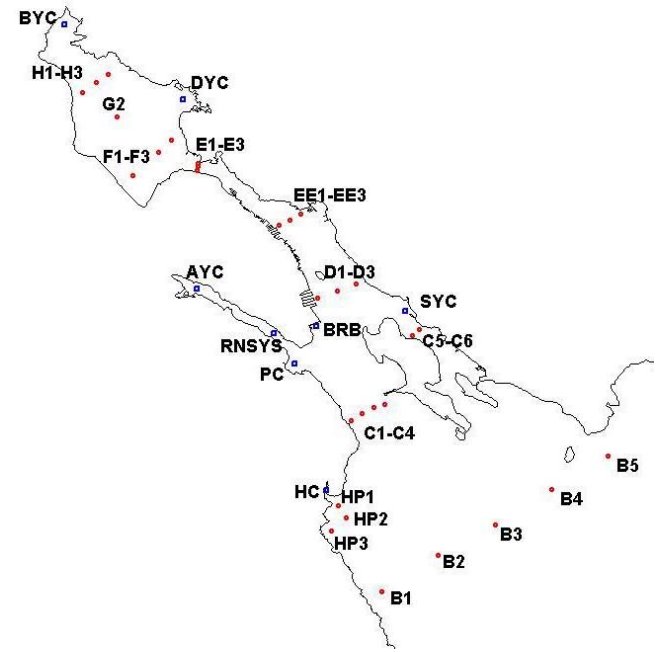
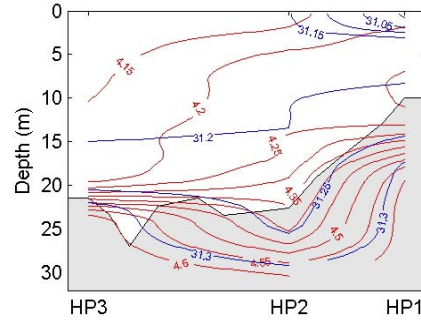
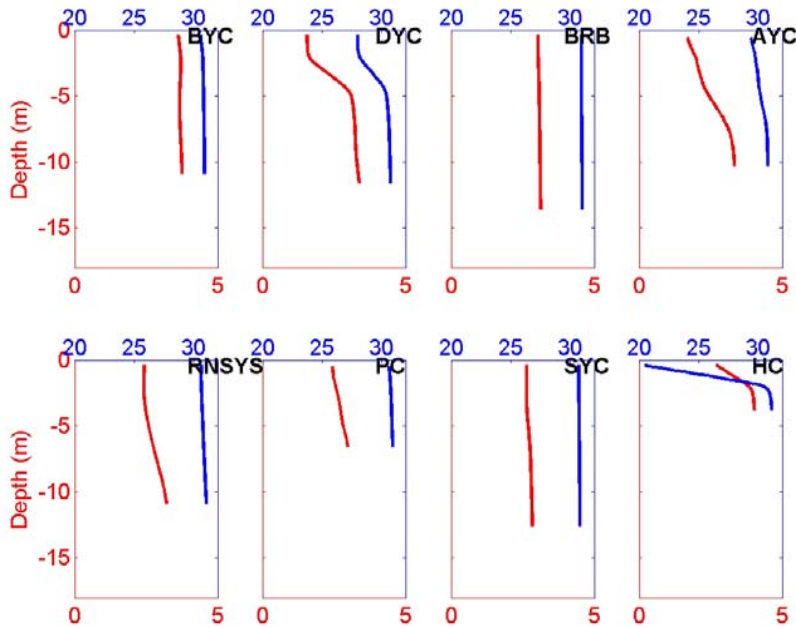
**Ammonia:** The ammonia values are mostly just above the 0.05 mg/L detection limit everywhere (mean .058 mg/L). The levels are below detection in the Outer Harbour and in the H2-10 m sample in the northern Basin. The highest value (0.12 mg/L) is in the 10 m sample at EE2, in the centre of the Harbour.

**Metals:** There are no values exceeding guidelines. The closest are the copper concentrations that are about 1/3 to 1/2 the guideline value of 2.9 ug/L.

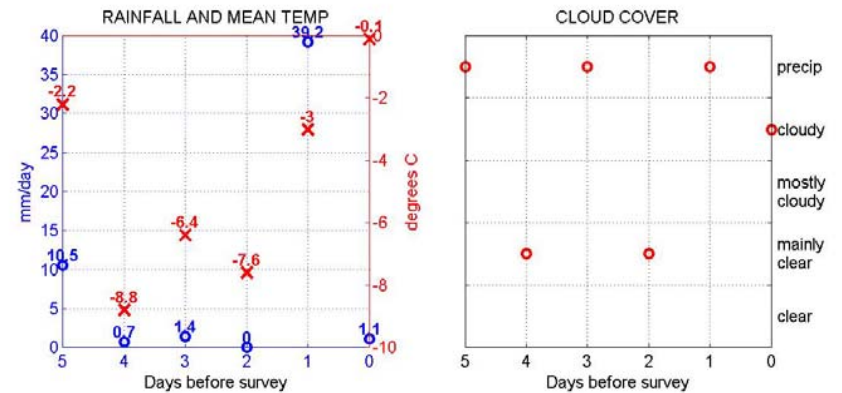
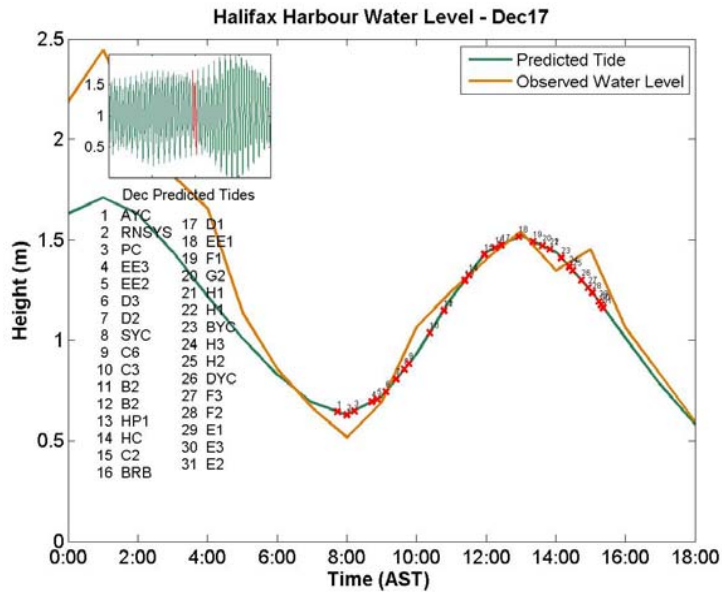
**Dissolved Oxygen:** The DO sensor experienced erratic behaviour during instrument stabilization. This resulted in the rejection of 10 of the DO profiles. The remaining DO profiles do not exhibit erratic behaviour but the DO levels are lower than expected. This is particularly evident in the Basin bottom water. In the previous survey an intrusion had left the DO at the bottom at about 7.4 mg/L, this week the DO at the bottom is measured at 4.1 mg/L. This is a very large change to occur in a week and is considerably lower than the BBPMP value measured the following day (5.7 mg/L). The values obtained at the LOBO buoy was 7.4 mg/L compared to 9.0 mg/L measured by the buoy. There is no obvious problem with the instrument but this will be monitored. The data indicate DO Levels in most of the harbour in the 5.5-6.5 mg/L range. The DO data should be interpreted with more than the usual circumspection.



