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**ENVIRONMENT
AGENCY**

**WATER QUALITY SECTION
CORNWALL AREA**

FINAL DRAFT REPORT

**NEWHAM STW AND
LADOCK VALLEY STW IMPACT
ASSESSMENT SURVEYS 1996**

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Newham STW and Ladock Valley STW Impact Assessment Surveys 1996

EXECUTIVE SUMMARY

Cornwall Area Investigations received a request from Regional Tidal Water Quality to undertake two surveys (spring and neap) to determine the impact of Newham STW and Ladock Valley STW on the bacterial water quality of the local estuarine system, particularly in the vicinity of the local shellfish beds (especially Grimes Bar). These surveys were to be carried out during the summer of 1996.

The survey specifications compiled by Regional Tidal Waters identified the need for spore and bacteriophage dosing, dye releases, fixed site monitoring at six points throughout the upper estuary system and real time tracking of the dye releases.

The following conclusions and recommendations were drawn:

- 1) The effluent plume from Newham STW reaches Grimes Bar at approximately HW+4 on springs and HW+5 on neaps.
- 2) At Grimes Bar minimum dilutions of Newham STW effluent occur on the late ebb to LW (HW+4 to HW+6) with measured worst case (values) of approximately 200 on neaps increasing to about 1400 on springs. These minimum dilutions occur at the surface and at the bed dilutions are even greater due to stratification and buoyant plume advection. (Dilution factor = Concentration of spores or bacteriophage in the final effluent / concentrations of spores or bacteriophage at the sample points).
- 3) The residence time of effluent released from Newham STW in the Truro and Tresillian estuaries is greater than one tidal cycle on both spring and neap tides. The actual dilutions occurring at Grimes Bar will therefore tend to be less than those measured.
- 4) The Ladock Valley discharge did not impact directly on Grimes Bar on the neap tide survey and was highly diluted when it reached Grimes bar on the spring tide survey. However, the phage dosing did not prove to be a particularly successful method.
- 5) The shellfish at the various beds in the Truro and Tresillian estuaries have not been assessed, as the relationship between Faecal Coliform levels in shellfish and the overlying water quality is not clearly understood. The Newham STW discharge is the major discharge affecting the water quality in the vicinity of the shellfish beds. No data collection on the levels of spores or Faecal Coliforms in shellfish was undertaken in this study.

Recommendations:

- 1) Further work is undertaken to assess the impact of Ladock Valley STW on the Truro and Tresillian estuaries.
- 2) The impact of the discharges from both Newham and Ladock Valley STW's is modelled, to assess the significance of the long residence times of effluent in the Truro and Tresillian estuaries.



3) Further work on the flushing time of the Newham STW discharge should be undertaken to validate the results obtained from the modelling.

4) Further work is required to evaluate the relationship between bacterial levels in shellfish and the overlying water quality. If further long-term spore work is undertaken for the Newham STW, data on the levels in shellfish should also be obtained.

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49	Meteorological Data (Neap Survey)
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1.0 AIM

Cornwall Area Investigations received a request from Regional Tidal Water Quality to undertake two surveys (spring and neap) to determine the impact of Newham STW and Ladock Valley STW on the bacterial water quality of the local estuarine system, particularly in the vicinity of the local shellfish beds (especially Grimes Bar).

1.1 Background

The two surveys were organised and conducted by Cornwall Area Investigations with assistance from Cornwall Area Survey, Regional Tidal Waters and Devon Area Investigations. The following report was then jointly prepared by Paul Salmon (Devon Area Investigations) and Rob Hocking (Cornwall Area Investigations).

2.0 METHODS

The most appropriate methods to undertake this impact assessment were deemed to be tracer releases (spore, bacteriophage and dye) along with fixed site monitoring, water & sediment sampling, and real time tracking of the dye releases.

A spring tide survey was undertaken on July 4th with a neap tide survey undertaken on August 8th. Tables 1 and 26 show the predicted tidal heights (at Truro) for the spring and neap tide surveys respectively. Each aspect of the two surveys are detailed below with lettered references to the survey chronology (Tables 2 and 27). Tables 3 and 28 list the activities, vessels and equipment used for each element of the surveys. Figure 1 shows the upper Truro/Tresillian estuarine system along with locations of the major sewage discharges and shellfish monitoring locations.

2.1 Spore and Phage Dosing

Two sets of tracers were injected concurrently from LW (A) to the subsequent LW (H) at the following locations;

- i) *Bacillus Globigii* (*B.Globigii*) spores were injected into the Newham STW discharge (at the head of the sampling chamber) at approximately 2×10^8 per second. SWW flow records were requested for Newham STW for the duration of the dosing. Dosing was undertaken from a spore stock solution via a peristaltic pump, and titres (subsamples) of the solution and dosing rate measurements were obtained every hour. Tables 4 and 29 show the *B.Globigii* dosing data with Tables 6 and 31 showing final effluent data.
- ii) Bacteriophage (phage) of *Serratia marcescens* was released over the outfall from Ladock Valley STW during the same dosing period as the *B.Globigii* (ie LW to LW). Dosing was undertaken from a phage stock solution (phage mixed with fresh water to mimic the effluent discharge) via a peristaltic pump, and titres of the solution and dosing rate measurements were obtained every hour. Tables 5 and 30 show the phage dosing data with Tables 7 and 32 showing final effluent data.

2.2 Dye Injection and Tracking

The dye tracing element of the survey enabled time of travel and ebb tide excursion observations to be made of the effluent discharged from both STWs. Additionally, the dye patches visibly marked the leading edge of the spore and phage plumes as they were transported down-estuary allowing sampling to be undertaken from the plumes.

Fluorescein dye (green) was dosed, from a survey vessel, over the Newham discharge at HW (B), with rhodamine dye (red) dosed into the Ladock Valley discharge (surface boil) site at the same time. These releases formed patches, which were then followed down-estuary and topped up intermittently by a survey vessel if the dye patch became indistinct. Each patch's position was fixed intermittently by Differential Global Positioning System (a satellite position fixing system) at the leading edge. Tracking continued to LW (H).

2.3 Bacterial Water Quality Monitoring

2.3.1 Dye Patch Monitoring

Depending on the water depth available up to three water samples were taken from just behind the leading edge of the patch. One sample at surface -0.5m, one sample at bottom +0.5m and one mid-depth sample. The criteria for determining if one, two or three samples were taken followed routine estuary sampling guidelines;

<1.5m depth one sample
1.5 - 3.0m depth two samples
>3.0m depth three samples.

Samples were subsequently analysed for;

Faecal Coliforms, Faecal Streptococci, *B. Globigii*, phage,
Suspended Solids and Salinity.

2.3.2 Fixed Site Monitoring

Six fixed sites were monitored at various frequencies during the survey. Each site position was fixed using the Differential Global Positioning System and plotted (see Figure 2 for locations). Samples were taken from the fixed sites under the same guidelines as the sampling from the dye patches. Analysis was also identical to those taken from the dye patches.

The following matrix lists the site numbers, names and National Grid References.

Site No.	Site Name	NGR
1	Upstream of confluence with Fal Estuary	SW850408
2	Off Grimes Bar	SW852423
3	Off Lambe Creek	SW841424
4	Tresillian Estuary upstream of Malpas	SW847429
5	Sunny Corner	SW836432
6	Off St. Clement	SW854439

2.4 Water Profiling

Profiling at 1.0m intervals from surface to bed, carried out immediately after all water sampling, was undertaken for the following properties;

Temperature, Salinity, pH, Dissolved Oxygen, and Turbidity.

2.5 Sediment Sampling

Surface sediment sampling, with subsequent analysis for *B. Globigii* was undertaken at various frequencies throughout the surveys.

2.6 River Gauging

Fresh water flows were measured for the R.Allen, Tresillian R., Calenick Creek and the R. Kenwyn. One measurement was obtained for the spring tide survey from each river, apart from the R. Kenwyn where records from the gauging station at Truro were obtained. Due to rainfall during the neap tide survey one gauging was made on the day of the survey with another measurement the following day. The records are shown in Tables 25 and 50.

2.7 Meteorological Observations

Frequent wind measurements were made from the survey vessels throughout both surveys. Wind speed was measured by anemometer with approximate direction also noted. These are shown on Tables 24 and 49.

3.0 RESULTS AND DISCUSSION

The following matrix lists the location of the data collected.

Data	Spring Tide Survey		Neap Tide Survey	
	Table	Figure	Table	Figure
Spore dosing	Table 4		Table 29	
Phage dosing	Table 5		Table 30	
Final Effluent Monitoring	Tables 6 and 7		Tables 31 and 32	
Dye Patch locations, water sampling and profiling data	Tables 8 - 11	Figures 3	Tables 33 - 36	Figures 16
Fixed site water sampling data	Tables 12 - 17	Figures 4 - 15	Tables 37 - 42	Figures 17 - 28
Fixed Site profiling measurements	Tables 18 - 23		Tables 43 - 48	
River Gauging Information	Table 25		Table 50	
Meteorological Observations	Table 24		Table 49	

Each survey is discussed separately below.

3.1 Spring Tide Survey (4 July)

This survey was undertaken in dry weather with initially strong westerly winds. By the evening of the 4 July the wind strength had reduced dramatically (see Table 24). Table 3 shows the survey time line with Table 2 indicating individually survey elements along with personnel, equipment and vessels utilised on the day. The impact of the Newham and Ladock Valley STWs are commented on individually below.

3.2.1 Newham STW Impact

Dosing of the *B.Globigii* spore tracer showed a fairly constant flux established between 02:40 and 06:40. The spore concentrations of <10/100ml for the remaining duration of the dosing are curious as the pumping of the spores was continuous with spore stock figures showing no major decline in numbers. For the purposes of this assessment it shall be assumed that the dosing, at an average value equivalent to that between 02:40 and 06:40, was achieved throughout the twelve hour dosing period.

The difference between the spore stock solution concentrations and the final effluent concentrations show that the average flow from the works was 50 litres/sec, which is reasonable for the size of Newham STW. Due to problems with flow gauging equipment SWW were unfortunately not able to supply flow data for the final effluent at Newham STW.

Tracking of the dye patch from Newham STW was successful with the dye patch tracked as far as the confluence with the Fal at approximately HW+5. Minimum dilutions in the dye patch were as follows;

1459 Off Lambe Creek at HW+2:25,
1946 off Grimes Bar HW +4:04, and
1868 at confluence of Truro and Fal at HW+5:03 .

The data shows gradual mixing of the plume through the water column with maximum stratification around high and low waters.

The site closest to the Newham discharge (site 5) shows surprisingly high dilutions and low bacterial concentrations. The lowest dilution recorded was at HW+3 (1061 dilutions) but no LW samples were collected due to insufficient water. It is possible that the sampling site was located too close to the discharge and outside of the transport pathway of the main plume. The *B. Globigii* results do however show that the residence time of the effluent is at least two tidal cycles. Profiling data shows good mixing of the water column as marine water penetrated up-estuary with mainly river water present after HW+3.5hrs.

Site 3 data (off Lambe Creek) shows dilutions less than 1000 when measured on the ebb tide and also at LW+3 on the succeeding flood tide. Bacterial concentrations are maximum around LW (max 19000 f.coli/100ml) but no corresponding dilution figures are available.

Data for the fixed site near Grimes Bar (Site 2) shows a minimum dilution of 1415 at HW+4 steadily increasing on the ebb tide. Succeeding flood tide dilutions are >10000 but the following LW shows a dilution of 2335. F.coliform concentrations are between 2000/100ml and 5600/100ml between HW+3 and LW at the surface. Both spore and bacteria concentrations show a general decrease down through the water column at all times indicating the buoyant nature of the effluent plume and the slightly stratified nature of the upper estuary (shown by the profiling data). Observations of the dye patch showed it tracking to the eastern side of the Truro River in the section south of Malpas. This resulted in the plume impacting directly onto Grimes Bar. This impact may well have been aided by the prevailing westerly wind.

The following table indicates the dilutions determined from the *B. Globigii* tracer data between Newham outfall and Grimes Bar along with the respective Faecal coliform concentrations. The *B. Globigii* dilutions were calculated using the highest concentration recorded at Grimes Bar at each time, and therefore represent the least dilution.

Time (wrt HW)	<i>B. Globigii</i> Dilutions	F. coliforms (No/100ml)	F.coliform Dilutions*
HW +3	3796	2000	235
HW +4	1415	3500	134
HW +5	2030	3200	146
LW	3221	2200	213
LW +3	10377	800	586
Following HW	20304	200	2346
Following LW	2335	6000	78
Following HW	22238	900	521

* Assuming all *F.coliforms* originated from Newham STW (mean final effluent conc of $4.69 \times 10^5/100\text{ml}$) with no die off.

From the above table it can be seen that the minimum dilutions to Grimes Bar occurred around the end of the ebb tide with the residence time of the *B.Globigii* being longer than one tidal cycle. The *F.coliform* dilutions show dilutions of approx. one order of magnitude less than the *B.Globigii* dilutions.

The mean *F.coliform* concentration in the Newham effluent over the duration of the dosing was measured to be $4.69 \times 10^5/100\text{ml}$. This value is approx one order of magnitude less than for the neap tide survey. Although it cannot be proved, the fact that the *F.coliform* and *B.Globigii* data are approximately 1 log different and the Newham final effluent *F.coliform* concentrations from the two surveys are similarly 1 log removed (approximately) indicate that the final effluent *F.coliform* concentrations are actually nearer $4.69 \times 10^6/100\text{ml}$ (ie 1 log higher). This would have the effect of increasing the *F.coliform* dilutions by 10 in the above table.

Near the confluence of the Fal and Truro estuaries (fixed site 1) a dilution of 3957 was measured at HW+4. The only other time dilutions <10000 were recorded was at the second LW after cessation of the dosing (no measurements were made on the first LW). At this time the spores and bacteria had become concentrated in the bottom layer of the water column. *F.coliform* concentrations around LW were in the range 2500/100ml to 5200/100ml at depth.

A detectable impact from Newham STW was recorded in the Tresillian. Around LW, dilutions as low as 687 were recorded at site 4 (near Malpas) and *B.Globigii* was detectable, at high dilutions, for the remaining duration of the survey. *F.coliform* numbers peaked at 6000/100ml (at LW) with most samples showing *F.coliform* concentrations in the mid hundreds.

Further up-estuary near St. Clement (site 6) a dilution of 1506 was recorded on the flood tide (LW+3), with *B.Globigii* being again detectable, at high dilutions, for the remaining duration of the survey. In general, higher bacterial concentrations were measured than at site 5 (*F.coliforms* generally around 1000 - 2000/100ml) probably due to the effect of Ladock Valley STW.

3.2.2 Ladock Valley STW Impact

The phage solution had a lower than expected concentration with the resultant effect of a mean value in the final effluent of only 15/100ml. This was totally unsatisfactory to quantify the impact of Ladock Valley STW. A maximum of 1 phage/100ml was found in the plume. However, the leading edge of the effluent as it advected down-estuary was tracked with the dye.

It can be seen that the dye passed the following points at the following times;

St. Clement at HW+3:25,
Confluence of Truro and Tresillian (at Malpas) at HW+4:30, and
Grimes Bar at HW+5:30.

The dye did not reach the Fal during the ebb tide. It is likely that the effluent from Ladock Valley STW has a very small impact at Grimes Bar on spring tides as the dye patch had to be topped up many times to keep it visible, for visual tracking, indicating the large number of dilutions the effluent experienced.

3.3 Neap Tide Survey (8 Aug)

3.3.1 Newham STW Impact

This survey was undertaken in rainy and windy conditions. A strong S to SWly wind may well have affected surface water movement, impairing ebb tide surface flow from the estuary and the results should be viewed with this in mind.

The spore dosing from the STW was completed with no problems encountered. A final effluent mean concentration of 1.07×10^5 was achieved. The individual results throughout the dosing period did show a 1.9 log variation however. F.coliform final effluent concentrations were approx. 1 log higher than the *B. Globigii* concentrations.

The difference between the spore stock solution concentrations and the final effluent concentrations show that the average final effluent flow was 202 litres/sec, which is reasonable for the size of Newham STW considering the prevailing wet conditions. Unfortunately SWW were not able to supply final effluent flow records which they had agreed to do.

The dye patch tracking from Newham STW was successful with the dye patch initially tracked up-estuary as the tide was still flooding at HW when the dye was released. The dye mainly pooled around the Truro Flood Defence Gates but some did penetrate further north towards Truro. Minimum dilutions in the dye patch were as follows;

15 at Truro Tidal Flood Defence Barrier (u/s of the discharge) at HW+0:10

202 Off Lambe Creek at HW+3:06

991 just past Malpas at HW+4:06

991 just past Grimes Bar HW +4:51

1691 near Old Kea at LW

The data shows gradual mixing of the plume through the water column with maximum stratification around high and low waters.

At site 5, the closest site to the Newham discharge, dilutions remained very low between HW+2 and HW+4. The result of 10 dilutions at HW+4, with a salinity of only 4.5 g/kg, shows the large effect of the effluent near LW after the majority of the marine water had evacuated the local area. On the following mid-flood 69 dilutions were recorded, and the next two HW periods showed only 102 and 238 dilutions respectively. This indicates a marked and prolonged influence of the discharge around this area. Very large *F.coliform* numbers (up to $2.4 \times 10^6/100\text{ml}$) confirms the generally low number of dilutions calculated from the *B.Globigii* values.

B.Globigii spores recorded in small numbers at site 3 (near Lambe Creek) at HW and HW+1 are probably due to contamination as the plume was not tracked to this location until approx. HW+3. The results from HW+3 to LW all show Newham effluent dilutions of <100 with a minimum of 38 dilutions at HW+5. As for site 5 the subsequent HW dilution was low (49) but had increased ten fold by the next HW to 465. *F.Coliform* results show that concentrations of 30000 - 50000/100ml are possible at both HW and LW.

The Grimes Bar site (site 2) showed dilute spore concentrations reaching this location at HW+4, which is 50 minutes before the dye from Newham STW reached the site. However by HW+5 much lower diluted spores were present (345 dilutions) with dilutions one hour later, at LW, of only 218. Both these figures are much lower than the plume sampling at this site which showed dilutions closer to 1000. It can be hypothesised that the effluent near the front of the plume was diluted to a much greater extent than that present behind the leading edge of the dye patch. Subsequent sampling gave dilutions in the range 3963 - 5944, apart from the succeeding LW where only 188 dilutions were recorded. This sample contained 12000 *F.coliforms* per 100ml, the largest concentration recorded at this site. The highest concentrations of bacteria occurred at the end of the ebb tide with a vast improvement at HW. At all times surface dilutions were much less than bottom dilutions. No bottom sample showed dilutions less than 3963.

The following table indicates the dilutions determined from the *B.Globigii* tracer data between Newham outfall and Grimes Bar along with the respective Faecal coliform concentrations. The *B.Globigii* dilutions were calculated using the highest concentration recorded at Grimes Bar at each time, and therefore represent the least dilution.

Time (wrt HW)	<i>B.Globigii</i> Dilutions	<i>F. coliforms</i> (No/100ml)	<i>F.coliform</i> Dilutions*
HW+4	2378	840	4047
HW+5	345	3703	916
LW	218	3400	1000
Following HW	5944	290	11724
Following LW	187	12000	283
Following HW	3962	20	17000

* Assuming all *F.coliforms* originated from Newham STW (mean final effluent conc of $3.4 \times 10^6/100\text{ml}$) with no die off.

The F.coliform dilutions show values between about 2 and 5 times that from the spore data. This shows either (a) the effect of coliform die off only, or (b) that Newham STW contributes between 20% and 50% of the F.coliforms at Grimes Bar on a neap tide. In reality there will have been coliform mortality which will increase the above proportional effect of the Newham STW.

The dye patch from Newham STW did not reach site 1 (just above the Fal) by LW and this was confirmed from fixed site sampling. Only small numbers of spores reached this site with maximum impact on the second LW after the dye was released, with nearly 2000 dilutions calculated. This value coincided with the highest F.coliform value recorded of 1190/100ml. This value was much elevated from the majority of samples which mainly showed concentrations in the range 20-80/100ml.

The fixed sites in the Tresillian (sites 4 and 6) show that effluent from Newham impacts on this body of water, with a time lag of about tidal cycle to maximum impact. Dilutions did not fall below 369.

3.3.2 Ladock Valley STW Impact

The concentrations of phage in the final effluent at Ladock Valley STW were much improved and enabled the impact from the STW to be quantified for a neap tide.

Tracking of the dye patch released at HW showed an ebb tide excursion to a point just north of Malpas in the Tresillian, somewhat short of Grimes Bar.

Dilutions as low as 10 were recorded in the upper Tresillian close to the discharge point but as the plume reached St.Clement this had risen to 146 (at HW+3:43). About 750m further south this had increased to 401 (at HW+5:20). At HW+6:16, approx. LW, the plume had nearly reached Malpas with dilutions quantified at 2140.

F.coliform numbers decreased from 1590/100ml near the discharge to <200/100ml near Malpas. The discharge from Ladock Valley STW is small and its limited impact on the Tresillian can be seen in these figures.

Fixed site 6 (near St.Clement) showed dilutions from 1284/100ml at HW+4 with phage still present in small numbers on the two subsequent HWs. Down-estuary, at fixed sites 4 and 2, phage was recorded two LWs after phage dosing had ceased. It can be seen in the final effluent figures from Newham STW (both surveys) that bacteriophage is present in the discharge itself. It is debatable where the phage originated from (the dosing, Newham, Ladock Valley or Malpas final effluent) so long after dosing ceased.

It was established that there was no impact on the Truro River during this survey.

3.3.3 Sediment Analysis Results

It must be noted that on both surveys no sediment *B.Globigii* analysis showed concentrations >10/g. From this we can be sure that sediments are not a sink for the spores and any reductions in concentrations from the final effluents are the results of dilution alone.

3.4 F.coliforms at Grimes Bar

Dilution data from the two surveys can be used to give a first approximation of F.coliform concentrations in the water at Grimes Bar if only Newham STW influences concentrations at this location. The following surface concentrations are based on a 12½ hour discharge from Newham STW with an assumed final effluent quality of $3 \times 10^6/100\text{ml}$, and assume no bacterial decay:

Time	F. Coliforms (No/100ml)	
	Neap	Spring
HW+3		790
HW+4	1262	2120
HW+5	8696	1478
LW	15957	1286
LW+3		231
HW	757	148

4.0 CONCLUSIONS

- 1) The effluent plume from Newham STW reaches Grimes Bar at approximately HW+4 on springs and HW+5 on neaps.
- 2) At Grimes Bar minimum dilutions of Newham STW effluent occur on the late ebb to LW (HW+4 to HW+6) with measured worst case (values) of approximately 200 on neaps increasing to about 1400 on springs. These minimum dilutions occur at the surface and at the bed dilutions are even greater due to stratification and buoyant plume advection. (Dilution factor = Concentration of spores or bacteriophage in the final effluent / concentrations of spores or bacteriophage at the sample points).
- 3) The residence time of effluent released from Newham STW in the Truro and Tresillian estuaries is greater than one tidal cycle on both spring and neap tides. The actual dilutions occurring at Grimes Bar will therefore tend to be less than those measured.
- 4) The Ladock Valley discharge did not impact directly on Grimes Bar on the neap tide survey and was highly diluted when it reached Grimes bar on the spring tide survey. However, the phage dosing did not prove to be a particularly successful method.
- 5) The shellfish at the various beds in the Truro and Tresillian estuaries have not been assessed, as the relationship between Faecal Coliform levels in shellfish and the overlying water quality is not clearly understood. The Newham STW discharge is the major discharge affecting the water quality in the vicinity of the shellfish beds. No data collection on the levels of spores or Faecal Coliforms in shellfish was undertaken in this study.

5.0 RECOMMENDATIONS

- 1) Further work is undertaken to assess the impact of Ladock Valley STW on the Truro and Tresillian estuaries.
- 2) The impact of the discharges from both Newham and Ladock Valley STW's is modelled, to assess the significance of the long residence times of effluent in the Truro and Tresillian estuaries.
- 3) Further work on the flushing time of the Newham STW discharge should be undertaken to validate the results obtained from the modelling.
- 4) Further work is required to evaluate the relationship between bacterial levels in shellfish and the overlying water quality. If further long-term spore work is undertaken for the Newham STW, data on the levels in shellfish should also be obtained.



Shellfish Sampling Points

Number	Name
1	Calenick Creek
2	Lambe Creek
3	Malpas
4	Tresillian River
5	Grimes Bar

