

THE ARAB REPUBLIC OF EGYPT

HOLDING COMPANY FOR WATER AND WASTEWATER (HCWW)

SHARKIYA POTABLE WATER AND SANITATION COMPANY (SHAPWASCO)

GHARBIA POTABLE WATER AND SANITATION COMPANY (GHAPWASCO)

MINUFIA COMPANY FOR WATER AND WASTEWATER (MCWW)

**THE PROJECT
FOR
IMPROVEMENT OF MANAGEMENT CAPACITY
OF
OPERATION AND MAINTENANCE
FOR
WATER SUPPLY FACILITIES IN NILE DELTA AREA**

**PROJECT FINAL REPORT
(MAIN REPORT)**

APRIL 2015

JAPAN INTERNATIONAL COOPERATION AGENCY

YACHIYO ENGINEERING CO., LTD.

GE
JR
15 - 066

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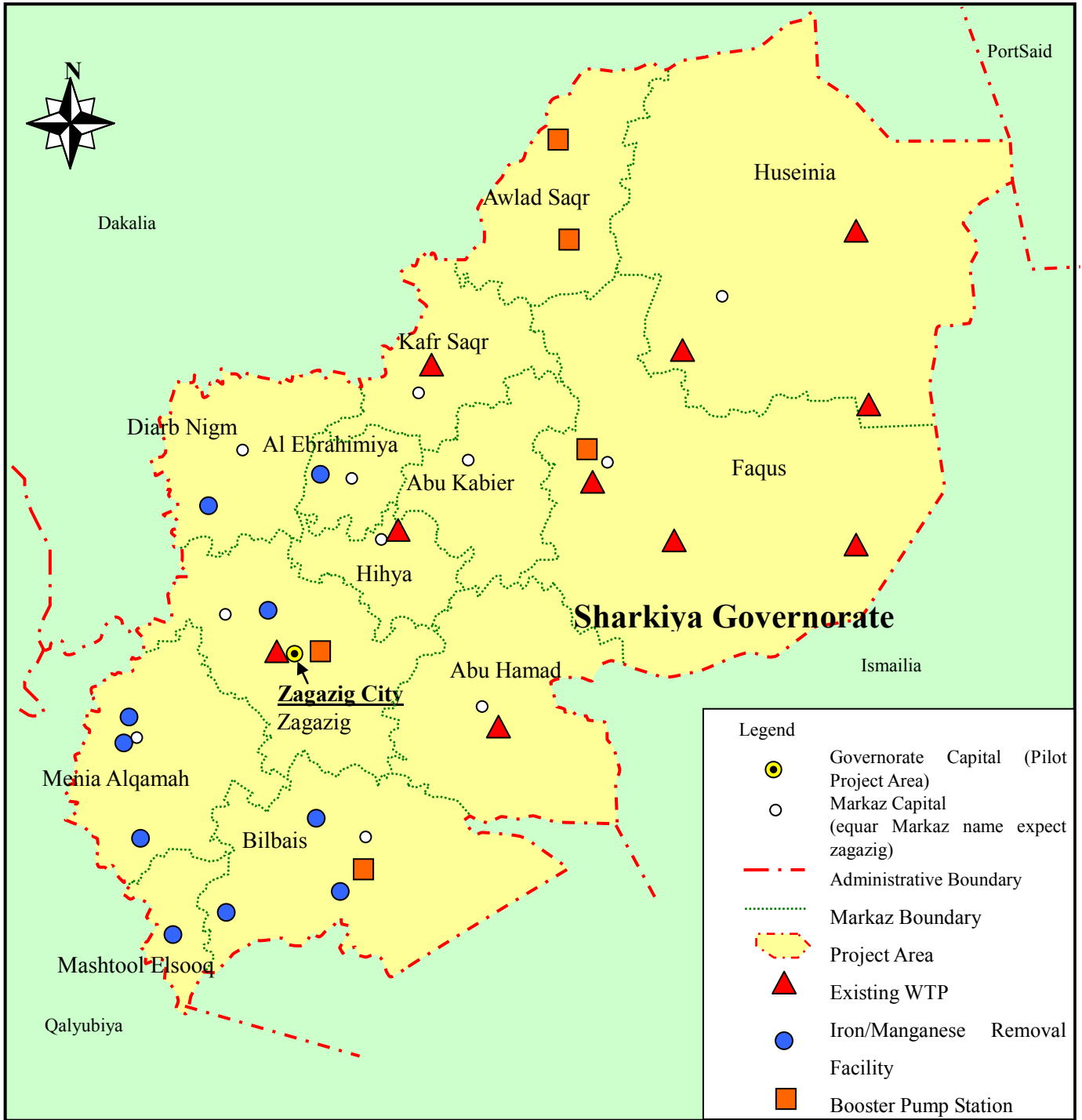
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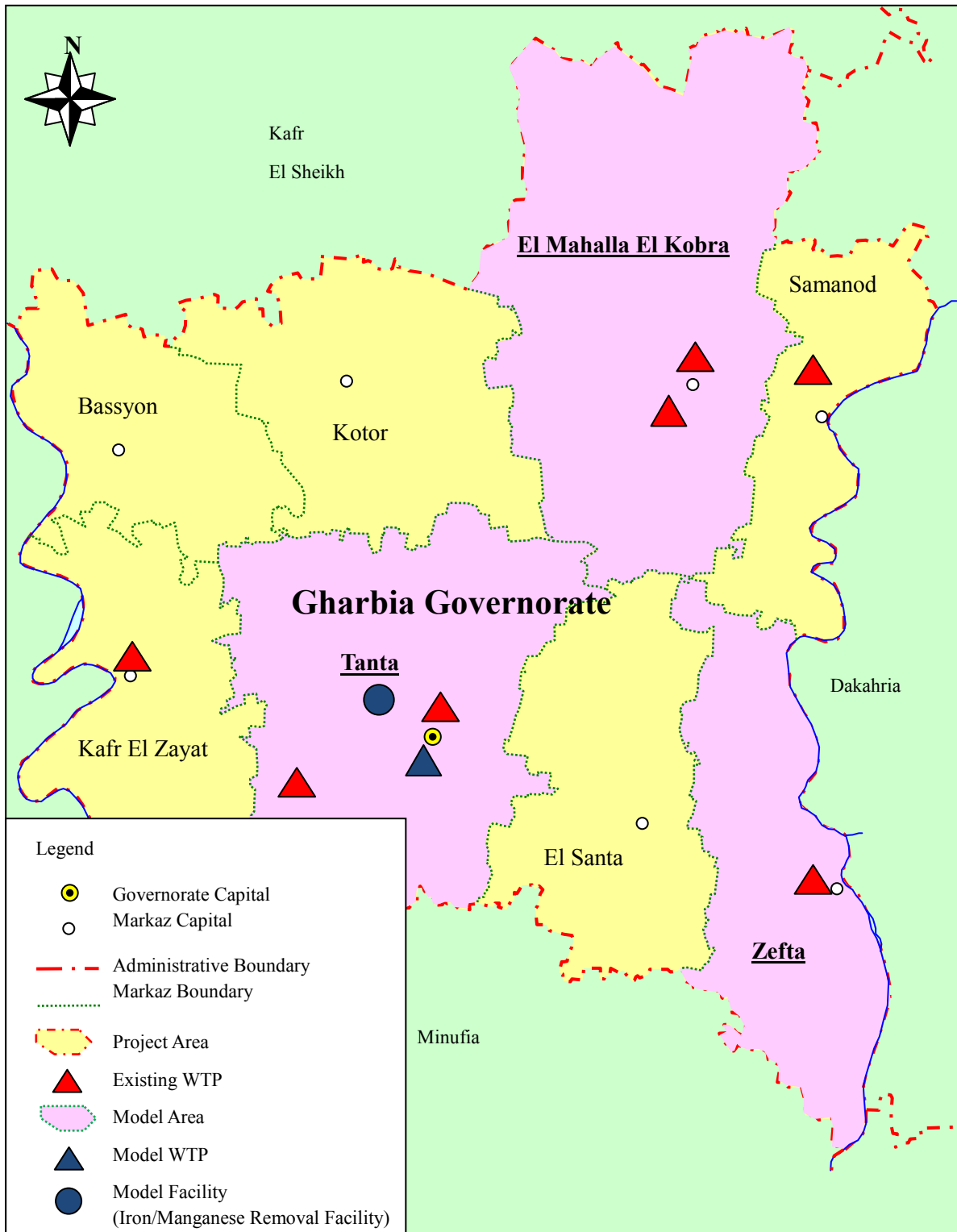


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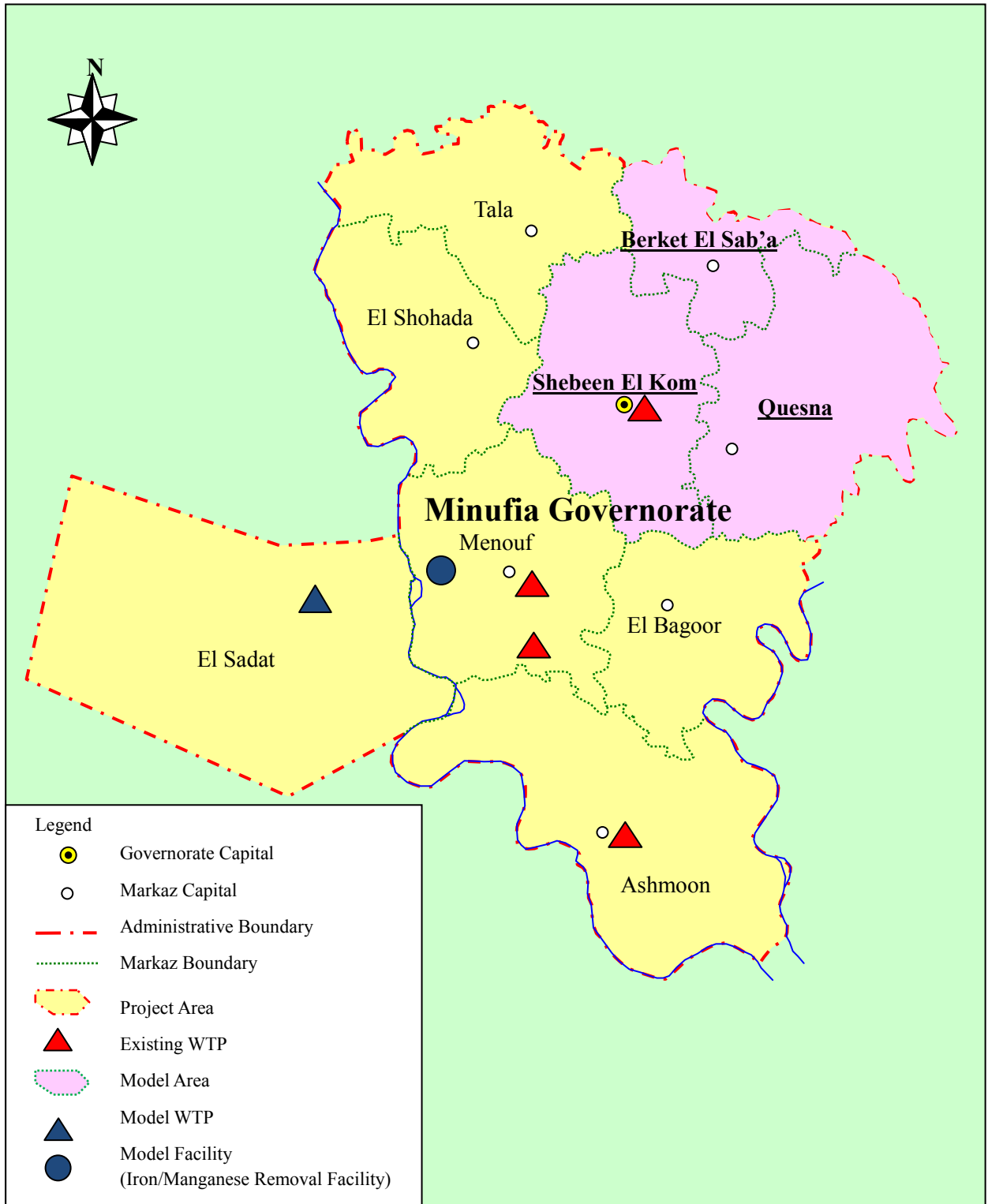
Note: SHAPWASCO

