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Prepared for:

**USAID Montenegro  
Good Local Governance Project**

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**OPERATIONS AND  
PROCEDURES MANUAL**

A GUIDE FOR  
FOR  
PERFORMANCE MONITORING  
AND BENCHMARKING OF THE  
WATER SUPPLY  
AND SEWERAGE SECTOR OF  
MONTENEGRO



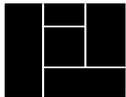
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– Montenegro

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## **1. Introduction**

The Government of Montenegro, with the support of USAID under its Good Local Governance Project (GLG), has created, for the first time, a nation-wide Performance Monitoring and Benchmarking Program for the water supply and sewerage sector. This Program consistent with international best practices in performance monitoring and benchmarking, and is envisioned as a permanent task of the Water Directorate (WD). The Program is complex in its scope and will serve all the stakeholders in the water sector, including the Republic and Local Governments in their effort to improve all aspects of essential public services.

The Performance Monitoring and Benchmarking Program for the water sector in Montenegro is conducted by WD, under the Prime Minister's office. A permanently staffed Monitoring and Benchmarking (M&B) Unit is located within WD and is dedicated to implementing the Program.

### **1.1 Purpose of the Operations and Procedures Manual**

This Operations and Procedures Manual has been prepared to serve as a guide and a reference for procedures and practices of the M&B Unit as it conducts its duties and responsibilities. It provides detailed descriptions of its tasks and relevant work procedures.

The Manual is considered a dynamic document that has been prepared with full expectation that it will be routinely revised and expanded as the M&B Unit grows in its capacity and complexity to monitor and benchmark performance indicators in the Montenegrin water supply sector.

The Manual will also serve as a training document for new or replacement staff to the M&B Unit, so that the quality of information relative to how the M&B Unit should function is institutionalized and not left up to the interpretation or motivation of individuals.

### **1.2 Structure of the Operations and Procedures Manual**

The Operations and Procedures Manual has been structured so the user can go directly to a specific functional area or activity (such as "Training Water Works to Participate in

Survey") of the M&B Unit, and read all information that is relevant to that functional area or activity.

Chapter 4 of the Operations and Procedures Manual highlights the Duties and Responsibilities of the M&B Unit. Each of these duties and responsibilities are then individually developed in succeeding sections of the Manual.

## **2. Institutionalization of the M&B Unit**

The M&B Unit was established with the understanding that it would be a permanent function of the Government of Montenegro in the water supply sector to assess and improve performance of Montenegrin Water Works. As such, it was established under WD.

### **2.1. Mission and Main Tasks of the M&B Unit**

The mission of the M&B Unit is to support WD in promoting the implementation of appropriate and realistic policies and practices in the water supply and sewerage sector in Montenegro, through the establishment of an effective and continuous program to measure, monitor and compare the performance of water and sewerage works in Montenegro.

The Performance Monitoring and Benchmarking Program requires the M&B Unit to organize and conduct regular annual surveys across water supply and sewerage works in Montenegro; to review and evaluate all data submitted by the utilities; maintain the integrity of the data; develop realistic benchmarks for purposes of comparing utility performance within the sector; and monitor the progress of the surveyed utilities in improving their performance based on defined performance indicators.

The M&B Unit reviews the established performance indicators and benchmarks annually to determine their continued appropriateness and modify them, if necessary. Furthermore, the M&B Unit consistently and continuously works to expand the Performance Monitoring and Benchmarking Program to achieve 100% inclusion of all water supply and sewerage works legally operating in Montenegro. In fulfilling these tasks, the M&B Unit, within the framework of WD,

maintains institutional relations with relevant stakeholders in the water sector in Montenegro.

The results of the Program will enable WD to assess the situation in the water sector in Montenegro, in terms of performance, and thereby assist water works in formulating policies to bring about improvements in their operations. It will also provide WD with information that can be shared with Local Government officials to create a positive environment for performance improvement.

## **2.2 Authority of the M&B Unit**

The M&B Unit is part of WD and in support of its functions, acts with the authority of WD, as given by the laws and regulations in effect.

The staff of the M&B Unit is authorized, having provided prior notice to the Director of a particular water supply and sewerage works, and during reasonable working hours, to enter the premises of a water supply and sewerage utility in Montenegro for the purpose of reviewing and evaluating the means by which the requested data is being measured, recorded, stored, and transmitted to assess that it is in accordance with the recommended procedures established in the Performance Monitoring and Benchmarking Program.

The M&B Unit staff making such a site visit has the right of access to all related files and facilities including laboratories, water supply sources, pump stations, treatment plants, distribution systems, reservoirs and any appurtenant facilities. They may make photocopies of computer data, laboratory sheets and other related documentation, and leave the premises with the copies for further evaluation at the M&B Unit offices in Podgorica. It is expected that the M&B Unit staff will act in a professional and collegial manner, and in a supportive and advisory role for the achievement of the Program objectives.

The M&B Unit staff may only record and evaluate data, but may not take any enforcement action of any kind as a result of the data. The success of the M&B Unit will depend on their role as a supporting and training function in order to improve the operation and maintenance of the water supply and sewerage works being monitored.

It is fully understood by all parties that the M&B Unit is not a regulator or an enforcer of performance, and is not authorized to act in an enforcement capacity.

### **3. Staffing Structure and Position Descriptions**

#### **3.1 Staffing Structure**

The staffing structure of the M&B Unit requires complementing skills sets that have been defined to provide the M&B Unit with the ability to comprehend and respond to the broad variety of challenges routinely faced by Montenegrin water works. The initial staffing structure includes up to four full time professional staff, though the Performance Monitoring and Benchmarking Program is not a full time activity.

The M&B Unit staff are intended to have specific skill. Ideal staff include an Economist/Financial Specialist, a Data Management Specialist and a Water Engineer, plus the Manager of the M&B Unit, who directs the overall activities of the M&B Unit. (The role of the Manager can be performed by one of the professional members of the M&B Unit.)

The key qualifications of the members of the M&B Unit are attached to this manual as Appendix A.

#### **3.2 Position Descriptions**

##### **Manager, M&B Unit**

The Manager of the M&B Unit is responsible for the overall direction of the Performance Monitoring and Benchmarking Program and for assigning daily tasks and duties to the staff. The specific major tasks include the following:

- Establish annual goals and objectives for the M&B Unit.
- Prepare the annual budget for the M&B Unit.
- Direct all organizational activities related to the conduct of annual surveys.
- Prepare recommendations for program coverage expansion.

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- Prepare recommendations for revisions to the performance indicators.
- Prepare all reports, based on input by other members of the M&B Unit.

The Manager of the M&B Unit has full authority to take staff disciplinary action, as necessary.

**Water Engineer**

The Water Engineer organizes the periodic collection of technical data from water works across Montenegro that are part of the Performance Monitoring and Benchmarking Program. Specifically, this individual will:

- Review and update technical data requirements on a regular basis and check for irregular, missing, or abnormal data.
- Produce reports and interpret utility performance results in cooperation with the Data Management Specialist.
- Perform technical analyses of water utility operations, and make proposals for improving technical data collection and management, as required.
- Develop and deliver training courses for water works staff in the relevant areas of data collection, recording and reporting.
- Make presentations to Local Government officials to build awareness regarding the value of technical performance indicators and benchmarking of water works performance.

**Economist/Financial Specialist**

The Economist/Financial Specialist organizes the periodic collection of financial data from water works across Montenegro that are part of the Performance Monitoring and Benchmarking Program. Specifically, this individual will:

- Review and update data requirements on a regular basis and check for irregular, missing or abnormal data.
- Produce reports and interpret utility performance results in cooperation with the Data Management Specialist.

