

# Halifax Harbour Water Quality Monitoring Project

## Weekly Summary #116

**Survey Date:** 08 November 2006  
**Nature of Survey:** Complete Survey  
**Report File (this document):** HHWQMP\_report116\_061108.doc  
**Data File:** HHWQMP\_data116\_061108.xls

### Data Return:

Profile: 100%  
 Bacteria: 100%  
 Chemical: 100%  
**Overall: 100%**

### Sample Notes:

CBOD<sub>5</sub> samples were taken at F1-1m, F1-10m, F2-1m and F2-10m.

### QA/QC samples:

#### Chemical Analysis

Detectable Parameter	units	E2 – 1m	
		reference sample	QA/QC
Ammonia (as N)	mg/L	0.08	0.07
Total Suspended Solids	mg/L	1	3
Copper (Cu)	ug/L	0.3	0.3
Iron (Fe)	ug/L	7	8
Manganese (Mn)	ug/L	6	4
Zinc (Zn)	ug/L	2	2

#### Fecal Coliform (CFU/100ml)

Site	SYC-10M	SYC-1M	AYC-10M	E1-1M
Reference	19	6	22	440
QA/QC	21	5	24	1400

### Comments:

**General:** A significant intrusion of more saline/denser shelf water has occurred. This has replaced much of the deep bottom water in the Basin. The overall salinity of the harbour has increased significantly, in spite of some light/moderate rainfall in the intermediate period. The only place in the Harbour with water of salinity less than 31

PSU is above 7-8 m in the Basin and Narrows. Interestingly, the bottom water throughout the Inner Harbour is of higher salinity than the bottom water at B2. The potential density of the water at the bottom of the Basin (70 m) two weeks ago was approximately 1024.9 kg/m<sup>3</sup>, this density now occurs at 27 m. It appears that the intrusion has stopped because the water in the Narrows is now less dense than water at the same depth in the Basin. The fecal coliform (fc) values are quite high with a distribution that is relatively tightly centered on the EE and E sections. There are also some high fc values in the southern Basin at both 1 and 10m samples. This could be due to some combination of local lower level up-harbour flow at the F section, and local input from the Duffus St. /Fairview Cove CSO diversion acted upon by the gentle to moderate South/South East wind.

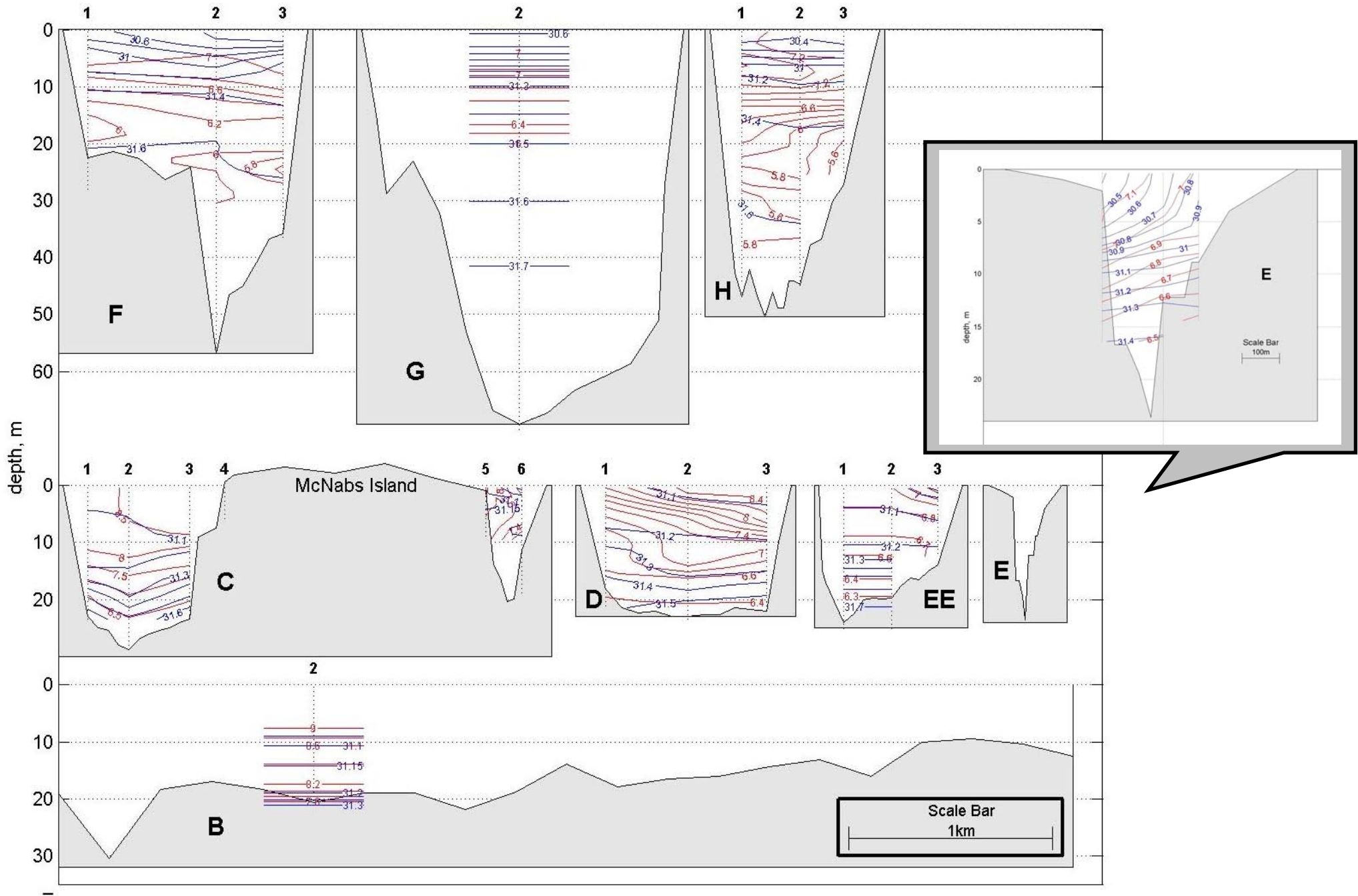
**Fluorescence:** The fluorescence levels are fairly low and not particularly different from those of two weeks ago. In the Basin, the profile maximums are 6-7 mg/m<sup>3</sup> at the surface, in the north, and at about 5m, in the south. South of the Narrows, the maximums are 3-4 mg/m<sup>3</sup> at about 15 m.