Project Area (Sharkiya Governorate)



Note: GHAPWASCO

Project Area (Gharbia Governorate)



Note: MCWW

Project Area (Minufia Governorate)

General Activities (1/3)



Discussion and signing on Minutes of Meeting for Inception report, May 2011



The 1st JCC meeting, September 2011



The kicking of seminar to share information with other companies in the Nile Delta (audience), September 2011



The kicking of seminar to share information with other companies in the Nile Delta (presentation by C/P member), September 2011



Training of Trainers for coaching skills in SHAPWASCO, October 2011



Management training in Japan, October 2011

General Activities (2/3)



Information exchange with Water Authority of Jordan, October 2012



Mid-term review organized by JICA, November 2012



Observation of water distribution management system in Japan, November 2012



Lecture for mapping system in Japan, November 2012



The 3rd JCC meeting, November 2012



Open Seminar, November 2012

General Activities (3/3)



Terminal Evaluation organized, February 2014



Terminal Evaluation organized, February 2014



Training of Trainers for coaching skills in GHAPWASCO, August 2014



Training of Trainers for coaching skills in MCWW, August 2014



The 5th JCC meeting, March 2014



Open Seminar, March 2014

SOP Activities for GHAPWASCO & MCWW (1/3)



Initial survey with JICA experts, May 2011



Confirmation works for current condition of water supply facilities, October 2011



Confirmation works for current condition of water supply facilities, October 2011



Confirmation works for current condition of water supply facilities, October 2011



Training in SHAPWASCO for the staff members of GHAPWASCO / MCWW, October 2011



Training in SHAPWASCO for the staff members of GHAPWASCO / MCWW, October 2011

SOP Activities for GHAPWASCO & MCWW (2/3)



Preparation of operation records, Mahatet El Sadat El Satheya SWTP, May 2012



Technical skill exchange between MCWW and GHAPWASCO, September 2012



Level adjustment of collecting trough, Tanta El Teraa El Melahia SWTP, October 2012



Check amount of flow meter of NWR team of MCWW, Ashama well station, December 2012



Training in SHAPWASCO for the staff members of GHAPWASCO and MCWW, January 2013



Training of hydraulic analysis for the staff members of GHAPWASCO, January 2013

SOP Activities for GHAPWASCO & MCWW (3/3)



Water quality measurement at Mahalet Marhoom IMRP in GHAPWASCO, April 2013



Activity monitoring by SHAPWASCO at Tanta El Teraa El Melahia SWTP in GHAPWASCO, May 2013



Improvement activity of filter runtime (adjustment of weir level in sedimentation tank) at Gezy IMRP in MCWW, May 2013



Site investigation for the SOP expansion at Tokh Tanbesha IMRP in MCWW, May 2013



Internal workshop on the expansion of SOP activity in MCWW, April 2014



Activity monitoring on water quality management at the laboratory of Mahatet El Sadat El Satheya SWTP in MCWW, April 2014

NRW Reduction Activities for GHAPWASCO & MCWW (1/3)



Mini-seminar for NRW reduction, conducted by SHAPWASCO, June 2011



Workshop for Action plan NRW reduction Activity, October 2011



Site survey on a pilot area, October 2011



Site survey on a pilot area, October 2011



Training in SHAPWASCO for the staff members of GHAPWASCO / MCWW, October 2011



Training in SHAPWASCO for the staff members of GHAPWASCO / MCWW, October 2011

NRW Reduction Activities for GHAPWASCO & MCWW (2/3)



Workshop for water meter reading at MCWW, March 2012



Minimum Night Flow survey in Zefta Markaz with invited staff from Tanta Markaz, April 2012



On-site training for the staff members of branch office of MCWW, December 2012



Training in SHAPWASCO for the staff members of branch office of GHAPWASCO, January 2013



Confirmation work of leakage in Zefta Markaz, January 2013



Confirmation work of leakage in Quesna Markaz, February 2013

NRW Reduction Activities for GHAPWASCO & MCWW (3/3)



Meeting with the staffs of Samanod branch before site training, March 2014



Internal meeting with all branches staffs in Shebeen, November 2013



On-site training for the staffs of Samanod branch of GHAPWASCO, March 2014



On-site training for the staffs of Tala branch of MCWW, December 2013



Implementation for “5 years plan for NRW reduction activity” in Kotor blanch, December 2013



Implementation for “5 years plan for NRW reduction activity” in Menouf blanch, November 2013

WDM Activities for SHAPWASCO (1/3)



Planning works for pilot area of WDM, September 2011



Mini-seminar on WDM, September 2011



Hydraulic analysis on the networks in pilot area, October 2011



Site survey on current condition of water distribution networks, October 2011



Confirmation of location for pipeline, October 2011



Site confirmation of valve condition, October 2011

WDM Activities for SHAPWASCO (2/3)



JICA's mission for scheme of pilot project for WDM, July 2012



Location survey for WDM pressure gauge installation, July 2012



Construction of chamber for water flow meter, December 2012



Construction of chamber for water flow meter, December 2012



WDM monitoring room under construction, February 2013



Interview survey on current condition of WDM, January 2013

WDM Activities for SHAPWASCO (3/3)



Installation of water flow meter in chamber for water flow monitoring, May 2013



Installation of telemeter at street side for data transfer, May 2013



Installation and setting of water flow meter, May 2013



Installation of pressure gauge for pressure monitoring, May 2013



Central monitoring room, constructed by SHAPWASCO, March 2014



Data monitoring activity for water distribution conditions, June 2014

**THE PROJECT FOR
IMPROVEMENT OF MANAGEMENT CAPACITY OF
OPERATION AND MAINTENANCE FOR WATER SUPPLY FACILITY
IN NILE DELTA AREA**

**Project Final Report
(Main Report)**

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Abbreviations

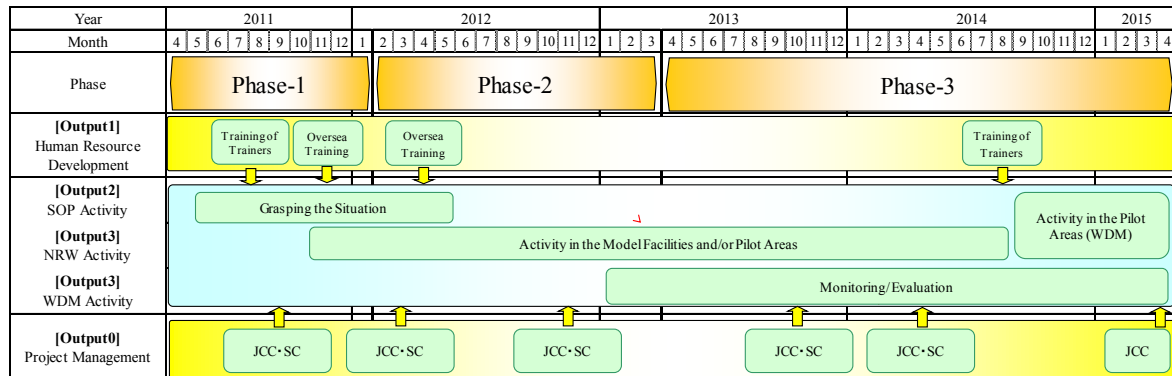
ACs	Affiliated Companies
APO	Annual Plan of Operations
C/P	Counterpart
DMA	District Metered Area
Fe/Mn	Iron and Manganese
FY	Fiscal Year
GHAPWASCO	Gharbia Potable Water and Sanitation Company
GIS	Geographic Information System
HCWW	Holding Company for Water and Wastewater
HQ	Headquarters
IC/R	Inception Report
IEC	International Electrotechnical Commission
IMRP	Iron and Manganese Removal Plants
ISO	International Organization for Standardization
IWA	International Water Association
IWSP	Improved Water and Wastewater Services Programme
JCC	Joint Coordinating Committee
JET	JICA expert team
JICA	Japan International Cooperation Agency
LCD	Liter per Capita per Day
LE	Egyptian Pound
L/s	Liter per second
MCWW	Minufia Company for Water and Wastewater
MDG	Millennium Development Goals
M/M	Minutes of Meeting
MNF	Minimum Night Flow
NOPWASD	National Organization for Potable Water and Sanitary Drainage
NRW	Non-Revenue Water
O&M	Operation and Maintenance
OJT	On the Job Training
P&ID	Piping and Instrumentation Diagram
pcs	Pieces
PDCA	Plan Do Check Act

PDM	Project Design Matrix
PIs	Performance Indicators
PO	Plan of Operation
PTM	Project Team Meeting
PVC	Polyvinyl Chloride
RW	Revenue Water
SC	Steering Committee
SCADA	Supervisory Control and Data Acquisition System
SHAPWASCO	Sharkiya Potable Water and Sanitation Company
SLD	Single Line Diagram
SOP	Standard Operational Procedures
SWTP	Surface Water Treatment Plant
USAID	United States Agency for International Development
WAJ	Water Authority of Jordan
WDM	Water Distribution Management
WTP	Water Treatment Plant

SUMMARY

1. Overall Schedule and Main Activities

The Project Final Report has been prepared for compiling all the activities and the achievements of the Project. The Project has been implemented in three (3) phases from April 2011 to April 2015. Overall schedule and main activities are described in Figure S-1 below:



Source: JICA expert team

Figure S-1 Overall Schedule and Main Activities

The Project period had been scheduled until March 2014. It was extended until August 2014 to cover the interrupted periods for dispatch of JICA experts. The Project activities for SOP (Standard Operational Procedures) and NRW (Non-Revenue Water) reduction were extended until August, 2014. The activities for WDM (Water Distribution Management) were, however, further extended until April 2015, to secure an enough period for activities monitoring.