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- Perform financial analyses of water works operations, and make proposals for improving financial data collection and management, as required.
- Develop and deliver training courses for water works staff in the relevant areas of data collection, recording and reporting.
- Make presentations to Local Government officials to build awareness regarding the value of financial performance indicators and benchmarking of water works performance.

**Data Management Specialist**

The Data Management Specialist develops the data collection forms for the annual data collection process from the water works that are part of the Performance Monitoring and Benchmarking Program, in coordination with the Economist/Financial Specialist and the Water Engineer. Specifically, this individual will:

- Organize all data entry to the monitoring and benchmarking data management system.
- Operate and maintain the computerized data management system in support of the Performance Monitoring and Benchmarking Program.
- Produce reports in cooperation with the Economist/Financial Specialist and Water Engineer.
- Apply modifications to the data management program to enhance performance.
- Develop and deliver training courses for water works staff in the use of relevant computer programs for recording, storing and transmitting data to the M&B Unit.

**4. Duties and Responsibilities**

**4.1 Assess and Recommend Revisions to Performance Indicators and Utility Profile Data**

The set of performance indicators that are selected for the Performance Monitoring and Benchmarking Program can change over time to reflect changes in water works services or management needs. Performance indicators are reviewed and upgraded on

a regular basis (annually, to ensure coherence with the Profile and Data Entry Forms) to serve the management needs of Montenegrin Water Works, and for purposes of the M&B Unit and WD. Revisions in performance indicators will likely impact data collection, since additional data may be required to support the calculation of new or revised performance indicators. .

Profile and Data Entry Forms will likely require revision following changes in the performance indicators, information requirements of WD, and eventual major and widespread changes in water works typology and management options (e.g. outsourcing).

This task is discussed further under Chapter 5.

#### **4.2 Planning for Program Expansion**

The ultimate goal of the Program is for 100% inclusion of all water and sewerage works in Montenegro. In support of this, the M&B Unit prepares an annual plan to include additional water supply and sewerage works in the Program. The plan for expansion includes the list of water works proposed to be added to the Program, a rationale for their inclusion, and estimates of additional costs that will be incurred as a result of the Program expansion.

Chapter 6 provides a detailed account of this task.

#### **4.3 Procedures for Conducting the Annual Survey**

The preparation and organization of the annual survey follows standard procedures that address, in detail, the various steps of the conduct of the annual survey. They are preparation of survey materials, notification, training on data collection and other related requirements, procedures for the delivery of survey materials, and installation of monitoring and benchmarking software at the utilities and software training.

A detailed discussion of these procedures is found under Chapter 7.

### **Conducting Site Visits to Participating Water Works**

An important task of the M&B Unit is the conduct of site visits. The water works included in an annual survey are visited by one or more members of the Unit. The number and timing of site visits at each utility is decided on a need basis, as well as on the budget available at the M&B Unit. However, it is recommended to visit each water works participating for the first time, at least, twice during the first six months of their first survey, and once during the second six-month period. The aim is to improve the technical and administrative capability of the utility staff in order that the data they provide is as accurate as possible, under their circumstances.

Chapter 8 provides a thorough description of this task.

#### **4.4 Establish Procedures for Data Collection, Analysis, and Administration**

The successful accomplishment of each annual survey is very much the result of meticulous management of the data maintained and submitted by the water works. This Manual describes in detail the procedures for the collection, analysis and administration of data.

This task is explained in Chapter 9.

#### **4.5 Conduct and Maintain a Broad-Based Communications Program**

Consistent with its mission and purpose, the M&B Unit seeks to expand and share its knowledge and information on the sector with all stakeholders. Such a task is accomplished through establishing and maintaining effective communication with stakeholders. A variety of means are used by the M&B Unit in this regard, to include: a newsletter, a website, a year-end and a mid-year workshop, as well as other public relation programs, accomplished in cooperation with other stakeholders in the water sector.

Chapter 10 provides a more extended discussion of this task.

#### **4.6 Develop Networking Relations with other Similar Units in the Balkans and Europe**

The Performance Monitoring and Benchmarking Unit shall establish and maintain institutional relations with other similar units in the Balkans and Europe. The purpose is to enhance the capacity of the M&B Unit, allow them to share their experience with other sister organizations, and ultimately improve their work quality.

A brief discussion of this task is found under Chapter 11.

#### **4.7 Reporting of the M&B Unit**

Consistent with its mission and purpose, the M&B Unit seeks to expand and share its knowledge and information on the water sector with relevant the stakeholders. The M&B Unit prepares regular quarterly and annual reports, which will document the work done by the M&B Unit. Upon request from the top manager of the WD, the M&B Unit prepares other reports.

Chapter 12 provides more detailed information on reporting requirements.

#### **4.8 Milestone Dates in Annual Cycle**

Nearly all of the duties and responsibilities of the M&B Unit are tied to a fairly precise schedule of milestone dates that define an annual survey cycle, as well as the preparation for a new survey cycle. In addition, the end of each quarter within an annual survey cycle has particular significance to the M&B Unit, since all water works participating in the survey submit data on a quarterly basis.

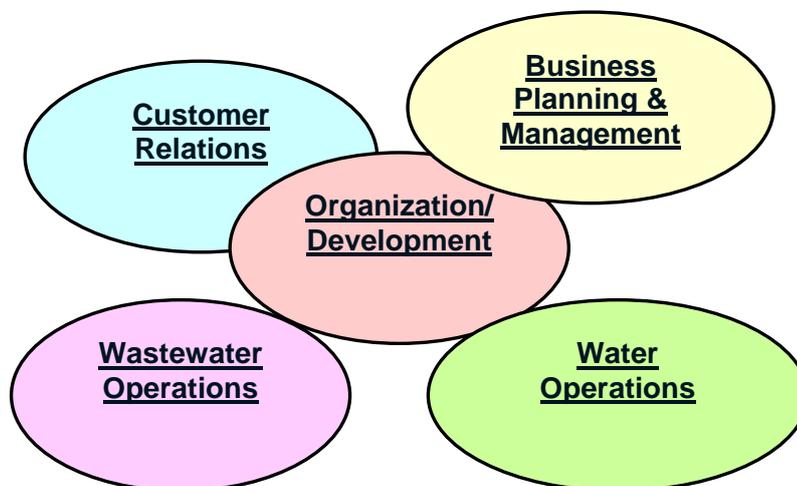
The schedule of milestone dates is included as Appendix B of this Manual. It provides and overview of the specific duties and responsibilities of the M&B Unit that are tied to these annual milestones. This schedule should be reviewed annually to see that it accurately reflects the actual timing and scheduling that is taking place in an annual cycle.

## **5. Assess and Recommend Revisions to Performance Indicators and Profile Information**

### **5.1 Performance Indicators**

The set of performance indicators that are selected for the Performance Monitoring and Benchmarking Program can change over time to reflect changes in water works services or management needs. Performance indicators are reviewed and upgraded on a regular basis (annually, to ensure coherence with the Profile and Data Entry Forms) to serve management needs in each utility, and for purposes of the M&B Unit and WD. Currently, the Program includes 16 performance indicators (see Appendix C).

Performance indicators should be selected so as to provide a complete assessment of the current performance and performance trends of the water works included in the Performance Monitoring and Benchmarking Program. The performance indicators should cover the following key functional areas of a typical water supply and sewerage utility:



One area where there will be a need to add new performance indicators is the area related to wastewater treatment and management. Since Montenegro has only one (Podgorica) operating wastewater treatment plant, no wastewater treatment performance indicators are currently included in the Program.

In defining the performance indicators to be used in the Performance Monitoring and Benchmarking Program, the M&B Unit should give serious consideration to several resources, to include:

- The World Bank "Benchmarking Tool Kit" and its international benchmarking network ([www.ib-net.org](http://www.ib-net.org))
- International Water Association ([www.iwa.org](http://www.iwa.org))
- American Water Works Association ([www.awwa.org](http://www.awwa.org))
- Water Environment Federation ([www.wef.org](http://www.wef.org))

It is essential that the selection or revision of performance indicators must be made in cooperation with the users of the data. This approach ensures that the selection of the performance indicators reflects the needs and requirements of the stakeholders in the water sector in Montenegro.

