



**USAID**  
FROM THE AMERICAN PEOPLE

OPERATIONS AND MAINTENANCE  
TRAINING PROJECT

# TRAINING IMPACT ASSESSMENT – REPORT 5: SUMMARY

USAID OPERATIONS AND MAINTENANCE TRAINING PROJECT

**November 2012**

This document was produced for review by the United States Agency for International Development. It was prepared by Chemonics International Inc.

# TRAINING IMPACT ASSESSMENT – REPORT 5: SUMMARY

**USAID OPERATIONS AND MAINTENANCE TRAINING PROJECT**

**Contract No. EPP-I-00-04-00020-00**

**Prepared by Chemonics International Inc.**

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

# CONTENTS

INTRODUCTION .....	2
ASSESSMENT BACKGROUND.....	2
METHODOLOGY .....	4
RESULTS SUMMARY.....	7
Aqaba Water Company - Wastewater Treatment Plant 2009 - 2012	
Quantitative Performance Indicators.....	8
Qualitative Survey and Interview Measures .....	10
Miyahuna Water Company - Zai Water Treatment Plant 2010 - 2012	
Quantitative Performance Indicators .....	14
Qualitative Survey and Interview Measures .....	15
General Findings .....	19
CONCLUSIONS AND RECOMMENDATIONS.....	20
ANNEX A: PRE-TRAINING ASSESSMENT TOOLS, FORMS.	
A.1 OMT Training Impact Assessment – Pre-Training/Trainee Interview	
OMT Training Impact Assessment – Pre-Training/Trainee Interview-Arabic	
A.2 Training Impact Assessment – Pre-Training/Supervisor; Manager Interview	
OMT Training Impact Assessment – Pre-Training/Supervisor; Manager Interview-Arabic	
ANNEX B: POST-TRAINING ASSESSMENT TOOLS AND FORMS	
B.1 OMT Training Impact Assessment – Post-Training/Trainee Interview	
OMT Training Impact Assessment – Post-Training/Trainee Interview-Arabic	
B2 OMT Training Impact Assessment – Post-Training/Supervisor Interview	
OMT Training Impact Assessment – Post-Training/Supervisor Interview-Arabic	
ANNEX C: TIA DATA - COMPLETE ELECTRONIC TIA DATA PROVIDED SEPARATELY	

# **Jordan Water and Wastewater Operator Certification and Training Program**

## **Training Impact Assessment (TIA) Report 5: Summary**

### **Introduction**

This report summarizes the activities undertaken by the USAID/Jordan Operations and Maintenance Training (OMT) Project as part of Component 4 – Performance Monitoring and Evaluation to establish a **Training Impact Assessment (TIA)** process that would provide the foundation for determining the extent to which the training conducted by the project and planned for the future had a measureable impact on improved operation and maintenance (O&M) of water and wastewater treatment plants and conveyance facilities. Over the course of the project, OMT delivered the four TIA reports listed below:

- TIA Report 1 – Aqaba Water Company (AWC), Wastewater Treatment Operator Level 1
- TIA Report 2 – Miyahuna/Greater Amman Water Company, Water Treatment Operator Level 1
- TIA Report 3 - Aqaba Water Company, Wastewater Treatment Operator Level 1; 6-Month Follow-up
- TIA Report 4 – Miyahuna Water Company, Water Treatment Operator Level 1; 6-Month Follow-up.

TIA Report 5 – Summary provides a comprehensive review of the four earlier TIA reports and updates the results to include data collected on-site one year after the initial pilot training. This summary also provides a comparison of annual quantitative performance including year-to-date data for 2012 and general findings gleaned from the TIAs related to various recent trainings conducted in 2011 and 2012.

This report offers a set of conclusions and recommendations as well as the TIA data collection instruments and reporting formats to be utilized by the Jordan Water Operators Certification Program to improve the program and demonstrate its beneficial impacts in the future.

### **Assessment Background**

In November 2012, USAID/Jordan concluded the 55-month Jordan OMT Project with the goal of contributing to improve the O&M of water and wastewater treatment plants and facilities thus ensuring more efficient operation, dependable service and sustainability of the infrastructure.

The strategic goal of OMT was to support improved O&M of infrastructure that would contribute to its sustainability. The central objective of OMT was to establish a mandatory operator certification requirement in Jordan including a highly defined career path stipulating detailed need-to-know competencies. This competency hierarchy was supported by a standardized training and testing program customized from successful US models for the particular needs in Jordan.

Operator training curricula and tests went through a piloting process. The results of the process were used to further improve the certification and training program. In addition, as a part of the pilot implementation of the operator training program, the OMT Project designed and developed a TIA approach and methodology to evaluate the impact of the training on the O&M performance at the facilities where the pilot and repeat trainings took place.

This approach and methodology were refined over the duration of the OMT project and were turned over to the Water and Wastewater Services Sector Team (WWSST) which serves as the Board of Certification reporting to the Center for Accreditation and Quality Assurance (CAQA). The WWSST is committed to continued use of the TIA to measure the effectiveness of the program on improved water and wastewater facility O&M and to make improvements in the program as indicated.

This TIA Summary Report describes the status of the TIA process at the end of the OMT project and the results through October 2012. The report focuses on TIA results from the Aqaba Water Company – Wastewater Treatment Plant and the Miyahuna/Greater Amman Water Company – Zai Water Treatment Plant as these were the initial pilot sites and comparative O&M performance data is available from 2009 to 2012 and 2010 to 2012 respectively.

The table below, TIA Implementation, shows all TIA events conducted through the end of the OMT project and planned for completion by the WWSST through 2013.

Annex C: TIA Data contains the complete set of quantitative survey and interview data collected and analyzed by the OMT project.

TIA Implementation									
Training				TIA - Surveys & Interviews				TIA Annual Indicators	
Course	Type	Organization	Date	Pre	Post	6 Months	12 Months	Baseline	Annual*
1 WWTO L1	Pilot	AWC - WWTP	Apr, 2010	Apr, 2010	Jul, 2010	Feb, 2011	Aug, 2011	2009	2012*
2 WTO L1	Pilot	Miyahuna – Zai	Jan, 2011	Dec, 2010	Jan, 2011	Sep, 2011	Mar, 2012	2010	2012*
3 WWTO L1	Repeat	Yarmouk	Sep, 2011	Sep, 2011	Sep, 2011	Mar, 2012	Aug, 2012	2011	2012
4 WTO L1	Repeat	AWC	Sep, 2011	Sep, 2011	Sep, 2011	Mar, 2012	Aug, 2012	2011	2012
5 WTO L1	Grandfather	WAJ	Sep, 2011	Sep, 2011	Sep, 2011	Mar, 2012	Aug, 2012	2011	2012
6 WWTO L1	Grandfather	WAJ	Nov, 2011	Nov, 2011	Dec, 2011	May, 2012	Oct, 2012	2011	2012
7 WWTO L1	Repeat	AWC – Wadi Musa	Nov, 2011	Nov, 2011	Dec, 2011	May, 2012	Oct, 2012	2011	2012
8 WWTO L1	Repeat	Miyahuna – Abu Nusair	Nov, 2011	Nov, 2011	Dec, 2011	May, 2012	Oct, 2012	2011	2012
9 WWTO L2	Pilot	AWC	Dec, 2011	Dec, 2011	Jan, 2012	Jul, 2012	Nov, 2012	2011	2012
10 WTO L2	Pilot	AWC	Jan, 2012	Jan, 2012	Jan, 2012	Jul, 2012	Dec, 2012	2011	2012
11 WWTO L1	Repeat	WAJ	Feb, 2012	Feb, 2012	Feb, 2012	Aug, 2012	Jan, 2013	2011	2012
12 WTO L1	Repeat	WAJ	Feb, 2012	Feb, 2012	Feb, 2012	Aug, 2012	Jan, 2013	2011	2012
13 WTO L1	Repeat	Yarmouk	Mar, 2012	Mar, 2012	Mar, 2012	Sep, 2012	Feb, 2013	2011	2012
14 WWTO L1	Repeat	As Samra	Mar, 2012	Mar, 2012	Mar, 2012	Sep, 2012	Feb, 2013	2011	2012
15 WWTO L2	Repeat	AWC - Wadi Musa	Mar, 2012	Mar, 2012	Mar, 2012	Sep, 2012	Feb, 2013	2011	2012
16 WWTO L2	Repeat	Yarmouk	Apr, 2012	Apr, 2012	Apr, 2012	Oct, 2012	Mar, 2013	2011	2012
17 WTO L1	Repeat	WAJ + Darak(2)	Apr, 2012	Apr, 2012	Apr, 2012	Oct, 2012	Mar, 2013	2011	2012
18 WTO L2	Repeat	Miyahuna – Zai	Apr, 2012	Apr, 2012	May, 2012	Nov, 2012	Apr, 2013	2011	2012
19 WWTO L1	Repeat	WAJ	May, 2012	May, 2012	May, 2012	Nov, 2012	Apr, 2013	2011	2012
20 WWC L1	Pilot	AWC	May, 2012	May, 2012	May, 2012	Nov, 2012	Apr, 2013	2011	2012
21 WWTO L3	Pilot	AWC	Jun, 2012	Jun, 2012	Jun, 2012	Dec, 2012	May, 2012	2011	2012
22 WD L1	Pilot	Mixed	Jun, 2012	Jun, 2012	Jun, 2012	Dec, 2012	May, 2012	2011	2012
23 WTO L2	Repeat	WAJ	Jun, 2012	Jun, 2012	Jun, 2012	Dec, 2012	May, 2012	2011	2012
24 WTO L1	Repeat	Mixed	Jul, 2012	Jul, 2012	Jul, 2012	Jan, 2013	Jun, 2013	2011	2012
25 UM 1	Pilot	Mixed	Jul, 2012	Jul, 2012	Jul, 2012	Jan, 2013	Jun, 2013	2011	2012
26 WWTO L2	Repeat	WAJ	Jul, 2012	Jul, 2012	Jul, 2012	Jan, 2013	Jun, 2013	2011	2012
27 WWC L2	Pilot	AWC	Sep, 2012	Sep, 2012	Sep, 2012	Mar, 2013	Aug, 2013	2011	2012
28 WD L2	Pilot	Mixed	Sep, 2012	Sep, 2012	Sep, 2012	Mar, 2013	Aug, 2013	2011	2012
29 WTO L3	Pilot	Mixed	Sep, 2012	Sep, 2012	Sep, 2012	Mar, 2013	Aug, 2013	2011	2012

\* Shading indicates TIA actions scheduled for the WWSST after the OMT project. Data for 2012 will be available in February 2013.  
For this report, OMT used AWC-WWTP and Miyahuna-Zai WTP data available through October 2012.

## Methodology

*Purpose* – Although the reporting of results achieved by operator trainees on standardized certification tests provides an indication of the degree of learning that has been accomplished, it does not show the impact of the training on the job and any associated O&M performance improvement by the work unit or the facility as a whole. Therefore, the OMT Project designed an approach to begin measuring and reporting the O&M performance impacts of certification and training at Jordanian treatment facilities.

This training impact assessment collected both quantitative and qualitative data describing the pre-training O&M performance baseline and compared that with the post-training O&M performance impact at selected facilities. The findings of this assessment will be used to further improve the training program and to assist managers in supporting training and certification to achieve the greatest results.