**Dissolved Oxygen:** The data indicate that the dissolved oxygen (DO) in the Basin bottom water has increased to about 5 mg/L. There appears to be remnants of the former, oxygen deprived bottom water at an intermediate depth in the northern Basin. The DO in the near surface water in the Basin and northern Inner Harbour (Section EE and North) is relatively uniform at about 6.4-6.5 mg/L. South of this the surface water DO is also quite uniform at around 7.1 – 7.3 mg/L. There appears to be a discontinuity at this point in several data sets including coliform, ammonia, iron, manganese and secchi disk depth. The DO is below the use specific guidelines everywhere in the Basin and the Class SA area of the Outer Harbour (B2). In other SB areas, the surface water meets the guidelines, but there is deeper water that does not. In the Inner Harbour the SC guideline is not met only in the deeper water of the Narrows. The DO data is not ground-truthed and absolute values are questionable (see DO discussion in QR#1).

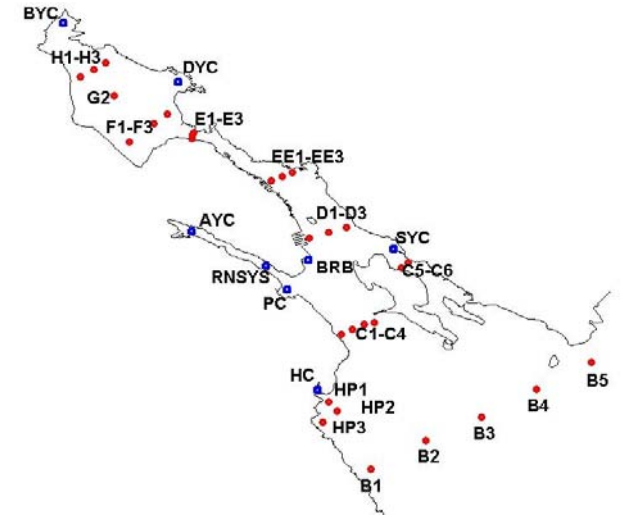
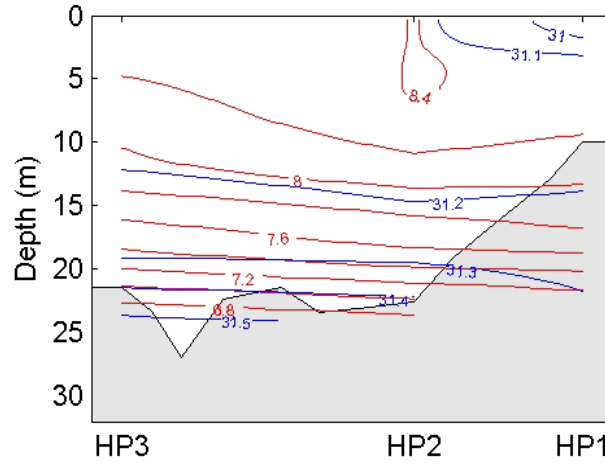
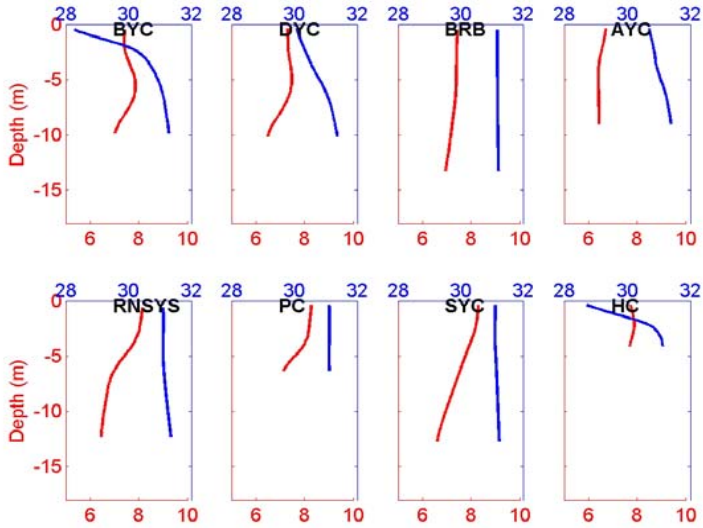
**TSS:** The TSS values are not particularly high and decrease relatively monotonically from a maximum of 4 mg/L in the north of the Basin to less than 1 mg/L in the Outer Harbour.