2. Achievement Levels for the Project

The Project consists of three (3) main activities, which are SOP (Standard Operational Procedures), NRW (Non-Revenue Water) reduction and WDM (Water Distribution Management) activities, to improve the operation and maintenance capacity of Sharkiya Water Supply and Sanitation Company (SHAPWASCO), Gharbia Water Supply and Sanitation Company (GHAPWASCO) and Minufia Water and Wastewater Company (MCWW). And it aims at expanding the technology nurtured through the Project to the entire Nile Delta by the personnel of above affiliated companies. Achievement Levels are summarized as follows:

Table S-1 Achievement Levels for the Project

Objectively Verifiable Indicators	Achievement
[Super Goal] Management capacity of operation and maintenance of water supply facilities is improved in Nile Delta Area	
1. Performance Indicators (PIs) in the fields of management capacity of operation and maintenance are improved in Nile Delta Area	The 1st and the 2nd seminars were held respectively in Sep. 2011(Phase-1) and Nov. 2012(Phase-2), to share the information of the Project progress among companies in the Nile Delta. The 3rd seminar was held in Mar. 2014(Phase-3) to share the information for results and achievement of the Project. Another workshop, which was initiated by GHAPWASCO, was held in Sept. 2012 to share information on leak detection activity nationwide. SHAPWASCO provided a technical presentation of WDM to Red Sea Company for Water and

Objectively Verifiable Indicators	Achievement
	Wastewater, which visited the WDM activities for observation in Jan. 2015. Such activities would contribute to improvement of operation and maintenance capacity in not only the Nile Delta but also the entire Egypt.
[Overall Goal] Management capacity of operation and maintenance of water supply facilities is improved in Sharkiya, Gharbia and Minufia Governorates	
1. PIs in the fields of management capacity of operation and maintenance are improved in Sharkiya, Gharbia, and Minufia Governorates	Activity, toward improvement, has been conducted in the model areas / facilities. SHAPWASCO, GHAPWASCO and MCWW have commenced the dissemination activities in respective Governorate as follows: 1) GHAPWASCO and MCWW prepared a dissemination plans for SOP and NRW reduction activities. They commenced the activities for other than model facilities / areas. 2) The three (3) companies established exclusive departments for SOP, NRW reduction and WDM (WDM is only for SHAPWASCO). They allocated budgets and staff members for the activities. 3) SHAPWASCO commenced expansion of monitoring system for Zagazig City and major water treatment plants in the Governorate although they has not yet prepared the documented plan. The expansion work, including maintenance service, was contracted with a local service provider in Mar. 2015.
[Project Purpose] Management capacity of operation and maintenance of water supply facilities is improved in target areas	
1. PIs in the fields of management capacity of operation and maintenance are improved at the model areas/facilities	PIs to monitor the Project achievements were selected in the 3rd JCC meeting. PIs showing the initial conditions (baselines) were examined in Nov. 2012(Phase-2). Monitoring and analyzing SOP and NRW reduction activities were conducted in Mar. 2013(Phase-3). (1) SOP The model facilities for SOPs achieved the targets for their PIs in the 37.2% of the monitoring period (Sept. 2012 -.Jun. 2014). The model facilities are as follows: 1) GHAPWASCO • Tanta EL Teraa El Melahia (surface water treatment plant) • Mahalet Marhoom (iron/manganese removal plant) • Sberby (well) 2) MCWW • Mahatet El Sadat El Satheya (surface water treatment plant) • Gezy(iron/manganese removal plant) • Ashama (well) (2) NRW Reduction Two (2) out of six (6) model areas reached the target of PI for NRW reduction. Three (3) of four (4) model areas had obvious NRW reductions. The model areas are as follows: 1) GHAPWASCO • Tanta Markaz • El Mahalla El Kobra Markaz • Zefta Markaz 2) MCWW • Shebeen El Kom Markaz • Quesna Markaz • Berket El Sab'a Markaz (3) WDM Low service pressure ratio was improved by WDM activity, although number of complaints was increased. The number of complaints is believed to have been increased due to frequent electricity suspensions. The pilot project area is Zagazig City.

Objectively Verifiable Indicators	Achievement
[Outputs1] Human Resource Development through collaboration among water supply companies in Sharkiya, Gharbia and Minufia Governorates is strengthened	
1-1 More than 3 members each of SOP/NRW teams in SHAPWASCO, GHAPWASCO and MCWW are approved as trainers by Steering Committee	Following numbers of C/P members are approved by the steering committee held in Aug. 2014 to be trainers. SHAPWASCO: SOP 4 members NRW 4 members GHAPWASCO: SOP 6 members NRW 3 members MCWW SOP 6 members NRW 3 members
1-2 More than 20 times of seminars/workshops are organized under inter-company cooperation by the Project team	The following were organized by the Project team till the end of Aug. 2014 : <ul style="list-style-type: none"> ➤ 3 open seminars in Sept. 2011, Nov. 2012, and Mar. 2014 ➤ 3 mini-seminars in Jun. – Jul. 2011 ➤ 1 site tour to observe the situation of SHAPWASCO in Oct. 2011 ➤ 1 site tour to observe the situation of MCWW in Sep. 2012 ➤ Special workshop (5days) for leak detection in Sept. – Oct. 2012 ➤ Information exchange with Water Authority of Jordan (5days) in Oct. 2012 ➤ 9 internal workshops among 3ACs ➤ 3 series of NRW reduction and leak detection training in SHAPWASCO ➤ 1 tour for observation of WDM activity in SHAPWASCO ➤ Total 23 events were organized
[Outputs2] Based on the experiences of SHAPWASCO, SOPs are developed and utilized at the model facilities in Gharbia and Minufia Governorates	
2-1 More than 80% of SOP team members rates understanding of trainings more than 3 on the 5-scale evaluation	C/P members for SOP have been conducting activities according to SOP as well as training on operation. Evaluation test for 12 members (6 members for GHAPWASCO and 6 members for MCWW) was conducted in Phase-3. All tested members exceeded scale 3 on the evaluation test. The team has evaluated that the 12 members acquire necessary skills.
2-2 The model facilities are operated and maintained based on SOP	The Project team prepared SOP for model facilities. Operation in model facilities has been conducted according to the SOP.
2-3 Improvement of PIs for the model facilities are evaluated based on SOP	PIs were selected as targets for improvement. The Project team commenced to improve values of the PIs since Nov. 2012(Phase-2). PIs of all model facilities are in improving trend.
[Outputs3] The institutional skills and experiences of SHAPWASCO for NRW reduction are transferred to NRW teams at the model areas in Gharbia and Minufia Governorates	
3-1 More than 80% of NRW teams members rates understanding of trainings more than 3 on the 5-scale evaluation	C/P members for NRW have been conducting activities for NRW reduction. Evaluation test of leak detection was conducted for seven (7) members (2 members for GHAPWASCO and 5 members for MCWW) in Phase-3 (2013). Another Evaluation test of NRW reduction management was also conducted for six (6) members (3 members for GHAPWASCO and 3 members for MCWW) in Phase-3 (2014). All tested members obtained scale 3 or more on both evaluation tests. The team has evaluated that the tested members acquire necessary skills.
3-2 Water balance analysis is conducted properly for the 3 model areas	The Project team conducted water balance analysis for six (6) model areas. The team examined water meter accuracy and concluded that the meter error should be considered to water balance calculation. One (1) area in GHAPWASCO and one (1) area in MCWW reached the target. Although other four (4) areas didn't reach their target, one (1) area in GHAPWASCO and two (2) areas in MCWW had obvious NRW reduction.

Objectively Verifiable Indicators	Achievement
3-3 100% of detected leakage is repaired at the model area	Leak detection was conducted for all model areas. Total fifteen (15) leakages (7 for GHAPWASCO and 8 for MCWW) were found and all detected leakages were repaired.
[Outputs4] The water distribution management capacity is improved in Sharkiya Governorate as an advanced model	
4-1 Water distribution is managed based on SOP at the model areas	The pilot areas were selected by the Project team in Dec. 2011 – Jul. 2012(Phase-2). The equipment was installed in Apr. 2013 – Jul. 2014(Phase-3). After installation of the monitoring equipment, the Project team has monitored and analyzed the water distribution situation, and recommended modifications of operation modes of water treatment plant and wells. Those activities are conducted according to SOP.
4-2 Issues on water distribution capacity are reported to top management of SHAPWASCO	Through the management activities, the following issues were reported to the top management of SHAPWASCO by C/P team. <ul style="list-style-type: none"> ➤ Replacement of pumps for Zagazig water treatment plant. ➤ Rehabilitation of intake facilities for old plant in Zagazig water treatment plant. ➤ Elevated tank at 6 well stations. ➤ Inspection of wells and rehabilitation of wells if necessary. ➤ Water distribution main to A-3 area. ➤ Expansion of monitoring points for well flows (to be all well stations).
[Outputs0] The project is managed and coordinated properly	
0-1 Agreement on the coordination among SHAPWASCO, GHAPWASCO and MCWW is prepared	SHAPWASCO, GHAPWASCO and MCWW agreed on inter-company cooperation. The steering committee was established by HCWW and the Chairmen of the three affiliated companies (ACs). Moreover, the team arranged inter-company cooperation activities such as workshop and site tour. Problems and issues were discussed and solved in the steering committee and inter-company cooperation activities.
0-2 Project activities are regularly monitored based on PO/APO	PO and APO were prepared by the Project team. Those plans were confirmed and approved by the steering committee and JCC, as well as review of actual progress. PO and APO were modified according to progress of the Project. In the Project, delays due to security conditions and adjustment trouble for WDM equipment were taken into consideration for modification of PO and APO.