*Theory* - There is wide recognition that capacity building and training are prerequisites to development. However, most evaluations of capacity building stop well short of attributing benefits specifically to training. Most only go so far as to claim that the capacity building made a significant contribution to achieving objectives. In spite of limited empirical evidence, the OMT project and the Jordan water and wastewater operators' certification and training program were committed to the assessment of the training impact at treatment facilities. The approach used was based on the following basic assumptions:

- Improving human capacity through relevant training (formal or informal) is inherently valuable and absolutely necessary for the achievement of performance improvement,
- Given a supportive organizational environment, individual employees will apply newly acquired knowledge and skills on the job,
- The effects of these changes in practice and/or behavior can be observed, described, often measured based on the controls and accomplishments reported, and,
- These effects can have a positive impact on productivity, efficiency, and cost of services or outputs delivered.

*From improved individual capacity to improved O&M* - The ultimate beneficiaries of the Jordan water operator certification and training program, apart from the trainees in terms of both greater self esteem and financial reward, are the water utilities and their customers. It is accepted here that improved individual performance will lead collectively to improved facility O&M that ensures greater compliance with potable water, effluent quality and environmental standards as well as protecting the investment in treatment and conveyance infrastructure and contributing to its sustainability.

Operator training and certification adds to the overall capacity of the employees at a facility; it is not typically linked directly with a specific targeted change. It is postulated that the collective effect of the training program leads, over time, in this case measured in six-month interval, to expected O&M improvements. The TIA relies upon both quantitative and qualitative input from the plants, trainees, their supervisors and utility managers regarding the perceived and quantified benefits of the program.

*Enabling environment* - The greatest variable when considering training impact is the enabling environment which plays a key role in determining the degree to which employees are encouraged and

supported in the on-job application of new knowledge, skills, behaviors and practices gained through the training.

As a rule of thumb, performance improvement interventions that, along with relevant high-quality training, address variables such as nurturing management commitment, securing related financial resources, and providing access to the necessary tools and spare parts will be more successful in achieving and demonstrating measurable results.

In addition to assessing improved O&M performance, the TIA also considers the extent to which an enabling environment has been created by management at each facility to encourage application of new knowledge and skills. The capacity building program developed and implemented by OMT included an On-Job-Coaching for Supervisors course to help mid-manager at facilities to get the most benefit from the training by making supervisors aware of their key role in performance improvement and the practical steps they could take to ensure the greatest impact from the training.

### Training Impact Assessment (TIA) - Description

Most training takes place in an organizational setting, typically in support of skill and knowledge requirements originating in the workplace. This certainly applied to the Jordan operators training and certification program. The job performance competencies, knowledge and skills supported by the Jordan program were based on the need-to-know procedures and criteria developed by the Association of Boards of Certification (ABC) by conducting on-going job task assessments of US and Canadian treatment plant operators. The ABC criteria were reviewed by local subject matter experts and tailored to the specific needs and requirements of Jordanian operators.

The important relationship between training and the workplace was adhered to in the design of the Jordan training and certification program. Using this relationship as a framework, the following four basic points were identified where measurements were taken, assessments conducted and judgments reached.

- Before Training
- During Training
- After Training or Before Returning to the Treatment Plant
- On the Job at the Treatment Plant (six-month; annual)

Collecting data at these four points provides an understanding of the effectiveness of the training and the impact on performance at the work site. Collecting data before training establishes the performance baseline and provides a picture of the performance improvement expectations of operator trainees, their supervisor and company managers. Any changes in performance resulting from the operator training and certification program will be measured against this initial baseline.

Testing during and after training measures the degree of new learning taking place as well as the reaction of the trainees to the instruction itself – in other words, how beneficial and well organized the trainees believed the training to be.

Monitoring the trainees when they are back on-the-job measures changes in behavior and the degree to which newly learned practices are being applied. The measureable quantitative (performance indicators) and qualitative results (survey and interview) of the trainee application of new practices can provide an assessment of the training impact on individual, work unit and overall plant performance. Surveys allow for uniform data collection providing a consistent basis for comparisons among data collected at various intervals and from different sites. Interviews allow respondents greater latitude to express their personal opinions when asked open-ended questions. Although results of interviews are more subjective, they provide a valuable opportunity to operators and managers to expand on any given topic. (As interviews are time consuming, they were used for pilots only. TIAs conducted for subsequent trainings of a given course were limited to operator and supervisor surveys only.)

The first round of post-training TIAs conducted on-job six months after training are intended to collect both quantitative and qualitative data to compare and identify any change in O&M performance as measured against the pre-training baseline established for the designated Jordanian treatment facilities.

*Quantitative Measures* – Indicators of measureable facility performance were determined with the cooperation of Jordanian utility managers. Baseline and performance data was collected in the following activities: Operations and Maintenance, Finance, Customer Service, and Human Resources/Staff Training and Certification. Indicators being applied for the initial pilots included:

Quality of W/WW treated – Non-compliance Citations/Year

Major Unplanned Shut-downs/Year

Emergency Actions (unit; facility)/Year

Accident Reports (unit; facility)/Year

Operating Costs (unit; facility)/Year

Maintenance Costs (unit; facility)/Year

*Qualitative Measures* - In addition to collecting facility performance data, the TIA process also collected qualitative opinion-based input from trainees and their supervisors/managers using standardized surveys and interviews for pre and post-training comparative purposes (see Annex A and B). On-job observations of trainee practical performance at their facilities are also conducted periodically to assess application of new knowledge and skills. Surveys and interviews covered the following:

- a. Relevance of Training
- b. Language of Instruction
- c. Knowledge/Understanding
- d. Attitude/Confidence; Self Esteem
- e. Skills/Technical; Management
- f. Impact on the Job



The OMT TIA performance monitoring and evaluation approach was recognized as a valuable innovation in assessing training impact by the Association of Boards of Certification (ABC). OMT delivered a presentation describing the TIA at the ABC conference in 2011.

As mentioned above, this report presents the findings of the annual quantitative and six-month follow-up assessments for the:

- Aqaba Water Company – Wastewater Treatment Plant and
- Miyahuna/Jordan Water Company – Zai Water Treatment Plant

These were the initial pilot sites and comparative O&M performance data is available from 2009 to 2012 and 2010 to 2012 respectively.

## **Summary of Results**

The TIA seeks to establish a performance management system that will allow the WWSST to monitor and track the impact of the Jordan Water Operators Certification Program. The TIA activity focused on the development of the data collection instruments and the training of personnel to collect and report quantitative and qualitative data. OMT did not attempt to control all variables that could have a bearing on O&M improvement. Therefore, the reported changes in performance cannot be directly attributed to the training. For example, where reductions in O&M costs were reported by sites, the TIA was careful not to attribute these changes as impacts of the program and suggested that the WWSST further investigate these results to identify other potential causes.

The findings presented here should be viewed as preliminary and not yet statistically significant. They were gathered from small samples over a short period of time without strict workplace controls. When quantitative results for performance indicators are viewed in conjunction with qualitative operator and supervisor survey and interview opinion-based data, the preliminary trends generally point to the positive impacts of the training on O&M at the sites. With continued implementation of the TIA, as the sample sizes grow, respondents become more familiar and sophisticated, and results can be tracked over extended periods (minimum of 5 years), the validity of the data in demonstrating concrete O&M improvement will gain greater validity and reliability.

The Jordan operator training program was initially piloted at the Aqaba Water Company/Wastewater Treatment Plant and the Miyahuna Water Company/Zai Water Treatment Plant. Data was collected from these two sites over a period of three years and two years respectively. Upon the conclusion of the OMT project in November 2012, the data presented below were the most reliable outputs of the TIA process.

**Aqaba Wastewater Treatment Plant (WWTP) Quantitative Indicators**  
**Baseline Year 2009, Pilot Year 2010 and Performance Year 2011 and 2012**

#	Indicator	2009 Baseline	2010 Pilot	2011	Oct, 2012	Notes
1	Quality of WW treated – Non-compliance Citations	2	0	0	0	Non-compliance citations eliminated
2	Major Unplanned Shut-downs	1	0	1	1	Shut-downs in line with previously observed levels.
3	Emergency Actions	1	1	1	2	Near parity in emergency actions with baseline levels
4	Accident Reports	7	5	5	2	Consistent decrease in accident reports from base year. Accident reports now less than 30% of 2009 levels
5	Operating Cost (JOD) – per year	1,229,598	1,308,875*	1,363,180	1,196,301	Operating costs reduced despite significant increase in cost of electricity
	Operational cost (JOD) – per m <sup>3</sup>		0.211	0.300	0.247	Slight increase – largely driven by rising electricity costs
6	Maintenance Cost (JOD)	146,130	83,701	57,846	35,847	Significant decline in maintenance costs – currently at less than 25% of base year levels.
7	Waste Water Quality (Lab) a) number of external lab tests conducted	156	156	162	120	Tests to determine compliance with standard
	b) percentage of results of noncompliance with the standard	1.28 %	0 %	0%	0%	Non-compliance citations eliminated

**Note:** The rise in operation costs in 2010 was due to implementation of a new organization structure at the WWTP that includes establishing a maintenance department with a new automation section. A raise in the depreciation rate by 4.6% in 2010 compared with 2009 also added to the operating costs.

This set of data collected for the Aqaba WWTP shows significant measurable performance improvements across the board. Most notable, maintenance costs were reduced by nearly half and despite the increased costs of a new organizational structure and an increase in the depreciation rate by 4.6%, operating costs were held to near parity with the 2009 levels despite an increase in electricity costs. Accident reports through October 2012 were less than 30% of the 2009 level. A total elimination of both non-compliance citations for wastewater quality and major unplanned shutdowns was also reported.

It is recognized that many factors are certainly at play in the achievement of these improvements and the impacts cannot be directly or totally attributed to the operator certification training. However, as trainees and supervisors have also reported a concerted effort at the Aqaba WWTP to apply new best O&M practices learned during the wastewater operator course (see survey results below); it is fair to assert that the training contributed to these impressive performance results.

Note: The OMT project recognizes that there are two different types of maintenance programs: Preventive maintenance; and, Corrective or emergency maintenance (corrective repairs and unplanned shutdowns). Preventive maintenance is performed to prevent or avoid corrective or emergency maintenance. An effective preventive maintenance program (scheduled maintenance) reduces or prevents costly corrective or emergency maintenance. Reducing preventive maintenance costs today can create excessive emergency maintenance costs in the future.

In future TIA activities, the Jordan program will endeavor to determine what types of maintenance costs are being affected by the training – preventive and/or corrective. TIAs will try to determine what else might be going on at a site that would contribute to the improvements (cost reductions). Although the results to any one form of intervention are difficult to isolate, one would draw a different conclusion if there was – an operational optimization effort underway versus normal operations. In terms of quantitative data collection, future TIAs will include the number of certified operators as a percentage of the total staff in operations.

