BABE ANALYSIS QUESTIONNAIRE

BASIC DATA QUESTIONNAIRE

FOR A PRELIMINARY ANALYSIS OF

UNACCOUNTED FOR WATER USING

THE BREAK AND BACKGROUND

ESTIMATION (BABE) METHODOLOGY

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1. GENERAL NOTES

The questionnaire will be used to generate a preliminary analysis of the Non-Revenue Water situation of the water supply and distribution system under consideration.

Each question should be answered as fully as possible and any supplementary data that can be provided to support the answers that are given will be useful.

If it is not possible to provide an answer to any question due to lack of data, then please indicate this accordingly.

When quoting Annual Volumes, any unit may be used, but please indicate clearly the units used in each case.

Section 2 contains specific notes to each of the individual questions in the questionnaire.

Additional information that can be very useful in improving the quality of the analysis includes:

- Any existing reports providing a technical overview of the water supply and distribution system;
- Recent Annual Statistical reports, especially those concerned with the Annual Water Balance and the Leakage Control Department (if one exists);
- Any diagrams or sketches of the typical arrangement at a service connection to customer's property including the location of the customer meter and any customer water storage tanks;
- Details of the rate structure.

Once you have completed the questionnaire, it can be either mailed or faxed to:

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11th Floor
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or alternatively, e-mail it back to us at:

mailto:office@wso.us

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2. SPECIFIC NOTES

Questionnaire Part 1 – Water Balance Issues	
Q1 What is the Total Annual System Input?	Total System Input is the total annual volume of water that is put into the system being studied. If the system is supplied from a single water production plant, then the total system input might be the annual volume of water produced by that plant. If the system being studied is only part of a larger network, then the total system input would be the total metered annual volume of water that is put into that part of the network being studied.
Q2 What is the Total Annual Metered Consumption?	Total Annual Metered Consumption is the amount of water recorded in the customer billing system as being consumed by metered customers. If it is possible to distinguish between different categories of metered customers, such as Domestic, Industrial, Commercial, Agricultural etc., then a breakdown of the total should also be provided.
Q3 What is the Total Annual Unmetered Consumption?	Total Annual Unmetered Consumption is the estimated amount of water that is taken by unmetered customers, that is, those customers authorized by the water utility operator to take water from the system without a meter. A typical estimate might be based on the estimated population multiplied by an allowance per person. The basis for the calculation of the estimate should also be provided if possible.
Q4 Does the estimate of Unmetered Consumption (Q3) include an allowance for operational use of water?	Operational use of water will include typical distribution management operations such as mains flushing to remove dirty water and water provided for mains rehabilitation or replacement.
Q4a If yes, then how much is allowed for?	
Q5 What is the current estimated Total Annual Volume of Non-Revenue Water?	Non-Revenue Water can be interpreted in many ways. Typically it will simply be the difference between the Total System Input (Q1) and the amount of water taken by customers (Q2 + Q3). Please also include the basis for the calculation.
Q6 Is the illegal or unauthorized use of water considered a problem?	In certain countries, there is reluctance by the customer to pay for water and so many ways are found to take water from the system without having to pay for it. This can include making illegal connections to the pipe network or by taking water from hydrants etc.
Q6a If yes, then what is the	

scale of the problem?	

Questionnaire Part 2 – Customer Metering Issues	
Q7 Does the water utility have a policy to meter all customers or only certain categories?	Please state the current customer metering policy (even if the policy is not to meter any customers).
Q8 What type of customer meter is typically used?	Please state the manufacturer and model of meter used and the class of meter if known.
Q9 For those customers that are metered, how often are the meters replaced?	This question is intended to determine the average age of customer meters. The average age of the customer meters will be one factor in determining the accuracy of the metered consumption.
Q10 Where is the customer meter typically positioned?	Please state whether the customer meter is positioned at the property line or whether it is placed inside the building.
Q11 Do customers have water storage tanks?	
Q11a If yes, are they at ground level or at roof level.	

Questionnaire Part 3 – Production Metering Issues	
Q12 Is the Total System Input based on flow records from water meters?	
Q12a If yes, what type of meter is used to measure the Total System Input?	The type of meter that is used will be one factor in determining the accuracy of the Total System Input.
Q12b If yes, how often are these meters checked for accuracy and/or calibrated?	The frequency of checking and calibration will be one factor in determining the accuracy of the Total System Input.
Q12c If no, on what basis is Total System Input estimated?	