Freshwater Inputs

Number	Name
1	Calenick Stream
2	River Allen
3	River Kenwyn
4	Tresillian River

Main Direct Sewage Inputs

Number	Name
1	Truro STW
2	Malpas Outfall
3	Ladock Outfall

Fig. 2. Fixed Site Sample Points

Spring and Neap Tides

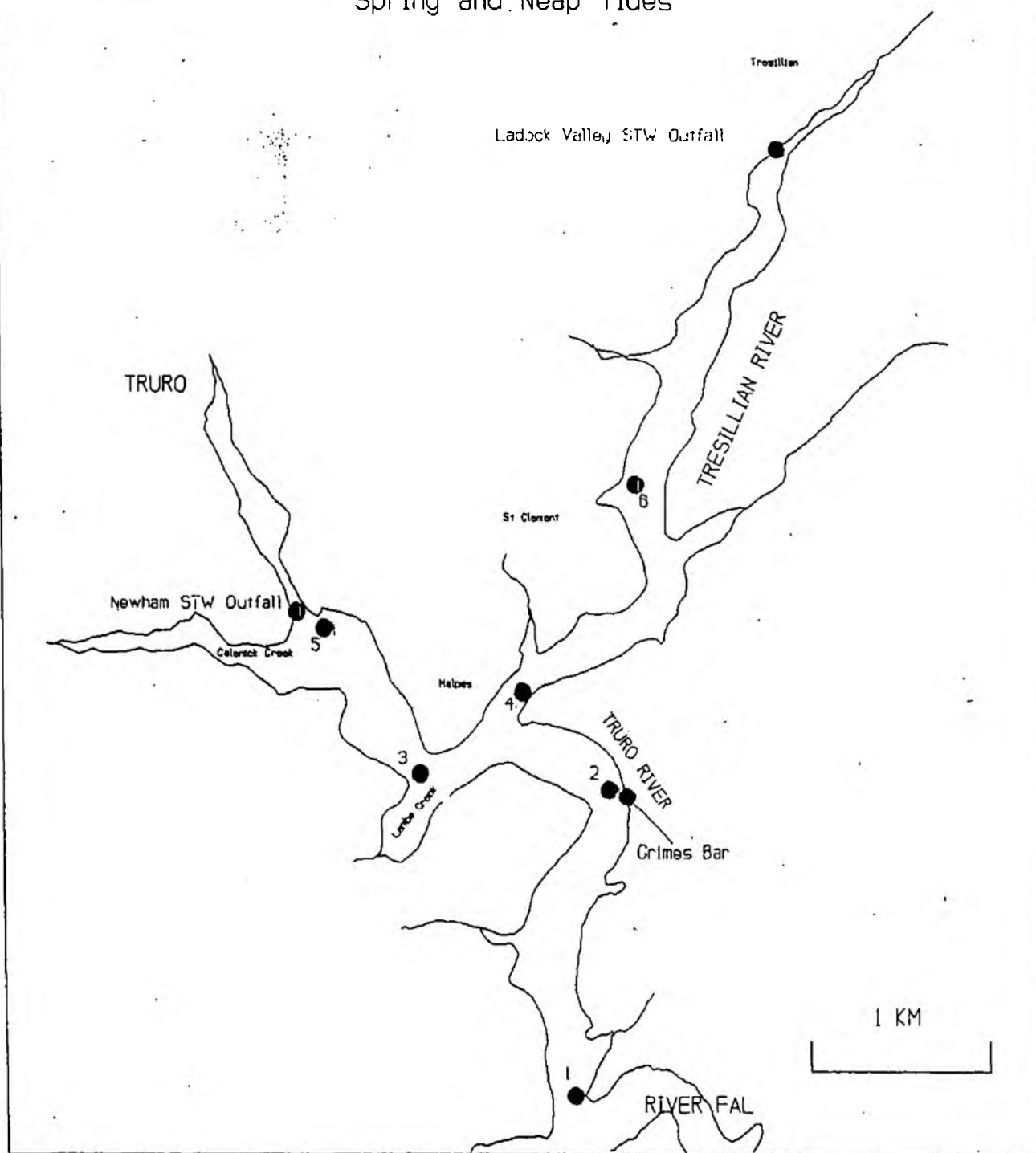


Fig.3 Dye Tracking Results

Spring Tide Survey



Fig 1. Fixed Site Sample Results LW(A) 00:45-01:50

Spring Survey

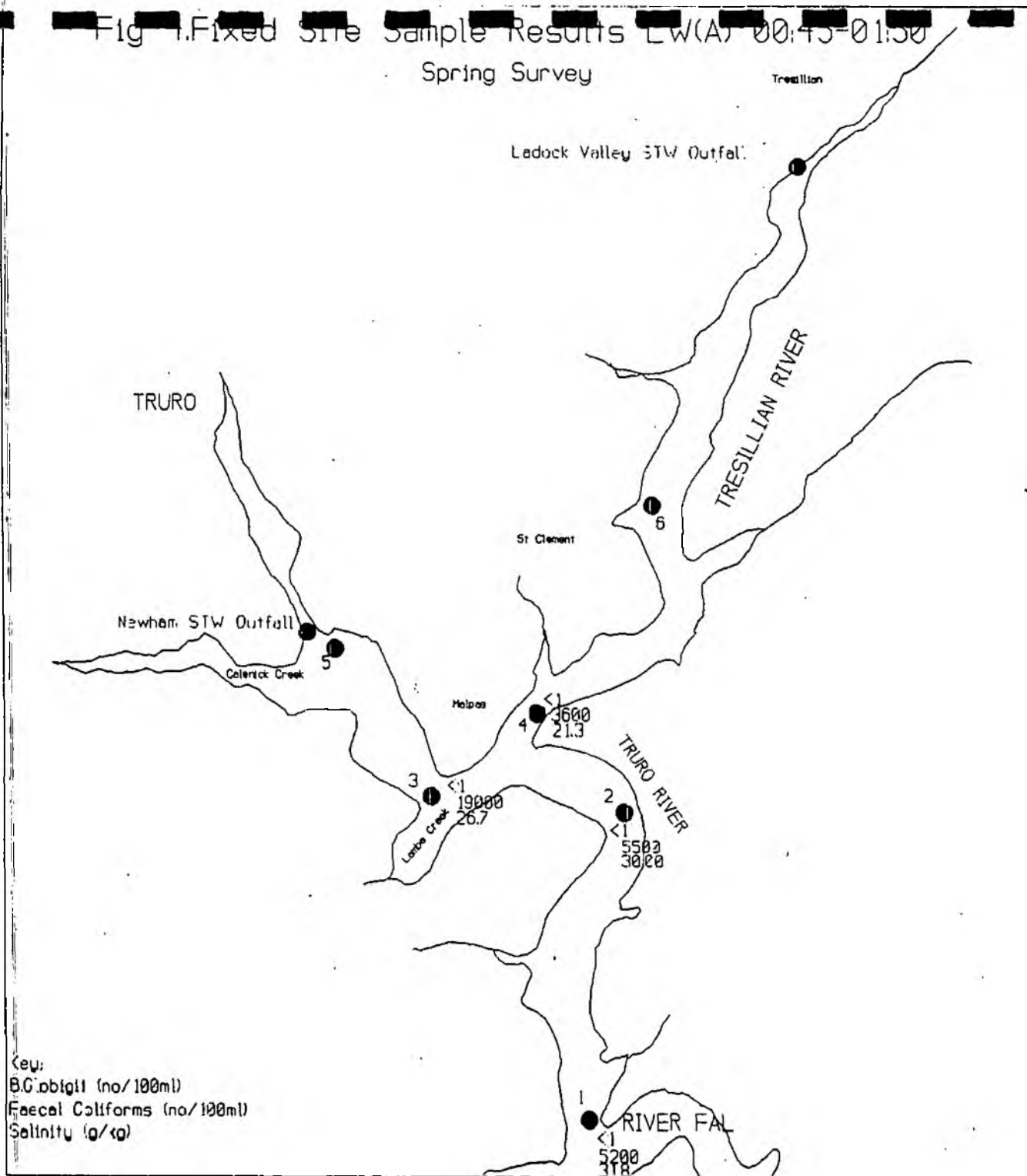


Fig 5. Fixed Site Sample Results HW(B) 07:30-08:15
Spring Survey

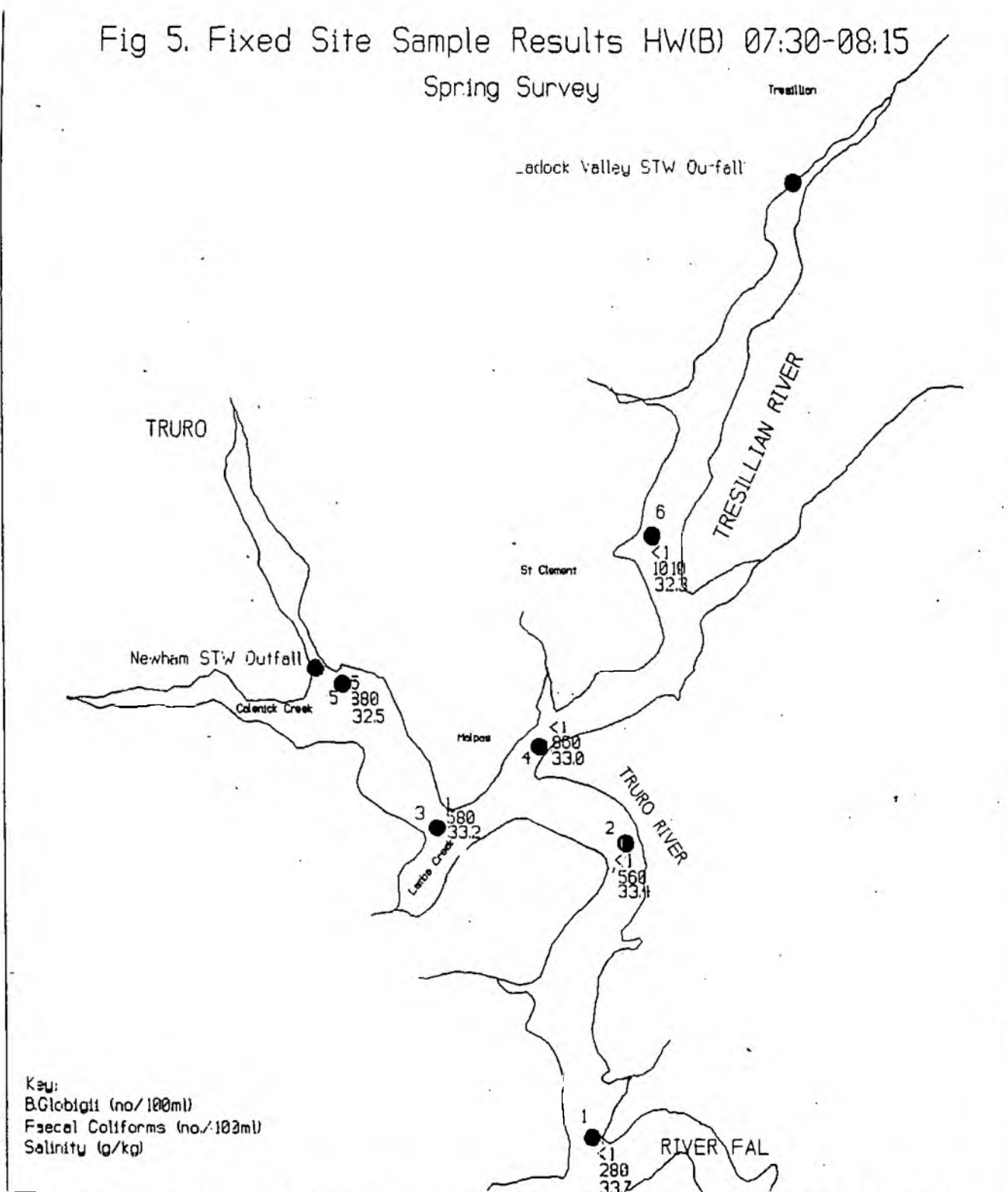


Fig 6. Fixed Site Sample Results HW+1(C) 08:30-09:15
Spring Tide

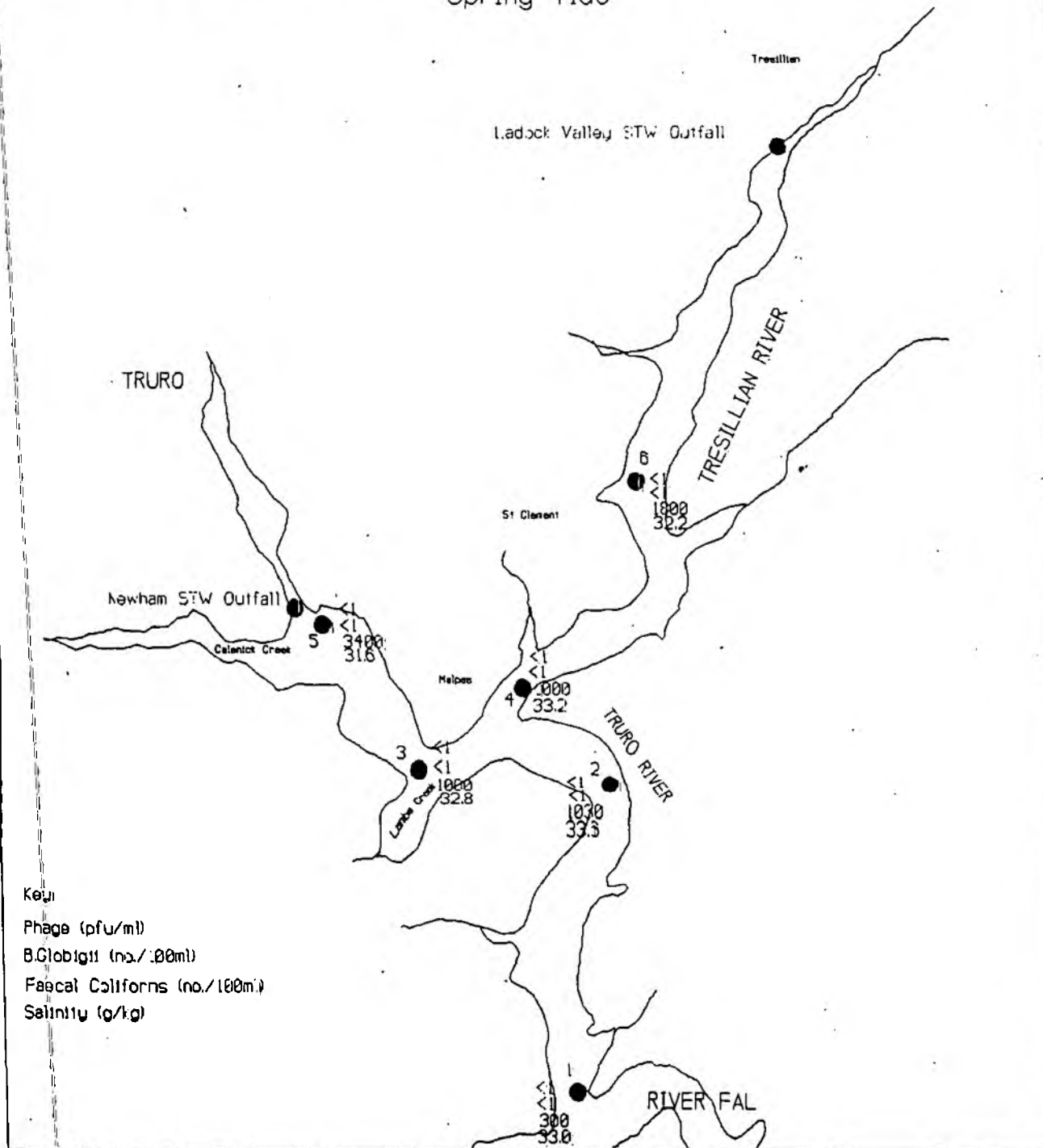


Fig 7. Fixed Site Sample Results HW+2(D) 08:50-10:25

Spring Survey

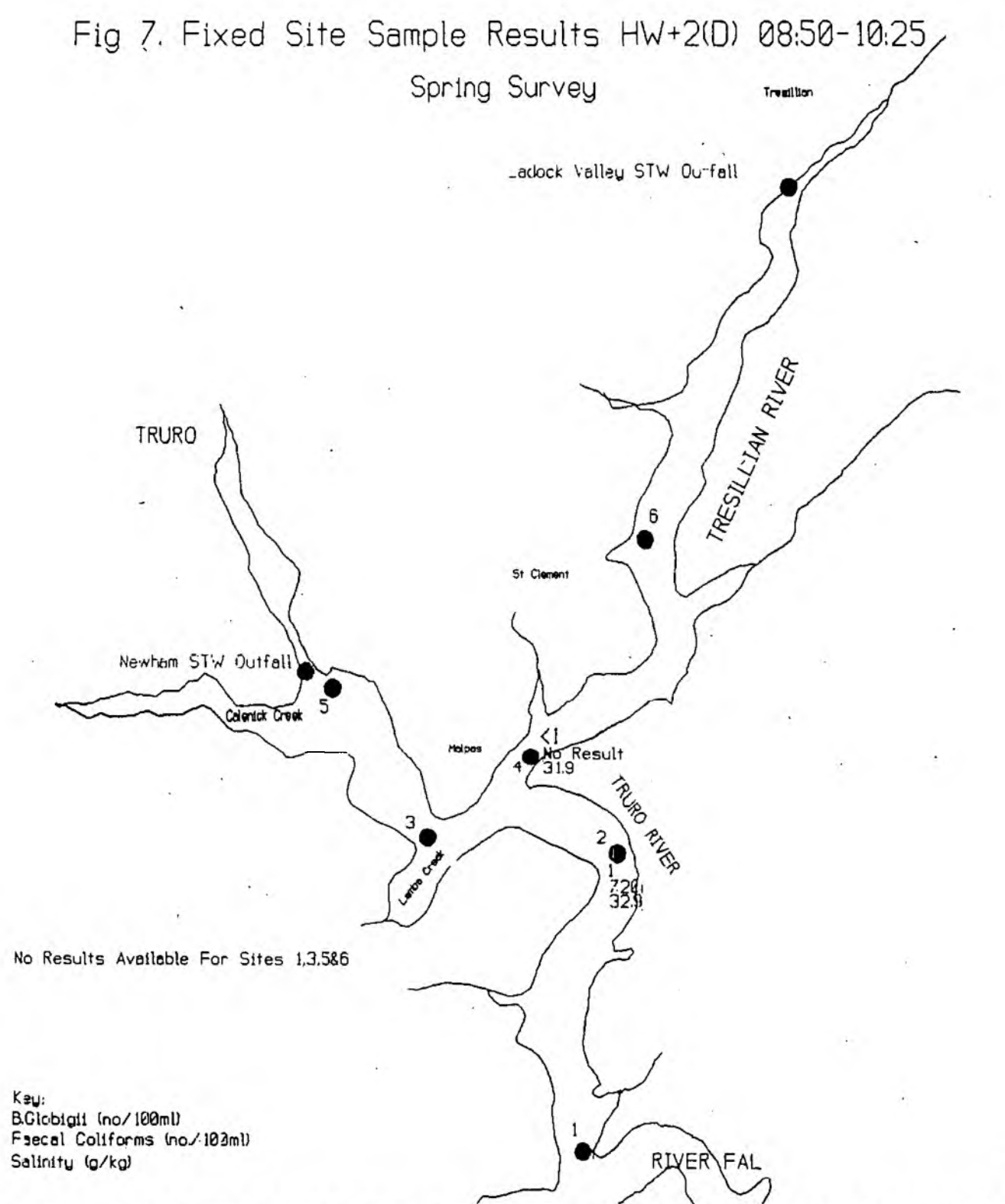


Fig 8. Fixed Site Sample Results HW+3(E) 10:50-11:30

Spring Survey

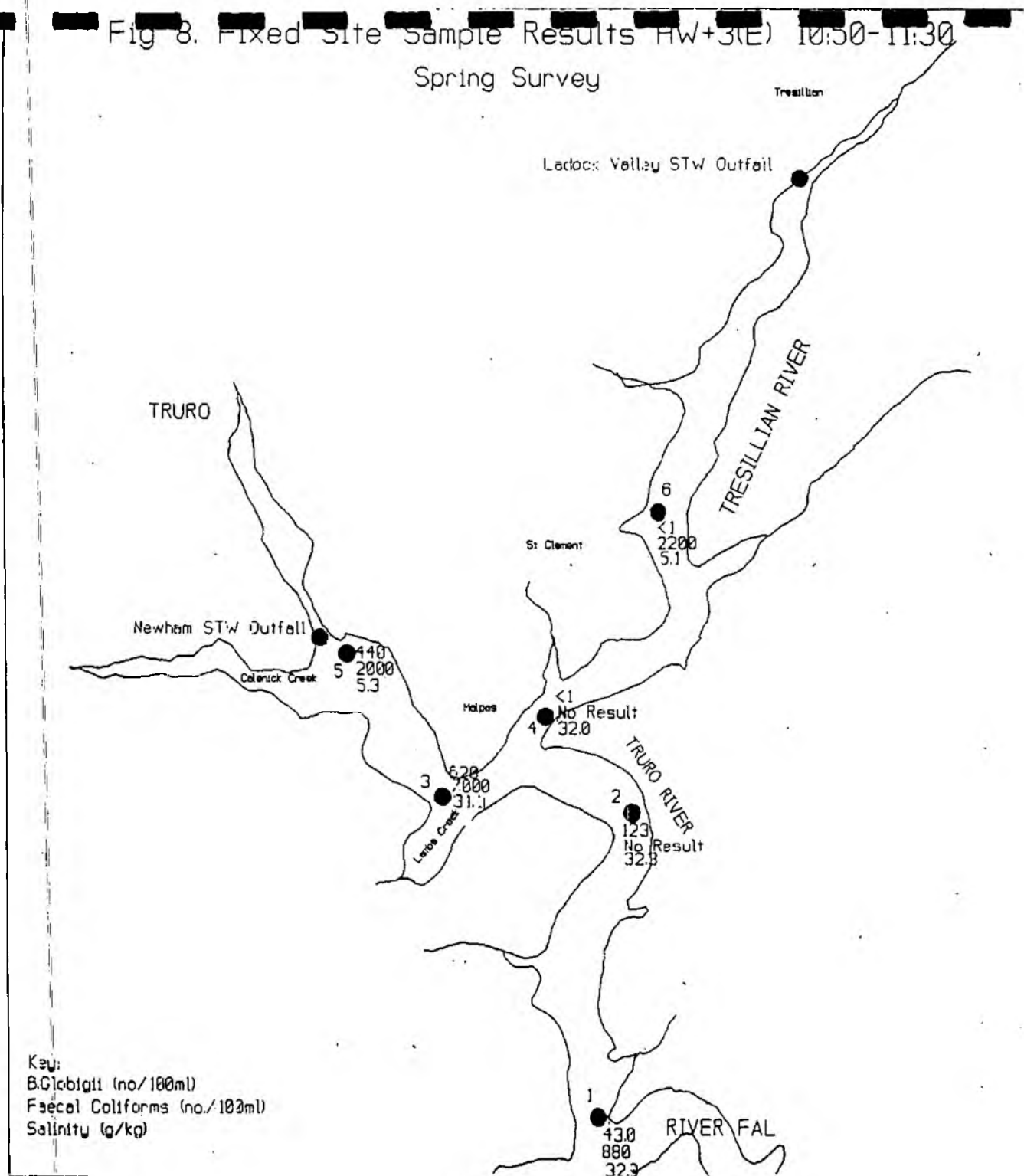


Fig 9. Fixed Site Sample Results HW+4(F) 11:25-12:00
Spring Survey

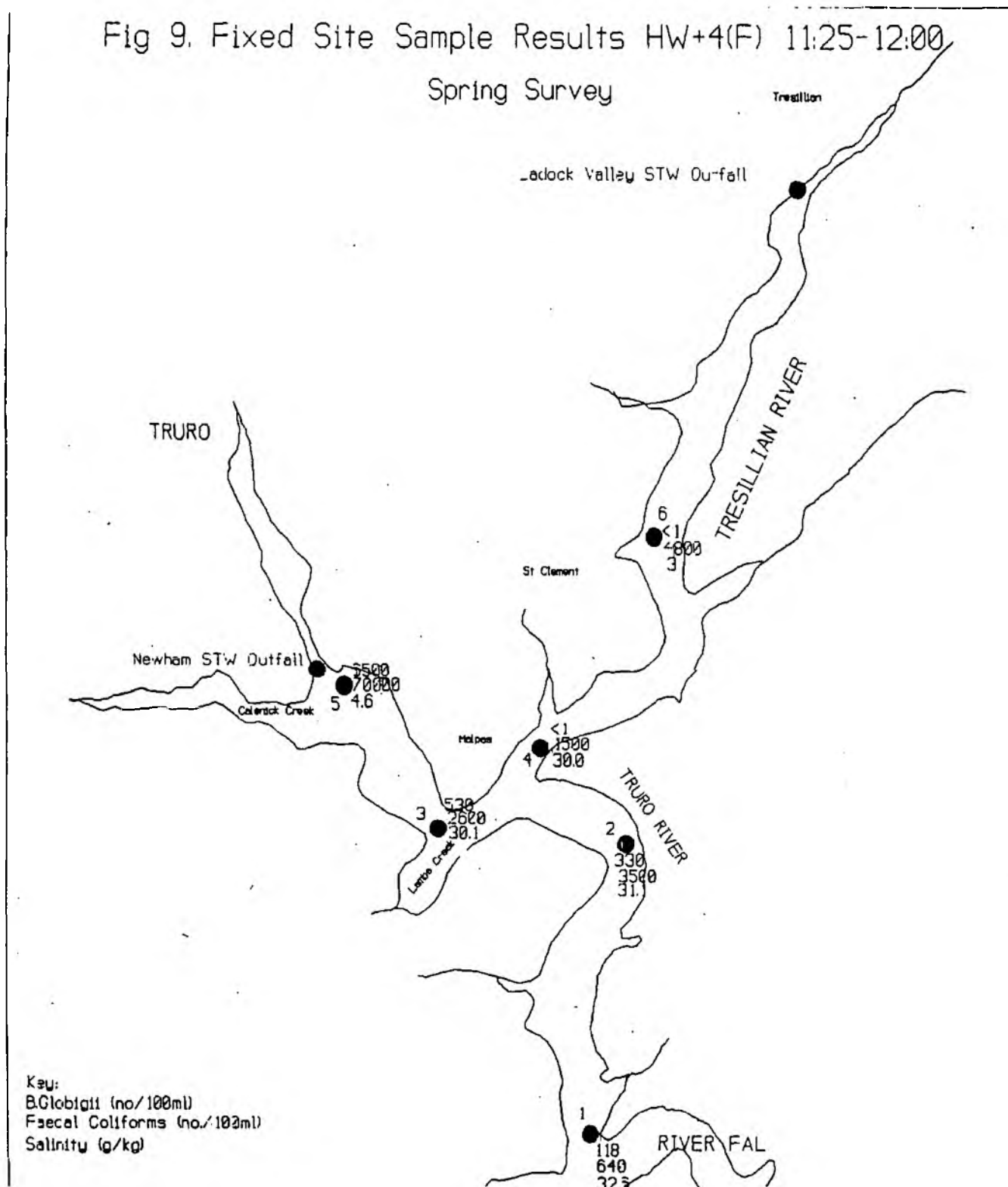


