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**ENVIRONMENT
 AGENCY**

memorandum

To	From	Graeme Storey
	<u>Extension number</u>	<u>7 50 4695</u>
	<u>Our ref.</u>	
	<u>Your ref.</u>	
	<u>Date</u>	<u>31-10-96</u>

Version 1 (Draft)

Re: Comparison of concentration values recorded for NMP locations with Annex 1A/OSPARCOM locations.

Introduction

In order to assess the quality of the NMP data it was felt necessary to quality control the data by comparing it with other similar data of known quality (e.g. OSPARCOM/A1A). This has been undertaken for all NMP sites throughout England and Wales.

Methods

The average concentrations of six determinands were calculated from 1991-1993 for all NMP sites. Less than values were taken as zero values. The six determinands were copper, cadmium, mercury (metals), nitrite, orthophosphate (nutrients) and lindane (organic).

The distribution of A1A/OSPARCOM sites were examined for this estuary. Any river discharge (RD) sites where the discharge fed into the estuary, typically upstream of the NMP sites, were included in the analysis as outlined above. Additionally any direct discharge (DD) sites such as sewage treatment works were included where their discharge fed into the estuary.

Results

The distribution of all sites included in this analysis for the various NMP sites included are shown on the maps provided. All NMP sites were included with the exception of two. The southern sites (Dook head to Selsey Bill) were not included due to there being little A1A/OSPARCOM data available to provide a meaningful comparison. The sites

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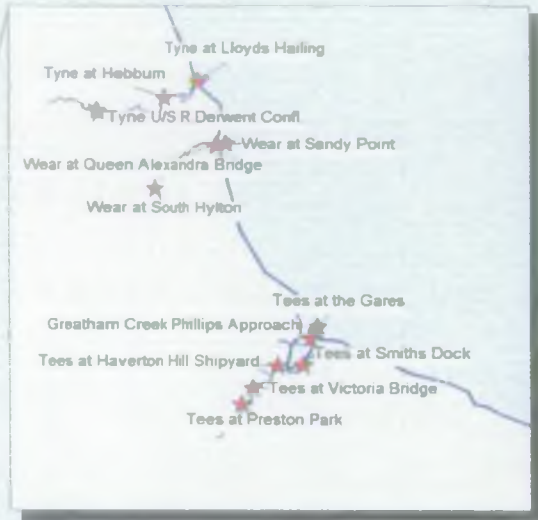
on the Mersey were not included because of a lack of NMP data. The average concentrations (plus one standard deviation) for the six determinands are represented graphically. Where no data was collected for a specific determinand no graph has been included. Throughout the whole of this project the colour coding for the three different types of location remains consistent. All NMP sites are coloured yellow, all river discharge sites blue and all direct discharge sites in red. For all graphs the locations are plotted approximately in an upstream to downstream direction, reference to the map should be made for their exact location. On graphs where the average concentration is significantly higher than the majority of the data the average value is recorded at the top of the column (note the height of these columns does not correspond to the true value).

Values recorded at the NMP sites should be similar to those recorded for the river discharge sites provided there is no significant input of determinands by direct discharge (e.g. sewage treatment works or industries). Where values at NMP sites are higher than the river discharge sites this may be attributable to direct discharge sites hence their inclusion in this study.

In an ideal comparison similar numbers of samples would be compared from the same years. The nature of the available data meant that this was not always the case, so for some comparisons data from 1991-1993 may be compared with data from 1992. Equally for some sites only one sample is taken per year compared with ten's from the surrounding sites.

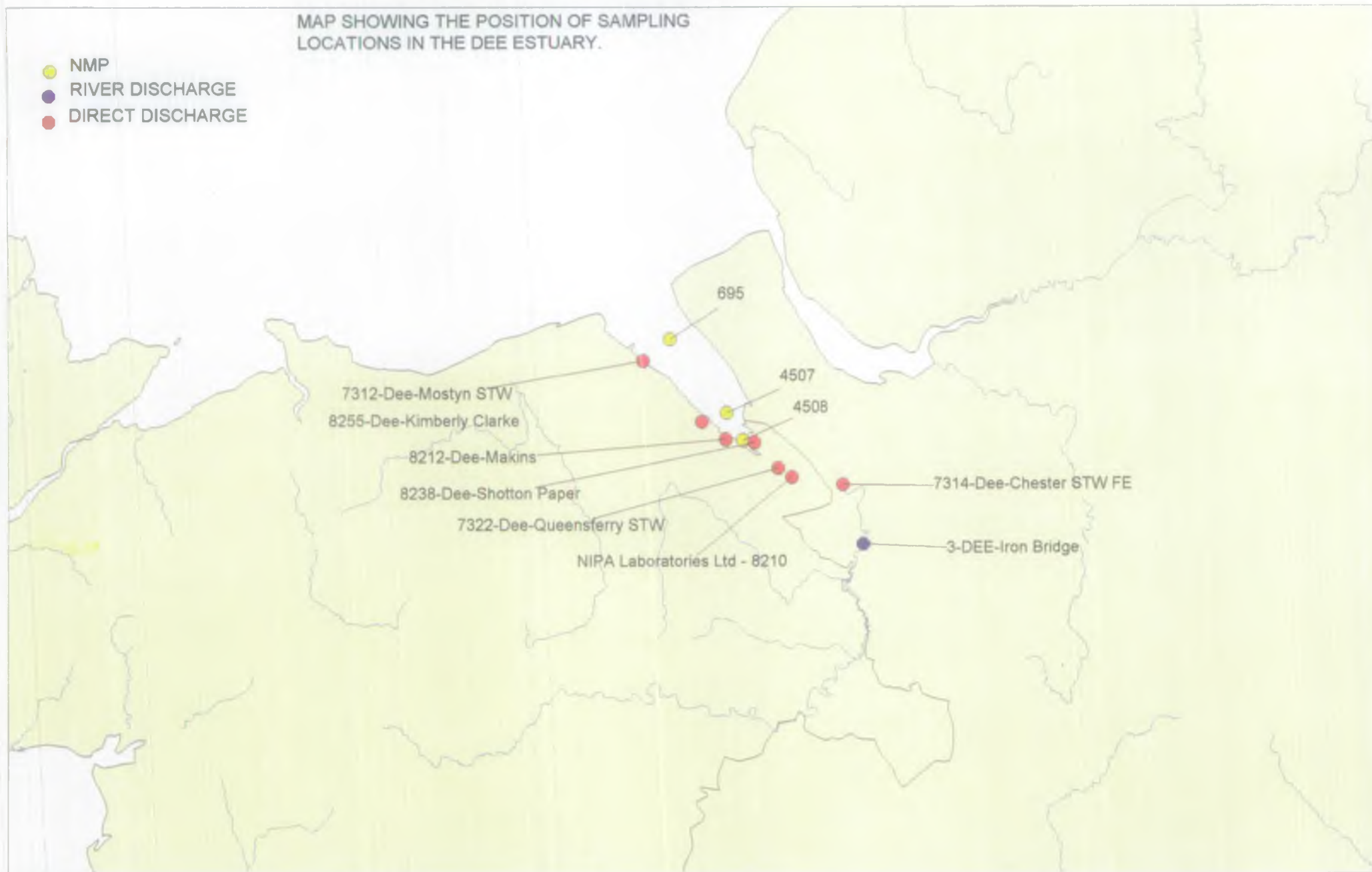
Graeme Storey
TAPS Data Technician

NMP Water Column Sample Sites In Selected Estuaries.



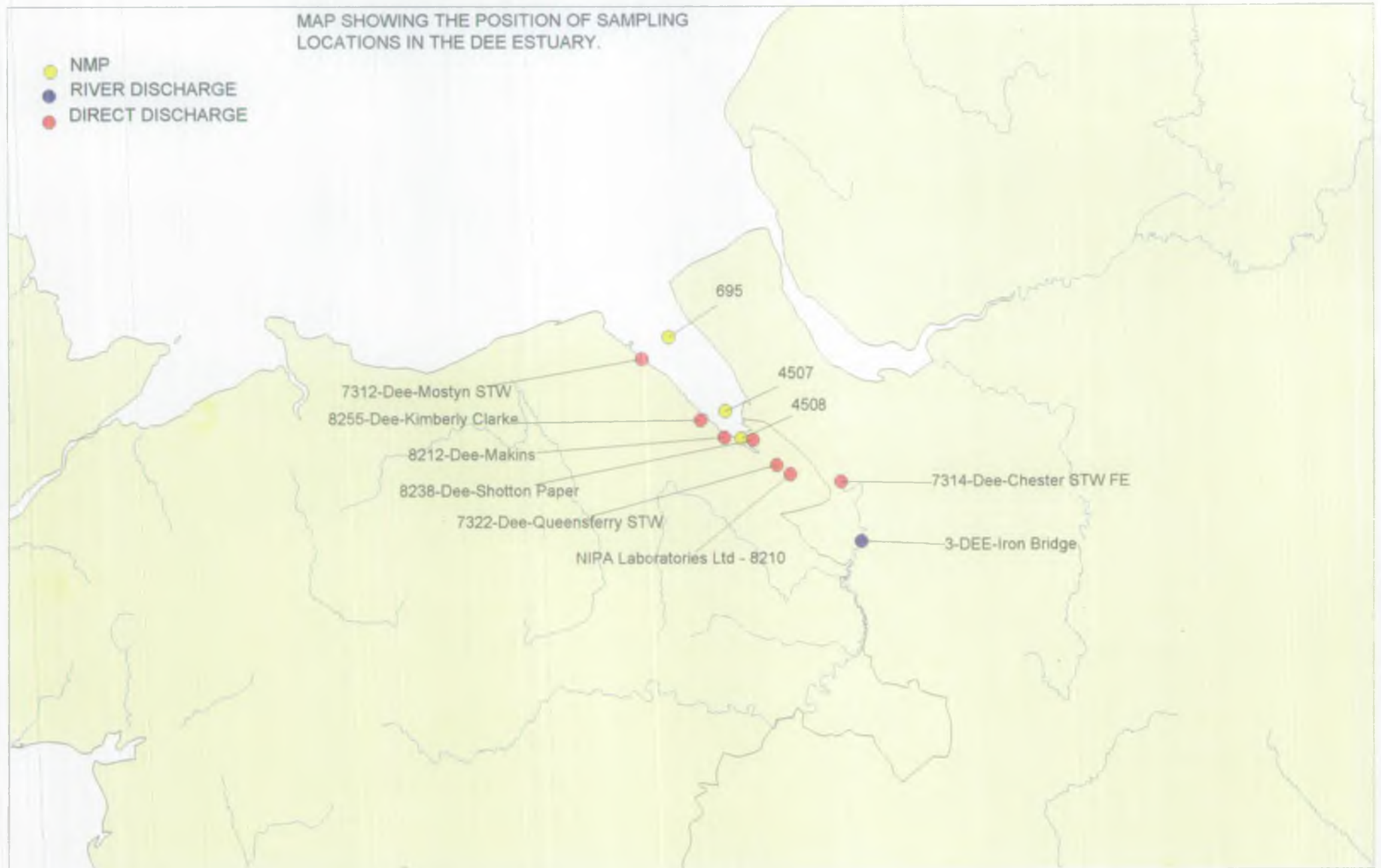
MAP SHOWING THE POSITION OF SAMPLING
LOCATIONS IN THE DEE ESTUARY.

- NMP
- RIVER DISCHARGE
- DIRECT DISCHARGE

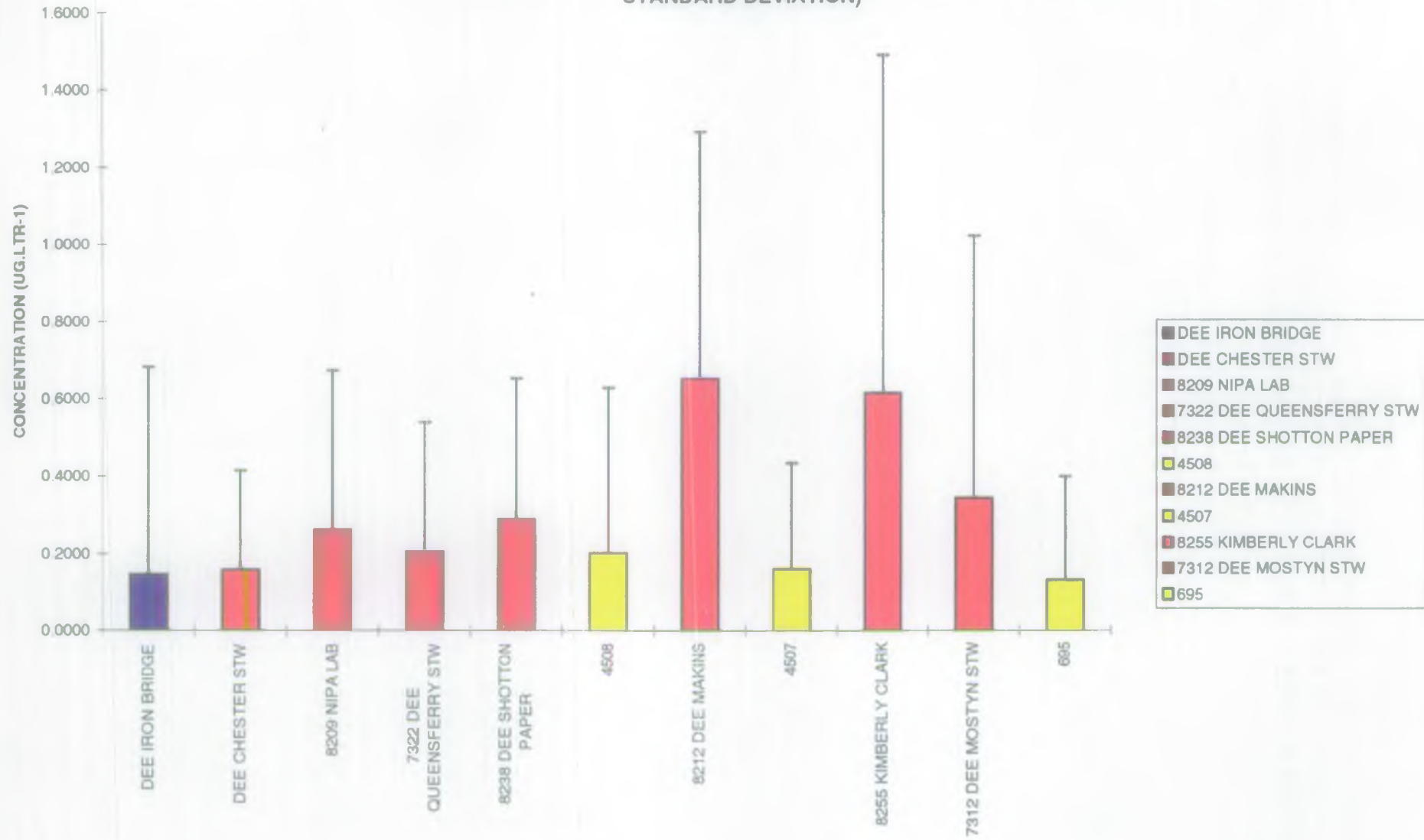


MAP SHOWING THE POSITION OF SAMPLING
LOCATIONS IN THE DEE ESTUARY.

- NMP
- RIVER DISCHARGE
- DIRECT DISCHARGE



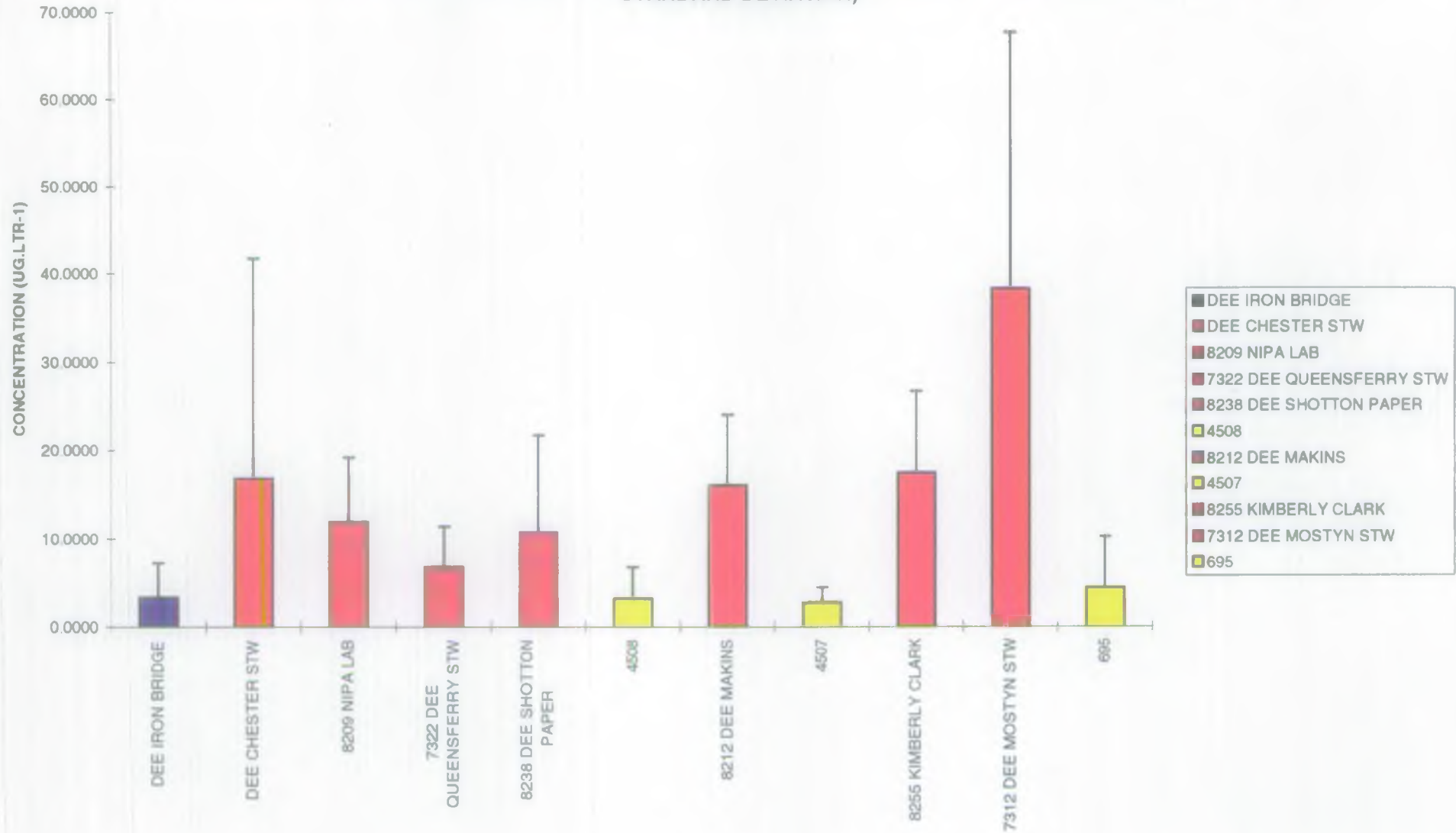
CONCENTRATION OF CADMIUM IN THE DEE ESTUARY BY SAMPLING LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

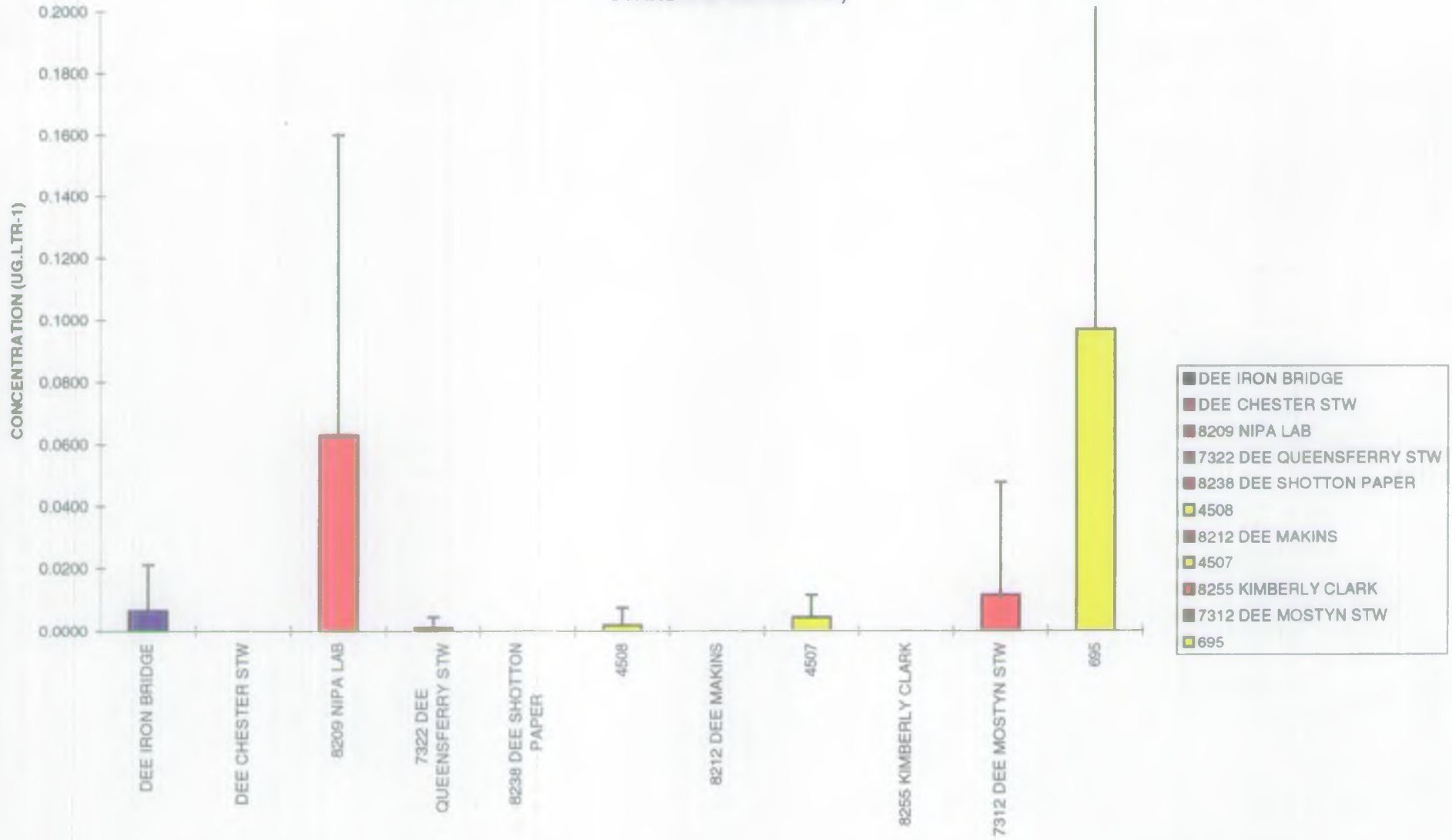
CONCENTRATION OF COPPER IN THE DEE ESTUARY BY SAMPLING LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

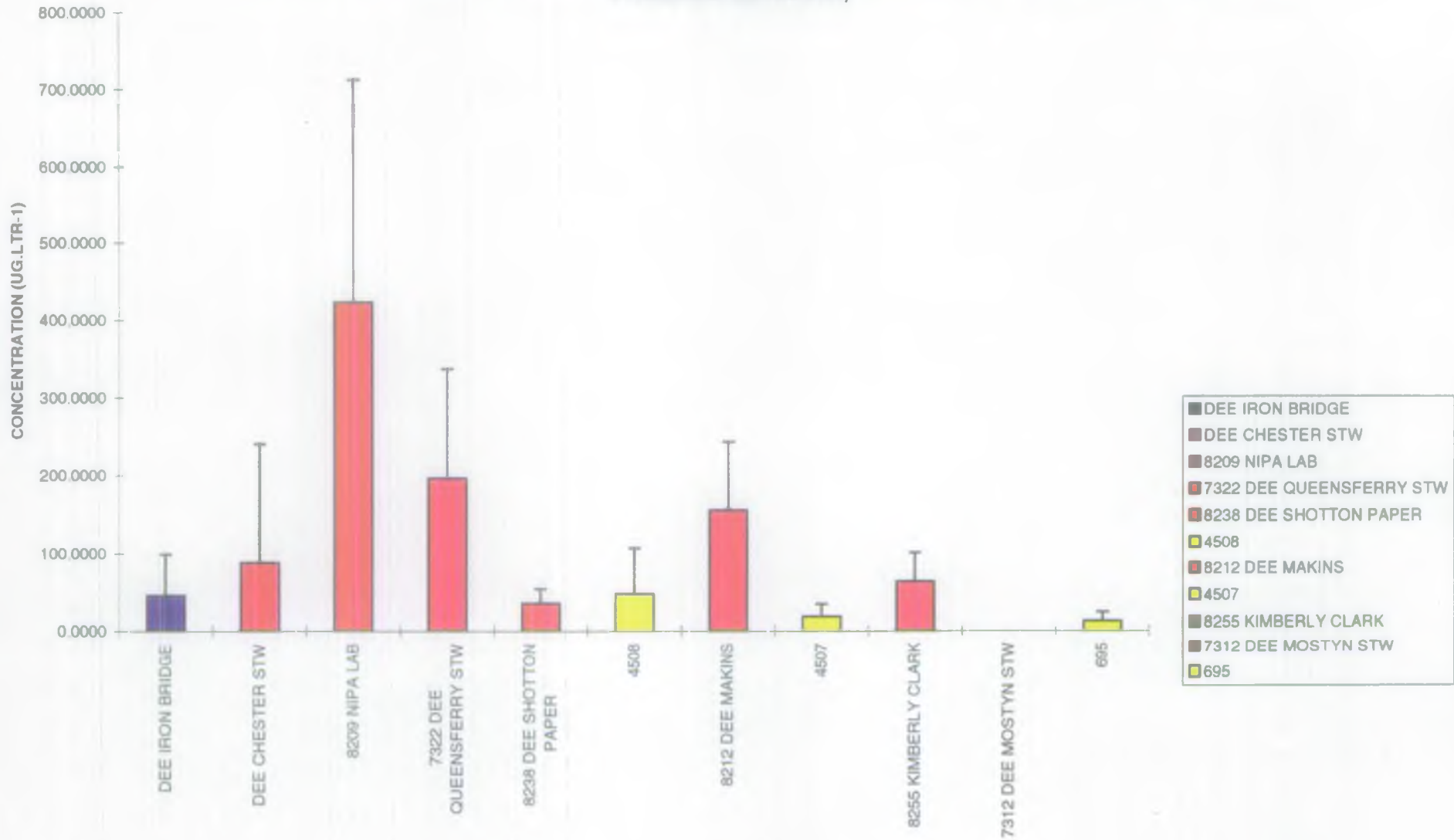
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UPSTREAM