## Qualitative Results – AWC; Six-Month and One-Year Follow-up

TIA Report 1 presented pre and post training interview and survey results for impacts from the Wastewater Level 1 course. The interview was used only in direct conjunction with pilots to afford the opportunity to broadly capture detailed trainee/operator and supervisor input that would be of value in the post-pilot revision of the courses and tests. TIA Report 3 presented on-job trainee/operator and supervisor survey input at an interval of six-months after training to assess perceived performance changes and beneficial impacts resulting from the certification training. These separate reports and Annex C of this report contain full details including background on all trainees and supervisors who participated in every TIA activity. The analysis below compares the six-month and one-year follow-up on job trainee/operator and supervisor survey inputs.

### **Summary of AWC On-Job Survey Responses - Six-Month and One Year Follow-up**

#### **Survey Results - Trainee**

##### **1. Relevance of Training**

- After six months back on the job, findings demonstrated that trainees continued to hold a high degree of agreement for the continuation of training.
- After one year, 100% of trainees expressed agreement that certification training be continued. 90% expressed an interest to continue receiving training that provided a complete knowledge of the field.

##### **2. Language of Instruction**

- After six months back on the job, trainees continued to indicate a preference to study in Arabic with 100% in agreement.
- After one year, support for training strictly in Arabic eroded with trainees reported a flat distribution of responses indicating a growing interest in training in the English language.

##### **3. Knowledge/Understanding**

- After six months back on the job, responses showed a 30% reduction in trainees reporting that they are not up-to-date with new technologies. While 100% of trainees at the end of training agreed that training should increase knowledge of new international developments and new technologies, only 60% agreed after 6 months; indicating a possible preference for specifically job-related instruction. This finding requires further investigation. 80% of trainees indicated a better understanding of water quality laws/regulations. 100% agreed/strongly agreed that they now have better knowledge of safety equipment and procedures.
- After one year, trainee opinion regarding new technologies and international developments rebounded with 80% agreement that this knowledge could improve job performance. 80% of trainees still indicated they had acquired a better understanding of water quality laws/regulations. 80% versus the previous 100% agreed/strongly agreed that they now have better knowledge of safety equipment and procedures.

#### 4. Attitude/Confidence; Self Esteem

- After 6 months back on the job, trainees still indicated a high degree of agreement regarding improved confidence and self esteem as a result of the training. These findings are encouraging as they indicate that high levels of confidence and self esteem are maintained in the ‘real world’ as compared to the artificial classroom environment.
- After one year, trainee opinions showed little variance from earlier surveys and continued to express agreement regarding confidence, self-esteem and pursuit of job opportunities. During this period, trainees expressed a greater awareness of the importance of their job among family, friends and neighbors. This may be attributable to OMT awareness activities and the growing confidence of trained operators to describe the importance of their work in their community.

#### 5. Skills/Technical; Management

- After 6 months on the job, 100% of trainees reported that technical knowledge and problem solving skills acquired during training enabled them to perform their jobs better. 80% indicated that they were able to better organize people and tasks. Responses indicated that after 6 months back on the job, trainees were in strong agreement that their new knowledge and skills have a beneficial effect on their performance.
- After one year, the earlier response remained largely unchanged. 100% of trainees continued to report that technical knowledge and problem solving skills acquired during training enabled them to perform their jobs better. 80% continued to report that they were able to better organize people and tasks. This set of responses indicates that the certification training remains relevant to on-job performance over time and that trainees believe that they are retaining new knowledge gained from training.

#### 6. Impact

- After 6 months back on the job, 90% of trainees responded that they can see improvements in their job performance as a result of the training. However, trainee assessment of the monitoring and support they expected from management had eroded from 80% at the end of training to a generally neutral to flat distribution of responses after 6 months back on the job. This important trainee perception was communicated to the management of the AWC WWTP.
- After one year, 72% of trainees responded that they continue to see improvements in their job performance as a result of the training. Trainee assessment of the monitoring and support they expected from management rebounded to 72% from a generally neutral to flat distribution of responses after 6 months back on the job indicating that supervisors were taking a more proactive approach to supporting their trainee operators. The effect of the On-Job Coaching for Supervisors capacity building course may be evident in this respect. This course was developed and implemented specifically to improve this factor. 91% of trainees expressed agreement that they continue to see improvements in their individual and work unit performance as a result of the training.

## Survey Results – Supervisor

### 1. Relevance of Training

- After 6 months back on the job, supervisor responses indicated only slight deviation from opinions at the end of training. 100% reported a strong interest in continued learning to improve job skills. 100% agreed or strongly agreed that they want trainees to have a complete knowledge of the field regardless of current position. These findings demonstrate a high degree of management support for the continuation of training.
- After one year, supervisor responses essentially remained unchanged with 100% agreement that certification training should continue and that they want their operators to have a complete competency-based knowledge of the field. This is significant endorsement of design and content of the certification training and would indicate that significant change in training is not a priority among supervisors at this stage.

### 2. Language of Instruction

- After 6 months back on the job, supervisors indicated a preference for staff to study in Arabic with 100% in agreement.
- After one year, supervisor responses were aligned with operators regarding a preference that Arabic be the language of instruction. Supervisors now expressed just 60% agreement for the exclusive use of Arabic as the language of instruction. During this period a number of supervisors and operators had the opportunity to attend the Training-of-Trainers and Instructional Systems Development courses as well as the On-Job Coaching for Supervisors. These three courses were instructed in English only and this experience may be a significant factor in the change of opinion regarding the exclusive use of Arabic in the certification program. This should be considered as new higher level certification courses are added to the Jordan program.

### 3. Knowledge/Understanding

- After 6 months back on the job, the opinion of supervisors had dropped from 100% to 60% regarding their staff having a practical awareness of new technologies that could improve performance. This finding could indicate that supervisors may not have been fully aware of the content of the training and have reset their expectations. This finding requires further investigation. The responses after 6 months show that supervisors perceive their staff demonstrating better knowledge pertaining specifically to safety and safe drinking water and/or pollution control laws/regulations.
- After one year, supervisors expressed 100% agreement across the board recognizing that their trainee operators were more aware of new technologies, international development, standards and safety and that all of these factors were contributing to improved performance as perceived by supervisors. These results were a significant positive change from the earlier responses and are further evidence that the design and content of the certification training program is relevant to the needs of Jordanian operators.

#### 4. Attitude/Confidence; Self Esteem

- After 6 months back on the job, supervisor responses indicated that trainees demonstrated confidence on the job and greater self esteem. Supervisor responses regarding the perception of families, friends and neighbors of their staff were neutral indicating that public awareness of the operator career requires further investigation.
- After one year, supervisors showed strong recognition that operators are demonstrating greater confidence and self esteem with 100% overall agreement. Supervisor responses regarding the perception of families, friends and neighbors of their staff remained unchanged possibly indicating a need for expanded public awareness of the operator career.

#### 5. Skills/Technical; Management

- After 6 months back on the job, 80% of supervisors agreed that new technical skills were enabling better performance; and, 100% agreed that staff now had improved problem-solving and organizational skills. These key findings indicate that after 6 months back on the job, supervisors are in strong agreement that the new knowledge and skills of their staff is having a beneficial effect on their performance.
- After one year, supervisors expressed universal agreement with 100% expressing recognition that new technical skills, problem solving approaches and abilities to organize people to accomplish tasks was clearly evident in the performance of their operators. These results are an improvement from earlier responses and seem to indicate that content and training techniques of the Jordan program are appropriate and relevant to the needs.

#### 6. Impact

- After 6 months back, supervisor responses were identical to their opinions at the end of training indicating that the expected high level of performance improvement as a result of training was confirmed on the job. Where supervisors believe that they are providing the essential support needed by their staff in the application of new knowledge and skill, this opinion is not widely held by the operators. This discrepancy was further investigated.
- After one year, this discrepancy still exists. While 100% of supervisors are confident that they are providing adequate support to their operators only 72% of operators would agree. This finding further supports the need to continue with a broad expansion of the On-Job Coaching for Supervisors course. 100% of supervisors did after one year express strong agreement that they can see improvements in the performance of the trainees and their work units as a result of the certification training.

**Miyahuna Zai Water Treatment Plant (WTP) Quantitative Indicators**  
**Baseline Year 2010, Pilot Year 2011 and Performance Year 2012**

#	Indicator	2010 Baseline	2011 Pilot	Oct, 2012	Notes
1	Quality of Water treated – Non-compliance Citations	0	0	0	Zero non-compliance citations in the past three years
2	Major Unplanned Shut-downs	0	0	0	Absence of unplanned shutdowns
3	Emergency Actions	0	0	0	No emergency actions required
4	Accident Reports	0	0	0	No accidents have been reported at the plant since the base year.
5	Operating Costs	17,231,125	20,215,855	24,034,768	Increase in operating costs driven by rising electricity expenses and increase in quantity of water treated and pumped.
6	Maintenance Costs*	214,503	117,487	113,621	Significant reduction in maintenance costs. These costs are slightly less than half of base year.
7	Water Quality (Lab) a) number of external lab tests conducted	365	365	304	Daily testing by external labs
	b) percentage of results of non-compliance with the standard	0%	0%	0%	Continual absence of non-compliance citations

\*Maintenance Costs were reduced by nearly half between 2010 and 2012. An increase in Operating Costs was observed driven almost entirely by the rise in electricity expenses, and potential savings in operations as a result of the program are currently under review.

Reduction in maintenance costs - The Zai facility has historically been very well operated, with no accidents or non-compliance citations noted prior to the advent of the operator certification and training program. As compared with 2010 baseline data, a nearly 50% reduction in maintenance costs has been reported since the beginning of the operator certification and training program in 2011. This may indicate the improved efficiency with which this program helps operators to perform their work.

Operating costs – Zai had a significant increase in the quantity of water treated and pumped in 2011 and 2012. Operating costs in 2011 and 2012 still maintained relative parity with the reported 2010 baseline recognizing a significant increase in electricity costs.

Treated water non-compliance citations and accident reports – For the 2010 baseline, Zai reported perfect records (zero occurrences) for these indicators. In 2011 and through October 2012, Zai reported that this level of performance was maintained.



## Qualitative Results – Miyahuna Zai Six-Month and One-Year Follow-up

TIA Report 2 presented pre and post training interview and survey results for impacts from the Water Level 1 course. The interview was used only in direct conjunction with pilots to afford the opportunity to broadly capture detailed trainee/operator and supervisor input that would be of value in the post-pilot revision of the courses and tests. TIA Report 4 presented on-job trainee/operator and supervisor survey input at an interval of six-months after training to assess perceived performance changes and beneficial impacts resulting from the certification training. These separate reports and Annex C of this report contain full details including background on all trainees and supervisors who participated in every TIA activity. The analysis below compares the six-month and one-year follow-up on job trainee/operator and supervisor survey inputs.

### **Summary of Zai On-Job Survey Responses - Six-Month and One Year Follow-up**

#### **Survey Results - Trainee**

##### **1. Relevance of Training**

- After 6 months back on the job, trainees reconfirmed by 100% agreement that they remain interested in learning and improving their job skills. Trainees were distributed across the range regarding study of topics related directly to their current job. However, 94% reconfirmed their agreement in wanting a complete knowledge of the field.
- After one year, 100% of trainees again reconfirmed their desire to continue the Jordan certification training and remain interested in learning and improving their job skills. They also reconfirmed their agreement in wanting to acquire a complete competency-based knowledge of their respective field.