Fig 10. Fixed Site Sample Results HW+5(G) 12:50-13:10

Spring Survey

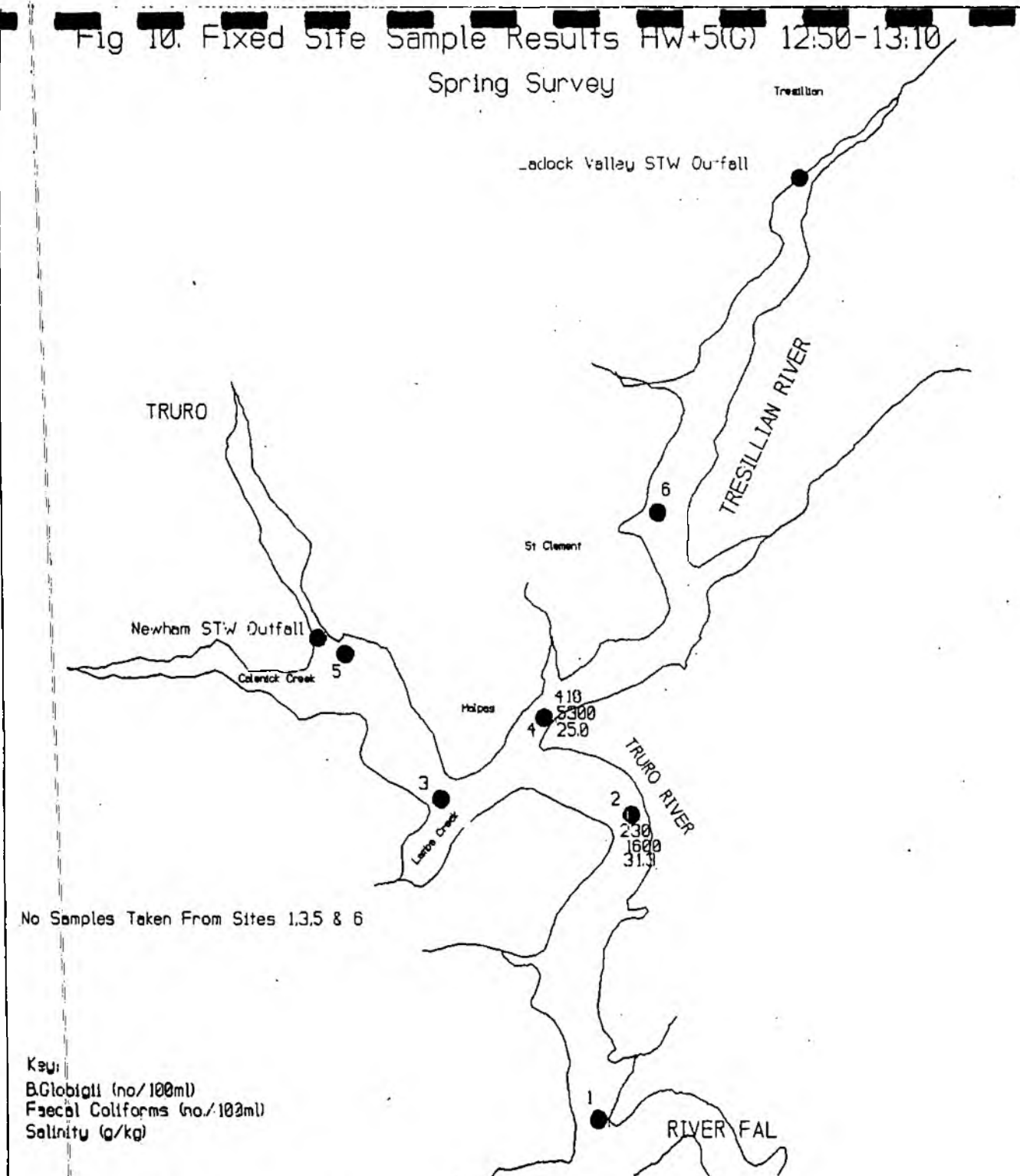


Fig 11. Fixed Site Sample Results LW(H) 14:00-15:10
Spring Survey

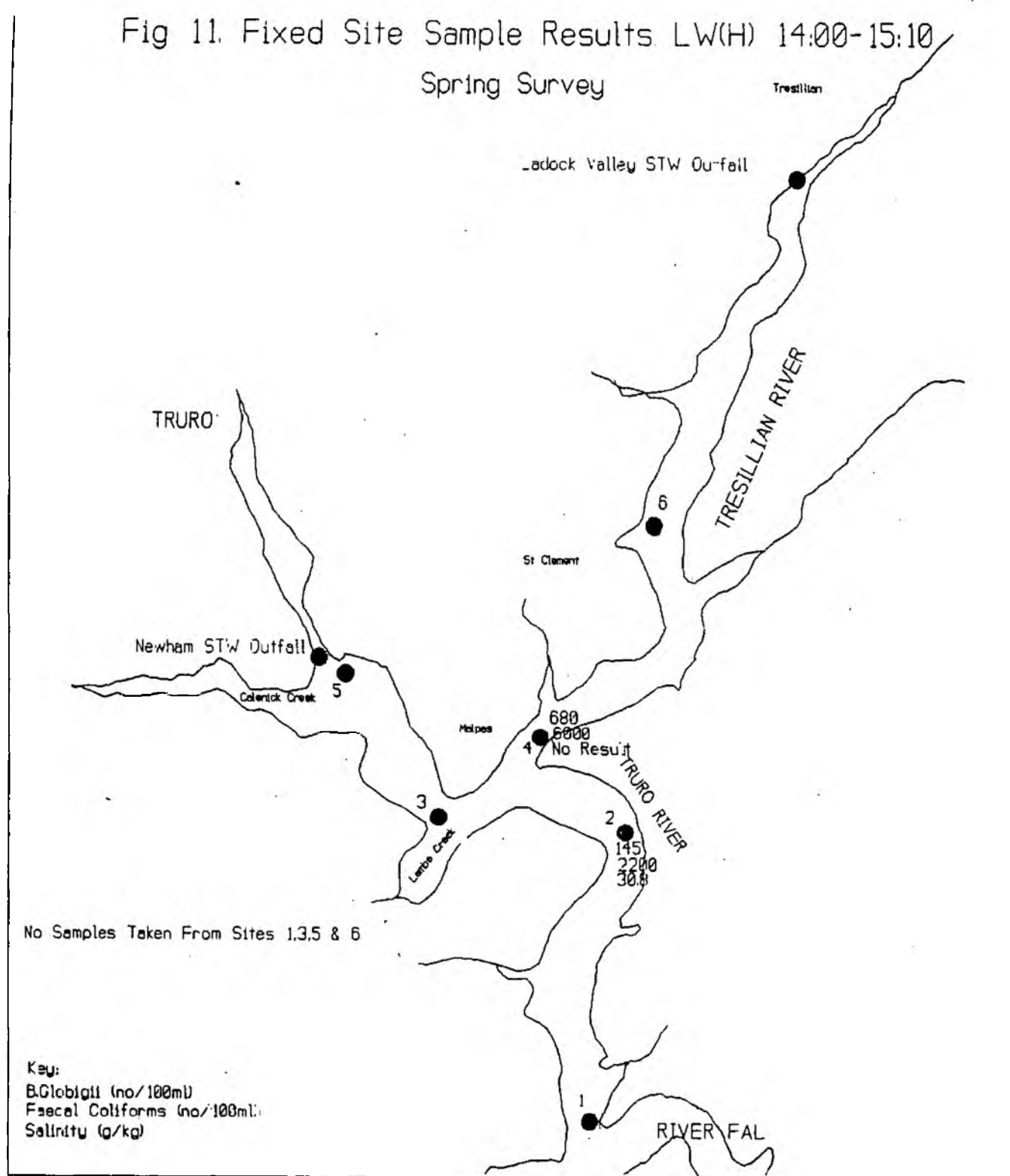


Fig 13. Fixed Site Sample Results HW(J) 19:50-22:10

Spring Survey

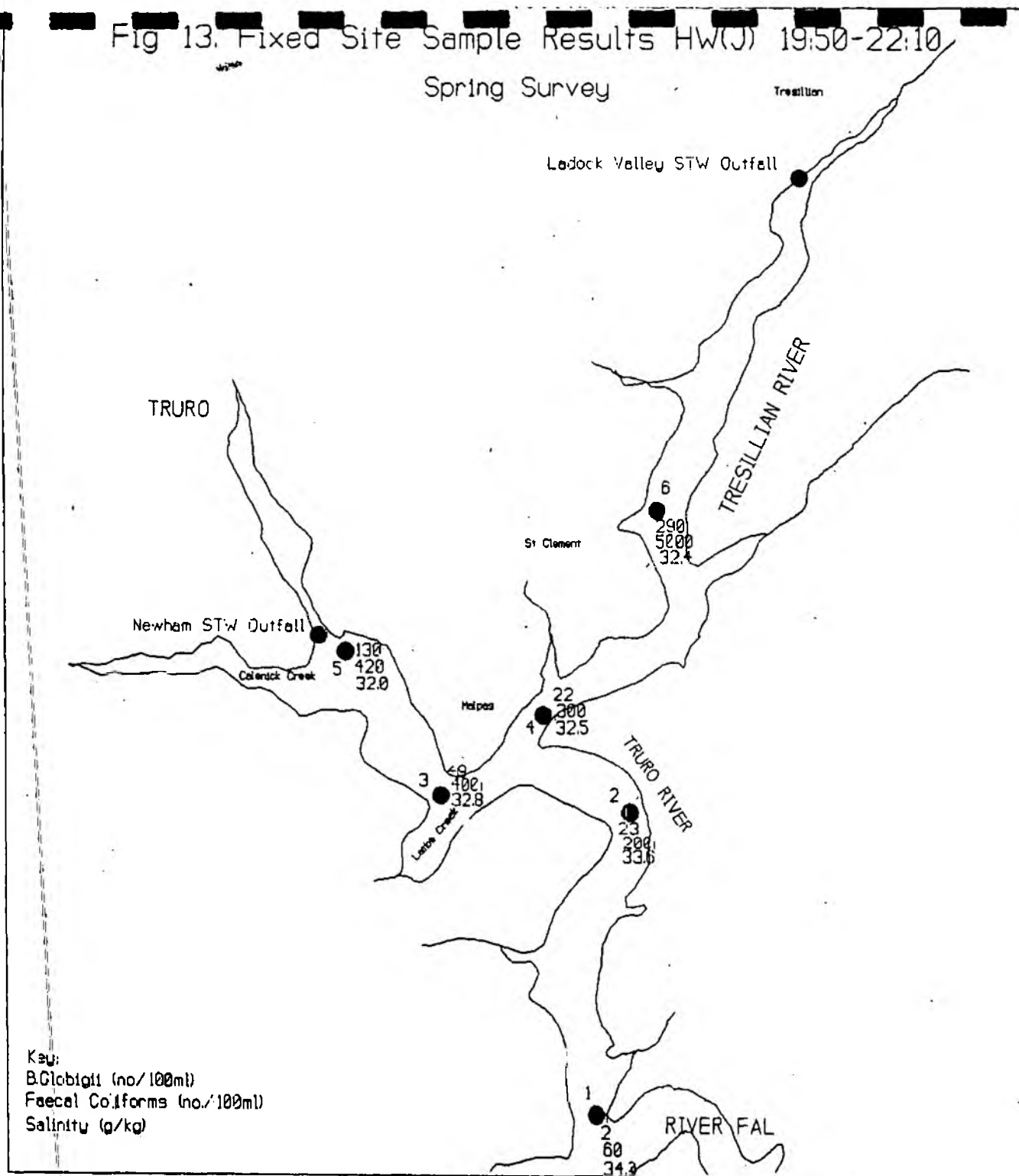


Fig 14. Fixed Site Sample Results LW(K) 02:45-03:30
Spring Survey

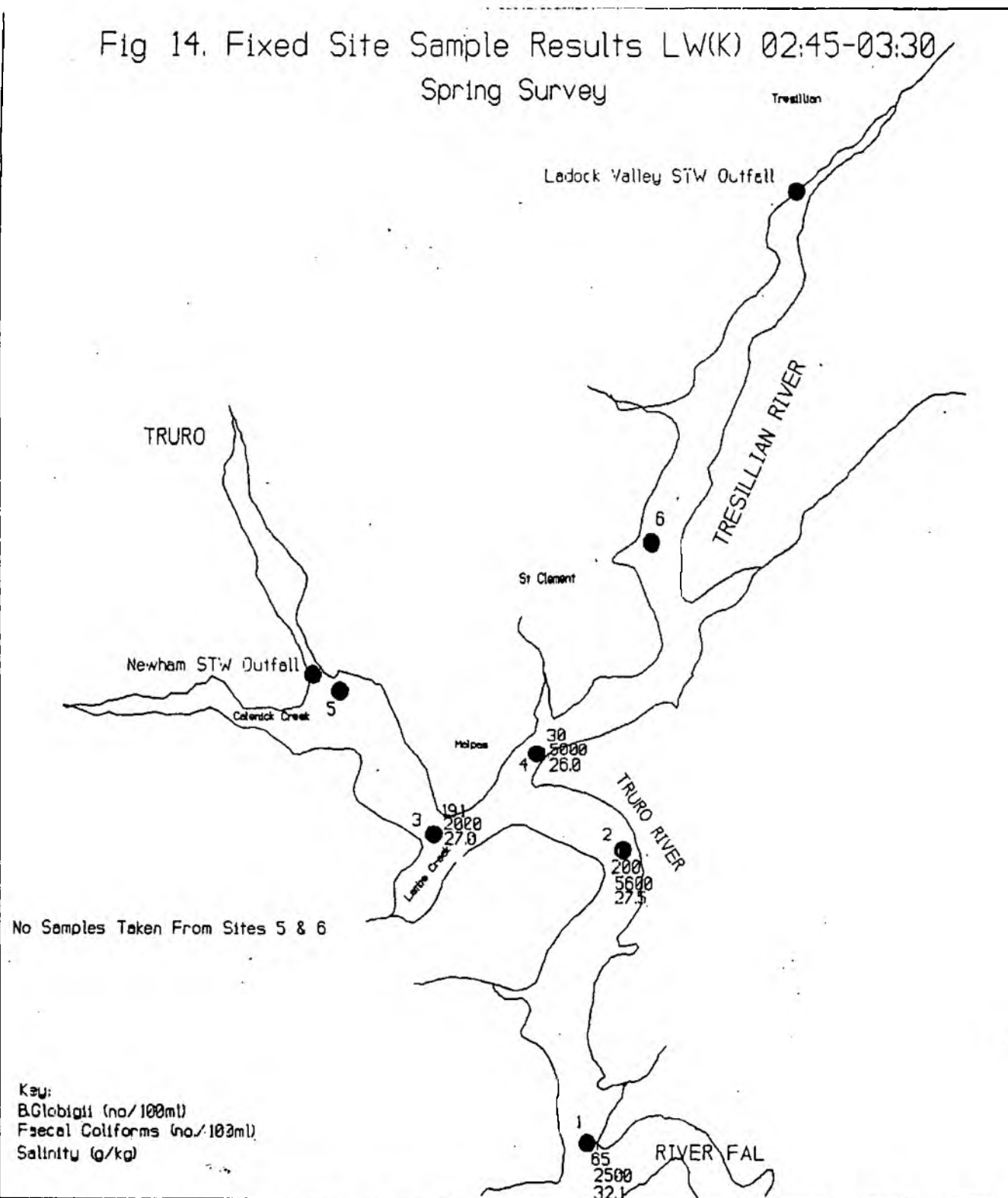


Fig 15. Fixed Site Sample Results HW(L) 08:25-10:15
Spring Survey

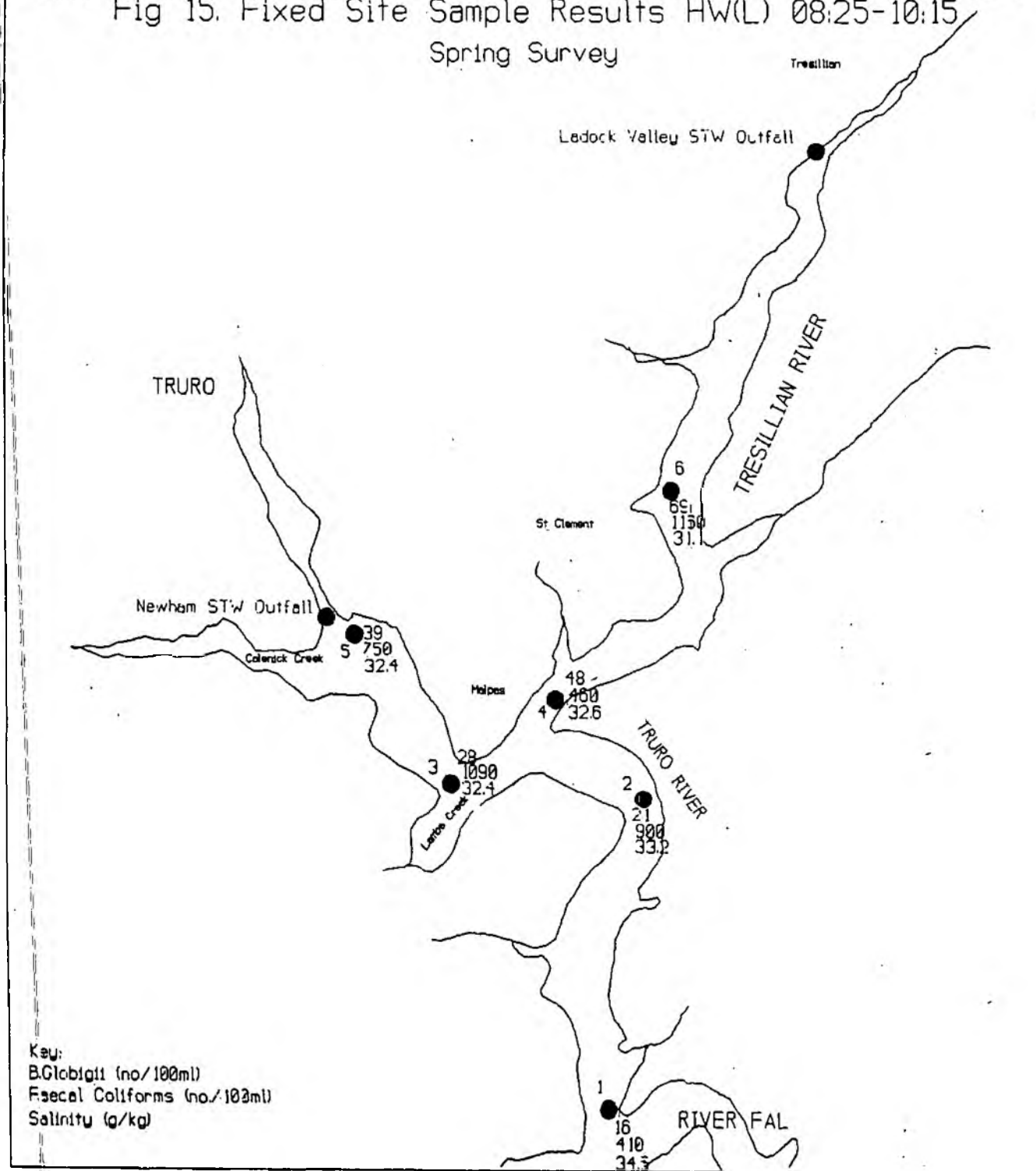


Fig 16. Dye Tracking Results
Neap Tide



Neap Tide

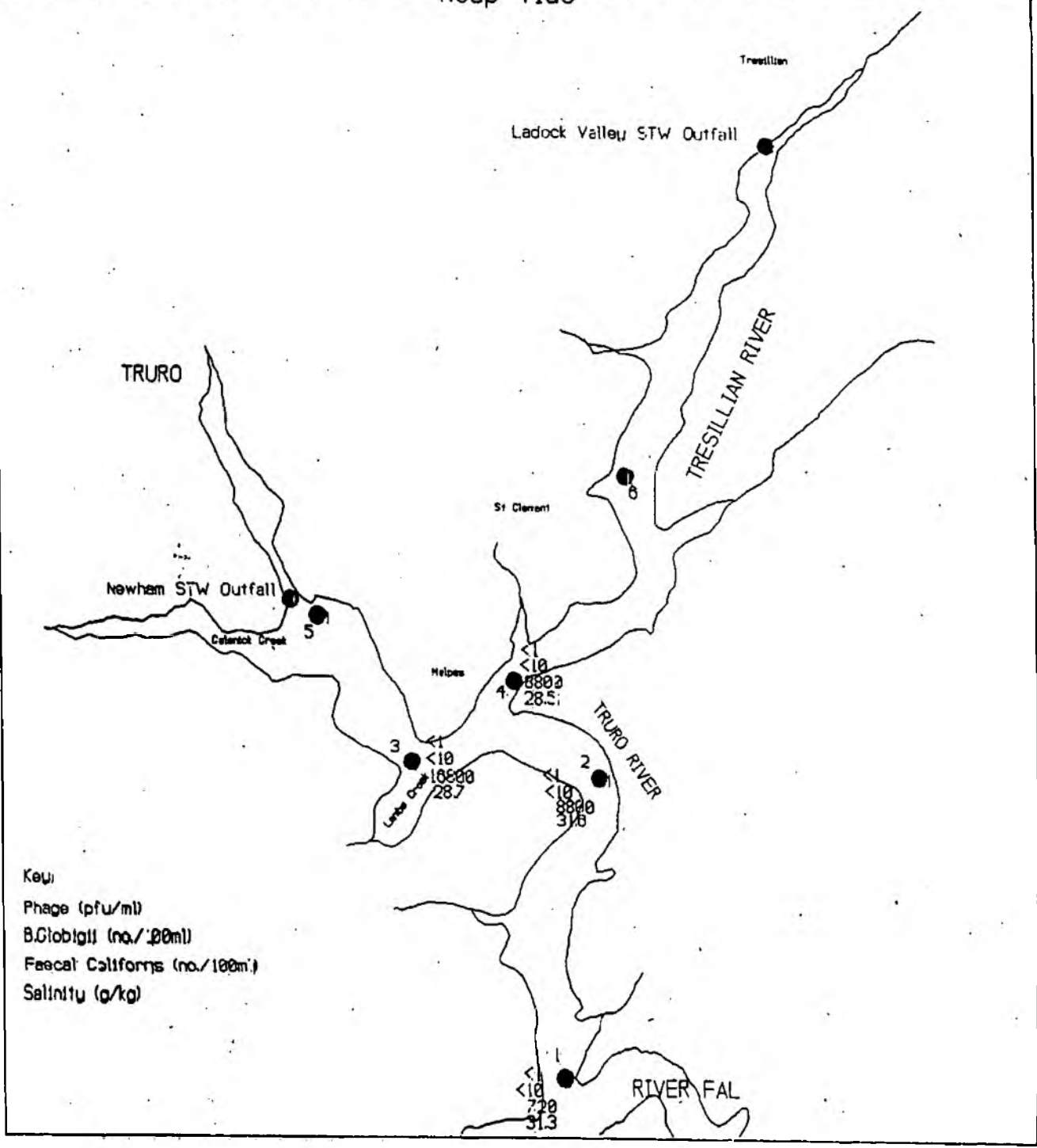
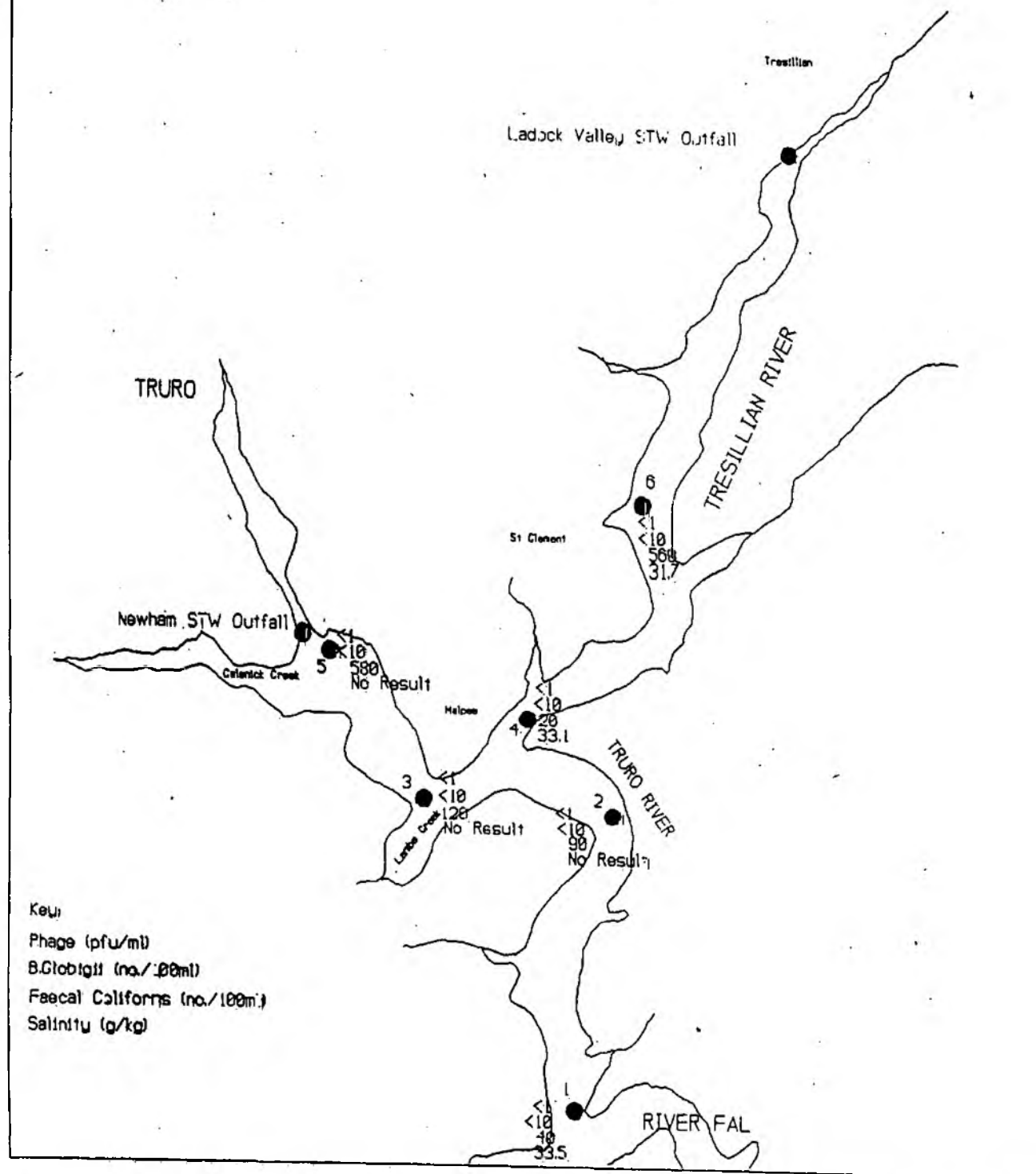


Fig 18. Fixed Site Sample Results HW(B) 12:20-13:15
Neap Tide



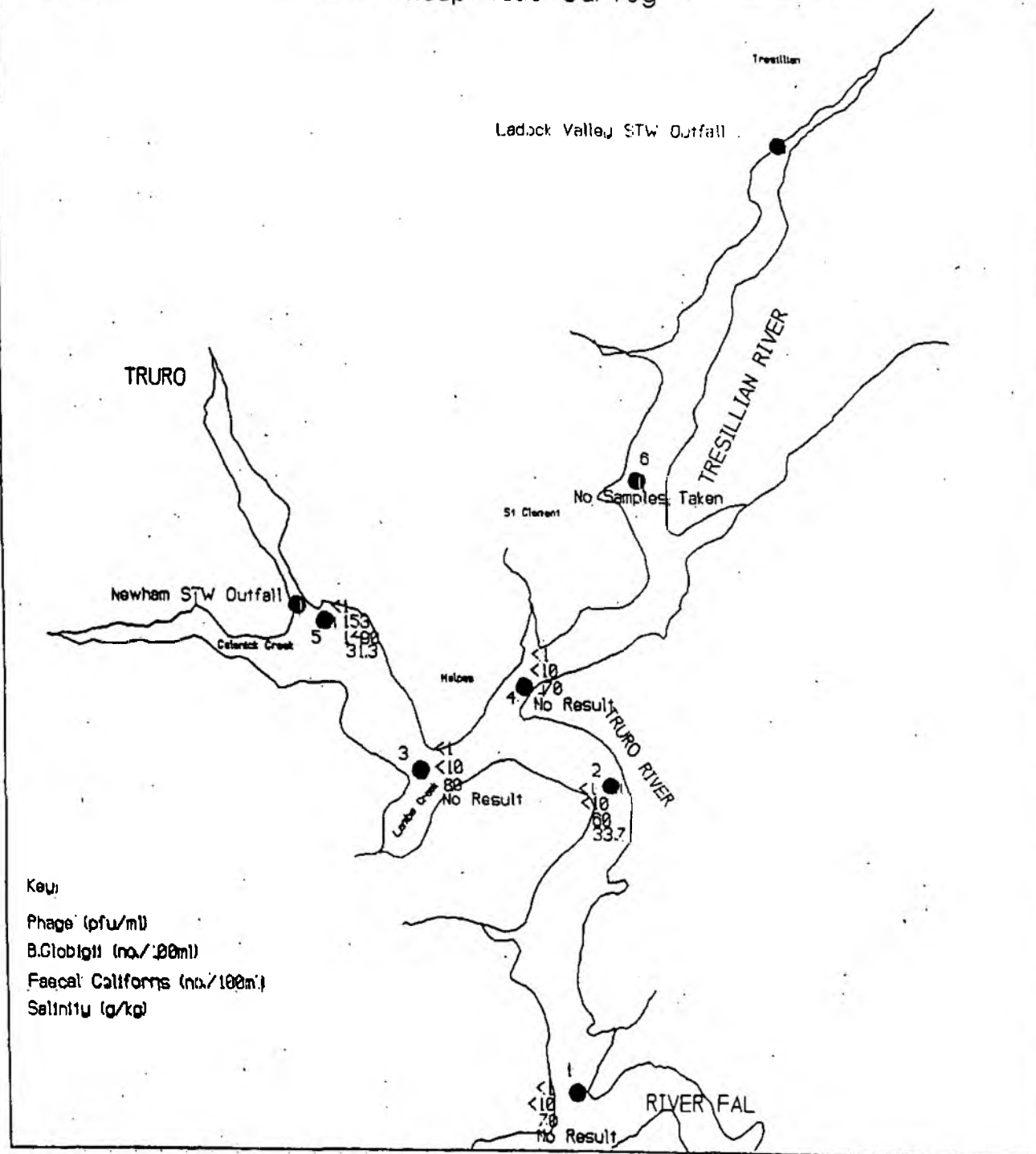


Fig 20. Fixed Site Sample Results HW+2(D) 13:30-15:00
Neap Tide Survey

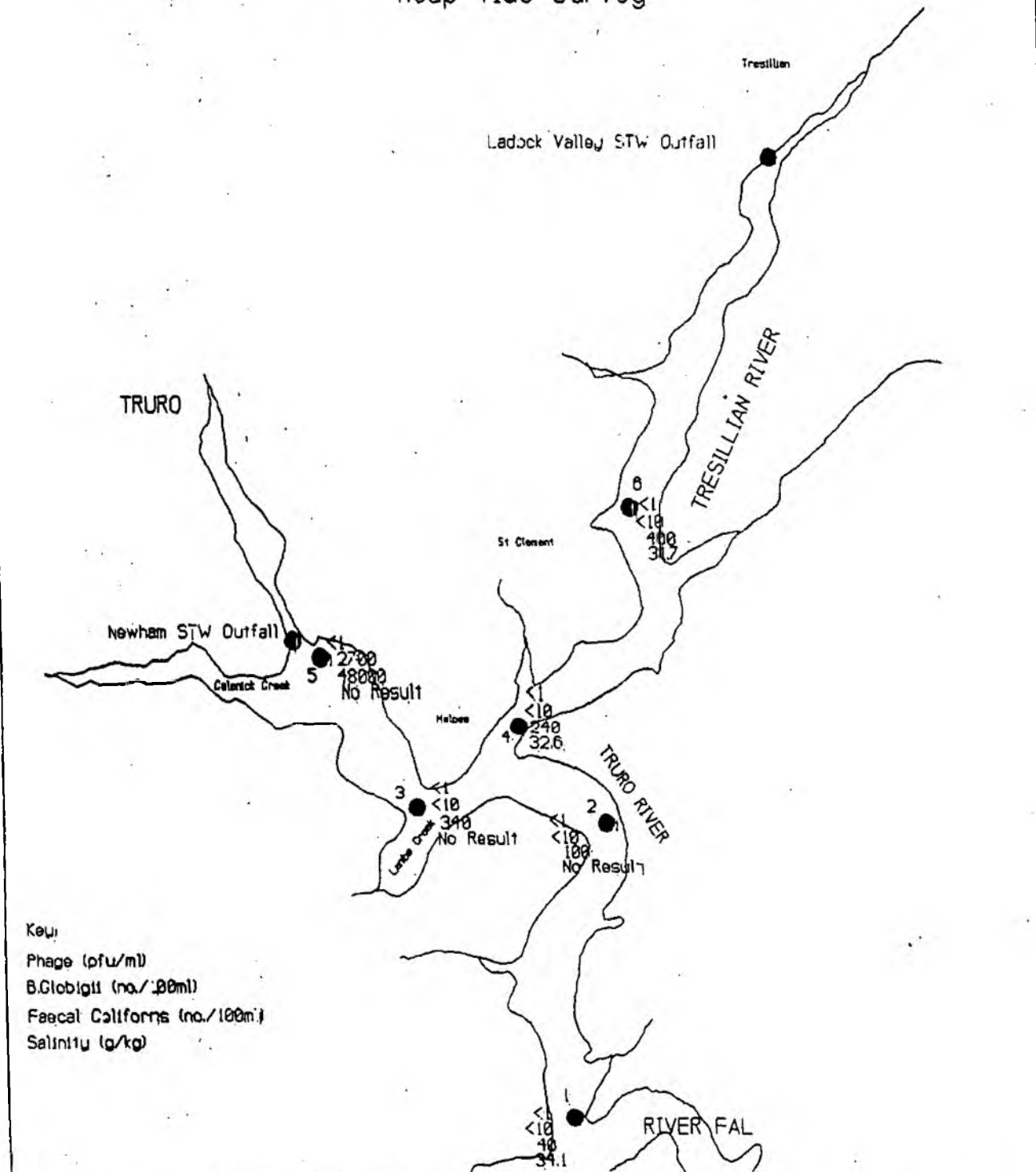
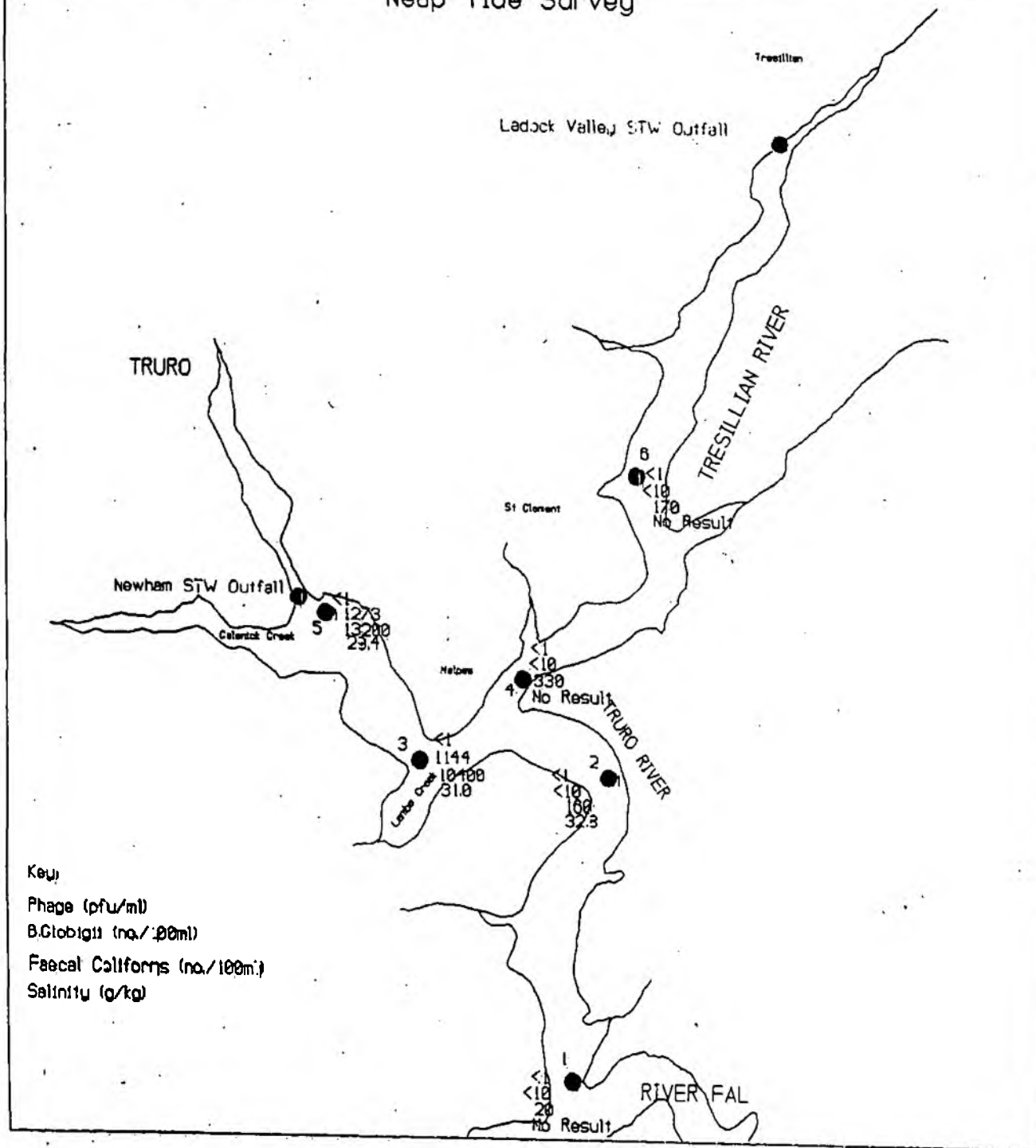