DOWNSTREAM

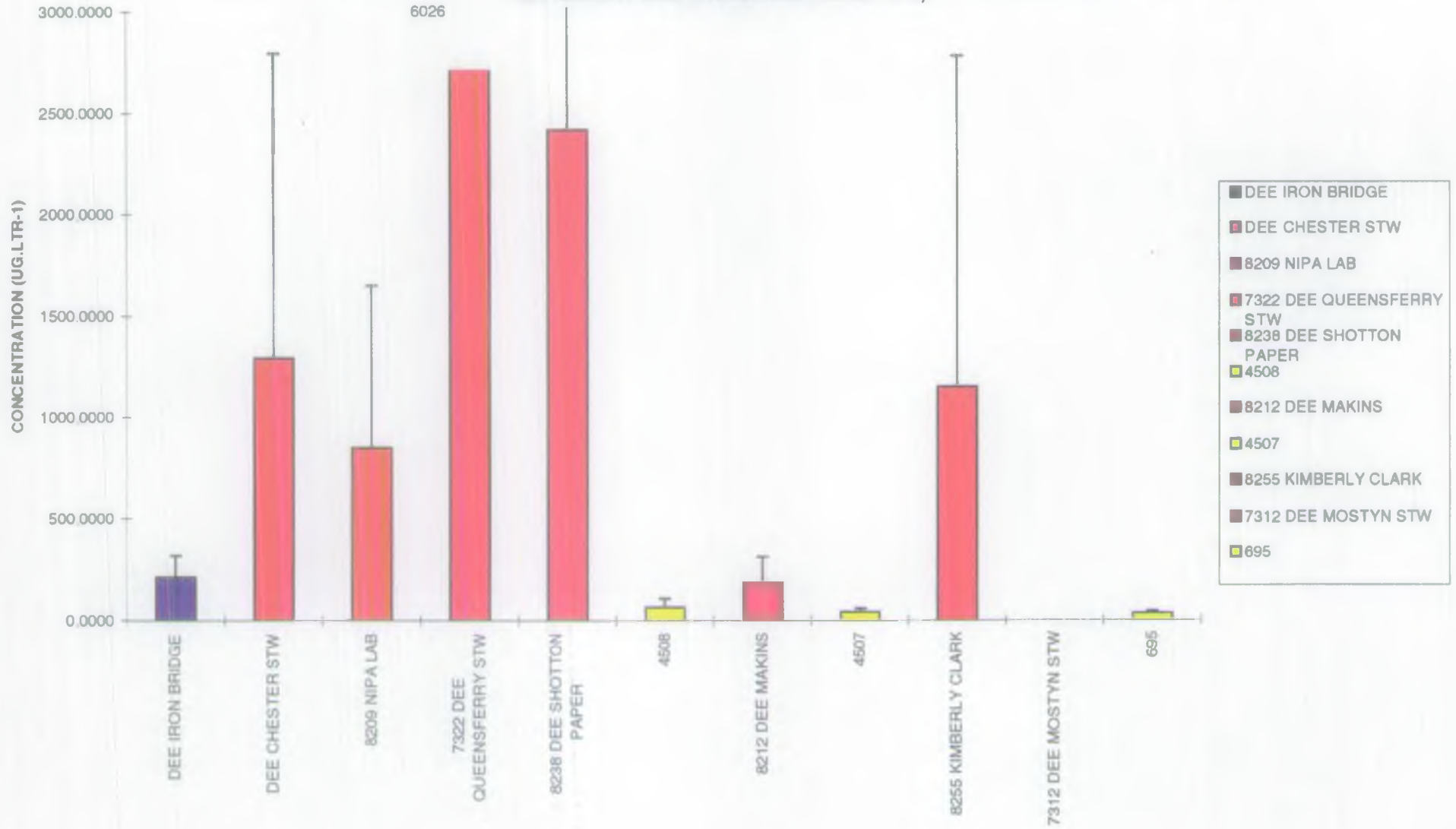
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UPSTREAM

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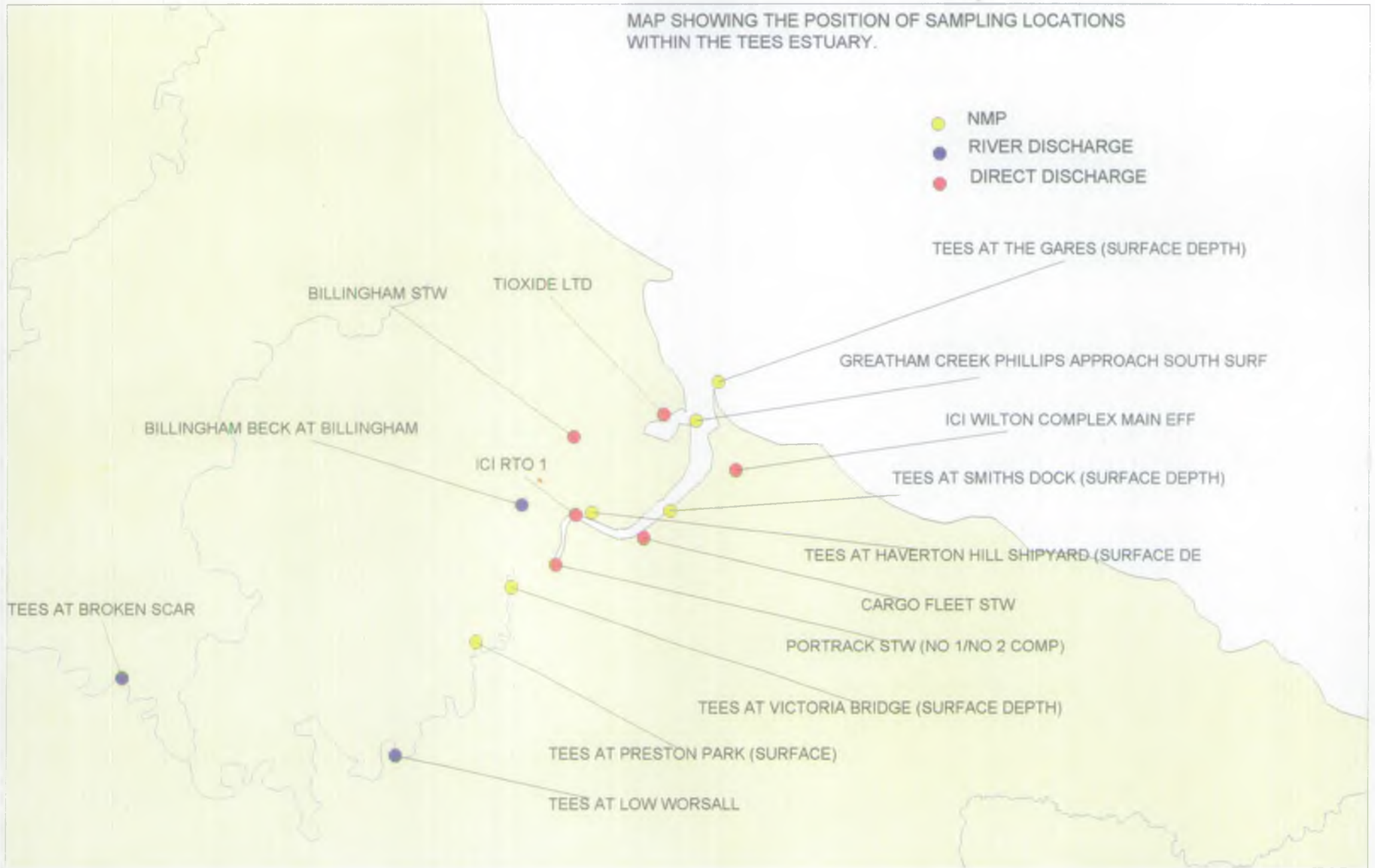
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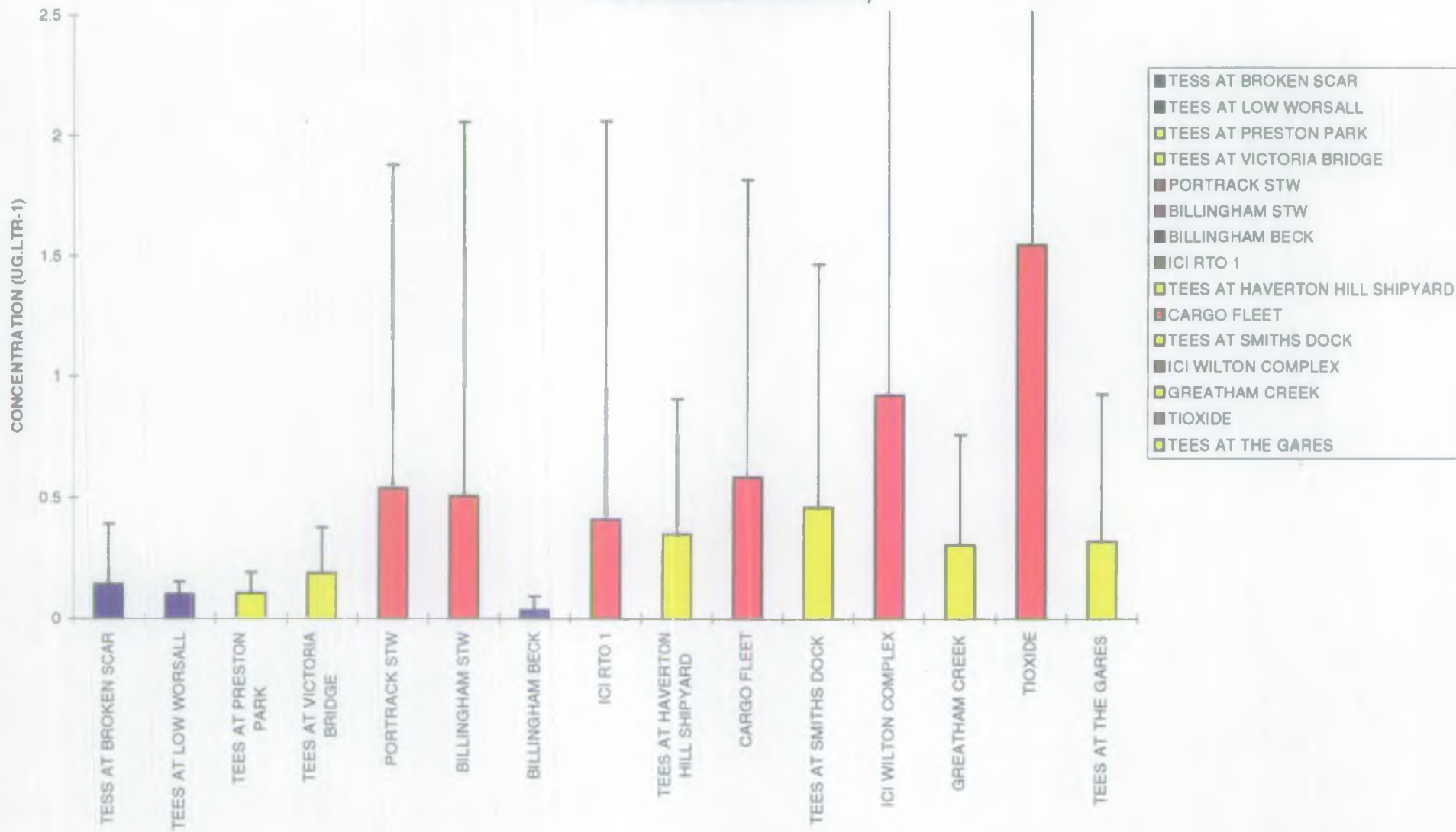
UPSTREAM

DOWNSTREAM

MAP SHOWING THE POSITION OF SAMPLING LOCATIONS WITHIN THE TEES ESTUARY.



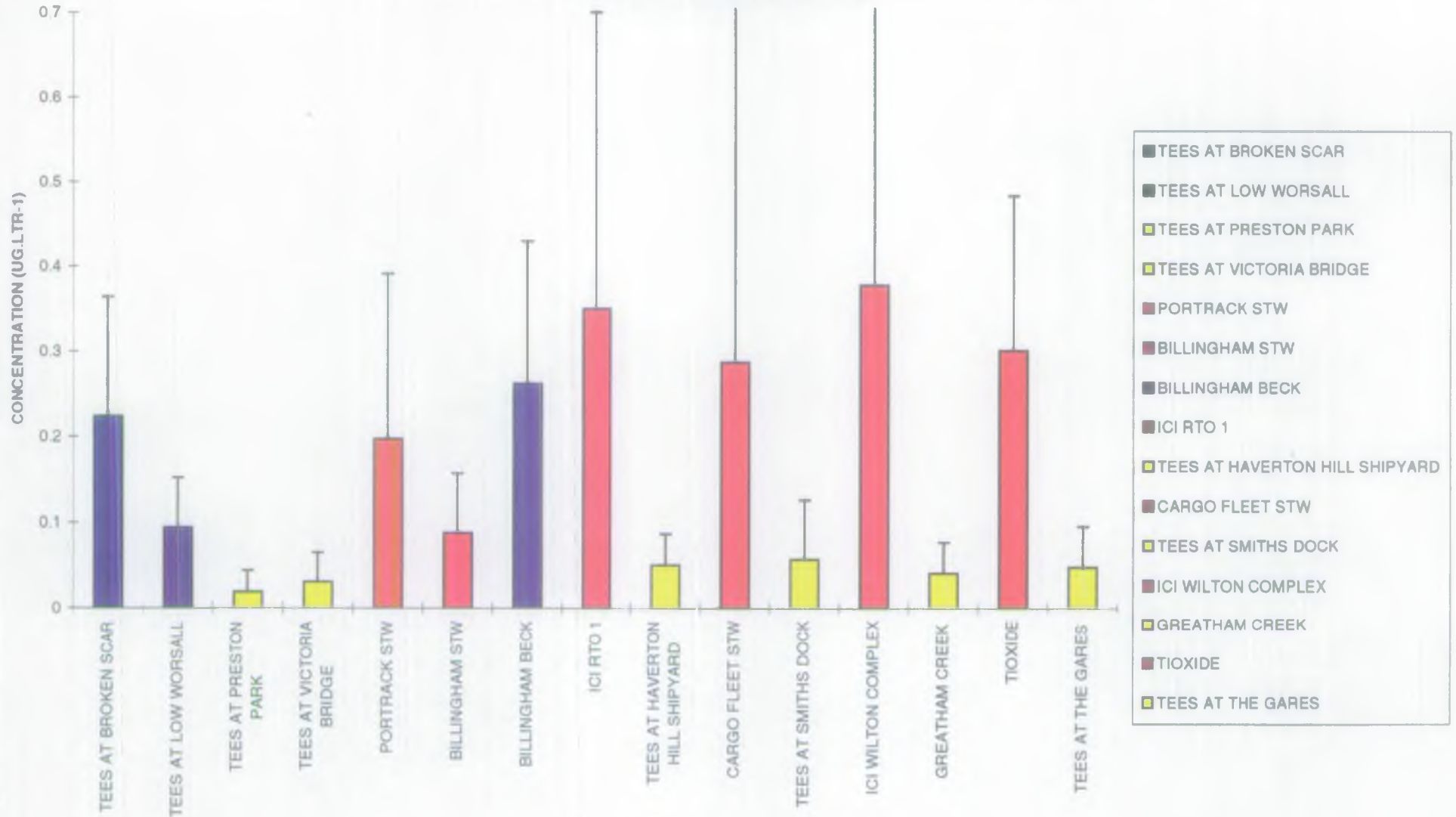
CONCENTRATION OF CADMIUM IN THE TEES ESTUARY BY NMP /OSPARCOM LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

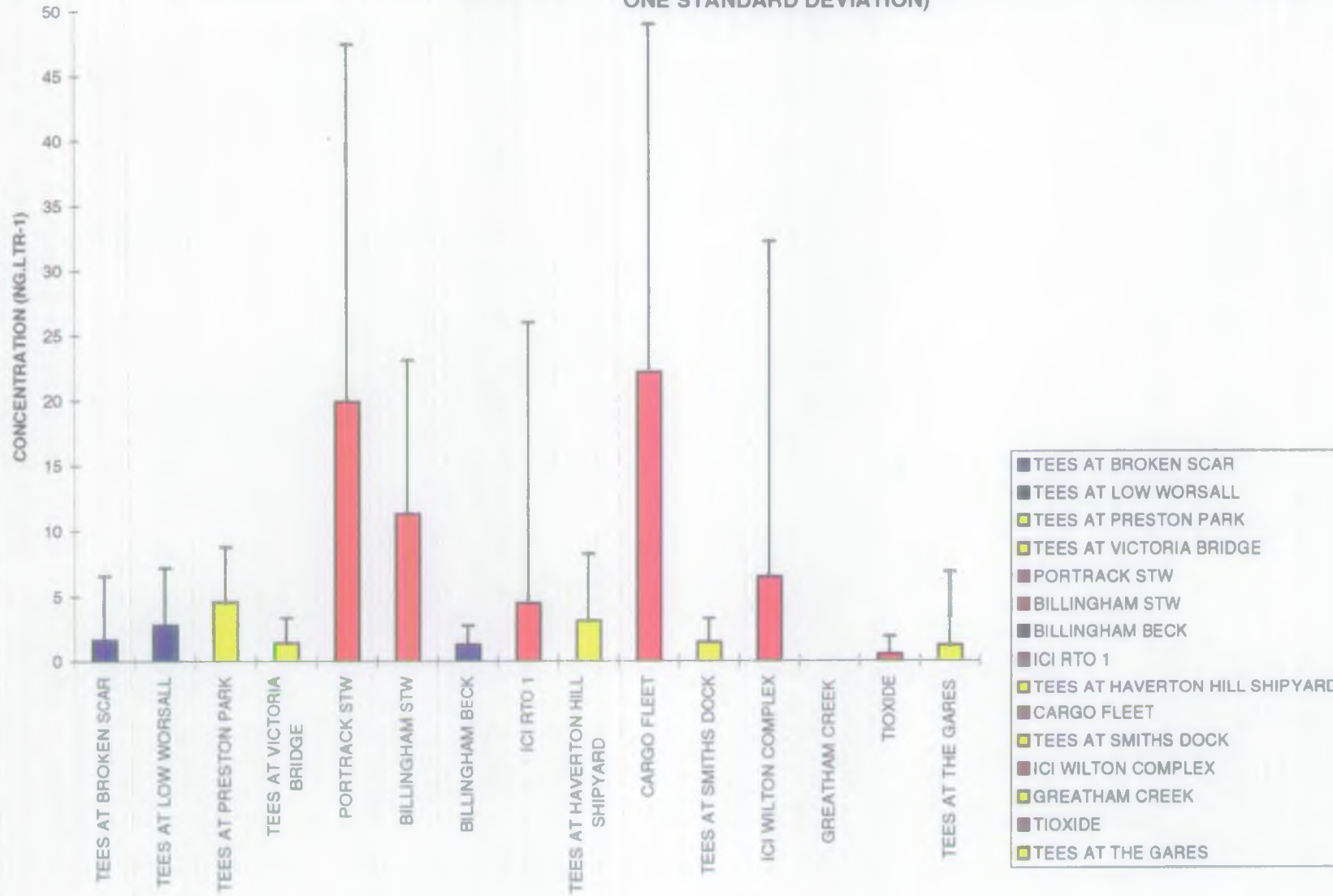
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UPSTREAM

DOWNSTREAM

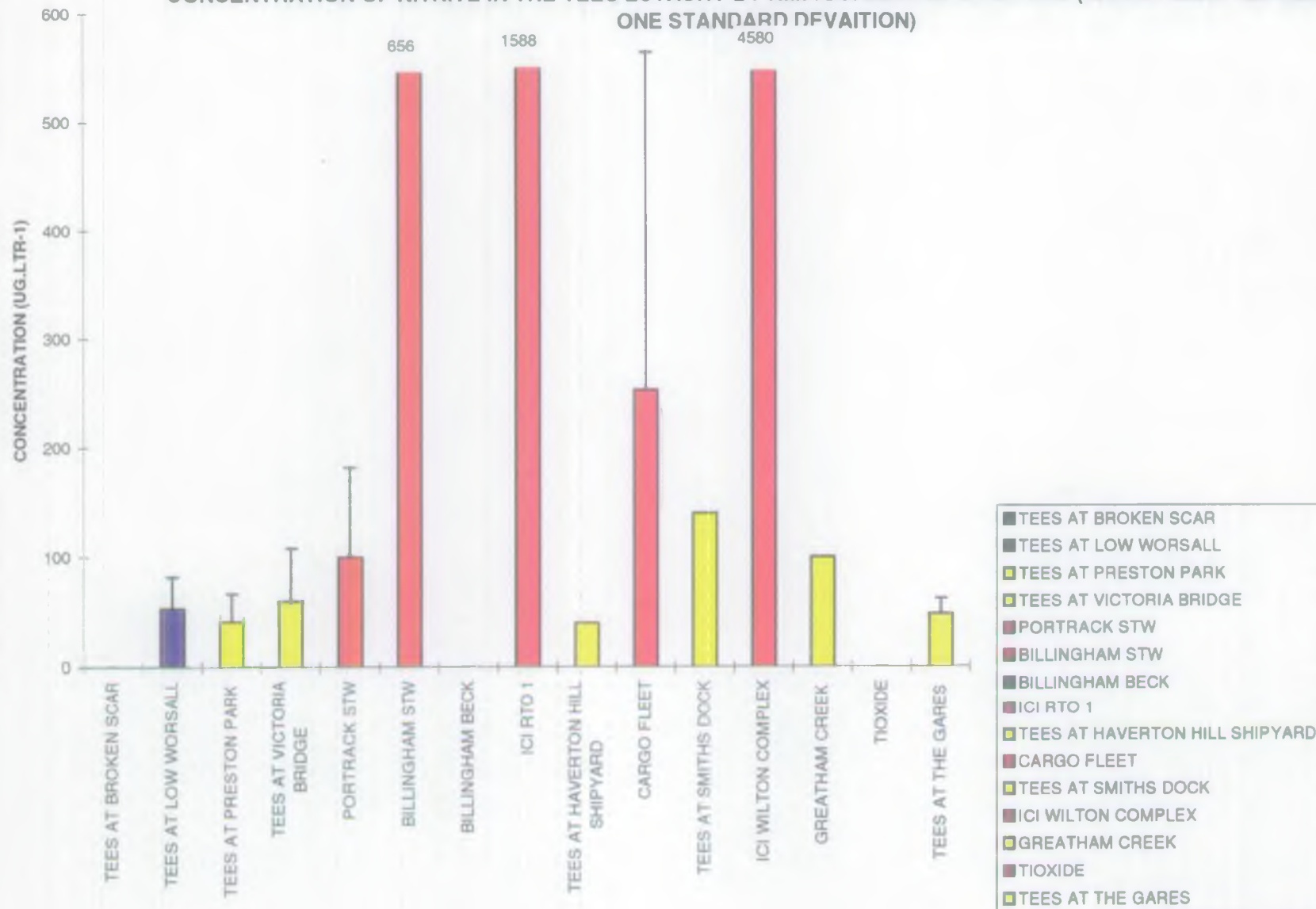
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UPSTREAM

DOWNSTREAM

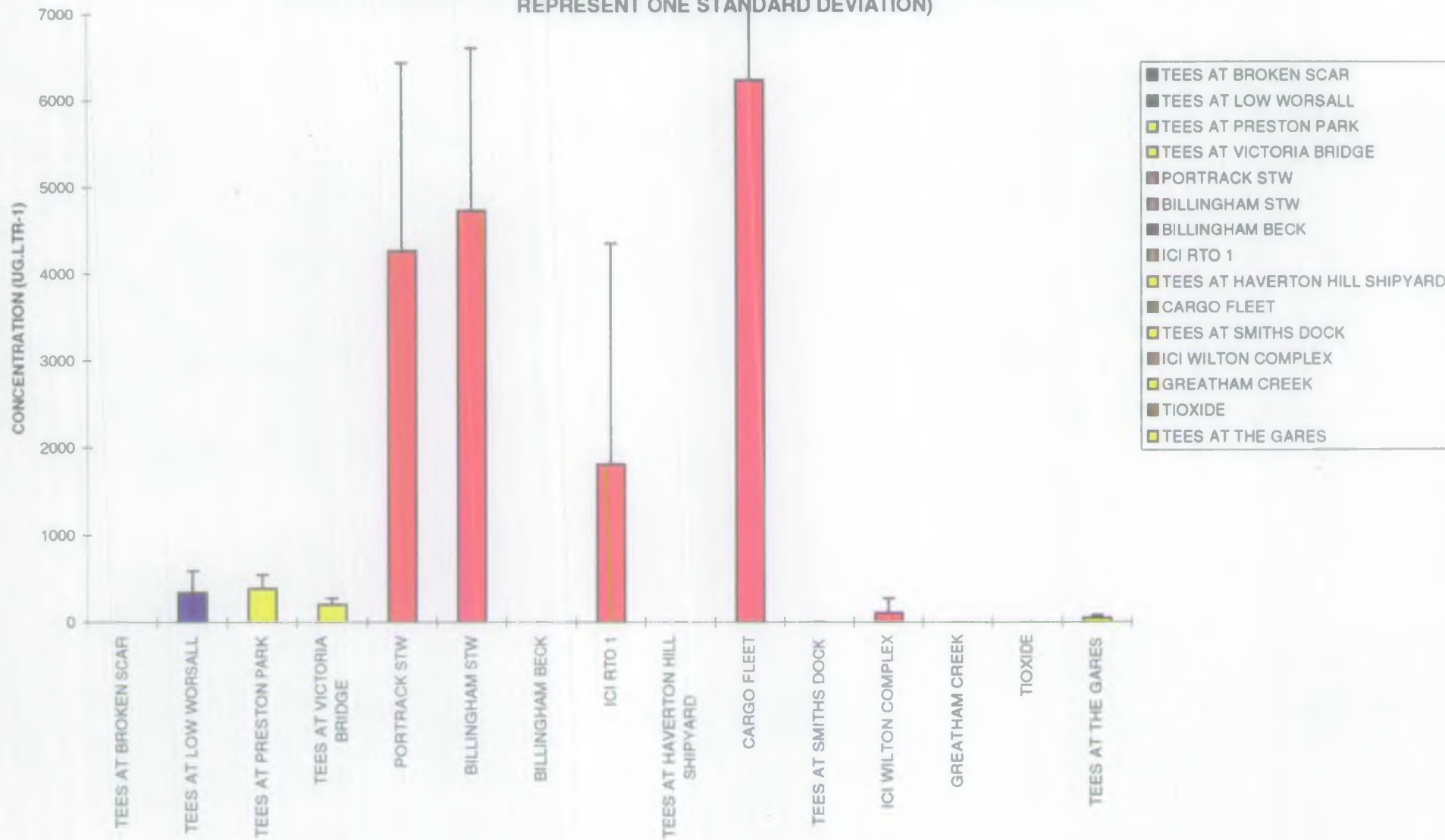
CONCENTRATION OF NITRITE IN THE TEES ESTUARY BY NMP/OSPARCOM LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

CONCENTRATION OF ORTHOPHOSPHATE IN THE TEES ESTUARY BY NMP/OSPARCOM LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

- NMP
- RIVER DISCHARGE
- DIRECT DISCHARGE

MAP SHOWING THE POSITION OF SAMPLING LOCATIONS WITHIN THE OUSE/WASH SYSTEM.