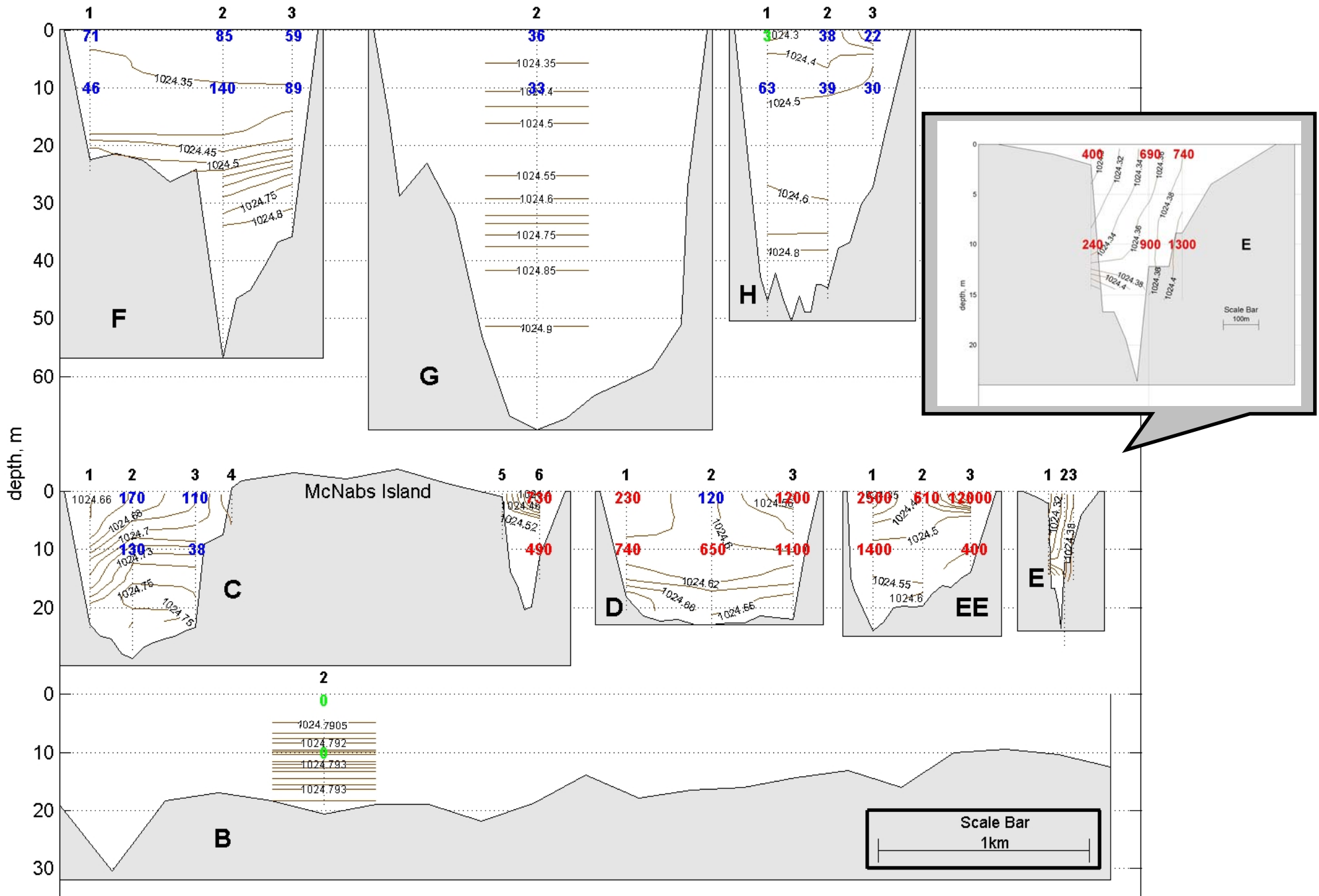
# Yacht Clubs



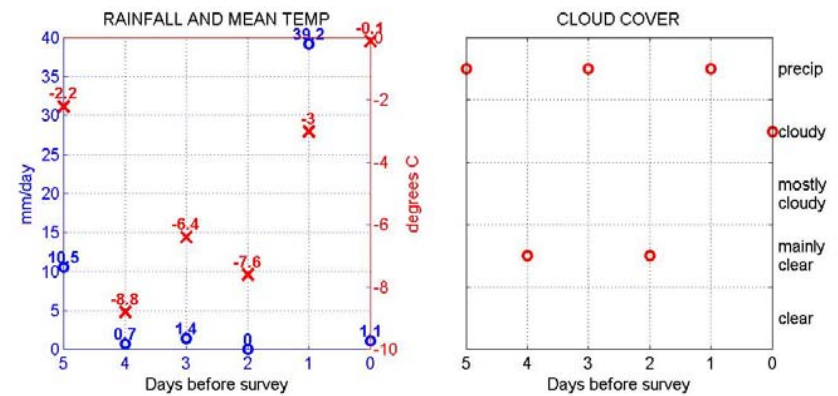
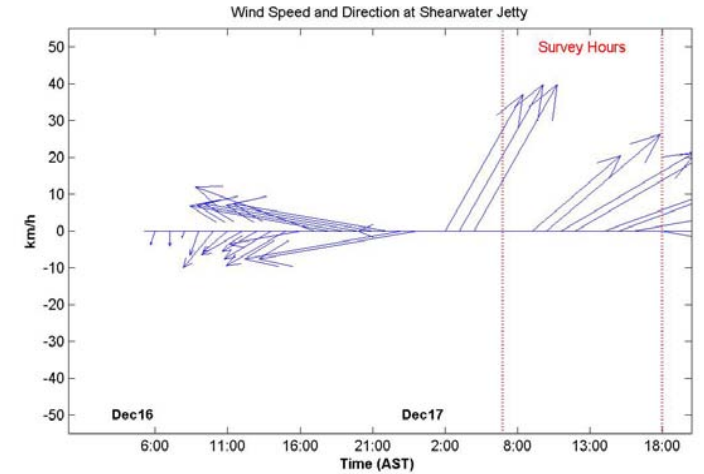
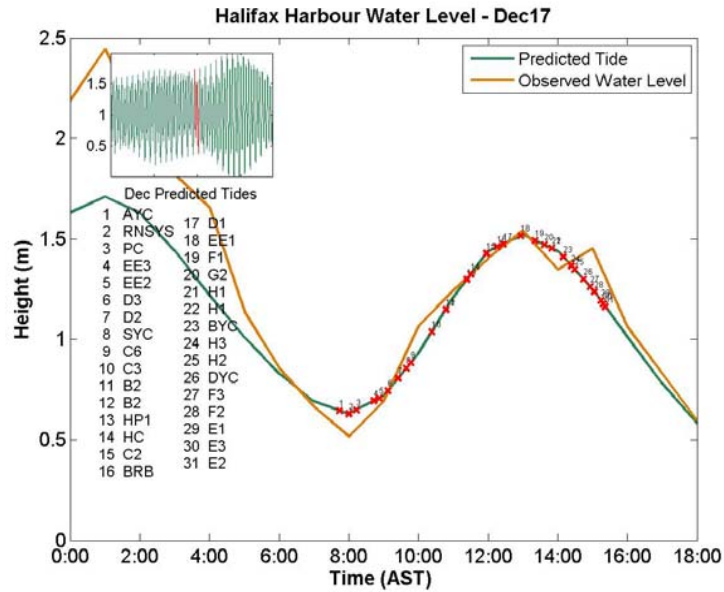
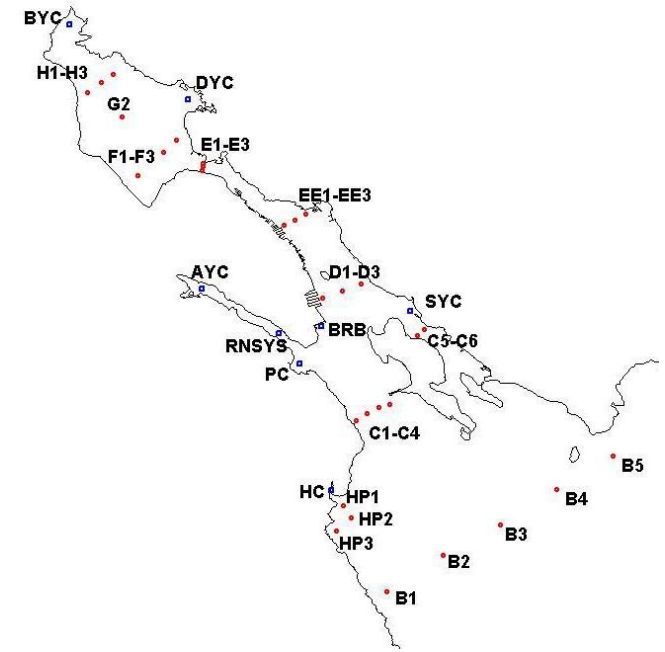
