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# Data Quality Checks for Model Build

Yogesh Mahajan, Prof. Sagar Gawande

Department of Civil and Environmental Engineering, Anantrao Pawar College of Engineering & Research

Savitribai Phule, Pune University, Pune, India

**ABSTRACT:** A large portion of the standard particulars for overviews for wastewater displaying were composed for the time when studies were completed crosswise over entire catchments; this was particularly the case with sewer vent studies. These days, most parts of the countries have been overviewed with by and large entirely great studies in most urban zones however with odd pockets of inadequate or missing information. The necessities for studies these days are overwhelmingly for infill overviews. The determinations for quality control checks are much of the time not proper or commonsense for such infill studies and as an outcome quality control checks are by and large no more embraced in the field. This places a more noteworthy weight on the modeler to survey whether the nature of the information is sufficient.This can be troublesome from behind a work area. This paper is planned to investigate procedures accessible with the most recent eras of programming to do these evaluations.

**KEYWORDS:** Ancillary Surveys, Flow Surveys, Data Quality, Rainfall Data, Impermeable Area Surveys, Data Flags.

## I. INTRODUCTION

With the advances in displaying methods and the force of the desktop PCs that can now be bought we are building and confirming ever greater and more unpredictable pressure driven models. These expansive, complex models depend vigorously on the nature of the information that makes up the model. Likewise, numerous more exercises included in building pressure driven models are getting to be robotized with substantial volumes of information just being exchanged from corporate databases. The familiar maxim that 'the nature of a model is just tantamount to the nature of the information utilized' is as genuine today as it was 10 years prior we can simply do things quicker at this point. Exact sewer vent information is one of the key things of information that is utilized as a part of model building and thusly it is vital that the information is of a high caliber and that no maverick qualities are data into the model. The "Model Contract Document for Manhole Location Surveys and the Production of Record Maps"2 states the quality control checks and the method that ought to be taken after when overseeing a sewer vent study. This is truly just pertinent when completing vast scale sewer vent overviews as the quality control prerequisite is to resurvey 5% of the reviewed sewer vents inside a matrix square or tile, and after that acknowledge every one of the sewer vents in that square if the 5% pass. These days since we appear to do little scale or infill sewer vent reviews to gather missing information instead of cover studies of the catchment we are displaying we have to take a gander at more practical and solid techniques for quality control checks. Likewise the downfall of the Ordnance Survey benchmarks is making things more troublesome. Computerized Terrain Modeling is getting to be built up all the more generally and these give methods which can be utilized to check the nature of spread levels from sewer records and sewer vent overviews. The easiest approach to utilize this method is to utilize the spread levels from you existing sewer records and create a rundown of the spread levels alongside their directions as a content document. This content record can then be foreign into InfoWorks™ or InfoNet™ and a TIN ground model can be made.

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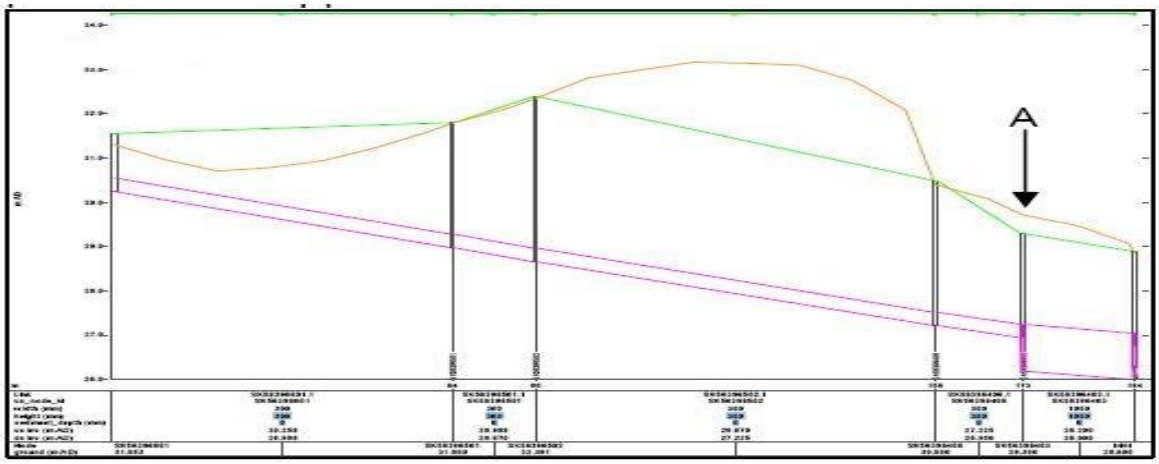