##### **2. Language of Instruction**

- After 6 months, trainees continued to show a strong preference (94%) to study in Arabic.
- After one year, trainee preference for training exclusively in Arabic eroded to approximately 50% expressing no language preference. This could be indicative of the exposure that some trainees have had to the ABC program and OWP training materials, and, the OMT capacity building courses that were taught in English.

##### **3. Knowledge/Understanding**

- After six months, trainees continued to express agreement with 73% rating indicating an increase in knowledge of new international developments and technologies and 100% agreement that they are now more aware of safety equipment and safe O&M procedures.
- After one year, 100% of trainees reconfirmed that they are more aware of new technologies as a result of the training while 87% agreed that the training had increased their knowledge of international developments and 93% agreed that they are now more aware of safety equipment and safe O&M procedures. These results indicate that the training is being retained 12 months after training.

#### 4. Attitude/Confidence; Self Esteem

- After 6 months, trainees continued to report strong agreement with 93% indicating confidence to apply new knowledge on the job. With regard to pursuing promotion, trainee responses indicated a wide range of opinions with a relatively flat distribution. 97% continued to report that the training gave them the confidence to pursue employment elsewhere. Regarding awareness of family and friends in the importance of their job, responses increased from 69% at the end of training to 87% after 6 months. This may indicate that the training is making the operators more confident and knowledgeable to talk about their work.
- After one year, 100% of trainees agreed that the training gave them greater confidence to apply new knowledge in performing their job however only 30% agreed that they were more confident to seek promotion. This is a decrease from the results after six months and could represent a more realistic assessment of the real prospects for advancement. Similarly, when asked about pursuing work elsewhere, trainees were evenly distributed across the range from strongly disagree to strongly agree which may again be a reaction to the reality of finding employment outside of Zai or Miyahuna or Jordan. Regarding awareness of family and friends in the importance of their job, responses remained stable at 74% after one year.

#### 5. Skills/Technical; Management

- After six months, all key measures of technical and managerial skills increased. 100% of trainees indicated that the training enabled them to do their job better. 86% indicated that training helped them solve work problems, and, 80% reported that training improved the ways they organize people and tasks. This set of responses shows that the effects of the training are not short-lived and that trainees continue to strongly agree that the training is enabling them to perform better after 6 months back on the job.
- After one year, responses in this category remained constant with 100% of trainees continuing to express that the training enabled them to do their job better. 100% also indicated that training helped them solve work problems which was an increase for 86% reported earlier. 80% continued to report that training improved the ways they organize people and tasks. These results are encouraging in that they indicate long-term and in some case increasing effects of the training over time which supports that the training design and content are relevant and appropriate to the needs of operators at Zai.

#### 6. Impact

- After six months, this set of responses pointed out some critical issues that require follow-up attention at the Zai Plant. After 6 months back on the job, approximately half (47%) of trainees do NOT agree that they are receiving adequate support from their supervisors in the application of new knowledge and skills. This is down from 71% who expected strong supervisory support immediately after training. A slight decline was also registered regarding the monitoring of their performance and impact by their supervisor. However, after 6 months, 93% agreed that they can see improvements in their performance as a result of the training. This is another strong indication that the training can have long-term positive effects on O&M at the Zai plant.

- After one year, the issues identified after six months at Zai persist. 53% of trainees agree that they are receiving adequate support from their supervisor and just 60% agree that their supervisor is monitoring their application of new knowledge and skills to impact overall performance. The identical results of 93% agreement was reported after one year regarding trainees seeing improvements in their performance as a result of the training perhaps in spite of what they perceive as generally inadequate supervisory support. As discussed earlier in this report, an enabling environment that encourages application of newly acquired capabilities is essential to maximizing beneficial impact. Again, it appears that the supervisors at Zai might benefit from the On-Job Coaching for Supervisors course.

## **Survey Results - Supervisor**

### **1. Relevance of Training**

- After 6 months back on the job, supervisors maintained their 100% agreement regarding the high level of staff interest in learning and improving job skills. Opinion with respect to supervisors wanting staff to receive a complete knowledge of the field deviated slightly from results immediately after training with 60% still in agreement and 40% neutral.
- After one year, supervisors confirmed their 100% agreement regarding the high level of staff interest in learning and improving job skills. Supervisor results with regard to specific study of job related topics versus a broader study intended to provide a complete understanding of the field remained broadly distributed with no strong consensus.

### **2. Language of Instruction**

- After six months, 100% of supervisors continued to support instruction in Arabic.
- After one year, results dropped to 75% support for Arabic and 60% expressing an interest in trainees studying in English. The Jordan program should take these findings into account when planning the development of new higher level training courses.

### **3. Knowledge/Understanding**

- After 6 months, results from supervisors regarding all four criteria measured showed a remarkable increase with 100% agreement across the board. This is a significant change emphasizing that the increase in staff knowledge after 6 months on the job is clearly obvious to supervisors. It is the only category of this assessment that received unanimous strong agreement on all factors and is highly indicative that the training content has been properly planned and delivered.
- After one year, the strong results reported after six months showed significant erosion. Only 60% agreed that trainees are more aware of new technologies and international developments. 80% agreed that trainees had a better knowledge of Jordanian standards and safety. The reasons for this reduction require further investigation especially since it contradicts the opinions of the trainees.

#### 4. Attitude/Confidence; Self Esteem

- After 6 months, 100% of supervisors could see that the training is giving staff the confidence to apply new knowledge and skills. Supervisors' opinion regarding trainee interest in promotion increased to 80% agreement. Supervisors maintained their opinion regarding confidence of staff to pursue employment elsewhere with 60% agreement and 40% neutral. Responses regarding whether the family and friends of their staff are aware of the importance of their work remained flat with opinions distributed relatively evenly across ratings. After 6 months, supervisors can still see the elevated confidence and positive attitude of trainees confirming that the training is delivering on the long-term behavioral as well as the knowledge objectives of the program.
- After one year, supervisory responses regarding the degree that the training is give staff the confidence to apply new knowledge and skills which eroded from 100% to 60% agreement. All other factors in this category were also reported with 60% agreement which is consistent with earlier opinions. The significant reduction in supervisor perception of staff confidence requires further investigation.

#### 5. Skills/Technical; Management

- After 6 months back on the job, supervisor responses remained identical to those indicated immediately after the training with agreement on factors ranging from 80% to 100%. These responses confirm that the technical, problem-solving and organizational skills acquired during training are evident in the workplace over the long term.
- After one year, supervisor opinions dropped to 60% agreement that trainees had acquired new technical knowledge and skills that enabled them to improve their performance and similar agreement that staff had acquired new ways to solve work problems. Only 40% agreed that trainees showed improvement on organizing people and work. It appears that supervisors at Zai see the benefits of the training diminishing over time. **The reasons for this perception are not clear and require urgent attention.**

#### 6. Impact

- After six months, the results on the survey generally matched expectations from the post-training. 100% of supervisors reported supporting their staff in the application of new learning on the job as well as monitor their performance. 80% of supervisors reported that they are monitoring performance. Most importantly, 80% of supervisors could see improvements in individual and work unit performance as a result of training and support. These are exceptional results indicating that supervisors are strongly in favor of the training and are able to recognize performance improvements attributable to the training. It should be noted that trainees did not totally agree that they are getting strong support from their supervisors in the application of new knowledge and skills. This discrepancy should be pointed out to the supervisors and trainees at the Zai plant to foster greater understanding between them and contribute to a higher level of performance impact.
- After one year, results remained somewhat consistent. 100% of supervisors continued to report supporting their staff in the application of new learning on the job as well as monitor their

performance. 80% of supervisors reported that they are monitoring performance. However, only 60% of supervisors could see improvements in individual and work unit performance as a result of training and support representing a 20% reduction from six months earlier. This supervisory perception is in opposition to the trainee perception of over 90% agreement that there have been improvements in individual and work unit performance as a result of training. The divergent opinions at Zai require additional follow-up and related action.

## General Findings

Responses collected from trainees/operators and their supervisors (as shown in the TIA Implementation table above) to the interview and survey categories below were aligned with the responses collected at the AWC/WWTP and the Miyahuna/Zai WTP:

- Relevance of Training
- Language of Instruction
- Knowledge/Understanding
- Attitude/Confidence; Self Esteem

Summarized below are averages of key responses for the TIA categories from nine sites other than AWC/WWTP and the Miyahuna/Zai WTP where a six-month back-on-job follow-up TIA survey was conducted.

Trainee/Operator		Supervisor
<b>Application of New Technical and Management Skills</b>		
Applying new skills	97% agreed that they were able to apply new knowledge and skills on the job	100% of supervisors agreed that their operators were applying new knowledge and skills on the job
Problem-solving	100% responded that their training has improved their ability to solve work problems	100% indicated that the training has improved the ability of their operators to solve work problems
Organizing people & work	94% responded that they are now able to better organize staff and work tasks	100% can see improved organization of staff and work tasks as the result of training
<b>On-Job Impact of Training on Individual and Work Unit Performance</b>		
Supervisory support	72% responded that they are receiving adequate support from their supervisor in the application of new knowledge and skill	100% responded that they are providing support to their operators in the application of new knowledge and skill
Monitoring performance	80% reported that their supervisor is monitoring the application of new knowledge and skills on the job	100% of supervisors reported that they are monitoring the application of new knowledge and skills on the job by trained operators
Beneficial on-job impact	90% agreed that they can see improvements in their job performance and the performance of their work unit as the result of their certification training	100% reported that they can see improvements in operator job performance and the performance of their work units as the result of the certification training

TIA feedback from this second round of six-month TIAs is encouraging as it indicates strong agreement and confirmation from trainees and their supervisors that the Jordan Water Operator Certification Program is providing training that is appropriate to the sector needs and when new knowledge and skills are applied, both operators and their supervisors see concrete improvement in individual and work unit performance.

The TIA results continue to bear out that trainees/operators are not always fully satisfied with the level of support that they receive from their supervisors while these same supervisors believe that they are

adequately supporting the operators. This TIA finding appears to further support the need for the program to continue to offer and conduct the On-Job Coaching for Supervisors capacity building course.

## Conclusions and Recommendations

**TIA Value** – After three years of TIA usage with the Jordan Water Operators Certification Program, its value as a tool to monitor the effectiveness of training and gather valuable insights into how the overall program can be improved has been proven. The TIA results have been a tremendous help in the pilot and revision process for training course materials. As more data is collected and analyzed, the TIA results will gain statistical validity and reliability which will make the results essential in demonstrating the overall value of the Jordan program and the need for its sustainability.

*Recommendation* - TIA findings should be freely shared with the government of Jordan, donors, the water sector and end-users to demonstrate the O&M performance improvements that results from the Jordan Water Operators Certification Program. It is of particular importance that the TIA results indicating improved O&M be shared with the CEOs of the three Jordanian water companies and WAJ to gain and retain their support for the sustainability of the Jordan program.

**Institutionalizing and Empowering the WWSST** – The organization of the CAQA includes the creation of sector teams/committees to provide technical support to the CAQA. The WWSST has been designed for this purpose as reflected in the policy and institutional framework of the Jordan Water Operators Certification Program and approved by the Employment-Technical and Vocational Education and Training (E-TVET) Council associated with the Ministry of Labor. A key role of the WWSST is the continued implementation of the TIA process. Upon conclusion of the OMT, the WWSST had not been fully institutionalized to carry out its mission.