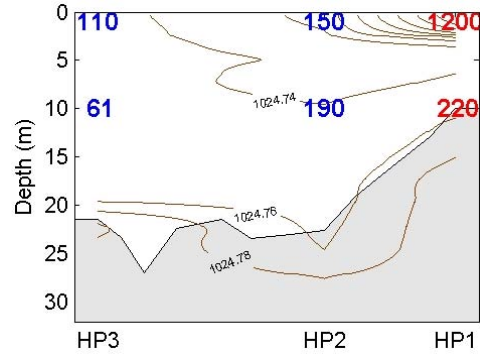
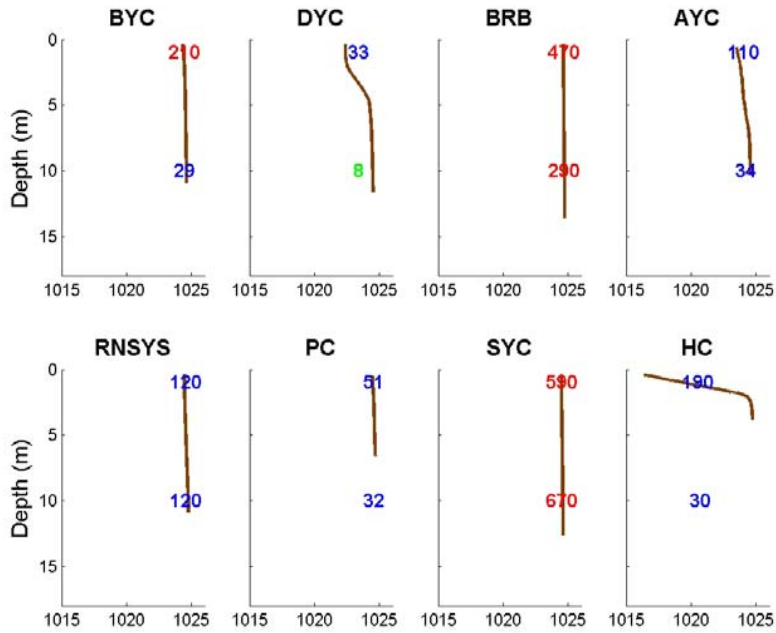
Rainfall and temperature data collected at Shearwater Autoport.  
Cloud cover data collected at Shearwater Airport