**Ammonia:** At section EE and north, the NH<sub>3</sub> values are between 0.05 and 0.18 mg/L. South of this, all values are below the detection limit of 0.05 mg/L.

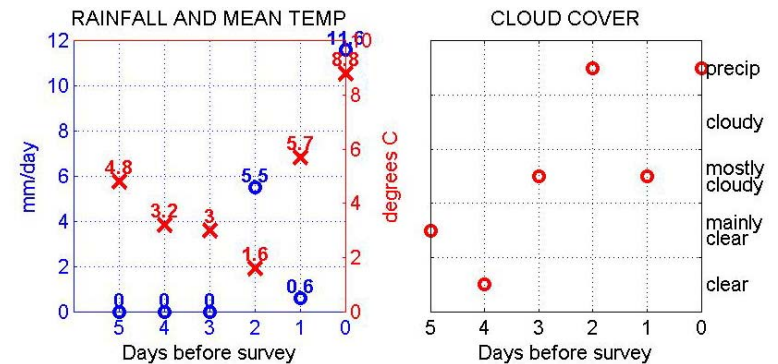
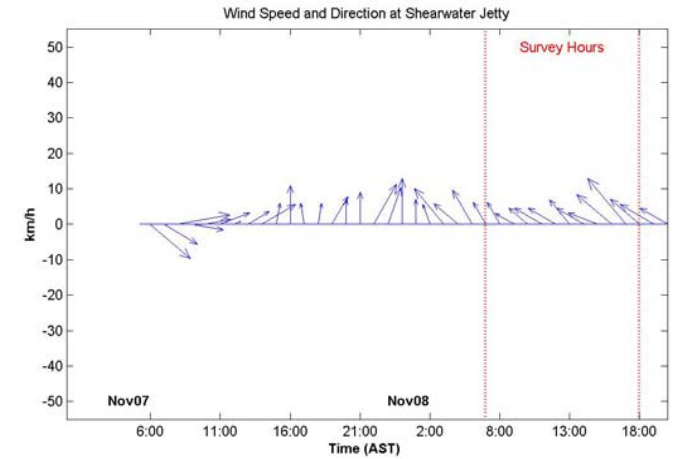
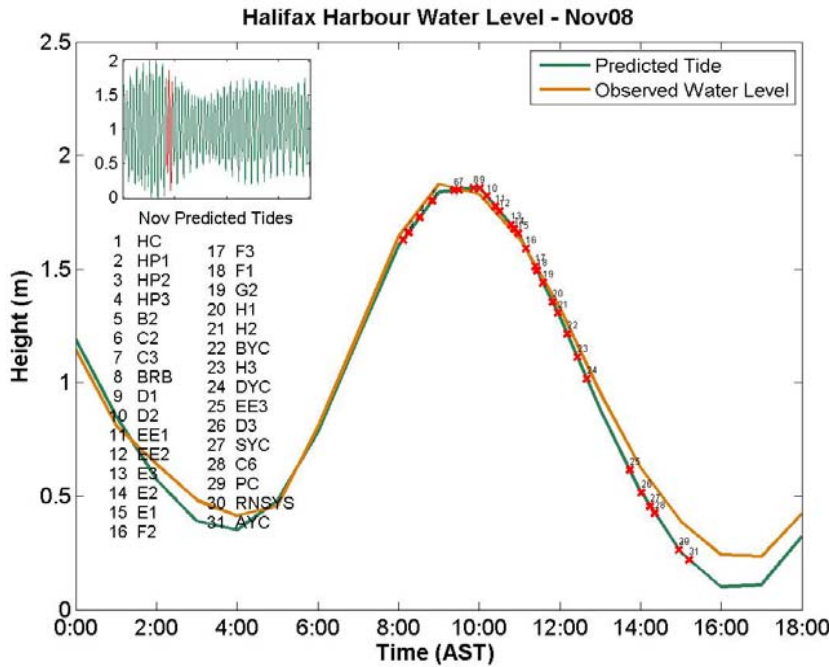
**CBOD<sub>5</sub>:** The samples taken at F1 and F2 had non-detectable levels (< 5 mg/L).



