LOIS LOIS

LOIS RACS(C) Core Programme
Water Guardian SV 33
Cruise Report
12th-16th August 1996

Personnel:

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Mike Griffiths (PML)	
Jack Hardisty (U of Hull)	
Nick Hughes (U of Hull)	
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Axel Miller (PML)	
Edward Wright (PML/U of Plymouth)	
Jon Barnes (U of Newcastle)	
Ruth Parker (U of Southampton)	
Tristan Sjoberg (UEA/PML)	
Alan Lawlor (IFE Windermere)	
Kevin Morris (PML)	

Sunday 11th: The scientific party traveled from Plymouth and Newcastle. In the late afternoon and early evening equipment was loaded and commissioned (1600-2200). All equipment was set up and calibrated ready for work on Monday.

Monday 12th: Downstream Survey

The party mustered from 0700 and the *Water Guardian* locked out of Hull Marina at 0835. Preparations for the survey continued while tied up along side Admiral Steps between 0840 and 0920. The downstream survey started at station 17 (0931) and continued eastwards and reached Spurn Head station 30 at 1227.

CASSI- A series of transect across the Humber Mouth followed in support of the CASSI project (starting at Spurn, N-S 1230-1254, S-N 1255-1315, N-S 1315-1328 and S-N 1328-1345). Throughout this time the aircraft was in operation overhead.

The survey then continued upstream starting at station 31 (1352) and ended at station 17 (1541). The *Water Guardian* locked into Hull Marina at 1600 and the scientific party disembarked at 1630 after analysis of standards and blanks on the underway analysers.

The survey measured nutrients (TON, phosphate, silicate and ammonium), conductivity, temperature, turbidity, pH and DO. Discrete samples were collected at all stations for gravimetric, C/N, chlorophyll and DOC analysis. In addition samples were collected during the downstream run starting from Hull for later determination of; nitrous oxide and methane, stations 18, 20, 24, 26 & 29; CO, stations 20, 24 & 29; and trace metals (and related parameters) at stations 17, 19, 21, 22, 23, 24, 25, 27, 28, 29 & 30. The latter samples were transferred to the Hull laboratory for cold storage.

(stations 17-37, 19-17)

Tuesday 13th: Upstream Trent survey

The party mustered on board from 0230 and *Water Guardian* departed Hull Marina at 0350. The upstream Trent survey commenced at station 15 (0410) and continued into the Trent at 0515 and was at Gainsbrough (station 50) at 0715. The survey then continued and returned downstream and ended at station 16 (1129). The *Water Guardian* tied up along side Admiral steps at 1145 and locked into Hull Marina at 1630. The scientific party departed the vessel at 1500.

CASSI- The vessel was in regular communication with John Cook (NERC) throughout the morning regarding work in support of possible overflights. However due to 8/8 cloud cover the work had to be postponed

The nutrient and standard parameter survey was as on Monday. Discrete samples were again taken at all stations for gravimmetric, C/N chlorophyll and DOC analysis. In addition samples were collected during the downstream run starting from Gainsbrough for later determination of trace metals (and related parameters) at stations 50, 48, 46, 44, 42, 41, 10, 12, 14 & 16.

(stations 16-8, 41-50, 50-41, 8-16)

Wednesday 14th: Upstream Ouse survey

The party mustered from 0400 and the *Water Guardian* locked out of Hull Marina at 0515. The upstream survey started at station 15 (0532) and continued upstream into the Ouse (0637) and reached Selby station 40 at 0831. The survey returned downstream passing Trent Falls at 1110 and proceeded to station 16 (1217). The *Water Guardian* tied up along side Admiral Steps at 1240 and locked into Hull Marina at 1700. After unloading equipment and samples the scientific party had disembarked by 1730.

CASSI- The vessel was in regular communication with John Cook (NERC) throughout the morning regarding work in support of possible overflights. However as on Tuesday the work had to be postponed due to 8/8 cloud cover.

The nutrient and standard parameter survey was as on Monday and Tuesday. Discrete samples were again taken at all stations for gravimmetric, C/N chlorophyll and DOC analysis. In addition samples were collected during the downstream run starting from Selby for later determination of; nitrous oxide and methane, stations 40, 39, 38, 1, 3, 10 and 13 and CO at stations 40, 3 & 13. A series of low salinity samples were collected at stations 40, 39, 3, 1, 2 & 3 for trace metal work.

(stations 16-8, 41-50, 50-41, 8-16)

Thursday 15th: Tidal Stream Observations

The scientific party assembled on board *Water Guardian* at 0715 and the vessel departed from Hull Marina at 0750. The float was deployed at (No 19) Paull Sands Lightfloat, 53 42.06 N 00 13.93 W. At 15 minute intervals the position of the float was recorded as it traveled downstream. Between 1420 (53 33.55 N, 00 00.536 E) and 1502 (53 33.49 N, 00 00.425 E) the float was 'becalmed' at the mouth of the Humber. To enable monitoring to continue upstream the float was recovered and redeployed near Hawke Moorage (No 5A), 53 33.56 N, 00 02.04W at 1516. The float was then monitored upstream and recovered near Grimsby Middle (No 63), 53 36.61 N, 00 04.10 W at 1653. The *Water Guardian* entered Hull Marina at 1800 and the scientific party had departed by 1815.

CASSI- Regular communication with John Cook (NERC) continued throughout the morning regarding work in support of possible overflights. The work was 'on and off' throughout this time and then finally had to be postponed due to problems with the aircraft. The weather was good.

Friday 16th: Contingency day.

Notes:

This was the twentyeighth LOIS RACS(C) Core Programme survey of the Humber and Ouse. The fourth of a regular series of surveys into the Trent was completed. Carbon monoxide, nitrous oxide and methane concentrations were monitored for the fifth in a series of two monthly investigations. DOC concentrations continued to be monitored. All aspects of the study were carried out over the full length of the survey. A number of large volume samples were collected in the low salinity region of the Ouse for later trace metal work.

Data was collected in support of the CASSI project on the Monday when a number of transects across the Humber Mouth were completed coincident with aircraft overflights.

We thank Jim Flett, Alan Shepherd, Nick Collier and John Yerson of the Environment Agency for their help throughout the programme. The flexibility of Jim Flett and Alan Shepherd, of the *Water Guardian*, was appreciated particularly as the programme was altered throughout the week. Their continued input and advice contributed to the success of the work.

Duncan Plummer 19th August 1996