Salinity in PSU      Temperature in °C



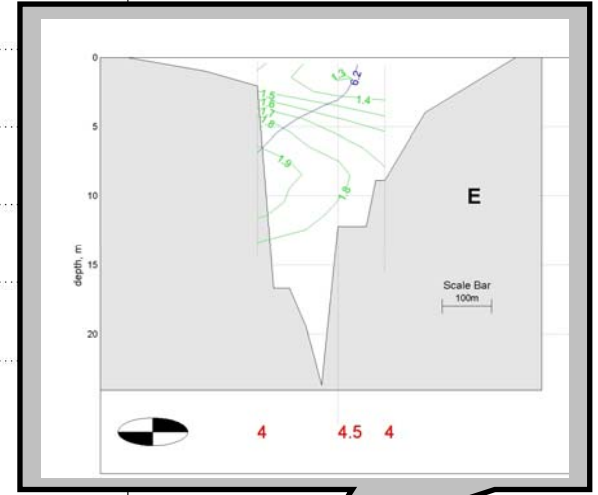
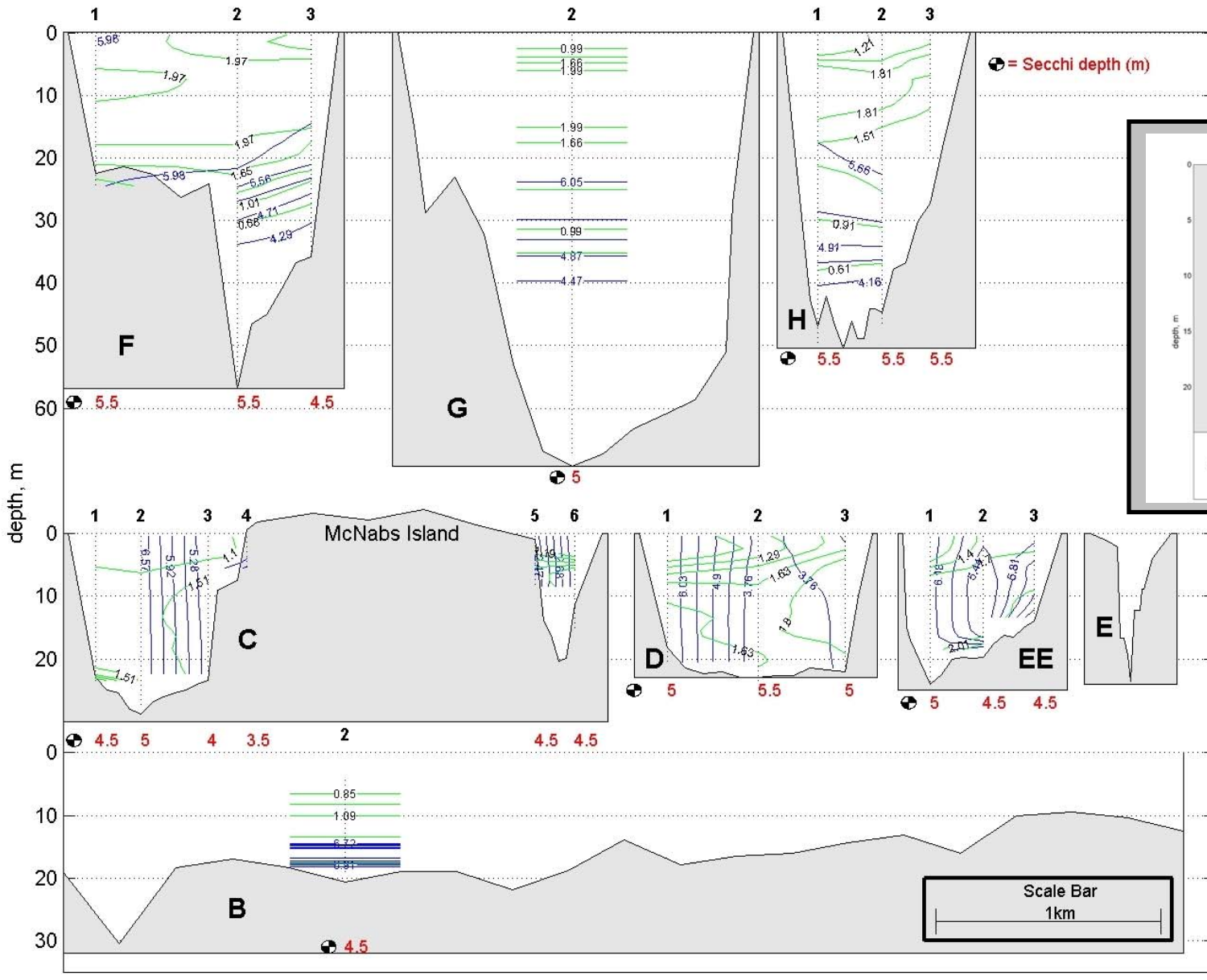
# Yacht Clubs