*Recommendation* – All partners in the Jordan Water Operators Certification Program should move to fully institutionalize the WWSST and ensure that it has staff and resources adequate to carry out all of its responsibilities as specified in the approved policy and framework including the continued implementation of the TIA.

**Investigation of Site-specific TIA Results** – Some TIA findings that required further follow-up are specific to a particular plant or network facility. Plants report increases and/or decreases in O&M costs without full explanations of whether the operator training had an effect on these changes. TIA results from a significant number of sites showed a discrepancy in opinion between operators and supervisors regarding the adequacy of support and performance monitoring that operators receive from their supervisors.

*Recommendation* – The WWSST should actively investigate issues where O&M cost data requires further clarification and where the full benefit of the operator training impact may not be maximized.

**Importance of On-Job Coaching for Supervisors and Utility Management Courses** – The Jordan program includes the **Utility Management Level 1** course which contains introductory topics on effective techniques for staff communication, support and motivation. The **On-Job Coaching for Supervisors** capacity building course was added to the Jordan program to proactively address findings from the early TIA reports that indicated possible deficiencies in supervisors' understanding of the Jordan program and in their back-on-job support for operators after training. Recent TIA results indicate that this problem persists.

*Recommendation* – The WWSST should place a high priority on making the **On-Job Coaching for Supervisors** and the **Utility Management Level 1** course specific requirements for all site supervisors to ensure the greatest impact on improved O&M from the Jordan program. The OMT project only conducted these courses once as pilots and current TIA results indicate that this training should be actively continued. In addition, when considering new courses to add to the Jordan program, the WWSST should place top priority on the development of the envisioned **Utility Management Level 2** course and ensure that it emphasizes how managers can facilitate the application of new knowledge and skills acquired by operators during certification training.

**Enhance Awareness of Operator Certification** – Although a lot has been done to draw attention to the Jordan Water Operators Certification Program, the TIA data indicates these awareness activities should continue for water sector, Jordanian government, donor, education sector and end-user target populations to engender support and further ensure sustainability.

*Recommendation* – The WWSST should fully utilize the awareness materials, contacts and skills developed by the OMT project by preparing an awareness program and implementing a regular annual schedule of awareness events.

**Relevance of Program Design and Course Content** – The TIA data clearly shows that operators and supervisors agree that the design and content of the training effectively addressed local training needs and ability to learn. The back-on-job 12-month TIA operator and supervisor responses further show the long-term effectiveness and relevancy of the training. These are important findings with regard to developing advocacy for program sustainability.

*Recommendation* – The WWSST should continue to adhere to the principles and processes of Instructional Systems Development (ISD) that were utilized by the OMT project to design, develop, pilot and revise the training program, curriculum outlines, courses and tests. Only graduates of the **Course and Test Developer** (ISD) training should work on revisions of current courses and tests and the development of new materials. Furthermore, the WWSST should ensure that an adequate number of interested, motivated and certified engineers attend ISD courses to meet demand.

**Use of English Language for New Higher Level Courses** – One of the more interesting findings of the TIA was that as trainees and supervisors gained greater familiarity with the training courses, their opinions were changing concerning whether Arabic or English should be the language of instruction. A growing number of trainee responses are no longer strictly showing a preference for Arabic. Some have been exposed to the English-language capacity building courses and the growing number of materials studied by some operators for Association of Boards of Certification (ABC) certification.

*Recommendation* – In the future, English should be considered as the language of instruction when the WWSST contemplates the need to add new higher level technical and utility management courses to the Jordan program. Development in English will be less expensive than adapting materials for local use in Arabic. Regardless of language, when the WWSST does decide to add more courses, this should be coordinated with the OWP/CSUS.

**TIA Continuation and Expansion** – The TIA is critical to the sustainability of the Jordan Water Operators Certification Program. It is the only uniform method of collecting performance data to demonstrate the beneficial OMT impacts of the Jordan program. A failure to continue a robust TIA process will ultimately undermine the future sustainability of the Jordan program and the support that it currently enjoys from the government of Jordan, donors, the water sector and end-users.

*Recommendation* – The WWSST should leverage the current strong support for the Jordan program as reported in the TIA to ensure that resources are available for continuation of the TIA approach. The WWSST now has all of the instruments, methods and experience needed to institutionalize the TIA process and future survey-based TIA data collection can easily be managed by email without travel to sites. As the Jordan program is more broadly implemented, the WWSST should expand the TIA scope to include new indicators to cover networks and financial performance. These should address O&M cost factors specifically electricity use and rate increases. Finally, as more operators are trained and certified the ‘Number of certified operators as a percentage of total technical staff’ should be added to the TIA data collection and reporting for all plant and network sites.



## Annex A: Pre-Training Assessment Tools, Forms.

### A.1 OMT Training Impact Assessment – Pre-Training/Trainee Survey and Interview

OMT Training Impact Assessment – Pre-Training/Trainee Survey and Interview-Arabic

### A.2 Training Impact Assessment – Pre-Training/Supervisor Survey and Interview

OMT Training Impact Assessment – Pre-Training/Supervisor Survey and Interview-Arabic

## A.1 OMT Training Impact Assessment Survey – Pre-Training/Trainee

Please indicate your level of agreement with the statement by circling a number from 1 through 5.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Disagree				Agree

### **Capacity Building** - Learning-to-Perform

#### 1. Relevance of Training

- 1.1 I have been interested in learning and improving my job skills.
- 1.2 I only want to study topics that are directly related to my current job.
- 1.3 I want a complete knowledge of my field regardless of the current relevance.

#### 2. Language of Instruction

- 2.1 I prefer to study my field in Arabic.
- 2.2 I prefer to study my field in English.
- 2.3 I have no language preference.

#### 3. Knowledge/Understanding

- 3.1 I am not aware of the new technologies that could improve my performance.
- 3.2 The training should increase my knowledge of new international developments and new technologies in my field.
- 3.3 I would like to understand the importance of safe drinking water and/or pollution control laws/regulations to my job.
- 3.4 I am not aware of safety equipment and safe O&M procedures in my field.

#### 4. Attitude/Confidence; Self Esteem

- 4.1 I expect the training to give me confidence to apply new knowledge to my job.
- 4.2 I expect the training to give me confidence to pursue promotion and career objectives.
- 4.3 I expect the training to give me confidence to pursue job opportunities elsewhere.
- 4.4 My family, friends and neighbors are not aware of the importance of my job to protect the public health by providing safe drinking water and/or the importance of controlling pollution to protect the environment.

#### 5. Skills/Technical; Management

- 5.1 I expect to acquire new technical skills that enable me to do my job better.
- 5.2 I expect to acquire new ways to solve work problems.
- 5.3 I expect to learn new ways to organize people and tasks.

#### 6. Impact

- 6.1 I expect to receive the support of my supervisor and the utility in the application of new knowledge and skills on the job.
- 6.2 I expect my supervisor to monitor my application of new knowledge and skills to determine impact on my performance and the performance of my work unit.
- 6.3 I expect to see improvements in my performance and the performance of my work unit as a result of the training.

المسح التقييمي (استبيان)

متدرب/مشغل

أثر تدريب مشروع التدريب على الادارة والصيانة – مرحلة ما قبل التدريب

يرجى الإشارة إلى مستوى الاتفاق/الاختلاف بوضع علامة (✓) مقابل البيان:

5	4	3	2	1
أوافق بشدة	أوافق	محايد	أختلف	أختلف بشدة

بناء القدرات -- التعلم من أجل التطبيق

**1. أهمية التدريب:**

- 1.1 أنا مهتم في التعلم وتحسين مهاراتي في أدائي العملي .
- 2.1 أريد دراسة الموضوعات التي تتصل بشكل مباشر بوظيفتي الحالية فقط .
- 3.1 أريد معرفة كاملة في مجال عملي بغض النظر عن مدى ارتباطها بوظيفتي الحالية .

**2. لغة التدريس:**

- 1.2 أنا افضل الدراسة باللغة العربية في مجال عملي .
- 2.2 انا افضل الدراسة باللغة الإنجليزية في مجال عملي .
- 3.2 ليس لدي تفضيل لأي لغة تدريس .

**3. المعرفة:**

- 1.3 أنا لست على اطلاع حول التقنيات الحديثة التي يمكن أن تحسن من أدائي لعملي .
- 2.3 التدريب سوف يزيد معرفتي حول التطورات العالمية الجديدة والتقنيات الحديثة في مجال عملي .
- 3.3 أود أن أفهم أهمية المياه الصالحة للشرب و/أو قوانين أنظمة مراقبة التلوث المتعلقة بعملي .
- 4.3 أنا لست على علم بمعدات السلامة و إجراءات التشغيل و الصيانة السليمة في مجال عملي .

#### 4. السلوكيات:

- 1.4 أتوقع أن التدريب سيمنحني الثقة لتطبيق المعرفة الجديدة في أدائي العملي .
- 2.4 أتوقع أن التدريب سيعطيني الثقة للحصول على ترقية في عملي وتحقيق الأهداف الوظيفية .
- 3.4 أتوقع أن التدريب سيعطيني الثقة للحصول على فرص عمل في أماكن عمل أخرى .
- 4.4 عائلتي والأصدقاء والجيران ليسوا على دراية بأهمية وظيفتي في حماية الصحة العامة من خلال توفير المياه الصالحة للشرب و/أو أهمية السيطرة على التلوث لحماية البيئة.

#### 5. المهارات:

- 1.5 أتوقع اكتساب مهارات فنية لأقوم بعملها بشكل أفضل .
- 2.5 أتوقع اكتساب طرق/أساليب جديدة لحل مشاكل العمل .
- 3.5 أتوقع اكتساب طرق وأساليب إدارية جديدة لتنظيم الموظفين والمهام .

#### 6. الأثر المستقبلي:

- 1.6 أتوقع أن أتلقي الدعم من المشرف والإدارة عند تطبيق المعارف والمهارات الجديدة في أدائي لعملي .
- 2.6 أتوقع من المشرف مراقبة تطبيقي للمعارف والمهارات الجديدة التي اكتسبتها في التدريب لتحديد أثرها على أدائي وأداء الوحدة .
- 3.6 أتوقع أن أرى تحسن في أدائي وأداء الوحدة نتيجة للتدريب .

## **A.1 OMT Training Impact Assessment – Pre-Training/Trainee Interview**

### **Capacity Building - Learning-to-Perform**

#### **1. Relevance of Training**

- 1.1 Why are you interested in learning and improving your job skills?
- 1.2 What training topics are of greatest importance to you? Why?

#### **2. Language of Instruction**

- 2.1 Did you express a preference in language of instruction – Arabic or English?
- 2.2 Why?

#### **3. Knowledge/Understanding**

- 3.1 Are you aware of any new technologies that you want to know more about?
- 3.2 To what extent do you understand the importance of safe drinking water and/or pollution control laws/regulations to your job?
- 3.3 To what extent are you aware of the safety equipment and safe O&M procedures associated with your job?

#### **4. Attitude/Confidence; Self Esteem**

- 4.1 How can this training help you in your career?
- 4.2 To what extent are your family, friends and neighbors aware of the importance of your job to protect the public health by providing safe drinking water and/or the importance of controlling pollution to protect the environment?