Questionnaire Part 4 – Basic System Data – Connections	
Q13 What is the Total Population served by the network?	The Total Population can be used to check the Per Capita Consumption levels against international standards.
Q14 What is the Total Number of Properties served by the network?	A property can be a single house, a single apartment in a multi-storey block of apartments. In some cases an apartment block consisting of many individual dwelling units is counted as a single property. Please also state the basis of the calculation.
Q15 What is the Total Number of Service Connections to the network?	A Service Connection is a physical connection to the distribution network used to provide water to one or more properties. It is not necessarily the same as the number of customers in the billing system. For example, an apartment block may contain many individual customers but may only have one physical connection to the distribution pipe network. Please also state if it is common practice for properties to share a single connection to the network.
Q16 What is the average or typical length of a service connection?	The length of the service connection is measured from the point of the connection on the pipe network to the boundary of the property.

Questionnaire Part 5 – Basic System Data – Pipe Network	
Q17 What is the Total Length of Pipe Network	The Total Length of the Pipe Network should include all pipes from the point where the Total System Input is measured. Service connections should not be included in the total. If possible, also provide a breakdown of the total by diameter and material.
Q18 Is the Pipe Network subject to any form of intermittent supply?	Intermittent supply is often used by water utilities as a means of rationing a limited source of water.
Q18a If yes, on what basis is intermittent supply managed?	Typical methods of intermittent supply management are to only supply the pipe network every other day or to provide a set number of hours of supply each day.
Q19 What is the average network pressure when the network is being supplied?	
Q20 What is the Minimum Level of Service for pressure in the network that is considered acceptable?	If the water utility operator has a Minimum Level of Service for pressure such that a minimum level of pressure is guaranteed to the customer, then this should be stated here.

Questionnaire Part 6 – Basic System Data – Repairs	
Q21 What is the Total Annual Number of repairs made to Service Connections?	If possible, include a breakdown of the type of repairs made, for example, broken pipe, broken ferrule connection, broken stop tap etc.
Q21a What proportion of these repairs are as a result of a notification or a complaint from a customer?	If the water utility operator does not carry out any active leak detection activity, then all of the leaks that are repaired will have been reported to the operator by a customer or member of the public.
Q21b What proportion of these repairs is as a result of third party damage?	Third party damage is damage typically caused by other utilities, such as electricity, gas or sewerage utilities, carrying out excavations or other works and then causing damage to the service connection.
Q22 What is the Total Annual Number of repairs made to the Pipe Network?	If possible, include a breakdown of the types of repairs made and the pipe diameter.
Q22a What proportion of these repairs are as a result of a notification or a complaint from a customer?	If the water utility operator does not carry out any active leak detection activity, then all of the leaks that are repaired will have been reported to the operator by a customer or member of the public.
Q22b What proportion of these repairs is as a result of third party damage?	Third party damage is damage typically caused by other utilities, such as electricity, gas or sewerage utilities, carrying out excavations or other works and then causing damage to the service connection.
Q23 What is the average response time for the repair of broken connections and mains?	

Questionnaire Part 7 – Water Pricing	
Q24 What is the Average Sale Price of Water to metered customers?	
Q25 What is the Average Cost of Producing and Distributing the water?	The cost of producing and distributing water will include the power and chemicals to produce the water and the power costs of any pumping within the distribution network.

Q26 Are there any major capital expenditures planned to increase the availability of water?	
Q26a If yes, will the capital expenditure be recovered by increasing the water rate?	
Q27 If water is saved by reducing leakage levels, could this extra water be sold to new or existing customers or will it simply lead to a reduction in the amount of water produced?	

Questionnaire Part 8 – Distribution Management Issues	
Q28 Is any form of leakage control practized and if so, what type?	Please indicate the type of leakage control, even if this is nothing more than responding to customer reports of broken pipes.
Q29 Has the distribution network been sub-divided into hydraulically discrete zones?	Distribution networks may naturally consist of a number of hydraulically discrete zones due to topography and the network layout, please indicate if this is the case or whether a scheme to create zones has been implemented.
Q29a If yes, what is the average size of the zones (no. of properties)?	
Q29b If yes, is the inflow to each zone metered?	
Q29c If yes, is the pressure in any of the zones controlled by use of pressure controlling devices?	