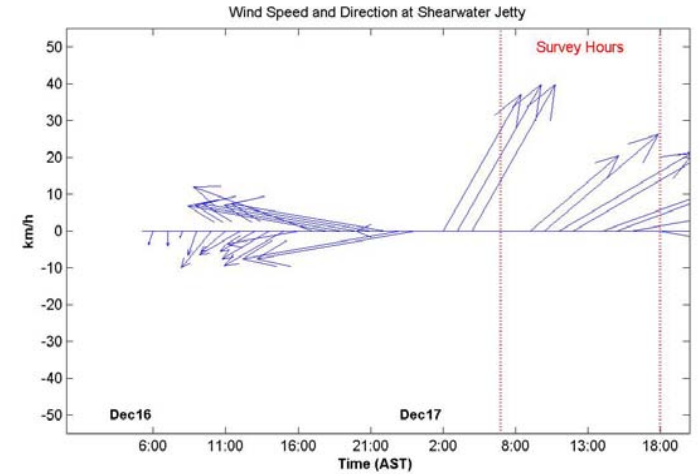
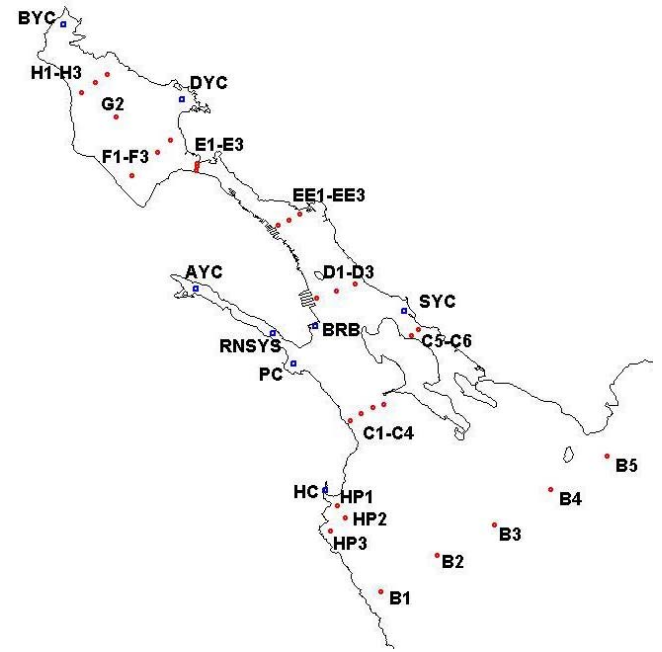
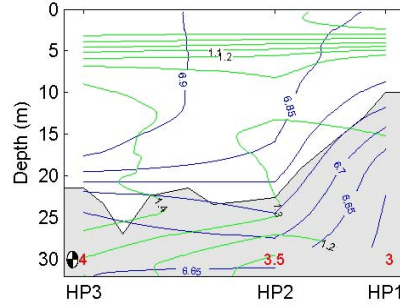
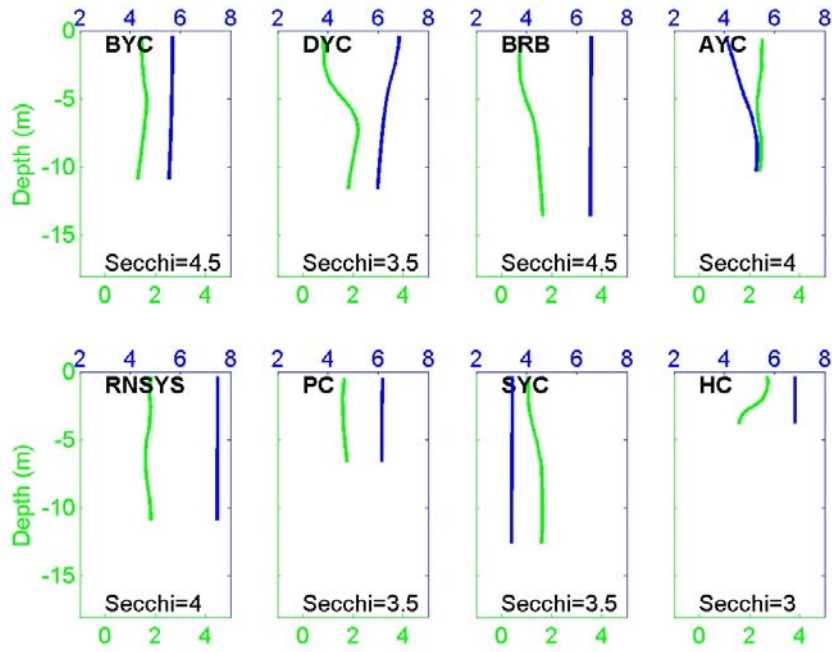
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Potential Density in  $\text{kg/m}^3$

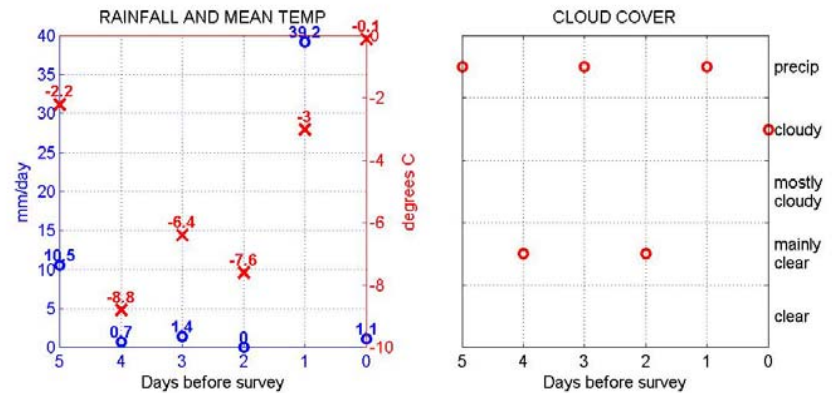
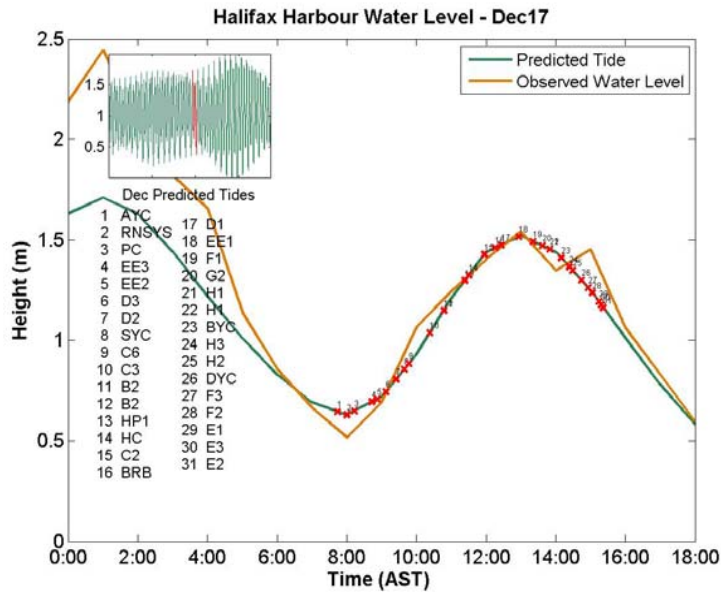
Fecal coliform: above swimming limit (200 mpn/100mL)  
above shellfish limit (14 mpn/100mL)  
below limits