Source: JICA expert team

3. Summary of Activity Result for the Project

Result of SOP, NRW reduction and WDM activities is summarized as follows:

Table S-2 Project Activities and Achievements

Project Activities	Achievements
1 Human Resource Development through collaboration among water supply companies in Sharkiya, Gharbia and Minufia Governorates in strengthened	
1-1 Conduct management training for the top management	<ul style="list-style-type: none"> ➤ General guidance on governing system of Japan for water supply was conducted by JICA experts. ➤ Training in Japan for top management was conducted in Oct. 2011. The contents cover wider fields of water supply management from the law establishment to O&M of treatment facilities. The contents include systems for human resources development, cooperation among water service providers, functions of association for water service providers.
1-2 Conduct Training of Trainers (TOT) for developing SOP	<ul style="list-style-type: none"> ➤ TOT for coaching skills was conducted for trainer candidates of SHAPWASCO in Oct. 2011(Phase -1). ➤ TOT was conducted for trainer candidates of

Project Activities	Achievements
	GHAPWASCO and MCWW in Aug. 2014(Phase-3). ➤ Technical skills of members in SHAPWASCO, GHAPWASCO and MCWW were improved through the Project activities on SOP and NRW reduction activities.
1-3 Conduct TOT for NRW reduction	Same as the above description.
1-4 Disseminate the contents, the manners and the results of the collaboration among SHAPWASCO, GHAPWASCO and MCWW to the water supply companies in Nile Delta Area through reports and workshops	Three seminars were organized in Sept. 2011, Nov.2012 and Mar. 2014 for inviting all ACs in the Nile Delta. All companies for water supply in Nile Delta were invited to the seminar. Moreover, a special workshop was initiated by GHAPWASCO to share the information of leak detection among stakeholders in Egypt. Those are disseminating activities of information obtained in the Project.
2 Based on the experiences of SHAPWASCO, SOPs are developed and utilized at the model facilities in Gharbia and Minufia Governorates	
2-1 Survey the current conditions of water supply facilities in Gharbia and Minufia Governorates	C/P team members, together with JICA experts, conducted the survey on current conditions of water supply facilities in Jun. – Oct. 2011(Phase-1). Results were summarized as short list of candidates for model facilities in Jun. – Oct. 2011(Phase-1).
2-2 Select 3 model facilities in Gharbia and Minufia Governorates each	In Oct. – Nov. 2011, based on the short list, the Project team selected three model facilities (one water treatment plant, one iron/manganese removal plant and one well plant) were selected for each of Gharbia and Minufia Governorates. The treatment plant for GHAPWASCO and the well for MCWW were replaced, in Oct. – Nov. 2011(Phase-2), with other ones for better trial activities.
2-3 Organize SOP teams	SOP team (headquarters team) was established in each of Gharbia and Minufia Governorates in May 2011(Phase-1). Site teams were organized for the model facilities in Jan. 2012(Phase-2).
2-4 Conduct training for developing and applying SOPs at the facilities of Sharkiya Governorate	Site tours, which are events to invite the members of GHAPWASCO and MCWW to facilities in SHAPWASCO, were done in Oct. 2011 and Nov. 2012.
2-5 Revise SOPs of Sharkiya Governorate, if necessary	SOP for emergency cases is prepared as an improvement of the existing SOP of SHAPWASCO in Sep. – Nov. 2012(Phase-2).
2-6 Develop SOPs for model facilities in Gharbia and Minufia Governorates based on SOPs for SHAPWASCO	SOPs were prepared in Dec. 2011 – May 2013 (Phase-2), and finalized in Jun. 2013 (Phase-3).
2-7 Conduct On-the-Job Training for GHAPWASCO and MCWW to apply SOPs in operation and maintenance	Effectiveness of SOP activities is verified by numerical value of PIs. JET conducted OJT to have C/P team clarify the objectives of SOP and necessary activities toward the target achievement.
2-8 Monitor the progress of SOP activities	During OJT, the Project team monitored the operation and maintenance condition in each model facility, and checked the achievement of PIs along with the verification of effectiveness of SOPs.
2-9 Draft the policy/plan for disseminating SOP to the other Markazes	Toward the achievement of overall goal, JET and C/P team jointly drafted disseminating plans of SOP in Feb. – Mar. 2014(Phase-3).
3 The institutional skills and experiences of SHAPWASCO for NRW reduction are transferred to NRW teams at the model areas in Gharbia and Minufia Governorates	
3-1 Analyze the current situation on NRW in Gharbia and Minufia Governorates	C/P team members, together with JICA experts, conducted the survey/analysis on situations on NRW by Markaz in Jun. – Nov. 2011(Phase-1). Results were summarized as short list

Project Activities	Achievements
	for model areas in Jun. – Nov. 2011(Phase-1)..
3-2 Select 3 model areas for NRW reduction in Gharbia and Minufia Governorates each	In Oct. – Nov. 2011, based on the short list, the Project team selected three model areas for each of Gharbia and Minufia Governorates in Oct. – Nov. 2011(Phase-1).
3-3 Organize NRW reduction teams	NRW team (headquarters team) was established in each of Gharbia and Minufia Governorates in May 2011 (Phase-1). It was strengthened and reformed in Jan. 2012 – Aug. 2014(Phase-2 and Phase-3), through assignments of members of Markazes to conduct the activity by branch offices.
3-4 Formulate an action plan for NRW reduction activities based on the action plan for SHAPWASCO	The Project team compiled all necessary activities for the Project as the action plan in Oct. 2011(Phase-1). It was prepared for each of Gharbia and Minufia Governorates.
3-5 Conduct training on general practice of NRW reduction	Training for general practice of NRW, including some part of leak detection, was conducted in Oct. 2011 at SHAPWASCO. It includes the initial training for water leak detection in the training yard. In Mar. 2012, a supplemental training was conducted by SHAPWASCO to have trainers in GHAPWASCO and MCWW. Trainers of SHAPWASCO explained their experiences in several mini-seminars and workshops.
3-6 Conduct training at the training yard in Sharkiya Governorate	Initial training was done as described above. In Jan. – Feb. 2013, further leak detection training was done at the training yard to have more skilled members in GHAPWASCO and MCWW.
3-7 Conduct training at model areas for water distribution management in Sharkiya Governorate	Observation tour for GHAPWASCO and MCWW was conducted in Aug. 2014. The purpose and beneficial effect of WDM activity were discussed and confirmed through obtained data and site observation in Sharkiya governorate.
3-8 Prepare GIS drawing for model areas in Gharbia and Minufia Governorates	It was done for the selected model areas in Jan. 2012 – Feb. 2013(Phase-2). According to the drawings, network isolations and location of chambers were examined.
3-9 Make water balance analysis at model areas	Pilot project areas in six (6) model areas were determined through minimum night flow (MNF) survey and field survey in Mar. 2012(Phase-2). After selection of pilot project areas, all water balance analyses for the six (6) areas before leak detection were completed in Jan. 2012 – Aug. 2014(Phase-2 and Phase-3). Metering error was considered into water balance analysis.
3-10 Conduct leak detection survey at model areas	Leak detection survey at all six (6) model areas was conducted in Jan. 2012 – Aug. 2014(Phase-2 and Phase-3). All leak points were repaired during the Project
3-11 Make water balance analysis after repair works	All water balance analyses at six (6) model areas after repair works were properly completed in Jan. 2012 – Aug. 2014(Phase-2 and Phase-3).
3-12 Draft policy/plan for disseminating NRW reduction activities to the other Markazes	“Five (5) years plan for NRW reduction activity” for GHAPWASCO and MCWW was established as “Draft policy/plan for disseminating NRW reduction activity” in Jul. 2013. MCWW revised the plan for “One (1) year plan” in Aug. 2014.
4 The water distribution management capacity is improved in Sharkiya Governorate as an advanced model	
4-1 Discuss methods and conduct survey for water distribution management	C/P team members discussed the purpose of water distribution management in May - Sept. 2011(Phase-1), as well as methods and necessary equipment, together with JICA experts. It was continued until May - Sept. 2011.
4-2 Conduct training for water distribution	Project team organized an internal workshop in Sept. 2011, in

Project Activities	Achievements
management	order to understand purposes and options for activities as well as necessary equipment.
4-3 Formulate a plan for water distribution management	The Project team selected Zagazig city for the target area of pilot project. It was divided into 6 DMAs (candidates). In Jul. 2012, together with JICA HQ team, the pilot project plan was discussed. After the discussions, A-4 area was selected as pilot area while water pressure is monitored in whole Zagazig at 10 points. The Project team compiled the plan of pilot project in Dec. 2012.
4-4 Install the equipment for water distribution management at the model area	JICA purchased the equipment for water flow/pressure monitoring. SHAPWASCO constructed a central monitoring room and chambers for the equipment installation. The equipment installation was commenced in Apr. 2013. Adjustments of the equipment and system verification, however, were conducted until Jul. 2014.
4-5 Operate the system	Water flow/pressure monitoring system is operated according to manuals prepared by the equipment manufacturers and SOP. The operation includes the following: <ul style="list-style-type: none"> ➤ Data monitoring on screen. ➤ Data analysis such as average / maximum flow. ➤ Low service pressure ratio ➤ Complaints from the citizen for water suspension and weak pressure. ➤ Recommendation of modification for operation modes of water treatment plant and wells.
4-6 Develop SOP for water distribution management	Draft SOPs for monitoring activities were prepared in the middle of Mar. 2013 – Aug. 2014(Phase-3). It was improved through activities of WDM and finalized in Nov. 2014.
4-7 Evaluate the operation and SOP for water distribution management	WDM including SOP was evaluated by the Project team. The Project team evaluates the system as necessary for Zagazig. As a result of the pilot activities, the following improvement are realized: <ol style="list-style-type: none"> 1) Awareness of operators of water treatment plant was much improved to secure sufficient water pressure. 2) Issues are able to be explained by analyzed data and graph. 3) The provision of analyzed data facilitates the decision making for rehabilitation.

Source: JICA expert team

CHAPTER 1 INTRODUCTION

1.1 Background

Having made the establishment of public water supply and wastewater services one of its priority goals, Egypt is striving to improve business management in the public water supply and waste water sector. It has been converting agencies in this sector into public corporations since 2004, and currently the Holding Company for Water and Wastewater (HCWW) oversees the potable water and sanitation companies in each Governorate.

In line with the adoption of the public corporation model, the potable water and sanitation companies in each Governorate are required to achieve higher level of efficiency. Against this background, JICA implemented the Project for improvement of management capacity of operation and maintenance for Sharkiya Potable Water and Sanitation Company (2006~2009) (hereafter referred to as the previous project), entailing the formulation of the Standard Operational Procedure (SOP) for facilities and implementation of a program for developing capacity for reduction of non-revenue water (NRW). As a result, effects were confirmed in terms of higher efficiency.

HCWW developed a plan to transfer the know-how learned in the previous project and to deploy similar improvement programs throughout the Nile Delta. This entails transferring the technology nurtured in Sharkiya Potable Water and Sanitation Company (SHAPWASCO) to the potable water supply and sanitation companies in neighboring Gharbia Governorate (GHAPWASCO) and Minufia Governorate (MCWW). And it planned that the skill of SHAPWASCO shall be improved furthermore. At the same time it issued a request for technical cooperation to the Government of Japan. Accordingly Japan International Cooperation Agency (JICA) conducted the detailed planning study from January to March 2010 and confirmed the Project contents by record of discussions (R/D) in August 2010, and the JICA expert team commenced their work in Egypt on the 15th May 2011.

In the Inception meeting, held on the 25th May 2011, the Inception Report (IC/R) of the Project was presented by the JICA expert team and approved by HCWW, SHAPWASCO, GHAPWASCO and MCWW. According to the Inception Report (IC/R), the Project was commenced by both the JICA expert team and the Egyptian side.

