

#94015

Studies of Circulation and Pollutant Transport  
in Massachusetts Coastal Waters

CRUISE REPORT, WHITE HEATH 16-94

(October 4-5, 1994)

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U.S. GEOLOGICAL SURVEY-BRANCH OF ATLANTIC MARINE GEOLOGY

CRUISE REPORT

1. SHIP NAME (Parent vessel)/SUBMERSIBLE/OWNER-OPERATOR:  
U.S. Coast Guard Buoy Tender WHITE HEATH
2. PRE-CRUISE SERIAL # AND CRUISE-LEG: #94015, W16-94
3. PROJECT # AND NAME: 9470-67542; Studies of circulation and contaminant transport in Massachusetts coastal waters.
4. FUNDING AGENCY: Joint Funding Agreement between U.S.G.S. and the Massachusetts Water Resources Authority
5. CONTRACT (If applicable):NA
6. AREA OF OPERATIONS: Mass Bay
7. DATES AND PORTS OF CALL: October 4-5, 1994  
Boston Coast Guard Base
8. CHIEF SCIENTIST(S): Michael Bothner
9. SCIENTIFIC PARTY (Names,affiliations,cruise duties):  
Day 1: Recovery and Deployment- From USGS: Mike Bothner, Michael Casso, Peter Gill, Marinna Martini, Joe Newell,Rick Rendigs, and Bill Strahle.  
  
From MWRA: Mark Goodwin and Leo Sommaripa  
  
Day 2: Sediment sampling and subsampling- From USGS: Mike Bothner, Rick Rendigs, Michael Casso and Peter Gill.  
  
From MWRA: Anne Canaday
10. SHIP'S CAPTAIN: CWO Vernon E. Shay Jr. USCG
11. PURPOSE OF CRUISE: This cruise was the 16th in a program jointly funded by the USGS and the Massachusetts Water Resources Authority. The US Coast Guard generously provides ship time and at-sea support. The objective of the program is to conduct long-term monitoring of currents, sediment transport, and physical/chemical characteristics of sediments in western Massachusetts Bay (Figure 1).

Work accomplished on day 1: Recovered and redeploy the standard instrumented tripod, and a subsurface mooring near the "B" buoy at the approach to Boston Harbor (Figure 2). We also recovered a smaller tripod holding the acoustic doppler current profiler to be deployed on a future cruise. All moorings were recovered and redeployed without incident by about 1400 hrs. Three cores were collected at station 2. Ship returned to the dock at 1800 hrs.

Work accomplished on day 2: At station 3 and 2 sediment samples were be collected with the hydraulically damped corer (fitted with the Osprey TV camera), and a Van Veen grab sampler (see table 1). Two additional locations were also sampled closer to the proposed offshore outfall for Boston's sewage treatment plant (see Fig. 1). Returned to port at 1536 hrs.

12. NAVIGATION TECHNIQUES: Differential GPS, equipment provided by the White Heath.
13. SCIENTIFIC EQUIPMENT: The hydraulically damped corer (with the Osprey TV camera attached) and a teflon coated van Veen grab sampler will be used to collect bottom sediments. Currents and sediment transport measurements will be made with a subsurface current meter, the BASS tripod, and the acoustic doppler current profiler. A time-series sediment trap is attached to the subsurface mooring and a remotely operated suspended matter sampler is deployed on the BASS tripod. Eight tube traps and 1 Anderson trap will be attached to the moorings. An upright refrigerator is used to store cores and other samples until they are transported to Woods Hole.
14. TABULATED INFORMATION:  
DAYS AT SEA: 2  
CONTINUOUS DATA (in km): NA  
STATIONS OCCUPIED (stationary and underway): 3 mooring stations, 4 sampling stations.  
SUBMERSIBLE DIVES (BY #):NA  
  
STATION INFORMATION: Please see Table 1.
15. PAGE-SIZE TRACKCHART (See Figure 1)
16. SUBMITTED BY: M. Bothner
17. DATE: October 26, 1994