# Yacht Clubs

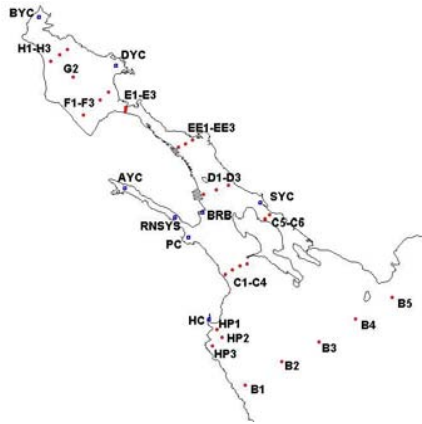
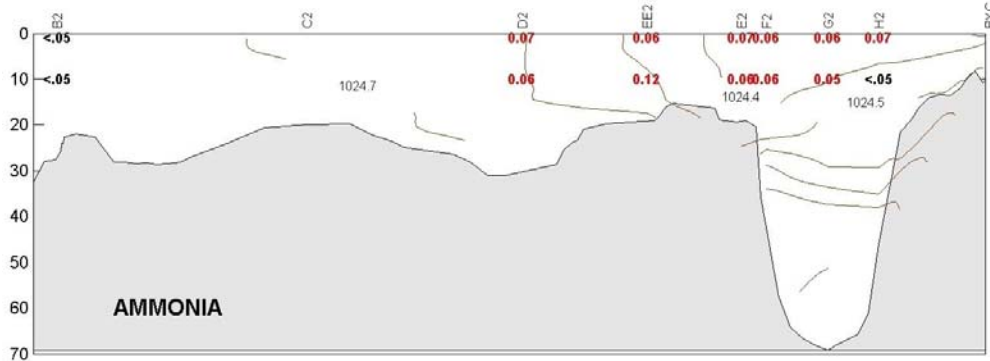
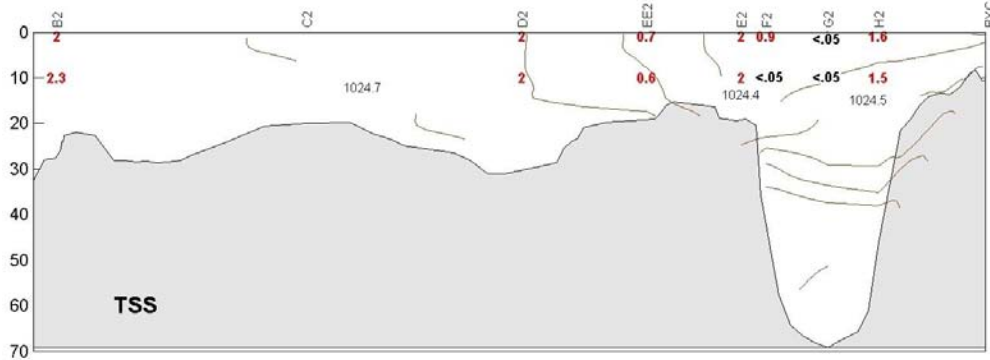


Rainfall and temperature data collected at Shearwater Autoport.  
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DO in mg/L

Chlorophyll in mg/m<sup>3</sup>

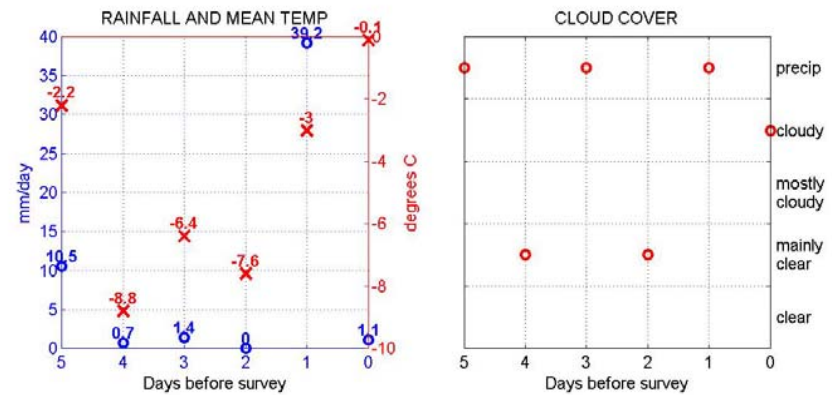
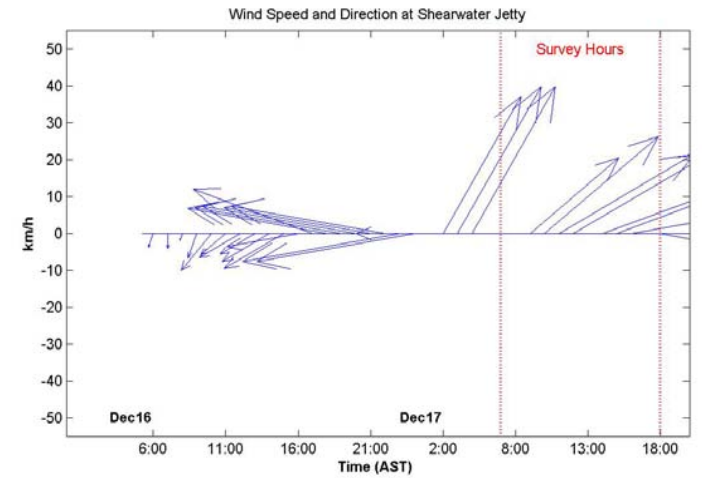
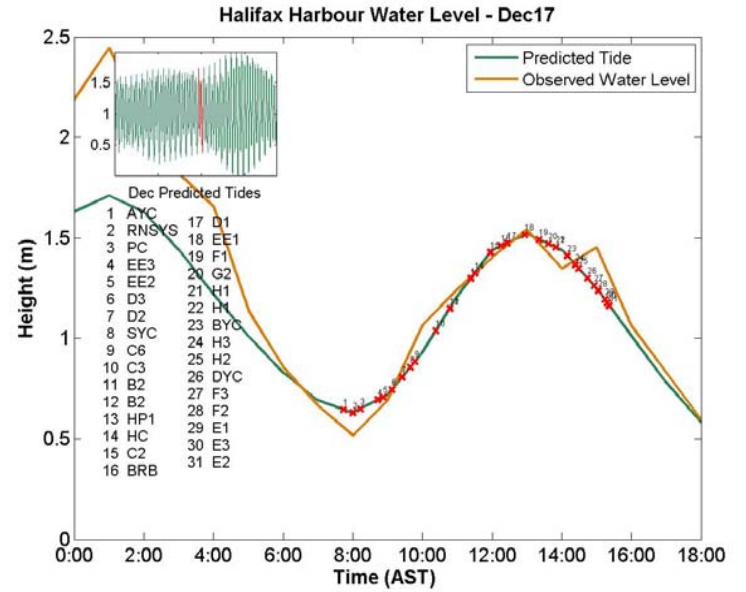