1.2 Objectives of the Project

The Objectives of the Project are summarized as follows:

[Super Goal] Management capacity of operation and maintenance of water supply facilities is improved in Nile Delta Area

[Overall Goal] Management capacity of operation and maintenance of water supply facilities is improved in Sharkiya, Gharbia and Minufia Governorates

[Project Purpose] Management capacity of operation and maintenance of water supply facilities is improved at the model areas/facilities in Sharkiya, Gharbia and Minufia Governorates

The following outputs are expected to be gained from the Project:

- [Outputs]**
- Human Resource Development through collaboration among water supply companies in Sharkiya, Gharbia and Minufia Governorates is strengthened
 - Based on the experiences of SHAPWSCO, SOPs are developed and utilized at the model facilities in Gharbia and Minufia Governorates
 - The institutional skills and experiences of SHAPWSCO for NRW reduction are transferred to NRW teams at the model areas in Gharbia and Minufia Governorates
 - The water distribution management capacity is improved in Sharkiya governorate as an advanced model
 - The project is managed and coordinated properly

Activities in the Project are focused on the following:

- [Activities]**
- Activity for human resource development such as training.
 - Activity for Improvement of operation and maintenance capacity of water supply facilities (SOP : Standard Operational Procedures)
 - Activity for reduction of Non Revenue Water (NRW)
 - Activity for development of water distribution management (WDM)
 - Activity for development of management among the 3 Affiliated Companies (ACs)

The Project Design Matrix (PDM0) and Plan of Operation (PO0) were improved to PDM1, PO1 in the JCC meeting, on the 27th September 2011. After then, they have been modified in several times according to progress of the Project. The last PDM, which is PDM3, modified on the 30th of October 2013. The PO has been modified four times and the last one, which is PO4, approved on the 31st August 2014.

1.3 Project Area

The Project Sites are categorized according to the activities as follows:

<For SOP Activity>

- Model facilities in Gharbia Governorate:
 - Tanta El Teraa El Melahia Surface water treatment plant (SWTP)
 - Mahalet Marhoom Iron/manganese removal plant (IMRP)
 - Seberbay Well
- Model facilities in Minufia Governorate:
 - Mahatet El Sadat El Satheya Surface water treatment plant (SWTP)
 - Gezy Iron/manganese removal plant (IMRP)
 - Ashama Well

<For NRW Reduction Activity>

- Model area in Gharbia Governorate:
 - Tanta Markaze
 - El Mahalla El Kobra Markaze
 - Zefta Markaze
- Model area in Minufia Governorate:
 - Shebeen El Kom Markaze
 - Qesna Markaze
 - Berket El Sab'a Markaze

<For WDM Activity>

- Pilot project area in Sharkiya Governorate:
 - Zagazig City

1.4 Structure for Project Implementation

The Project was conducted under the following implementation structure.

1.4.1 Formation for Project Implementation

The Project is being conducted by the following members:

(1) Counterpart Agencies

Supervision:

- Holding Company for Water and Wastewater (HCWW)

Implementation:

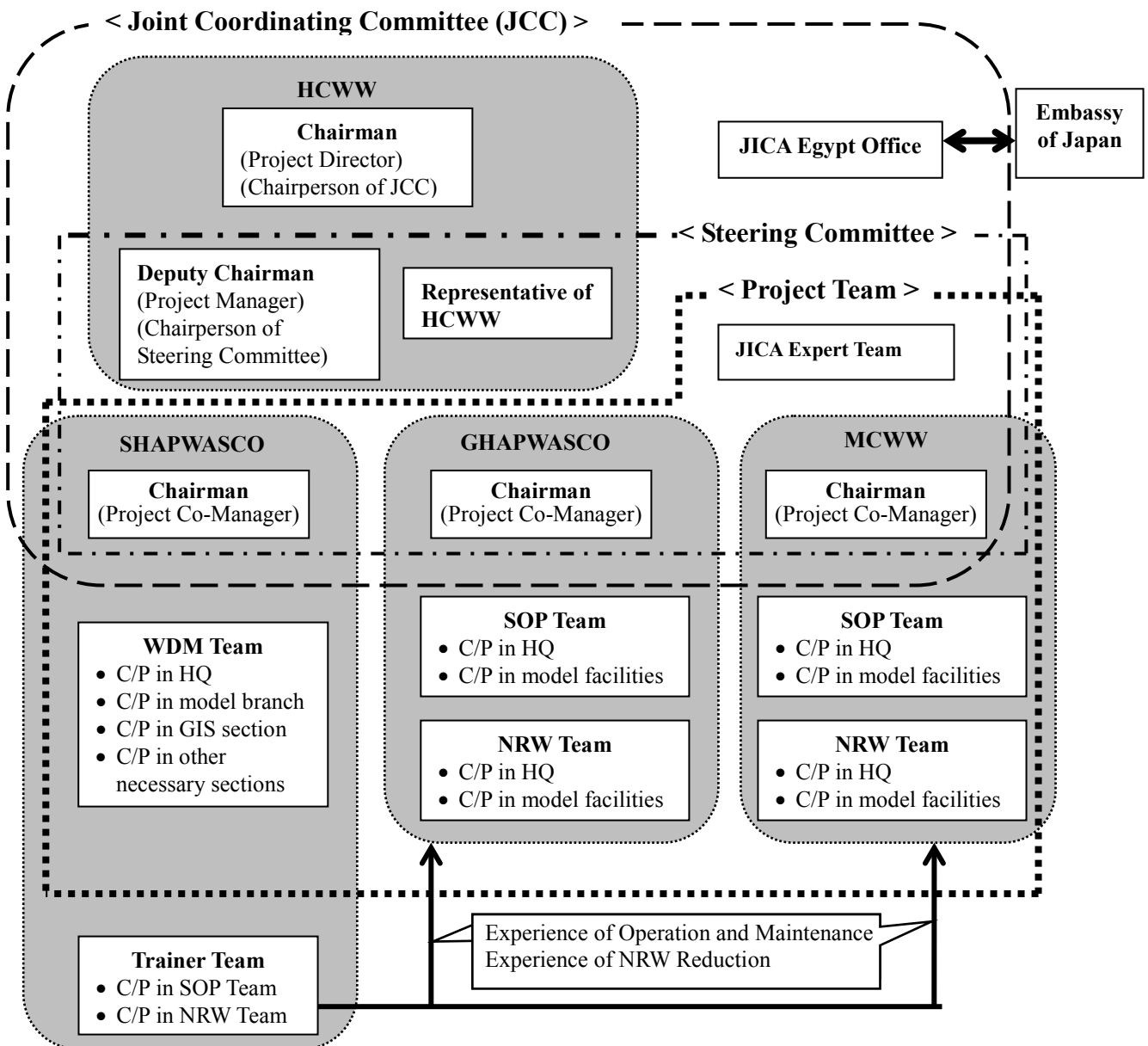
- Sharkiya Potable Water and Sanitation Company (SHAPWASCO)
- Gharbia Potable Water and Sanitation Company (GHAPWASCO)
- Minufia Company for Water and Wastewater (MCWW)

(2) Key Members for the Project

- Project Director :Chairman, HCWW
- Project Manager :Deputy Chairman, HCWW
- Project Co-Manager :Chairmen of SHAPWASCO, GHAPWASCO and MCWW
- Counterpart :Staffs of SHAPWASCO, GHAPWASCO and MCWW

Figure 1-1 illustrates the project implementation organization.

Note: Head of Project Sector in HCWW was the Project Manager at the beginning of the Project. Since he was promoted to Vice Chairman of HCWW in the course of the Project, the post of Project Manager was modified to be for the Vice Chairman of HCWW.



Source: Project team

Figure 1-1 Organizational Structure of the Project Implementation

(3) Joint Coordinating Committee (JCC)

Joint Coordinating Committee (JCC) was formed in May 2011. Chairman of Holding Company for Water and Wastewater (HCWW) has been nominated as the Project Director. The Deputy Chairman of HCWW is assigned as the Project Manager. JCC has overseen all activities of the Project for progress and in / outputs. The members of JCC are as follows:

Table 1-1 Members of Joint Coordinating Committee (JCC)

Role	Member
- Chairman	➤ Chairman of HCWW
- Members on Egyptian Side	➤ Deputy Chairman of HCWW
	➤ Chairman of SHAPWASCO
	➤ Chairman of GHAPWASCO
	➤ Chairman of MCWW
	➤ Staffs of SHAPWASCO, GHAPWASCO and MCWW
- Members on Japanese Side	➤ Chief Adviser
	➤ JICA Experts
	➤ Representatives of JICA Egypt Office
	➤ Other personnel concerned to be dispatched by JICA , if necessary

Source: JICA expert team

(4) Steering Committee (SC)

Steering Committee (SC) was formed by Deputy Chairman of HCWW, Chairmen of SHAPWASCO, GHAPWASCO and MCWW, and JICA experts. SC held seven meetings from the 1st June 2011 to the 31st August 2014. In the meetings of SC, issues are discussed for cooperation among the three (3) companies, responsibilities and roles of each companies and management of progress and outputs. The results of the meetings are summarized in the minutes of meeting. The members of SC are as follows:

Table 1-2 Members of Steering Committee (SC)

Role	Member
- Chairman	➤ Deputy Chairman of HCWW
- Members	➤ Chairman of SHAPWASCO
	➤ Chairman of GHAPWASCO
	➤ Chairman of MCWW
	➤ Head of SOP team, GHAPWASCO
	➤ Head of SOP team, MCWW
	➤ Head of NRW team, GHAPWASCO
	➤ Head of NRW team, MCWW
	➤ Head of WDM team, SHAPWASCO
➤ JICA Experts	

Source: JICA expert team

(5) Project Team

The Project team has been organized by Counterpart (C/P) team and JICA expert team. It was formed separately in each of SHAPWASCO, GHAPWASCO and MCWW. It consists of the following members:

Table 1-3 Members of Project Team

Role	Member
- Project Co-Manager	➤ Chairman of company (each of SHAPWASCO, GHAPWASCO, MCWW)
- Member	➤ C/P team members of company (each of SHAPWASCO, GHAPWASCO, MCWW)
	➤ JICA expert team members

Source: JICA expert team

(6) Counterparts

SOP, NRW and WDM teams of SHAPWASCO, GHAPWASCO, and MCWW were organized. Those were strengthened in steps according to the progress.