THE WASH N. SEA TASK FORCE OFFSHORE POINT

R. OUSE THE POINT KINGS LYNN

KINGS LYNN STW F/E

PORVAIR LTD. KINGS LYNN

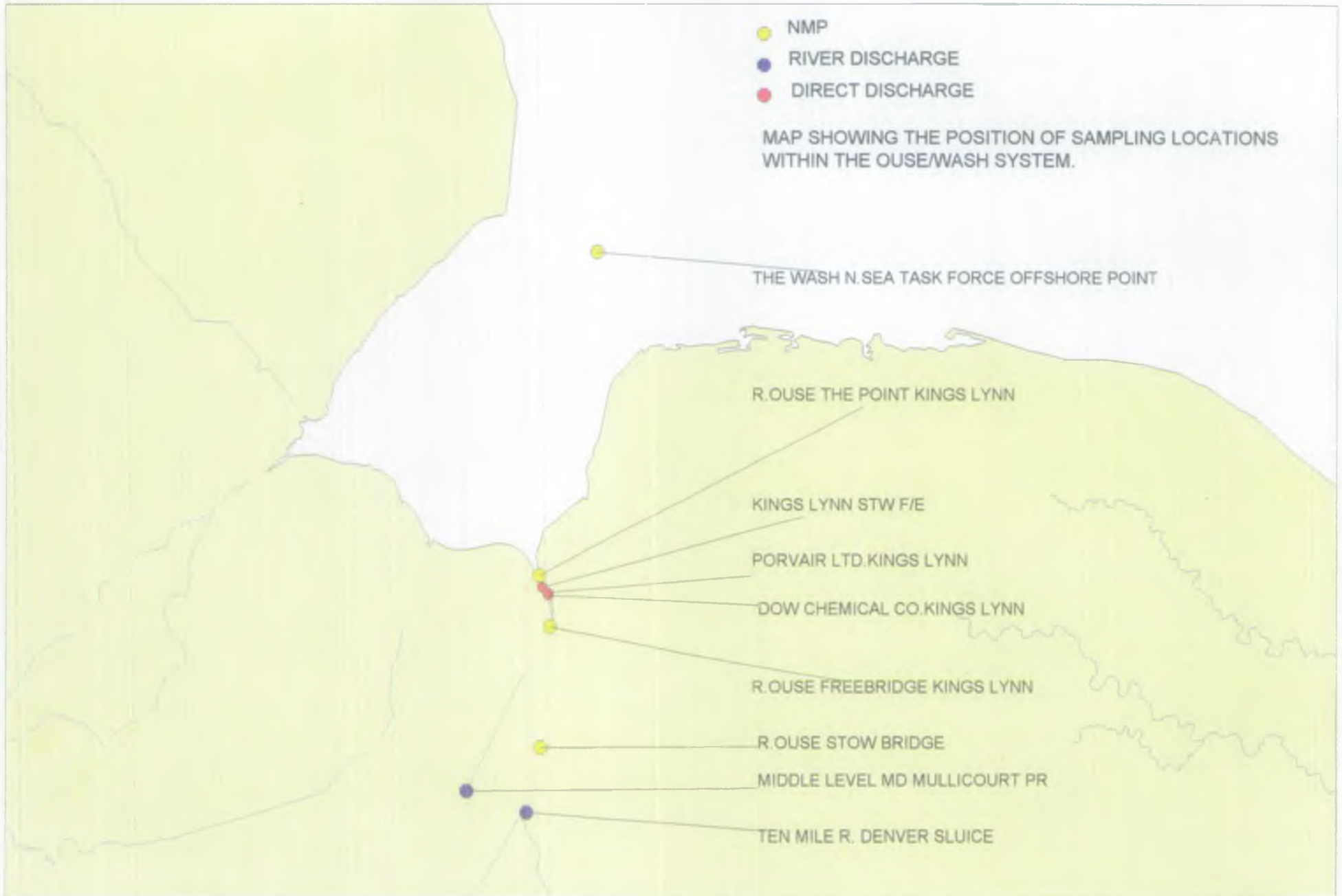
DOW CHEMICAL CO. KINGS LYNN

R. OUSE FREEBRIDGE KINGS LYNN

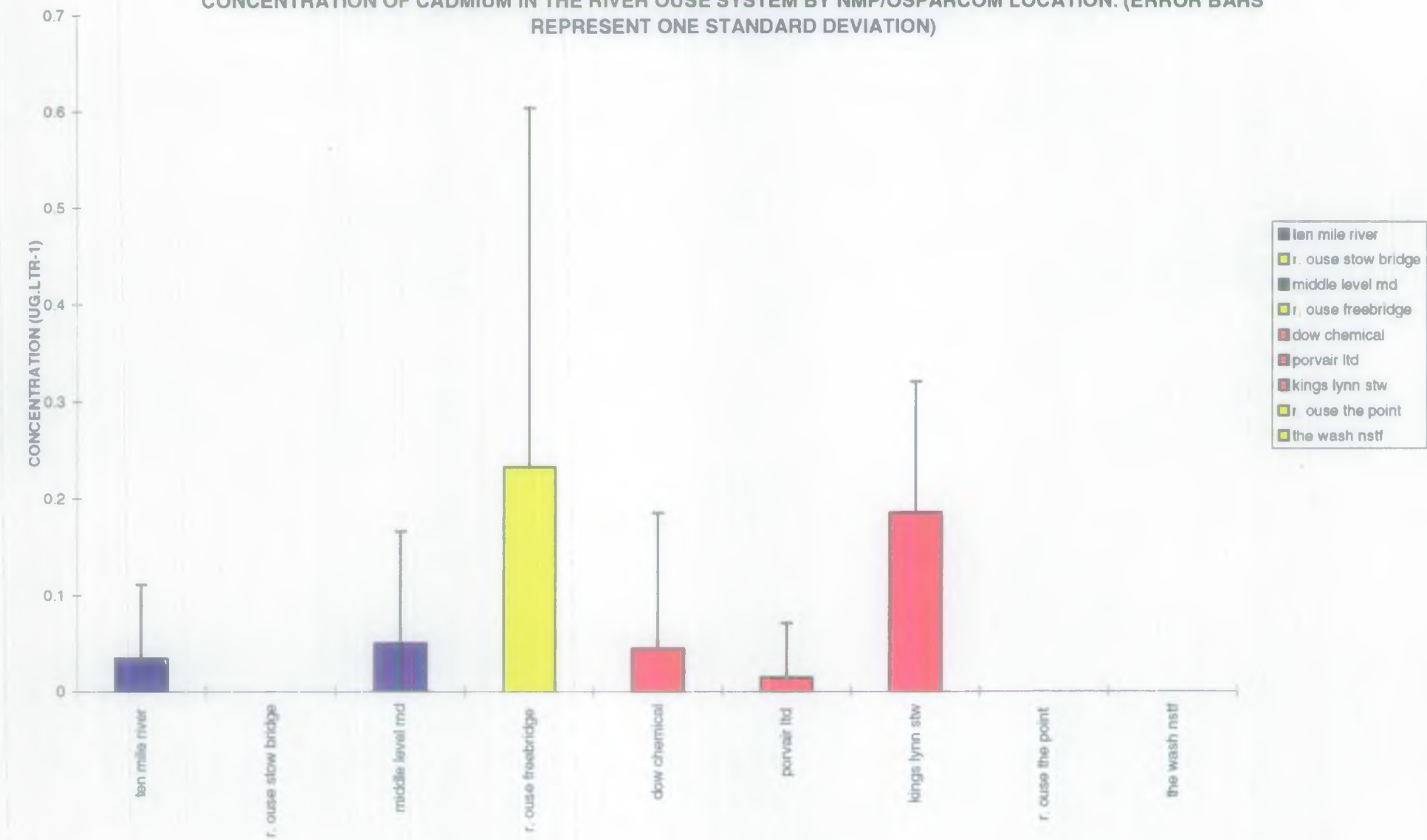
R. OUSE STOW BRIDGE

MIDDLE LEVEL MD MULLICOURT PR

TEN MILE R. DENVER SLUICE



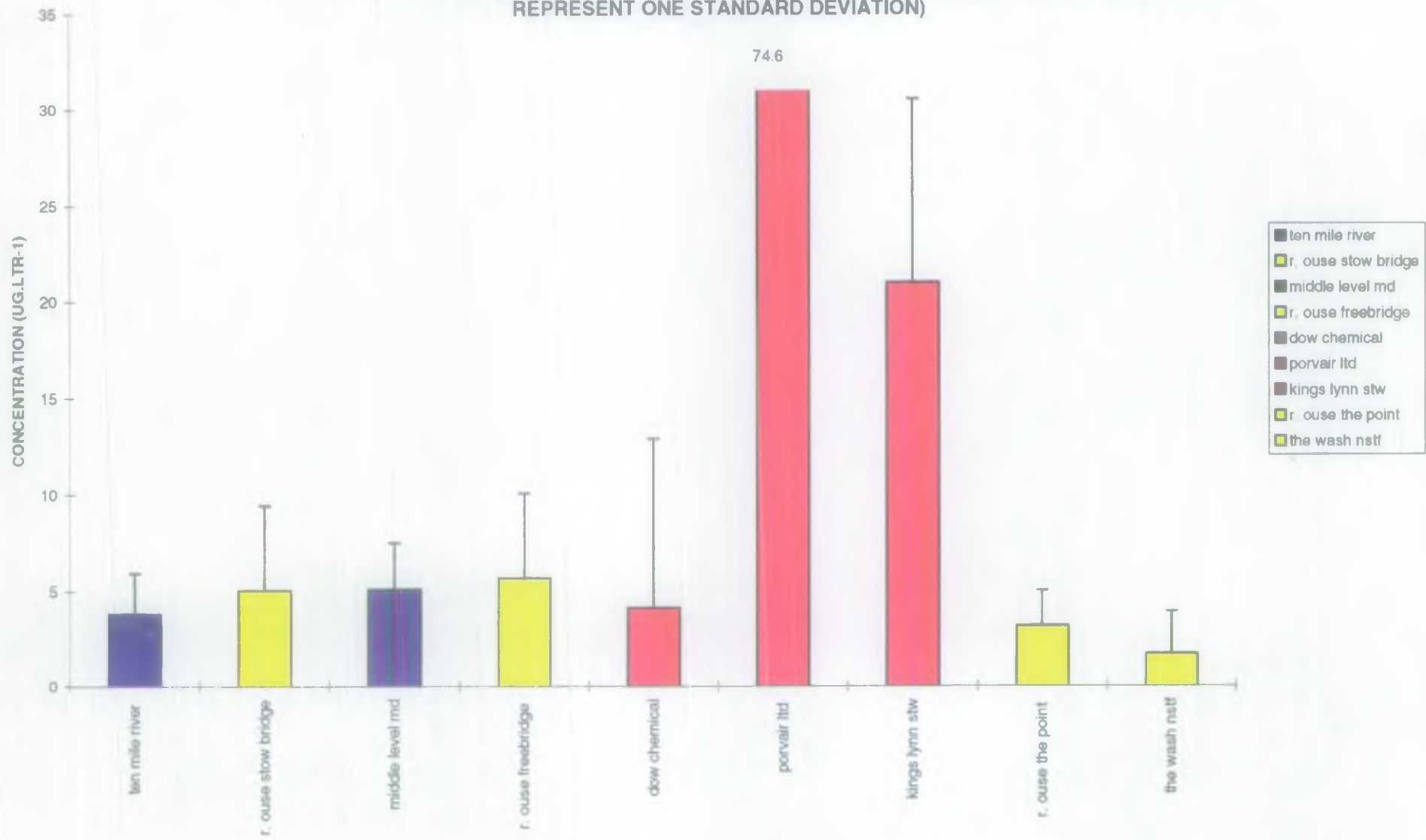
CONCENTRATION OF CADMIUM IN THE RIVER OUSE SYSTEM BY NMP/OSPARCOM LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

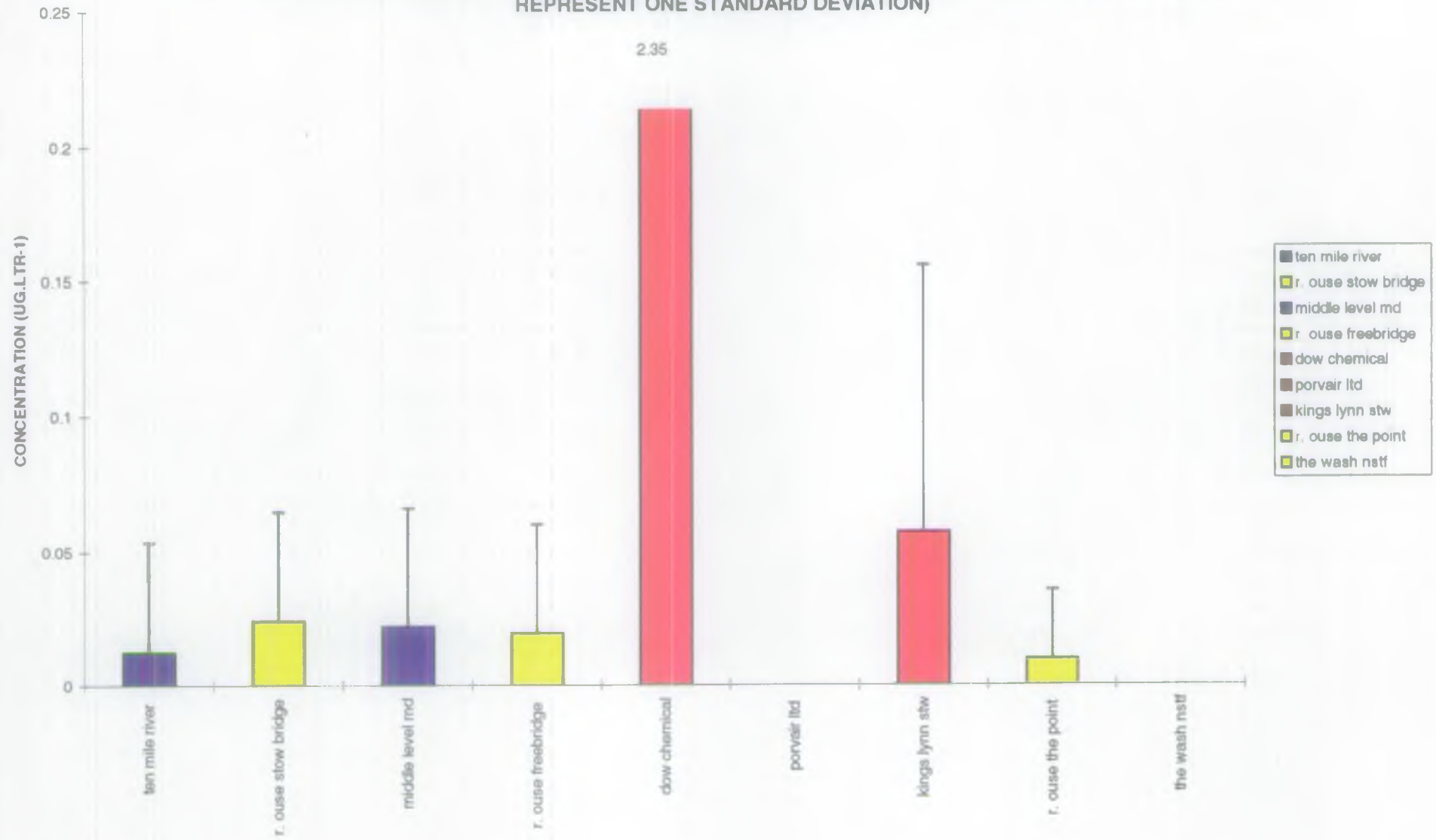
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UPSTREAM

DOWNSTREAM

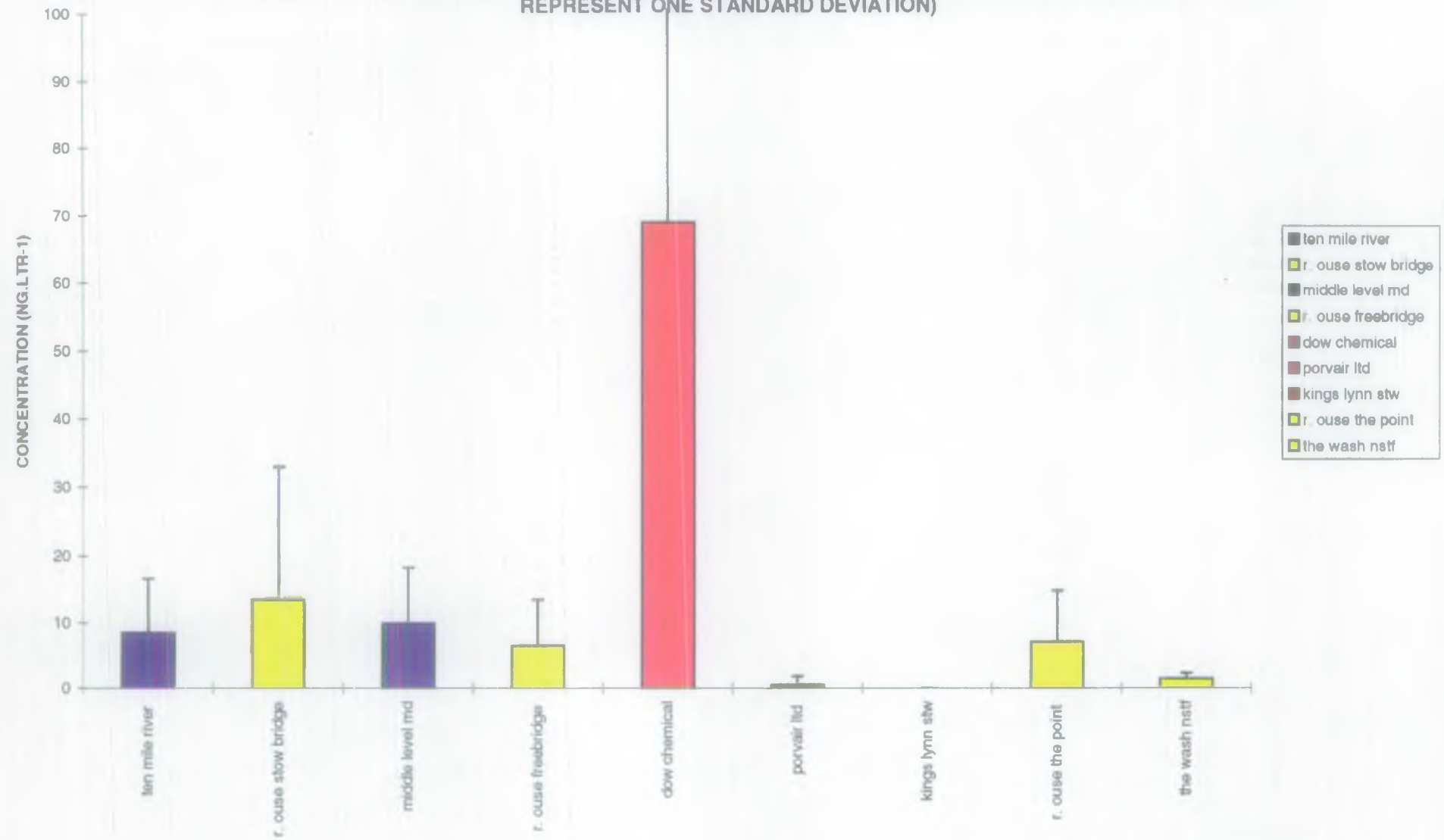
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UPSTREAM

DOWNSTREAM

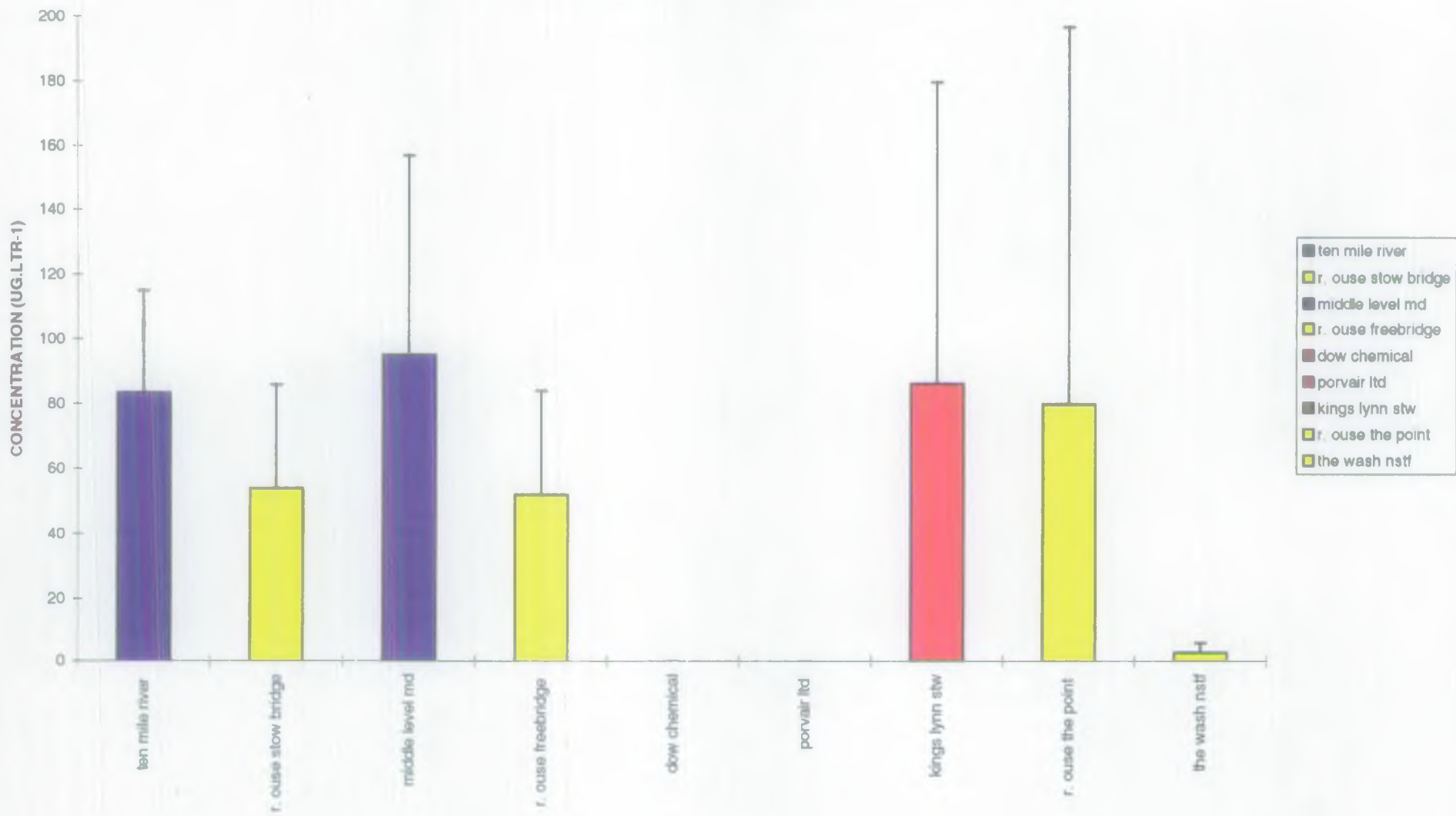
CONCENTRATION OF LINDANE IN THE RIVER OUSE SYSTEM BY NMP/OSPARCOM LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

CONCENTRATION OF NITRITE IN THE RIVER OUSE SYSTEM BY NMP/OSPARCOM LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



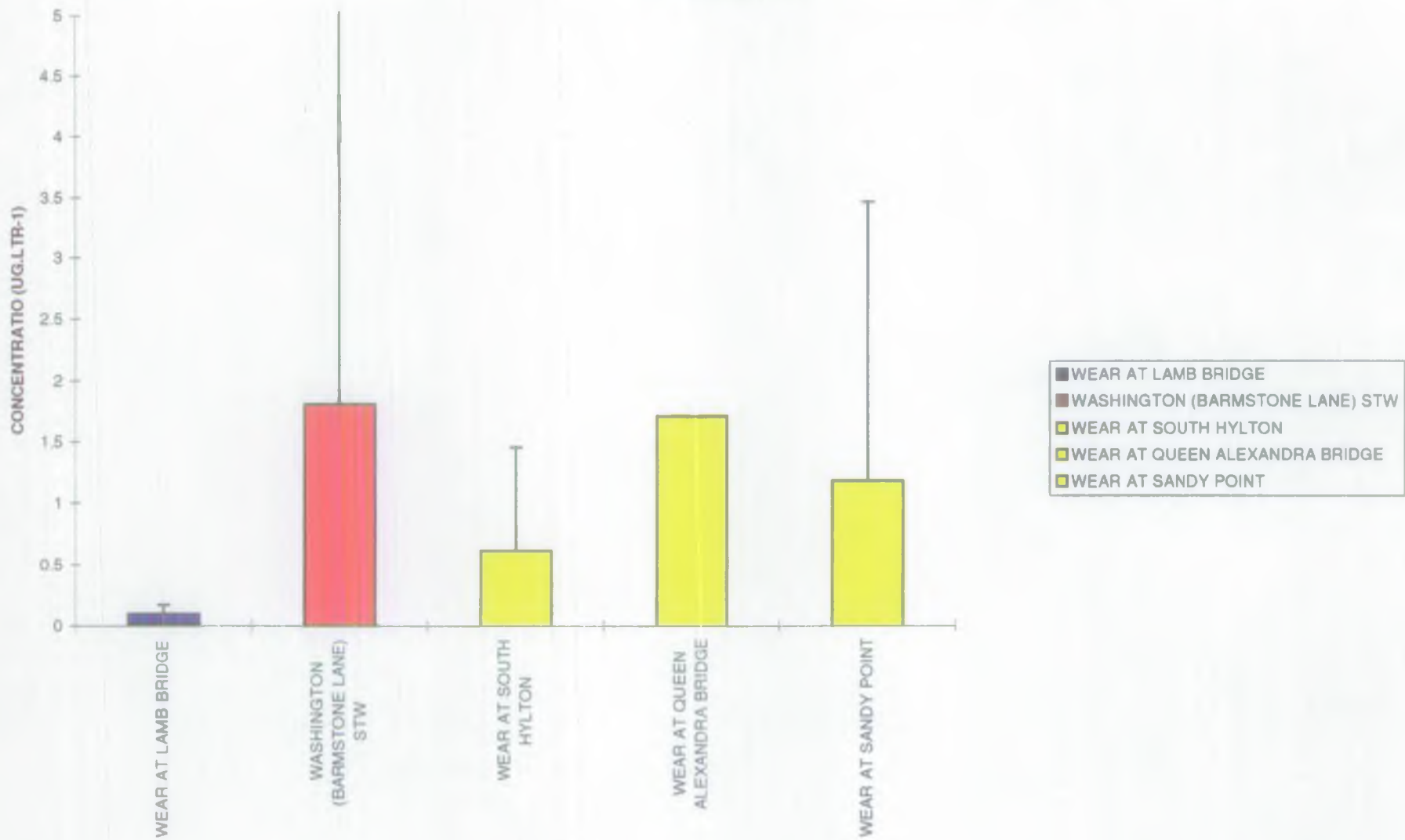
UPSTREAM

DOWNSTREAM

MAP SHOWING THE POSITION OF SAMPLING LOCATIONS IN THE WEAR ESTUARY.