**Fig. 1 The Continuous Ground Levels From The DTM (Brown Line)**

## II. RELATED WORK

Ancillaries are key components in the sewerage network and they control how the network will operate and clearly incorrect data on ancillaries may significantly affect how the performance of the network is simulated. In much the same way as with manhole surveys the type of quality checking which should be carried out depends on the number of ancillaries being surveyed. There are a number of checks which should be carried out on site during the survey such as repeating pump drawdown tests until 3 similar values are achieved. In addition there are a number of checks which the modeller can carry out back at the office:-

1. Check that the pump rates are realistic by checking that the velocity in the rising main is somewherenear to 1m2/s; if it is significantly different from this there is a probability that either the rising main size isincorrect or that the pump rates are incorrect.
2. Check the pump rate against the platedcapacity on the pumps to see if they aresimilar. This will also give an idea of howwell the pumps are operating.
3. Check that the operating range of the pumpsis sensible. If the range between switch onand switch off is too small then the situationcould arise where the pumps would beoperating too frequently and this couldcause instabilities in the model.
4. Visualize the ancillary in 3D but bear in mindthat Infoworks and InfoNet both show allnodes as circular even though in reality theymight be rectangular. Figure 4 shows a 3Dview of a pumping station. Storage Nodes inInfoworks and InfoNet are shown in 3Dwith square plan shapes and considerationshould be given to using ‘storage nodes’ atpumping stations, CSO’s and other complexchambers in order to get a bettervisualization of them.

## III. FLOW SURVEYS

Flow surveys are expensive and time consuming and it is important that the data collected from a flow survey is of the highest quality and that any sites giving poor quality data are recognised at the earliest opportunityso that monitors can be re-located to alternative sites. The current requirement for flow surveys is to followthe “Model Contract Document for Short Term Sewer Flow Surveys”1 which states that in-sewer checks should be carried out as part of the data retrieval visits and at the end of the survey to check that the monitors are recording correctly. It is becoming increasingly important that the Modeler is taking a greater role in understanding and checking the quality of the data during the currency of the survey. This involves carrying out more external quality checks on the data. The quality of the flow survey can be broken down in
to three sections, the quality of the installation site, the quality of the data at the site and the location and spacing of rain gauges.

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## IV. RAINFALL DATA

Rainfall data is the hardest item of data on which to carry out quality checks. The "Model Contract Document for Short Term Sewer Flow Surveys"1 states that the contractor should make sure that each raingauge is operating correctly at each visit and that the data logger records tips in both directions. These checks only check that the raingauge itself is recording correctly. The WaPUG Code of Practice sets out acceptable criteria in terms of rainfall depths, rainfall intensities and variation between adjacent raingauges. It is getting harder these days to find suitable locations at which raingauges can be installed and as a result it is becoming more difficult to achieve an adequate coverage across a catchment. Therefore it is important that the quality of data that is recorded is of a high standard. There are only a limited number of checks which a modeller can undertake to check the quality and consistency of rainfall data. One very useful method is to plot graphs of cumulative rainfall both weekly and ongoing for the whole survey period. This should be done throughout the flow survey period so that an early indication can be gained if one raingauge is recording less than the others.

## V. IMPERMEABLE AREA SURVEYS

Impermeable Areas are another important aspect of model building and it is important that the data is adequately checked. It could perhaps be argued that the verification process is in itself a checking process on the impermeable areas input into the model. However, there can still be significant errors which cancel each other out in verification but do affect how extreme storms are simulated. The recommended way of checking the quality of the IAS data has always been for the Consultant to go out into the field with the surveyor and resurvey 5% of the study area and check that the results from the first survey match the second survey of those areas. This method is still the best approach for Impermeable Area Studies which are carried out on large areas and whole catchments. When the surveys are more localizedinfill and where the study area is small it can be meaningless to carry out a 5% check. In these cases it may be better to consider resurveying a larger area and carrying out meaningful 5% checks. An alternative approach is to ascertain whether other checking methods could be applied to resurveys of selected areas. The possible alternative methods for checking IAS data alongside infield checks can be:

1. Master map.
2. Aerial Photographs (especially infrared).

## VI. CONCLUSION

A hefty portion of the standard particulars for reviews for wastewater displaying were composed for the time when studies were completed crosswise over entire catchments; this was particularly the case with sewer vent studies. These days, most parts of the UK have been overviewed with by and large entirely great reviews in most urban territories however with odd pockets of deficient or missing information. The necessities for studies these days are overwhelmingly for infill reviews. The determinations for quality control checks are as a rule not proper or pragmatic for such infill overviews and as a result quality control checks are by and large no more embraced in the field. This places a more noteworthy weight on the modeler to survey whether the nature of the information is sufficient this can be troublesome from behind a work area or PC. This paper is expected to investigate systems accessible with the most recent eras of programming to do these appraisals.

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