[SHAPWASCO]

Counterpart team members are listed below (Total : Twenty one (21) members) :

Table 1-4 Counterpart Members of SHAPWASCO

C/P Name	Title	Field	Working Period	Note
Mr. Ahmed Abdeen	Chairman	Management	May, 2011 – Jan., 2014	
Mr. Ayman Abd El Kader	Chairman	Management	Jan., 2014 - Apr., 2015	
WDM Team in Headquarters (HQ)				
Mr. Alaa El Din Mohamed	Head of C/P Team/ Head of NRW Team Headquarters (HQ)	Management	May, 2011 – Apr., 2015	
Mr. Ahmed Maher	Assistant for head of WDM team/HQ	Engineer	May, 2011 – Apr., 2015	
Mr. Abd El Rahim Mohamed	Assistant for head of WDM team/HQ	Engineer	May, 2011 – Dec., 2013	On leave
Mr. Mohamed Atef	Assistant for head of WDM team/HQ	Engineer	May, 2011 – Apr., 2015	
Mr. Mostafa Ibrahim	Assistant for head of WDM team/HQ	Engineer	May, 2011 – Apr., 2015	
Mr. Tamer Kamel Hussein	Assistant for head of WDM team/HQ	Engineer	May, 2011 – Apr., 2015	
SOP Team				
Mr. Abd El Shafi Abd El Aziz Mohamed	SOP team	Engineer	May, 2011 – Apr., 2015	
Mr. Ali El Mosalami	SOP team	Engineer	May, 2011 – Apr., 2015	
Mr. Gamal Abd El Hameed	SOP team	Engineer	May, 2011 – Apr., 2015	
Mr. Samir Ghareeb	SOP team	Engineer	May, 2011 – Apr., 2015	
Mr. El Sayed Mostafa	SOP team	Engineer	May, 2011 – Apr., 2015	
Ms. Heba Mahmoud	SOP team	Engineer	May, 2011 – Apr., 2015	
Mr. Ahmed Saeed Abd El	SOP team	Engineer	May, 2011 – Apr., 2015	

C/P Name	Title	Field	Working Period	Note
Halim				
Ms. Marwa Mohie Atia	SOP team	Technician	May, 2011 – Apr., 2015	
Mr. Mohamed Salah	SOP team	Technician	May, 2011 – Apr., 2015	
NRW Team				
Mr. Saeed Mohamed Attia	NRW team	Engineer	May, 2011 – Apr., 2015	
Ms. Walaa Hamdi	NRW team	Engineer	May, 2011 – Apr., 2015	
Ms. Walaa Mohamed Ali	NRW team	Engineer	May, 2011 – Apr., 2015	
Mr. Salama Mohmoud Abd Alaal	NRW team	Assistant Engineer	May, 2011 – Apr., 2015	
Mr. Mr. Mohamed Baker	NRW team	Assistant Engineer	May, 2011 – Apr., 2015	
Mr. Tamer Wael Abd Elhady	NRW team	Technician	May, 2011 – Apr., 2015	

Source: JICA expert team

[GHAPWASCO]

Counterpart team members are listed below (Total : 83 members) :

Table 1-5 Counterpart Members of GHAPWASCO

C/P Name	Title	Field	Working Period	Note
Mr. Ayman Abd El Kader	Chairman	Management	May, 2011 – Jan., 2014	
Mr. Mahmoud Zaki Assad	Chairman	Management	Jan., 2014 – Apr., 2015	
Mr. Abdullah El Letty	Head of C/P team	Management	May, 2011 – May, 2012	Retired
Mr. Adel Attia	Head of C/P team	Head of C/P team	Jun., 2012 – Aar., 2015	
SOP Team in Headquarters (HQ)				
Mr. Ahmed El Maleh	SOP team leader/HQ	Engineer	Jun., 2012 – Aar., 2015	
Mr. Rizk El Fiky	SOP member/HQ	Engineer	Sep., 2011 – Apr., 2015	
Mr. Samy Mogahed	SOP member/HQ	Engineer	Sep., 2011 – Jul., 2012	Left C/P team
Mr. Essam Badawy	SOP member/HQ	Engineer	Sep., 2011 – Jul., 2012	Left C/P team
Mr. Nagy youssry	SOP member/HQ	Engineer	Sep., 2011 – Jun., 2012	Left Company
Mr. Mohamed Masood	SOP member/HQ	Engineer	Jul., 2012 – Apr., 2015	
Mr. Mahmoud Badr	Electricity SOP member/HQ	Engineer	Jul., 2011 – Apr., 2015	
Mr. Mekawy Mekawy	WQMSOP member/HQ	Chemist	Nov., 2011 – Apr., 2015	
Mr. Gad Abdel Monsef Gad	SOP member/HQ	Engineer	Aug., 2013 – Apr., 2015	
SOP Team in Branches				
Mr. Moataz Riyad Hassan	Station manager / Melahia SWTP	Engineer	Jul., 2012 – Apr., 2015	
Mr. Mahmoud El Sayed Sarhan	Vice manager/ Melahia SWTP	Engineer	Jul., 2012 – Apr., 2015	
Ms. Hemat Fathy Hozayfa	Laboratory manager/ Melahia SWTP	Chemist	Jul., 2012 – Apr., 2015	
Mr. Goerge Naguib Abdo	Senior technician/ Melahia SWTP	Technician	Jul., 2012 – Apr., 2015	
Mr. Saeed Eid Kombar	Senior technician/ Melahia SWTP	Technician	Jul., 2012 – Apr., 2015	
Mr. Ramy Mostafa El Feky	Technician/ Melahia SWTP	Technician	Jul., 2012 – Apr., 2015	
Mr. Mahrous Mohamed El Zayat	Technician/ Melahia SWTP	Technician	Jul., 2012 – Apr., 2015	
Mr. Amir El Safty	Technician/ Melahia SWTP	Technician	Jul., 2012 – Apr., 2015	
Mr. Mohamed Aly Saber	Technician/ Melahia SWTP	Technician	Jul., 2012 – Apr., 2015	
Mr. Mohamed Ahmed Balat	Technician/ Melahia SWTP	Technician	Jul., 2012 – Apr., 2015	

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C/P Name	Title	Field	Working Period	Note
Mr. Huessein Youssef Shahin	Station manager / Mahalet Marhoum IMRP	Technician	Sep., 2012 – Apr., 2015	
Mr. El Mohamady Mekawy	Senior technician / Mahalet Marhoum IMRP	Technician	Sep., 2012 – Apr., 2015	
Mr. Mahmoud Abou El Anein	Technician / Mahalet Marhoum IMRP	Technician	Sep., 2012 – Apr., 2015	
Mr. Ahmed El Maraghy	Technician / Mahalet Marhoum IMRP	Technician	Sep., 2012 – Apr., 2015	
Mr. Ahmed Shoieb	Samanoud SWTP	Engineer and facility manager	Dec., 2013 – Apr., 2015	
Mr. Ahmed El Shimy	Samanoud SWTP	Engineer	Dec., 2013 – Apr., 2015	
Mr. Malek Abo El Fadl	Samanoud SWTP	Chemist	Dec., 2013 – Apr., 2015	
Mr. Hamdy El Sayed Ramadan	Samanoud SWTP	Chemist	Dec., 2013 – Apr., 2015	
Mr. Ahmed Mahmoud	Samanoud SWTP	Chemist	Dec., 2013 – Apr., 2015	
Mr. Magdy Sherif	Samanoud SWTP	Technician	Dec., 2013 – Apr., 2015	
Mr. Abdel Aty Galal	El Ramlia IMRF	Manager/technician	Dec., 2013 – Apr., 2015	
Mr. Sayed Bayoumy Sharaf	El Ramlia IMRF	Technician	Dec., 2013 – Apr., 2015	
Mr. Fath El Bab Saber	El Ramlia IMRF	Technician	Dec., 2013 – Apr., 2015	
Mr. Reda bdel Hady Zaki	El Ramlia IMRF	Technician	Dec., 2013 – Apr., 2015	
Mr. Ahmed Fath El Bab	El Ramlia IMRF	Technician	Dec., 2013 – Apr., 2015	
Mr. Mohamed Ali El Meliegy	Shobrabeel WPS	Manager/technician	Dec., 2013 – Apr., 2015	
Mr. Mohamed Saad Gouda	Shobrabeel WPS	Technician	Dec., 2013 – Apr., 2015	
Mr. Saeed Khaled Ibrahim	Shobrabeel WPS	Technician	Dec., 2013 – Apr., 2015	
Mr. Suliman El Sayed Suliman	Shobrabeel WPS	Technician	Dec., 2013 – Apr., 2015	
Mr. Ibrahim Ahmed Shehata	Shobrabeel WPS	Technician	Dec., 2013 – Apr., 2015	
Mr. El Hussein El Sayed Sengaf	Shobrabeel WPS	Technician	Dec., 2013 – Apr., 2015	
NRW Team in Headquarters (HQ)				
Mr. Ahmed Rabee'	NRW team leader/HQ	Engineer	Jun., 2011 – Apr., 2015	
Mr. Omar Salah El Din	NRW member/HQ	Engineer	Jun., 2011 – Apr., 2015	
Mr. Ahmed Ramadan El Bakary	NRW member/HQ	Engineer	Jun., 2011 – Mar., 2012	Left C/P team
Mr. Mohamed Masood	NRW member/HQ	Engineer	Mar., 2012 – Jun., 2012	Moved to SOP
Mr. Gad Abdel Monsef Gad	NRW member/HQ	Engineer	Mar., 2012 – Jun., 2012	Moved to SOP
Mr. Salah Mohamed El Sawahly	NRW member/HQ	Technician	Mar., 2012 – Apr., 2015	
NRW Team in Branches				
Mr. Abdel Azim Gouda	Water manager/Zefta	Engineer	Mar., 2012 – Apr., 2015	
Mr. Abdel Ghafar Mohamed	Network manager/Zefta	Technician	Mar., 2012 – Apr., 2015	
Mr. Mohamed Hasouna	Meter reader/Zefta	Technician	Mar., 2012 – Apr., 2015	
Mr. Adel Othman	Meter reader/Zefta	Technician	Mar., 2012 – Apr., 2015	
Mr. Ibrahim Shehata	Worker/Zefta	Worker	Mar., 2012 – Apr., 2015	
Mr. Abdel Azim El Beheiry	Worker/Zefta	Worker	Mar., 2012 – Apr., 2015	
Mr. Waleed El Sayed Bekheit	Surveyor /Zefta	Technician	Sep., 2013 – Apr., 2015	
Mr. Tamer Nassef	Surveyor /Zefta	Technician	Sep., 2013 – Apr., 2015	
Mr. Ibrahim Abdel Mallak	Branch manager/Tanta	Engineer	Mar., 2012 – Apr., 2015	