The revision of performance indicators and Profile Information Sheets and Data Entry Forms is done based on the outputs of the Annual Mid-Year Program Review and Workshop, which is discussed in detail under Section 10.2 of this Manual, and no later than one month from the date of the said workshop.

## **5.2 Profile Information Data**

The selection of water works profile data that will be provided by the water works participating in the Performance Monitoring and Benchmarking Program is critical, since this data serves to define the unique characteristics of a given water works. Water works that vary greatly in such areas as total served population, percent of pumped water, existence of treatment facilities, etc., for example, cannot be compared for all performance indicators.

Profile Information data allows the water works to be grouped in categories of similar characteristics. Once grouped in this way, then the performance indicators can be considered to assess differences between water works for the purposes of developing standards for performance and goals for improvement.

The Profile Information Sheet needs to be revised following changes in the performance indicators, information requirements of WD, and eventual major and widespread changes in water works typology and management options.

## **6. Planning for Program Expansion**

Planning for the expansion of the Performance Monitoring and Benchmarking Program to include additional water supply and sewerage works that are operate legally in Montenegro is done on an annual basis. The ultimate goal of the Program is for 100% inclusion of all such utilities.

For this purpose, the M&B Unit prepares a detailed program for expansion each year.

The program for expansion includes the following:

- list of utilities proposed to be added to the program;
- a rationale for inclusions;
- schedule of planned site visits; and
- detailed budget estimate for the M&B Unit.

### **6.1 Selection Criteria for Adding New Water Works**

In principle, the Performance Monitoring and Benchmarking Program strives to include all the water supply and sewerage works in Montenegro that operate legally.

There are some criteria that can be applied for the selection of additional utilities to be included in the Performance Monitoring and Benchmarking Program. The following criteria are presented in an order of relevance and can be useful in allowing for a fine-tuning of the selection process.

#### ***Urban vs. Rural Water Works***

The selection of the additional water works takes in consideration urban and rural systems, in order to obtain a country-wide picture of the water supply and sewerage works, and to allow comparisons between similar systems. In making such distinctions, the M&B Unit will have to use the best available definition of urban vs. rural systems.

***Water Works and System Characteristics***

To the extent possible, the selection of the additional water works should consider the following criteria, without, however, setting any priority among them.

- **Represent small, middle and large water works, based on the population served.**

Water works size, which in turn, reflects the size of the service area, does have an impact on management approaches. Therefore, similarity of size serves as a basis for comparisons between water works for a number of performance indicators.

The American Water Works Association (AWWA)<sup>1</sup> utilizes the practice of classifying water works by size, as is shown on Table 6.1 below:

**Table 6.1 – Classification of Water Works by Size**

<b>Number of Served Population</b>	<b>Relative Size</b>
25-500	very small
501-3,300	Small
3,301–10,000	medium
10,001–100,000	Large
Over 100,000	very large

- **Include regional systems as well as non-regional systems, managed by smaller units**

Currently, the management of water supply and sewerage works systems in Montenegro is done at Local Government level by each municipality. Eventually water works could be operated by either regional companies, which could include considerably large service areas, or possibly smaller systems at the village level. The differences rely largely on the disproportionate size, but also

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represent differences in management techniques and approach, and for these reasons, it is important to include all types.

- **Include a variety of system types (gravity, pumped and combined systems.)**

The nature of the system has a crucial weight in the value of a number of technical and cost performance indicators. By forming groups of water works that have similar systems, it is possible to create meaningful benchmarks for relevant performance indicators.

- **Provide for a representative geographical distribution.**

The Performance Monitoring and Benchmarking Program is aimed to be nationwide and as the Program expands from year to year, this characteristic can be observed by ensuring a fair geographical distribution, to the extent possible.

- **Include systems that are situated in areas with potential economic growth, as well as systems in non-growth areas.**

This criterion also aims to obtain a widely representative picture of water supply and sewerage works performance across the country.

## **6.2 Annual Budgeting for Program Continuation and Expansion**

The determination of the number of water supply and sewerage works that can be accommodated in the Performance Monitoring and Benchmarking Program will be a direct function of budget constraints placed on the M&B Unit from within WD.

Annually, the M&B Unit will need to develop a budget for the following year. The budget will need to assess any cost increases for simply maintaining the current

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<sup>1</sup> Developing Rates for Small Systems – 1<sup>st</sup> edition (AWWA Manual; M54)

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Program and survey coverage, as well as any cost increases due to Program expansion.

Clearly, there is a direct correlation between cost to conduct the Program and the manner that the Program is conducted. The Program should have adequate funding to conduct necessary training at water works participating in the Program and prepare communications programs with stakeholders (e.g., Montenegrin Water Works, Municipal and Republic officials, donors).

Program costs can be reduced by reducing the amount of interaction with water works and the amount of communication with stakeholders. However, such reductions will obviously reduce the quality of the Program, and ultimately the quality of the results and their use by stakeholders in monitoring the performance of the Montenegrin water sector. .

At minimum, budget estimates for the M&B Unit, must consider the following areas of costs:

- Personnel
  - i. Specialized Staff Wages
  - ii. Supporting Staff Wages
  - iii. Social Insurance
  
- Office Facilities and Support
  - i. Office Space
  - ii. Office Furniture
  - iii. Office Rent
  - iv. Utility Services
  - v. Telephone, fax, email, internet
  - vi. Printing, photocopying services
  - vii. Consumable Expenses
  
- Equipment
  - i. Computer Equipment
  - ii. Other Equipment
  - iii. Maintenance and Repair

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- Transportation and Travel Expense
- Training for the Utilities
- Communication Programs

### **6.3 Standard Procedure for Program Expansion**

The Performance Monitoring and Benchmarking Program is structured to operate on an annual cycle that starts on 1 January of each year. When consideration is made for program expansion, the decision process must start well in advance of 1 January of the new year to allow for the proper integration of the new water works into the Program. To accomplish this in an orderly and structured manner, the process of program expansion has been divided into three steps:

- ***Identification and Justification for Adding New Water Works***

Although there will likely be input from other stakeholders in the sector, it is the responsibility of the M&B Unit to prepare the list of potential new water works to be added to the Performance Monitoring and Benchmarking Program for the following year.

The M&B Unit, in developing the list of potential new water works, will apply the criteria for selection of additional water works that are described in this Manual. The M&B Unit will provide a rational justification of the Program extension. In addition the M&B Unit will prepare an estimate of the added costs of the proposed program expansion.

The task of developing the list of potential new water works to be added to the Program, and the estimate of additional budget needs, is accomplished 2 months prior to the date when the WD is required to submit its budget proposal for the next year to the appropriate authorities in Montenegro. Before that date of any given year, the M&B Unit prepares the list of new water works to be added to the Program, with full justification, and with an estimate for additional budgeted funds. The proposal is sent to the WD for approval.

- ***Review and Approval of New Water Works***

WD will review and approve/revise the list of new water works to be added to the Program, as presented by the M&B Unit. The approval of the final list of new water works shall occur within 45 working days from the submittal of the proposal by the M&B Unit.

- ***Annual Training Workshop***

Once the Director of WD has approved the final list of new water works to be added to the Program, the M&B Unit notifies all the participating water works (former and new) and organizes the Annual Training Workshop. This workshop serves to thoroughly brief and train the officials of the new water works regarding the Performance Monitoring and Benchmarking Program, survey process, collection of the data for the Profile Information Sheet and Data Collection Forms, and responsibilities that each participant has in the survey. In addition, this workshop serves to update water works that are already part of the Program, regarding the any changes in the survey requirements and procedures. This approach is useful also in cases when relevant staff of water works already in the Program have been replaced and the new staff is not well acquainted with the Performance Monitoring and Benchmarking Program.