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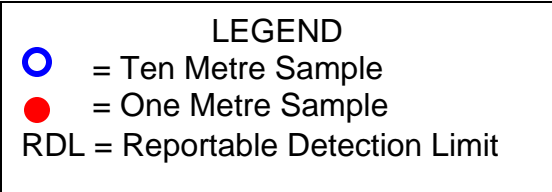
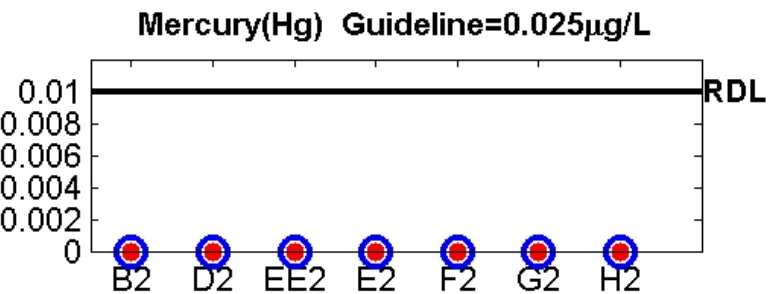
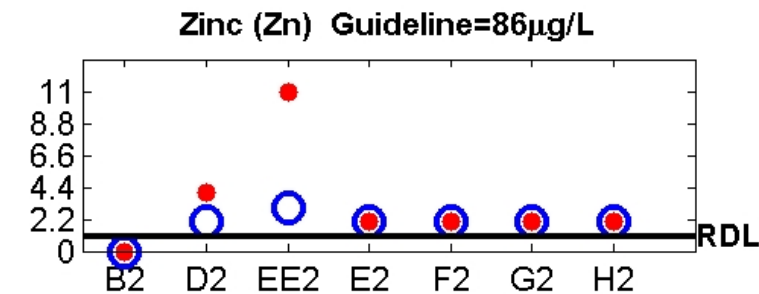
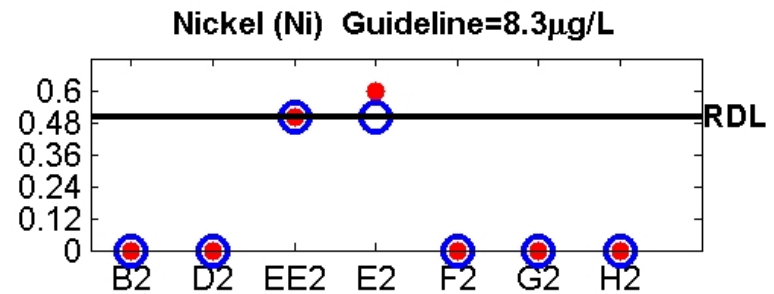
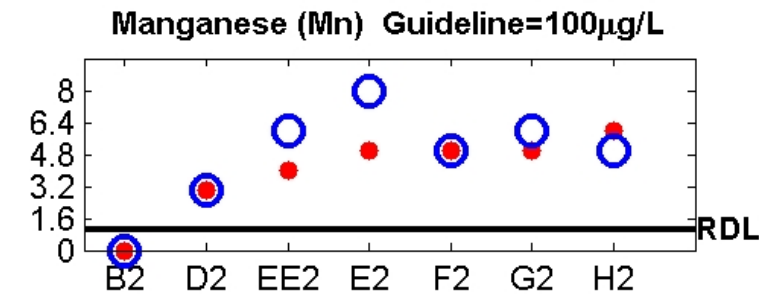
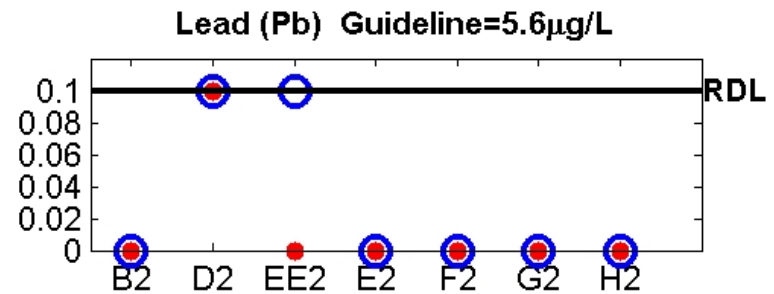
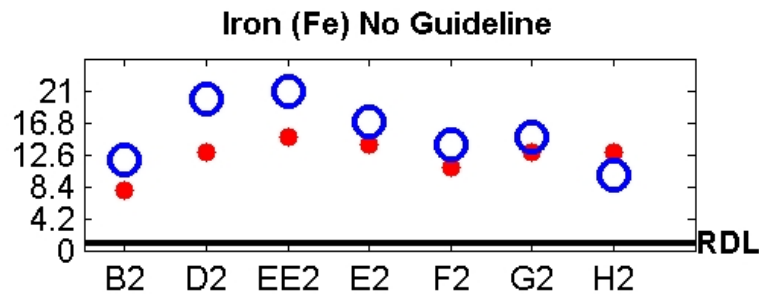
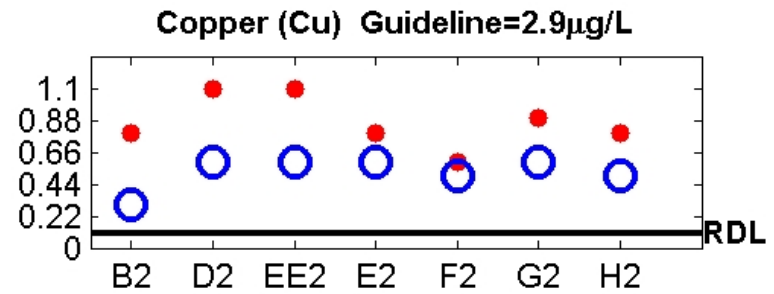
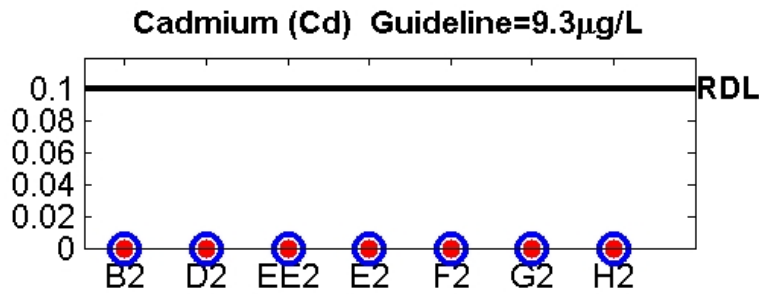
Potential Density in  $\text{kg/m}^3$