Fig 21. Fixed Site Sample Results HW+3(E) 15:20-16:30
Neap Tide Survey



Key:

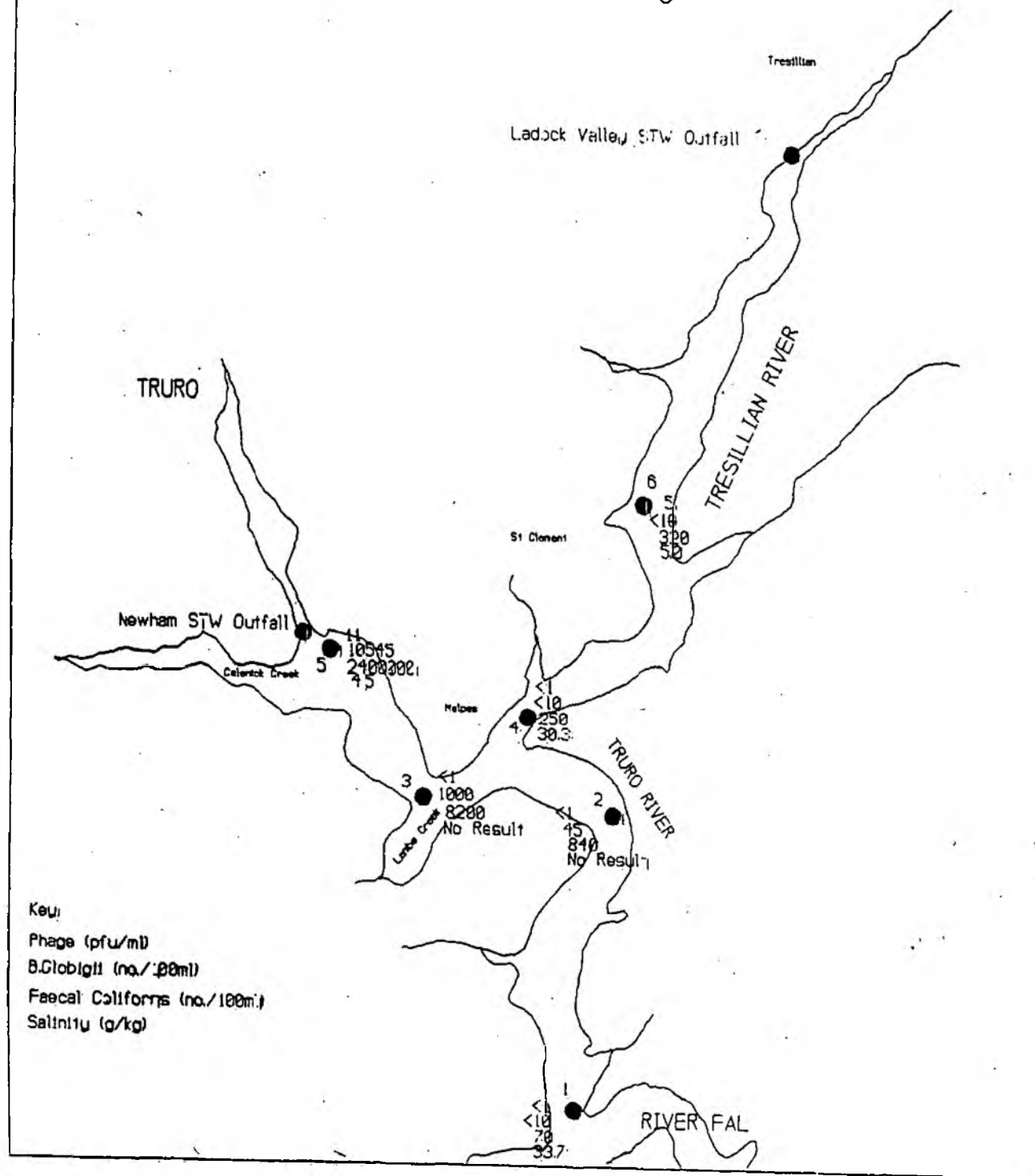
Phage (pfu/ml)

B.Globigii (no./100ml)

Faecal Coliforms (no./100ml)

Salinity (g/kg)

Fig 22. Fixed Site Sample Results HW+4(F) 16:30-17:00
Neap Tide Survey



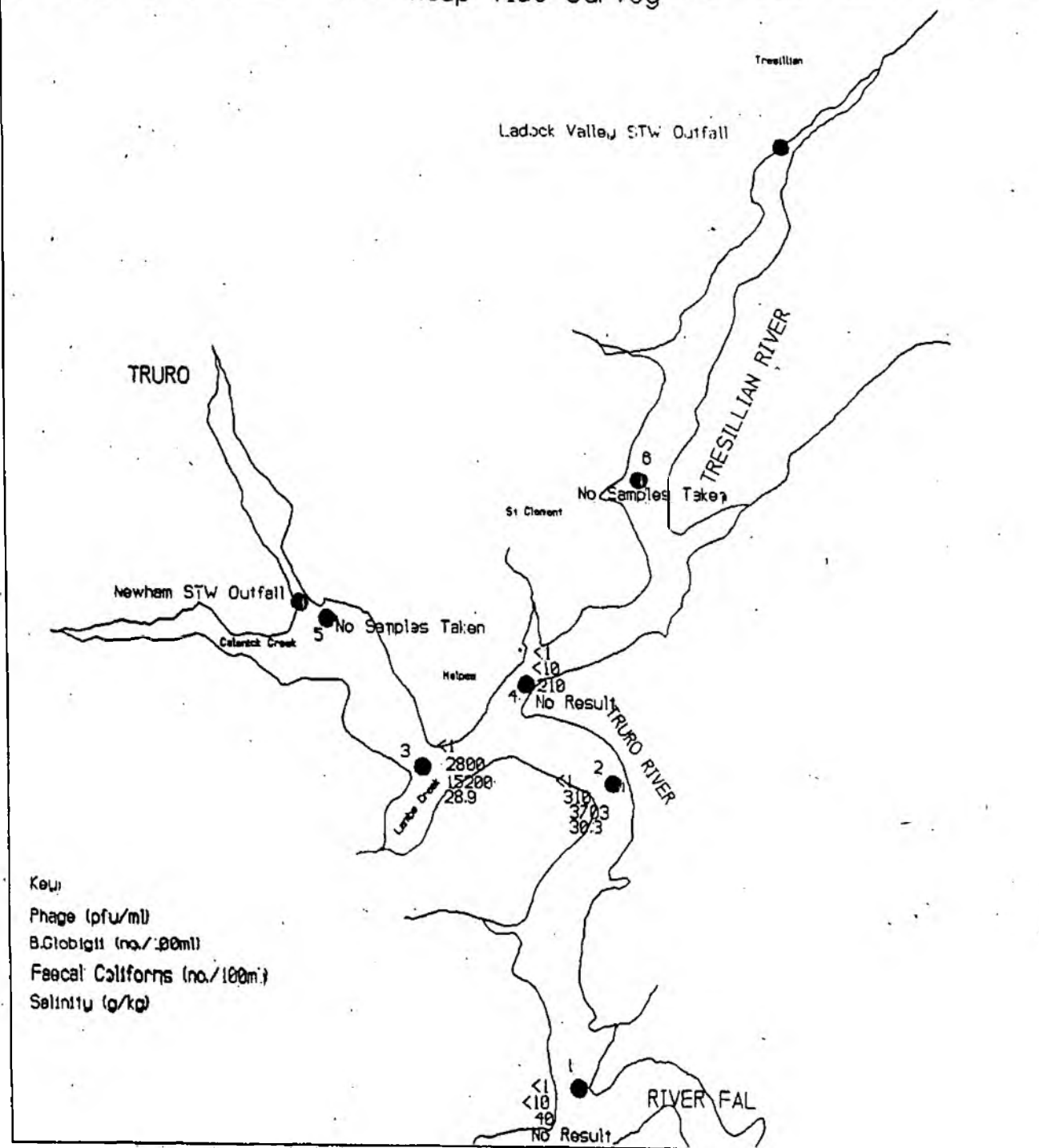
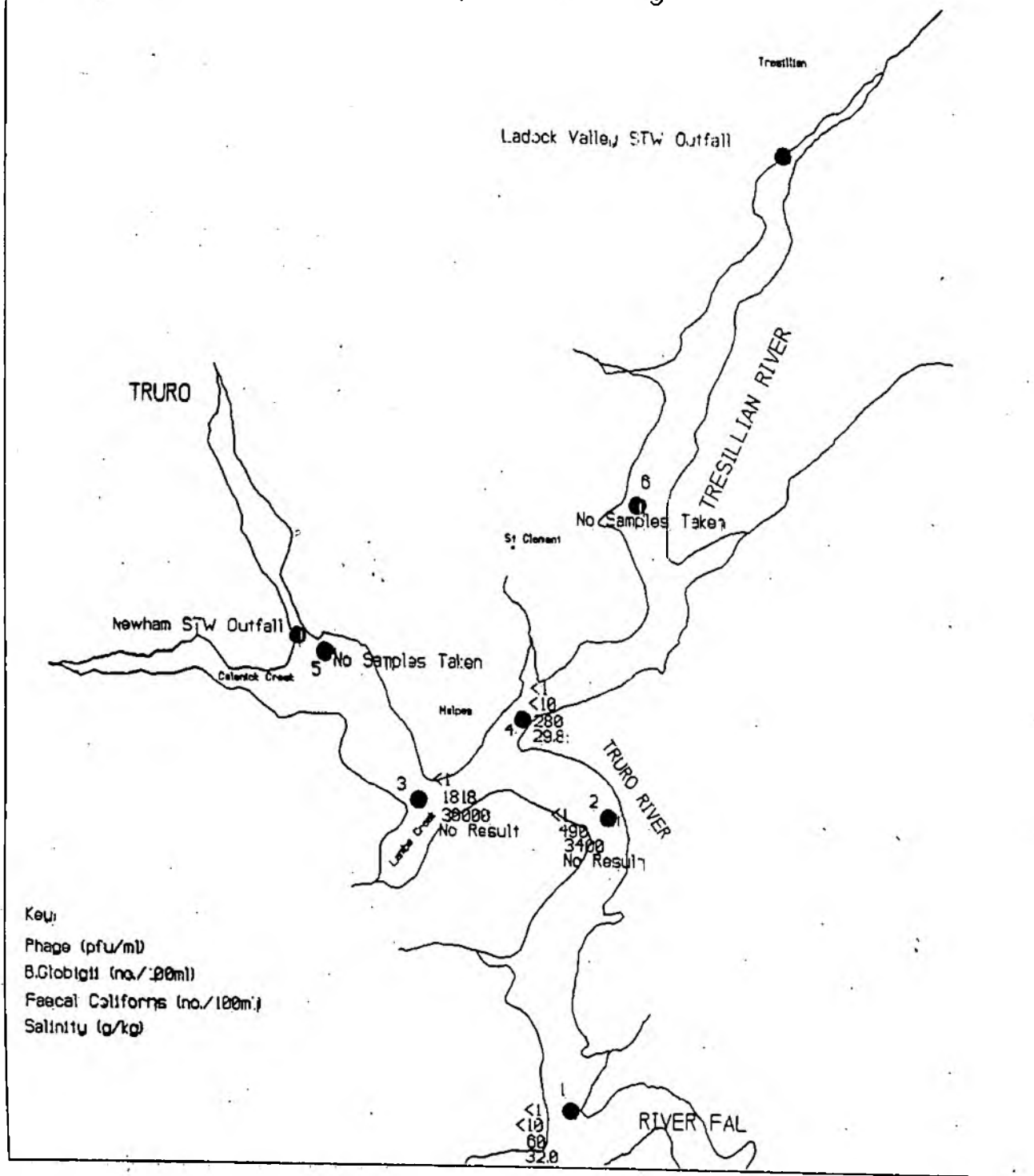


Fig 24. Fixed Site Sample Results LW(H) 18:45-19:15
Neap Tide Survey



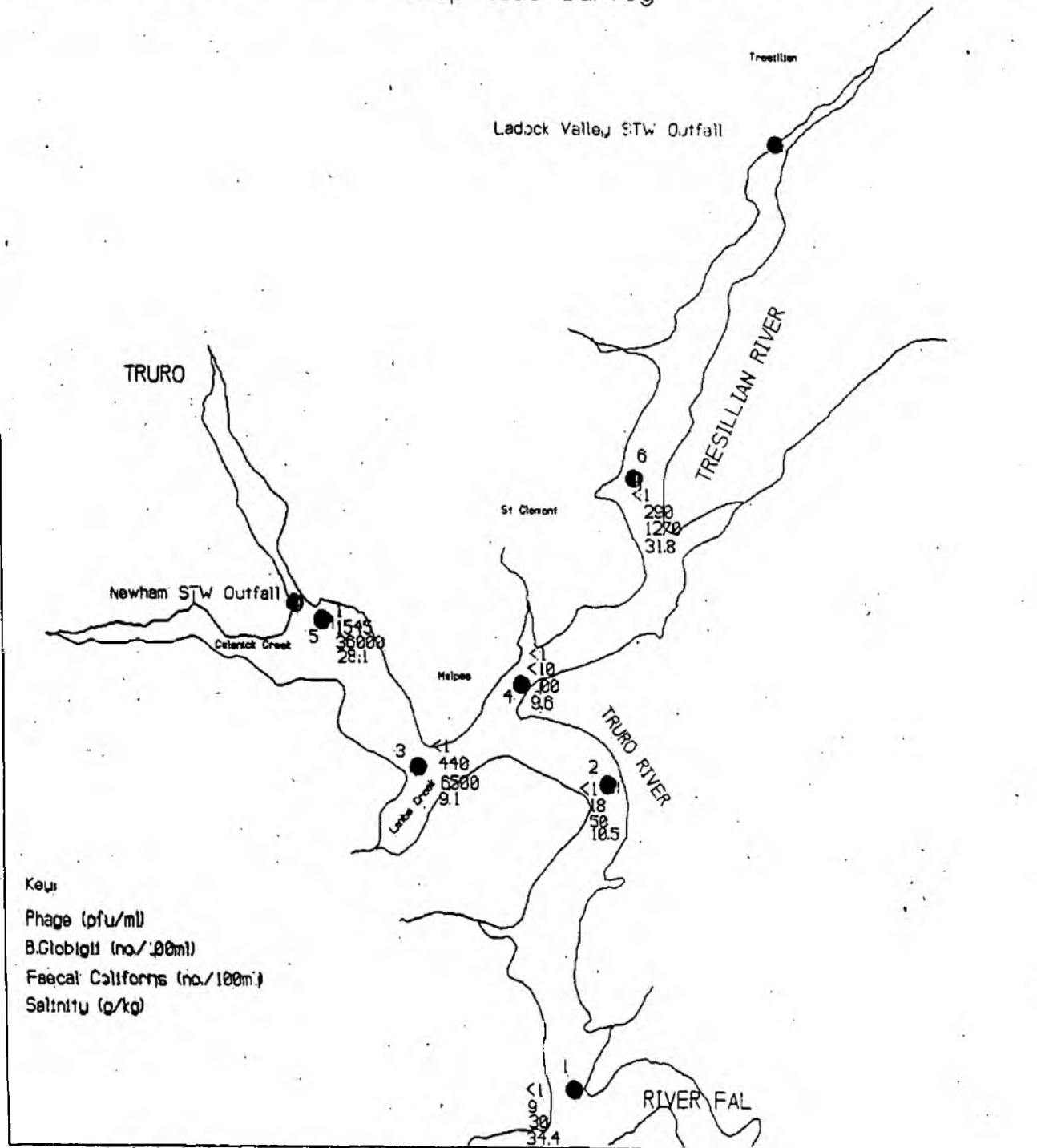
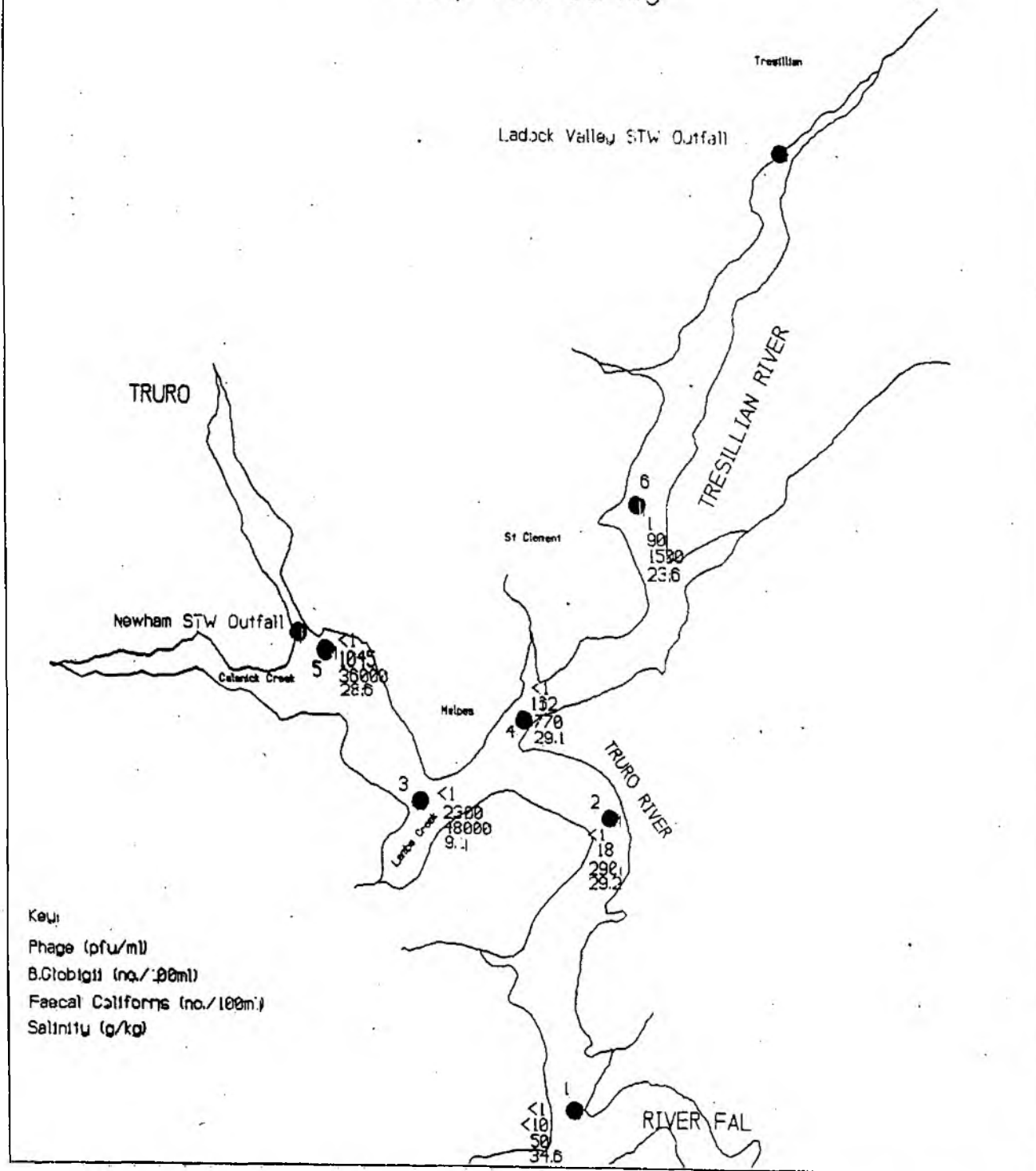


Fig 20. Fixed Site Sample Results HW(J) 01:25-04:00
Neap Tide Survey



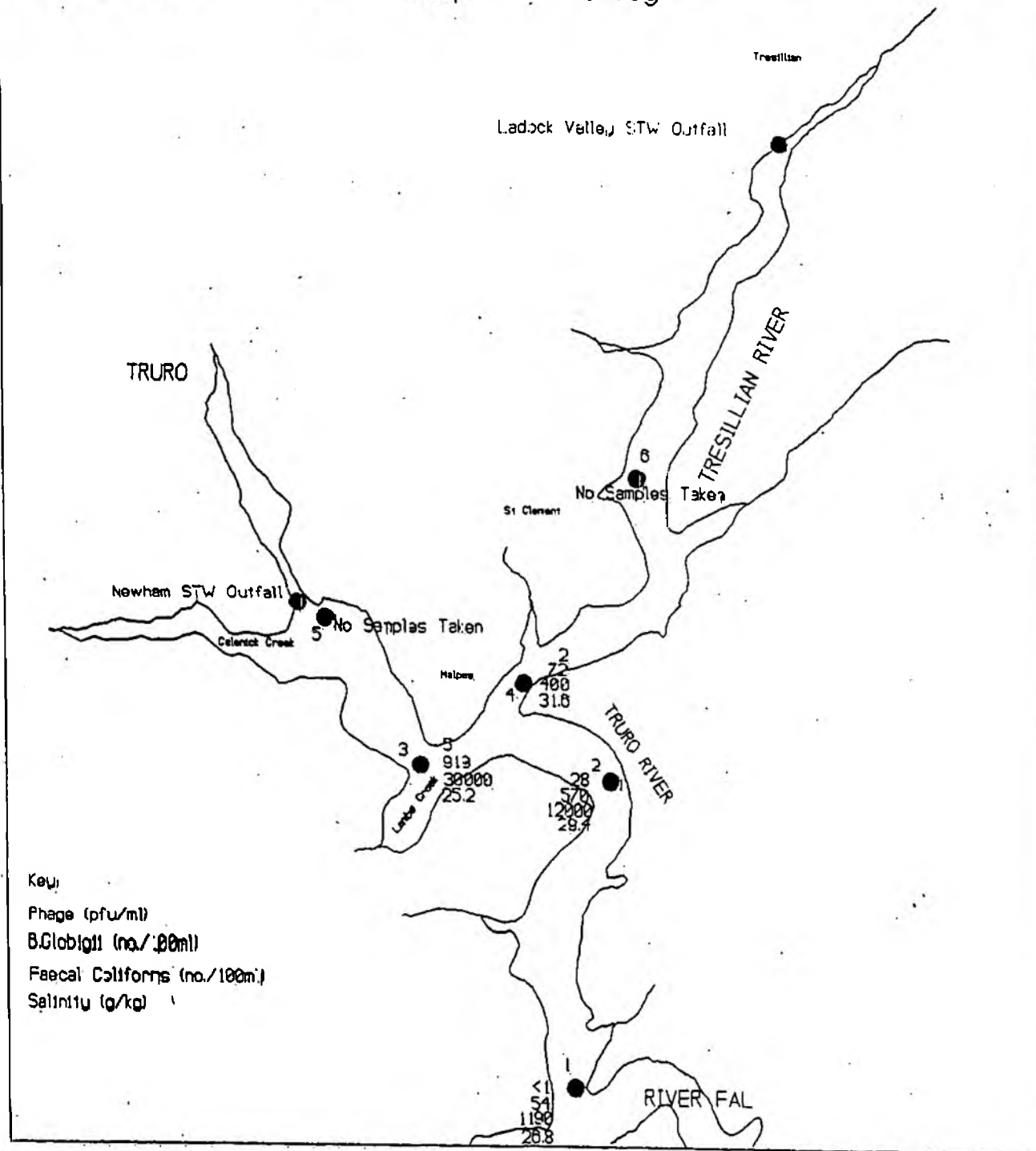


Fig 28. Fixed Site Sample Results HW(L) 15:55-16:35
Neap Tide Survey

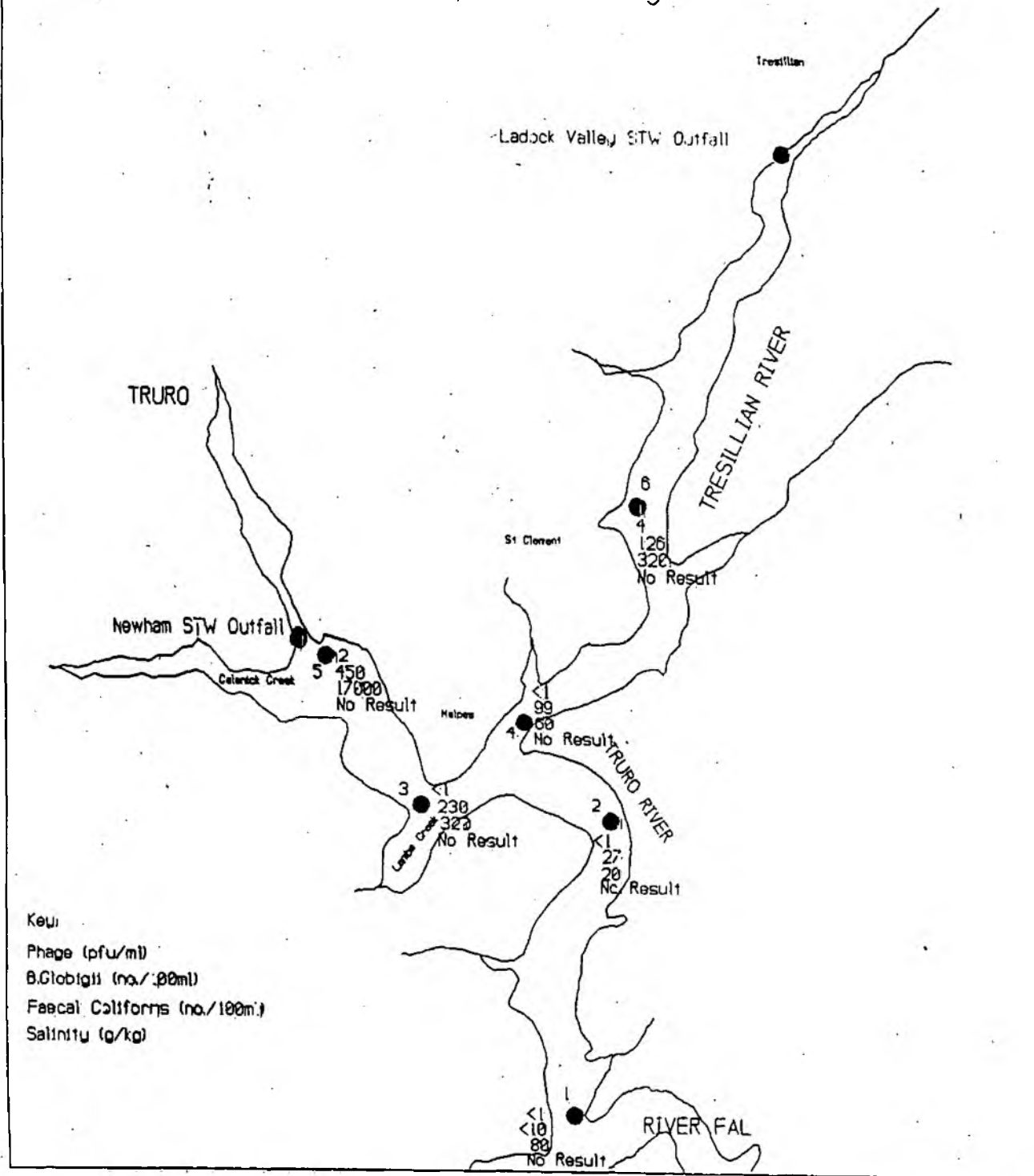


Table 1: Predicted Tides (Truro),

Spring Tide Survey

Date	Tidal State	Time (GMT)	Height (mAOD)
July 4	LW	Dries, apart from river water	
	HW	07:43	3.4
	LW	Dries, apart from river water	
	HW	20:00	3.6
July 5	LW	Dries, apart from river water	
	HW	08:32	3.3
	LW	Dries, apart from river water	
	HW	20:47	3.5