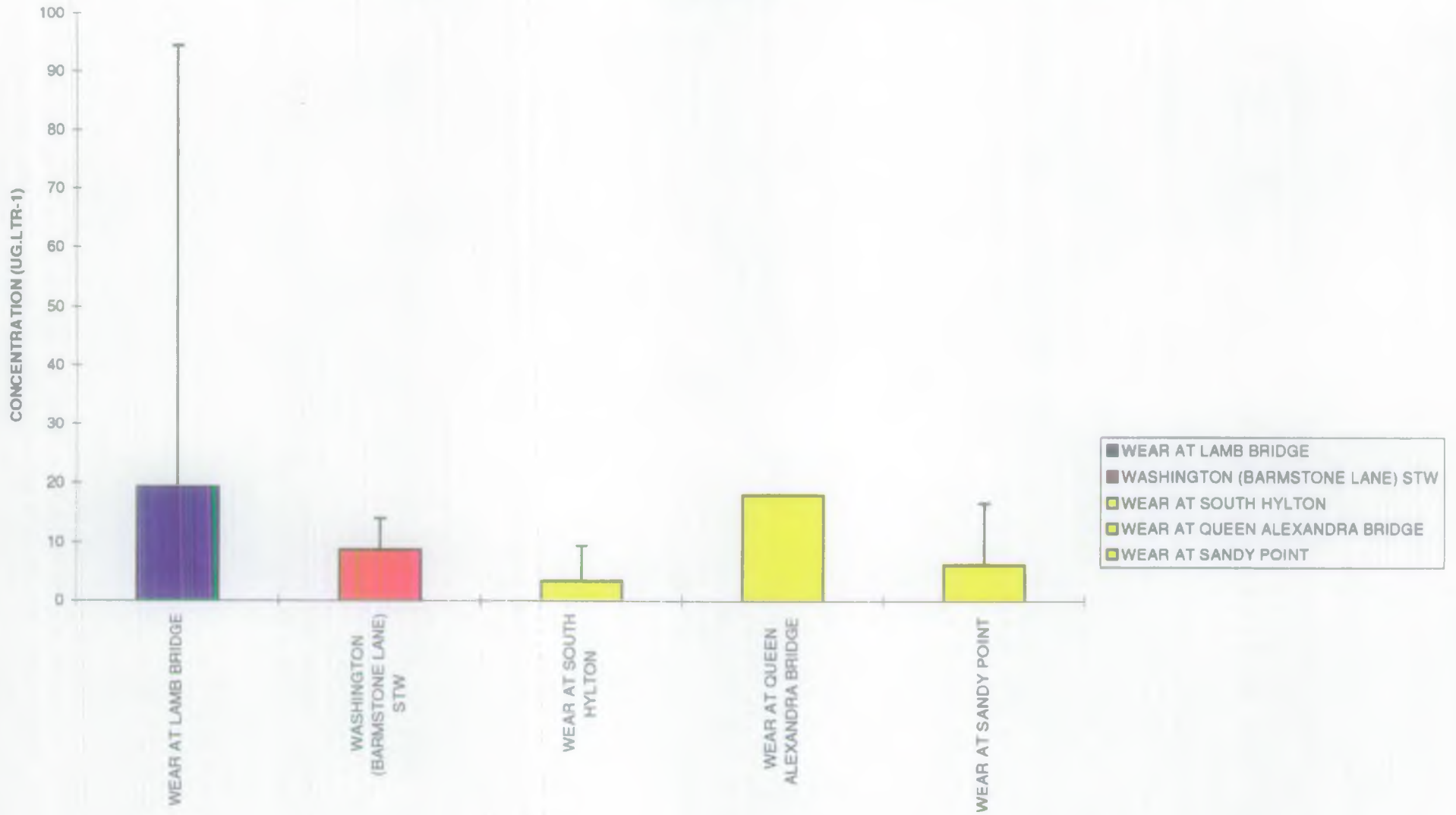
CONCENTRATION OF CADMIUM IN THE WEAR ESTUARY BY LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

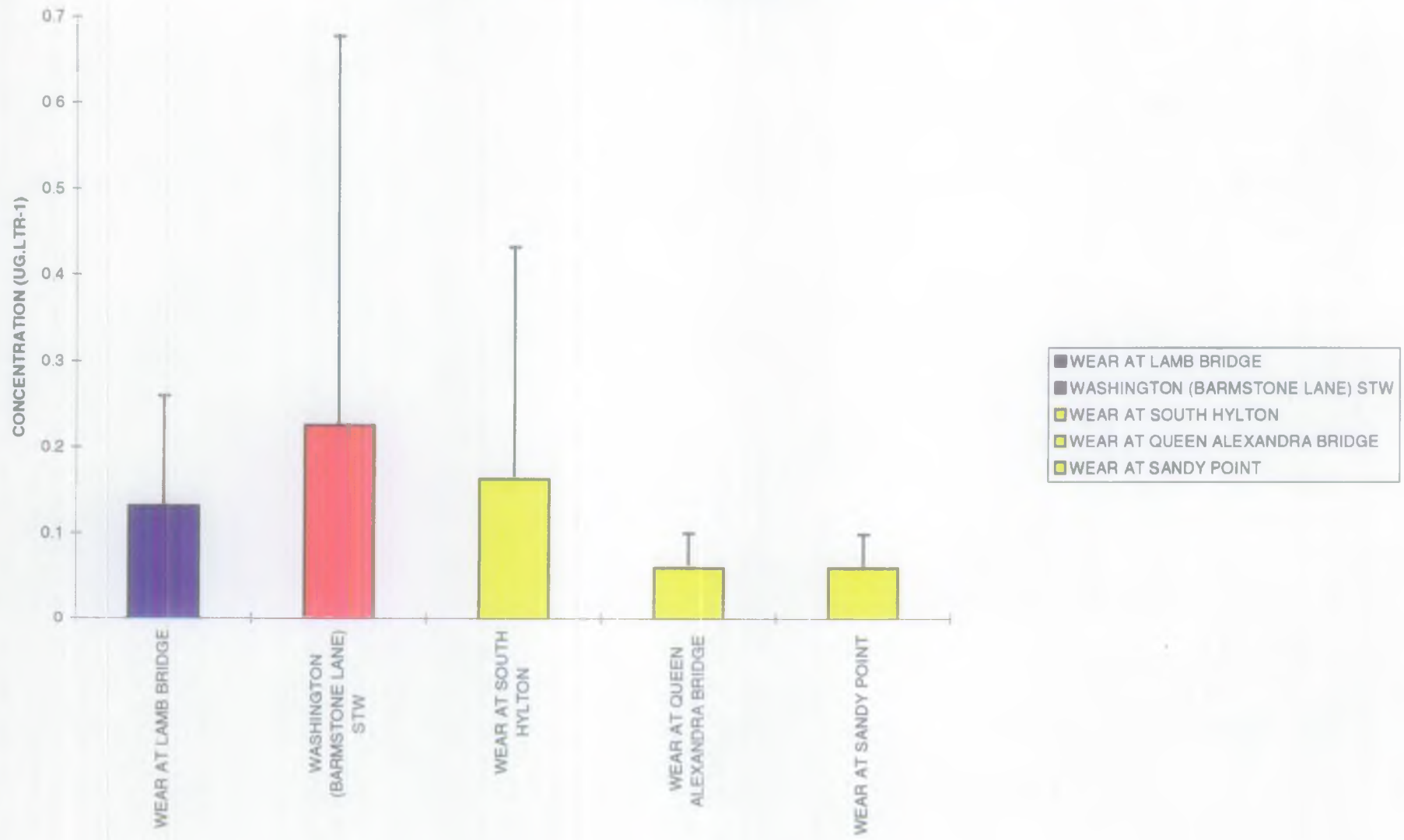
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UPSTREAM

DOWNSTREAM

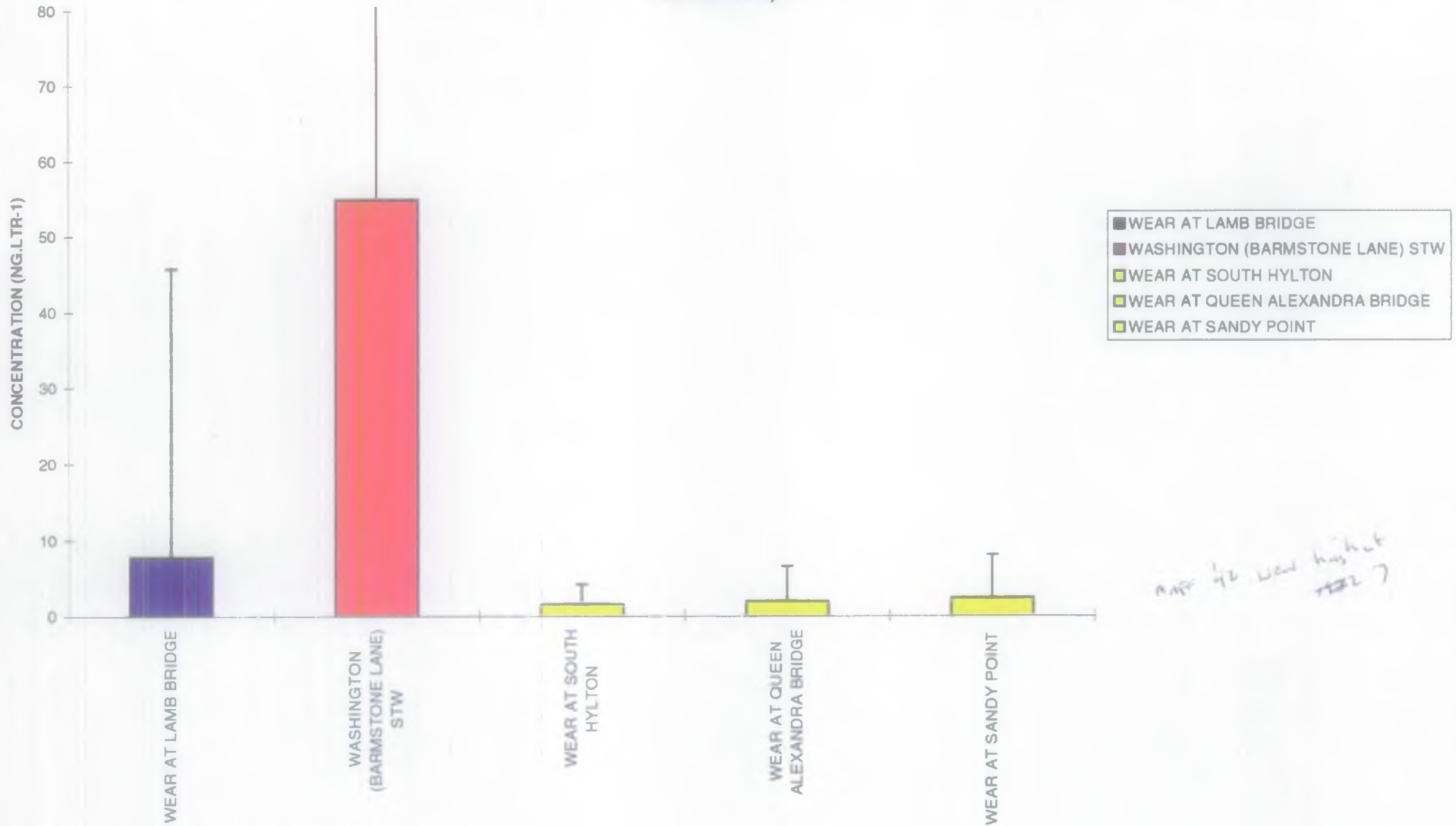
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UPSTREAM

DOWNSTREAM

CONCENTRATION OF LINDANE IN THE WEAR ESTUARY BY LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



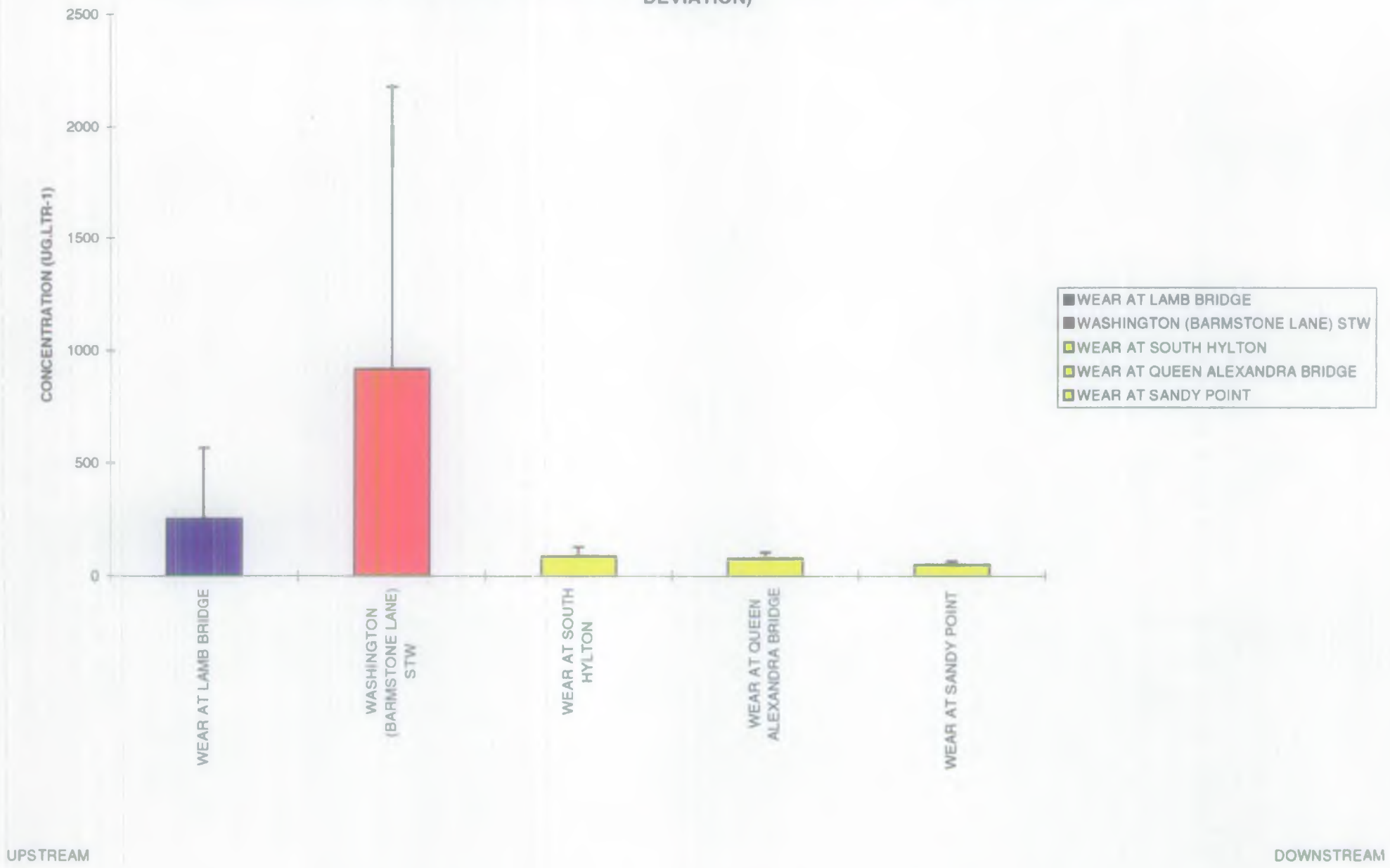
- WEAR AT LAMB BRIDGE
- WASHINGTON (BARMSTONE LANE) STW
- WEAR AT SOUTH HYLTON
- WEAR AT QUEEN ALEXANDRA BRIDGE
- WEAR AT SANDY POINT

max 72 low highest 7227

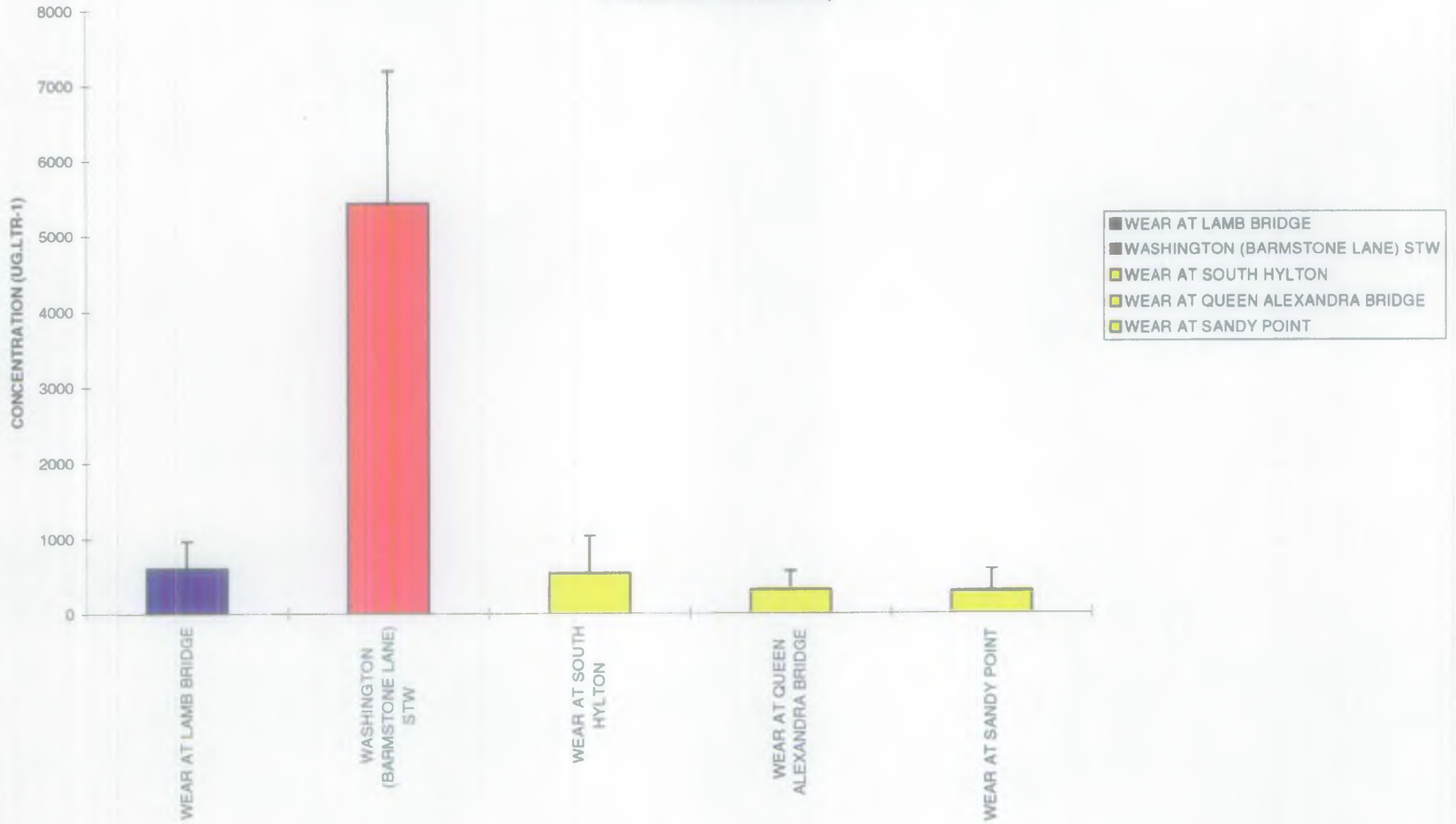
UPSTREAM

DOWNSTREAM

CONCENTRATION OF NITRITE IN THE WEAR ESTAURY BY LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



CONCENTRATION OF ORTHOPHOSPHATE IN THE WEAR ESTUARY BY LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)

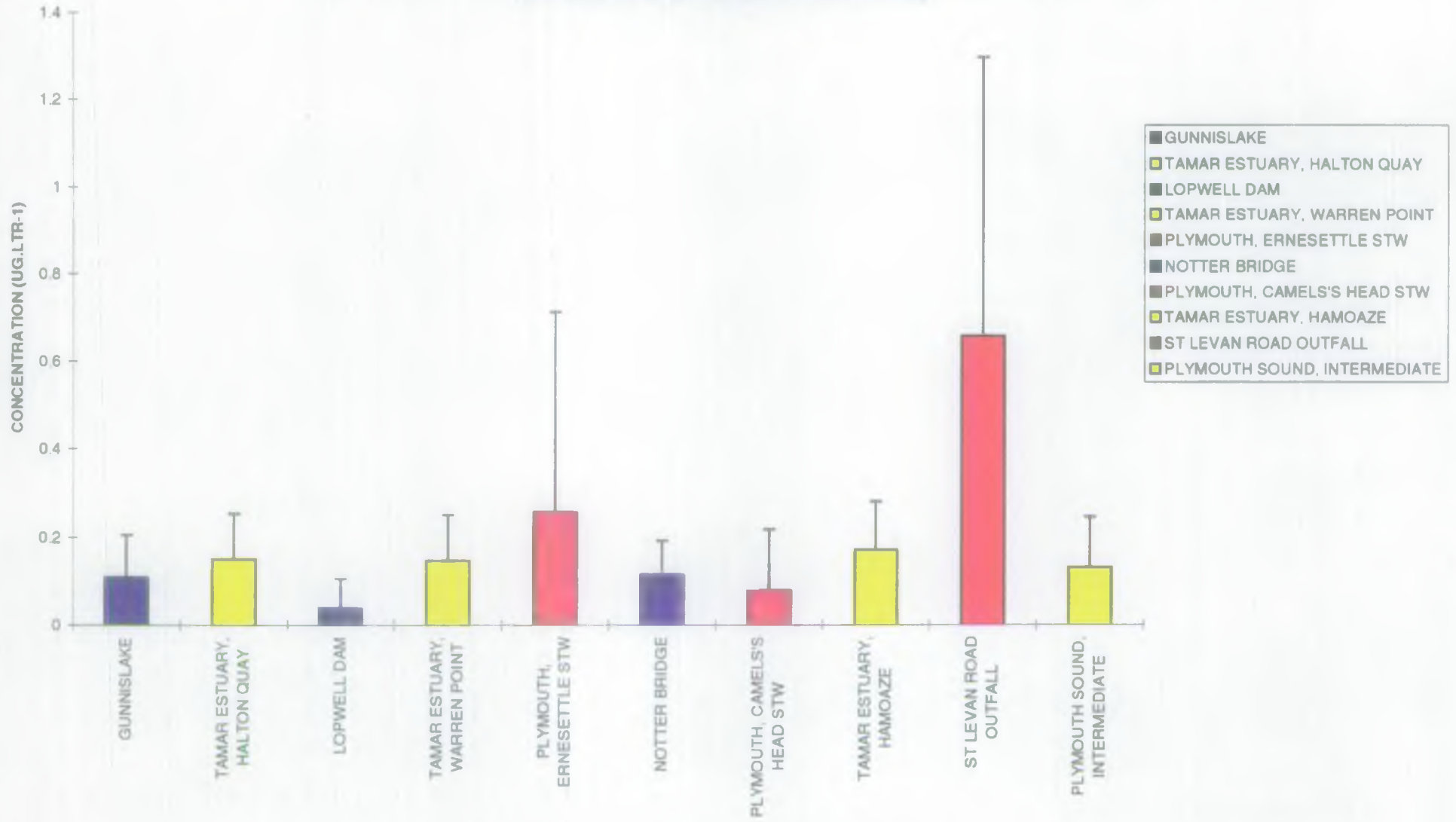


UPSTREAM

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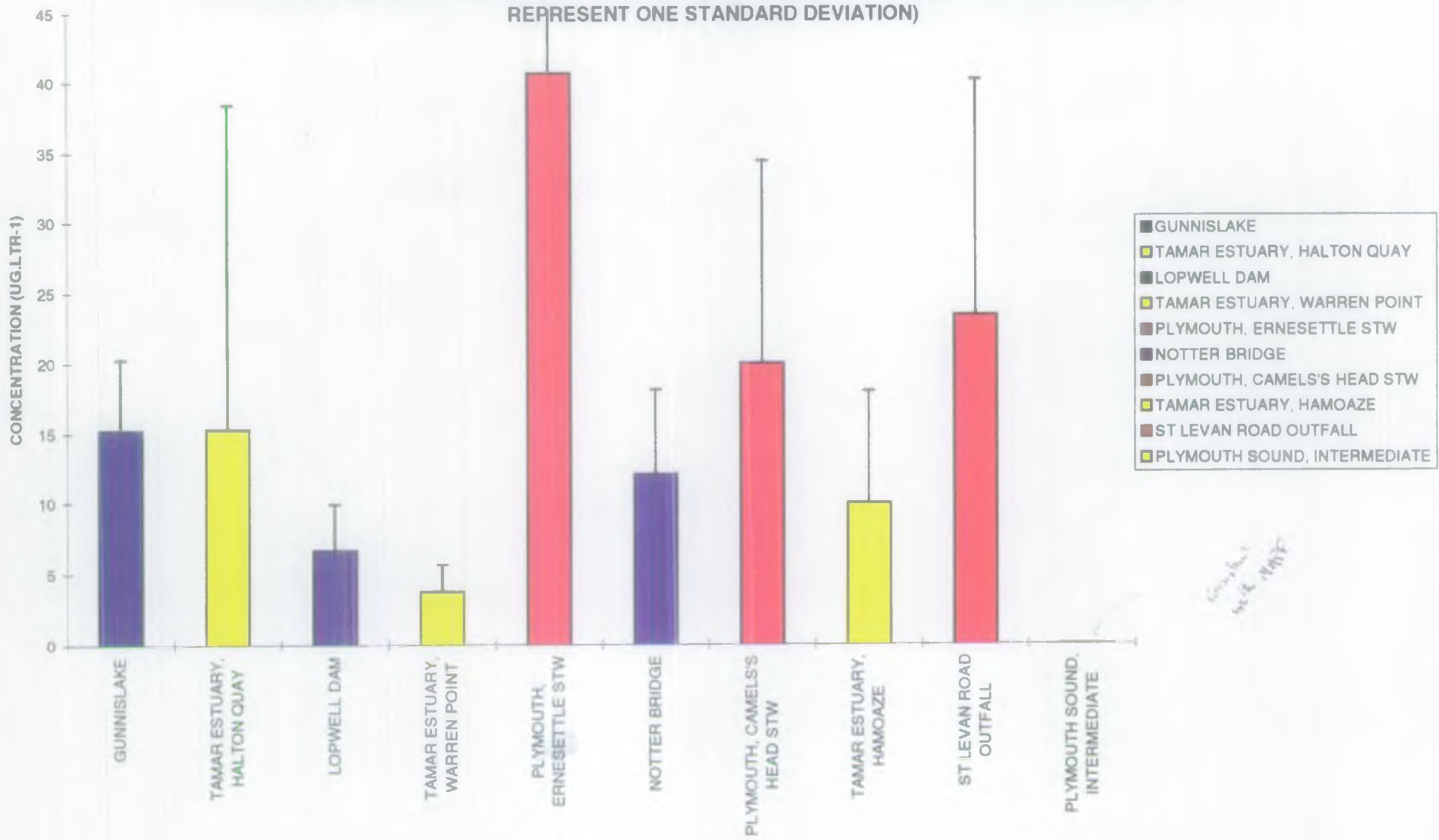
CONCENTRATION OF CADMIUM IN THE TAMAR ESTUARY BY NMP/OSPARCOM LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

CONCENTRATION OF COPPER IN THE TAMAR ESTUARY BY NMP/OSPARCOM LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



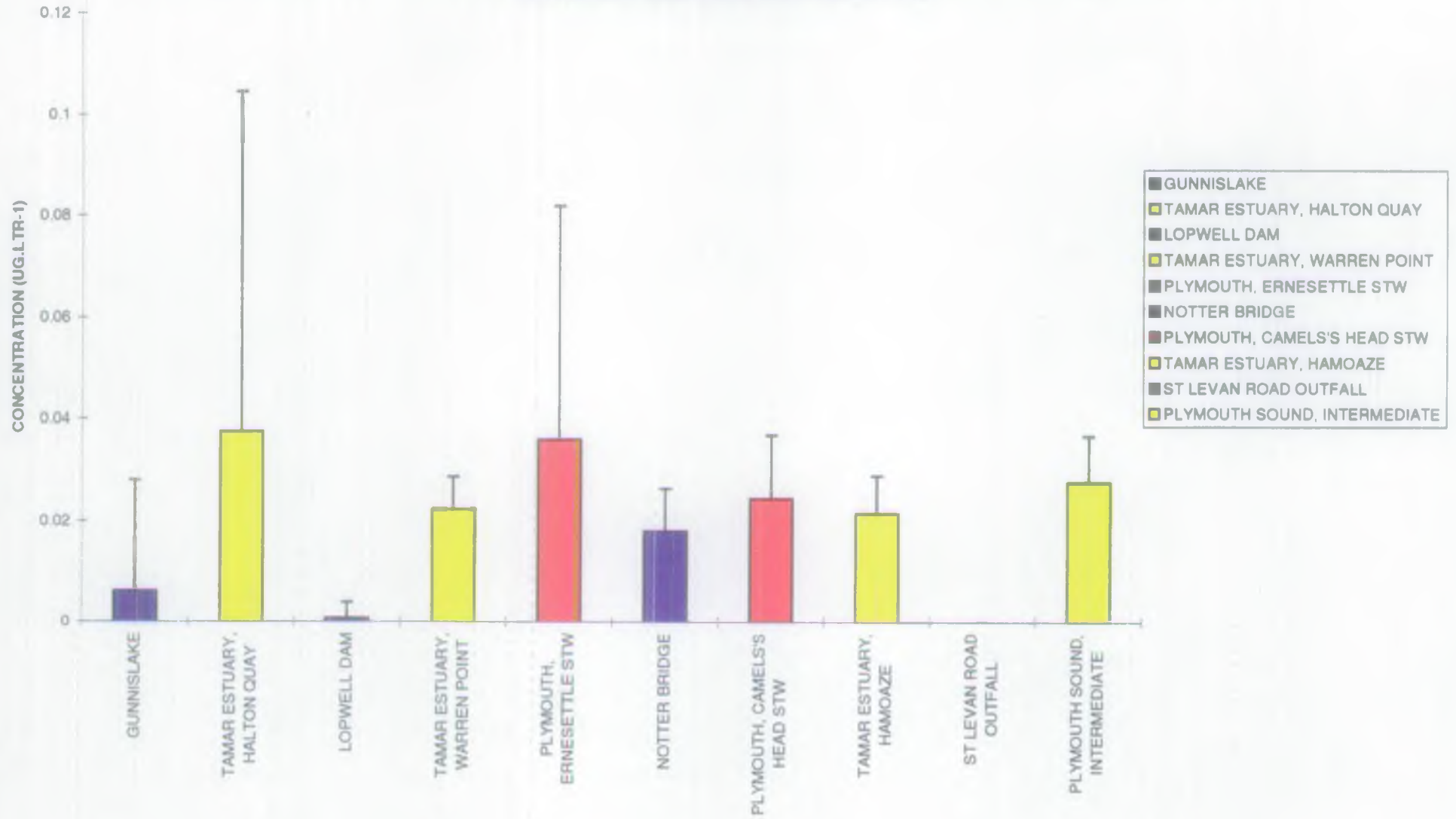
- GUNNISLAKE
- TAMAR ESTUARY, HALTON QUAY
- LOPWELL DAM
- TAMAR ESTUARY, WARREN POINT
- PLYMOUTH, ERNESETTLE STW
- NOTTER BRIDGE
- PLYMOUTH, CAMELS'S HEAD STW
- TAMAR ESTUARY, HAMOAZE
- ST LEVAN ROAD OUTFALL
- PLYMOUTH SOUND, INTERMEDIATE