Ammonia in  $\text{mg/L}$

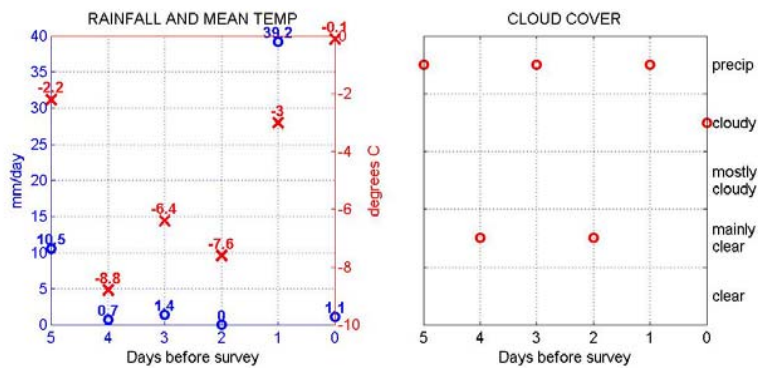
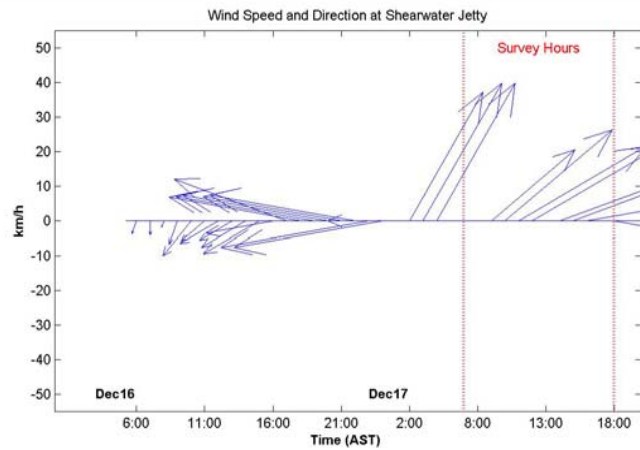
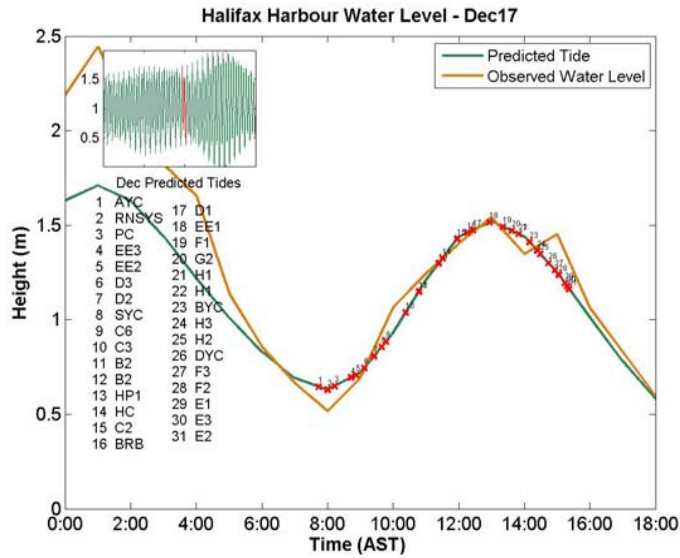
TSS in  $\text{mg/L}$



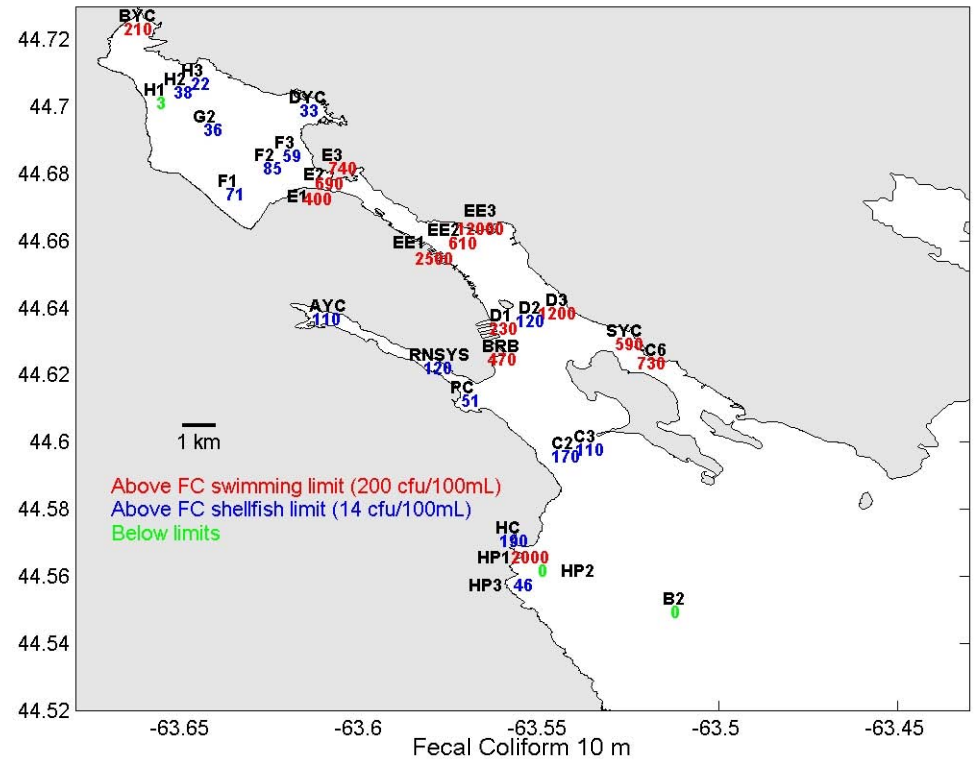




**FECAL COLIFORM SUMMARY**



Fecal Coliform 1 m



Fecal Coliform 10 m