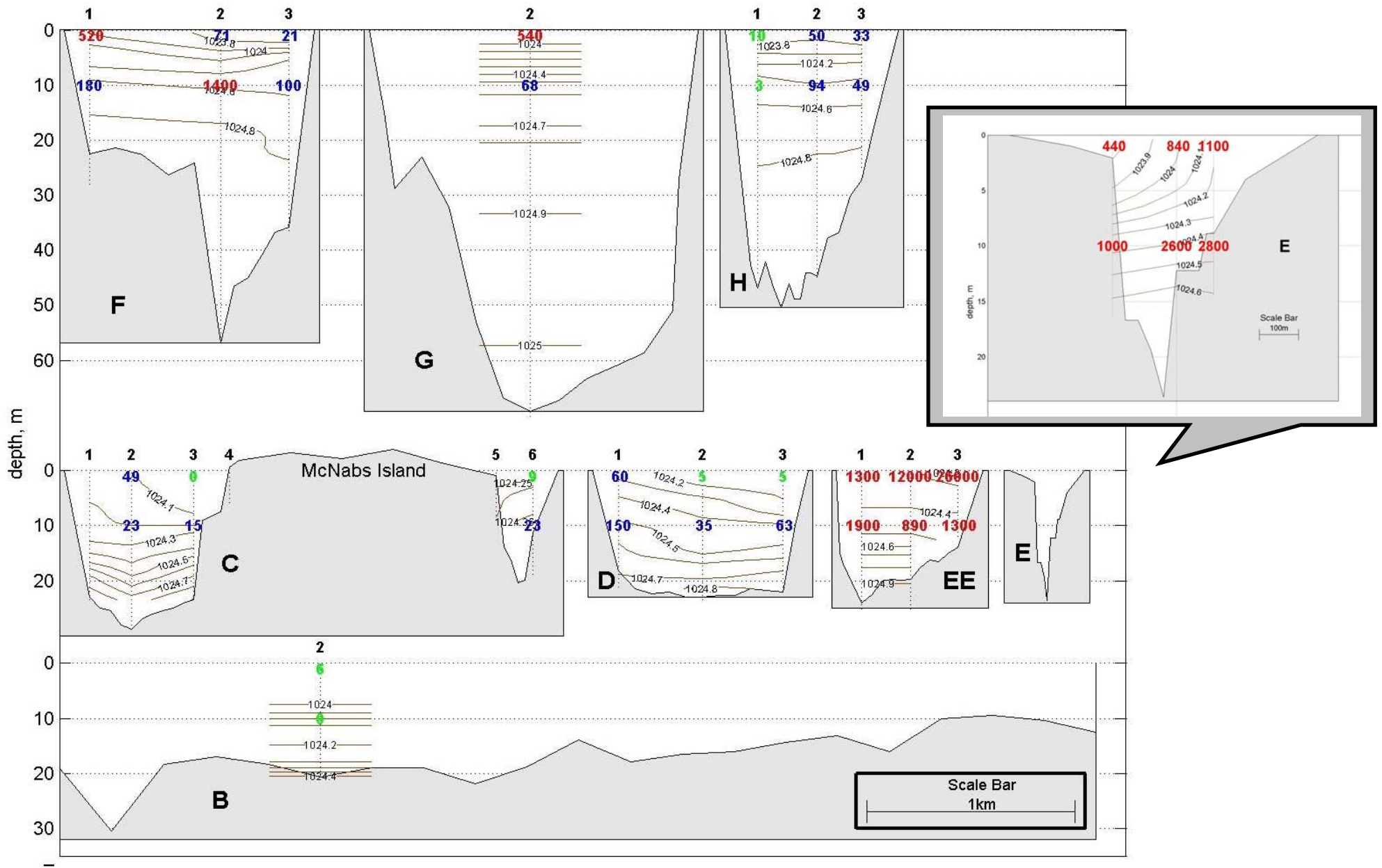
# Yacht Clubs



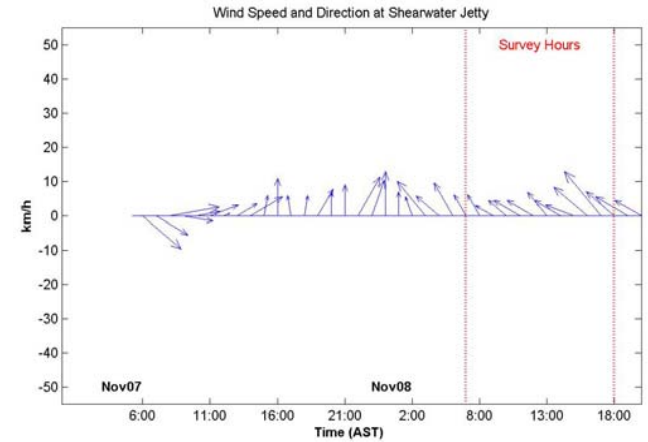
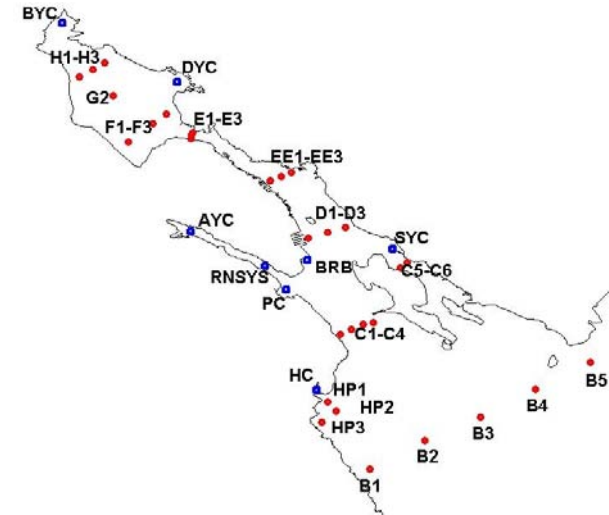
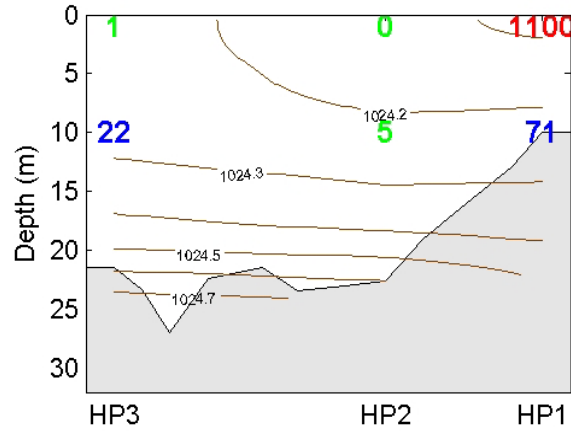
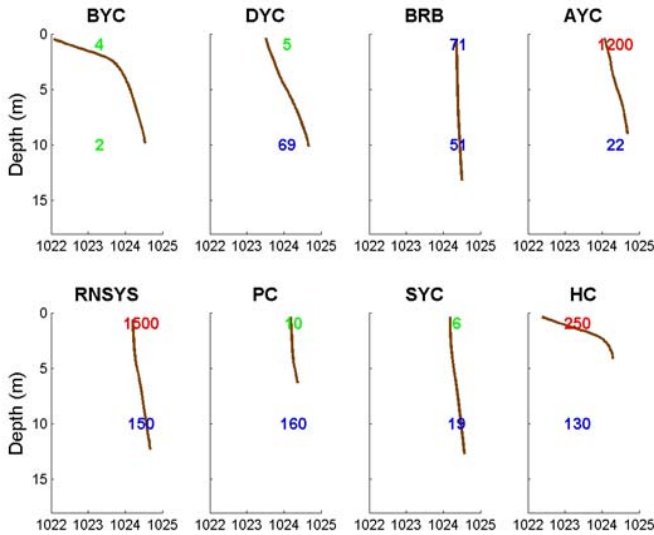