Handwritten note:
 10/10/01
 10.11.01

UPSTREAM

DOWNSTREAM

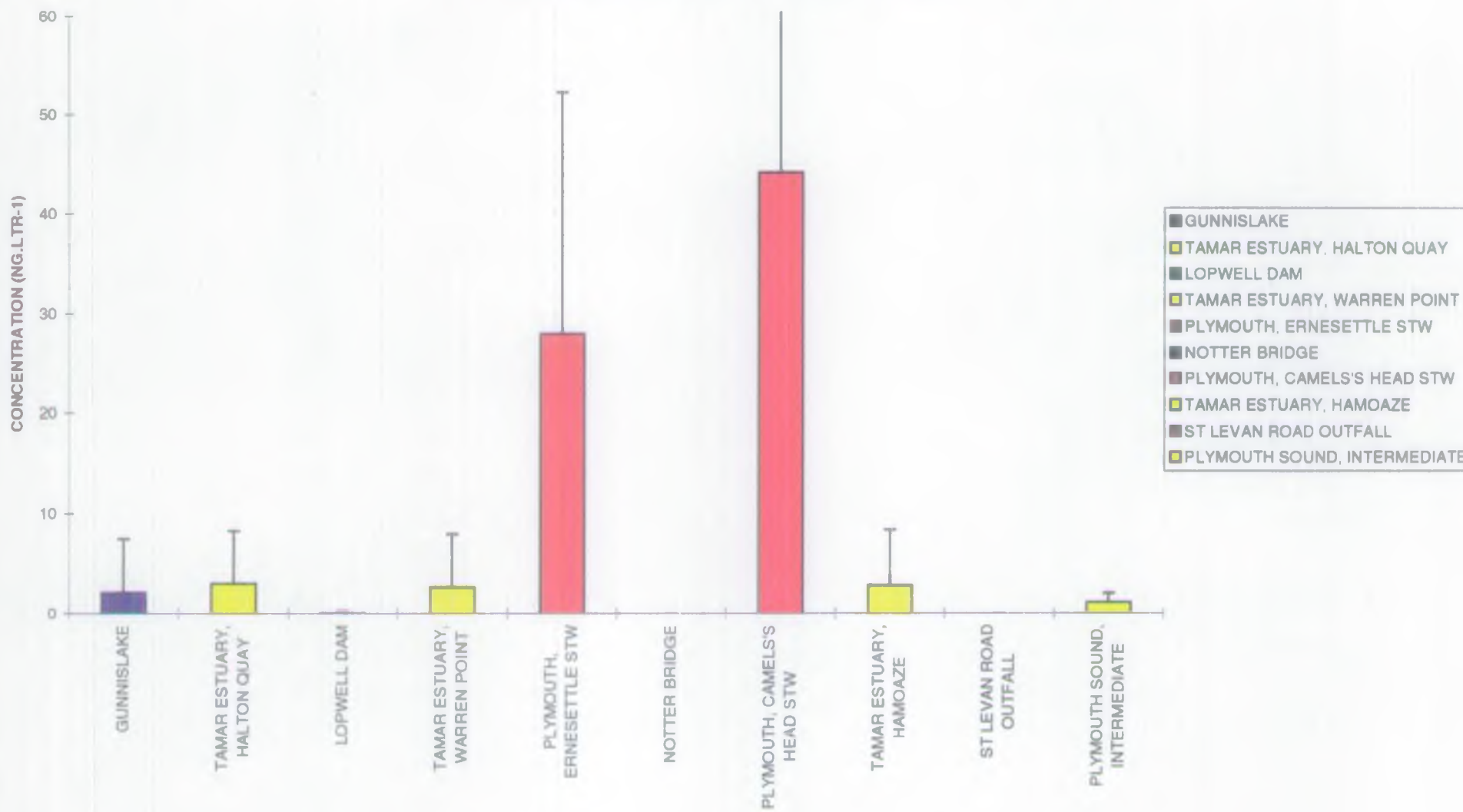
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UPSTREAM

DOWNSTREAM

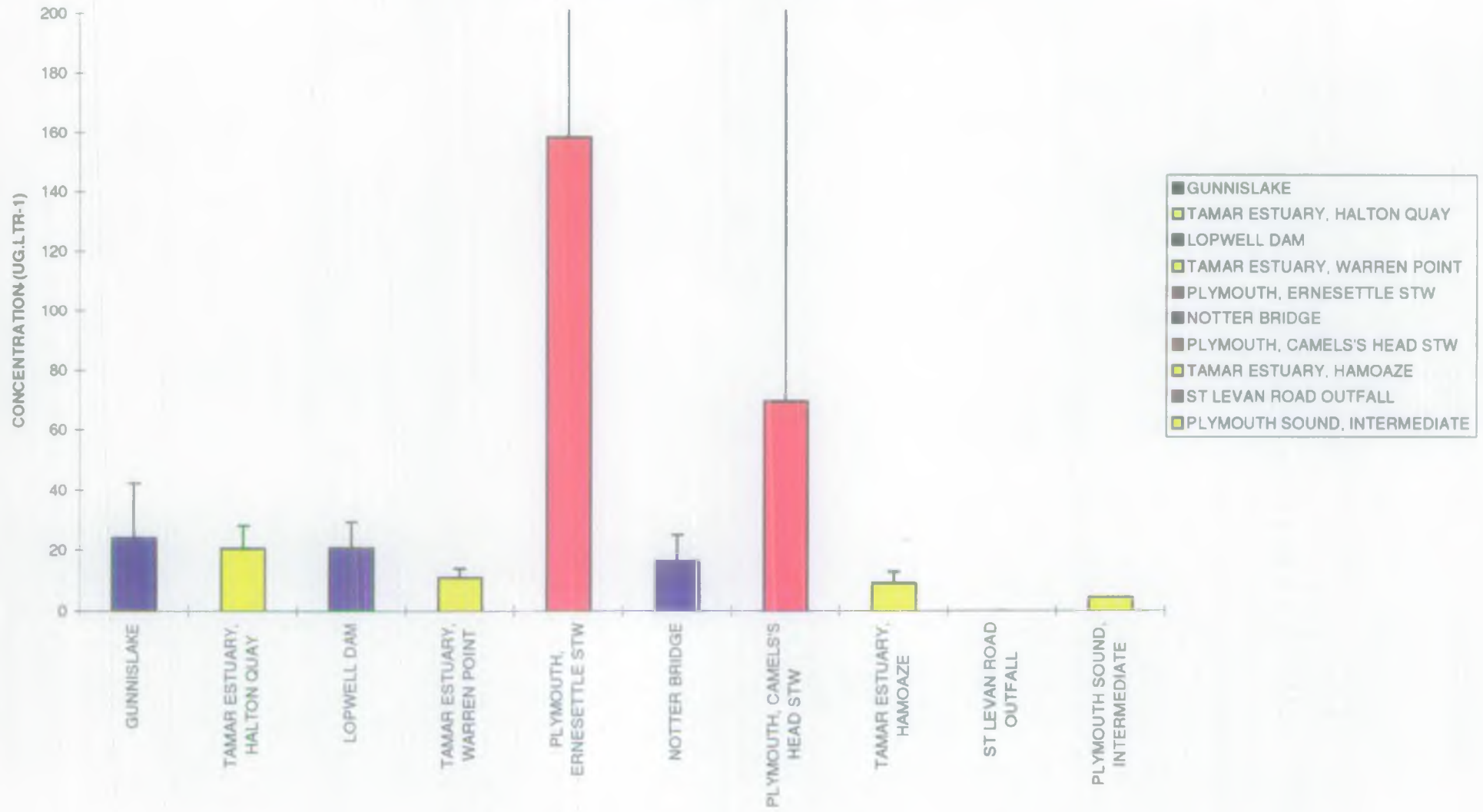
CONCENTRATION OF LINDANE IN THE TAMAR ESTUARY BY NMP/OSPARCOM LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

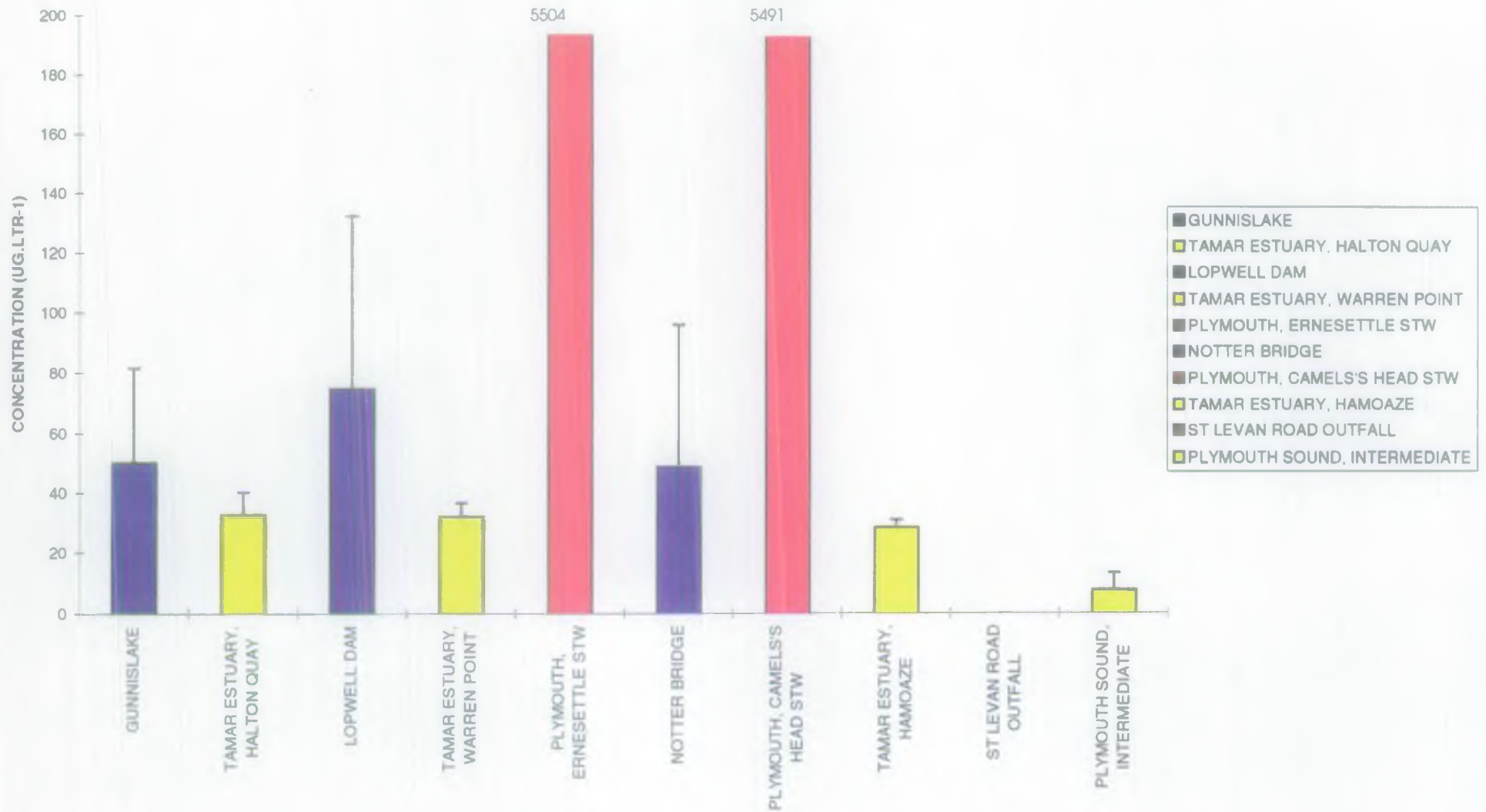
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UPSTREAM

DOWNSTREAM

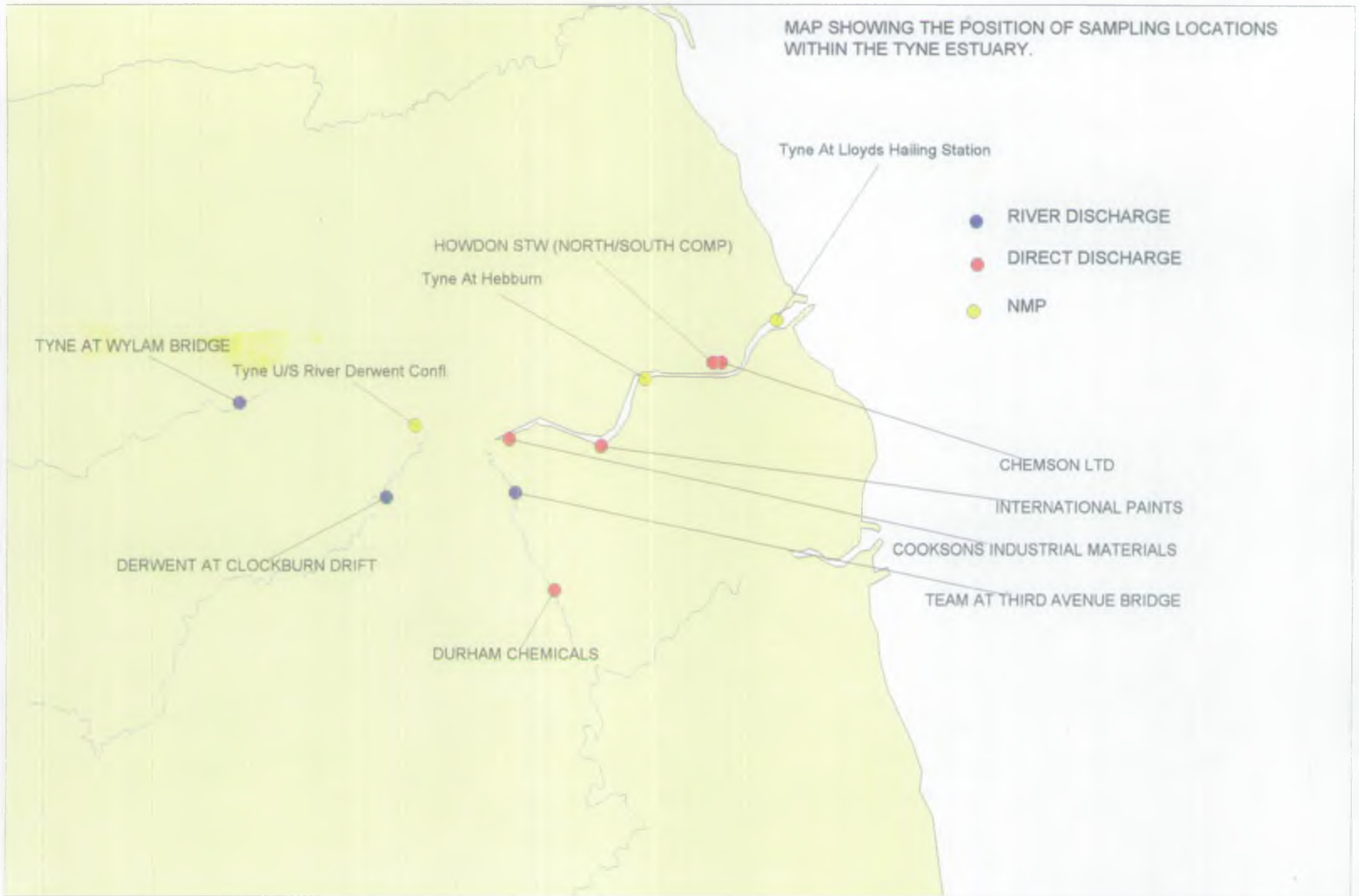
CONCENTRATION OF ORTHOPHOSPHATE IN THE TAMAR ESTUARY BY NMP/OSPARCOM LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



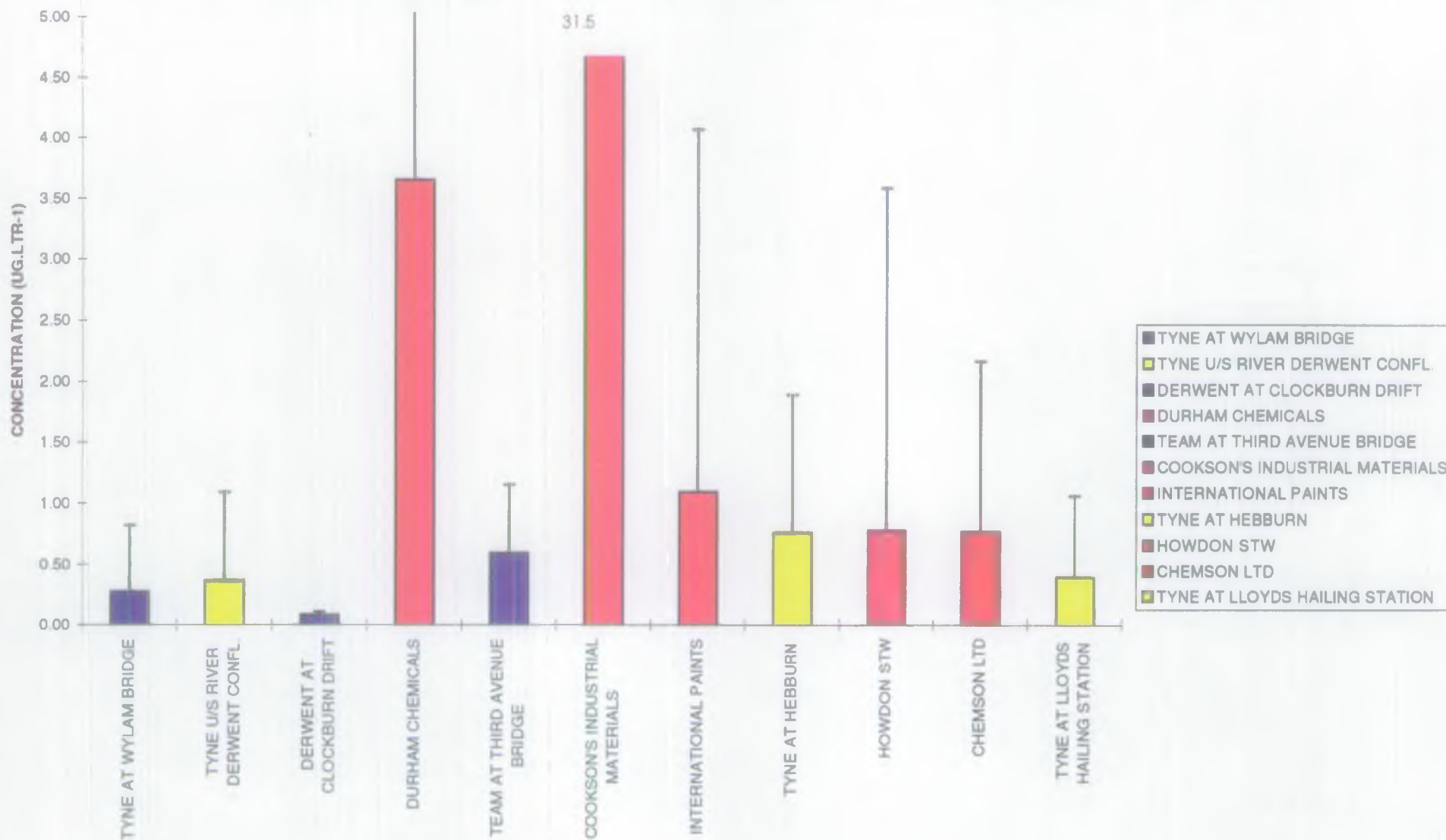
UPSTREAM

DOWNSTREAM

MAP SHOWING THE POSITION OF SAMPLING LOCATIONS WITHIN THE TYNE ESTUARY.



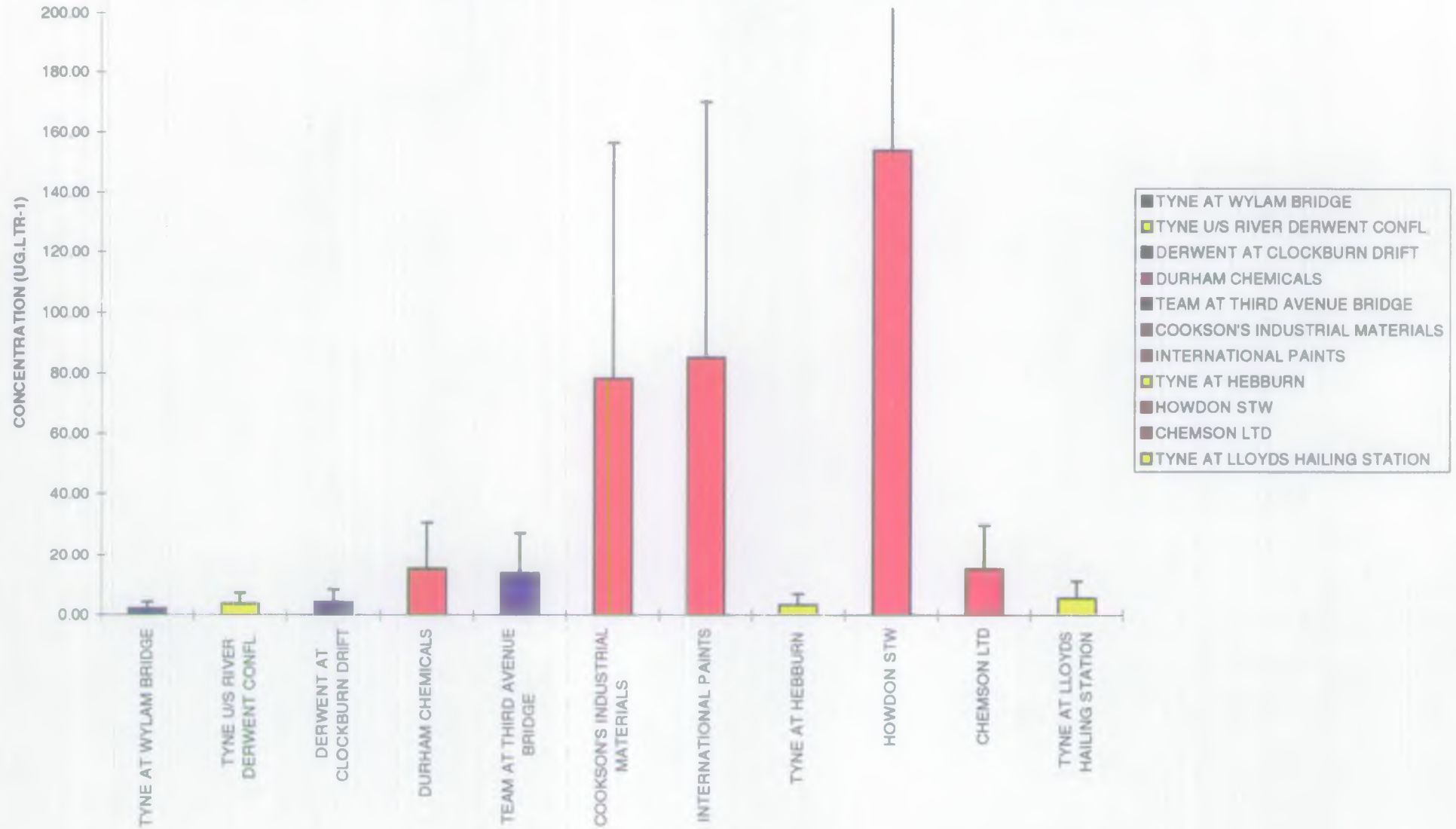
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UPSTREAM

DOWNSTREAM

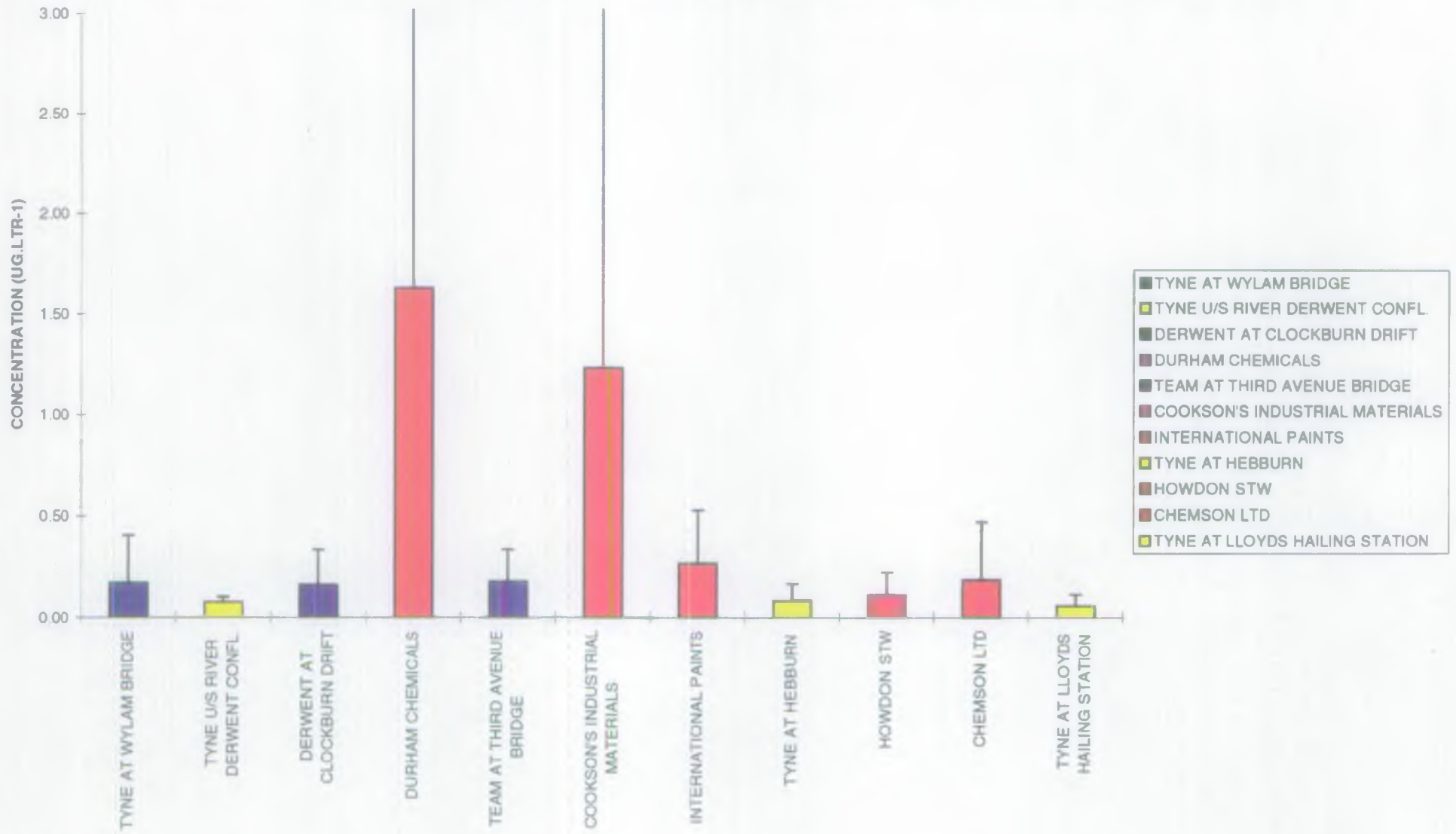
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UPSTREAM