Table 2: Activity and Equipment List, Spring Tide Survey, 4 July
Newquay and Looe Valleys Impact Assessment
Spring Tide 4th July 1996

Activity	Personnel	Vessel	Equipment Used	Timescale (see table 3)	Comments
B. Globigii dosing	Mark Walton (CAI)	n/a	Watson Marlow Peristaltic Pump	A-H	
Dye Release	"	n/a	Fluorescein Dye	B	
Phage dosing	Bill Loxton (DAI)	n/a	Watson Marlow Peristaltic Pump	A-H	
Dye Release	"	n/a	Rhodamine Dye	B	
Final Effluent & Titro Sampling	Martin Dymond (CAS)	n/a	Standard EA sampling equipment	A-H	
Water Sampling (sites 1, 3 & 5)	Mark Jacob (CAS) Tim Geatches (CAI)	6.0 m RIB	Hydrobios Depth sampler and standard EA sampling equipment	B - I	Samples at G & H missed due to insufficient depth for boat
Sediment Sampling (sites 1, 3 & 5)	"	"	Van Veen Grab	"	"
Water Column Profiling (sites 1, 3 & 5)	"	"	Hydrolab H20	"	"
Water Sampling (sites 2, 4 & 6)	Pete Bluett (CAS) Eric Darbyshire (RTW)	5.4 m RIB	Hydrobios Depth sampler and standard EA sampling equipment	B - I	
Sediment Sampling (sites 2, 4 & 6)	"	"	Eckman Grab	"	
Water Column Profiling (sites 2, 4 & 6)	"	"	Hydrolab H20	"	
Water Sampling (all sites)	Peter Long (CAI) Pete Scobie (CAS)	4.65 m RIB	Hydrobios Depth sampler and standard EA sampling equipment	A, J, K & L	
Sediment Sampling (all sites)	"	"	Eckman Grab	"	
Water Column Profiling (all sites)	"	"	Hydrolab H20	"	
Dye Patch Tracking	Jeff Headon (CAS) Paul Salmon (RTW) Dave Smith (CAS)	4.65 m RIB	Differential Global Positioning System	B - I	
Dye Patch Sampling	"	"	Standard EA sampling equipment	"	
Dye Patch Profiling	"	"	Hydrolab H20	"	
River Gauging	Jeff Taylor (CAH) Chris Ridge (CAH)	n/a	Braystoke 002 Current Meter		

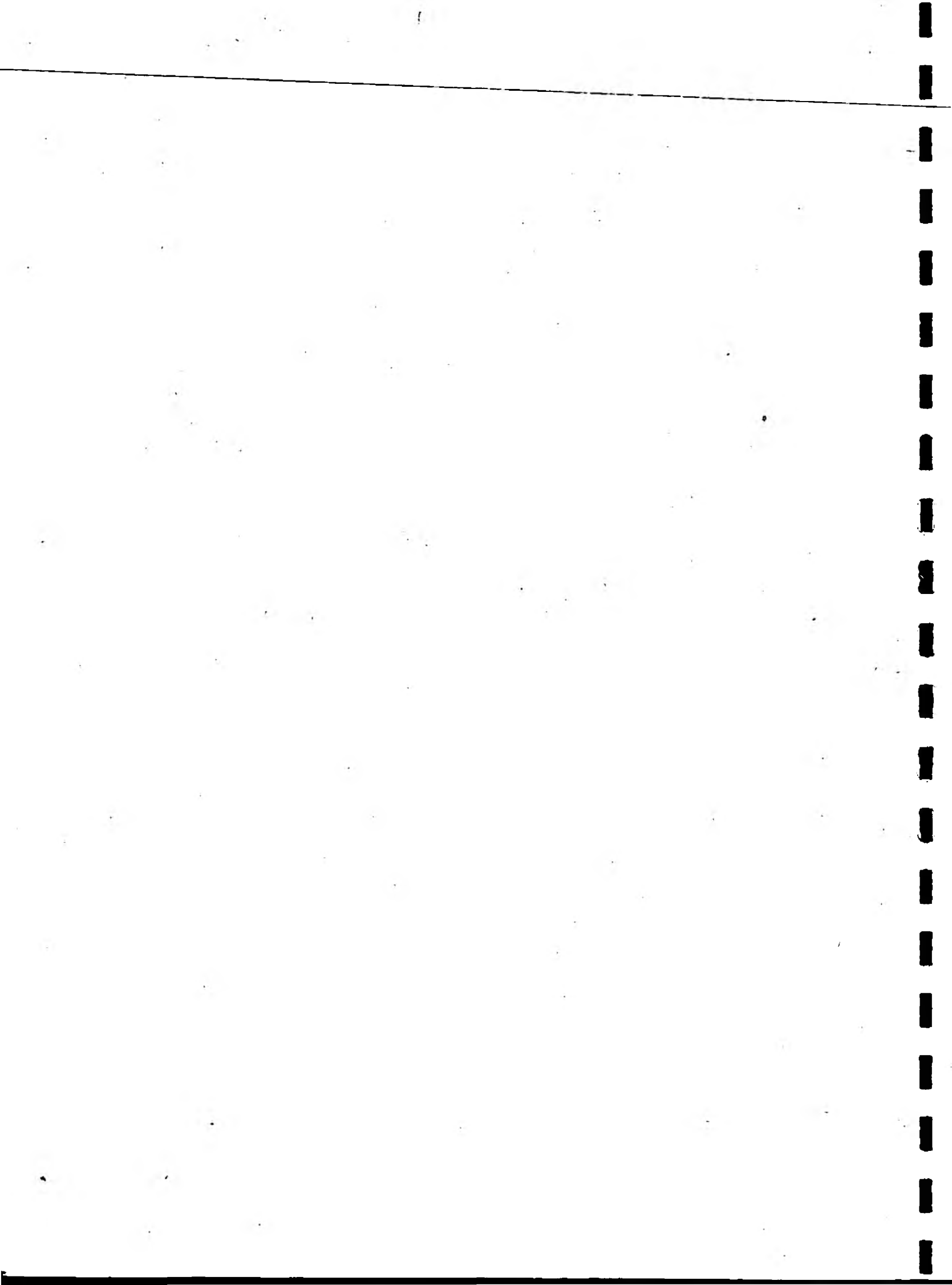
CAI - Cornwall Area Investigations

CAS - Cornwall Area Survey

CAH - Cornwall Area Hydrometrics

DAI - Devon Area Investigations

RTW - Regional Tidal Waters



**Table 3: Newham and Ludock Valley Impact Assessment
Spring Tide - 4th July 1996**

Activity	Location	LW A	HW B	HW+1 C	HW+2 D	HW+3 E	HW+4 F	HW+5 G	LW H	LW+3 I	HW J	LW K	HW L
Spore Dosing	Newham STW	■	■	■	■	■	■	■	■				
Phage Dosing	Ladock Outfall	■	■	■	■	■	■	■	■				
Effluent Monitoring	Newham & Ladock STW's	■	■	■	■	■	■	■	■				
Dye Injection & Tracking			■	■	■	■	■	■	■				
Water Sampling & Profiling	Sites 1,2,3 & 4	■	■	■	■	■	■	■	■	■	■	■	■
Water Sampling & Profiling	Sites 5 & 6		■	■	■	■	■			■	■		■
Sediment Sampling	Sites 1,2,3 & 4	■				■	■		■		■		■
Sediment Sampling	Sites 5 & 6					■	■				■		■

Table 4: B.Globigii Dosing Data, Spring Tide Survey, 4 July

TIME (GMT)	FLOW(mls/min)	B.GLOBIGII (no./ul)	FLUX (no/sec)
Date: 4/7/96			
02:00	10.0	1.21E+06	2.02E+08
02:46	10.0	1.43E+06	2.38E+08
03:46	10.0	1.19E+06	1.98E+08
04:46	10.0	1.39E+06	2.32E+08
05:46	10.0	1.30E+06	2.17E+08
06:46	10.0	1.28E+06	2.13E+08
07:45	10.0	9.50E+05	1.58E+08
08:30	10.0	7.90E+05	1.32E+08
09:41	10.0	1.17E+06	1.95E+08
10:45	10.0	1.08E+06	1.80E+08
11:49	10.0	1.38E+06	2.30E+08
12:57	10.0	1.41E+06	2.35E+08
14:01	10.0	3.10E+06	5.17E+08
Mean	10.0	1.4E+06	2.3E+08

Table 5: Phage Dosing Data, Spring Tide Survey, 4 July

TIME (GMT)	FLOW(mls/min)	PHAGE (PFU/ul)	FLUX (PFU/sec)
Date: 04/07/96			
01:45	8.3	2.64E+03	3.67E+05
02:45	8.3	4.00E+03	5.55E+05
03:45	8.3	1.29E+04	1.79E+06
04:45	8.3	9.64E+03	1.34E+06
05:45	8.3	6.64E+03	9.22E+05
06:35	8.3	4.10E+04	5.69E+06
07:35	8.3	4.60E+04	6.39E+06
08:40	8.3	2.90E+04	4.03E+06
09:40	8.3	4.00E+04	5.55E+06
10:40	8.3	4.20E+04	5.83E+06
11:50	8.3	1.35E+04	1.87E+06
12:55	8.3	1.22E+04	1.69E+06
13:55	8.3	1.39E+04	1.93E+06
Mean	8.3	2.10E+04	2.92E+06

Table 6: Newham STW Final Effluent Data, Spring Tide Survey, 4 July

TIME (GMT)	TEMPERATURE °C	SOLIDS (mg/l)	PHAGE (PFU/ml)	B.GLOBIGII (no./100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)
01:40	16.21	38.0	30	<10.00	9.00E+04	9.60E+05
02:40	15.90	20.0	24	4.50E+05	5.20E+04	8.00E+04
03:40	16.20	29.0	20	5.90E+05	5.00E+04	8.40E+05
04:40	15.80	32.0	32	7.50E+05	3.40E+04	4.80E+05
05:40	16.10	37.0	17	2.90E+05	4.00E+04	6.00E+05
06:40	16.20	68.0	14	2.50E+05	8.00E+04	4.80E+05
07:40	16.20	13.0	12	<10.0	1.70E+04	3.30E+05
08:40	16.40	16.0	11	<10.0	1.00E+04	2.40E+05
09:40	16.30	20.0	9	<10.0	3.90E+04	4.00E+05
10:45	16.70	13.0	5	<10.0	2.20E+04	2.80E+05
11:45	16.80	15.0	9	<10.0	4.10E+04	6.50E+05
12:50	16.90	18.0	6	<10.0	3.00E+04	3.60E+05
13:55	17.20	8.7	5	<10.0	2.30E+04	4.00E+05
Mean	16.38	25.21	14.92	4.66E+05 2:40 to 6:40 Only	4.06E+04	4.69E+05

Table 7: Ladock Valley STW Final Effluent Data, Spring Tide Survey, 4 July

TIME (GMT)	TEMPERATURE °C	SOLIDS (mg/l)	PHAGE (PFU/ml)	B.GLOBIGII (no./100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)	COMMENTS
01:50	16.00	20.0	2	<10.00	2.50E+04	6.00E+05	
02:50							No discharge
03:50							No discharge
04:50							No discharge
05:50		18.0	<1.0	<10.00	8.50E+03	2.00E+05	
06:50	16.20	11.0	11	<10.00	2.30E+04	7.20E+05	
07:55	16.10	251.0	12	<10.00	1.00E+05	2.40E+07	
08:55	16.40	103.0	17	<10.00	4.20E+05	3.80E+07	
09:55	16.50	57.0	8	<10.00	4.10E+05	3.60E+07	Tanks cleaned out prior to sample being taken
10:55	16.40	125.0	19	<10.00	2.10E+07	1.40E+08	
12:00	16.40	59.0	28	<10.00	4.30E+05	4.00E+07	
13:05	16.90	63.0	23	<10.00	3.60E+07	1.20E+08	
14:05	17.00	83.0	31	1.35E+05	6.00E+07	1.20E+08	
Mean	16.43	79.00	15.20	1.35E+04	1.18E+07	5.20E+07	

Table 8: Newham STW Dye Patch Sampling Data, Spring Tide Survey, 4 July

TIME	DEPTH	TEMPERATURE °C	SOLIDS (mg/l)	SALINITY (g/kg)	PHAGE (PFU/ml)	GLOBIGII (no./100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)	No of Dilutions From Newham STW
07:47	Surface	15.35	28.00	31.00	<1.0	3600	10000	72000	130
07:48	Mid depth	15.23	17.00	33.00	<1.0	1073	5000	36000	435
07:49	Bottom	15.24	16.00	33.00	<1.0	240	2100	16000	1946
08:52	Surface	15.38	8.00	32.40	<1.0	827	2900	40000	565
08:57	Bottom	15.37	41.00	34.60	<1.0	670	3300	15000	697
10:08	Surface	15.70	18.00	31.50	<1.0	320	140	2800	1459
10:47	Surface	15.60	16.00	32.10	<1.0	<1.0	80	800	
10:48	Bottom	15.62	14.00	32.30	<1.0	10	150	2000	46700
11:47	Surface	15.93	20.00	31.60	<1.0	240	140	2200	1946
12:20	Surface	16.34	31.00	31.60	<1.0	260	130	1780	1796
13:46	Surface	16.25	11.00	30.90	<1.0	250	10	1250	1868
13:45	Mid depth	16.20	14.00	31.50	<1.0	230	20	940	2030
13:49	Bottom	15.87	39.00	32.10	<1.0	173	20	870	2699

Note: No. of dilutions from Newham STW based on mean *B.Globigii* concentration in Final Effluent between 02:40 and 06:40 GMT of 4.67×10^5 /100ml

Table 9: Ladock Valley STW Dye Patch Sampling Data, Spring Tide Survey, 4 July

TIME	DEPTH	TEMPERATURE °C	SOLIDS (mg/l)	SALINITY (g/kg)	PHAGE (PFU/ml)	GLOBIGII (no./100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)	No of Dilutions From Newham STW
08:22	Surface	15.45	11.00	29.10	<1.0	<1.0	200.00	5000.00	
09:22	Surface	15.63	15.00	27.80	<1.0	<1.0	240.00	1800.00	
09:23	Bottom	15.45	32	30	1	<1.0	320	2400	
10:28	Surface	15.99	23.00	29.20	<1.0	<1.0	110.00	960.00	
10:29	Bottom	16.00	44.00	30.00	1.00	<1.0	160.00	2000.00	
11:25	Surface	16.20	38.00	29.70	<1.0	<1.0	180.00	1080.00	
11:27	Bottom	16.24	50.00	29.70	<1.0	<1.0	130.00	1230.00	
12:04	Surface	16.40	48.00	29.40	<1.0	<1.0	80.00	1280.00	
12:06	Bottom	16.38	55.00	29.60	<1.0	<1.0	130.00	1210.00	
12:38	Surface	16.46	28.00	30.10	<1.0	350.00	330.00	1230.00	1334
12:39	Mid depth	16.44	33.00	30.50	<1.0	470.00	400.00	5000.00	
12:40	Bottom	16.39	67.00	30.70	<1.0	390.00	300.00	3900.00	1197
13:17	Surface	16.64	23.00	30.50	<1.0	240.00	20.00	1450.00	1946
14:12	Surface	16.75	17.00	30.30	<1.0	155.00	50.00	1420.00	3013
14:10	Mid depth	16.62	19.00	30.70	<1.0	280.00	30.00	930.00	1668
14:14	Bottom	16.02	13.00	31.80	<1.0	320.00	100.00	2000.00	1459

Note: No. of dilutions from Newham STW based on mean *B.Globigii* concentration in Final Effluent between 02:40 and 06:40 GMT of 4.67×10^5 /100ml

Table 10: Newham STW Dye Patch Profiling Data, Spring Tide Survey, 4 July

DEPTH (m)	TIME (GMT)	TEMPERATURE °C	SALINITY (g/kg)	D.O (% sat)	TURBIDITY (ftu)	COMMENTS
0.1	07:48:30	15.35	31.0	102.3		Leading fluorescein edge
1.0		15.20	32.7	102.0	11.1	
2.0		15.23	33.0	101.4	10.6	
3.0		15.24	33.0	101.3	14.8	
0.1	08:52:30	15.38	32.4	106.3	18.4	Truro leading edge
1.0		15.37	32.4	106.3	11.8	
2.0		15.37	32.5	106.2	11.8	Wind:WSW 14 knots
3.0		15.37	32.6	106.1	9.6	
0.1	10:08:00	15.70	31.5	106.4		Truro profile.
0.5		15.70	31.5	105.6	18.1	
0.1	10:47:50	15.60	32.1	106.1		Truro profile in green patch.
1.0		15.65	32.3	104.6	13.2	
2.0		15.64	32.3	104.7	13.7	
3.0		15.62	32.3	105.3	12.7	
0.1	11:47:50	15.93	31.6	107.2		Truro profile in green patch
0.5		15.95	31.6	106.3	29.2	
0.1	12:20:50	16.34	31.6	110.4		Truro profile Wind:9-11 kn Westerly
0.5		16.40	31.8	110.0	47.8	
0.1	13:46:50	16.28	30.9	113.1	21.7	Truro green patch just before Fal.
1.0		16.28	31.6	112.9	24.8	
2.0		16.20	31.6	111.0	16.0	
3.0		16.20	31.8	110.1	17.2	
4.0		16.20	32.0	108.7	15.4	
5.0		15.90	32.1	107.8	13.1	
6.0		15.87	32.1	107.7	10.3	

Table 11: Ladock Valley STW Dye Patch Profiling Data, Spring Tide Survey, 4 July

DEPTH (m)	TIME (GMT)	TEMPERATURE °C	SALINITY (g/kg)	D.O (% sat)	TURBIDITY (ftu)	COMMENTS
0.1	08:22:00	15.45	29.1	93.8	6.3	Tresillian
0.5		15.38	29.3	92.9	14.8	
1.0		15.36	29.4	89.8	15.2	
0.1	09:22:00	15.63	27.8	95.8		Tresillian leading edge.
0.5		15.48	29.0	91.3	21.0	
1.0		15.45	29.2	90.2	13.4	
2.0		15.45	30.0	85.1	17.8	
0.1	10:28:50	15.99	29.2	95.5	25.4	Tresillian Profile. Wind:5-11 knots Westerly
1.0		15.92	30.0	94.7	38.5	
2.0		16.00	30.0	96.0	36.4	
0.1	11:25:30	16.20	29.7	100.2	27.0	Tresillian profile in red patch
1.0		16.22	29.6	99.0	37.9	
2.0		16.24	29.7	98.9	>50	
0.1	12:04:20	16.40	29.4	99.8	40.7	Tresillian patch Wind:9-12 knots
0.5		16.38	29.6	99.3	38.3	
1.0		16.38	29.6	99.5	44.1	
1.3		16.39	29.6	99.3	44.9	
0.1	12:38:10	16.46	30.1	100.4		Tresillian patch Dye spread out across river.
1.0		16.39	30.4	100.4	23.9	
2.0		16.44	30.5	100.2	26.3	
3.0		16.39	30.7	100.3	38.0	
0.1	13:17:00	16.64	30.3	104.3	22.3	Tresillian profile.
0.5		16.67	30.4	104.2	38.4	
1.4		16.58	30.4	103.7	104.0	
0.1	14:12:00	16.78	30.3	108.3	16.6	Tresillian patch Spread out over width of estuary.
1.0		16.67	30.5	106.3	39.7	
2.0		16.62	30.7	105.5	36.9	
3.0		16.40	31.2	104.2	34.2	
3.8		16.02	31.8	102.8	29.6	

TIDE TIME	TIME (GMT)	DEPTH	GLOBIGIN IN SEDIMENTS (No./g)	TEMPERATURE °C	SOLIDS (mg/l)	SALINITY (g/kg)
Date: 04/07/96						
LW	00:45	Surface		13.60	15.00	31.80
	00:50	Mid depth		15.68	22.00	32.00
	00:55	Bottom	<10.00	15.60	28.00	32.30
HW	08:11	Surface		14.83	6.20	33.70
	08:13	Mid depth		14.35	8.60	34.20
	08:15	Bottom		14.27	13.00	34.30
HW+1	09:13	Surface		15.05	11.00	33.00
	09:11	Mid depth		14.53	9.90	34.00
	09:15	Bottom		14.44	12.00	34.00
HW+2						
HW+3	11:22	Surface		15.62	18.00	32.60
	11:26	Mid depth		15.38	25.00	32.90
	11:31	Bottom	<10.00	15.36	32.00	33.00
HW+4	11:21	Surface		15.62	12.00	32.60
	11:23	Mid depth		15.37	28.00	32.90
	11:25	Bottom		15.36	22.00	33.00
LW+3	17:31	Surface		15.52	12.00	33.50
	17:33	Mid depth		15.14	14.00	33.80
	17:35	Bottom		14.96	42.00	34.10
HW	19:50	Surface		14.74	9.40	34.00
	19:55	Mid depth		14.52	10.00	34.60
	20:00	Bottom	<10.00	14.57	10.00	34.60
Date: 05/07/96						
LW	02:45	Surface		15.87	11.00	31.10
	02:50	Mid depth		15.99	9.10	32.10
	02:55	Bottom		15.75	19	32.6
HW	08:25	Surface		14.91	6.30	33.80
	08:30	Mid depth		14.41	9.80	34.50
	08:35	Bottom	<10.00	14.35	11.00	34.50

concentration in Final Effluent between 02:40 and 06:40 GMT of $4.67 \times 10^{-5}/100\text{ml}$

PHAGE (PFU/ml)	GLOBIGII (no./100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)	COMMENTS	No of Dilutions From Newham STW
<1.0	<1.0	420	5200		
<1.0	<1.0	400	4000		
<1.0	<1.0	350	4900		
<1.0	<1.0	60	280		
<1.0	<1.0	70	30		
<1.0	<1.0	10	70		
<1.0	<1.0	30	300		
<1.0	<1.0	20	160		
<1.0	<1.0	20	150		
HW+2 Data Inaccurate					
<1.0	38	110	1530		12289
<1.0	43	160	880		10860
<1.0	9	60	720		51889
<1.0	118	30	640		3958
<1.0	96	<10.00	270		4865
<1.0	70	10	440		6671
<1.0	5	10	160		93400
<1.0	1	10	230		467000
<1.0	<1.0	20	140		
<1.0	2	80	60		233500
<1.0	<1.0	40	20		
<1.0	1	40	40		467000
<1.0	17	270	650		27471
<1.0	65	280	2500		7185
<1.0	58	240	3400		8052
<1.0	16	20	410		29188
<1.0	2	10	80		233500
<1.0	5	10	90		93400

Table 13: Fixed Site 2 (Off Grimes Bar) Sampling Data, Spring Tide Survey, 4 July

TIDE TIME Date: 04/07/96	TIME (GMT)	DEPTH	GLOBIGII IN SEDIMENTS (No./g)	TEMPERATURE °C	SOLIDS (mg/l)	SALINITY (g/kg)	PHAGE (PFU/ml)	GLOBIGII (no./100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)	COMMENTS	No of Dilutions From Newham STW
LW	01:15	Surface		15.82	21.00	30.00	<1.0	<1.0	470	5500		
	01:20	Mid depth		15.83	24.00	30.00	<1.0	<1.0	600	6200		
	01:25	Bottom	<10.00	15.80	36.00	30.90	<1.0	<1.0	440	3900		
HW	08:01	Surface		15.10	12.00	33.40	<1.0	<1.0	90	560		
	08:04	Mid depth		14.80	15.00	33.90	<1.0	<1.0	70	450		
	08:06	Bottom		14.70	20.00	34.00	<1.0	<1.0	30	250		
HW+1	09:02	Surface		15.10	11.00	33.40	<1.0	<1.0	50	810		
	09:04	Mid depth		15.00	11.00	33.60	<1.0	<1.0	90	1030		
	09:06	Bottom		14.40	9.00	34.00	<1.0	<1.0	30	480		
HW+2	10:02	Surface		15.50	16.00	32.20	<1.0	<1.0				
	10:04	Mid depth		15.30	23.00	32.70	<1.0	<1.0	90	760		
	10:06	Bottom		15.40	27.00	32.90	<1.0	1	110	720		467000
HW+3	11:04	Surface		15.80	31.00	32.00	<1.0	<1.0				
	11:06	Mid depth		15.60	31.00	32.30	<1.0	123				3797
	11:12	Bottom	<10.00	15.60	35.00	32.40	<1.0	81	230	2000		5765
HW+4	12:02	Surface		16.10	29.00	31.10	<1.0	330	230	3500		1415
	12:04	Mid depth		16.00	31.00	31.50	<1.0	141	110	2600		3312
	12:06	Bottom		16.10	34.00	31.50	<1.0	41	120	2200		1390
HW+5	13:02	Surface		16.70	148.00	30.00	<1.0	<1.0	260	3200		
	13:04	Mid depth		16.50	37.00	30.40	<1.0	220	170	2200		2123
	13:06	Bottom		16.30	55.00	31.30	<1.0	230	140	1600		2030
LW	15:12	Surface		17.13	211.00	28.10	<1.0	<1.0	120	2000		
	15:14	Mid depth		16.38	21.00	30.80	<1.0	145	90	2200		3221
	15:16	Bottom	<10.00	16.19	22.00	31.30	<1.0	100	70	1080		4670
LW+3	16:59	Surface		16.10	19.00	33.00	<1.0	36	50	800		12972
	17:04	Mid depth		15.70	23.00	32.80	<1.0	45	40	600		10378
	17:06	Bottom		15.50	92.00	33.40	<1.0	<1.0	40	720		
HW	20:35	Surface		15.33	13.00	33.60	<1.0	23	130	200		20304
	20:40	Mid depth		14.93	9.90	34.30	<1.0	2	80	120		233500
	20:45	Bottom	<10.00	14.78	10.00	34.40	<1.0	2	140	50		233500
Date: 05/07/96												
LW	03:00	Surface		16.54	8.30	27.50	<1.0	200	400	5600		2335
	03:05	Mid depth		16.37	19.00	30.50	1.00	136	740	6000		3434
	03:10	Bottom		16.18	15.00	31.70	<1.0	95	400	3500		4916
HW	08:45	Surface		15.15	9.90	33.20	<1.0	21	50	900		22238
	08:50	Mid depth		14.81	13.00	34.20	<1.0	6	30	240		77833
	08:55	Bottom	<10.00	14.74	17.00	34.20	<1.0	6	20	150		77833