The Annual Training Workshop, which would typically be conducted in one day, is scheduled to be conducted no later than the second week of December.

## **7. Procedures for Conducting the Annual Survey**

The annual survey is conducted based on a data year that starts on 1 January. Therefore, the timing of all procedures related to the annual survey are such that the water works participating in the annual survey are properly prepared to begin collection of data on that date.

The initial step in the preparation for an annual survey is the decision by the WD on the number of participating water works, including the new entries, for the next survey year. This item is discussed in detail in Section 6 of this Manual, where are described the

procedures to be followed after the participating water works have been confirmed by WD.

Conducting the annual survey requires several steps, which are described in detail below.

## **7.1 Preparation of Survey and Training Materials**

Consistent with the final list of performance indicators to be applied in a given survey year, the M&B Unit prepares the Data Entry Form, the accompanying Instructions for Completion of the Data Entry Form and Profile Information Sheet.

### ***Data Entry Form***

The Data Entry Form is prepared consistent with the list of performance indicators that have been proposed by the M&B Unit and approved by WD. Any revisions in the list of performance indicators are reflected in the Data Entry Form as modified or additional data requirements.

The Data Entry Form, as it exists in the Performance Monitoring and Benchmarking Program software, is prepared in Excel and covers the entire 12-month period of one annual survey. The Data Entry Form, which is distributed to the participating water works, is prepared in four identical versions, representing the four quarters of the annual survey period. Therefore, the only difference is the naming of months.

### ***Profile Information Sheet***

The Profile Information Sheet is valid for one annual survey, and is completed and sent to the M&B Unit once, at the end of the first quarter, or, in case of any important changes at water works and at their discretion, once again at the end of the survey year.

### ***Survey Instructions***

The Survey Instructions is a document that helps the recipient in the understanding and completion of the Data Entry Form. The Survey Instructions provides general instructions how to complete the Data Entry Form, as well as

detailed explanations for all required data items included in the Data Entry Form. The numbering of the instructions should correspond to the number of the data input on the Data Entry Form. The Survey Instructions is prepared in MSWord.

***Training Materials***

The M&B Unit prepares all training materials for the conduct of the Performance Monitoring and Benchmarking Program. The training materials address the following:

**(a) Training in Support of the Annual Workshop**

Training materials for the Annual Workshop consist of the Survey Instruction document, and any other additional training material that addresses the question of correct methodologies for data collection. The M&B Unit prepares its handouts of presentations no later than one week prior to the date of the Annual Workshop.

**(b) Follow-Up Training**

The Follow-Up Training and Coaching Activity is related to the training of the staff of the participating water works on more specific technical and financial matters and will be delivered during the survey period. The program and content of such training is prepared by the M&B Unit, consistent with the perceived needs of the participating water works. Based on these needs, the delivery of training is done in a concentrated manner (i.e., in one or more workshops), or during site visits at the water works.

**c. Training for Use of Performance Monitoring and Benchmarking Software**

The training for the use of the Performance Monitoring and Benchmarking software is part of the Annual Training Workshop. If additional training is needed, it will be planned and organized by the M&B Unit and based on the needs of a specific water works.

## **7.2. Participating Water Works Notification Procedures**

The M&B Unit sends an official notice to all the participating water works to confirm their participation in the next annual survey. This notice includes a general description and objectives of the Performance Monitoring and Benchmarking Program.

The notice is sent immediately after the approval by WD, i.e., during weeks 3-4 of November of the year prior to the survey year.

## **7.3 Annual Training Workshop for Water Supply and Sewerage Works Participating in the Survey**

The M&B Unit has the primary responsibility for the training of the relevant water works staff in the procedures for collecting data and reporting on the survey forms. The Survey Instructions form the basis for this training. The annual workshop is a regular event and takes place every year and anticipates the next annual survey. Subject to the number of water works participating in the survey, the annual workshop may be held in more than one location to reduce the total number of attendees at a given workshop in order to allow for sufficient interaction.

The aim of the training is to enhance the capability of the water works to understand correctly the meaning of each piece of data required in the survey, as well as their capacity to collect, maintain and report such data consistent with a correct methodology.

The workshop is directed by the members of the M&B Unit, who present and explain the survey data and methodology relevant to their field of expertise. The workshop is concentrated on the detailed explanation of each data item of the annual survey, the correct methodology to collect data, and the procedures for data submission.

During the workshop, the M&B Unit presents the schedule of the site visits during the upcoming survey year and the training program for the same.

The notification for the annual workshop is sent officially to all water works participating in the upcoming survey, and is incorporated with the notification of their participation in the annual survey, discussed under the Section 7.2. It is recommended that the workshop be attended by 2-3 management level representatives from each water works.

The notification should include of the following items:

- Letter of Invitation
- Workshop Agenda
- List of Performance Indicators to be applied in the upcoming survey
- A copy of the Profile Information Sheet and Data Entry Form

The notification is delivered no later than two weeks from the start of the workshop. The notification should be sent by mail or fax and e-mail to the water works that have e-mail facilities. The annual workshop takes place no later than two weeks from the date of the start of the survey.

The following are details regarding the training topics to be addressed during the Annual Training Workshop are consistent with the fields of operation for which data are required.

#### **7.4 Delivery of Survey Materials**

The survey materials consist of the Profile Information Sheet, Data Entry Form, and Survey Instructions.

The survey materials are given to the water works through their representatives attending the annual workshop described above. In case of absence of any water works, the materials are mailed and/or e-mailed immediately after the workshop, in the following quantities and delivery options:

- 1 paper copies (for reference)
- 1 floppy disc or CD
- email

Only the Data Entry Form is delivered 4 times, once for each quarter, and each time in the preferred delivery option. All participating Montenegrin water works are expected to complete the survey electronically.

Consistent with the timeframes of the training workshop, the survey materials are made available at the water works no later than 15 - 21 days before the annual survey start date. The Data Entry Form for each quarter is also made available to the water works no later than 15 - 21 days before the start of each quarter.

### **7.5 Installation of Monitoring and Benchmarking Software and Software Training**

The Performance Monitoring and Benchmarking Program software is installed at each participating water works. The software is entirely written in MsExcel, therefore the latest versions of the Windows operating system are able to host it.

Before the installation, the M&B Unit organizes a brief training workshop on the use of the software. After the training session, each water works receives the software on a CD or floppy.

Since the availability of computer literate staff at the water works is a function of factors out of the reach of the M&B Unit, the software training will be adjusted for the IT capacity of each participating water works.

## **8. Conducting Site Visits at Participating Water Works**

An important task of the M&B Unit is to conduct site visits. The water works included in the annual survey are visited by one or more members of the M&B Unit during an annual survey period. The number and timing of site visits at each water works is decided on a needs basis, as well as on the budget available at the M&B Unit.

It is the practice of the M&B Unit to visit each water works participating for the first time in a survey at least twice during the first six months of their first survey year, and once during the second six-month period. The aim of these site visits is to improve the

technical and administrative capability of the water works staff in order that the data they provide is as accurate as possible, under their particular circumstances.

## **8.1 Logistics**

The site visits involve some practical logistic considerations which must be decided before making the field site visits. Specifically, these are:

### ***Transportation***

Adequate transportation is critical to the ability of the M&B Unit to properly conduct field site visits. It is anticipated that the members of the M&B Unit make site visits as a two person team (technical and financial) so that a site visit can be all-inclusive to take best advantage of the time and resources available.