Rainfall and temperature data collected at Shearwater Autoport.  
Cloud cover data collected at Shearwater Airport



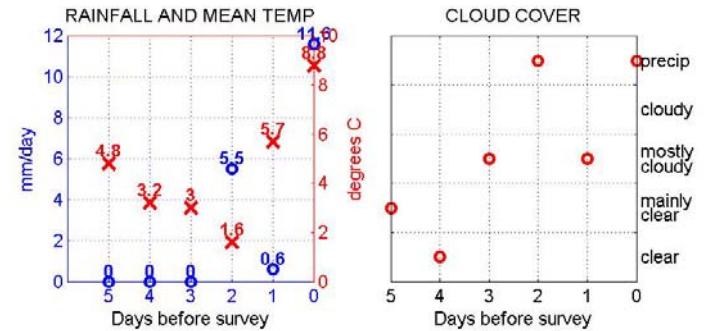
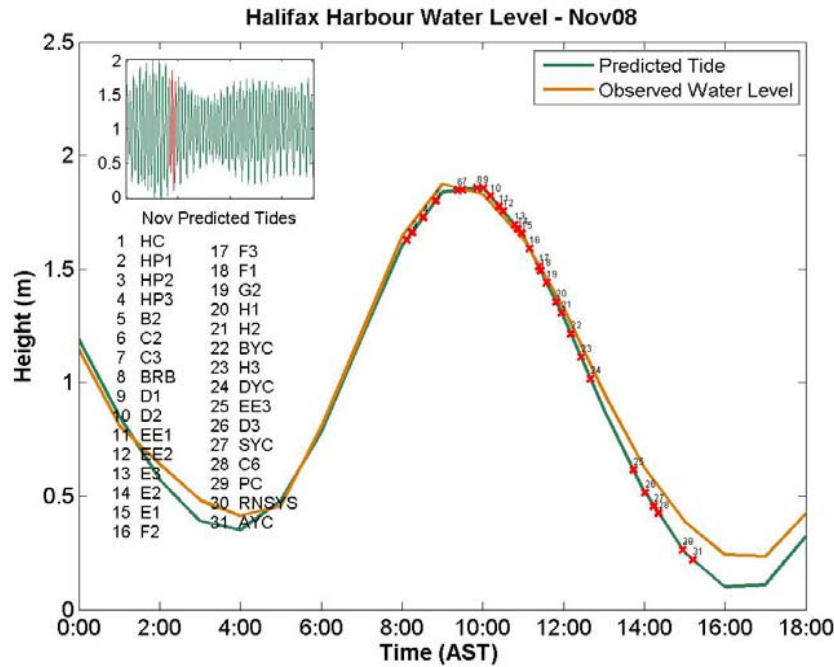
Salinity in PSU      Temperature in °C