Note: No. of dilutions from Newham STW based on mean *B. Globigii* concentration in Final Effluent between 02:40 and 06:40 GMT of $4.67 \times 10^5/100\text{ml}$

Table 14: Fixed Site 3 (Off Gambe Creek) Sampling Data, Spring Tide Survey, 4 July

TIDE TIME Date: 04/07/96	TIME (GMT)	DEPTH	GLOBIGII IN SEDIMENTS (No./g)	TEMPERATURE °C	SOLIDS (mg/l)	SALINITY (g/kg)	PHAGE (PFU/ml)	GLOBIGII (no./100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)	COMMENTS	No of Dilutions From Newham STW
LW	01:40	Surface	<10.000	14.74	76.00	26.70	<1.0	<1.0	2400	19000		
HW	07:51	Surface		15.14	14.00	32.80	<1.0	<1.0	50	840		
	07:53	Mid depth		15.09	19.00	33.20	<1.0	1	30	580		
	07:55	Bottom		15.07	15.00	33.30	<1.0	<1.0	90	390		
HW+1	08:45	Surface		15.29	9.20	32.80	<1.0	<1.0	80	1000		
	08:41	Mid depth		15.18	15.00	33.10	<1.0	<1.0	70	880		
	08:39	Bottom		15.17	15.00	33.20	<1.0	<1.0	110	1000		
HW+2											HW+2 Data Inaccurate	
HW+3	10:51	Surface		15.76	17.00	30.90	<1.0	490				953
	10:53	Bottom	10.00	15.77	29.00	31.10	<1.0	620	420	7000		753
HW+4	11:55	Surface		16.42	26.00	30.10	<1.0	530	60	2600		881
LW+3	17:11	Surface		15.98	32.00	32.20	<1.0	60	60	720		7783
	17:13	Mid depth		15.98	43.00	32.20	<1.0	580	30	2300		805
	17:15	Bottom		15.72	103.00	32.60	<1.0	82	170	1570		5695
HW	20:55	Surface		15.70	7.50	32.80	<1.0	49	240	400		9531
	21:00	Mid depth		15.61	6.30	33.60	<1.0	25	30	350		18680
	21:05	Bottom	<10.00	15.39	9.90	33.70	<1.0	20	50	200		23350
Date: 05/07/96												
LW	03:20	Surface		16.38	24.00	27.00	<1.0	191	2000	10000		2445
HW	09:05	Surface		15.41	10.00	32.40	<1.0	28	40	1090		16679
	09:10	Mid depth		15.43	12.00	33.10	<1.0	19	80	520		24579
	09:15	Bottom	<10.00	15.25	11.00	33.60	<1.0	14	40	620		33357

Note: No. of dilutions from Newham STW based on mean *B.Globigii* concentration in Final Effluent between 02:40 and 06:40 GMT of 4.67×10^5 /100ml

Table 15: Fixed Site 4 (Tresillian Estuary upstream of Malpas) Sampling Data, Spring Tide Survey, 4 July

TIDE TIME Date: 04/07/96	TIME (GMT)	DEPTH	GLOBIGII IN SEDIMENTS (No./g)	TEMPERATURE °C	SOLIDS (mg/l)	SALINITY (g/kg)	PHAGE (PFU/ml)	GLOBIGII (no./100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)	COMMENTS	No of Dilutions From Newham STW
LW	01:50	Surface	<10.00	15.30	52.00	21.30	<1.0	<1.0	600	3600		
HW	07:42	Surface		15.20	13.00	33.00	<1.0	<1.0	130	860		
	07:44	Mid depth		15.10	10.00	33.30	<1.0	<1.0	80	670		
	07:46	Bottom		15.10	17.00	33.30	<1.0	<1.0	90	560		
HW+1	08:42	Surface		15.30	10.00	33.10	<1.0	<1.0	90	890		
	08:44	Mid depth		15.20	9.20	33.20	<1.0	<1.0	100	610		
	08:46	Bottom		15.20	14.00	33.20	<1.0	<1.0	130	1000		
HW+2	09:52	Surface		15.50	38.00	31.90	<1.0	<1.0				
	09:54	Mid depth		15.50	53.00	32.20	<1.0	<1.0				
	09:56	Bottom		15.50	22.00	32.30	<1.0	<1.0				
HW+3	10:52	Surface		15.80	31.00	32.00	<1.0	<1.0				
	10:56	Bottom	10.00	15.70	128.00	32.10	<1.0	<1.0	90	600		
HW+4	11:52	Surface		16.30	60.00	30.00	<1.0	<1.0	140	1500		
	11:56	Bottom		16.30	285.00	30.00	<1.0	<1.0	100	1800		
HW+5	12:52	Surface		16.80	24.00	25.00	<1.0	410	350	5300		1139
LW	14:02	Surface			34.00		<1.0	680	170	6000		687
	14:04	Mid depth		17.90		17.60						
	14:06	Bottom	<10.00									
LW+3	17:12	Surface		16.30	26.00	31.90	<1.0	118	40	800		3958
	17:16	Bottom		15.90	126.00	32.40	<1.0	91	60	1350		5132
HW	21:15	Surface		15.39	8.30	32.50	<1.0	22	10	300		21227
	21:20	Mid depth		15.46	<6.0	33.30	<1.0	14	30	270		33357
	21:25	Bottom	<10.00	15.40	7.10	33.50	<1.0	5	260	190		93400
Date: 05/07/96												
LW	03:30	Surface		16.54	24.00	26.00	<1.0	30	400	5000		15567
HW	09:25	Surface		15.51	9.90	32.60	1.00	48	720	460		9729
	09:30	Mid depth		15.33	15.00	33.40	<1.0	30	80	1010		15567
	09:35	Bottom	<10.00	15.31	21.00	33.40	<1.0	32	60	860		14594

Note: No. of dilutions from Newham STW based on mean *B. Globigii* concentration in Final Effluent between 02:40 and 06:40 GMT of $4.67 \times 10^5 / 100\text{ml}$

Table 16: Fixed Site 5 (Sunny Corner) Sampling Data, Spring Tide Survey, 4 July

TIDE TIME	TIME (GMT)	DEPTH	GLOBIGII IN SEDIMENTS (No./g)	TEMPERATURE °C	SOLIDS (mg/l)	SALINITY (g/kg)	PHAGE (PFU/ml)	GLOBIGII (no./100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)	COMMENTS	No of Dilutions From Newham STW
Date: 04/07/96												
HW	07:31	Surface		15.23	18.00	32.40	<1.0	<1.0	160	2300		
	07:37	Mid depth		15.23	14.00	32.50	<1.0	5	100	880		93400
	07:41	Bottom		15.22	18.00	32.80	<1.0	4	290	1210		116750
HW+1	08:32	Surface		15.32	14.00	31.60	<1.0	270	410	3400		1730
		Mid depth									Too shallow. No sample	
	08:35	Bottom		15.25	13.00	32.80	<1.0	13	390	2600		35923
HW+2											HW+2 Data inaccurate	
HW+3	11:30	Surface	<10.00	16.50	108.00	5.30	<1.0	440	260	2000		1061
HW+4	13:00	Surface		17.20	257.00	4.60	<1.0	6500	12300	70000		72
LW-3	17:02	Surface		17.50	45.00	29.60	<1.0	230	10	1500		2030
HW	21:35	Surface		16.21	7.10	32.00	<1.0	60	130	420		7783
	21:40	Mid depth		16.05		35.50					No sample	
	21:45	Bottom	<10.00	16.01	23.00	32.60	<1.0	46	50	420		10152
Date: 05/07/96												
HW	09:45	Surface		15.65	7.90	32.40	<1.0	39	50	750		11974
	09:50	Mid depth		15.46	7.50	33.00	<1.0	31	60	600		15065
	09:55	Bottom	<10.00	15.45	11.00	33.00	<1.0	25	60	540		18680

Note: No. of dilutions from Newham STW based on mean *B. Globigii* concentration in Final Effluent between 02:40 and 06:40 GMT of 4.67×10^5 /100ml

Table 17: Fixed Site 6 Sampling Data, Spring Tide Survey, 4 July

TIDE TIME	TIME (GMT)	DEPTH	GLOBIGII IN SEDIMENTS (No./g)	TEMPERATURE °C	SOLIDS (mg/l)	SALINITY (g/kg)	PHAGE (PFU/ml)	GLOBIGII (no./100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)	COMMENTS	No of Dilutions From Newham STW
Date: 04/07/96												
HW	07:32	Surface		15.30	15.00	32.30	<1.0	<1.0	200	1010		
	07:34	Mid depth		15.30	16.00	32.60	<1.0	<1.0	210	1520		
	07:36	Bottom		15.30	16.00	32.60	<1.0	<1.0	200	1400		
HW+1	08:38	Surface		15.50	11.00	32.20	<1.0	<1.0	110	1800		
	08:34	Mid depth		15.30	13.00	32.50	<1.0	<1.0	210	1530		
	08:36	Bottom		15.30	12.00	32.60	<1.0	<1.0	220	1480		
HW+2											HW+2 data inaccurate	
HW+3	11:14	Surface	<10.00	16.70	42.00	5.10	<1.0	<1.0	240	2200		
HW+4	08:24	Surface		17.20	566.00	3.00	<1.0	<1.0	530	4800		
LW-3	17:00	Surface		17.30	36.00	30.20	<1.0	310	40	1790		1506
HW	22:00	Surface		15.99	15.00	32.40	<1.0	290	340	5000		1610
	22:05	Mid depth		15.70	27.00	33.10	<1.0	33	130	800		14152
	22:10	Bottom	<10.00	15.61	29.00	33.20	<1.0	34	50	250		13735
Date: 05/07/96												
HW	10:05	Surface		15.99	12.00	31.10	<1.0	69	90	1160		6768
	10:10	Mid depth		15.90		31.80					No sample taken	
	10:15	Bottom	<10.00	15.70	15.00	32.30	<1.0	39	140	1620		11974

Note: No. of dilutions from Newham STW based on mean *B. Globigii* concentration in Final Effluent between 02:40 and 06:40 GMT of 4.67×10^5 /100ml

Table 18: Fixed Site 1 (Upstream of Confluence with the Fal Estuary) Profiling Data, Spring Tide Survey, 4 July

TIDE TIME Date: 04/07/96	TIME (GMT)	DEPTH (m)	TEMPERATURE °C	SALINITY (psu)	D.O (% sat)	pH	TURBIDITY (ftu)	COMMENTS
LW	00:45	0.1	15.60	31.8	99.3	7.99	42.7	
		1.0	15.68	31.8	98.4	8.01	29.0	
		2.0	15.70	31.9	98.9	8.02	29.4	
		3.0	15.69	32.0	99.2	8.02	32.5	
		4.0	15.68	32.0	99.4	8.02	38.5	
		5.0	15.68	32.0	99.6	8.03	45.0	
		6.0	15.66	32.1	100.3	8.03	44.5	
		7.0	15.62	32.2	100.9	8.04	38.5	
		8.0	15.61	32.2	101.2	8.04	25.6	
		9.0	15.60	32.3	101.3	8.04	22.2	
HW	08:10	0.1	14.83	33.7	100.2	8.09	12.0	
		1.0	14.75	33.8	99.8	8.09	12.0	
		2.0	14.61	34.0	98.1	8.08	12.0	
		3.0	14.53	34.1	94.6	8.07	12.0	
		4.0	14.42	34.2	93.2	8.07	12.0	
		5.0	14.39	34.2	90.5	8.07	12.0	
		7.0	14.30	34.3	31.2	8.06	13.0	
		9.0	14.28	34.4	90.0	8.06	12.0	
		11.0	14.26	34.3	89.1	8.06	12.0	
		13.0	14.27	34.3	89.3	8.06	10.0	
HW+1	09:03	0.1	15.05	33.0	102.3	8.10	4.0	
		1.0	14.99	33.1	101.2	8.10	5.0	
		2.0	14.94	33.1	100.0	8.10	4.0	
		3.0	14.81	33.6	96.7	8.09	5.0	
		5.0	14.60	33.9	93.5	8.07	4.0	
		7.0	14.53	34.0	92.8	8.07	4.0	
		9.0	14.51	34.0	92.1	8.07	3.0	
		11.0	14.44	34.0	91.5	8.07	4.0	
HW+2	10:17	0.1	15.27	32.8	102.4	8.10	15.0	
		1.0	15.23	32.9	100.4	8.09	15.0	
		2.0	15.12	33.0	98.8	8.09	15.0	
		3.0	15.12	33.0	97.9	8.08	15.0	
		5.0	15.03	33.2	95.5	8.08	13.0	
		7.0	14.99	33.5	94.6	8.08	11.0	
		9.0	14.94	33.6	94.7	8.08	10.0	
		11.0	14.92	33.6	95.0	8.07	13.0	
HW+3	11:22	0.1	15.62	32.6	103.9	8.09	20.0	
		1.0	15.49	32.8	101.3	8.08	23.0	
		2.0	15.40	32.9	99.1	8.08	28.0	
		3.0	15.37	32.8	98.7	8.08	29.0	
		5.0	15.38	32.9	97.9	8.08	32.0	
		7.0	15.37	32.9	97.6	8.08	32.0	
		9.0	15.36	33.0	99.5	8.09	32.0	
HW+4	12:10	0.1	15.80	31.6	102.4	8.08	25.0	
		1.0	15.70	31.7	100.6	8.08	27.0	
		2.0	15.62	31.8	99.4	8.08	33.0	
		3.0	15.61	31.9	98.7	8.08	33.0	
		5.0	15.60	32.3	98.0	8.08	26.0	
		7.0	15.61	32.3	97.7	8.08	25.0	
		9.0	15.59	32.5	99.9	8.08	40.0	
LW+3	17:30	0.1	15.52	33.5	111.0	8.15	17.0	
		1.0	15.50	33.6	111.4	8.16	17.0	
		2.0	15.36	33.8	109.7	8.14	17.0	
		3.0	15.31	33.8	109.9	8.15	17.0	
		5.0	15.14	33.8	108.3	8.13	18.0	
		7.0	14.97	34.0	104.8	8.13	29.0	
		9.0	14.96	34.1	103.8	8.12	30.0	
		11.0	14.96	34.1	103.5	8.12	35.0	
HW	19:45	0.1	14.74	34.0	110.6	8.15	26.7	
		1.0	14.74	34.4	109.2	8.67	24.4	
		2.0	14.77	34.4	111.8	8.15	19.2	
		3.0	14.70	34.4	112.2	8.15	16.2	
		5.0	14.63	34.6	111.2	8.14	15.0	
		7.0	14.52	34.6	110.4	8.14	14.0	
		9.0	14.52	34.6	110.4	8.18	13.6	
		11.0	14.52	34.6	110.2	8.14	12.9	
		13.0	14.52	34.6	110.0	8.14	12.8	
		15.0	14.51	34.6	109.4	8.13	11.4	
Date: 05/07/96 LW	02:45	0.1	15.87	31.3	97.5	8.07	9.5	Wind: 0
		1.0	16.03	31.3	98.2	8.07	8.9	
		2.0	16.05	31.7	98.7	8.08	9.3	
		3.0	16.06	31.9	101.4	8.09	9.5	
		5.0	15.99	32.1	102.3	8.10	9.6	
		7.0	15.94	32.4	102.6	8.10	11.1	
		9.0	15.75	32.6	102.9	8.11	12.1	
HW	08:20	0.1	14.91	33.8	105.6	8.12	6.7	Wind: 3 knots
		1.0	14.81	34.2	105.4	8.12	8.7	
		2.0	14.56	34.2	105.5	8.12	7.2	
		3.0	14.57	34.3	105.4	8.12	10.8	
		5.0	14.48	34.4	104.5	8.11	9.1	
		7.0	14.41	34.5	103.9	8.11	10.3	
		9.0	14.35	34.6	103.4	8.11	9.6	
		11.0	14.35	34.6	103.1	8.11	15.2	
		13.0	14.34	34.6	103.1	8.11	8.3	
		15.0	14.35	34.5	102.4	8.10	25.1	

Table 19: Fixed Site 2 (Off Grimes Bar) Profiling Data, Spring Tide Survey, 4 July

TIDE TIME Date: 04/07/96	TIME (GMT)	DEPTH (m)	TEMPERATURE °C	SALINITY (g/kg)	D.O (% sat)	pH	TURBIDITY (ftu)	COMMENTS
LW	01:30	0.1	15.67	27.0	88.0	7.91	27.6	
		1.0	15.85	28.8	85.5	7.91	25.0	
		2.0	15.78	30.2	88.5	7.95	19.9	
		3.0	15.83	30.6	90.8	7.98	18.3	
		4.0	15.83	30.8	92.6	7.99	23.0	
		5.0	15.80	30.9	92.3	7.99	20.5	
HW	07:50	0.1	15.03	33.5	109.9	8.10		
		1.0	15.04	33.5	109.9	8.10		
		2.0	15.03	33.5	107.9	8.10		
		3.0	14.95	33.7	105.7	8.09		
		4.0	14.86	33.8	105.1	8.08		
		5.0	14.81	33.9	104.2	8.08		
		6.0	14.78	33.9	103.4	8.08		
		7.0	14.74	33.9	102.9	8.08		
HW+1	09:00	8.8	14.73	34.0	100.5	8.07		
		0.1	15.12	33.4	100.0	8.11		
		1.0	15.11	33.4	101.0	8.11		
		2.0	15.09	33.5	101.9	8.11		
		3.0	15.07	33.5	102.9	8.11		
		4.0	15.00	33.6	102.0	8.10		
		5.0	14.96	33.7	102.6	8.11		
		6.0	14.81	33.9	102.2	8.10		
HW+2	10:07	7.0	14.79	34.0	102.0	8.10		
		8.0	14.72	34.0	100.9	8.10		
		0.1	15.52	32.2	102.0	8.07		
		1.0	15.44	32.4	103.1	8.07		
		2.0	15.42	32.5	104.8	8.07		
		3.0	15.38	32.6	106.4	8.07		
		4.0	15.33	32.7	107.5	8.08		
		5.0	15.33	32.9	108.6	8.08		
HW+3	11:00	6.0	15.34	33.0	109.3	8.08		
		7.0	15.35	32.9	108.2	8.08		
		8.0	15.36	32.9	109.0	8.09		
		8.8	15.36	32.9	109.2	8.09		
		0.1	15.65	32.1	102.5	8.07		
		1.0	15.62	32.1	105.1	8.07		
		2.0	15.63	32.2	106.7	8.07		
		3.0	15.61	32.3	107.2	8.07		
HW+4	12:05	4.0	15.61	32.3	107.2	8.08		
		5.0	15.61	32.4	108.3	8.08		
		6.0	15.61	32.4	109.0	8.08		
		7.0	15.62	32.4	108.5	8.08		
		7.9	15.63	32.4	108.5	8.08		
		0.1	16.11	31.1	103.4	8.04		
		1.0	16.04	31.1	104.5	8.04		
		2.0	16.03	31.2	105.3	8.05		
HW+5	13:05	3.0	16.04	31.4	107.0	8.05		
		4.0	16.04	31.5	107.2	8.05		
		5.0	16.06	31.5	108.4	8.05		
		6.0	16.09	31.5	109.1	8.05		
		6.7	16.09	31.5	108.2	8.05		
		0.1	16.65	30.0	100.4	7.99		
		1.0	16.60	30.2	100.4	8.00		
		2.0	16.50	30.4	100.3	8.00		
LW	14:10	3.0	16.53	30.5	100.4	8.01		
		4.0	16.43	31.0	101.4	8.03		
		5.0	16.41	31.2	101.1	8.04		
		5.5	16.32	31.3	102.1	8.04		
		0.1	17.13	28.1	99.7	7.96		
		1.0	16.95	28.5	101.6	7.98		
		2.0	16.68	29.9	101.0	7.99		
		3.0	16.38	30.8	101.9	8.02		
LW+3	17:15	4.0	16.34	31.1	102.6	8.03		
		5.0	16.20	31.3	102.7	8.03		
		5.3	16.19	31.3	102.3	8.03		
		0.1	16.07	33.0	114.9	8.13		
		1.0	15.69	33.1	115.3	8.14		
		2.0	15.92	33.0	118.3	8.15		
		3.0	15.72	33.3	117.3	8.14		
		4.0	15.74	32.8	118.9	8.15		
HW	20:30	5.0	15.58	33.4	118.9	8.13		
		6.0	15.43	33.5	116.4	8.13		
		7.0	15.40	33.5	115.7	8.13		
		7.6	15.40	33.4	116.9	8.14		
		0.1	15.33	33.6	113.9	8.16	27.4	Wind: 0
		1.0	15.27	33.8	114.5	8.16	32.3	
		2.0	15.14	34.0	114.5	8.16	29.8	
		3.0	15.06	34.2	113.6	8.15	24.5	
LW	03:00	4.0	14.93	34.3	112.9	8.15	19.9	
		5.0	14.88	34.3	111.9	8.14	18.9	
		6.0	14.83	34.3	111.7	8.14	16.7	
		11.0	14.78	34.4	110.6	8.14	15.8	
		0.1	16.54	27.5	86.7	7.95	14.7	Wind: 0
		1.0	16.44	30.1	93.7	8.02	12.6	
		2.0	16.40	30.5	93.3	8.03	13.9	
		3.0	16.37	30.5	93.0	8.02	11.2	
HW	08:40	4.0	16.20	31.6	97.1	8.07	11.1	
		6.0	16.18	31.7	97.6	8.07	12.0	
		0.1	15.15	33.2	118.5	8.14	8.7	Wind: 9 knots
		1.0	15.12	33.6	109.1	8.14	8.8	
		2.0	15.06	33.6	107.4	8.13	7.5	
		3.0	14.99	33.7	106.4	8.13	7.4	
		4.0	14.81	34.1	104.2	8.11	6.5	
		7.0	14.78	34.2	104.2	8.11	7.2	
LW		9.0	14.74	34.2	103.8	8.11	8.0	
		11.0	14.74	34.2	103.8	8.11	8.0	

Table 20: Fixed Site 3 (Off Lambe Creek) Profiling Data, Spring Tide Survey, 4 July

TIDE TIME Date: 04/07/96	TIME (GMT)	DEPTH (m)	TEMPERATURE °C	SALINITY (g/kg)	D.O (% sat)	pH	TURBIDITY (ftu)	COMMENTS
LW	01:35	0.1	14.94	26.7	75.4	7.75	101.0	
HW	07:46	0.1	15.14	32.8	98.1	8.09	22.0	
		1.0	15.15	32.9	96.9	8.09	20.0	
		2.0	15.09	33.2	95.6	8.09	23.0	
		3.0	15.07	33.3	95.3	8.09	21.0	
		4.0	15.07	33.3	95.0	8.08	20.0	
HW+1	08:45	0.1	15.29	32.8	98.7	8.09	16.0	
		1.0	15.22	32.9	98.2	8.09	10.0	
		2.0	15.18	33.1	97.5	8.09	11.0	
		3.0	15.16	33.2	95.0	8.08	13.0	
		4.0	15.17	33.2	94.3	8.07	17.0	
HW+2	09:50	0.1	15.47	31.9	96.7	8.06		
		1.0	15.45	32.1	96.1	8.06	15.0	
		2.0	15.45	32.1	95.7	8.07	13.0	
		3.0	15.46	32.1	95.5	8.07	10.0	
HW+3	10:47	0.1	15.76	30.9	91.3	8.01	14.0	
		1.0	15.74	31.0	91.0	8.01	15.0	
		2.0	15.77	31.1	91.5	8.02	13.0	
HW+4	11:58	0.1	16.42	30.1	90.1	8.00	131.0	
		1.0	16.40	30.1	88.8	7.99	238.0	
LW+3	17:11	0.1	15.98	32.2	105.4	8.10	30.0	
		1.0	15.90	32.4	103.9	8.11	28.0	
		2.0	15.80	32.5	102.9	8.10	37.0	
		3.0	15.77	32.6	102.4	8.10	50.0	
HW	20:50	0.1	15.70	32.8	112.4	8.15	31.7	Wind: 2 knots
		1.0	15.70	33.0	112.3	8.15	32.7	
		2.0	15.61	33.3	112.7	8.15	30.8	
		3.0	15.48	33.6	113.1	8.15	28.3	
		5.0	15.39	33.7	113.6	8.15	29.3	
Date: 05/07/96								
LW	03:20	0.1	16.38	27.0	86.1	7.87	41.6	Wind: 3 knots
HW	09:00	0.1	15.41	32.4	107.2	8.12	19.2	Wind: 2 knots
		1.0	15.45	32.9	106.9	8.13	18.1	
		2.0	15.43	33.1	107.2	8.13	18.1	
		3.0	15.25	33.5	105.3	8.12	14.9	
		4.0	15.25	33.6	104.8	8.12	22.0	

Table 21: Fixed Site 4 (Tresillian Estuary upstream of Malpas) Profiling Data, Spring Tide Survey, 4 July

TIDE TIME Date: 04/07/96	TIME (GMT)	DEPTH (m)	TEMPERATURE °C	SALINITY (g/kg)	D.O (% sat)	pH	TURBIDITY (ftu)	COMMENTS
LW		0.1	15.30	21.3	80.3	7.75	108.0	
HW	07:50	0.1	15.19	33.0	99.7	8.02		
		1.0	15.15	33.1	97.3	8.04		
		2.0	15.13	33.3	96.3	8.05		
		3.0	15.13	33.3	97.1	8.05		
		4.0	15.12	33.3	97.2	8.06		
HW+1	08:47	0.1	15.28	33.1	99.6	8.10		
		1.0	15.25	33.1	101.3	8.10		
		2.0	15.21	33.2	102.5	8.10		
		3.0	15.20	33.2	102.8	8.09		
		3.6	15.20	33.2	103.8	8.10		
HW+2	09:55	0.1	15.53	31.9	103.2	8.06		
		1.0	15.51	32.1	104.5	8.07		
		2.0	15.47	32.2	104.4	8.06		
		2.9	15.46	32.3	104.6	8.06		
HW+3	10:45	0.1	15.75	32.0	101.7	8.03		
		0.5	15.71	32.1	103.7	8.03		
		1.0	15.70	32.1	104.5	8.03		
		1.5	15.67	32.1	104.5	8.04		
		2.0	15.68	32.1	104.7	8.04		
HW+4	11:50	0.1	16.32	30.0	103.9	7.98		Too shallow. Moved downstream
		0.5	16.29	30.0	103.7	7.99		
		1.0	16.30	30.1	103.7	7.99		
		1.4	16.31	30.0	103.6	7.99		
HW+5	12:55	0.1	16.80	25.0	99.2	7.96		
		0.5	16.80	25.0	99.6	7.96		
		0.9	16.82	25.0	100.8	7.96		
LW	14:00	0.1	17.93	17.6	94.3	7.85		
		0.4	17.96	18.3	92.8	7.85		
LW+3	17:10	0.1	16.32	31.9	112.8	8.13		
		1.0	15.96	32.4	112.6	8.12		
		2.0	15.95	32.4	113.1	8.12		
		2.6	15.95	32.4	113.4	8.12		
HW	21:10	0.1	15.39	32.8	112.5	8.15	9.5	Wind: 1 knot
		1.0	15.47	32.9	112.9	8.15	9.1	
		2.0	15.46	33.3	113.0	8.15	8.5	
		3.0	15.41	33.4	113.1	8.15	8.9	
		5.0	15.40	33.8	113.0	8.15	9.1	
Date: 05/07/96								
LW	03:30	0.1	16.54	26.0	85.4	7.94	20.1	Wind: 3 knots
HW	09:45	0.1	15.51	32.6	112.0	8.13	40.2	Wind: 0
		1.0	15.49	32.9	108.2	8.12	26.4	
		2.0	15.33	33.4	106.3	8.11	26.5	
		3.0	15.31	33.4	105.7	8.11	26.7	
		5.0	15.31	33.4	105.6	8.11	36.7	

Table 22: Fixed Site 5 (Sunny Corner) Profiling Data, Spring Tide Survey, 4 July

TIDE TIME	TIME (GMT)	DEPTH (m)	TEMPERATURE °c	SALINITY (g/kg)	D.O (% sat)	pH	TURBIDITY (ftu)	COMMENTS
Date: 04/07/96								
HW	07:30	0.1	15.23	32.4	93.5	8.07	35.0	
		1.0	15.25	32.5	92.7	8.08	33.0	
		2.0	15.24	32.7	92.2	8.08	20.0	
		2.8	15.22	32.8	91.8	8.08	17.0	
HW+1	08:33	0.1	15.32	31.6	93.1	8.05	14.0	
		1.0	15.30	32.4	91.0	8.05	15.0	
		2.0	15.25	32.8	91.0	8.05	12.0	
HW+2	09:41	0.1	15.59	30.3	89.2	8.01		
		1.0	15.36	32.2	92.4	8.01	13.0	
HW+3.5	11:30	0.1	16.50	5.3	82.0			
HW+5	13:00	0.1	17.10	4.6	87.7			
LW+3	17:02	0.1	17.15	29.6	102.4	8.08	60.0	
HW	21:30	0.1	16.21	32.0	113.0	8.13	42.8	Wind: 0
		1.0	16.05	32.5	112.0	8.14	40.4	
		2.0	16.01	32.6	112.2	8.14	37.7	
Date: 05/07/96								
HW	09:25	0.1	15.65	32.4	101.3	7.93	18.6	Wind: 8 knots
		1.0	15.51	32.8	102.3	8.10	17.2	
		2.0	15.46	33.0	102.9	8.10	12.1	
		3.0	15.45	33.0	103.6	8.11	16.2	

