NRA-THAMES 320

NRA THAMES REGION

TIME OF TRAVEL STUDY ON THE RIVER LEE UNDER HIGH AND MEDIUM FLOW
APPENDIX B: TIME OF TRAVEL ON THE SMALL RIVER LEE.

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B1 STUDY ONE

Two additions of rhodamine-t (Rh-wt) were made to the Small River Lee, one of 7.2 grams at Mollison Avenue at 0614 hours on the 3 March 1994. The other 4.0 grams Rh-wt at Windmill Lane at 0535 hours on the 4 March 1994. The resulting tracer clouds were monitored as they passed though the downstream detection sites. The information gained during the above study is detailed in Table B1 and Figures B1 and B2.

B2   STUDY TWO

Two additions of rhodamine-wt (Rh-wt) were made to the Small River Lee, one of 7.2 grams at Mollison Avenue at 1743 hours on the 25 July 1994. The other 3.0 grams Rh-wt at Windmill Lane at 1822 hours on the 25 July 1994. The resulting tracer clouds were monitored as they passed though the downstream detection sites. The information gained during the above study is detailed in the Table B2 and Figures B3 and B4.

Due to the extremely low flow/velocity in the reach between Mollison Avenue and Keider Weir the river appeared to be functioning more like a lake than a river.

Because of the excessive travel time in the above reach operational constraints prevented the full tracer curve being recorded.

Table B1   Small River Lee time of travel 3-4 March 1994

Reach	Map ref	Date	D km	WD $m^3 s^{-1}$	Ta h
Windmill Lane	TL 36750235				0
Mollison Avenue	TL 36859820	03/04/94	4.5	0.293	11.7
Keider Weir	TL 36309530	04/04/94	3.0	0.293	21.0

Notes:

D - Distance from previous site

WD - Mean daily discharge at Small Lee gauging station

Ta - Time of arrival from previous site

Tp - Time of travel of peak from previous site

Tk - Mean time for tracer plume to pass site

Mt - Mean travel time from addition site

Va - Velocity of tracer arrival from previous site

Vp - Velocity of tracer peak from previous site

RD - River discharge calculated by dilution gauging

Cp - Peak tracer concentration

Tp h	Tk h	Mt h	Va kmh^{-1}	Vp kmh^{-1}	RD m^3 s^{-1}	Cp μg l^{-1}
12.9	1.5	13.2	0.39	0.35	0.37	1.75
27.2	5.2	26.7	0.14	0.11	-	0.33

Table B2   Small River Lee time of travel (low flows) 25-29 July 1994

Reach	Map ref	Date	D km	WD m³ s⁻¹	Ta h	Tp h	Tk h	Mt h	Va kmh⁻¹	Vp kmh⁻¹	RD m³ s⁻¹	Cp µg l⁻¹
Windmill Lane	TL 36750235					-						
Mollison Avenue	TL 36859820	03/04/94	4.5	0.086	41.4	48.79	23.5	49.35	0.11	0.09	0.08	0.7
Keider weir	TL 36309530	04/04/94	3.0	0.086	55.0	>98.00	-	26.18	0.06	<0.04	0.08	

Notes: D - Distance from previous site
WD - Mean daily discharge at Small Lee gauging station 27.07.94
Ta - Time of arrival from previous site
Tp - Time of travel of peak from previous site
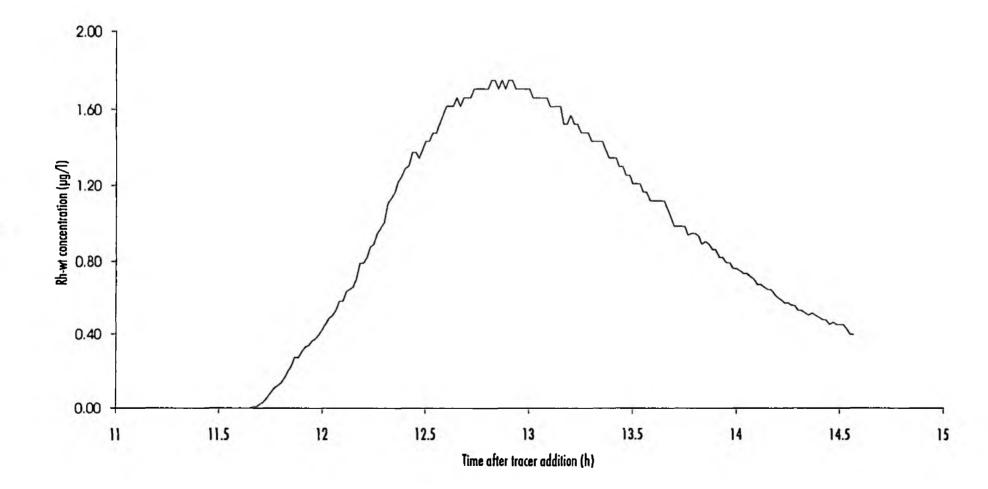Tk - Mean time for tracer plume to pass site
Mt - Mean travel time from addition site
Va - Velocity of tracer arrival from previous site
Vp - Velocity of tracer peak from previous site
RD - River discharge calculated by dilution gauging
Cp - Peak tracer concentration