# Yacht Clubs

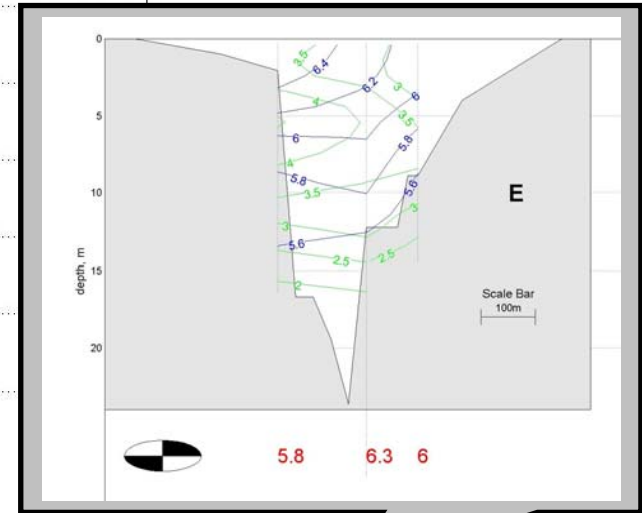
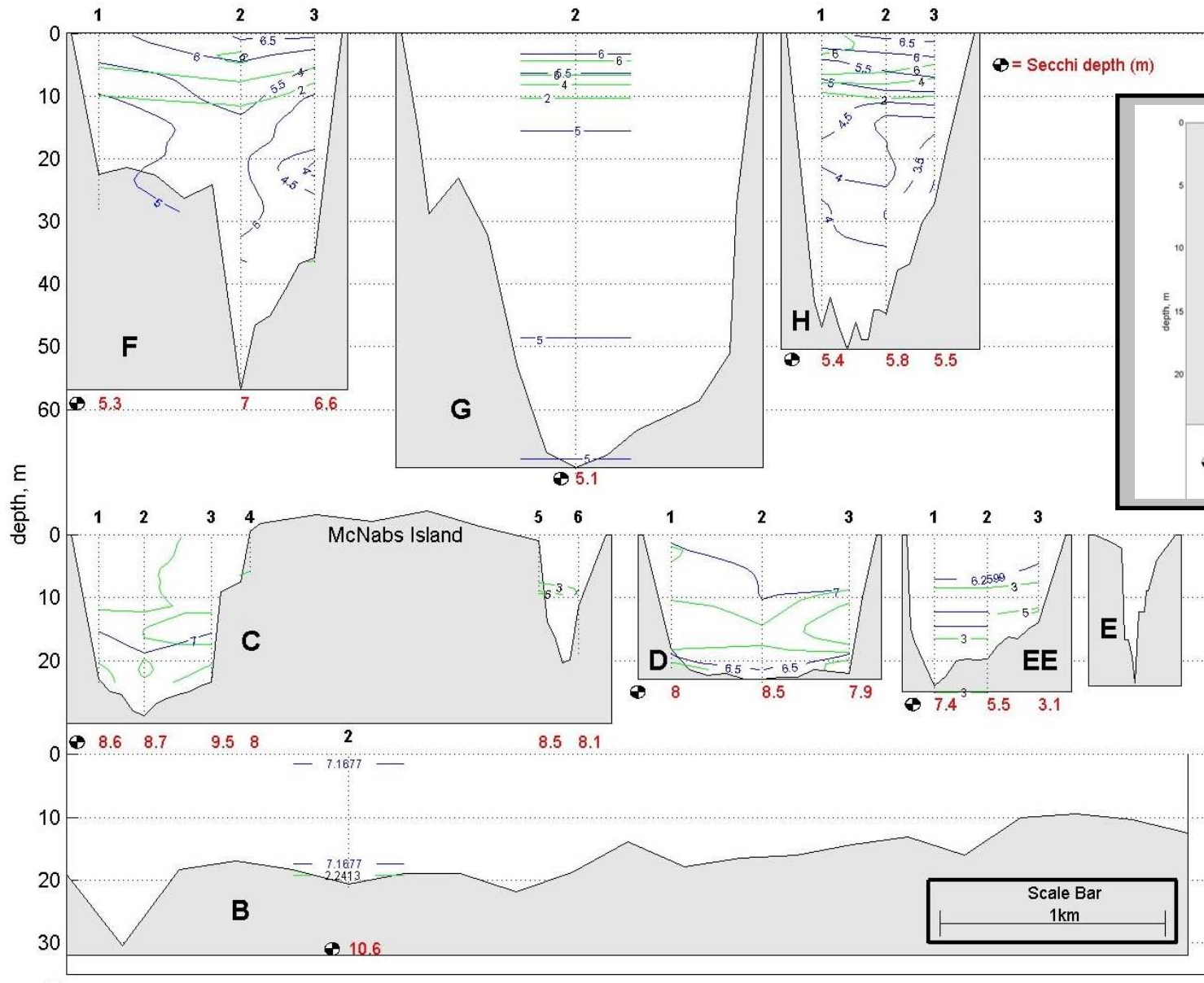