DOWNSTREAM

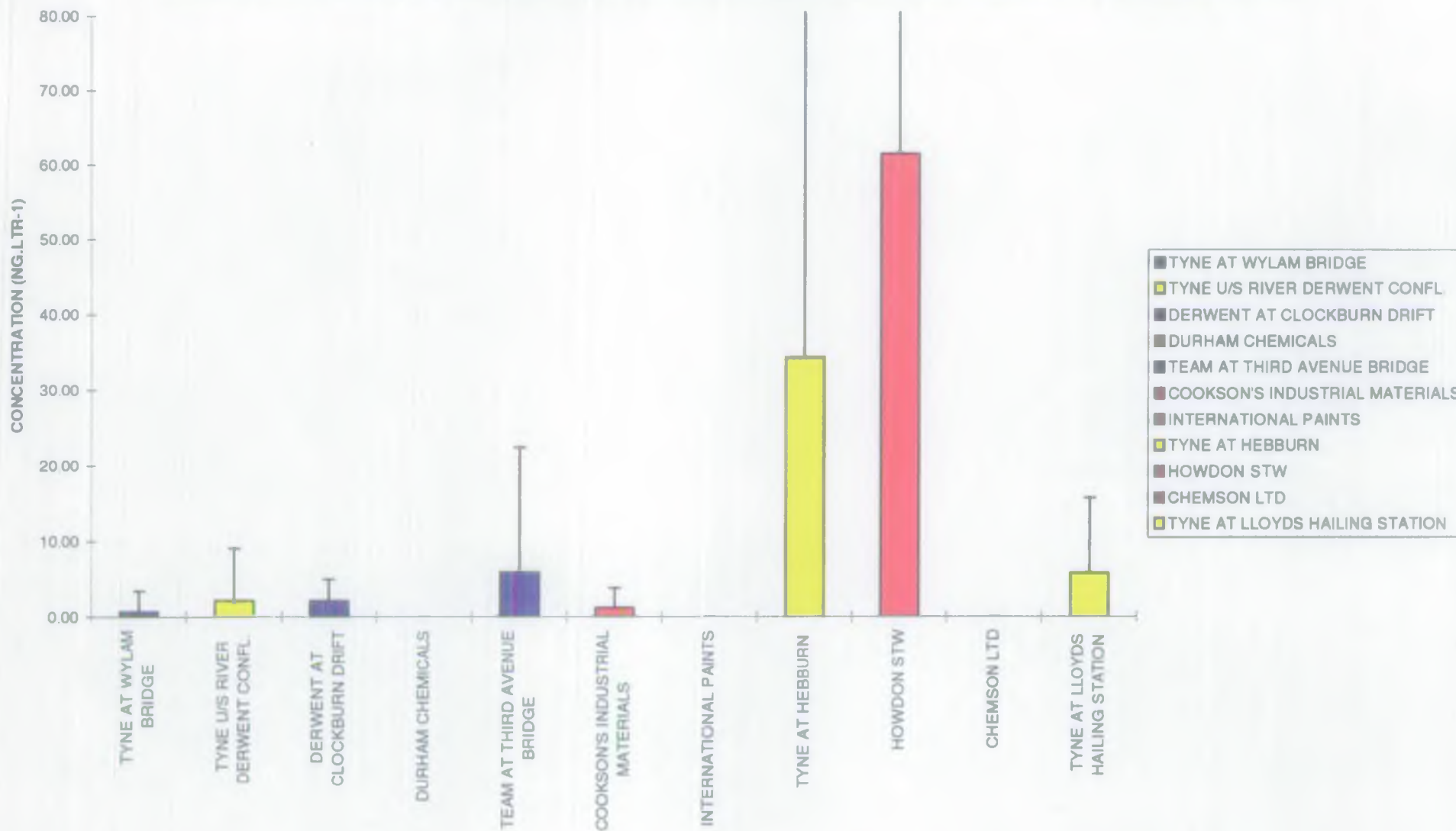
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UPSTREAM

DOWNSTREAM

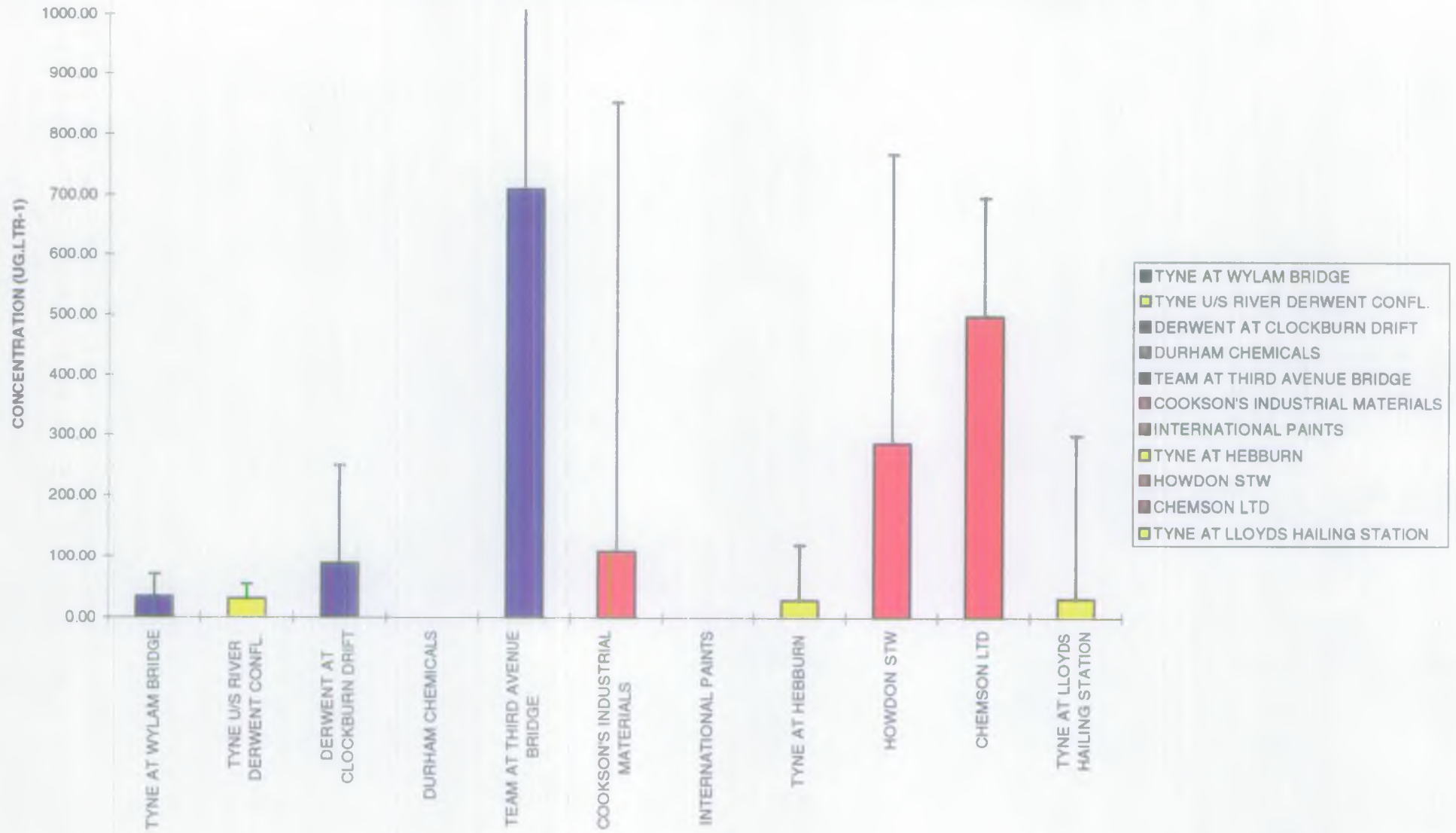
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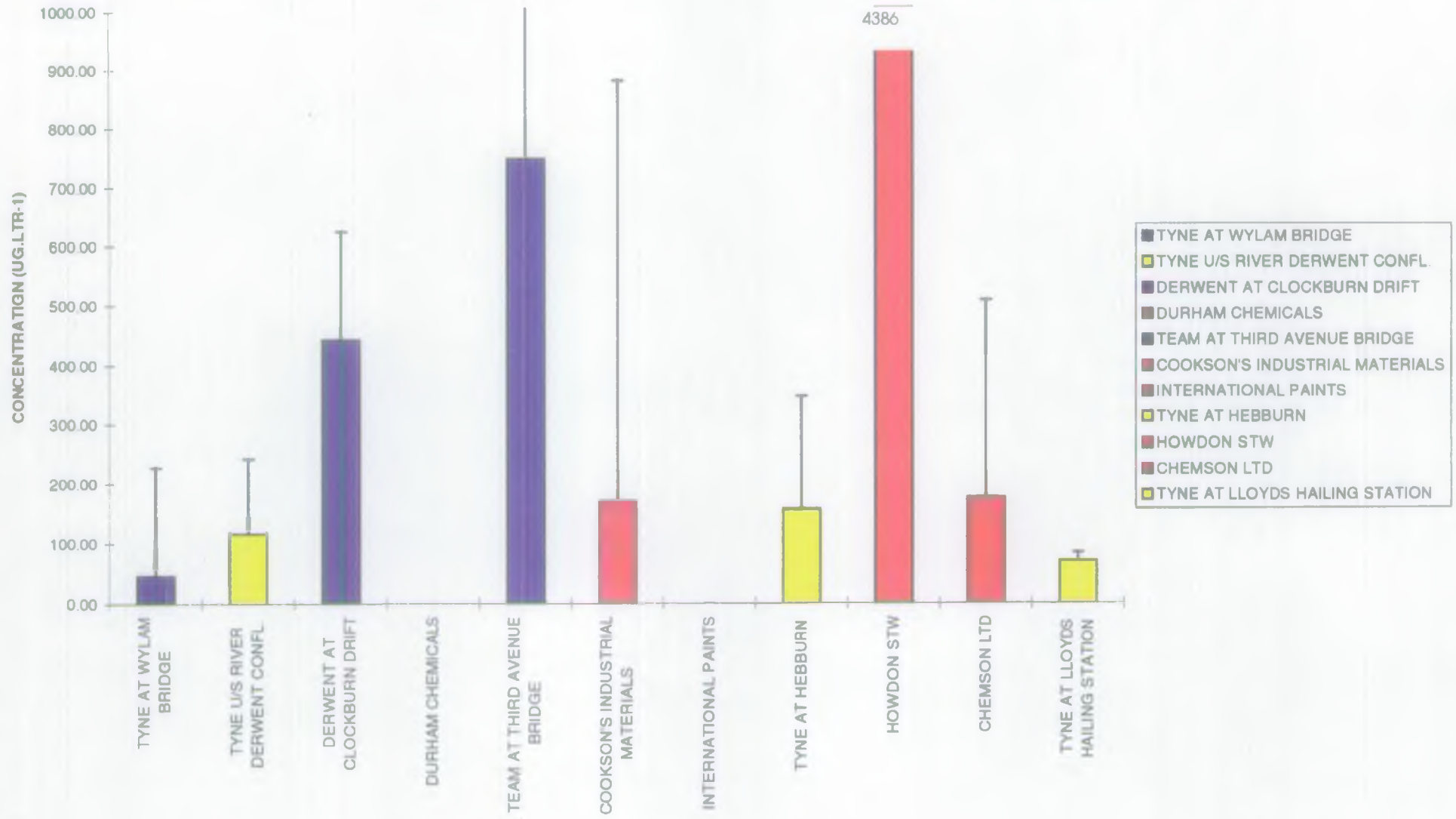
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UPSTREAM

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CONCENTRATION OF ORTHOPHOSPHATE IN THE TYNE ESTUARY BY NMP/OSPARCOM LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



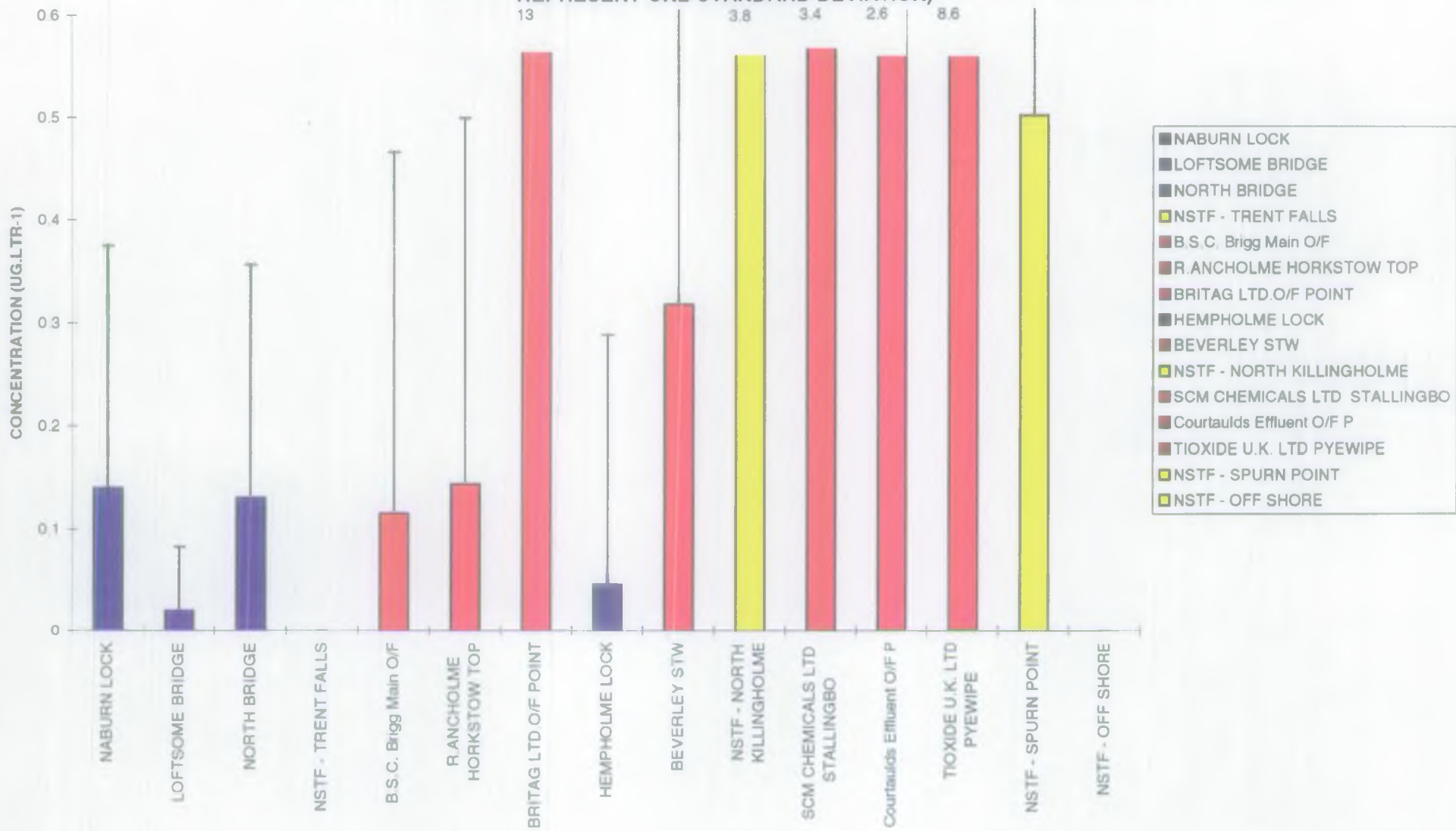
UPSTREAM

DOWNSTREAM

MAP SHOWING THE POSITION OF SAMPLING LOCATIONS WITHIN THE HUMBER ESTUARY.



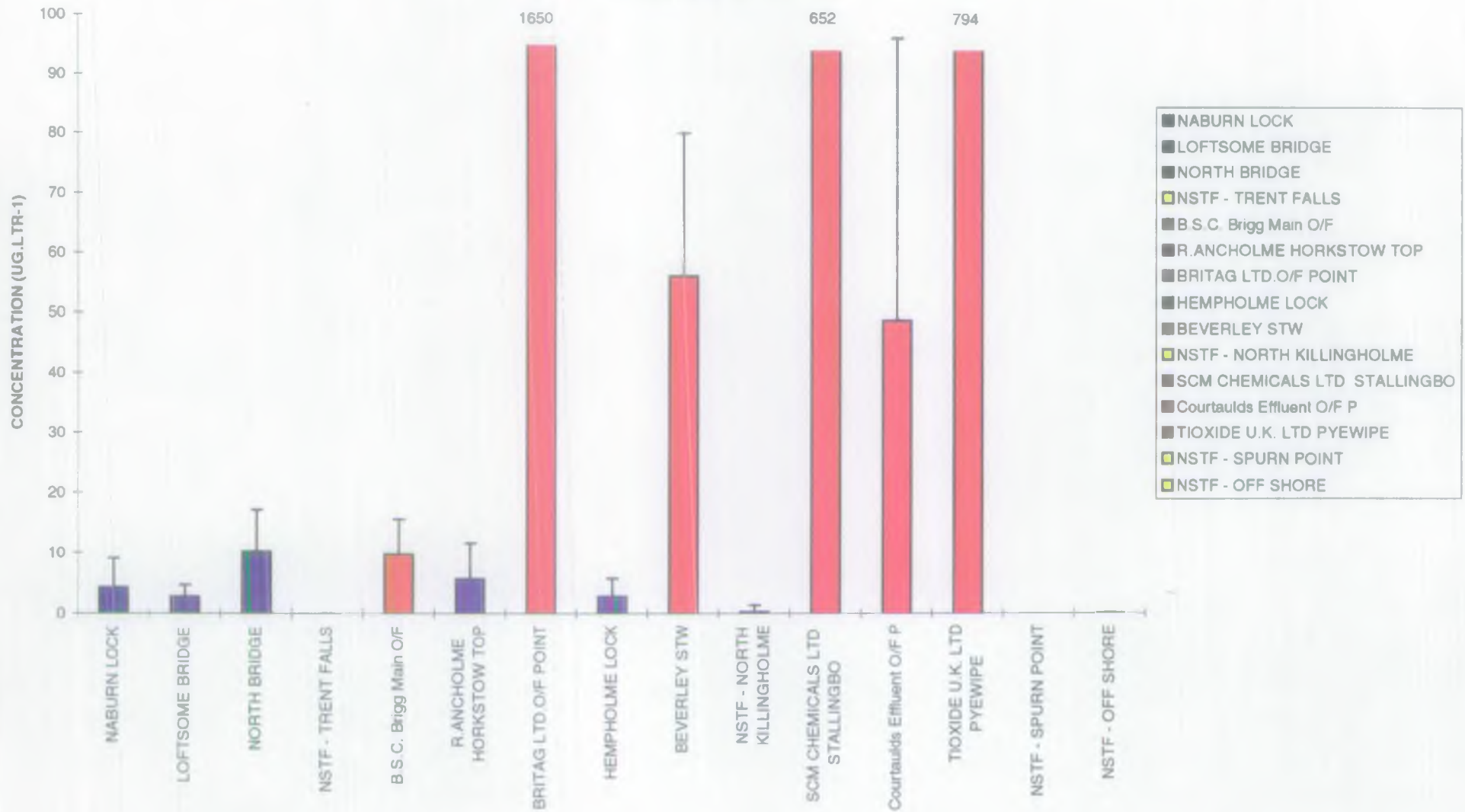
CONCENTRATION OF CADMIUM IN THE HUMBER ESTUARY BY NMP/OSPARCOM LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

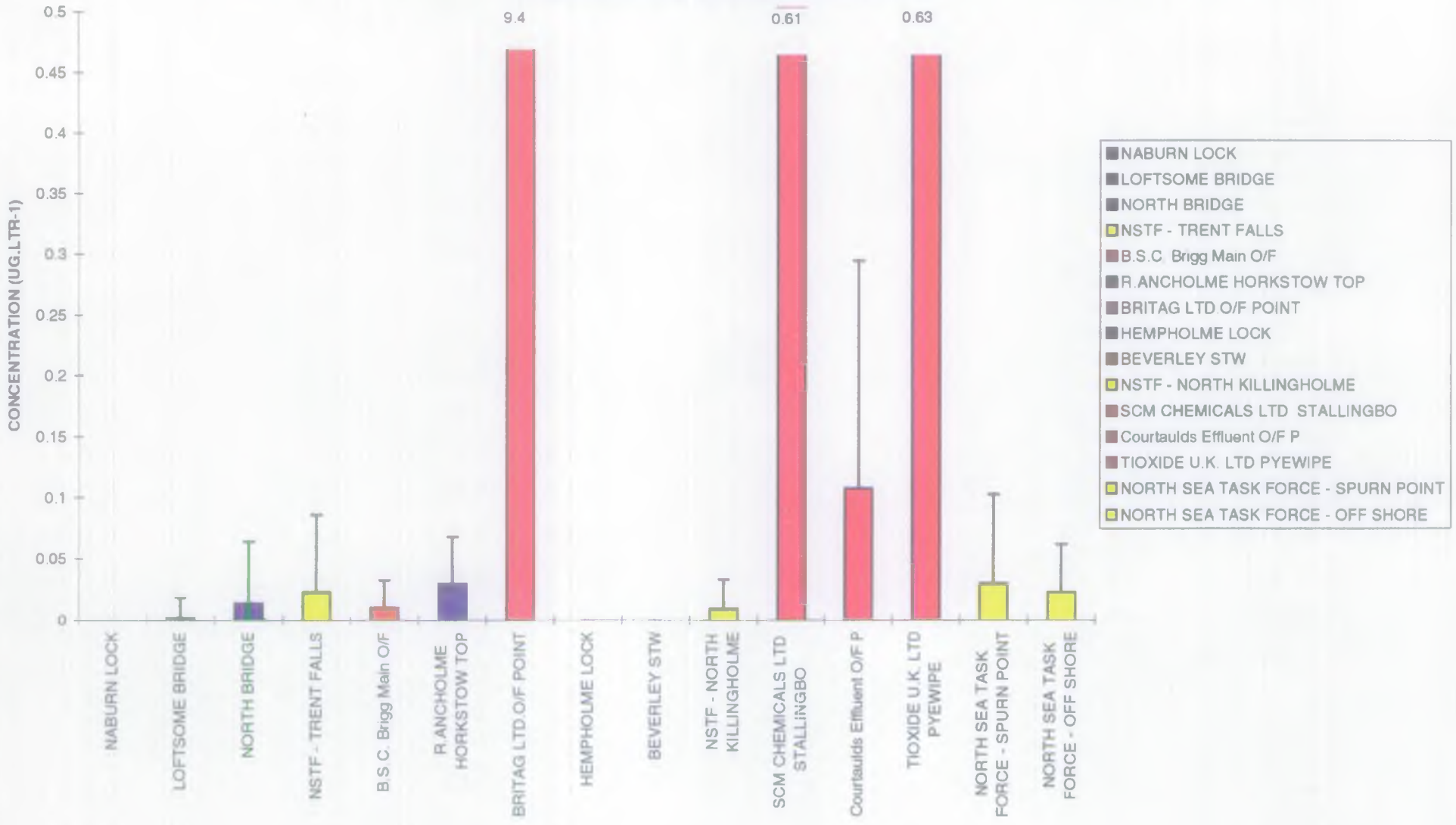
CONCENTRATION OF COPPER IN THE HUMBER ESTUARY BY LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

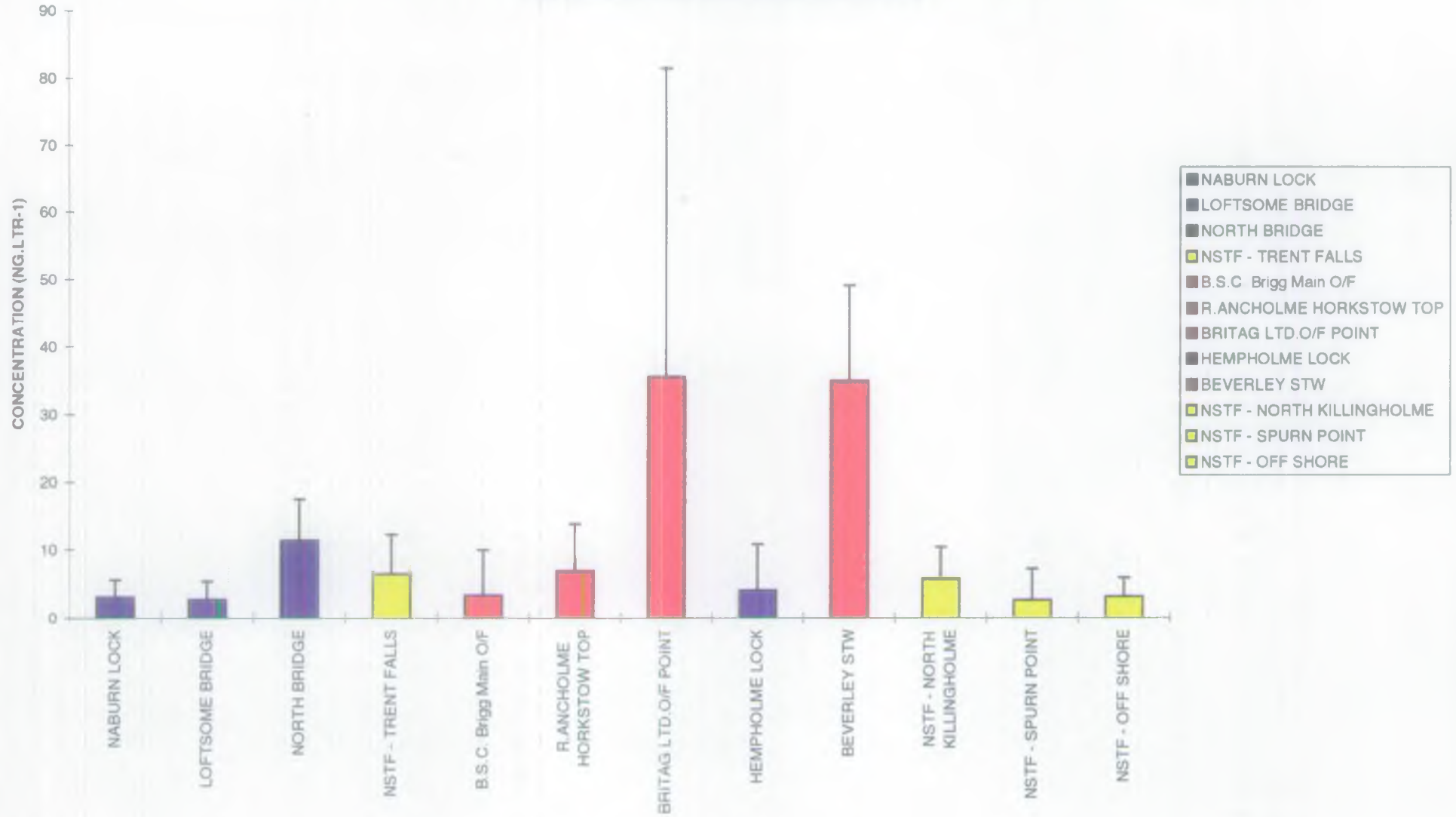
CONCENTRATION OF MERCURY IN THE HUMBER ESTUARY BY NMP/OSPARCOM LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