C/P Name	Title	Field	Working Period	Note
Mr. Mostafa Abdel Aal	Nawag area network manager/Tanta	Technician	Mar., 2012 – Apr., 2015	
Mr. Ahmed Hemeida	Network technician/Tanta	Technician	Mar., 2012 – Apr., 2015	
Mr. Atef El Borlosy	Network technician/Tanta	Technician	Mar., 2012 – Apr., 2015	
Mr. Samy Abdel Gawad	Network manager/Tanta	Technician	Mar., 2012 – Apr., 2015	
Mr. Saied Shahin	Follow up/Tanta	Technician	Mar., 2012 – Apr., 2015	
Mr. Hany Sallam	Worker/Tanta	Worker	Mar., 2012 – Apr., 2015	
Mr. El Dessouky Mohamed	Worker/Tanta	Worker	Mar., 2012 – Apr., 2015	
Mr. Ahmed Abdel Rabo Aallam	Network/Tanta	Engineer	Sep., 2013 – Apr., 2015	
Mr. Mohamed Ibrahim El Sheikh	Network /Tanta	Engineer	Sep., 2013 – Apr., 2015	
Mr. Samy Morees Bekheet	Water manager/Mahala	Engineer	Sep., 2013 – Apr., 2015	
Mr. Refaii Abdel El Rahman Badawy	Network technician/Mahala	Technician	Sep., 2013 – Apr., 2015	
Mr. Rashed Mohamed Abo Hargal	Technician/Mahala	Technician	Sep., 2013 – Apr., 2015	
Mr. Fahmy Moussa	Branch manager/Mahala	Engineer	Mar., 2012 – Apr., 2015	
Mr. Ahmed Suliman	Network technician/Mahala	Technician	Mar., 2012 – Apr., 2015	
Mr. Mohamed El Sheshtawy	Network head/Mahala	Technician	Mar., 2012 – Apr., 2015	
Mr. Hany Abdel Wahab	Worker/Mahala	Worker	Mar., 2012 – Apr., 2015	
Mr. Sobhy Farahat	Meter reader/Mahala	Technician	Mar., 2012 – Apr., 2015	
Mr. Mohamed Hegazy	Meter reader/Mahala	Technician	Mar., 2012 – Apr., 2015	
Mr. Ahmed El Sayed Morsi	Bassyoun	Engineer	Sep., 2013 – Apr., 2015	
Mr. Zakaria Kandil	Bassyoun	Technician	Sep., 2013 – Apr., 2015	
Mr. Saad Kotb Rezq	Bassyoun	Technician	Sep., 2013 – Apr., 2015	
Mr. Abdel Hamid Sherif	Bassyoun	Technician	Sep., 2013 – Apr., 2015	
Nashaat Eissa	Kotour	Technician	Sep., 2013 – Apr., 2015	
Mr. Mohamed Ismail Attia	Kotour	Technician	Sep., 2013 – Apr., 2015	
Mr. Saeed Abou Ali	Santa	Engineer	Sep., 2013 – Apr., 2015	
Mr. Abdel Hameed Ahmed Omar	Santa	Technician	Sep., 2013 – Apr., 2015	
Mr. Abdel Hady Saeed El Hebeishy	Santa	Technician	Sep., 2013 – Apr., 2015	
Mr. Mosaad El Sheikh	Samanoud	Technician	Sep., 2013 – Apr., 2015	
Mr. Mahmoud El Mahalawy	Samanoud	Technician	Sep., 2013 – Apr., 2015	
Mr. Mohamed Khalil	Samanoud	Technician	Sep., 2013 – Apr., 2015	
Mr. Aly El Hassawy	Kafr El Zayat	Technician	Sep., 2013 – Apr., 2015	
Mr. Ragab El Nagar	Kafr El Zayat	Technician	Sep., 2013 – Apr., 2015	
Mr. Ramadan El Araby Abdel Aziz	Kafr El Zayat	Technician	Jan., 2014 – Apr., 2015	

Source: JICA expert team

[MCWW]

Counterpart team members are listed below (Total : 90 members) :

Table 1-6 Counterpart Members of MCWW

C/P Name	Title	Field	Working Period	Note
Mr. Mohamed Abo El Khier	Chairman	Management	May, 2011 – Sep., 2012	Retired
Mr. Ezzat Elsayad	Chairman	Management	Sep., 2012 – Jan., 2014	Move to other AC
Mr. Mohamed Naguib	Chairman	Management	Jan., 2014 – Apr., 2015	

C/P Name	Title	Field	Working Period	Note
Mr. Samir Abdel Moneom Suliman	Head of C/P team	Management	May, 2011 – Jan., 2012	Retired
Mr. Mohamed Abdulla	Assistant for Head of C/P team	Management	May, 2011 – Jan., 2012	Left C/P team
SOP Team in Headquarters (HQ)				
Mr. Ayman Bassyouni	Head of SOP Team/HQ	Engineer	May, 2011 – Apr, 2015	
Mr. Mohamed Fawzy Awad	Assistant for head of SOP team/HQ	Engineer	Jun., 2011 – Apr., 2015	
Mr. Mohamed Fathy	Assistant for head of SOP team/HQ	Engineer	Jun., 2011 – Apr., 2015	
Mr. Khaled Kazamel	Assistant for head of SOP team/HQ	Engineer	Jul., 2011 – Apr., 2015	
Mr. Saeed Abdelfattah	Assistant for head of SOP team/HQ	Engineer	Jun., 2011 – Apr., 2015	
Mr. Salem Hamdy Fawzy	Assistant for head of SOP team/HQ	Engineer	Jun., 2011 – Nov., 2011	Left C/P team
Ms. Eyman Zahran	Assistant for head of SOP team/HQ	Chemist	Jun., 2011 – Jun., 2012	Left C/P team
Mr. Mostafa Lotfy	Assistant for head of SOP team/HQ	Engineer	Mar., 2012 – Jun., 2012	Left C/P team
Mr. Adel Ibraheem	Assistant for head of SOP team/HQ	Chemist	Jun., 2012 – Apr., 2015	
SOP Team in Branches				
Mr. Ahmed Sameer Elkawas	Mahatet El Sadat El Satheya SWTP	Engineer, Plant manager	Dec., 2011 – Apr., 2015	
Mr. Mohamed Abdallah Abdelrehem	Mahatet El Sadat El Satheya SWTP	Engineer, Operation manager	Dec., 2011 – Apr., 2015	
Mr. Ahmed Fathy Said Mr. Ahmed	Mahatet El Sadat El Satheya SWTP	Chemist	Dec., 2011 – Apr., 2015	
Mr. Mahmod Abdelzaher Elsaid	Mahatet El Sadat El Satheya SWTP	Chemist	Dec., 2011 – Apr., 2015	
Mr. Mansoor Shawky Ibraheem	Mahatet El Sadat El Satheya SWTP	Technician (Generator)	Dec., 2011 – Apr., 2015	
Mr. Mansoor Shawky Ibraheem	Mahatet El Sadat El Satheya SWTP	Technician (Mech. maintenance)	Dec., 2011 – Apr., 2015	
Mr. Haithem Ahmed Omar	Mahatet El Sadat El Satheya SWTP	Technician (Mech. maintenance)	Dec., 2011 – Apr., 2015	
Mr. Mohamed Foaad Soltan	Mahatet El Sadat El Satheya SWTP	Technician (Elec. maintenance)	Dec., 2011 – Apr., 2015	
Mr. Mohamed Ashraf Arafa	Mahatet El Sadat El Satheya SWTP	Technician (Elec. maintenance)	Dec., 2011 – Apr., 2015	
Mr. Haithem Ahmed Omar	Mahatet El Sadat El Satheya SWTP	Technician (Sedimentation facility)	Dec., 2011 – Apr., 2015	
Mr. Ahmed Bahnasy Mohamed	Mahatet El Sadat El Satheya SWTP	Technician (Filtration facility)	Dec., 2011 – Apr., 2015	
Mr. Mohamed Sabry Abdelazeem	Mahatet El Sadat El Satheya SWTP	Technician (Sludge)	Dec., 2011 – Apr., 2015	

C/P Name	Title	Field	Working Period	Note
		facility)		
Mr. Ahmed Abd Elsalam Belal	Mahatet El Sadat El Satheya SWTP	Technician (Pump room)	Dec., 2011 – Apr., 2015	
Mr. Ahmed Samy Saleh	Mahatet El Sadat El Satheya SWTP	Technician (Cl room)	Dec., 2011 – Apr., 2015	
Mr. Amin Gamal Mahroos	Mahatet El Sadat El Satheya SWTP	Technician (Al room)	Dec., 2011 – Apr., 2015	
Mr. Ahmed Ebrahim Gobara	Gezy IMRP	Technician, O&M	Dec., 2011 – Apr., 2015	
Mr. Elsaid Reyad	Gezy IMRP	Technician (Elec. maintenance)	Dec., 2011 – Apr., 2015	
Mr. Abdelhakeem Abdelrasheed	Gezy IMRP	Technician (Cooling system)	Dec., 2011 – Apr., 2015	
Mr. Mahmood Ali Ateem	Gezy IMRP	Technician (Operation)	Dec., 2011 – Apr., 2015	
Mr. Ibrahim Maher Abdelglel	Gezy IMRP	Technician (Operation)	Dec., 2011 – Apr., 2015	
Mr. Shaker Ibrahim Abdelgel	Gezy IMRP	Labor	Dec., 2011 – Apr., 2015	
Mr. M. Nagi	Gezy IMRP (Chemist)	Technician (Mech. maintenance)	Mar., 2012 – Apr., 2015	
Ms. Wala'a Elaskary	Gezy IMRP (Manager)	Engineer	Dec., 2011 – Apr., 2015	
Mr. Salah M. Kabeel	Ashama WPS	Technician, Plant manager.	Mar., 2012 – Apr., 2015	
Mr. Yosri William	Ashama WPS	Technician	Mar., 2012 – Aug., 2013	Moved to another plant
Mr. Hassan Mohamed	Ashama WPS	Technician	Aug., 2013 – Apr., 2015	
Mr. Zaki Abdelazim	Ashama WPS	Technician	Mar., 2012 – Apr., 2015	
Mr. Mohamed Abdelfatah	Ashama WPS	Technician	Mar., 2012 – Apr., 2015	
Mr. Abdelrahman Abdullah	Ashama WPS	Technician	Mar., 2012 – Apr., 2015	
Mr. Abdellatif Ammar	Ashama WPS	Technician	Mar., 2012 – Aug., 2013	Moved to another plant
Mr. Abdullah Abu Omar	Ashama WPS	Technician	Aug., 2013 – Apr., 2015	
Mr. Helal Khedr	Shebin SWTP Manager	Engineer	Oct., 2013 – Apr., 2015	
Mr. Bassem Mahmoud	Shebin SWTP lab manager	Chemist	Oct., 2013 – Apr., 2015	
Ms. Radwa Hassan	Shebin SWTP SCADA system	Engineer	Oct., 2013 – Apr., 2015	
Mr. Ali Amer	Shebin SWTP	Technician	Oct., 2013 – Apr., 2015	
Mr. Mostafa Mohammed	Shebin SWTP	Technician	Oct., 2013 – Apr., 2015	
Mr. Baha'a Elserwy	Shebin SWTP Lab.	Chemist	Oct., 2013 – Apr., 2015	
Ms. Hala Bukr	Shebin SWTP Lab.	Chemist	Oct., 2013 – Apr., 2015	
Ms. Yassmin Gaber	Shebin SWTP Lab.	Chemist	Oct., 2013 – Apr., 2015	
Mr. Mahmoud Elhadary	Minuof SWTP Manager	Engineer	Oct., 2013 – Apr., 2015	
Mr. Mahmoud Sallam	Minouf SWTP Chemist	Chemist	Oct., 2013 – Apr., 2015	