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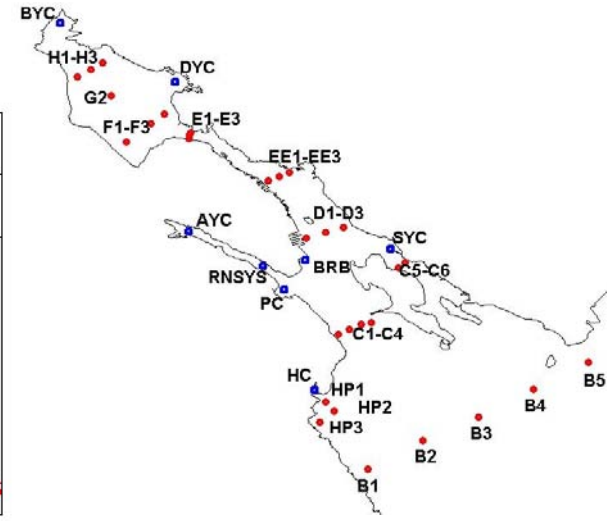
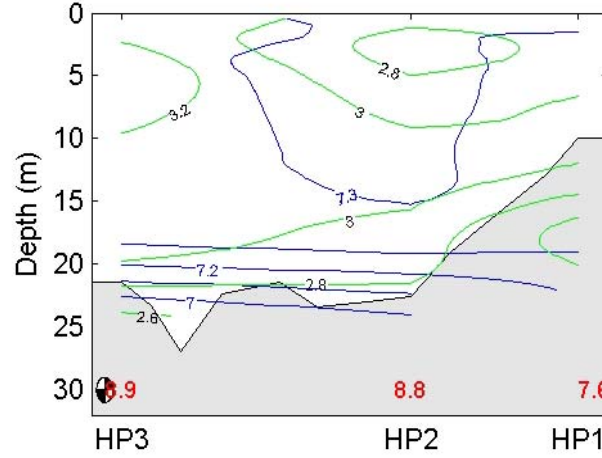
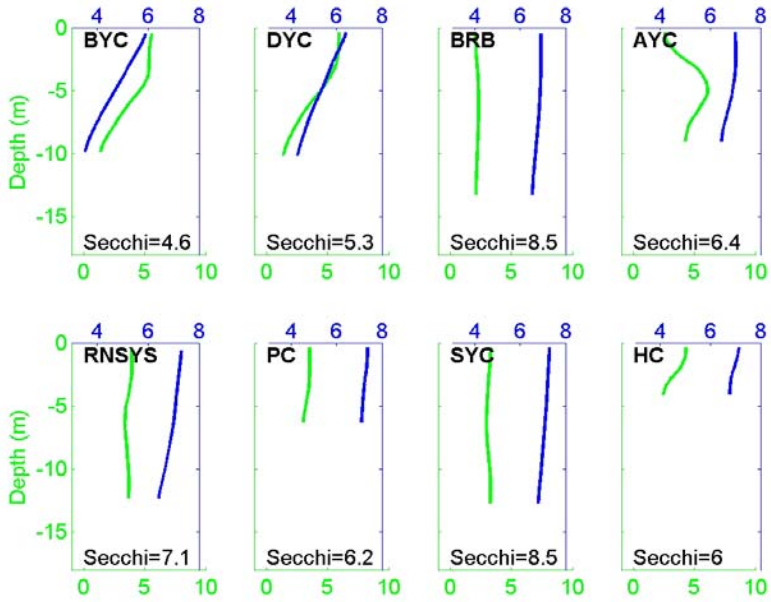
Potential Density in  $\text{kg/m}^3$

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

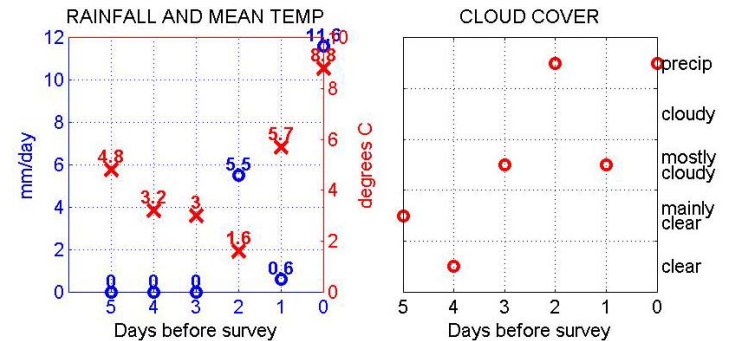
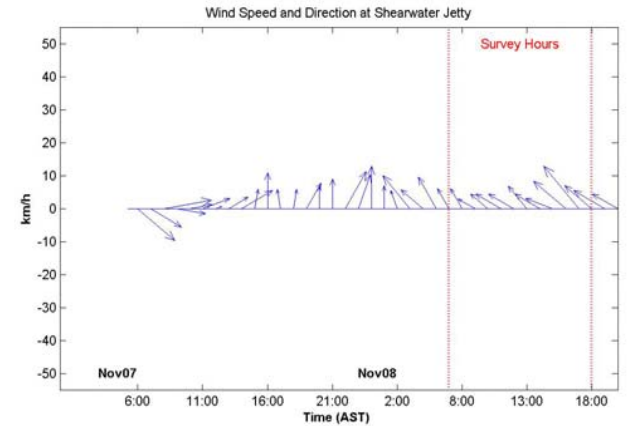
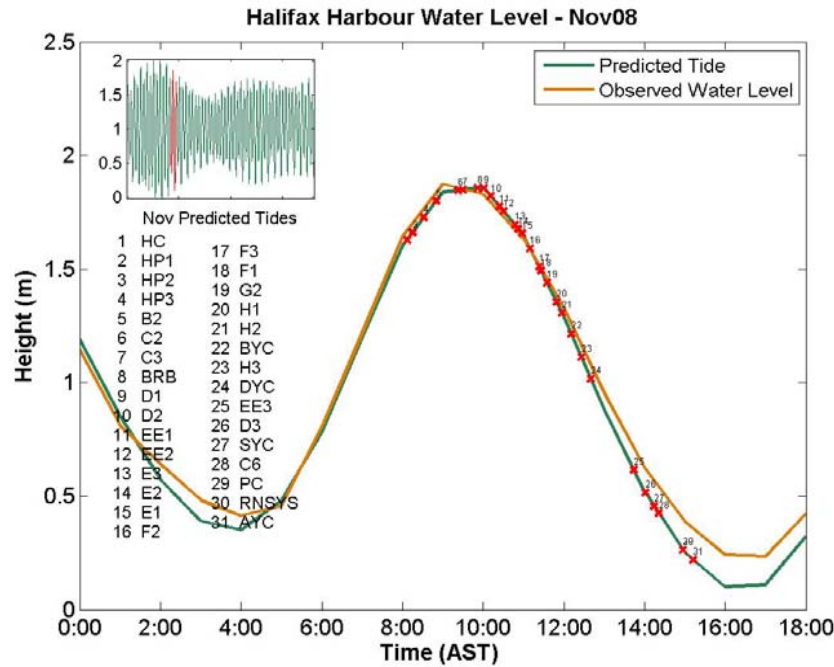