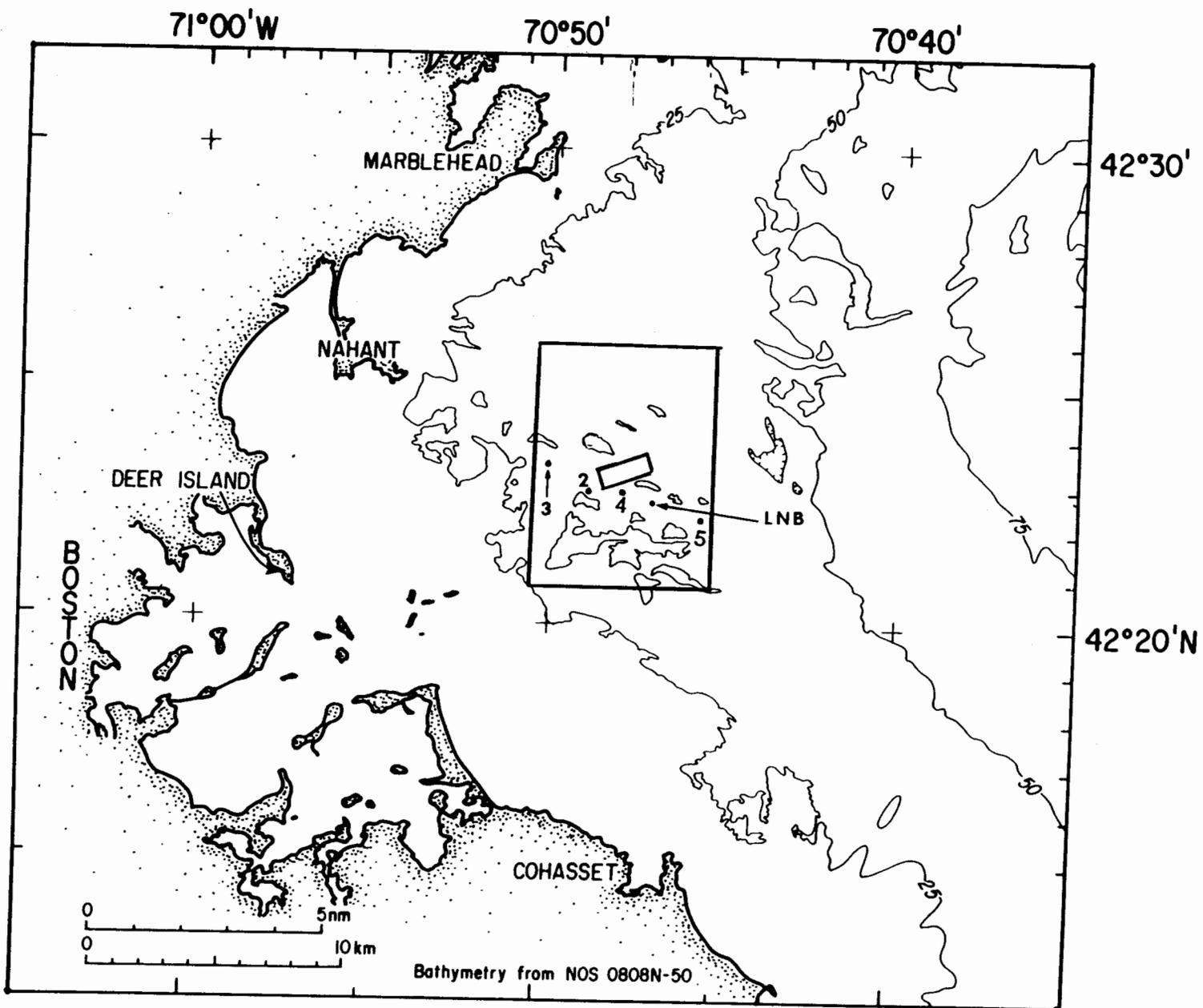


Figure 1. Larger box outlines area of sidescan sonar survey conducted by USGS in April 1989. Smaller rectangle is the proposed site for Boston's outfall diffuser. USGS moorings are located adjacent to the Large Navigation Buoy (LNB) at the approach to Boston Harbor. Sediment sampling locations are indicated by numbers 1 - 3.

