



Workshop No. 1 Report

Short Term Flow Surveys

Wide ranging discussions were held at both sessions which were broadly covered by the following areas:-

1. Model Contract Document

All the model contract documents are being reviewed. A core document has been completed, and work is due to commence on supplementary documents which will cover specific areas. These will be:-

- a) Short Term Flow Survey
- b) Manhole Survey
- c) CCTV and Man Entry Survey (these previously separate areas now being combined)

The question was asked whether the documents would be controlled for QA purposes - Nick Orman agreed to investigate.

It was noted that there were no plans to revise the "Guide to Short Term Flow Surveys" and delegates thought that WaPUG should review this document. In addition it was thought that a Guide and Model Contract Document for Water Quality Surveys would also be required.

2. Equipment vs Site Practicalities

It was pointed out that whilst equipment works within reasonable tolerances and can be accurately checked under controlled conditions, the situation could be radically different on site. At best, in a site with good flow conditions, it was thought unlikely that accuracy of better than $\pm 15\%$ could be realistically be claimed. In hydraulically poor sites confidence limits could stretch to as much as 30%. With this in mind, concern was expressed that the degree of fit on verification stipulated by some clients was totally unrealistic.

Considering the above, great care should be exercised in site selection. Excellent advice is given in the "Guide to Short Term Flow Surveys".

Experience has shown that good preparation and comprehensive advance information will be reflected in the quality of the subsequent data throughout the survey. The contractor should always be made aware of the reason for the survey particularly if it is not for verification, as this could affect the advice he may give with regard to site suitability/data accuracy.

Any new documentation should include a formal system for pre-inspection of sites with a requirement that the client's engineer must visit the sites with the contractor, and a detailed set of notes regarding site selection should be kept. Improved methods of checking the quality of data are required and suggestions made were:-

- a) Review data against Colebrook White and Mannings
- b) Review the scattergraphs after the first event (these are not currently supplied as a matter of course but may be included at tender stage)

It is the contractors duty/responsibility to comment on the data provided, including highlighting reverse flows, low flow problems, and any general limitations.

It was noted that surveys for verification of SPIDA models were likely to be more difficult as SPIDA was generally used on flat looped networks which were subject to velocities below the instrument velocity threshold, reverse flows and a greater possibility of siltation problems.

Similarly for MOSQUITO studies, particular attention should be paid to sources of DWF in the peripheries of the catchment. Low dry weather flows are generally at, or below, the limits of current/conventional equipment.

3. Reports

It was noted that reporting procedures had not changed for more than 3 years.

There should be a requirement for the client to give notice of termination of the survey before the 5th week data is retrieved. If the client wishes to review data during retrieval an item to cover this should be included in the tender documents.

A contractual time limit after retrieval should be specified for the provision of interim reports. It was stressed that interim data should not be used for verification as it was not calibrated.

Contractors are rarely asked to discuss the results with the client. The contractor has a very detailed knowledge of the survey which it is not practical to cover comprehensively in the written report. A post contract meeting after the client has had the opportunity to review the data can be invaluable.

The contractor has no control over when the client provides him with the required events for inclusion in the report. At present the date by which the contractor must produce the final report is related to the withdrawal of the monitors but should more fairly be related to date when the client provides written notification of the storms he requires in the final report.

4. Reliability

Discussion on how to improve the reliability of equipment and data retrieval gave rise to three possible solutions:-

- a) Increased frequency of visits
- b) Built in redundancy
- c) Telemetry

All the above would prove to be very costly, especially (c). However at key locations where data was essential any of the above may be considered. It was thought that occasionally clients discarded data where the velocity had failed, and it was pointed out that the depth information was still very valuable.

The problems of applying penalties and/or extensions was raised and comment was made that the 80%,90% rules in the Model Contract Document were ambiguous and open to various interpretations. This is an area that should be clarified in the new document.

5. Availability and Delays

Some contractors now provide a copy of their programme showing the slot allocated to the client. As a minimum the client should request details of the survey/s which are programmed before their allocated slot and from which the monitors will be made available.

The Association of Flow Survey Contractors (AFSC) was asked to consider the possibility of establishing a clearing house for equipment availability.

(NB. At their meeting on Tuesday 8th December 1992, the AFSC discussed the idea of a clearing house but decided it was commercially sensitive, administratively difficult and therefore not practical.)

There was brief reference to the opposing interests of client and contractor which were inherent in the current type of contract. The client obviously required the shortest possible contract period whereas the contractor obtained far better equipment utilisation during longer timescales. Whilst the weather generally dictated the monitoring period it was felt that a more flexible and equitable arrangement which satisfied both parties should be achievable.

6. Rainfall

It is good practice to install at least two of the raingages in the catchment at least 5 days prior to the installation of the full survey. This allows for the collection of rainfall data necessary for the calculation of API5 for any event which occurs at the commencement of the survey. Bearing in mind the requirements of the new run-off model as detailed in Martin Osborne's paper it may be appropriate to install these gauges as much as 30 days prior to the survey! However due to uncertainties with respect to the weather, and thus start dates, it is likely that this approach is impractical as well as expensive.

More research and development of radar rainfall appears to be worthwhile as gauges can only ever give single point information and may well not be in a position to collect the most intense areas of any storm.

NB. Supplementary information supplied by Dr Sue Walker subsequent to the workshops is that the Draft BSI Guide to Precipitation Measurement will be published during Spring 1993. It will include pragmatic advice on the collection, analysis, and archiving of rainfall data.

There is no doubt that workshops are only successful if those people who attend are prepared to contribute and share their experience and opinions with others. I should therefore like to take this opportunity to thank all those who contributed to the workshops and made them worthwhile. Also my thanks to all those who assisted in the organisation and recording of the proceedings, and to members of the Association of Flow Survey Contractors who made themselves available to stimulate discussion and answer queries.

Gareth Catterson, 25/11/92