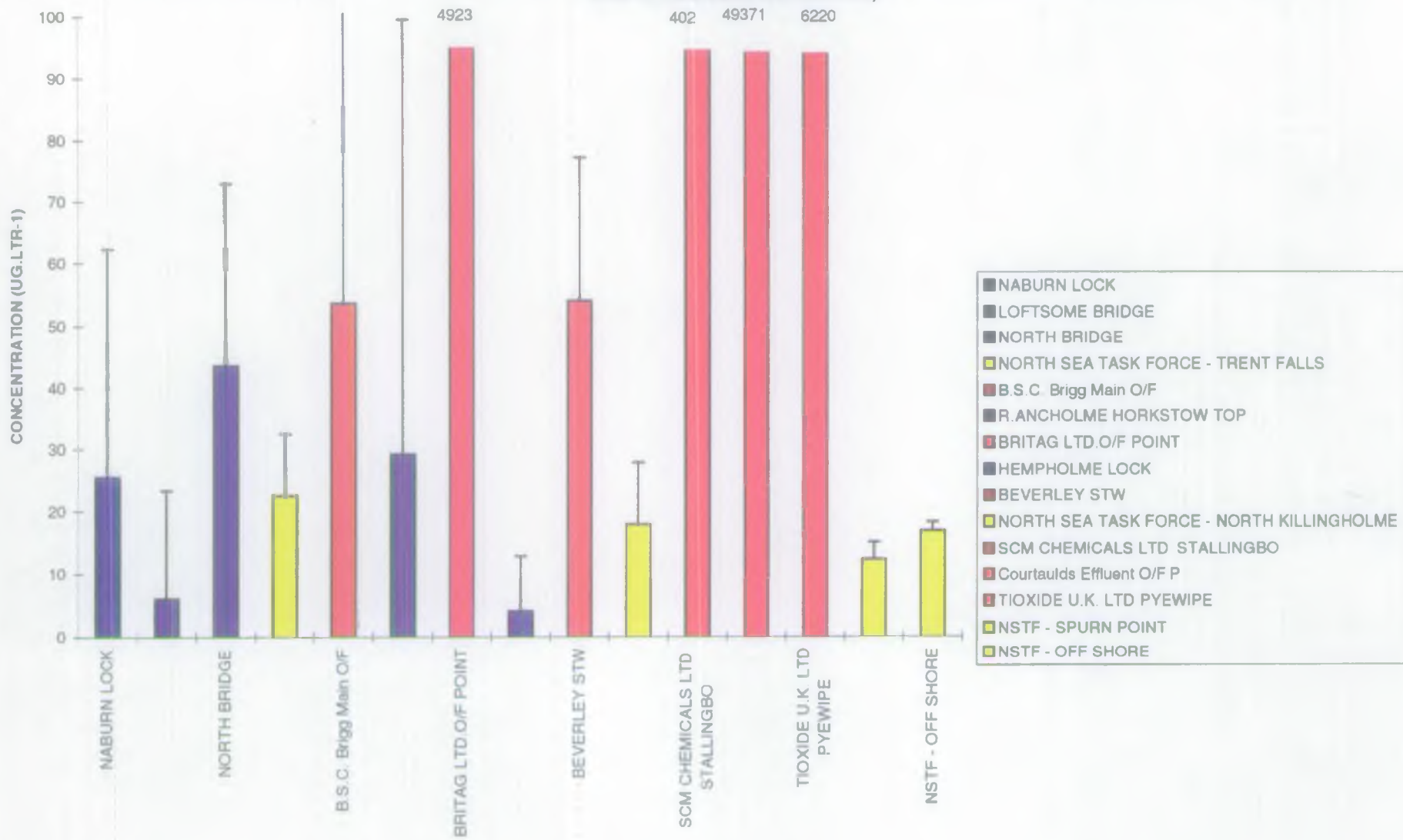
CONCENTRATION OF LINDANE IN THE HUMBER ESTUARY BY NMP/OSPARCOM LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

CONCENTRATION OF ZINC IN THE HUMBER ESTUARY BY NMP/OSPARCOM LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)

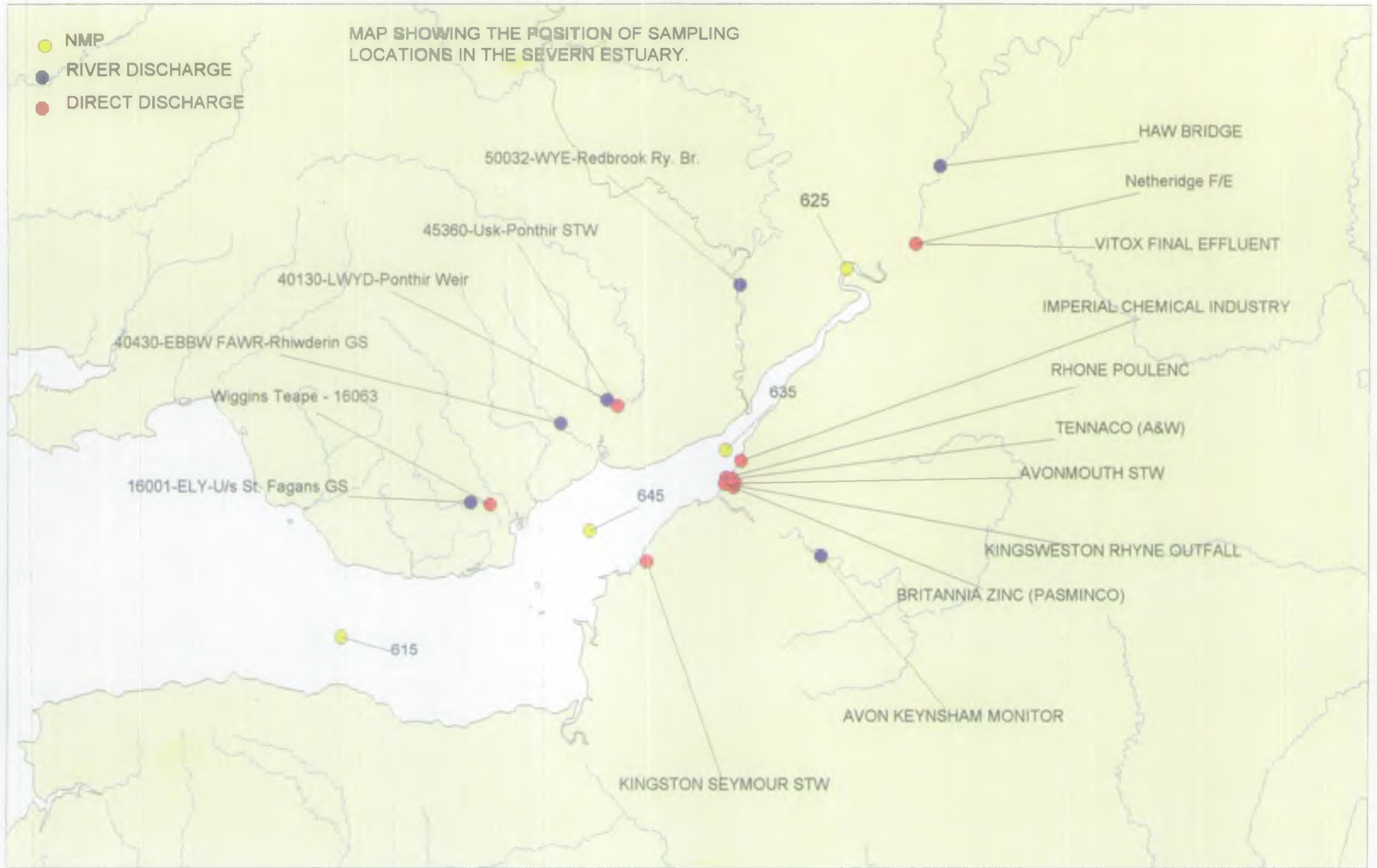


UPSTREAM

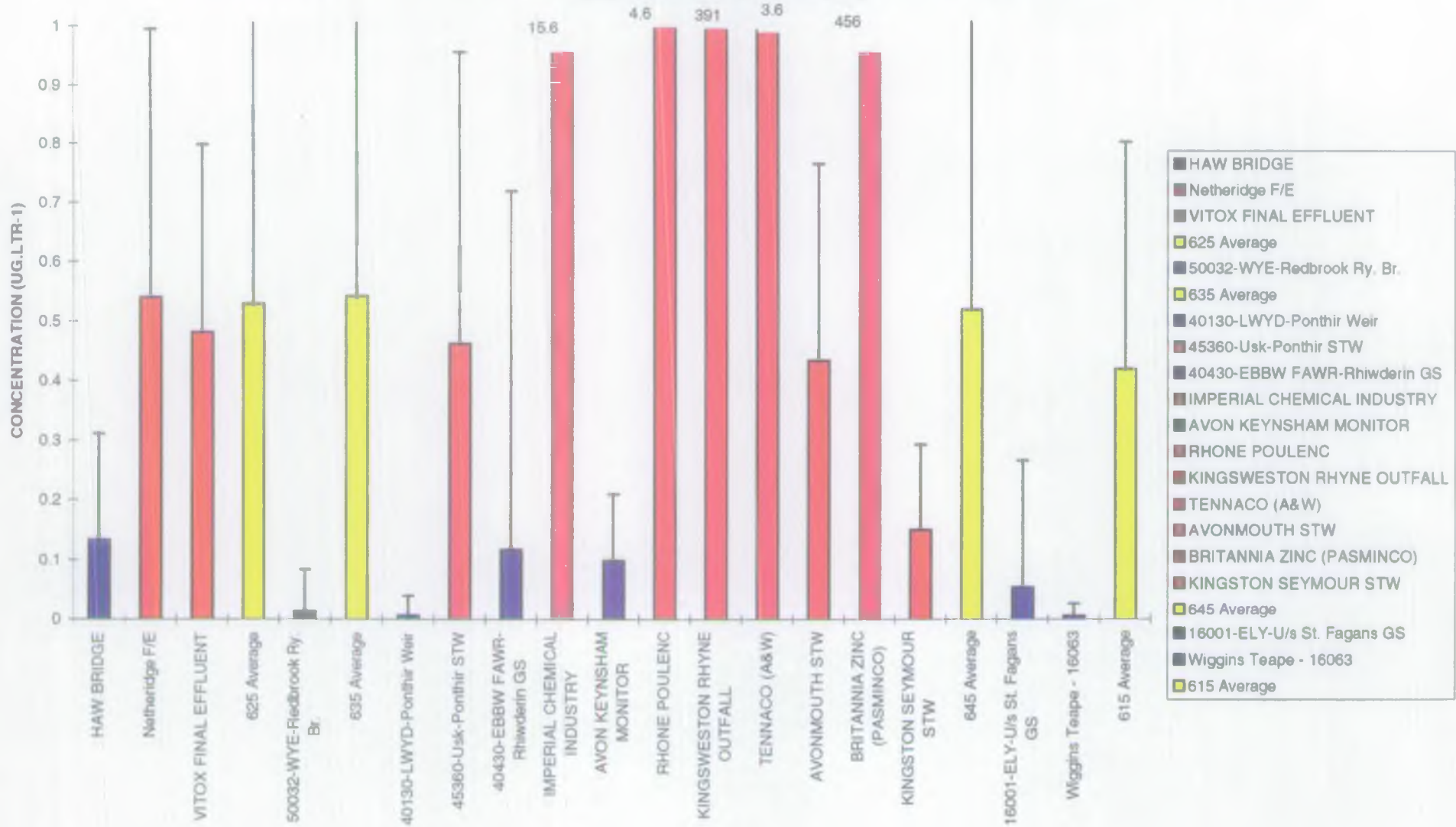
DOWNSTREAM

- NMP
- RIVER DISCHARGE
- DIRECT DISCHARGE

MAP SHOWING THE POSITION OF SAMPLING LOCATIONS IN THE SEVERN ESTUARY.



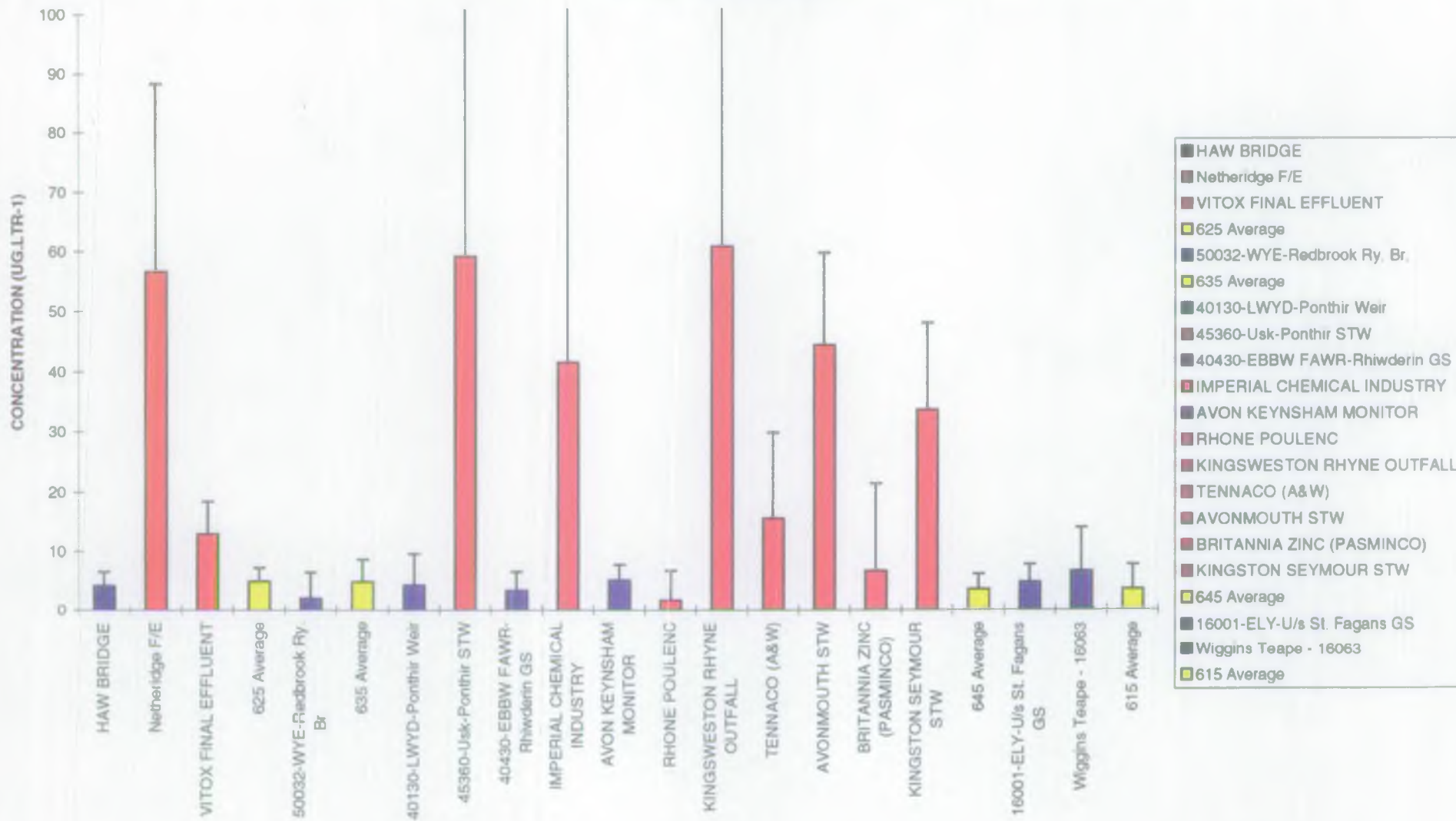
CONCENTRATION OF CADMIUM IN THE SEVERN ESTUARY BY SAMPLING LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

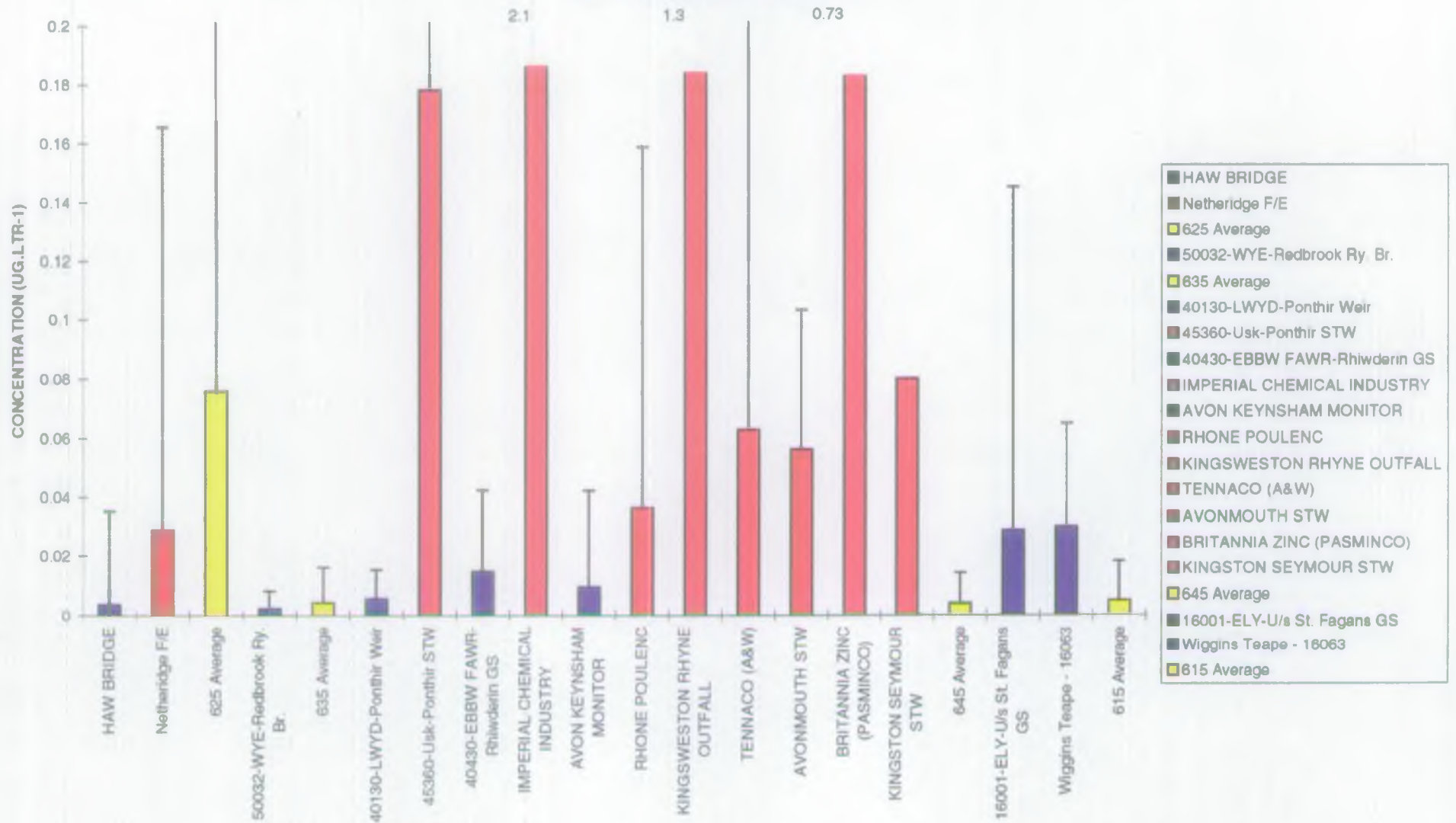
CONCENTRATION OF COPPER IN THE SEVERN ESTUARY BY SAMPLING LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

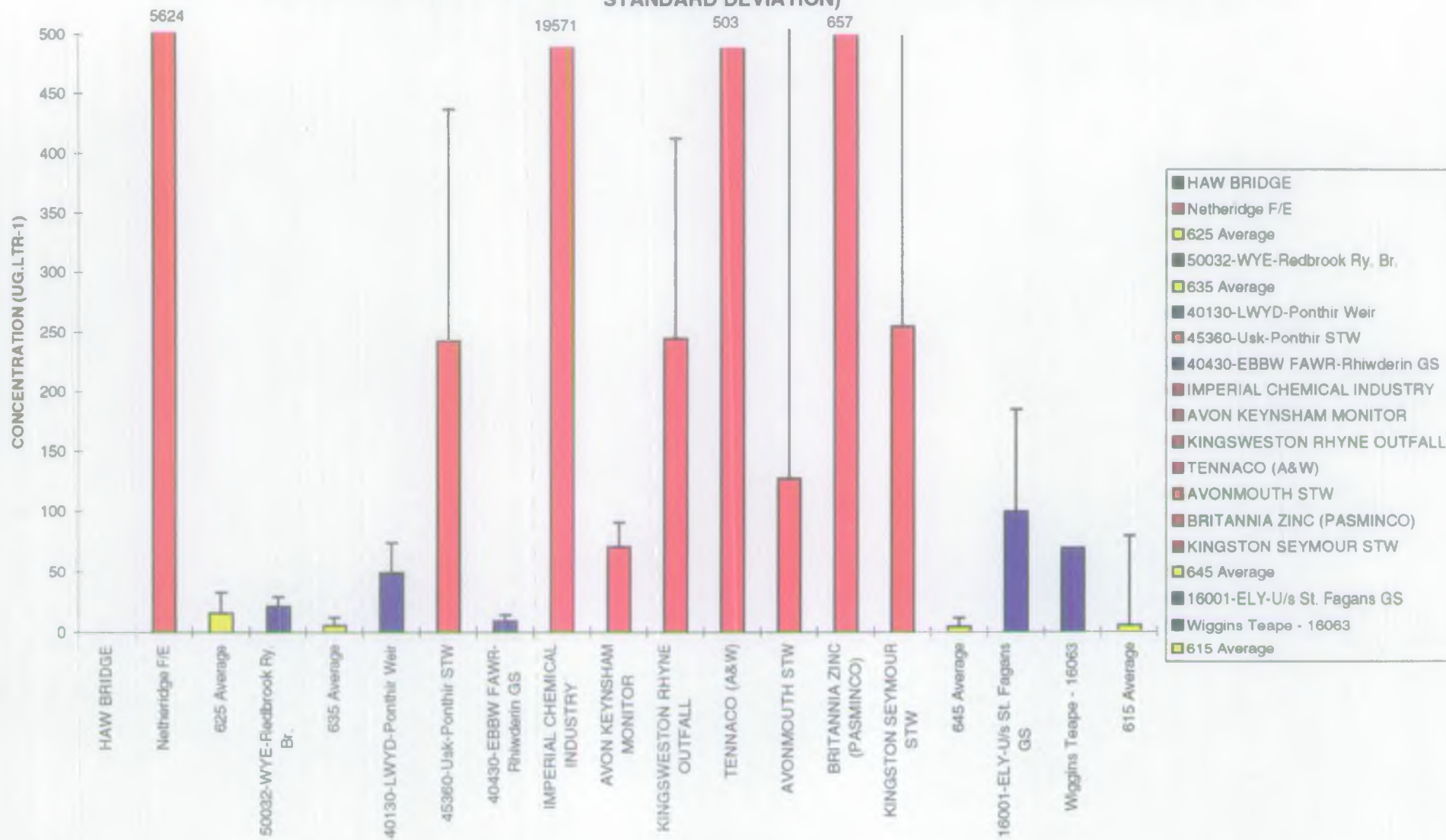
CONCENTRATION OF MERCURY IN THE SEVERN ESTUARY BY SAMPLING LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

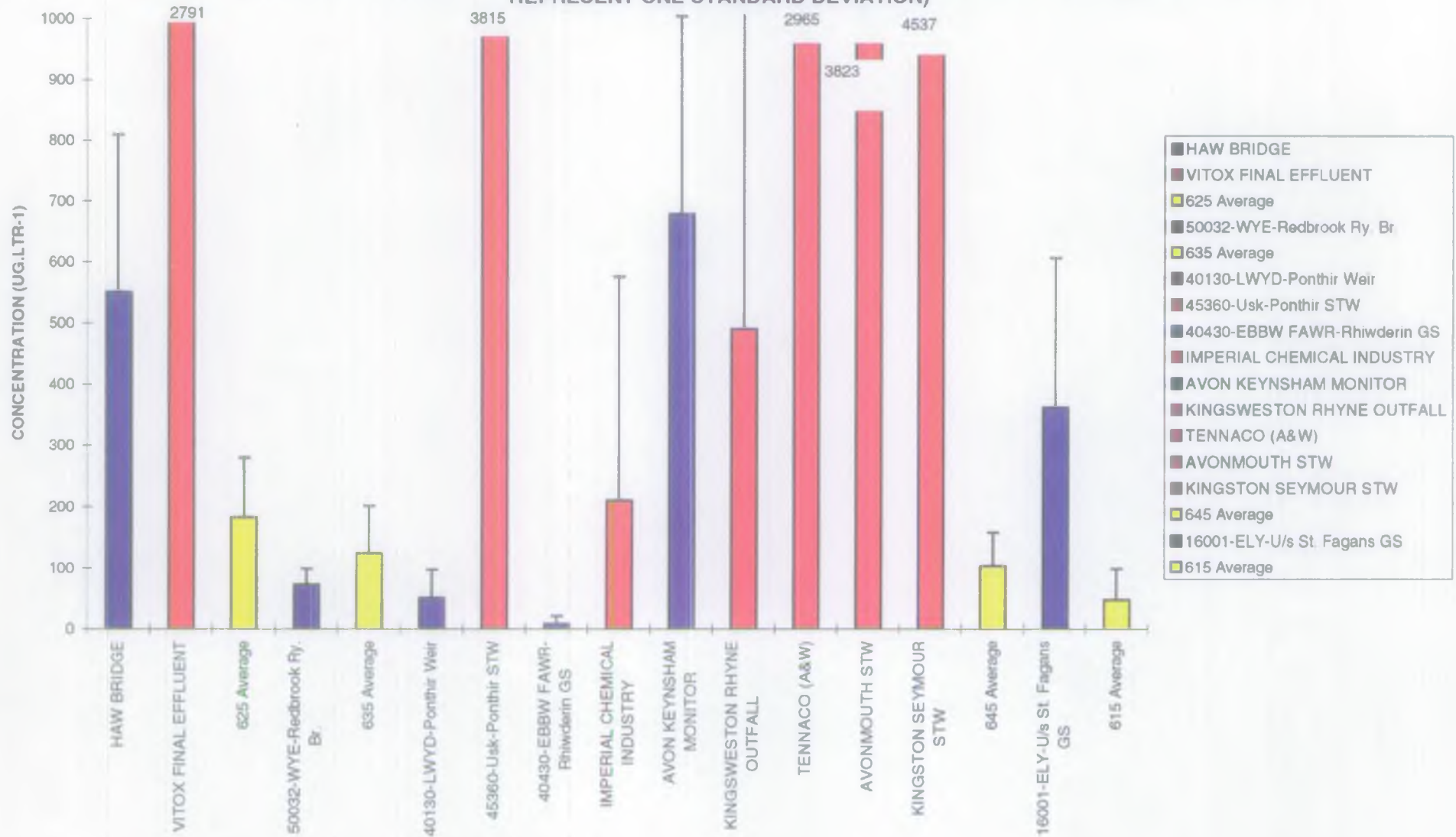
CONCENTRATION OF NITRITE IN THE SEVERN ESTAURY BY SAMPLING LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