#### **5. Skills/Technical; Management**

- 5.1 What new technical skills do you expect to acquire that will enable you to do your job better?
- 5.2 What new problem solving skills do you expect to acquire that will enable you to do your job better?
- 5.3 What new supervisory/management skills do you expect to acquire that enable you to do your job better?

#### **6. Impact**

- 6.1 In what ways do you expect to receive the support of your supervisor and the utility in the application of new knowledge and skills on the job?
- 6.2 How do you expect your supervisor to monitor your application of new knowledge and skills to determine impact on your performance and the performance of your work unit?
- 6.3 What improvements do you expect to see in your performance and the performance of your work unit as a result of the training?
- 6.4 I expect to see improvements in facility performance in terms of (A) compliance and (B) minimizing repairs and down time. What improvements do you expect?

نموذج مقابلة  
(متدرب/مشغل)

بناء القدرات -- التعلم من أجل التطبيق

1. أهمية التدريب:

- 1.1 لماذا أنت مهتم في التعلم وتطوير مهارات أدائك لعملك؟
- 2.1 ما هي المواضيع التدريبية التي لها أهمية قصوى بالنسبة لك؟ لماذا؟

2. لغة التدريس:

- 1.2 ما اللغة التي تفضلها في التدريس -- العربية أم الإنجليزية ؟
- 2.2 لماذا؟

3. المعرفة:

- 1.3 هل سمعت عن تقنيات عمل حديثة تريد أن تعرف عنها المزيد؟ ماهي؟
- 2.3 ماذا تعرف عن أهمية المياه الصالحة للشرب و/أو قوانين/أنظمة مراقبة التلوث بالنسبة لعملك؟
- 3.3 ماذا تعرف عن أهمية معدات السلامة و إجراءات التشغيل و الصيانة السليمة المرتبطة بعملك؟

4. السلوكيات:

- 1.4 كيف يمكن لهذا التدريب أن يساعدك في عملك وحياتك المهنية؟
- 2.4 إلى أي حد تدرك عائلتك وأصدقائك والجيران أهمية وظيفتك في حماية الصحة العامة من خلال توفير المياه الصالحة للشرب و/أو على أهمية السيطرة على التلوث لحماية البيئة؟

5. المهارات:

- 1.5 ماهي المهارات الفنية الجديدة التي تتوقع اكتسابها لتمكنك من القيام بعملك بشكل أفضل ؟
- 2.5 ماهي المهارات الجديدة في حل المشاكل التي تتوقع اكتسابها لتمكنك من القيام بعملك بشكل أفضل؟
- 3.5 ما هي المهارات الإشرافية/الإدارية الجديدة التي تتوقع اكتسابها لتمكنك من القيام بعملك بشكل أفضل؟

## 6. الأثر المستقبلي:

- 1.6 ما هي الطرق التي تتوقع أن تتلقى بها الدعم من مسؤولك وإدارتك عند تطبيقك للمعارف والمهارات الجديدة في عملك؟
- 2.6 كيف تتوقع أن يقوم مسؤولك بمراقبة تطبيقك للمعارف والمهارات الجديدة لتحديد أثر التدريب على أدائك وأداء الوحدة التي تعمل بها؟
- 3.6 ما هي توقعاتك حول رفع وتحسين مستوى أدائك وأداء الوحدة التي تعمل بها نتيجة للتدريب؟
- 4.6 ما هي توقعاتك حول رفع وتحسين مستوى أداء المرفق من حيث الالتزام بمتطلبات العمل وتقليل الأعطال/الإصلاحات وتوقف العمل؟

## A.2 OMT Training Impact Assessment Survey – Pre-Training/Supervisor; Manager

Please indicate your level of agreement with the statement by circling a number from 1 through 5.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Disagree				Agree

### **Capacity Building** - Learning-to-Perform

#### 1. Relevance of Training

- 1.1 My staff is interested in learning and improving their job skills.
- 1.2 I only want staff to study topics that are directly related to their current job.
- 1.3 I want staff to receive complete knowledge of the field regardless of the current relevance.

#### 2. Language of Instruction

- 2.1 I prefer staff to study in Arabic.
- 2.2 I prefer staff to study in English.
- 2.3 I have no language preference.

#### 3. Knowledge/Understanding

- 3.1 My staff is aware of the new technologies that could improve their performance.
- 3.2 My staff is not aware of safety equipment and safe O&M procedures in their fields.
- 3.3 The training should increase staff knowledge of new international developments and new technologies in their field.
- 3.4 My staff currently understands the importance of safe drinking water and/or pollution control laws/regulations to their jobs.

#### 4. Attitude/Confidence

- 4.1 I expect the training to give staff confidence to apply new knowledge on their job.
- 4.2 I expect the training to give staff confidence to pursue promotion and career objectives.
- 4.3 I expect the training to give staff confidence to pursue job opportunities elsewhere.
- 4.4 In my opinion, the families, friends and neighbors of my staff are not aware of the importance of the jobs my staff do to protect the public health by providing safe drinking water and/or the importance of controlling pollution to protect the environment.

#### 5. Skills/Technical; Management

- 5.1 I expect staff to acquire new technical skills that enable them to do their job better.
- 5.2 I expect staff to acquire new ways to solve work problems.
- 5.3 I expect staff to learn new ways to organize people and tasks.

#### 6. Impact

- 6.1 I intend to support staff in applying new knowledge and skills on the job.
- 6.2 I intend to monitor the performance of staff after training to assess impact.
- 6.3 I expect to see improvements in staff and work unit performance as a result of training.



**المسح التقييمي (استبيان)**  
**(مشرف/مدير)**

أثر تدريب مشروع التدريب على الإدارة والصيانة -- مرحلة ما قبل التدريب  
يرجى الإشارة إلى مستوى الاتفاق/الاختلاف بوضع (✓) مقابل البيان:

5 أوافق بشدة	4 أوافق	3 محايد	2 أختلف	1 أختلف بشدة
-----------------	------------	------------	------------	-----------------

**بناء القدرات -- التعلم من أجل التطبيق**

**1. أهمية التدريب:**

- 1.1 الموظفون لديهم الاهتمام في التعلم وتحسين مهاراتهم في أدائهم لعملهم .
- 2.1 أريد فقط من الموظفين دراسة وتعلم الموضوعات ذات العلاقة المباشرة بوظائفهم الحالية .
- 3.1 أريد من الموظفين تلقي المعرفة الكاملة في مجال عملهم بغض النظر عن مدى ارتباطها بوظائفهم الحالية .

**2. لغة التدريس:**

- 1.2 أنا أفضل للموظفين الدراسة باللغة العربية .
- 2.2 أنا أفضل للموظفين الدراسة باللغة الإنجليزية .
- 3.2 ليس لدي تفضيل لأية لغة تدريس .

**3. المعرفة:**

- 1.3 الموظفون على اطلاع حول التقنيات الحديثة التي قد تحسن من أدائهم .
- 2.3 الموظفون ليسوا على علم بمعدات السلامة وإجراءات التشغيل و الصيانة السليمة في مجال عملهم .
- 3.3 تدريب الموظفون يؤدي الى زيادة معرفتهم بالتطورات العالمية الجديدة والتقنيات الحديثة في مجال عملهم .
- 4.3 الموظفون حاليا على دراية بأهمية المياه الصالحة للشرب و/أو قوانين أنظمة مراقبة التلوث المتعلقة بعملهم .

#### 4. السلوكيات:

- 1.4 أتوقع أن تدريب الموظفين سيعطيهم الثقة بتطبيق المعرفة الجديدة في أداء عملهم .
- 2.4 أتوقع أن تدريب الموظفين سيعطيهم الثقة للحصول على ترقية وتحقيق أهدافهم الوظيفية .
- 3.4 أتوقع أن تدريب الموظفين سيعطيهم الثقة للحصول على فرص عمل في أماكن عمل أخرى .
- 4.4 في رأيي ، أسر وأصدقاء وجيران الموظفين ليسوا على دراية بأهمية وظائفهم في حماية الصحة العامة من خلال توفير المياه الصالحة للشرب و/أو أهمية السيطرة على التلوث لحماية البيئة .

#### 5. المهارات:

- 1.5 أتوقع من الموظفين اكتساب المهارات الفنية الجديدة التي تمكنهم من القيام بعملهم على نحو أفضل.
- 2.5 أتوقع من الموظفين اكتساب طرق وأساليب جديدة لحل مشاكل العمل .
- 2.5 أتوقع من الموظفين اكتساب طرق وأساليب إدارية جديدة لتنظيم الموظفين والمهام .

#### 6. الأثر المستقبلي:

- 1.6 سوف أدمج الموظفين في تطبيق المعارف والمهارات الجديدة التي اكتسبها أثناء التدريب عند أدائهم لأعمالهم .
- 2.6 سوف أقوم بمراقبة أداء الموظفين بعد التدريب لتقييم أثر التدريب .
- 3.6 أتوقع أن أرى تحسينات في مستوى أداء الموظفين والوحدة نتيجة للتدريب

## **A.2 OMT Training Impact Assessment – Pre-Training/Supervisor; Manager Interview**

### **Capacity Building - Learning-to-Perform**

#### **1. Relevance of Training**

- 1.1 To what extent do you support your staff in learning and improving their job skills? How?
- 1.2 What are the top priority topics that you want your staff to study? Why?

#### **2. Language of Instruction**

- 2.1 The training is conducted in Arabic. What is your opinion of this decision?
- 2.2 Why?

#### **3. Knowledge/Understanding**

- 3.1 To what extent do you increase the awareness of your staff of new technologies that could improve their performance? How?
- 3.2 What specific new international developments and new technologies do you want your staff to learn? Why?
- 3.3 To what extent do you ensure that your staff currently understands the importance of safe drinking water and/or pollution control laws/regulations to their jobs? How?
- 3.4 To what extent do you ensure that your staff is aware of safety equipment and safe O&M procedures associated with their work? How?

#### **4. Attitude/Confidence; Self Esteem**

- 4.1 Do you expect this training to result in a loss of staff to other employers?
- 4.2 How can this be avoided?
- 4.3 In your opinion, to what extent are the families, friends and neighbors of your staff aware of the importance of their jobs in the protection of public health by providing safe drinking water and/or the importance of controlling pollution to protect the environment?

#### **5. Skills/Technical; Management**

- 5.1 What specific new technical skills does your staff need to enable them to do their job better?
- 5.2 What specific new supervisory/management skills does your staff need to enable them to do their job better?

#### **6. Impact**

- 6.1 How do you intend to support staff in applying new knowledge and skills on the job?
- 6.2 How do you intend to monitor the performance of staff after training to assess impact?
- 6.3 What improvements in staff and work unit performance do you expect to see as a result of training?
- 6.4 What improvements do you expect to see in facility performance in terms of (A) compliance and (B) minimizing repairs and down time?