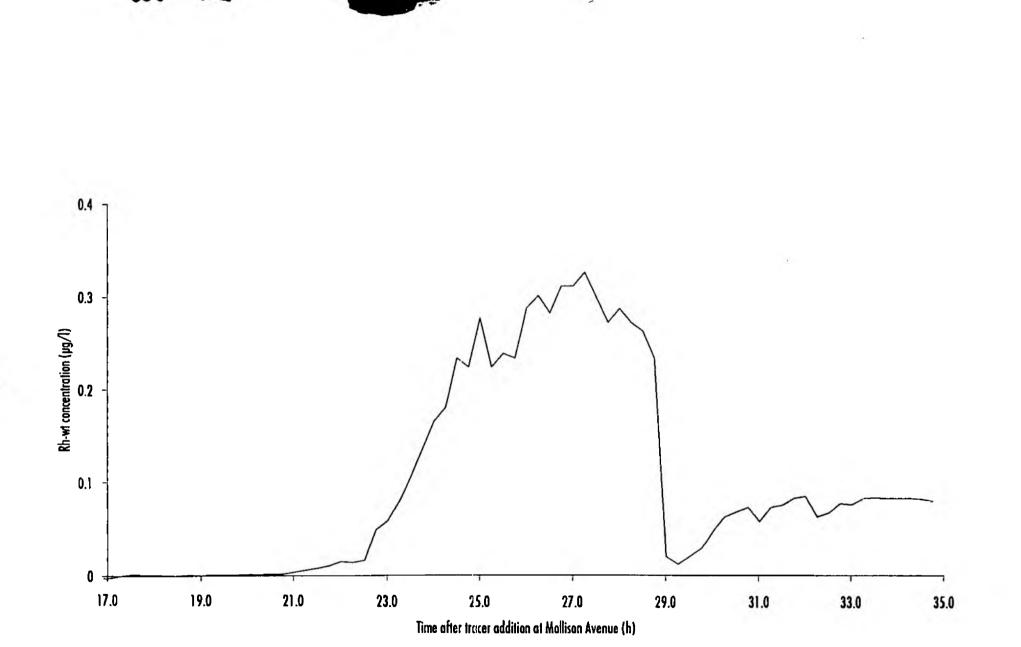Figure B1   River small Lee time of travel Windmill Lane to Mollison Avenue 04.03.94

Figure B2   River small Lee time of travel Mollison Avenue to Keider Weir 04.03.94

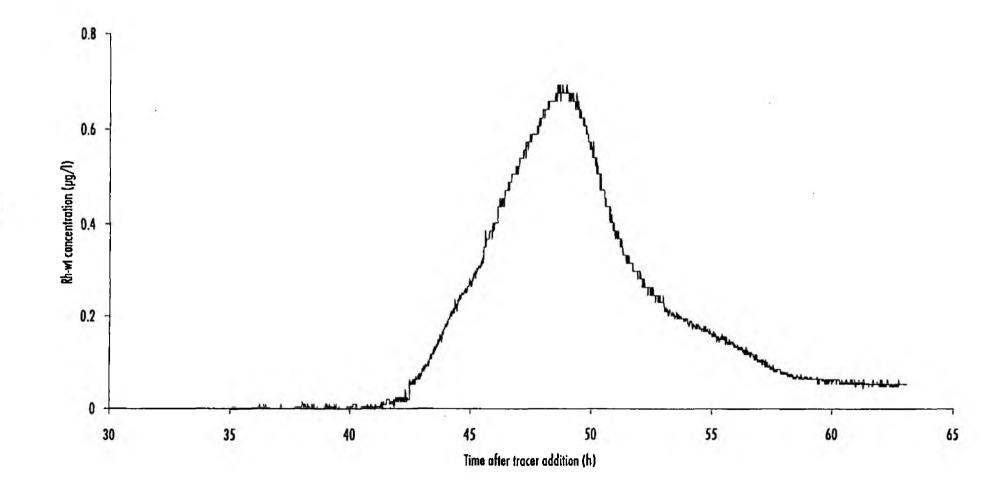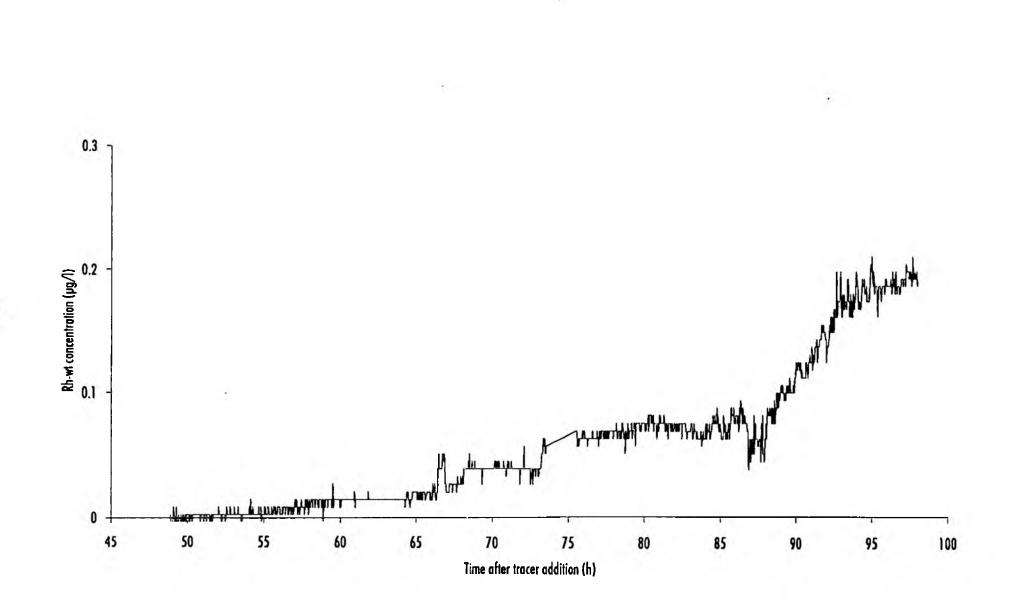Figure B3 River Small Lee time of travel (low flow) Windmill Lane to Mollison avenue 27-28.07.94

Figure B4   River Small Lee time of travel Mollison avenue to Keider Weir 27-29.07.94