### ***Equipment for Field Site Visits***

Currently, the M&B Unit has no field equipment. However, in the future, the M&B Unit may have access to a variety of field testing and monitoring equipment that they can take to the field with them. This equipment could include portable flumes and external pipe flow-metering devices. The purpose of this equipment is to verify recorded data that has been submitted by the water works or to provide training in the use of such equipment by the water works.

If the M&B Unit begins using field equipment to verify survey data, it may require use of a four-wheel drive vehicle, since some of the well sites and reservoirs will be in terrain that could be difficult to reach in wet or winter weather. The vehicle would need to be sufficiently large to accommodate the monitoring equipment and have sufficient space its safe storage during transportation.

## **8.2 Preparation of Site Visit Schedule**

At the end of each calendar year, and after the approval of the renewed/expanded list of water supply and sewerage works to be included in the Performance Monitoring and Benchmarking Program, the Manager of the M&B Unit, in close cooperation with the other members of the M&B Unit, prepares a

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schedule for regular field site visits to the water works to be surveyed in the coming year.

The field site visit frequency for a given water works in a given survey year will differ based on some specific factors, to include:

- Number of years that the water works has been a part of the Program.
- Capacity of the water works staff responsible for completion of the survey.
- Specific training needs as new technology is added at the water works to support data collection, recording and transmission.

As a basis for planning and scheduling the field site visits for a given year, the M&B Unit will apply the following visit frequency guidelines:

- One visit for water works that have been in the Program and are considered to be highly capable in data collection, recording and transmission.
- Two visits for water works that have been in the Program but demonstrate some weaknesses in data collection, recording and transmission.
- Three visits for water works that have been newly added to the Program

As the survey progresses, the need may arise to make follow-up visits, which will be scheduled based on the difficulties being faced by the various water works understanding the requirements of the Program, and in obtaining the necessary data. It is not possible to foresee the number and location of such follow-up visits before the start of the survey, therefore the end-year planning of site visits allows a number of potential, additional visits, expressed as a percentage of the regular visits (10-15%).

The final proposed schedule is part of the proposal for Program expansion, which is sent for approval to the WD Director no later than 2 months prior to the date when WD is required to submit its budget proposal for the next year to the appropriate authorities.

### **8.3 Communication with Water Works**

After the field site visit schedule and budget for the site visits has been approved, the M&B Unit publishes the schedule for the site visits and distributes it to all individuals that have a need to know. The Unit uses various communication means, such as its newsletter, which is mailed to all the utilities, and the web page to share such information (see Section 10).

In addition, the M&B Unit communicates directly with each water works, 10-14 days before making a visit to a particular utility to confirm the visit date and time.

### **8.4 Site Visit Agenda**

Every site visit is based on a standard agenda to be followed by the M&B Unit staff making the field site visit, in order to achieve full efficiency of resources and time utilization for both the M&B Unit staff and the visited water works. As a minimum, during the site visits, the members of the M&B Unit addresses the following issues:

- **Conducting Physical Inspections and Verifying Sources and Quantities**

The site visits shall include an inspection of the physical facilities of the water works including all pump stations, treatment facilities, reservoirs and appurtenant facilities to the extent that the condition or type of facilities impacts the data collection required by the Program.

In cases where flow volumes are estimated, it will be necessary to review and determine that the estimates are based on the best available technology and/or measurement procedures. If the flow data is deemed to be questionable or not available and the M&B Unit team has access to a portable flow meter, it should use the flow meter to measure the flow. The actual flow, as measured, should then be used to revise the flow data provided by the water works for the previous month(s).

Comparisons will be made between the measured volume of flow and the system records for water sales, to detect any significant variations. If such

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variations exist, the M&B Unit team will work with the water works staff to try to identify the cause for the difference.

The M&B Unit staff will reconfirm the data submitted on the Profile Information Sheet to determine if new water sources or facilities have been added to the system, since the previous review, and determine the changes in the volume of water delivered and billed, if any. Any new sources of water should be documented with the name of the source, the volume of flow, the general nature of the source, and whether it is bulk purchase, well or spring supply. Any other changes in the information provided in the Profile Information Sheet is recorded and included in a Trip Report. If the changes in the system profile will have a direct impact on any of the performance indicators, a special note of the information should be made and included in the quarterly report to the WD Director.

- **Review Data and Documentation**

Conduct an overall review, with water works staff, of the data and documentation being provided for every report that is submitted by the water works and determine that the data is complete and is based on actual conditions at the facilities. The current data being collected on a monthly basis for inclusion in the water works quarterly report should be reviewed and evaluated for the reasonableness of the data. The current report is also compared to the previous quarter to determine any major changes in data or in performance indicators. For example, if the percentage of lost water decreases significantly from one quarter to the next, the reason for the improvement should be determined. If a new neighborhood is added to the water distribution system or to the sewerage collection system, this fact should be noted, since it will significantly affect one or more of the Program performance indicators.

- **Review Laboratory Operations**

The laboratory operations, if any, should be reviewed once per year to determine that the analytical data being collected is in accordance with internationally accepted standards, that sample collection has been

conducted in the appropriate locations, and that the data collected is being reported completely.

Chlorine residual records should be reviewed to determine the extent of the effectiveness of the system chlorination program. Similarly, coliform (E coli) (or any other test) results should be reviewed to determine the extent of the monitoring program and the water quality being provided. Chlorine residual results should be verified by taking samples for analysis with the portable test kits available to the M&B Unit staff. These should be compared with the summary of the test results produced by the water works using its own chlorine test kits, as well as those from any other authority that has the right to test water quality, which are reported in the quarterly report for the water works.

- **Review Financial Records**

The financial records of the water works are reviewed during each field site visit to evaluate the completeness of the data and the accuracy of the financial performance indicator being reported. The data reported in the calculation of the financial performance indicators is reviewed in detail to be sure that the operating costs include all relevant factors and no more.

Review the staff costs that are included in the performance indicators to be sure of their accuracy. Review the latest available financial audit and ensure that the audited information is consistent with the submitted data. Review that portion of the operating costs that are for electricity, generally the highest cost item in the utility budget, and determine whether or not the electricity bills have been paid. Review the cost for chemicals, particularly chlorine, and compare the cost with the dosage of chlorine reported to determine any discrepancies.

Calculate the unaccounted-for-water, or non-revenue water, for the previous period and determine if progress has been made in the reduction of such water losses. This determination will require an analysis of the production flow records and the total financial billing for water supply services to customers. If the flow records appear inaccurate, refer to procedures

(described above) to check flow rates. Report the calculated non-revenue water as a separate item in the Trip Report.

- **Provide Training to Technical and Financial Staff**

Since the key role of the M&B Unit is to build capacity and to be a resource for performance improvement, each field site visit is an opportunity to provide training in appropriate techniques, procedures and calculations, as well as in the need to fill out the data forms completely and accurately.

During the initial site visit by the M&B Unit, the Data Entry Form and the Survey Instructions will serve as the basis for understanding. The M&B Unit team will proceed through the Form on an item-by item basis to explain exactly what is required for data entry. The meaning of each item will be discussed and instructions will be provided in the derivation of the data, the use of the data, and how the data is applied to determine the performance indicators.

The staff of the water works should also be trained to look for any discrepancies in the data and in the procedures to follow if they suspect that the data provided is incorrect. Once data is collected, training is provided on the need to enter the right numbers in the right units in the proper location on the Data Entry Form. The water works staff should also be trained to report in the comments any issues they have with the data being reported.

Follow-up site visits are scheduled based on the difficulties being faced by the utility in understanding the requirements of the Program and in obtaining the necessary data. The follow-up visits are scheduled at the conclusion of each site visit.

## **8.5 Preparation of Standardized Site Visit Reports**

After each field site visit, the members of the M&B Unit prepare reports in a standardized format, for reference by the Unit. The format is prepared consistent with the items of the visit agenda.