Table 23: Fixed Site 6 Profiling Data, Spring Tide Survey, 4 July

TIDE TIME	TIME (GMT)	DEPTH (m)	TEMPERATURE °c	SALINITY (g/kg)	D.O (% sat)	pH	TURBIDITY (ftu)	COMMENTS
Date: 04/07/96								
HW	07:30	0.1	15.33	32.3	93.6	7.95		
		1.0	15.29	32.5	94.0	7.99		
		2.0	15.27	32.6	95.3	8.01		
		3.0	15.27	32.6	95.8	8.02		
		4.0	15.27	32.6	94.9	8.03		
HW+1	08:30	0.1	15.45	32.2	97.3	8.06		
		1.0	15.33	32.4	97.5	8.04		
		2.0	15.32	32.5	97.2	8.04		
		3.0	15.31	32.5	97.5	8.05		
		3.8	15.30	32.6	96.8	8.05		
HW+2	09:40	0.1	15.58	31.2	96.6	7.97		
		1.0	15.59	31.2	97.3	7.98		
		2.0	15.62	31.3	98.1	7.99		
		3.0	15.65	31.3	98.9	8.00		
HW+3.5	11:15	0.1	16.70	5.1	94.4			
HW+5	12:35	0.1	17.20	3.0	81.2			
LW+3	17:00	0.1	17.13	30.2	109.3	8.05		
		1.0	17.08	30.2	109.3	8.05		
		2.0	17.07	30.2	110.5	8.05		
		2.3	17.07	30.3	111.5	8.05		
HW	21:45	0.1	15.97	32.4	106.7	8.11	9.7	
		1.0	15.79	32.8	108.3	8.13	7.7	
		2.0	15.70	33.1	108.6	8.13	7.4	
		3.0	15.61	33.2	107.9	8.13	7.8	
Date: 05/07/96								
HW	10:10	0.1	15.99	31.1	101.9	8.07	20.1	Wind: 1 knot
		1.0	15.90	31.8	104.9	8.09	31.0	
		2.0	15.70	32.3	101.0	8.08	16.9	

Table 24: Spring Survey, 4 July 1996, Meteorological Data

Time (GMT)	Speed (Knots)	Direction
08:52	14	WSW
10:28	5-11	Westerly
12:04	9-12	
12:20	9-11	Westerly
19:45	3	
20:30	0	
20:50	2	
02:45	0	
03:20	3	
08:20	3	
08:50	9	

Table 25: River gauging Data, Spring Tide Survey, July 4/5

4 July 1996			
Watercourse	Time (GMT)	Flow Rate m ³ /sec	NGR
Tresillain Stream	12:00	0.226	SW 8700 4650
Calenick Stream	09:20	0.048	SW 8230 4320
River Allen	11:00	0.095	SW 8250 4550
River Kenwyn	10:00	0.099	SW 8198 4503
5 July 1996			
Watercourse	Time (GMT)	Flow Rate m ³ /sec	NGR
Tresillain Stream	12:10	0.252	SW 8700 4650
Calenick Stream	10:10	0.051	SW 8230 4320
River Allen	11:00	0.144	SW 8250 4550
River Kenwyn	09:30	0.100	SW 8198 4503

Table 26: Predicted Tides (Truro),
Neap Tide, 8/9 August

Date	Tidal State	Time (GMT)	Height (mAOD)
Aug 8	LW	Dries, apart from river water	
	HW	12:28	2.3
Aug 9	LW	Dries, apart from river water	
	HW	01:07	2.2
	LW	Dries, apart from river water	
	HW	13:39	2.4
	LW	Dries, apart from river water	

Table 27: Activity and Equipment List, Spring Tide Survey, 8 August

Activity	Personnel	Vessel	Equipment Used	Timescale (see table 28)	Comments
B. Globigii dosing	Mark Walton (CAI)	n/a	Watson Marlow Peristaltic Pump	A-H	
Dye Release	**	n/a	Fluorescein Dye	B	
Phago dosing	Ian Warden (CAS)	n/a	Watson Marlow Peristaltic Pump	A-H	
Dye Release	**	n/a	Rhodamine Dye	B	
Final Effluent & Titre Sampling	Martin Dymond (CAS) Dave Smith (CAS)	n/a	Standard EA sampling equipment	A-H	
Water Sampling (sites 1,3 & 5)	Mark Jacob (CAS) Tim Geatches (CAI)	5.4 M RIB	Hydrobios Depth sampler and standard EA sampling equipment	B - H	
Sediment Sampling (sites 1,3 & 5)	**	**	Van Veen Grab	**	
Water Column Profiling (sites 1,3 & 5)	**	**	Hydrolab H20	**	Profiler shared with other boat team Profiles missed at: D,F & H
Water Sampling (sites 2,4 & 6)	Pete Bluen (CAS) Peter Scobie (CAS)	4.65 M RIB	Hydrobios Depth sampler and standard EA sampling equipment	B - H	Depth Sampler Broken at B Replaced by C
Sediment Sampling (sites 2,4 & 6)	**	**	Eckman Grab	**	
Water Column Profiling (sites 2,4 & 6)	**	**	Hydrolab H20	**	Profiler shared with other boat team Profiles missed at: C,E & G
Water Sampling (all sites)	Peter Long (CAI) Katherine Ivall (CAB)	4.65 m RIB	Hydrobios Depth sampler and standard EA sampling equipment	A,I,J,K & L	
Sediment Sampling (all sites)	**	**	Eckman Grab	**	
Water Column Profiling (all sites)	**	**	Hydrolab H20	**	Profiler damaged during survey
Dye Patch Tracking	Jeff Headon (CAS) Paul Salmon (RTW) Simon Toms (CAB)	6.0 M RIB	Differential Global Positioning System	B - H	
Dye Patch Sampling	**	**	Standard EA sampling equipment	**	
Dye Patch Profiling	**	**	Hydrolab H20	**	
River Gauging	Chris Ridge (CAH)	n/a	Braystoke 002 Current Meter		

CAI - Cornwall Area Investigations
CAS - Cornwall Area Survey
CAB - Cornwall Area Biology
CAH - Cornwall Area Hydrometrics
RTW - Regional Tidal Waters

Table 28: Survey Timeline, Neap Tide Survey, 8 August

Activity	Location	LW A	HW B	HW+1 C	HW-2 D	HW+3 E	HW+4 F	HW+5 G	LW H	LW-3 I	HW J	LW K	HW L
Spore Dosing	Newham STW	X	X	X	X	X	X	X	X	X			
Phage Dosing	Ladock Outfall	X	X	X	X	X	X	X	X	X			
Effluent Monitoring	Newham & Ladock STW's	X	X	X	X	X	X	X	X	X			
Dye Injection & Tracking			X	X	X	X	X	X	X	X			
Water Sampling & Profiling	Sites 1,2,3 & 4	X	X	X	X	X	X	X	X	X	X	X	X
Water Sampling & Profiling	Sites 5 & 6		X	X	X	X	X	X		X	X	X	X
Sediment Sampling	Sites 1,2,3 & 4	X				X			X		X		X
Sediment Sampling	Sites 5 & 6					X					X		X

Table 29: Newham STW B.Globigii Dosing Data, Neap Tide Survey, 8 August

TIME (GMT)	FLOW(mls/min)	GLOBIGII (no./ul)	FLUX (No/sec)
06:10	10.0	1.51E+06	2.5E+08
07:10	10.0	1.58E+06	2.6E+08
08:00	10.0	1.33E+06	2.2E+08
09:00	10.0	1.31E+06	2.2E+08
10:00	10.0	1.15E+06	1.9E+08
11:10	10.0	1.31E+06	2.2E+08
12:00	10.0	1.28E+06	2.1E+08
13:00	10.0	1.28E+06	2.1E+08
13:20	10.0	1.05E+06	1.8E+08
14:20	10.0	1.29E+06	2.2E+08
15:20	10.0	1.41E+06	2.4E+08
16:20	10.0	1.21E+06	2.0E+08
17:30	10.0	1.09E+06	1.8E+08
19:30	10.0	1.40E+06	2.3E+08
Mean	10.0	1.3E+06	2.2E+08

Table 30: Ladock Valley STW Phage Dosing Data, Neap Tide Survey, 8 August

TIME (GMT)	FLOW(mls/min)	PHAGE (PFU/ul)	FLUX (PFU/sec)	COMMENTS
06:00	10.0	3.60E+06	6.00E+08	
06:50	10.0	7.10E+05	1.18E+08	
07:50	10.0	3.60E+06	6.00E+08	
08:50	10.0	5.80E+06	9.67E+08	
09:50	10.0	3.70E+06	6.17E+08	
10:50	10.0	5.40E+06	9.00E+08	
11:50	10.0	6.80E+06	1.13E+09	
12:50	10.0	9.90E+06	1.65E+09	
13:50	10.0	1.03E+07	1.72E+09	
14:30	10.0	1.40E+06	2.33E+08	
15:30	10.0	1.27E+07	2.12E+09	Dosing pipe jammed in pump. Cleared at 15.25
16:40	10.0 but intermittent	1.00E+07	1.67E+09	Suspect pipe blocked by clip in last hour
17:40		2.40E+06		Suspect pipe blocked by clip in last hour
18:50	10.0 but intermittent	1.15E+07	1.92E+09	
Mean		6.3E+06	1.1E+09	

Table 31: Newham STW Final Effluent Data, Neap Tide Survey, 8 August

TIME (GMT)	SOLIDS (mg/l)	PHAGE (PFU/ml)	GLOBIGII (no./100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)	COMMENTS
Date: 08/08/96						
06:05	16	70		2.20E+05	1.40E+06	
06:55	12	71	2.43E+05	2.40E+05	1.98E+06	
07:55	18	40	1.03E+05	3.20E+05	2.48E+06	
08:55	16	13	7.40E+04	2.00E+05	1.80E+06	
09:55	12	22	1.20E+05	2.80E+05	3.60E+06	
10:55	14	8	8.80E+04	3.50E+05	1.52E+06	
12:10	13	80	1.11E+05	3.50E+05	3.60E+06	
13:15	17	170	1.81E+05	5.00E+05	4.80E+06	
14:15	13	190	1.36E+05	4.60E+05		
15:25	20	200	1.18E+05	6.30E+05	1.80E+06	
16:30	30	13	7.90E+04	1.60E+06	4.80E+06	
17:30	30	40	2.30E+04			No bacti results
18:30	41	20	3.20E+03	8.40E+06	9.60E+06	
Mean	19.38	72.08	1.07E+05	1.13E+06	3.40E+06	

Table 32: Ladock Valley STW Final Effluent Data, Neap Tide Survey, 8 August

TIME (GMT)	SOLIDS (mg/l)	PHAGE (PFU/100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)	COMMENTS
Date: 08/08/96					
05:55	16	4.20E+03	2.00E+03	1.47E+05	
07:05	17	5.90E+03	1.60E+03	1.63E+05	
08:05	27	7.00E+03	3.60E+03	3.30E+05	
09:05	28	6.90E+03	5.20E+03	2.50E+05	
10:05	29	7.40E+03	7.00E+03	8.00E+05	
11:05	18	8.30E+03	5.20E+03	4.60E+05	
12:15	21	7.80E+03	4.70E+03	1.05E+05	
13:25					No discharge
14:25	18	6.20E+03	5.40E+03	2.08E+05	
15:20					No discharge
16:20					No discharge
17:40	15	4.10E+03	1.12E+04	2.00E+05	
18:40					No discharge
Mean	21	6.42E+03	5.10E+03	2.96E+05	

Table 33: Newham STW Dye Patch Sampling Data, Neap Tide Survey, 8 August

TIME (GMT)	DEPTH	TEMPERATURE °c	SOLIDS (mg/l)	SALINITY (g/kg)	PHAGE (PFU/ml)	GLOBIGII (no./100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)	COMMENTS	Dilutions from Newham STW
12:38	Surface	18.19	15.00	30.70	9	7100	6300	36000		15
13:45	Surface	18.26	13.00	31.10	<1.00	2500	3700	26000		43
13:49	Bottom	18.20	12.00	31.90	<1.00	2900	3900	24000		37
14:47	Surface	18.42	12.00	31.40	<1.00	680	1210	4400		157
14:51	Bottom	18.14	8.70	32.10	<1.00	820	1040	8400		130
15:34	Surface	18.22	10.00	31.70	<1.00	530	880	4800		202
15:39	Bottom	18.07	13.00	32.40	<1.00	510	760	3800		210
16:34	Surface	18.11	8.90	32.30	<1.00	108	170	520		991
16:39	Mid Depth	18.11	12.00	32.30	<1.00	99	110	680		1081
16:44	Bottom	17.79	8.00	32.60	<1.00	45	90	640		2378
17:09	Surface	18.01	9.80	32.50	<1.00	108	90	460		991
17:14	Mid Depth	17.95	8.40	32.80	<1.00	54	60	410		1981
17:19	Bottom	17.82	11.00	33.00	<1.00	27	60	230		3963
18:11	Surface	17.96	6.90	32.20	<1.00	9	70	260		11889
18:16	Bottom	17.96	11.00	32.50	<1.00	27	20	310		3963
18:58	Surface	17.96	7.30	32.60	<1.00	63	70	280		1698
19:01	Bottom	17.87	24.00	32.80	<1.00	45	20	480		2378

Note: Dilutions from Newham STW are based on a mean *B. Globigii* concentration in the final effluent of 1.07×10^5 .

Table 34: Ladock Valley STW Dye Patch Sampling Data, Neap Tide Survey, 8 August

TIME (GMT)	DEPTH	TEMPERATURE °c	SOLIDS (mg/l)	SALINITY (g/kg)	PHAGE (PFU/ml)	GLOBIGII (no./100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)	COMMENTS	Dilutions from Ladock Valley STW
13:07	Surface	18.24	17.00	25.30	570	<10.00	90	1010		11
13:10	Bottom	18.22	15.00	25.50	360	<10.00	70	960		18
14:14	Surface	18.23	16.00	25.60	560	<10.00	90	720		11
14:19	Bottom	18.25	59.00	26.20	640	<10.00	150	1590		10
15:14	Surface	18.32	20.00	26.30	47	<10.00	90	300		137
15:19	Bottom	18.36	25.00	27.00	58	<10.00	70	280		111
16:11	Surface	18.30	18.00	27.10	44	<10.00	90	300		146
16:15	Bottom	18.38	23.00	28.30	31	<10.00	90	360		207
16:57	Surface	18.29	17.00	27.60	24	<10.00	80	260		268
16:59	Bottom	18.31	28.00	28.50	23	<10.00	80	210		279
17:49	Surface	18.32	23.00	28.00	16	<10.00	40	160		401
18:46	Surface	18.23	15.00	28.60	3	<10.00	60	180		2140
18:50	Bottom	18.34	32.00	29.90	<1.00	<10.00	120	230		

Note: Dilutions from Ladock Valley STW are based on a mean phage concentration in the final effluent of 6.42×10^3 .

Table 35: Newham STW Dye Patch Profiling Data, Neap Tide Survey, 8 August

DEPTH	TIME	TEMPERATURE °c	SALINITY (g/kg)	D.O (% sat)	pH (ftu)	COMMENTS
0.1	12:38:10	18.19	30.7	81.7	7.64	Newham patch Wind: 8-13 knots Southerly @ 12:40:00 Dye heading inland
0.5		18.20	31.0	81.0	7.63	
0.8		18.21	30.9	81.0	7.64	
0.1	13:45:00	18.26	31.1	85.0	7.64	Newham patch Wind: 12-14 knots Southerly @ 13:55:00
0.5		18.26	31.1	84.8	7.64	
1.0		18.21	31.6	85.5	7.67	
1.5		18.20	31.9	83.0	7.69	
0.1	14:47:30	18.42	31.4	90.5	7.68	Newham patch
0.5		18.41	31.4	89.4	7.68	
1.0		18.33	31.7	89.2	7.70	
1.5		18.21	31.9	88.9	7.73	
2.0		18.14	32.1	88.3	7.73	
0.1	15:34:00	18.22	31.7	93.8	7.73	Newham patch Wind: 6-11 knots Southerly @ 15:37:00 Topped up leading edge with 1 litre @ 16:01:10
0.5		18.08	32.2	93.1	7.78	
1.0		18.08	32.3	93.6	7.79	
1.5		18.09	32.3	92.5	7.79	
2.0		18.07	32.4	92.8	7.79	
0.1	16:34:40	18.11	32.3	96.5	7.79	Newham patch
1.0		18.11	32.3	94.0	7.79	
2.0		18.01	32.6	91.3	7.80	
3.0		17.79	33.0	91.5	7.82	
0.1	17:19:00	18.01	32.5	94.9	7.82	Newham patch
1.0		18.01	32.5	94.5	7.82	
2.0		17.95	32.8	94.7	7.84	
3.0		17.94	32.8	96.8	7.87	
4.0		17.87	32.9	95.8	7.87	
4.5		17.82	33.0	92.6	7.86	
0.1	18:11:10	17.96	32.2	95.1	7.82	Newham patch Topped up @ 18:15:50 Wind: 0-4 knots SW @ 18:43:50 (last 10 mins wind has dropped)
0.5		17.96	32.3	95.9	7.82	
1.0		17.96	32.3	95.6	7.82	
1.5		17.96	32.3	96.5	7.82	
2.0		17.90	32.5	96.4	7.82	
0.1	18:58:50	17.96	32.6	93.6	7.83	Newham patch
0.5		17.95	32.6	92.7	7.84	
1.0		17.94	32.6	93.1	7.84	
1.5		17.92	32.7	93.1	7.84	
2.0		17.87	32.8	89.0	7.85	

Table 36: Ladock Valley STW Dye Patch Profiling Data, Neap Tide Survey, 8 August

DEPTH	TIME	TEMPERATURE °c	SALINITY (g/kg)	D.O (% sat)	pH (ftu)	COMMENTS
0.1	13:07:20	18.24	25.3	80.8	7.48	Ladock patch
0.5		18.21	25.3	77.1	7.50	
1.0		18.23	25.2	76.6	7.48	
1.5		18.22	25.5	75.2	7.47	
0.1	14:13:50	18.23	25.6	87.4	7.55	Ladock patch Topped up leading edge with 1 litre @ 14:25:40
0.5		18.23	25.4	82.0	7.53	
1.0		18.24	25.6	79.5	7.52	
1.5		18.25	26.2	77.7	7.53	
0.1	15:13:30	18.32	26.3	82.6	7.57	Ladock patch Topped up with 1 litre (no time given)
0.5		18.35	26.4	81.4	7.57	
1.0		18.34	26.6	80.8	7.56	
1.5		18.36	27.0	79.7	7.57	
0.1	16:11:10	18.30	27.1	76.3	7.59	Ladock patch Topped up @ 16:21:20
0.5		18.29	27.0	77.5	7.59	
1.0		18.39	27.7	78.4	7.60	
1.5		18.38	28.3	78.0	7.61	
0.1	16:57:00	18.29	27.6	80.6	7.62	Ladock patch
0.5		18.30	28.0	81.8	7.62	
1.0		18.32	28.4	81.6	7.63	
1.5		18.31	28.5	81.9	7.63	
0.1	17:49:00	18.32	28.0	79.2	7.63	Ladock patch
0.5		18.31	28.2	79.9	7.63	
1.0		18.36	29.2	79.9	7.66	
0.1	18:46:00	18.23	28.6	80.7	7.66	Ladock patch Flood has begun @ 18:45 Boats facing inland
0.5		18.28	29.1	77.1	7.67	
1.0		18.33	29.4	78.4	7.68	
1.4		18.34	29.9	79.0	7.69	

Table 37. Fished Site 1 (Upstream of Confluence with the Fal Estuary) Sampling Data, Neap Tide Survey, 8 August

TIDE TIME	TIME (GMT)	DEPTH	GLOBIGII IN SEDIMENTS (No./g)	TEMPERATURE °C	SOLIDS (mg/l)
Date: 08/08/96					
LW	05:26	Surface		17.40	6.2
	05:27	Mid depth		16.98	8.5
	05:28	Bottom	<10.00	16.63	11.0
HW	12:53	Surface		16.90	3.0
HW+1	13:41	Surface			7.4
	13:51	Mid depth			7.4
	14:03	Bottom			7.0
HW+2	13:48	Surface		16.80	10.0
	13:53	Mid depth		16.80	12.0
	13:58	Bottom		16.80	4.5
HW+3	16:08	Surface			14.0
	16:13	Mid depth			5.0
	16:18	Bottom	<10.00		78.0
HW+4	16:43	Surface		17.20	27.0
	16:48	Mid depth		17.20	16.0
	16:53	Bottom		17.00	16.0
HW+5	17:53	Surface			3.6
	17:58	Mid depth			15.0
	18:03	Bottom			14.0
LW	19:03	Surface		17.74	9.9
	19:08	Mid depth		17.40	17.0
	19:13	Bottom	<10.00	17.20	20.0
LW+4	23:00	Surface		17.03	19.0
	23:05	Mid depth		16.73	11.0
	23:10	Bottom		16.32	15.0
Date: 09/08/96					
HW	03:15	Surface		16.96	8.2
	03:30	Mid depth		16.66	6.2
	03:55	Bottom		16.41	14.0
LW	08:15	Surface		16.93	9.2
	08:20	Mid depth		16.78	17.0
	08:25	Bottom		16.62	14.0
HW	15:54	Surface			7.0
	15:55	Mid depth			20.0
	15:56	Bottom	<10.00		11.0

Note: Dilutions from Newham STW are based on a mean *B. Globigii* concentration in the final effluent of 1.07×10^5 .

SALINITY (g/kg)	PHAGE (PFU/ml)	GLOBIGII (no./100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)	COMMENTS	Dilutions from Newham STW
31.3	<1.00	<10.00	110	720		
33.9	<1.00	<10.00	10	190		
34.2	<1.00	<10.00	20	200		
33.5	<1.00	<10.00	<10.00	40	Depth sampler broken	
	<1.00	<10.00	10	20		
	<1.00	<10.00	<10.00	20		
	<1.00	<10.00	<10.00	70		
32.8	<1.00	<10.00	<10.00	20		
34.2	<1.00	<10.00	<10.00	30		
34.1	<1.00	<10.00	10	40		
	<1.00	<10.00	40	20		
	<1.00	<10.00	<10.00	<10.00		
	<1.00	<10.00	<10.00	<10.00		
33.5	<1.00	<10.00	60	<10.00		
33.7	<1.00	<10.00	20	70		
33.9	<1.00	<10.00	40	50		
	<1.00	<10.00	<10.00	40		
	<1.00	<10.00	10	30		
	<1.00	<10.00	10	40		
32.0	<1.00	<10.00	80	60		
33.5	<1.00	<10.00	20	40		
33.9	<1.00	<10.00	100	40		
33.3	<1.00	<10.00	<10.00	30		
34.0	<1.00	9	<10.00	20		11889
34.4	<1.00	9	<10.00	30		11889
33.6	<1.00	<10.00	<10.00	40		
34.5	<1.00	<10.00	<10.00	<10.00		
34.6	<1.00	<10.00	<10.00	50		
26.8	<1.00	54	240	1190		1981
34.2	<1.00	<10.00	<10.00	80		
34.4	<1.00	18	10	30		5944
	<1.00	<10.00	10	80		
	<1.00	<10.00	<10.00	30		
	<1.00	<10.00	180	10		

Table J8: Fixed Site 2 (Off Grimes Bar) Sampling Data, Neap Tide Survey, 8 August

TIDE TIME	TIME (GMT)	DEPTH	GLOBIGII IN SEDIMENTS (No./g)	TEMPERATURE °C	SOLIDS (mg/l)	SALINITY (g/kg)
Date: 08/08/96						
LW	05:36	Surface		17.75	5.30	31.60
	05:37	Mid depth		17.30	7.80	33.50
	05:38	Bottom	<10.00	16.44	11.00	34.50
HW	13:07	Surface			4.40	
	13:12	Mid depth			7.00	
	13:02	Bottom(8.4m)			17.00	
HW-1	13:52	Surface		17.31	6.10	33.40
	13:57	Mid depth		17.16	7.70	33.70
	14:02	Bottom		17.06	12.00	33.80
HW-2	14:52	Surface			6.10	
	14:57	Mid depth			14.00	
	15:02	Bottom(8.0)			17.00	
HW-3	15:57	Surface		17.85	9.50	32.50
	16:02	Mid depth		17.77	14.00	32.80
	16:07	Bottom	<10.00	17.60	14.00	33.10
HW-4	16:47	Surface			12.00	
	16:52	Mid depth			19.00	
	16:57	Bottom(7.0m)			12.00	
HW-5	17:47	Surface		18.08	14.00	30.30
	17:52	Mid depth		18.11	16.00	32.00
	17:57	Bottom(6.4m)		18.00	13.00	32.50
LW	18:57	Surface			17.00	
	19:02	Mid depth			15.00	
	19:07	Bottom	<10.00		43.00	
Date: 09/08/96						
LW-1	00:00	Surface		17.23	7.90	10.50
	00:05	Mid depth		16.96	19.00	31.80
	00:10	Bottom		16.63	6.80	33.70
HW	02:55	Surface		17.26	6.80	29.20
	03:00	Mid depth		16.79	12.00	34.10
	03:05	Bottom	<10.00	16.59	10.00	34.30
LW	08:45	Surface		17.50	28.00	29.40
	08:50	Mid depth		17.40	7.70	33.10
		Bottom		17.28	18.00	33.60
HW	16:06	Surface	<10.00		15.00	

Note: Dilutions from Newham STW are based on a mean *B.Globigii* concentration in the final effluent of 1.07×10^5 .

Note: Dilutions from Ladoek Valley STW are based on a mean phage concentration in the final effluent of 6.42×10^3 .

PHAGE (PFU/ml)	GLOBIGII (no./100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)	COMMENTS	Dilutions from Newham STW	Dilutions from Ladock Valley STW
<1.00	<10.00	580.00	8800.00			
<1.00	<10.00	100.00	860.00			
<1.00	<10.00	10.00	160.00			
<1.00	<10.00	<10.00	90.00	Meter failure		
<1.00	<10.00	<10.00	30.00			
<1.00	9.00	<10.00	60.00		11889	
<1.00	<10.00	10.00	30.00			
<1.00	<10.00	<10.00	60.00			
<1.00	<10.00	<10.00	20.00			
<1.00	<10.00	<10.00	100.00	Meter failure		
<1.00	<10.00	10.00	80.00			
<1.00	<10.00	10.00	90.00			
<1.00	<10.00	50.00	60.00			
<1.00	<10.00	20.00	160.00			
<1.00	<10.00	20.00	60.00			
<1.0	45.00	150.00	840.00	Meter failure	2378	
<1.0	36.00	70.00	350.00		2972	
<1.00	9.00	60.00	200.00		11889	
<1.00	310.00	350.00	3703.00		345	
<1.00	162.00	340.00	2300.00		660	
<1.00	27.00	60.00	360.00		3963	
<1.00	490.00	920.00	3400.00	Meter failure	218	
<1.00	210.00	280.00	2300.00		510	
<1.00	9.00	30.00	80.00		11889	
<1.00	18.00	10.00	50.00		5944	
<1.00	<10.00	<10.00	<10.00			
<1.00	<10.00	10.00	20.00			
<1.00	18.00	50.00	290.00		5944	
<1.00	<10.00	10.00	20.00			
<1.00	<10.00	10.00	20.00			
28.00	570.00	3600.00	12000.00		188	229
<1.00	45.00	110.00	500.00		2378	
2.00	<10.00	10.00	40.00			3210
<1.00	27.00	<10.00	20.00	Depth sampler lost	3963	

Table 39: Fixed Site 3 (Off Lambe Creek) Sampling Data, Neap Tide Survey, 8 August

TIDE TIME	TIME (GMT)	DEPTH	GLOBIGII IN SEDIMENTS (No./g)	TEMPERATURE °C	SOLIDS (mg/l)
Date: 08/08/96					
LW	05:45	Surface	<10.00	17.45	18.00
HW	12:47	Surface			7.20
	12:52	Mid depth			7.30
	12:57	Bottom(3.6m)			9.20
HW-1	13:37	Surface		17.72	14.00
	13:42	Mid depth		17.59	12.00
	13:47	Bottom		17.09	9.70
HW-2	14:37	Surface			14.00
	14:42	Mid depth			9.90
	14:47	Bottom(3.0m)			14.00
HW-3	15:42	Surface		18.14	24.00
	15:47	Bottom	<10.00	18.02	27.00
HW-4	16:37	Surface			17.00
	16:42	Bottom(2.0m)			17.00
HW-5	17:42	Surface		18.33	19.00
LW	18:47	Surface(1.0m)	<10.00		23.00
Date: 09/08/96					
LW-4	00:26	Surface		17.06	16.00
	00:34	Bottom		17.35	23.00
HW	02:15	Surface		17.06	22.00
	02:25	Bottom	<10.00	17.30	13.00
LW	09:20	Surface		17.40	16.00
HW	16:28	Surface	<10.00		11.00

Note: Dilutions from Newham STW are based on a mean *B. Globigii* concentration in the final effluent of 1.07×10^5 .