# U.S. GEOLOGICAL SURVEY LONG-TERM MONITORING STATION MASSACHUSETTS BAY

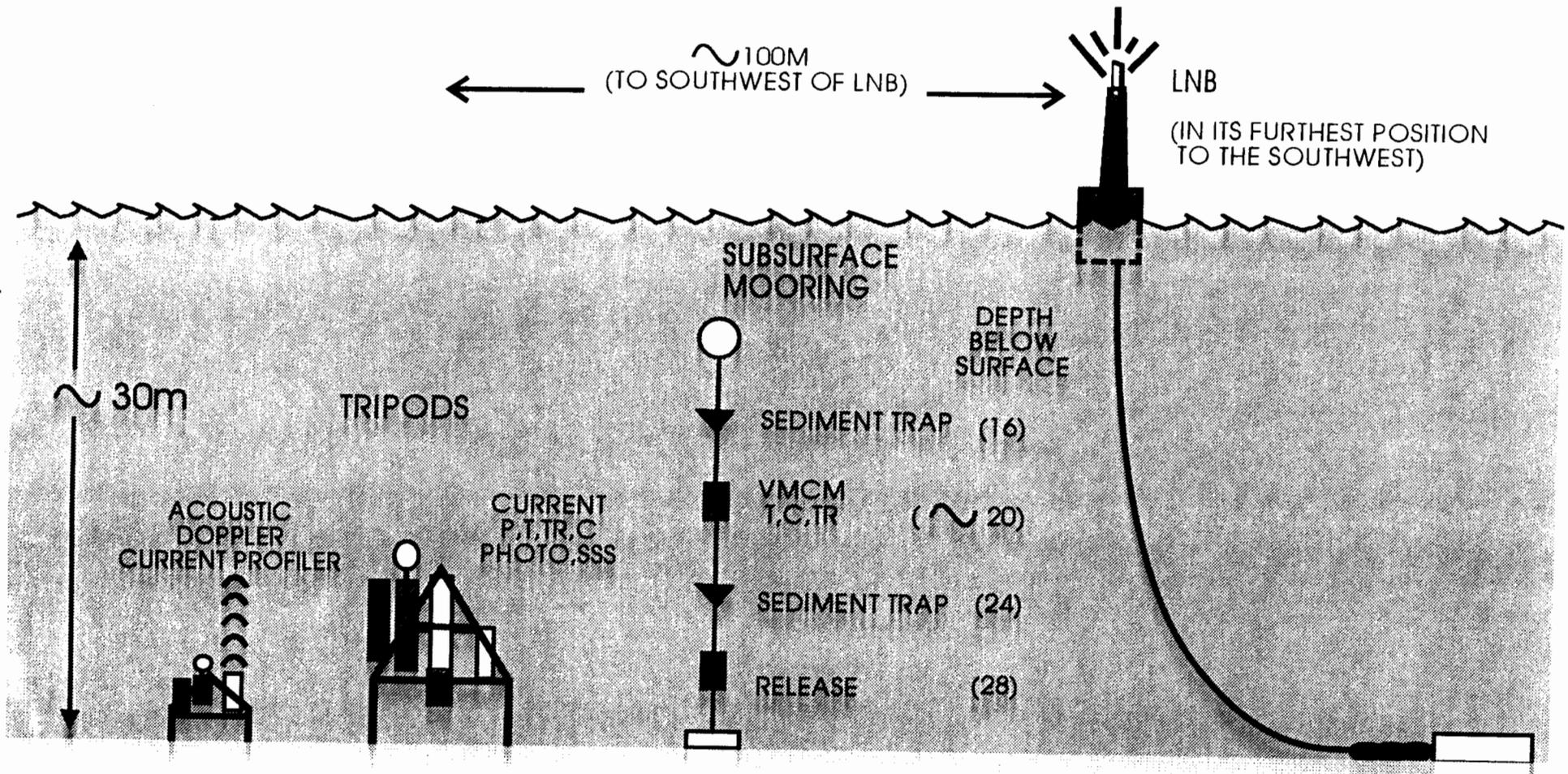


Figure 2. Schematic of long-term monitoring station near the new outfall in western Massachusetts Bay.