## **8.6 Follow-up Coaching of Water Works in Support of the Program**

During the course of implementation of the Performance Monitoring and Benchmarking Program, it is likely that the M&B Unit staff will notice discrepancies or unreasonable data from some of the participating water works. When that happens, the M&B Unit staff will investigate the nature of the problem through telephone/email communication with the water works to try to resolve the situation. If that is not possible, the M&B Unit will schedule a follow-up visit to address the particular problem and overcome the concern.

## **9. Establish Procedures for Data Collection, Review and Analysis**

The process of data collection, review and analysis is a crucial element of the overall activity of the Performance Monitoring and Benchmarking Unit. This section of the Manual presents detailed procedures for the management of the data. It is to be understood that these stated procedures are to be followed rigorously by the Performance Monitoring and Benchmarking Unit.

### **9.1 Data Collection Procedures**

Data is collected at each water works on a monthly basis. All data is recorded electronically on either GLG-supplied or other computer facilities. According to the ability of the water works, the data will be transmitted to the M&B electronically by way of the Internet, on a floppy diskette or CD. It is recommended that monthly data will be transmitted from each water works to the M&B Unit on a quarterly basis.

Profile Information Sheet data are submitted together with the first quarter Data Entry Form, and in case of any important changes at the water works and at their discretion, once again at the end of the survey year.

Once the data is prepared, checked for accuracy, agreed to by the water works, and ready to be sent, a paper cover sheet signed by the director of the water works will be faxed to the M&B Unit to alert it that the water works data will be arriving. This is the official data submittal form and must include the signature of the person with the authority to submit and certify data. The data will then be

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sent to the M&B Unit via mail or courier, in the case of floppy disk or CD, or sent as an email attachment.

Each set of quarterly data forms are to be submitted to the M&B Unit no later than 15 working days after the end of the last month of the reporting quarter.

## **9.2 Data Analysis**

Data analysis is an important process, and is handled with particular care. It goes through various steps, which are discussed below.

### ***Data Entry***

The M&B Unit insert the submitted data into the database software on a quarterly basis, within the month following the end of a data collection quarter.

### ***Checking Data Accuracy***

All the financial and technical data are reviewed by the M&B Unit economist and engineer, respectively. The review serves to identify missing, abnormal and/or erroneous data.

Accountability is the watchword for the gathering, monitoring and reporting of data from the water works participating in the Performance Monitoring and Benchmarking Program. When the data is submitted in a quarterly report, or when a site visit is made, it is necessary to validate the procedures as much as possible. Some items to look for as an indication that the reported data may not be valid are the following:

- Unexpected similarity from one data submission to the next. It is expected that data will vary as seasons and flow conditions vary, and unlikely similarity of data may be an indication that data are being copied from previous months rather than collected.
- Results tabulated for days in which it is unlikely that the data was actually gathered on the date stated, such as holidays or weekends.
- Increasing, steady progress toward improved Performance Indicators with no clear reason for the improvement, such as new equipment or procedures.
- Financial or population data that seems to be estimated rather than determined.

- Lack of a valid signature on the submittal form. The person with the authority to submit and certify data must be predetermined.

If data submissions are consistently late, or lacking important data, or if a particular value appears to be suspect, a follow-up action is initiated and a note made in the file. The issue may be able to be resolved by telephone call or email. If the issue cannot be resolved quickly, and if it concerns a key value for a performance indicator, it may be necessary to follow-up with a short site visit to determine what corrective action needs to be taken. If the issue is not critical, it should be noted as an item to be resolved during the next comprehensive site visit.

In particular, the M&B Unit should be sure that the units reported are the units called for in the formulae. After inserting information in the formula and deriving a Performance Indicator, that Performance Indicators should be compared with previous values to see that the results are in accordance with expectations and are not unreasonably high or low.

#### ***Data Analysis and Report Generation***

Once the data are finally scrutinized, the Data Management Specialist proceeds to perform the data analysis programmed into the software and to produce all the reports and results required. Afterwards, the respective members of the M&B Unit analyze the results, including interpretation of any trends or peculiarities.

The data analysis is completed no later than 45 days after the end of each quarter.

### **9.3 Data Administration within the M&B Unit**

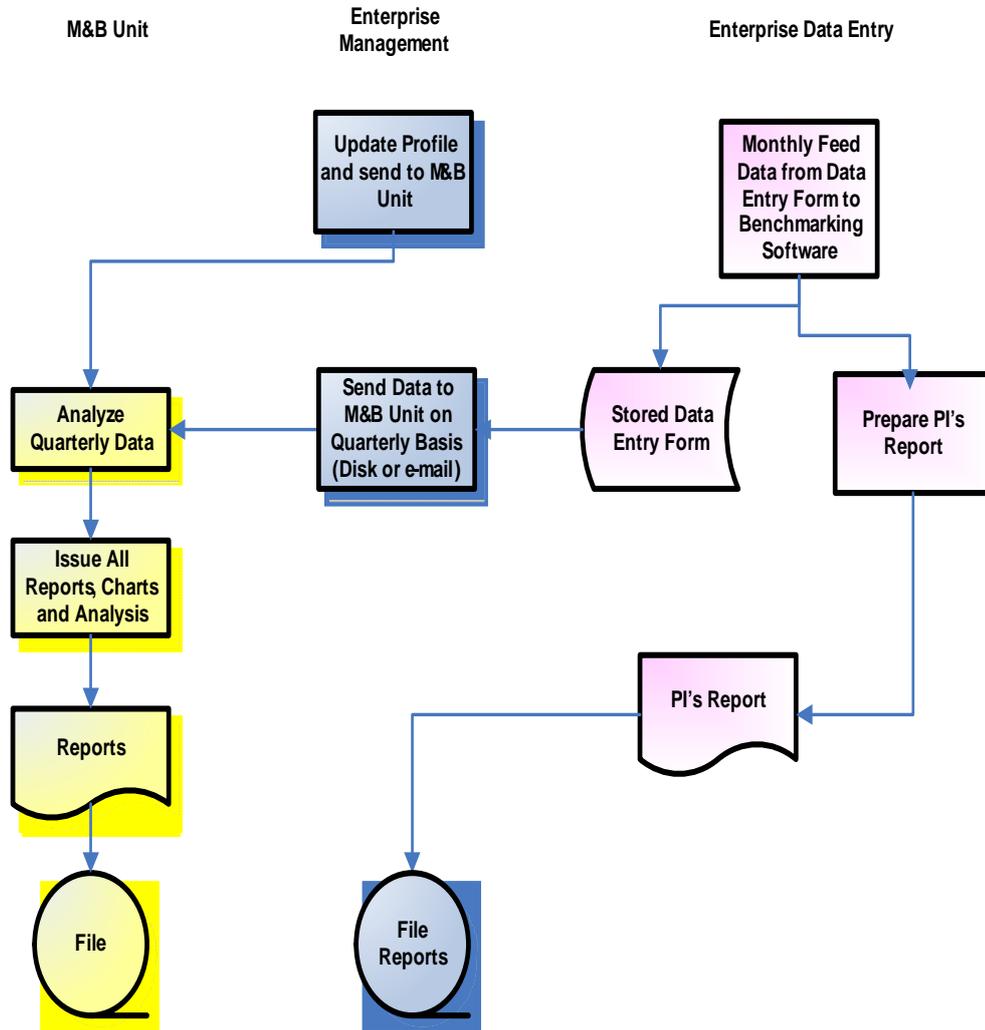
The M&B Unit maintains computerized and paper files on each water utility included in the Performance Monitoring and Benchmarking Program in a logical and sequential manner for ease of data access. Contained within the files are trip reports, reporting issues, progress toward performance indicators, all data reports submitted by the water works, inspection schedules, Profile Information

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Sheets, correspondence, and any follow up requirements from the most recent site visit and any other relevant information that was not included in the system profile sheets, but were collected during the site visits, are maintained in the files. Every official contact with personnel from the water works is recorded. All training records from the Annual Workshop, as well as specific training materials, are also maintained.