Unless otherwise labeled:  
 - **dissolved oxygen** contour interval is 0.5 mg/L  
 - **chlorophyll** contour interval is 2 mg/m<sup>3</sup>.

# Yacht Clubs



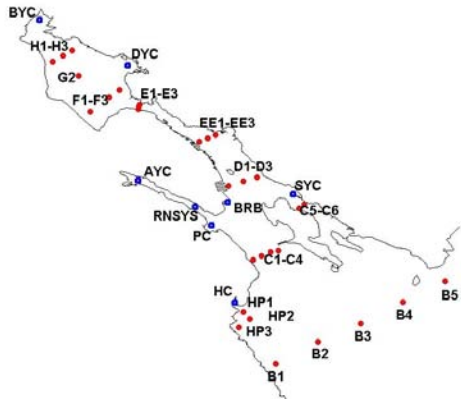
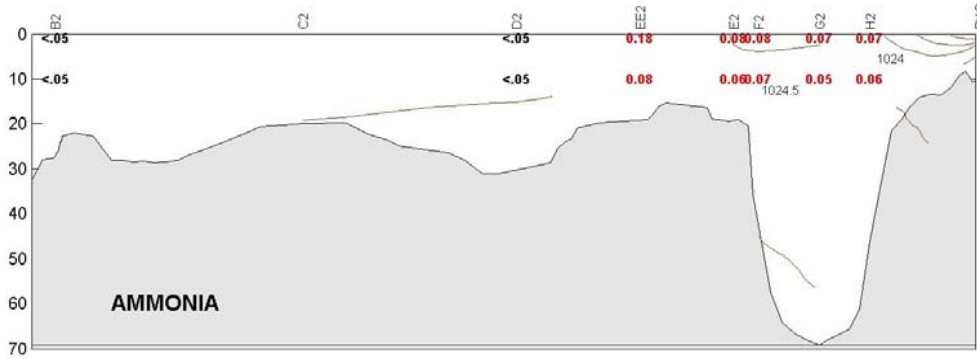
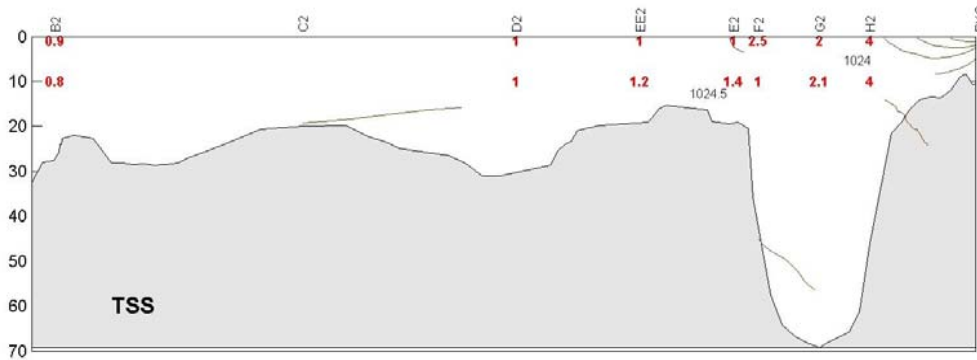
Rainfall and temperature data collected at Shearwater Autoport.  
Cloud cover data collected at Shearwater Airport



DO in mg/L

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

CHEMISTRY



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

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

Ammonia in  $\text{mg/L}$

TSS in  $\text{mg/L}$

Halifax Harbour Water Level - Nov08