## نموذج مقابلة

### (مشرف/مدير)

#### بناء القدرات -- التعلم من أجل التطبيق

#### 1. أهمية التدريب:

1.1 إلى أي مدى تدعم موظفيك في التعلم وتحسين مهاراتهم الوظيفية؟ وكيف؟

2.1 ما هي المواضيع ذات الأولوية العليا التي تريد لموظفيك تعلمها؟ لماذا؟

#### 2. لغة التدريس:

1.2 سيكون التدريب باللغة العربية. ما هو رأيكم في ذلك؟

2.2 لماذا؟

#### 3. المعرفة:

1.3 إلى أي مدى يمكنك زيادة الوعي لدى موظفيك حول التقنيات الجديدة التي قد تحسن من أدائهم؟ وكيف؟

2.3 ما هي التطورات العالمية الجديدة والتقنيات الحديثة التي تريد من موظفيك تعلمها؟ ولماذا؟

3.3 إلى أي مدى يمكنك التأكد من أن الموظفين يدركون أهمية المياه الصالحة للشرب و/أو قوانين/أنظمة مراقبة

التلوث أثناء ممارستهم لأعمالهم؟ وكيف؟

4.3 إلى أي مدى يمكنك التأكد من أن موظفيك يدركون أهمية معدات السلامة واجراءات التشغيل والصيانة

السليمة بعملهم؟ وكيف؟

#### 4. السلوكيات:

1.4 هل تتوقعون أن هذا التدريب سيؤدي إلى خسارة في الموظفين وانتقالهم الى شركات/مؤسسات أخرى؟

2.4 كيف يمكن تفادي ذلك؟

3.4 برأيك ، إلى أي حد يدرك أهالي وأصدقاء وجيران موظفيكم أهمية وظائفهم في حماية الصحة العامة من

خلال توفير المياه الصالحة للشرب و/أو أهمية السيطرة على التلوث لحماية البيئة؟

## 5. المهارات:

- 1.5 ما هي المهارات التقنية الجديدة التي يحتاجها موظفيك بحيث يستطيعوا القيام بعملهم على نحو أفضل؟
- 2.5 ما هي المهارات الادارية/الإشرافية الجديدة التي يحتاجها موظفيك بحيث يستطيعوا القيام بعملهم على نحو أفضل؟

## 6. الأثر المستقبلي:

- 1.6 كيف ستعملون على دعم الموظفين في تطبيق المعارف والمهارات الجديدة في عملهم؟
- 2.6 كيف ستعملون على مراقبة أداء الموظفين بعد التدريب لتقييم أثر التدريب؟
- 3.6 ما هي توقعاتكم حول رفع مستوى أداء الموظفين والوحدات التي يعملون بها كنتيجة للتدريب؟
- 4.6 ما هي توقعاتكم حول رفع أداء المرفق (المحطة) من حيث الالتزام بمتطلبات العمل وتقليل الأعطال/الاصلاحات وتوقف العمل؟

## ANNEX B: POST-TRAINING ASSESSMENT TOOLS AND FORMS

### B.1 OMT Training Impact Assessment – Post-Training/Trainee Interview

OMT Training Impact Assessment – Post-Training/Trainee Interview-Arabic

### B2 OMT Training Impact Assessment – Post-Training/Supervisor Interview

OMT Training Impact Assessment – Post-Training/Supervisor Interview-Arabic

## **B.1 OMT Training Impact Assessment Survey – Post-Training/Trainee**

Based on having completed the pilot WW/L1 training, please indicate your level of agreement with the statement by circling a number from 1 through 5.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Disagree				Agree

### **Capacity Building**

#### **1. Relevance of Training**

- 1.1 I am interested in learning and improving my job skills.
- 1.2 I only want to study topics that are directly related to my current job.
- 1.3 I want a complete knowledge of my field regardless of the current relevance.

#### **2. Language of Instruction**

- 2.1 I prefer to study my field in Arabic.
- 2.2 I prefer to study my field in English.
- 2.3 I have no language preference.

#### **3. Knowledge/Understanding**

- 3.1 I am now more aware of new technologies that could improve my performance.
- 3.2 The training increased my knowledge of new international developments and new technologies in my field.
- 3.3 I now better understand the importance of safe drinking water and/or pollution control laws/regulations to my job.
- 3.4 I am now more aware of safety equipment and safe O&M procedures in my field.

#### **4. Attitude/Confidence; Self Esteem**

- 4.1 The training is giving me confidence to apply new knowledge to my job.
- 4.2 The training is giving me confidence to pursue promotion and career objectives.
- 4.3 The training is giving me confidence to pursue job opportunities elsewhere.
- 4.4 My family, friends and neighbors are not aware of the importance of my job to protect the public health by providing safe drinking water and/or the importance of controlling pollution to protect the environment.

#### **5. Skills/Technical; Management**

- 5.1 I acquired new technical skills that enable me to do my job better.
- 5.2 I acquired new ways to solve work problems.
- 5.3 I learned new ways to organize people and tasks.

#### **6. Impact**

- 6.1 I am receiving the support of my supervisor and the utility in the application of new knowledge and skills on the job.
- 6.2 My supervisor is monitoring my application of new knowledge and skills to determine impact on my performance and the performance of my work unit.
- 6.3 I can see improvements in my performance and the performance of my work unit as a result of the training.

**المسح التقييمي (استبيان)**

**متدرب/مشغل**

**أثر تدريب مشروع التدريب على الإدارة والصيانة – مرحلة ما قبل التدريب**

يرجى الإشارة إلى مستوى الاتفاق/الاختلاف بوضع علامة (✓) مقابل البيان:

5	4	3	2	1
أوافق بشدة	أوافق	محايد	أختلف	أختلف بشدة

**بناء القدرات -- التعلم من أجل التطبيق**

**1. أهمية التدريب:**

- 1.1 أنا مهتم في التعلم وتحسين مهاراتي في أدائي العملي .
- 2.1 أريد دراسة الموضوعات التي تتصل بشكل مباشر بوظيفتي الحالية فقط .
- 3.1 أريد معرفة كاملة في مجال عملي بغض النظر عن مدى ارتباطها بوظيفتي الحالية .

**2. لغة التدريس:**

- 1.2 أنا افضل الدراسة باللغة العربية في مجال عملي .
- 2.2 أنا افضل الدراسة باللغة الإنجليزية في مجال عملي .
- 3.2 ليس لدي تفضيل لأي لغة تدريس .

**3. المعرفة:**

- 1.3 أنا حاليا على اطلاع وادراك افضل حول التقنيات الحديثة التي يمكن أن تحسن من أدائي لعملي .
- 2.3 التدريب قد زاد معرفتي حول التطورات العالمية الجديدة والتقنيات الحديثة في مجال عملي .
- 3.3 أنا حاليا على علم افضل عن أهمية المياه الصالحة للشرب و/أو قوانين أنظمة مراقبة التلوث المتعلقة بعملي.
- 4.3 أنا لست على علم بمعدات السلامة و إجراءات التشغيل و الصيانة السليمة في مجال عملي .



#### 4. السلوكيات:

- 1.4 التدريب يمنحني الثقة لتطبيق المعرفة الجديدة في أدائي العملي .
- 2.4 التدريب يمنحني الثقة للحصول على ترقية في عملي وتحقيق الأهداف الوظيفية .
- 3.4 التدريب يمنحني الثقة للحصول على فرص عمل في أماكن عمل أخرى .
- 4.4 عائلتي والأصدقاء والجيران ليسوا على دراية بأهمية وظيفتي في حماية الصحة العامة من خلال توفير المياه الصالحة للشرب و/أو أهمية السيطرة على التلوث لحماية البيئة.

#### 5. المهارات:

- 1.5 اكتسبت مهارات فنية جديدة لأقوم بعملية بشكل أفضل .
- 2.5 اكتسبت طرق/أساليب جديدة لحل مشاكل العمل .
- 3.5 تعلمت طرق وأساليب إدارية جديدة لتنظيم الموظفين والمهام .

#### 6. الأثر المستقبلي:

- 1.6 انا اتلقى الدعم من المشرف والادارة عند تطبيق المعارف والمهارات الجديدة في أدائي لعملي .
- 2.6 المشرف يراقب تطبيقي للمعارف والمهارات الجديدة التي اكتسبتها في التدريب لتحديد أثرها على دائي وأداء الوحدة .
- 3.6 أستطيع أن أرى تحسينات في أدائي وأداء الوحدة نتيجة للتدريب .

## **B.1 OMT Training Impact Assessment – Post-Training/Trainee Interview**

Based on having completed the WW/L1 training, please answer the following:

### **Capacity Building**

#### **1. Relevance of Training**

- 1.1 Are you interested in learning and improving your job skills? Why?
- 1.2 What training topics were of greatest importance to you? Why?

#### **2. Language of Instruction**

- 2.1 Was the combination of Arabic and English useful?
- 2.2 Why?

#### **3. Knowledge/Understanding**

- 3.1 Did the training cover new technologies that you wanted to know more about?
- 3.2 To what extent did you learn the importance of safe drinking water and/or pollution control laws/regulations to your job?
- 3.3 To what extent did you learn about the safety equipment and safe O&M procedures associated with your job?

#### **4. Attitude/Confidence; Self Esteem**

- 4.1 How will this training help you in your career?
- 4.2 To what extent are your family, friends and neighbors aware of the importance of your job to protect the public health by providing safe drinking water and/or the importance of controlling pollution to protect the environment?

#### **5. Skills/Technical; Management**

- 5.1 Did the training cover the technical skills that you expected to acquire to help you do your job better?
- 5.2 What new problem solving skills did you acquire that will enable you to do your job better?
- 5.3 What new supervisory/management skills did you acquire that will enable you to do your job better?

#### **6. Impact**

- 6.1 In what ways are you receiving the support of your supervisor and the utility in the application of new knowledge and skills on the job?
- 6.2 How is your supervisor monitoring your application of new knowledge and skills to determine impact on your performance and the performance of your work unit?
- 6.3 What improvements can you see in your performance and the performance of your work unit as a result of the training?
- 6.4 What improvements can you see in facility performance in terms of (A) compliance and (B) minimizing repairs and down time?

نموذج مقابلة  
(متدرب/مشغل)

بناء القدرات -- التعلم من أجل التطبيق

1. أهمية التدريب:

- 1.1 هل أنت مهتم في التعلم وتطوير مهارات أدائك لعملك؟ لماذا؟  
2.1 ما هي المواضيع التدريبية التي كانت لها أهمية قصوى بالنسبة لك؟ لماذا؟

2. لغة التدريس:

- 1.2 هل كان الجمع بين اللغة العربية والانجليزية مفيداً؟  
2.2 لماذا؟

3. المعرفة:

- 1.3 هل التدريب غطى التقنيات الحديثة التي كنت تريد معرفة المزيد عنها؟  
2.3 إلى أي مدى تعلمت عن أهمية المياه الصالحة للشرب و/أو قوانين/أنظمة مراقبة التلوث بالنسبة لعملك؟  
3.3 إلى أي مدى تعلمت عن أهمية معدات السلامة و إجراءات التشغيل و الصيانة السليمة المرتبطة بعملك؟

4. السلوكيات:

- 1.4 كيف سيساعدك التدريب في عملك وحياتك المهنية؟  
2.4 إلى أي حد تدرك عائلتك وأصدقائك والجيران أهمية وظيفتك في حماية الصحة العامة من خلال توفير المياه الصالحة للشرب و/أو على أهمية السيطرة على التلوث لحماية البيئة؟

5. المهارات:

- 1.5 هل غطى التدريب المهارات الفنية التي كنت تتوقع اكتسابها لتساعدك في القيام بعملك بشكل أفضل؟
- 2.5 ماهي المهارات الجديدة في حل المشاكل التي اكتسبتها والتي ستمنحك من القيام بعملك بشكل أفضل؟
- 3.5 ما هي المهارات الإشرافية/الإدارية الجديدة التي اكتسبتها و التي ستمنحك من القيام بعملك بشكل أفضل؟

## 6. الأثر المستقبلي:

- 1.6 ما هي الطرق التي تتلقى بها الدعم من مسؤولك وادارتك عند تطبيقك للمعارف والمهارات الجديدة في عملك؟
- 2.6 كيف يقوم مسؤولك بمراقبة تطبيقك للمعارف والمهارات الجديدة لتحديد أثر التدريب على أدائك وأداء الوحدة التي تعمل بها؟
- 3.6 ما هي التحسينات التي تستطيع ان تراها في أدائك وأداء الوحدة التي تعمل بها نتيجة للتدريب؟
- 4.6 ماهي التحسينات التي تستطيع ان تراها في أداء المرفق من حيث الالتزام بمتطلبات العمل وتقليل الأعطال/الإصلاحات وتوقف العمل؟

## B.2 OMT Training Impact Assessment Survey – Post Training/Supervisor

Based on your staff having completed the pilot WW/L1 training, please indicate your level of agreement with the statement by circling a number from 1 through 5.