The graphic presentation below and titled, "Software Flow Chart" illustrates the computerized flow of data through the water works and to the M&B Unit. The graphic presents an ideal situation, when the typical water works is capable of making complete use of the performance monitoring and benchmarking software, and performs individual analysis of its own data, independently from the M&B Unit.

### Software Flow Chart



## **10. Conduct and Maintain a Broad-Based Communications Program**

It is a key priority for the M&B Unit to develop and implement an intense communications program, so that the importance of its work, and the results of its surveys are shared with, and understood by, as broad an audience as possible. The following are the current elements of the communications program.

### **10.1 Public Relations Program**

The Public Relations (PR) Program for the Performance Monitoring and Benchmarking Program, as conducted by the M&B Unit is an active and not reactive program. The PR Program includes periodic press releases, radio and television announcements, and printed literature on water sector performance issues.

The PR Program of the M&B Unit extends to the water works as well. If water works are having problems in collecting their water bills, the M&B Unit PR Program could be helpful by arranging for television spot announcements regarding the need for customer payment of water works bills to insure reliable services.

The M&B Unit prepares press releases whenever a significant event occurs that helps to promote the success and impact of the Performance Monitoring and Benchmarking Program in supporting improved performance in the water sector. The Manager of the M&B Unit designates one person within the M&B Unit with the primary responsibility for maintaining contacts with the electronic and print media, so that press releases and reports can be issued consistently. Before being published or announced, press releases require the approval of WD.

### **10.2 Annual Program Report Workshop**

By April of each year, the M&B Unit organizes the Annual Program Report Workshop. At this Workshop, the M&B Unit presents the results of the previous year's survey along with other activities in the framework of the Performance Monitoring and Benchmarking Program. The invitees to the Workshop include all of the participating water works and the other stakeholders.

This particular Workshop has a very high PR value since it presents "reportable" news about an important social issue, water supply services. In this regard, the M&B Unit makes every effort to encourage media coverage of the Workshop.

### **10.3 Mid-Year Program Review Workshop**

After the second quarterly report has been prepared in any given year, a workshop is conducted to undertake a Program Review, with the participation of all stakeholders in the water sector and participating water works.

The workshop agenda includes, as a minimum, the following topics:

- Assessment of the data gathering procedures, the quality of the data being collected, and the resulting performance indicators calculated from the data.
- Review of current performance indicators, and recommendations regarding the revision of the performance indicators and Profile Data Entry Form (as necessary), to be applied in the survey of the following year.
- Discussion and feedback from the stakeholders regarding the expansion of the Performance Monitoring and Benchmarking Program for the next data cycle.
- Discussion of any relevant issues related to the conduct and facilitation of the Performance Monitoring and Benchmarking Program, to include measures taken to improve performance at the water works, and assessment of needs to improve the legal/regulatory framework in the water sector.

### **10.4 Newsletter**

The M&B Units prepares a newsletter and distributes it to all participants in the Program, as well as stakeholders showing an interest in receiving it. The newsletter is written, published, and distributed by the M&B Unit.

The first issue of the newsletter at the beginning of each year, contains the list of performance indicators being applied for the current survey, and the activities

planned by the M&B Unit in the framework of the Monitoring and Benchmarking Program for the current year. This would include the site visit schedule and training programs.

The newsletter features various water works in the program and strategies that they have applied to improve their performance as measured by the indicators. It also shares techniques that are used by various water works to overcome shortcomings in instrumentation and measuring devices.

The concept of the newsletter is to keep it personal and helpful. By making the newsletter personal, it will be widely read among the Montenegrin water works. The newsletter is intended to be a quarterly publication with the idea of making it more frequent, if it is well received. Every issue of the newsletter is mailed or sent electronically to each participating utility and stakeholder.

#### **10.5 Website**

In order to make all Program data available to anyone with an interest and with a computer, the M&B Unit will maintain a website.

The website will consist of a Program summary and a description of the Program Objectives with links to the various reports prepared by the M&B Unit for each of the participating water works and for the Program as whole. In this way, it will be possible for a water works to track its own progress and compare it to the progress of others. The site also provides links to other important sources, such as the World Bank, IWA, AWWA, etc. If possible, the website should be mirrored to other websites, such as that of the AWWA, IWA, the World Bank, etc.

The content and accessibility procedures are finally decided in agreement with the WD Director. The website is maintained by the M&B Unit and contains information on the Project, Quarterly and Annual Reports, information on scheduled workshops and training programs, and analysis of data and performance indicators.

In addition, the M&B Unit will have a published email address for individuals who have questions about the Performance Monitoring and Benchmarking Program, or who wish further information on the monitoring and benchmarking activities in the water sector in Montenegro.

## **11. Development of Institutional relations with other Benchmarking and Monitoring Units in the Balkans and Europe**

The Performance Monitoring and Benchmarking Unit shall establish and maintain institutional relations with other similar units in the Balkans and Europe. The purpose is to enhance the capacity of the M&B Unit, allow them to share their experience with other sister organizations, and ultimately improve the work quality.

The M&B Unit, through WD shall use the government channels to establish institutional relations with other monitoring and benchmarking units in the Balkans and Europe. The information on such organizations can be obtained through Internet, international reviews and magazines, meetings, etc.

## **12. Reporting**

The M&B Unit prepares regular quarterly and annual reports, which will document the work done by the M&B Unit. Upon the request of the WD Director, the M&B Unit prepares other reports as required.

### **12.1 Quarterly reports**

The M&B Unit prepares quarterly reports for the WD Director. The quarterly report contains the following information:

- Executive Summary in two pages describing in general terms of the activities over the previous quarter;
- Calculated performance indicators for each of the participating water works;
- Discussion of any anomalies in the data;
- Significant changes in the performance indicators from the previous quarter.
- A list of site visits conducted to each of the participating water works;
- Recommendations for any modifications to the performance indicators for the next period;

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- Activities planned for the following quarter;
- Any significant changes in the Profile Information Sheet of the water works included in the survey;
- Recommendations for any additional water works for the next survey;
- Status of training for water works staff participating in the survey.
- Any issues regarding cooperation on the part of the participating water works.

All quarterly reports are submitted to the Director of WD no later than 45 days after the end of each quarter.

## **12.2 Annual Report**

The annual report contains a summary of the Annual Survey and reflects the information of one complete data cycle. The annual report covers, as a minimum, the following items:

- Includes an Executive Summary in two pages describing in general terms the activities over the whole year;
- Provides detailed analysis of the trends in the performance of the surveyed utilities over different periods of time;
- Establishes metric benchmarks based on various combinations of water works included in the survey;
- Provides recommendations for process benchmarking;
- Describes status of training for the water works staff and training program for the following year;
- Provides targets and work plans for expansion and sophistication of the Performance Monitoring and Benchmarking Program in future data cycles.
- Presents a final list of performance indicators for the next annual survey;
- Outlines any issues regarding cooperation on the part of the participating water works.

The annual reports are submitted to the WD Director no later than 45 days after the end of each survey year.

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The reporting requirements may extend beyond those stated above, as WD may have additional reporting requirements.

## **APPENDIX A**

### **PROPOSED STAFF POSITIONS - MONITORING AND BENCHMARKING UNIT OF THE WATER DIRECTORATE, GOVERNMENT OF MONTENEGRO**

**Position Title: Financial Expert**

**Position Description:** Organize the periodic collection of financial data from water works across Montenegro that are participating in the water supply services benchmarking program. Review and update data requirements on a regular basis and check for irregular, missing or abnormal data. In cooperation with the Data Management Specialist, produce reports and interpret utility performance results. Perform financial analysis of water works, and make proposals for improving financial data management, as required. Develop and deliver training course for water works staff in the relevant areas. Make presentations to local government officials to build awareness in the value of performance indicators and benchmarking of utility performance.