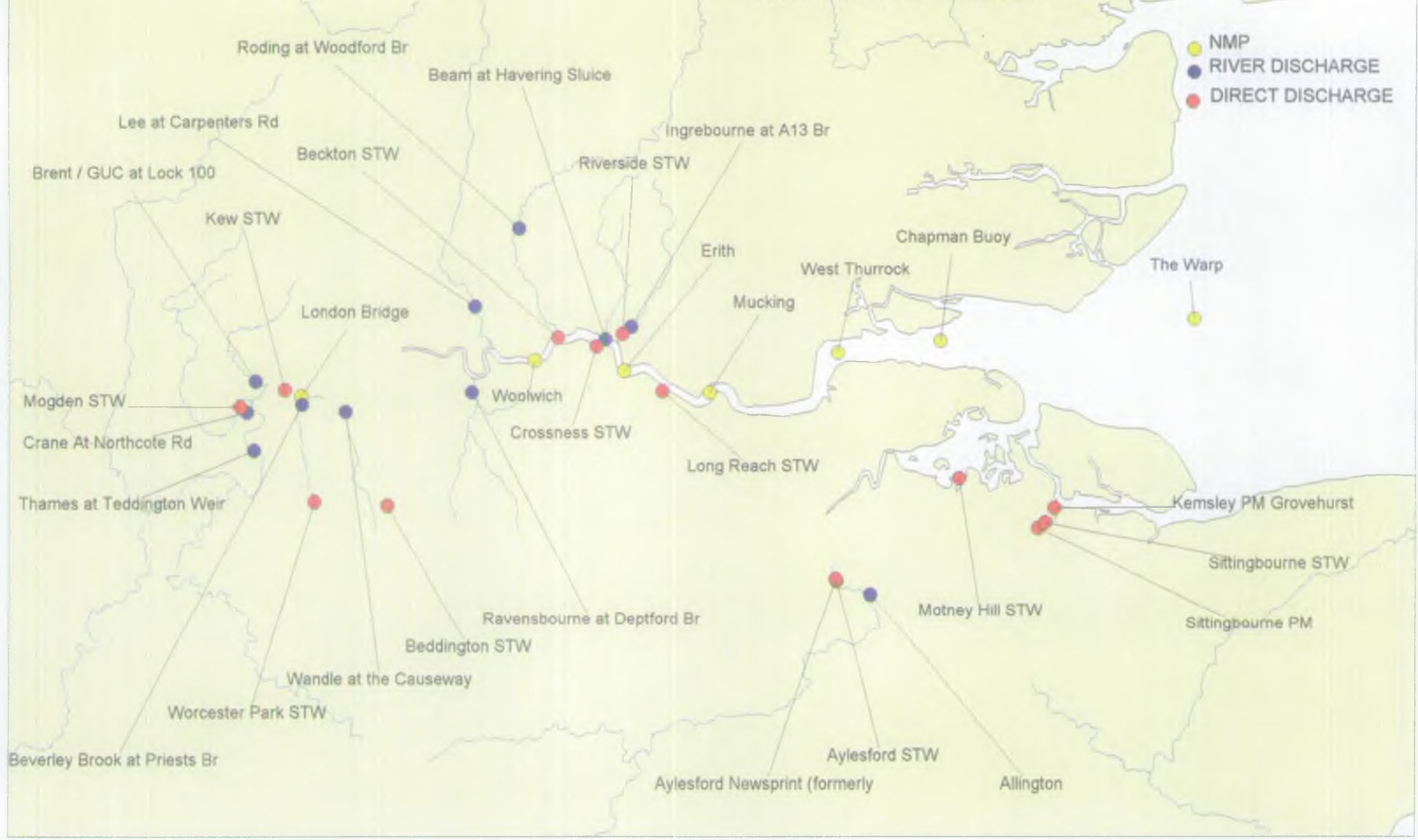
CONCENTRATION OF ORTHOPHOSPHATE IN THE SEVERN ESTUARY BY SAMPLING LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



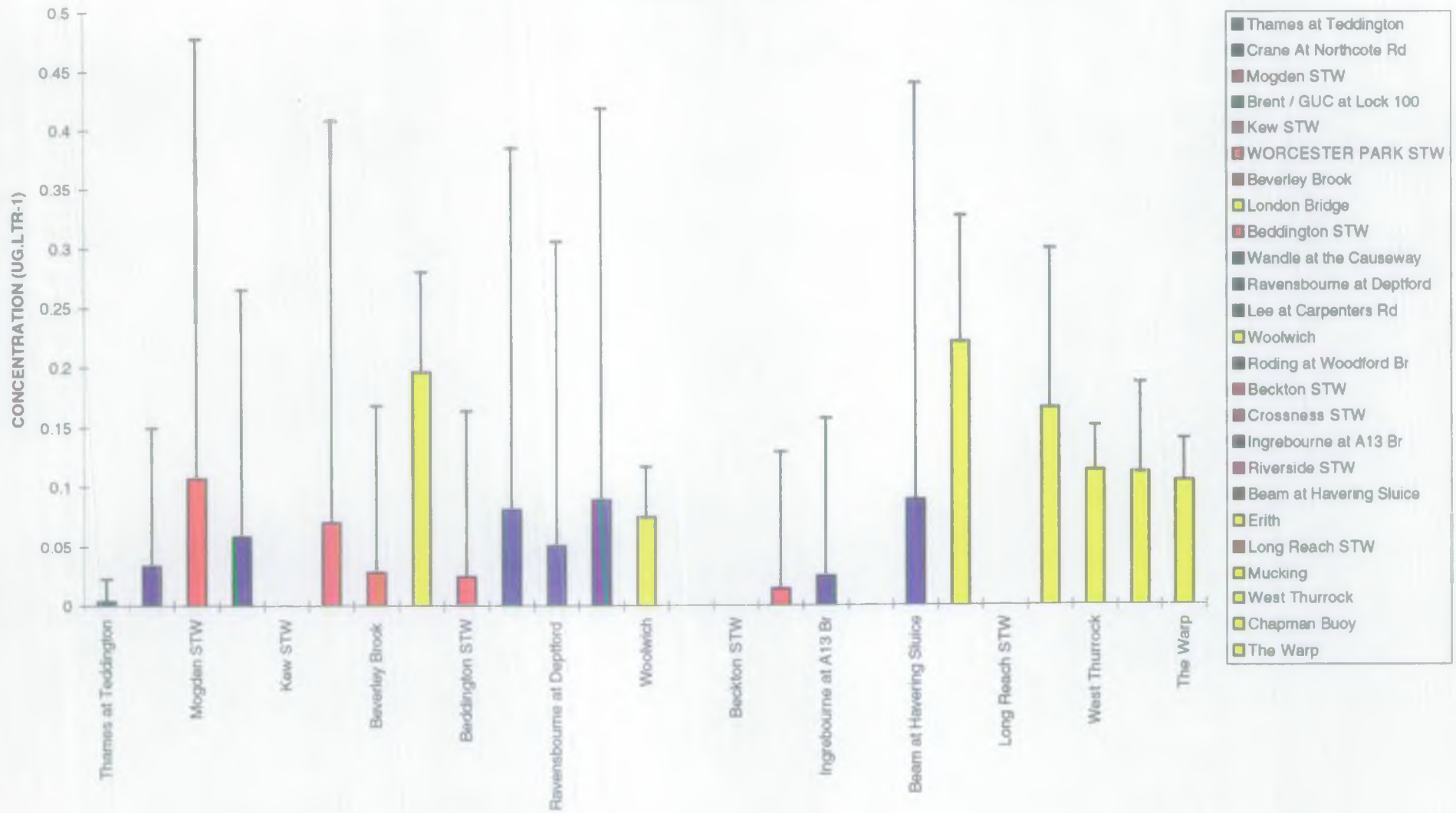
UPSTREAM

DOWNSTREAM

MAP SHOWING THE POSITION OF SAMPLING LOCATIONS IN THE THAMES ESTUARY.



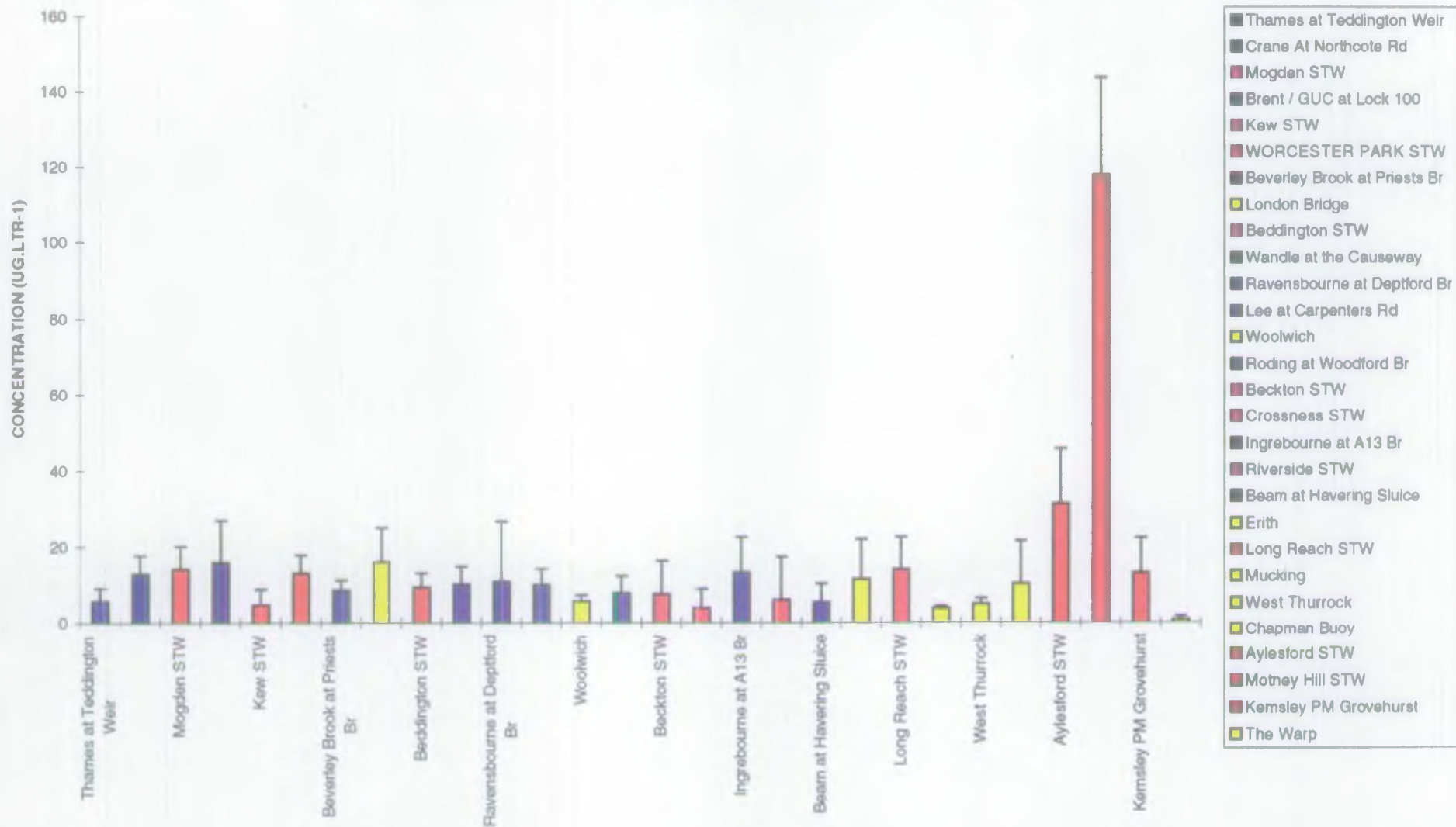
CONCENTRATION OF CADMIUM IN THE THAMES ESTUARY BY LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

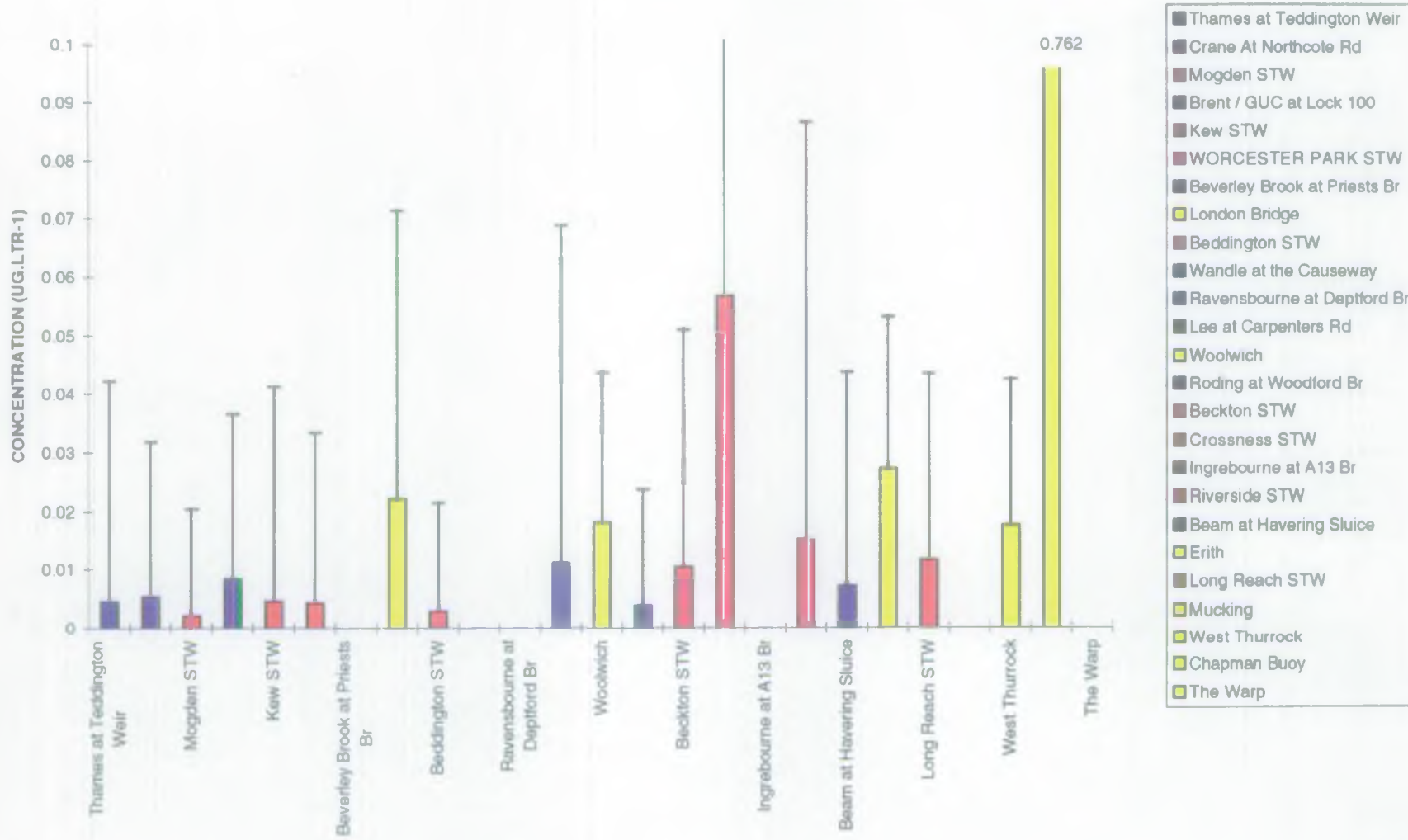
CONCENTRATION OF COPPER IN THE THAMES ESTUARY BY LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

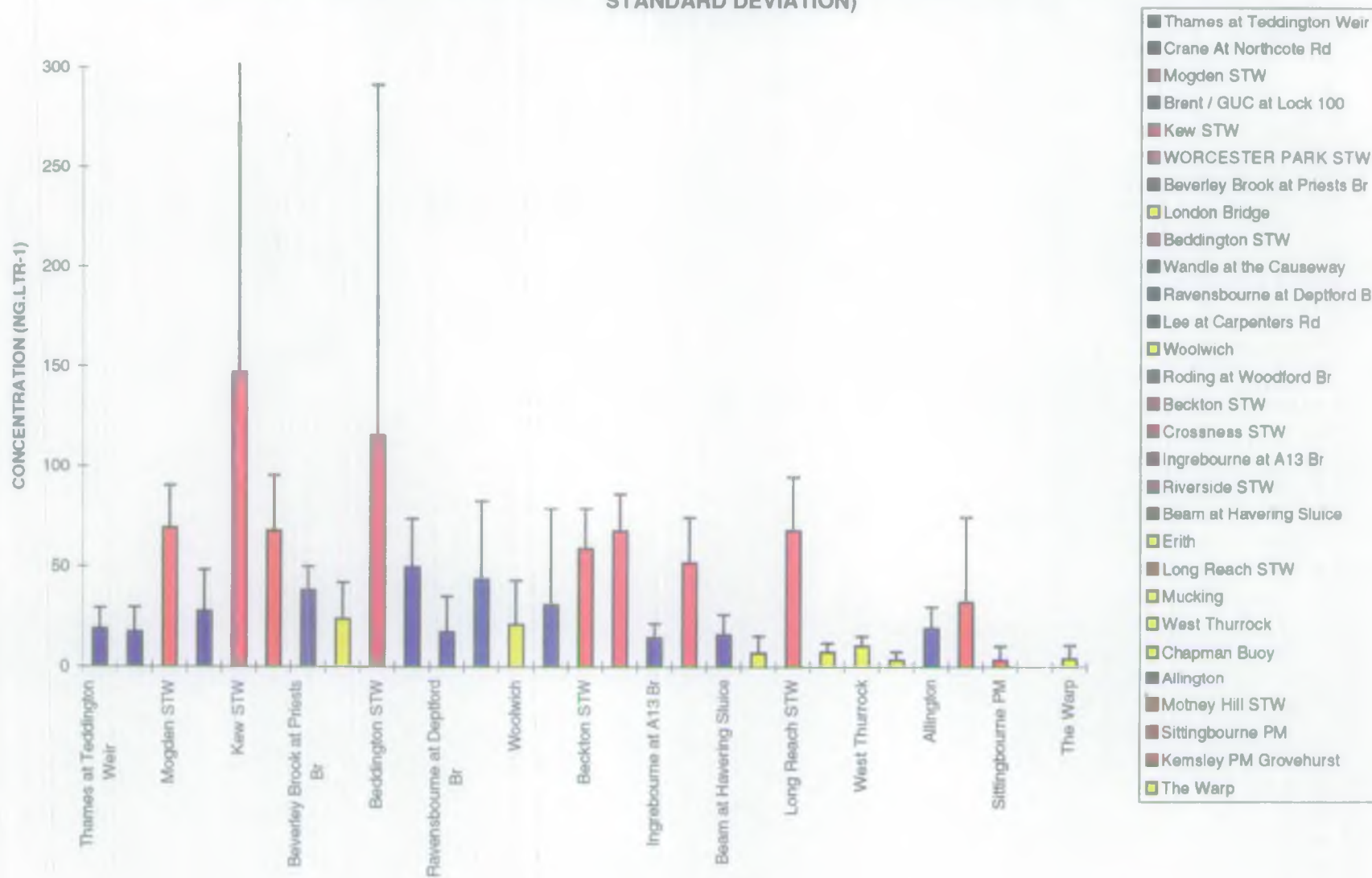
CONCENTRATION OF MERCURY IN THE THAMES ESTUARY BY SAMPLING LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

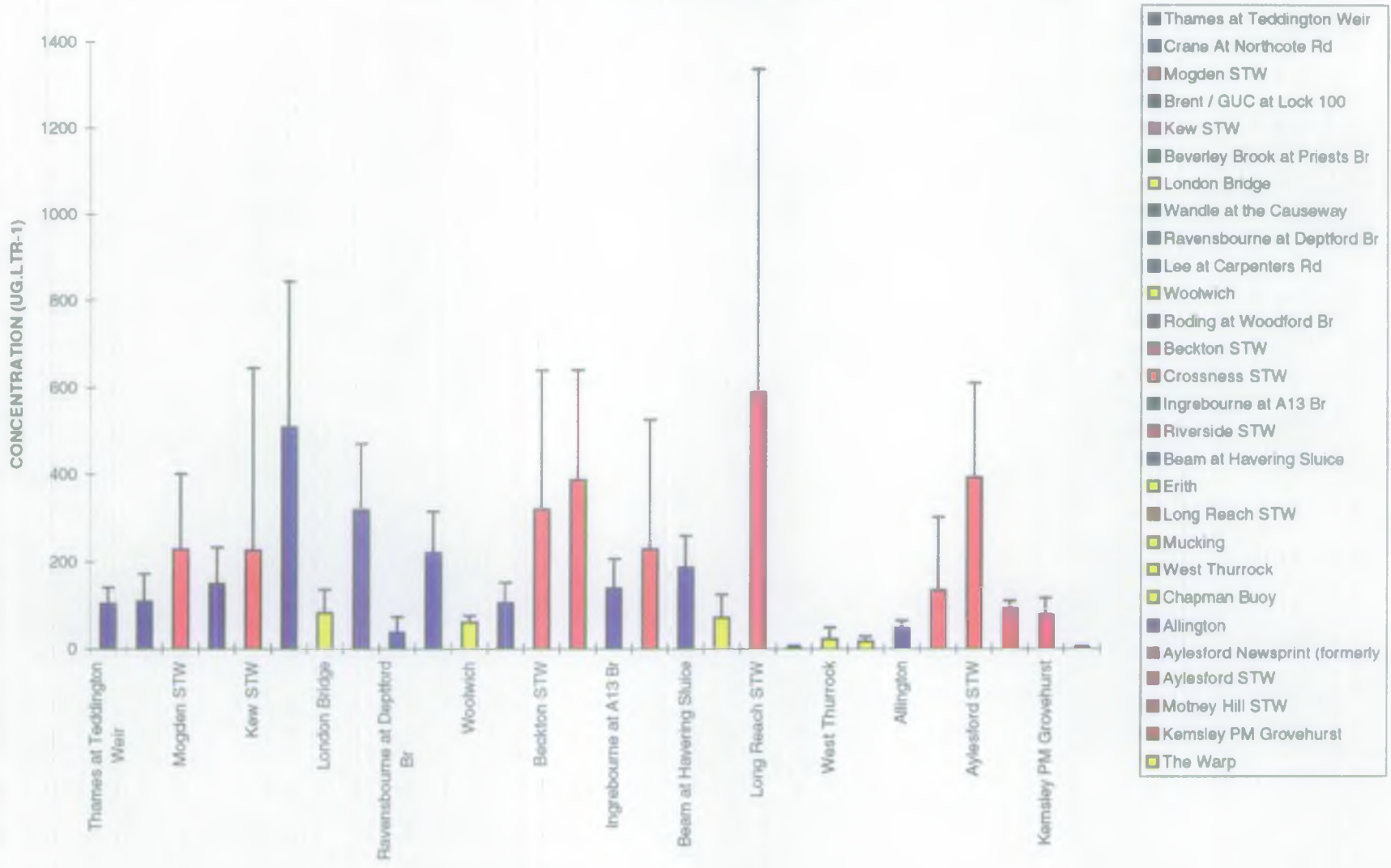
CONCENTRATION OF LINDANE IN THE THAMES ESTUARY BY SAMPLE LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

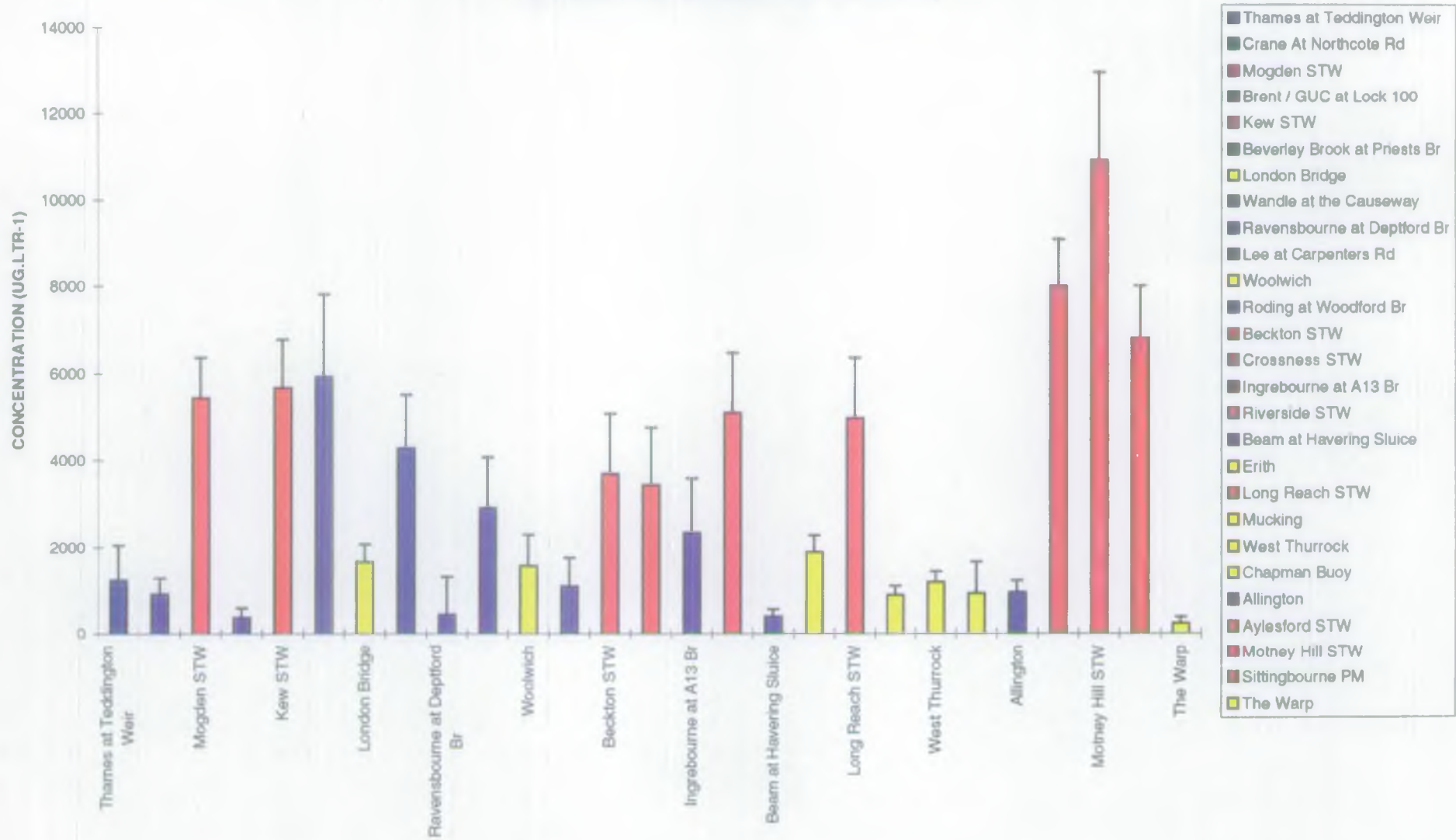
CONCENTRATION OF NITRITE IN THE THAMES ESTUARY BY SAMPLING LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

CONCENTRATION OF ORTHOPHOSPHATE IN THE THAMES ESTUARY BY SAMPLING LOCATION. (ERROR BARS REPRESENT ONE STANDARD DEVIATION)



UPSTREAM

DOWNSTREAM

MANAGEMENT AND CONTACTS:

The Environment Agency delivers a service to its customers, with the emphasis on authority and accountability at the most local level possible. It aims to be cost-effective and efficient and to offer the best service and value for money.

Head Office is responsible for overall policy and relationships with national bodies including government.

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The 24-hour emergency hotline number for reporting all environmental incidents relating to air, land and water

**ENVIRONMENT AGENCY
EMERGENCY HOTLINE**

0800 80 70 60



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