1 2 3 4 5  
Disagree Agree

## Capacity Building

## 1. Relevance of Training

- 1.1 My staff is interested in learning and improving their job skills.
- 1.2 I only want staff to study topics that are directly related to their current job.
- 1.3 I want staff to receive complete knowledge of the field regardless of the current relevance.

## 2. Language of Instruction

- 2.1 I prefer staff to study in Arabic.
- 2.2 I prefer staff to study in English.
- 2.3 I have no language preference.

### 3. Knowledge/Understanding

- 3.1 My staff is now better aware of the new technologies that could improve their performance.
- 3.2 My staff is now better aware of safety equipment and safe O&M procedures in their fields.
- 3.3 The training has increased staff knowledge of new international developments and new technologies in their field.
- 3.4 My staff now better understand the importance of safe drinking water and/or pollution control laws/regulations to their jobs.

#### 4. Attitude/Confidence

- 4.1 The training is giving my staff confidence to apply new knowledge on their job.
- 4.2 The training is giving my staff confidence to pursue promotion and career objectives.
- 4.3 The training is giving my staff confidence to pursue job opportunities elsewhere.
- 4.4 In my opinion, the families, friends and neighbors of my staff are not aware of the importance of the jobs my staff do to protect the public health by providing safe drinking water and/or the importance of controlling pollution to protect the environment.

## 5. Skills/Technical; Management

- 5.1 My staff is acquiring new technical skills that enable them to do their job better.
- 5.2 My staff is acquiring new ways to solve work problems.
- 5.3 My staff is learning new ways to organize people and tasks.

## 6. Impact

- 6.1 I am supporting staff in applying new knowledge and skills on the job.
- 6.2 I am monitoring the performance of staff after training to assess impact.
- 6.3 I can see improvements in staff and work unit performance as a result of training.

## B.2 OMT Training Impact Assessment Survey – Post Training/Supervisor “Arabic”

### المسح التقييمي (استبيان) (مشرف/مدير)

أثر تدريب مشروع التدريب على الإدارة والصيانة -- مرحلة ما قبل التدريب  
يرجى الإشارة إلى مستوى الاتفاق/الاختلاف بوضع (✓) مقابل البيان:

5	4	3	2	1
أوافق بشدة	أوافق	محايد	أختلف	أختلف بشدة

### بناء القدرات -- التعلم من أجل التطبيق

#### 1. أهمية التدريب:

- 1.1 الموظفون لديهم الاهتمام في التعلم وتحسين مهاراتهم في أدائهم لعملهم .
- 2.1 أريد فقط من الموظفين دراسة وتعلم الموضوعات ذات العلاقة المباشرة بوظائفهم الحالية .
- 3.1 أريد من الموظفين تلقي المعرفة الكاملة في مجال عملهم بغض النظر عن مدى ارتباطها بوظائفهم الحالية.

#### 2. لغة التدريس:

- 1.2 أنا أفضل للموظفين الدراسة باللغة العربية .
- 2.2 أنا أفضل للموظفين الدراسة باللغة الإنجليزية .
- 3.2 ليس لدي تفضيل لأية لغة تدريس .

#### 3. المعرفة:

- 1.3 الموظفون حالياً مدركين وعلى اطلاع أفضل حول التقنيات الحديثة التي قد تحسن من أدائهم .
- 2.3 الموظفون حالياً مدركين وعلى اطلاع أفضل بمعدات السلامة وإجراءات التشغيل و الصيانة السليمة في مجال عملهم .
- 3.3 تدريب الموظفون قد زاد معرفتهم بالتطورات العالمية الجديدة والتقنيات الحديثة في مجال عملهم .
- 4.3 الموظفون حالياً على دراية أفضل بأهمية المياه الصالحة للشرب و/أو قوانين أنظمة مراقبة التلوث المتعلقة بعملهم .

#### 4. السلوكيات:

- 1.4 التدريب يعطي الموظفين الثقة لتطبيق المعرفة الجديدة في أداء عملهم .
- 2.4 التدريب يعطي الموظفين الثقة للحصول على ترقية وتحقيق أهدافهم الوظيفية .
- 3.4 التدريب يعطي الموظفين الثقة للحصول على فرص عمل في أماكن عمل أخرى .
- 4.4 في رأيي ، أسر وأصدقاء وجيران الموظفين ليسوا على دراية بأهمية وظائفهم في حماية الصحة العامة من خلال توفير المياه الصالحة للشرب و/أو أهمية السيطرة على التلوث لحماية البيئة .

#### 5. المهارات:

- 5.1 الموظفين يكتسبون المهارات الفنية الجديدة التي تمكنهم من القيام بعملهم على نحو أفضل.
- 5.2 الموظفين يكتسبون طرق وأساليب جديدة لحل مشاكل العمل .
- 5.3 الموظفين يتعلمون طرق وأساليب إدارية جديدة لتنظيم الموظفين والمهام .

#### 6. الأثر المستقبلي:

- 1.6 انا أدمع الموظفين في تطبيق المعارف والمهارات الجديدة التي اكتسبها أثناء التدريب عند أدائهم لأعمالهم .
- 2.6 انا أقوم بمراقبة أداء الموظفين بعد التدريب لتقييم أثر التدريب .
- 3.6 أستطيع ان أرى التحسينات في مستوى أداء الموظفين والوحدة نتيجة للتدريب

## **B.2 OMT Training Impact Assessment – Post-Training/Supervisor Interview**

Based on your staff having completed the WW/L1 training, please answer the following:

### **Capacity Building**

#### **1. Relevance of Training**

- 1.1 To what extent are you supporting your staff in learning and improving their job skills?  
How?
- 1.2 Did your staff study the topics that you consider to be top priority?

#### **2. Language of Instruction**

- 2.1 The training is conducted in Arabic with introduction of some English terms. What is your opinion of this decision?
- 2.2 Why?

#### **3. Knowledge/Understanding**

- 3.1 To what extent are you aware of the content of the training that your staff received?
- 3.2 What specific new international developments and new technologies did you want your staff to learn? Were these technologies included in the training?
- 3.3 To what extent did the training ensure that your staff learned the importance of safe drinking water and/or pollution control laws/regulations to their jobs?
- 3.4 To what extent did the training ensure that your staff learned the safety equipment and safe O&M procedures associated with their work?

#### **4. Attitude/Confidence; Self Esteem**

- 4.1 Do you expect this training to result in a loss of staff to other employers?
- 4.2 How can this be avoided?
- 4.3 In your opinion, to what extent are the families, friends and neighbors of your staff aware of the importance of their jobs in the protection of public health by providing safe drinking water and/or the importance of controlling pollution to protect the environment?

#### **5. Skills/Technical; Management**

- 5.1 What specific new technical skills did your staff learn to enable them to do their job better?
- 5.2 What specific new supervisory/management skills did your staff learn to enable them to do their job better?

#### **6. Impact**

- 6.1 How are you supporting staff in applying new knowledge and skills on the job?
- 6.2 How are you monitoring the performance of staff after training to assess impact?
- 6.3 What improvements in staff and work unit performance do you see as a result of training?
- 6.4 What improvements do you see in facility performance in terms of (A) compliance and (B) minimizing repairs and down time?



## نموذج مقابلة

### (مشرف/مدير)

#### بناء القدرات -- التعلم من أجل التطبيق

#### 1. أهمية التدريب:

1.1 إلى أي مدى تدعم موظفيك في التعلم وتحسين مهاراتهم الوظيفية؟ وكيف؟

1.2 هل تعلم موظفيك المواضيع التي اعتبرت ذات أولوية عليا؟

#### 2. لغة التدريس:

2.1 تم التدريب باللغة العربية مع استخدام اللغة الانجليزية لبعض المصطلحات, ما هو رأيكم في ذلك؟

2.2 لماذا؟

#### 3. المعرفة:

1.3 إلى أي مدى تدرك محتوى التدريب الذي تعلمه موظفيك؟

2.3 ما هي بشكل محدد التطورات العالمية الجديدة والتقنيات الحديثة التي أردت من موظفيك تعلمها؟ هل كانت هذه التقنيات ضمن التدريب؟

3.3 إلى أي مدى ضمن التدريب بان الموظفين قد تعلموا أهمية المياه الصالحة للشرب و/أو قوانين/أنظمة مراقبة التلوث أثناء ممارستهم لأعمالهم؟

4.3 إلى أي مدى ضمن التدريب بان الموظفين قد تعلموا أهمية معدات السلامة واجراءات التشغيل والصيانة السليمة بعملهم؟

#### 4. السلوكيات:

1.4 هل تتوقعون أن هذا التدريب سيؤدي الى خسارة في الموظفين وانتقالهم الى شركات/مؤسسات أخرى؟

2.4 كيف يمكن تفادي ذلك؟

3.4 برأيك ، إلى أي حد يدرك أهالي وأصدقاء وجيران موظفيكم أهمية وظائفهم في حماية الصحة العامة من خلال توفير المياه الصالحة للشرب و/أو أهمية السيطرة على التلوث لحماية البيئة؟

## 5. المهارات:

- 1.5 ما هي المهارات التقنية الجديدة التي تعلمها موظفيك لتمكنهم من القيام بعملهم على نحو أفضل؟
- 2.5 ما هي المهارات الادارية/الإشرافية الجديدة التي تعلمها موظفيك لتمكنهم من القيام بعملهم على نحو أفضل؟

## 6. الأثر المستقبلي:

- 1.6 كيف تدعمون موظفيكم في تطبيق المعارف والمهارات الجديدة في عملهم؟
- 2.6 كيف تراقبون أداء الموظفين بعد التدريب لتقييم أثر التدريب؟
- 3.6 ما هي التحسينات في أداء الموظفين والوحدات التي يعملون بها كنتيجة للتدريب؟
- 4.6 ما هي التحسينات في أداء المرفق (المحطة) من حيث الالتزام بمتطلبات العمل وتقليل الأعطال/الاصلاحات وتوقف العمل؟