SALINITY (g/kg)	PHAGE (PFU/ml)	GLOBIGII (no./100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)	COMMENTS	Dilutions from Newham STW
28.70	<1.00	<10.00	2100	16800		
	<1.00	<10.00	10	120	Meter Failure	
	<1.00	<10.00	<10.00	70		
	<1.00	9	10	110		11889
32.30	<1.00	<10.00	20	60		
32.60	<1.00	27	10	80		3963
33.70	<1.00	<10.00	<10.00	30		
	<1.00	<10.00	50	340	Meter failure	
	<1.00	<10.00	50	220		
	<1.00	<10.00	10	140		
31.00	<1.00	1144	1530	10400		94
32.30	<1.00	340	430	2700		315
	<1.00	1545	2800	8200	Meter failure	69
	<1.00	1000	1250	5200		107
28.90	<1.00	2800	2700	15200		38
	<1.00	1818	8400	36000	Meter failure	59
9.10	1	440	1600	6500		243
16.10	<1.00	18	60	200		5944
9.10	<1.00	2300	11200	48000		47
16.10	<1.00	54	190	2000		1981
25.20	5	919	6900	30000		116
	<1.00	230	70	320	Depth sampler lost	465

Table 40: Fixed Site 4 (Tresillian Estuary upstream of Malpas) Sampling Data, Neap Tide Survey, 8 August

TIDE TIME	TIME (GMT)	DEPTH	GLOBIGII IN SEDIMENTS (No./g)	TEMPERATURE °C	SOLIDS (mg/l)	SALINITY (g/kg)
Date: 08/08/96						
LW	06:15	Surface		17.62	13.00	28.50
	06:25	Bottom	<10.00	18.01	13.00	31.80
HW	12:38	Surface		17.20	17.00	33.10
	12:43	Mid depth		17.20	7.60	33.40
	12:48	Bottom		17.20	14.00	33.50
HW+1	14:08	Surface			7.80	
	14:13	Mid depth			7.90	
	14:18	Bottom			11.00	
HW+2	13:33	Surface		17.80	16.00	32.50
	13:38	Mid depth		17.80	12.00	32.60
	13:43	Bottom		17.60	19.00	32.90
HW+3	15:48	Surface			8.70	
	15:53	Mid depth			8.50	
	15:58	Bottom	<10.00		24.00	
HW+4	16:33	Surface		18.20	15.00	30.30
	16:38	Bottom		18.10	13.00	31.70
HW+5	17:43	Surface			18.00	
	17:48	Bottom			24.00	
LW	18:48	Surface		18.20	17.00	29.80
	18:53	Bottom	<10.00	18.20	27.00	30.70
Date: 09/08/96						
LW+4	00:52	Surface		17.29	7.00	9.60
	00:59	Bottom		0.72	17.00	30.70
HW	02:35	Surface		17.41	8.60	29.10
	02:45	Bottom	<10.00	17.32	8.60	32.90
LW	09:00	Surface		17.50	12.00	26.90
	09:10	Bottom		17.70	20.00	31.60
HW	16:14	Surface	<10.00		10.00	

Note: Dilutions from Newham STW are based on a mean *B. Globigii* concentration in the final effluent of 1.07×10^5 .

Note: Dilutions from Ladock Valley STW are based on a mean phage concentration in the final effluent of 6.42×10^3 .

PHAGE (PFU/ml)	GLOBIGII (no./100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)	COMMENTS	Dilutions from Newham STW	Dilutions from Ladock Valley STW
<1.00	<10.00	50	8800			
<1.00	<10.00	30	2300			
<1.00	<10.00	10	20			
<1.00	<10.00	<10.00	10			
<1.00	<10.00	<10.00	<10.00			
<1.00	<10.00	<10.00	70			
<1.00	<10.00	10	170			
<1.00	<10.00	50	80			
<1.00	<10.00	<10.00	160			
<1.00	<10.00	30	240			
<1.00	<10.00	20	230			
<1.00	<10.00	20	160			
<1.00	<10.00	50	330			
<1.00	<10.00	50	180			
<1.00	<10.00	110	250			
<1.00	<10.00	50	180			
<1.00	<10.00	80	120			
<1.00	<10.00	90	210			
<1.00	<10.00	140	280			
<1.00	<10.00	120	170			
<1.00	<10.00	<10.00	100			
>1.00	<10.00	10	50			
<1.00	162	80	770		660	
<1.00	27	30	90		3963	
71	9	530	1390		11889	90
2	72	70	400		1486	3210
<1.00	99	10	60	Depth sampler lost	1081	

Table 41: Fixed Site 5 (Sunny Corner) Sampling Data, Neap Tide Survey, 8 August

TIDE TIME	TIME (GMT)	DEPTH	GLOBIGII IN SEDIMENTS (No./g)	TEMPERATURE °C	SOLIDS (mg/l)
Date: 08/08/96					
HW	12:42	Surface			8.10
	12:37	Mid depth			3.70
	12:32	Bottom (3m)			9.20
HW-1	13:32	Surface		18.08	14.00
	13:27	Mid depth		18.08	9.20
	13:22	Bottom (3.0m)		17.91	14.00
HW-2	14:27	Surface			28.00
	14:32	Bottom (2.4m)			28.00
HW-3	15:26	Surface	<10.00	18.38	17.00
HW-4	16:36	Surface		17.60	132.00
Date: 09/08/96					
LW-3	00:39	Surface		17.77	15.00
HW	01:55	Surface		17.33	16.00
	02:05	Bottom	<10.00		14.00
HW	16:35	Surface	<10.00		27.00

Note: Dilutions from Newham STW are based on a mean *B. Globigii* concentration in the final effluent of 1.07×10^5 .

SALINITY (g/kg)	PHAGE (PFU/ml)	GLOBIGII (no./100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)	COMMENTS	Dilutions from Newham STW
	<1.00	<10.00	30	520	Meter failure	
	<1.00	<10.00	50	580		
	<1.00	<10.00	60	480		
31.30	<1.00	153	230	1490		699
31.50	<1.00	<10.00	40	600		
31.70	<1.00	9	40	360		11889
	<1.00	2700	4500	48000		40
	<1.00	450	500	4800		238
29.40	<1.00	1273	2200	13200	Sample taken from boat	84
4.50	11	10545	1400000	2400000		10
28.10	1	1545	14000	36000		69
28.60	<1.00	1045	5400	36000		102
	<1.00	90	300	1290		1189
	2	450	600	17000	Depth sampler lost	238

Table 42: Fixed Site 6 (Off St. Clement) Sampling Data, Neap Tide Survey, 8 August

TIDE TIME	TIME (GMT)	DEPTH	GLOBIGII IN SEDIMENTS (No./g)	TEMPERATURE °C	SOLIDS (mg/l)	SALINITY (g/kg)
Date: 08/08/96						
HW	12:23	Surface		18.20	13.00	30.90
	12:28	Mid depth		18.00	20.00	31.50
	12:33	Bottom		18.00	16.00	31.70
HW-1						
HW-2	13:23	Surface		18.40	58.00	31.20
	13:28	Bottom		18.30	52.00	31.70
HW-3	15:36	Surface	<10.00		19.00	
HW-4	16:31	Surface		18.20	46.00	5.00
Date: 09/08/96						
LW-3	00:58	Surface	<10.00	24.00	31.80	31.80
HW	01:25	Surface		17.23	48.00	23.60
	01:35	Bottom	<10.00	17.29	17.00	32.10
HW						
HW	16:19	Surface	<10.00		17.00	

Note: Dilutions from Newham STW are based on a mean *B. Globigii* concentration in the final effluent of 1.07×10^5 .

Note: Dilutions from Ladoek Valley STW are based on a mean phage concentration in the final effluent of 6.42×10^3 .

PHAGE (PFU/ml)	GLOBIGI (no./100ml)	F/STREP (no./100ml)	F/COLI (no./100ml)	COMMENTS	Dilutions from Newham STW	Dilutions from Ladock Valley STW
<1.00	<10.00	60	340			
<1.00	<10.00	40	240			
<1.00	<10.00	20	560			
				No samples taken		
<1.00	<10.00	170	360			
<1.00	<10.00	340	400			
<1.00	<10.00	90	170	Taken from boat		
5	<10.00	160	320			1284
<1.00	290	180	1270		369	
1	90	180	1500		1189	6420
<1.00	99	80	900		1081	
4	126	50	320	Depth sampler lost	849	1605

Table 43: Fixed Site 1 (Upstream of the Confluence with the Fal Estuary) Profiling Data, Neap Tide Survey, 8 August

TIDE TIME Date: 08/08/96	TIME (GMT)	DEPTH (m)	TEMPERATURE °C	SALINITY (g/kg)	D.O (% sat)	pH	TURBIDITY (ftu)	COMMENTS
LW	05:30	0.1	17.40	31.3	86.6	7.92	2.5	Wind: 2 knots Southerly
		1.0	17.53	32.7	83.4	7.91	2.0	
		2.0	17.54	32.8	84.3	7.91	3.1	
		3.0	17.45	33.0	85.0	7.93	2.3	
		4.0	17.21	33.5	84.8	7.94	2.9	
		5.0	16.98	33.9	85.2	7.96	2.5	
		6.0	16.99	33.9	85.1	7.96	2.6	
		7.0	16.79	34.1	85.6	7.97	3.4	
		8.0	16.73	34.2	84.1	7.98	2.8	
		9.0	16.65	34.2	84.0	7.98	3.8	
		10.0	16.64	34.2	83.4	7.98	2.5	
		11.0	16.63	34.2	80.1	7.98	6.0	
HW	12:50	0.1	16.93	33.7	96.1	8.05		
		1.0	16.82	34.0	94.9	8.05	2.8	
		2.0	16.19	34.1	89.9	8.05	2.2	
		3.0	16.22	34.4	90.6	8.04	3.2	
		4.0	16.18	34.5	89.9	8.04	3.2	
		5.0	16.16	34.5	90.1	8.04	3.2	
		6.0	16.11	34.6	88.8	8.04	2.2	
		7.0	16.09	34.6	88.9	8.04	1.9	
		8.0	16.07	34.6	87.5	8.04	1.3	
		9.0	16.07	34.6	86.2	8.04	1.4	
		10.0	16.07	34.6	87.1	8.05	1.7	
		11.0	15.99	34.6	86.0	8.05	2.0	
		12.0	15.93	34.6	86.0	8.04	3.0	
HW+2		0.1	16.85	33.8	93.2	8.03	3.1	HW+1 missed due to meter failure
		1.0	16.85	33.9	89.2	8.03	5.0	
		2.0	16.84	34.0	87.9	8.04	4.9	
		3.0	16.84	34.0	88.9	8.04	4.0	
		4.0	16.83	34.0	91.0	8.05	4.0	
		5.0	16.83	34.1	89.3	8.05	4.0	
		6.0	16.82	34.2	89.2	8.06	4.7	
		7.0	16.81	34.1	90.4	8.06	3.8	
		8.0	16.80	34.1	90.3	8.05	4.2	
		9.0	16.77	34.2	89.7	8.05	3.5	
		10.0	16.77	34.2	88.7	8.05	3.5	
		11.0	16.76	34.1	90.0	8.05	3.2	
		12.0	16.76	34.1	89.5	8.04	3.9	
HW+4	16:50	0.1	17.22	33.5	93.9	8.04		HW+3 missed due to meter failure
		1.0	17.24	33.6	92.4	8.04	5.5	
		2.0	17.23	33.5	90.4	8.04	5.0	
		3.0	17.23	33.6	89.4	8.04	4.7	
		4.0	17.19	33.7	88.7	8.04	5.0	
		5.0	17.18	33.7	88.6	8.05	5.9	
		6.0	17.19	33.7	88.9	8.05	7.8	
		7.0	17.15	33.8	90.0	8.05	8.5	
		8.0	17.12	33.9	88.9	8.05	10.5	
		9.0	17.06	33.9	88.6	8.04	12.1	
		10.0	17.04	33.9	85.6	8.04	14.0	
LW	18:55	0.1	17.74	32.0	98.7	8.07	3.7	HW+5 missed due to meter failure
		2.0	17.52	33.2	92.1	8.04	4.1	
		4.0	17.42	33.5	89.1	8.04	4.5	
		6.0	17.39	33.6	89.5	8.04	3.8	
		8.0	17.32	33.6	85.5	8.04	5.0	
		10.0	17.17	33.9	81.3	8.02	5.2	
LW+3	23:00	0.1	17.03	33.3	93.6	8.09	1.1	
		1.0	17.06	33.4	95.3	8.10	1.2	
		2.0	16.97	33.5	95.5	8.10	1.3	
		3.0	16.95	33.7	94.6	8.10	1.2	
		4.0	16.92	33.7	92.0	8.10	2.1	
		5.0	16.89	33.8	92.4	8.10	2.0	
		6.0	16.87	33.9	92.8	8.10	2.2	
		7.0	16.73	34.0	91.5	8.09	1.1	
		8.0	16.64	34.1	89.5	8.09	1.2	
		9.0	16.57	34.3	88.9	8.09	1.6	
		10.0	16.48	34.3	89.3	8.08	1.8	
		11.0	16.46	34.3	88.1	8.08	1.9	
		12.0	16.34	34.4	86.3	8.08	1.4	
		13.0	16.32	34.4	86.0	8.07	1.7	
Date: 09/08/96 HW+2	03:20	0.1	16.96	33.6	88.2	8.07	7.4	
		1.0	16.95	33.8	90.5	8.07	7.1	
		2.0	16.95	33.9	89.2	8.08	7.6	
		3.0	16.94	34.0	89.0	8.08	8.4	
		4.0	16.79	34.3	88.7	8.08	1.9	
		5.0	16.71	34.4	90.1	8.08	2.2	
		6.0	16.66	34.5	88.3	8.08	2.3	
		7.0	16.63	34.5	87.4	8.08	3.3	
		8.0	16.60	34.5	86.7	8.07	3.4	
		9.0	16.57	34.6	86.6	8.08	4.1	
		10.0	16.49	34.6	87.4	8.08	4.1	
		11.0	16.44	34.7	85.7	8.07	4.7	
		12.0	16.41	34.6	85.8	8.07	6.2	
LW+1	08:15	0.1	16.93	26.8	79.0	7.91	9.5	
		1.0	17.28	32.4	79.3	7.94	7.2	
		2.0	17.23	33.1	82.4	7.98	6.5	
		3.0	17.17	33.3	84.1	8.00	6.6	
		4.0	17.04	33.6	82.8	8.01	5.8	
		5.0	16.78	34.1	83.0	8.03	5.9	
		6.0	16.76	34.2	84.0	8.03	6.0	
		7.0	16.67	34.3	84.2	8.04	5.7	
		8.0	16.62	34.4	85.5	8.04	5.7	
		9.0	16.61	34.4	85.2	8.04	6.0	
		10.0	16.62	34.4	83.5	8.05	6.1	
		11.0	16.62	34.4	83.2	8.05	6.1	

No further profile results due to meter failure. 1 run missed (HW)

Table 44: Fixed Site 2 (Off Grimes Bar) Profiling Data, Neap Tide Survey, 8 August

TIDE TIME	TIME (GMT)	DEPTH (m)	TEMPERATURE °C	SALINITY (g/kg)	D.O (% sat)	pH	TURBIDITY (ftu)	COMMENTS
Date: 08/08/96								
LW	05:45	0.1	17.75	31.6	73.1	7.85	8.1	
		1.0	17.78	31.6	73.0	7.86	4.6	
		2.0	17.77	32.3	77.5	7.88	5.0	
		3.0	17.60	33.1	80.3	7.92	4.7	
		4.0	17.10	33.9	82.2	7.96	3.1	
		5.0	16.95	34.0	83.0	7.98	2.7	
		6.0	16.57	34.3	82.0	7.99	3.2	
		7.0	16.44	34.5	82.0	7.99	3.8	
HW+1	13:50	0.1	17.31	33.4	91.4	8.03	6.0	
		1.0	17.30	33.4	91.0	8.03	8.0	
		2.0	17.20	33.5	90.5	8.03	10.0	
		3.0	17.16	33.7	90.5	8.03	5.0	
		5.0	17.10	33.8	88.7	8.03	5.0	
		7.0	17.06	33.8	86.0	8.03	5.0	
HW+3	16:00	0.1	17.85	32.5	92.3	8.02	6.0	HW+2 missed due to meter failure
		1.0	17.84	32.6	93.0	8.02	4.0	
		2.0	17.81	32.8	89.6	8.01	5.0	
		3.0	17.79	32.8	89.3	8.01	7.0	
		5.0	17.70	33.0	88.6	8.01	6.0	
		7.0	17.60	33.1	87.4	8.01	6.0	
HW+5	17:58	0.1	18.08	30.3	88.1	7.97	5.0	HW+4 missed due to meter failure
		1.0	18.08	31.5	87.6	7.97	4.0	
		2.0	18.11	32.0	87.6	7.97	3.0	
		3.0	18.11	32.0	87.0	7.97	3.0	
		5.0	18.00	32.5	88.1	8.00	6.0	
Date: 09/08/96								
LW+3	00:00	0.1	17.23	10.5	92.3	8.07	4.3	LW missed due to meter failure
		1.0	17.24	12.3	90.1	8.07	4.5	
		2.0	17.15	24.4	92.8	8.09	4.1	
		3.0	16.98	30.4	91.4	8.09	4.5	
		4.0	16.96	31.8	91.4	8.08	5.9	
		5.0	16.86	32.4	90.5	8.08	5.3	
		6.0	16.75	33.1	89.2	8.08	5.4	
		7.0	16.68	33.3	88.8	8.07	6.0	
		8.0	16.63	33.5	88.2	8.07	6.8	
		9.0	16.63	33.7	88.3	8.08	6.5	
HW+2	02:50	0.1	17.26	29.2	91.6	8.04	2.4	
		1.0	17.27	31.8	88.1	8.05	2.4	
		2.0	17.20	32.8	89.7	8.06	2.1	
		3.0	17.05	33.4	89.0	8.06	2.1	
		4.0	16.94	33.7	88.3	8.06	2.2	
		5.0	16.79	34.0	86.1	8.07	2.5	
		6.0	16.77	34.1	85.8	8.07	2.0	
		7.0	16.66	34.1	84.4	8.07	2.0	
		8.0	16.63	34.2	84.7	8.07	1.6	
LW+1.5	08:45	0.1	17.50	29.8	73.1	7.82	5.9	
		1.0	17.54	31.9	79.8	7.91	6.8	
		2.0	17.54	32.0	79.0	7.94	3.7	
		3.0	17.40	33.1	83.1	7.99	4.1	
		4.0	17.35	33.4	81.3	8.00	5.2	
		5.0	17.31	33.3	81.2	8.01	3.4	
		6.0	17.28	33.6	89.8	8.01	7.1	

No further profile results due to meter failure. 1 run missed(HW)

Table 45: Fixed Site 3 (Off Lambe Creek) Profiling Data, Neap Tide Survey, 8 August

TIDE TIME	TIME (GMT)	DEPTH (m)	TEMPERATURE °c	SALINITY (g/kg)	D.O (% sat)	pH	TURBIDITY (ftu)	COMMENTS
Date: 08/08/96								
LW	06:00	0.1	17.45	28.7	55.7	7.65	7.1	
		1.0	17.99	31.1	64.1	7.77	5.1	
HW+1	13:35	0.1	17.72	32.3	90.2	8.00	0.0	
		1.0	17.69	32.3	89.4	8.00	1.0	
		2.0	17.48	33.0	86.4	8.00	1.0	
		3.0	17.09	33.7	83.7	8.01	1.0	
HW+3	15:42	0.1	18.14	31.0	86.7	7.92	11.0	HW+2 missed due to meter failure
		1.0	18.08	32.0	95.3	8.01	11.0	
		2.0	18.02	32.3	94.9	8.04	14.0	
HW+5	17:45	0.1	18.33	28.9	75.2	7.79	10.0	HW+4 missed due to meter failure
		1.0	18.38	30.3	79.5	7.82	10.0	
Date: 09/08/96								
LW+3	00:26	0.1	17.06	9.1	82.7	7.95	1.9	LW missed due to meter failure
		1.0	17.32	10.1	89.6	8.04	2.2	
		2.0	17.42	11.3	86.9	8.04	3.6	
		3.0	17.35	16.1	84.4	8.04	2.7	
HW+1	02:15	0.1	17.39	29.9	79.9	7.90	18.9	
		1.0	17.54	31.5	85.5	7.98	8.3	
		2.0	17.52	32.3	87.4	8.02	6.0	
		3.0	17.45	32.7	86.8	8.03	6.7	
LW+1.75	09:10	0.1	17.40	25.2	60.8			No ph, turbidity due to meter failure
		1.0	17.80	31.7	74.5			

No further profile results due to meter failure. 1 run missed(HW)

Table 46: Fixed Site 4 Profiling Data, Neap Tide Survey, 8 August

TIDE TIME	TIME (GMT)	DEPTH (m)	TEMPERATURE °c	SALINITY (g/kg)	D.O (% sat)	pH	TURBIDITY (ftu)	COMMENTS
Date:08/08/96								
LW	06:10	0.1	17.62	28.5	64.3			
		1.0	17.86	30.9	66.6			
		2.0	18.01	31.8	64.2			
HW	12:30	0.1	17.19	33.1	89.1	8.00		
		1.0	17.18	33.1	88.1	8.00		
		2.0	17.16	33.4	88.6	8.00	5.6	
		3.0	17.16	33.5	88.0	8.00	7.1	
		4.5	17.15	33.5	84.9	8.00	7.8	
HW+2	14:40	0.1	17.84	32.5	94.1	8.00	11.0	HW+1 missed due to meter failure
		1.0	17.82	32.6	88.6	8.00	11.9	
		2.0	17.83	32.6	89.4	8.00	4.9	
		3.0	17.68	32.8	88.0	8.00	5.0	
		4.0	17.64	32.9	85.8	8.00	4.4	
HW+4	16:35	0.1	18.16	30.3	91.5	7.96	1.6	HW+3 missed due to meter failure
		1.0	18.17	31.2	89.4	7.96	3.2	
		2.0	18.16	31.6	88.0	7.97	3.2	
		2.5	18.14	31.7	87.8	7.97	3.6	
LW	18:40	0.1	18.18	29.8	91.8	7.90	6.4	HW+5 missed due to meter failure
		1.0	18.23	30.3	84.5	7.91	5.5	
		2.0	18.21	30.7	84.7	7.92	6.7	
Date:09/08/96								
LW+3	00:52	0.1	17.29	9.6	89.2	8.04	19.5	
		1.0	17.33	20.0	87.2	8.04	19.5	
		2.0	17.22	30.6	87.7	8.05	18.0	
		3.0	17.21	30.7	86.9	8.05	18.9	
HW+1.5	02:30	0.1	17.41	29.1	82.9	7.97	6.0	
		1.0	17.50	30.9	86.9	8.02	6.1	
		2.0	17.38	32.2	86.4	8.03	6.4	
		3.0	17.32	32.9	87.0	8.01	7.1	
LW+1.5	09:00	0.1	17.50	26.9	73.5			No ph,turbidity due to meter failure
		1.0	17.50	31.6	79.2			

No further profile results due to meter failure. 1 run missed(HW)

Table 46: Fixed Site 4 (Tresillian Estuary upstream of Malpas) Profiling Data, Neap Tide Survey, 8 August

TIDE TIME Date:08/08/96	TIME (GMT)	DEPTH (m)	TEMPERATURE °c	SALINITY (g/kg)	D.O (% sat)	pH	TURBIDITY (Nu)	COMMENTS
LW	06:10	0.1	17.62	28.5	64.3			
		1.0	17.86	30.9	66.6			
		2.0	18.01	31.8	64.2			
HW	12:30	0.1	17.19	33.1	89.1	8.00		
		1.0	17.18	33.1	88.1	8.00		
		2.0	17.16	33.4	88.6	8.00	5.6	
		3.0	17.16	33.5	88.0	8.00	7.1	
		4.5	17.15	33.5	84.9	8.00	7.8	
HW+2	14:40	0.1	17.84	32.5	94.1	8.00	11.0	HW+1 missed due to meter failure
		1.0	17.82	32.6	88.6	8.00	11.9	
		2.0	17.83	32.6	89.4	8.00	4.9	
		3.0	17.68	32.8	88.0	8.00	5.0	
		4.0	17.64	32.9	85.8	8.00	4.4	
HW+4	16:35	0.1	18.16	30.3	91.5	7.96	1.6	HW+3 missed due to meter failure
		1.0	18.17	31.2	89.4	7.96	3.2	
		2.0	18.16	31.6	88.0	7.97	3.2	
		2.5	18.14	31.7	87.8	7.97	3.6	
								HW+5 missed due to meter failure
LW	18:40	0.1	18.18	29.8	91.8	7.90	6.4	
		1.0	18.23	30.3	84.5	7.91	5.5	
		2.0	18.21	30.7	84.7	7.92	6.7	
Date:09/08/96								
LW+3	00:52	0.1	17.29	9.6	89.2	8.04	19.5	
		1.0	17.33	20.0	87.2	8.04	19.5	
		2.0	17.22	30.6	87.7	8.05	18.0	
		3.0	17.21	30.7	86.9	8.05	18.9	
HW+1.5	02:30	0.1	17.41	29.1	82.9	7.97	6.0	
		1.0	17.50	30.9	86.9	8.02	6.1	
		2.0	17.38	32.2	86.4	8.03	6.4	
		3.0	17.32	32.9	87.0	8.01	7.1	
LW+1.5	09:00	0.1	17.50	26.9	73.5			No ph,turbidity due to meter failure
		1.0	17.50	31.6	79.2			

No further profile results due to meter failure. 1 run missed(HW)

Table 47: Fixed Site 5 (Sunny Corner) Profiling Data, Neap Tide Survey, 8 August

TIDE TIME Date: 08/08/96	TIME (GMT)	DEPTH (m)	TEMPERATURE °c	SALINITY (g/kg)	D.O (% sat)	pH	TURBIDITY (ftu)	COMMENTS	
HW+1	13:20	0.1	18.08	31.3	84.6	7.92	0.0	HW+2 missed due to meter failure	
		1.0	18.09	31.5	84.2	7.92	3.0		
		2.0	18.07	31.7	84.2	7.93	4.0		
		3.0	17.91	32.2	85.6	7.95	6.0		
HW+3	15:30	0.1	18.38	29.4	73.2	7.75	8.0		
		1.0	18.54	29.8	75.8	7.81	7.0		
Date: 09/08/96									
HW+1	01:51	0.1	17.83	20.6	84.2	7.93	14.4		
		1.0	17.78	28.6	82.7	7.96	12.3		
		2.0	17.65	30.8	84.7	7.98	7.9		
		3.0	17.63	20.2	83.9	7.99	8.0		

No further profile results due to meter failure. 1 run missed(HW)

Table 48: Fixed Site 6 Profiling Data, Neap Tide Survey, 8 August

TIDE TIME	TIME (GMT)	DEPTH (m)	TEMPERATURE	SALINITY	D.O	pH	TURBIDITY	COMMENTS	
Date: 08/08/96			°c	(g/kg)	(% sat)		(ftu)		
HW	12:20	0.1	18.18	30.9	83.9	7.90		HW+1 missed due to meter failure	
		1.5	17.96	31.5	83.3	7.91			
		3.1	17.97	31.7	82.5	7.93			
HW+2	14:25	0.1	18.37	31.2	86.4	7.90			
		1.0	18.37	31.5	81.4	7.90	18.5		
		2.0	18.32	31.7	82.9	7.92	25.4		
		2.5	18.32	31.7	81.1	7.92	27.7		
Date: 09/08/96									
HW	01:20	0.1	17.23	23.2	83.1	7.92	7.5		
		1.0	17.76	31.9	85.2	7.98	11.3		
		2.0	17.79	32.1	84.5	7.99	13.4		

No further profile results due to meter failure. 1 run missed(HW)