Table 1. Sample and mooring locations

STATION 2		DATE 04OCT94		TARGET POSITION 042-22.874 070-48.897				NAD83	
TIME	SAMPLE TYPE	SAMPLE QUALITY	WATER DEPTH FT	LATITUDE	LONGITUDE	W	LORAN C X	BEARING/ RANGE	
1455	HDC 2-1	OK	104	42-22.86	070-48.87	13954.6	25792.4	292/37	
1521	HDC 2-2	OK	102	42-22.87	070-48.89	13954.6	25792.7	211/7	
1547	HDC 2-3	OK	102	42-22.86	070-48.89	13954.7	25792.5	351/14	
1617	GRAB 2-4	OK	102	42-22.86	070-48.89	13964.6?	25802.7?	317/13	
1032 05OCT	HDC 2-5	GOOD	102	42-22.870	070-48.899	13954.7	25792.6	030/08	

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STATION 3		DATE 05OCT94		TARGET POSITION 042-23.3961 070-49.8342				NAD83	
TIME	SAMPLE TYPE	SAMPLE QUALITY	WATER DEPTH FT	LATITUDE	LONGITUDE	W	LORAN C X	BEARING/ RANGE	
0832	GRAB 3-2	GOOD	120	42-23.392	070-49.829	13958.2	25802.1	320/12	
0858	HDC 3-3	GOOD	120	42-23.396	070-49.833	13958.1	25802.1	321/03	
0926	HDC 3-4	GOOD	120	42-23.394	070-49.834	13958.1	25802.1	360/98	
0945	HDC 3-5	GOOD	120	42-23.394	070-49.836	13958.1	25807.1	022/05	
1006	HDC 3-6	GOOD	120	42-23.396	070-49.834	13958.0	25802.0	282/10	
1637 04OCT	GRAB 3-1	TOO FULL	114	42-23.39	070-49.82	13958.0	25802.1	307/14	

Table 1. Sample and mooring locations (continued)

STATION 4		DATE 05OCT94		TARGET POSITION 042-22.830 070-48.100				NAD83	
TIME	SAMPLE TYPE	SAMPLE QUALITY	WATER DEPTH FT	LATITUDE	LONGITUDE	W	LORAN C X	BEARING/ RANGE	
1105	HDC 4-1	GOOD	125	42-22.826	070-48.093	13949.8	25786.9	305/12	
1127	HDC 4-2	GOOD	125	42-22.829	070-48.106	13949.9	25787.0	078/10	
1225	HDC 4-3	GOOD	120	42-22.839	070-48.094	13949.7	25786.9	208/25	
1246	HDC 4-4	GOOD	126	42-22.833	070-48.091	13949.8	25786.8	248/15	

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STATION 5		DATE 05OCT94		TARGET POSITION 42-22.210 070-45.953				NAD83	
TIME	SAMPLE TYPE	SAMPLE QUALITY	WATER DEPTH FT	LATITUDE	LONGITUDE	W	LORAN C X	BEARING/ RANGE	
1326	HDC 5-1	GOOD	120	42-22.210	070-45.953	13939.0	25768.7	269/10	
CAMERA TRANSECT NEAR STATION 5									
				42-22.182	070-45.953				
1335			126	42-22.155	070-45.942				
1339			126	42-22.181	070-45.945				

G-GRAB

HDC-HYDRAULICALLY DUMPED GRAVITY CORER

Table 1. Sample and mooring locations (continued)

BASS Tripod 445	04OCT94	42-22.430	70-46.982
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Subsurface Mooring 446	04OCT94	42-22.482	70-47.060
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