**Position Qualifications:**

**Education:** University degree in Economics or Finance.

**Job Experience:** At least 5 years of job experience in this field of expertise. Substantial (at least 3 years) of working experience in the water sector in Montenegro.

**Computer Skills:** Must be qualified in the use of MS Office 2000 or later, particularly Excel and Word, and Internet applications. Knowledge in Access or similar database program at a basic level desirable.

**Foreign Languages:** Good knowledge of English language, particularly in reading and writing.

**Other:** Good communication skills. Availability to travel domestically.

**Position Title: Water Engineer**

**Position Description:** Organize the periodic collection of technical data from water works across Montenegro that are participating in the water supply services benchmarking program. Review and update data requirements on a regular basis and check for irregular, missing or abnormal data. In cooperation with the Data Management Specialist, produce reports and interpret water works performance results. Perform technical analyses of water works operations, and make proposals for improving technical data management, as required. Develop and deliver training courses for water works staff in the relevant areas. Make presentations to local government officials to build awareness in the value of performance indicators and benchmarking of water works.

**Position Qualifications:**

**Education:** University degree in Civil Engineering.

**Job experience:** At least 5 years of job experience in his field of expertise. Substantial (at least 3 years) of working experience in the water sector in Montenegro.

**Computer Skills:** Must be qualified in the use of MS Office 2000 or later, particularly Excel and Word, and Internet applications. Knowledge in Access or similar database program at a basic level desirable.

**Foreign Languages:** Good knowledge of English language, particularly in reading and writing.

**Other:** Good communication skills. Availability to travel domestically.

**Position Title: Data Management Specialist**

**Position Description:** Coordinating with the Financial Expert and the Water Engineer, develop the data collection forms for the annual data collection process from water works across Montenegro that are participating in the water supply services benchmarking program. Organize all data entry to the benchmarking data management system. Operate and maintain the computerized data management system in support of the benchmarking program. Produce reports in cooperation with the Financial Expert and Water Engineer. Apply modifications to the data management program to enhance performance. Develop and deliver train courses for water works' staff in relevant computer programs.

**Position Qualifications:**

**Education:** University degree in Informatics or Electronics. However, university degrees in Economics, Finance or Civil Engineering are acceptable, if computer skills are at the level described below.

**Job Experience:** At least 3 years of job experience in data management and analysis.

**Computer Skills:** Must be qualified in the use of MS Office 2000 or later, particularly Excel and Word, and Internet applications. High competence in the use of Access or similar database is a must.

**Foreign Languages:** Good knowledge of English language, particularly in reading and writing.

**Other:** Good communication skills. Availability to travel domestically.

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**APPENDIX B**

<b>January</b>	<b>February</b>	<b>March</b>
<p><b>Week 1</b> – Start of Annual Survey</p> <p><b>Week 2</b> – First issue of newsletter</p> <p><b>Week 3</b> – Completed 4<sup>th</sup> Quarter Data Collection</p>	<p><b>Week 2-3</b> – Submission of Annual Report</p>	<p><b>Week 2-3</b> - Annual Program Report Workshop</p>
<b>April</b>	<b>May</b>	<b>June</b>
<p><b>Week 3</b> – Completed 1<sup>st</sup> Quarter Data Collection</p>	<p><b>Week 2-3</b> – Submission of 1<sup>st</sup> Quarterly Report</p>	
<b>July</b>	<b>August</b>	<b>September</b>
<p><b>Week 3</b> – Completed 2<sup>nd</sup> Quarter Data Collection</p>	<p><b>Week 2-3</b>– Submission of 2<sup>nd</sup> Quarterly Report</p>	<p><b>Week 2</b> - Mid-Year Program Review Workshop</p> <p><b>Week 4</b> – Completed Revision of PI's and Profile Info</p>
<b>October</b>	<b>November</b>	<b>December</b>
<p><b>By 1 Oct</b> – M&amp;B Unit sends proposal for program expansion to Water Directorate</p> <p><b>Week 3</b> – Completed 3<sup>rd</sup> Quarter Data Collection</p> <p><b>Week 4</b> – Complete preparation of next year survey materials</p>	<p><b>Week 2-3</b>- Submission of 3<sup>rd</sup> Quarterly Report</p> <p>- Water Directorate confirms expansion program</p> <p><b>Week 4</b>- Send notice for participation and Annual Training Workshop to all participating utilities</p> <p>- Complete preparation of Annual Workshop</p>	<p><b>Week 2</b> - Annual Training Workshop</p> <p>- Delivery of next year Survey materials</p>

**MILESTONE DATES IN AN ANNUAL CYCLE OF THE M&B UNIT**

# MONTENEGRIN WATER SECTOR MONITORING AND BENCHMARKING PROGRAM

## The Urban Institute

### Appendix C

#### Performance Indicators for Montenegrin Water Works Benchmarking Program

All data collected monthly, compiled quarterly

No.	Indicator	Unit	Data Requirements
1	Water Coverage	%	Population served with water (capita) Number of customer accountants Assumed number of person per customer accounts Population within water service area boundaries - census data
2	Wastewater Coverage	%	Population connected to sewerage system Population within sewerage service area boundaries
3	<i>Water consumption by customer type</i> Total Water Billed Total Water Billed - Legal entities Total Water Billed - households	liters/capita/day m3/customer/month %	Volume of water billed to households (m3) Volume of water billed to legal entities (m3) Total volume of water billed (m3) Population served with water No. of customer accounts No. of days per month
4	Non Revenue Water	% m3/km/day m3/customer/day liters/capita/day	Volume of water supplied from all sources (m3) Volume of water billed (m3) Length of transmission and distribution system (km) No. of customer accounts
5	Water Pipe Breaks	breaks/km/month breaks/1000 customers/month	Number of pipe breaks per month Length of transmission and distribution system (km) No. of customer accounts x 1000
6	Sewer System Blockages	blockages/10000 customers/month blockages/km/month	No. of sewer blockages/month Length of sewer network (km) No. of customer accounts x 1000
7	Staff/1000 water connections	No.	No. of fulltime (equivalent) staff No. of customer accounts x 1000
8	Electricity Costs as proportion of Operational Costs (water and sewerage) (monthly)	%	Total operational costs (W&S) (euros, monthly) Monthly operational costs (W) (euros) Monthly operational costs (sewerage) (euros) Total electricity costs (W&S) (euros, monthly) Monthly electricity costs (W) (euros) Monthly electricity costs (S) (euros)
9	Average Monthly Revenues - Water	Euro/m3 billed/month	Monthly operational revenues, billed monthly amount (euro) Volume of water billed (m3)
10	<i>Collection Rate</i> Overall Collection Rate Household Collection Rate Legal Entities Collection Rate	%	Monthly amount collected by customer category (euro) Monthly billed amount by customer category (euro)
11	Working Ratio	ratio	Monthly operating costs (euro) Monthly revenues - billed plus subsidies (euro)
12	Water Sold (Billed) and Metered	%	Volume of water billed that is metered (m3) Total (metered and unmetered) volume of water billed (m3)
13	Disruption Rate	%	No. of customer accounts No. of service disruption, both planned and unplanned (for 3 categories: disruption less than 4 hrs, between 4 and 12 hrs, greater than 12 hrs)
14	Customer Service Complaint Rate	%	No. of customer accounts x 1000 No. of customer services associated complaints
15	Affordability rate	%	Volume of water billed to households (m3) No. of household customer accounts multiplier for household income Average monthly salary per capita (euro - by Municipality)