C/P Name	Title	Field	Working Period	Note
Mr. Mohammed Abdeldaim	Minouf SWTP	Technician	Oct., 2013 – Apr., 2015	
Mr. Mohammed Khalifa	Minouf SWTP	Technician	Oct., 2013 – Apr., 2015	
Mr. Ashraf Elshahed	Minouf SWTP	Technician	Oct., 2013 – Apr., 2015	
Mr. Ali Kamunna	Minouf SWTP	Technician	Oct., 2013 – Apr., 2015	
Mr. Salah Elbatanony	Kafr Elbatanon IMRF Manager	Engineer	Oct., 2013 – Dec, 2013	Retired
Mr. Mohammed Khattab	Kafr Elbatanon IMRF Lab. manager.	Chemist	Oct., 2013 – Apr., 2015	
Mr. Mohammed Eid	Kafr Elbatanon IMRF Electrical(Plant manager)	Technician	Oct., 2013 – Apr., 2015	
Ms. Ahlam Sadek	Kafr Elbatanon IMRF	Technician	Oct., 2013 – Apr., 2015	
Mr. Mohammed Ghaly	Kafr Elbatanon IMRF	Technician	Oct., 2013 – Apr., 2015	
Mr. Shawky M. Elmeshad	Elbatanon WPS Manager	Technician	Oct., 2013 – Apr., 2015	
Mr. Kamel Abdelsaid	Elbatanon WPS	Technician	Oct., 2013 – Apr., 2015	
Mr. Mohamed Abdelaziz	Elbatanon WPS	Technician	Oct., 2013 – Apr., 2015	
Mr. Samy Azer	Elbatanon WPS	Technician	Oct., 2013 – Apr., 2015	
Mr. Adel Abellatif	Elbatanon WPS	Technician	Oct., 2013 – Apr., 2015	
Mr. Saeed Sha'aban	Elbatanon WPS	Technician	Oct., 2013 – Apr., 2015	
NRW Team in Headquarters (HQ)				
Mr. Belal Galal Khalaf	Head of NRW Team/HQ	Management	May, 2011 – Jan., 2012	
	Head of C/P and Leader of NRW Team/HQ	Management	Jan., 2012 – Dec., 2013	Retied
Mr. Mohamed El Shafey	Assistant for head of NRW team/HQ	Engineer	Jun., 2011 – Apr., 2015	
Mr. Mohamed Fawzy Bader	Assistant for head of NRW team/HQ	Engineer	Jul., 2011 – Apr., 2015	
Mr. Ahmed Radwan	Assistant for head of NRW team/HQ	Engineer	Jun., 2011 – Dec., 2012	Left C/P team
Mr. Ahmed El Showny	Assistant for head of NRW team/HQ	Engineer	Oct., 2011 – Apr., 2015	
Mr. Ahmed Shalaby	Assistant for head of NRW team/HQ	Engineer	Oct., 2011 – Oct., 2012	Left C/P team
Mr. Gamal Rizk	NRW Team member	Technician	Aug., 2012 – Aug., 2013	Army service
Mr. Mohammed Gaber	NRW Team member	Technician	Aug., 2012 – Aug., 2013	Army service
NRW Team in Branches				
Mr. Monir Mohamed	Quesna	Engineer	Mar., 2012 – Apr., 2015	
Mr. Anwar Ibrahim	Quesna	Engineer	Mar., 2012 – Apr., 2015	
Mr. Abdelsattar Hossin	Quesna	Technician	Mar., 2012 – Apr., 2015	
Mr. Nagi Nikola	Quesna	Technician	Mar., 2012 – Apr., 2015	
Mr. Mohamed Sobhy	Quesna	Technician	Mar., 2012 – Apr., 2015	
Mr. Mohamed Ibrahim	Quesna	Plumper	Mar., 2012 – Apr., 2015	
Mr. Abdelmalek Mohamed	Quesna	Worker	Mar., 2012 – Apr., 2015	
Mr. Mansour Mohamed	Quesna	Worker	Mar., 2012 – Apr., 2015	
Mr. Ayman Abd rabo	Berket El Saba'a	Engineer	Mar., 2012 – Apr., 2015	
Mr. Ahmed Shawky	Berket El Saba'a	Technician	Mar., 2012 – Apr., 2015	
Mr. Bakry Mohamed	Berket El Saba'a	Plumper	Mar., 2012 – Apr., 2015	

C/P Name	Title	Field	Working Period	Note
Mr. Hamed Ali	Shebin	Network manager	Mar., 2012 – Apr., 2015	
Mr. Hassan Ismael	Shebin	Supervisor	Mar., 2012 – Apr., 2015	
Mr. Gamal Eldemerdash	Shebin	Technician	Mar., 2012 – Apr., 2015	
Mr. Abdelmonsif Mohamed	Shebin	Worker	Mar., 2012 – Apr., 2015	
Mr. Hitham Mohamed	Shebin	Worker	Mar., 2012 – Apr., 2015	
Mr. Ahmed Elshamy	Shebin Surveyor	Technician	Aug., 2013 – Apr., 2015	
Mr. Sobhy Yossif	Berket El Saba'a Surveyor	Technician	Aug., 2013 – Apr., 2015	
Mr. Mostafa Marzok	Minouf Surveyor	Technician	Aug., 2013 – Apr., 2015	
Mr. Mahmoud Faramawy	Elbagour Surveyor	Technician	Aug., 2013 – Apr., 2015	
Mr. Ali Ahmed Reyad	Ashaman Surveyor	Technician	Aug., 2013 – Apr., 2015	
Mr. Abdelsattar Hossin	Quesna Surveyor	Technician	Aug., 2013 – Apr., 2015	
Mr. Mohamed Ibrahim	Quesna Surveyor	Technician	Aug., 2013 – Apr., 2015	
Mr. Mohamed Sobhy	Elshohada Surveyor	Technician	Aug., 2013 – Apr., 2015	
Mr. Mohamed Elsha'ar	Minouf Surveyor	Technician	Aug., 2013 – Apr., 2015	
Mr. Mahmoud Shafik	Tala Surveyor	Technician	Aug., 2013 – Apr., 2015	

Source: JICA expert team

(7) JICA Expert Team

Members of JICA expert team (herein after referred to as “JET”) are shown below. The team is composed of the Japanese and the Egyptian members.

Table 1-7 JICA Expert Team

Position	Name	Period
[Japanese Team]		
- Chief Advisor/Water Supply Planning	Mr. Katsumi Fujii	9-May-11 – 8-Apr-15
- Deputy Chief Advisor/NRW Reduction Management	Mr. Mitsuhiro Omori	3-Jun-11 – 13-Apr-15
- Leakage Detection	Mr. Hiroki Niimura	5-Sep-11 – 7-Mar-15
- Water Treatment System	Mr. Tomohiro Shimizu	10-May-11 – 5-Apr-15
- Mechanical Equipment	Mr. Ryoji Nagao	3-Jun-11 – 29-Nov-12
- Electrical Equipment	Mr. Sayed Osman Madbouly	1-Jul-11 – 10-Feb-13
- Hydraulic Analysis for Network	Mr. Kenji Yamada	3-Sep-11 – 2-Jul-13
- Distribution Network(1)	Mr. Masahiro Takeuchi	9-May-11 – 12-Dec-12
- Distribution Network(2)	Mr. Kiyoshi Kiyama	27-Jun-11 – 28-Mar-14
- Well Monitoring	Mr. Nobuyuki Iijima	20-Jun-11 – 2-Jul-13
- Water Quality	Mr. Kazuhiro Umeki	7-Oct-11 – 30-Apr-14
- Coordinator/Assistant for NRW Reduction Management	Mr. Atsushi Kato	14-May-11 – 8-Apr-15
[Egyptian Team]		
- Project Facilitator	Mr. Mohamed Nagi Gaber	15-May-11 – 12-Apr-15
- Project Facilitator	Mr. Mohamed Abdel Kader Abouzekry	17-May-11 – 31-Aug-14
- Project Facilitator	Mr. Mohammed Abd El-kader Abd El-Ghany	5-Jun-11 – 31-Aug-14
- Local Expert (Water distribution facilities)	Mr. Mostafa Moawed Mostafa	5-Jun-11 – 15-Mar-14
- Local Expert (Water treatment facilities)	Mr. Ahmed El-Baz	5-Jun-11 – 1-Oct-12
- Local Expert (Water treatment facilities)	Mr. Mahmoud Abu Khalaf	2-Oct-11 – 17-Feb-13

Position	Name	Period
- Local Expert (Water treatment facilities)	Mr. Mahmoud Abdelkader	22-May-13 – 31-Aug-14
- Interpreter	Mr. Ahmed Ragab Hamed	5-Jun-11 – 5-Jul-12
- Interpreter	Mr. Ahmed Atef	5-Jun-11 – 31-Aug-14
- Interpreter	Mr. Ahmed Rasmy	1-Jul-12 – 27-Feb-13
- Interpreter	Mr. Ahmed Tahoum	1-May-13 – 15-Jun-14
- Interpreter	Mr. Amr Salah Abd-elaal	10-Dec-12 – 12-Apr-15

Source: JICA expert team

1.5 Coordination with Other Development Partners

SHAPWASCO, GHAPWASCO and MCWW was been implemented the technical cooperation of other development partners as shown in the table.

Table 1-8 Project of Other Development Partners

No.	Project	Donor	Province Area	Contents / Relation with the Project
1.	Water & Wastewater Sector Support Program (WWSS)	USAID	Minufia	<p>2008-2012. Target: HCWW, Water Supply and Sewerage Systems.</p> <ol style="list-style-type: none"> 1) Financial and commercial managerial capability improvement 2) Investment planning and monitoring system improvement 3) Technical cooperation for the purpose of human resource development <p>WWSS deals with mainly preparation of business plan. As a part of business improvement, WWSS trains MCWW for NRW metering, customers management / management of illegal connections, meter replacement, repairing leaks, etc. Nevertheless, they are simple and wider lectures in short period of three (3) months, but not deeper training at sites for NRW reduction. JICA side, therefore, plans to conduct mainly site trainings for leak detection and NRW reduction, and to have mutual complementation with WWSS.</p>
2.	Improved Water & Wastewater Services Program (IWSP)	EU KfW	Sharkiya Gharbia	<p>2010-2015.</p> <p>Sites: Gharbia, Sharkiya, Beheira, Damietta. Field: both water supply and sewerage.</p> <p>Lot A: investment. Lot B: technical cooperation.</p> <ol style="list-style-type: none"> 1) O&M 2) NRW reduction 3) Billing and fee collection 4) Human resource management 5) Publicity activities <p>IWSP planned to conduct SOP and NRW reduction in Gharbia. No interference, however, is expected in Sharkiya because IWSP has no plan for WDM.</p> <p><u>SOP</u> Both sides coordinated as follows:</p> <ol style="list-style-type: none"> 1) IWSP conducts SOP for sewerage. 2) JICA side conducts SOP for water supply

No.	Project	Donor	Province Area	Contents / Relation with the Project
				<p><u>NRW reduction</u> IWSP deals with mainly formulation of business strategy. They conduct NRW reduction, but it will not be deeper trainings at sites. JICA side conducts deeper training at site for leak detection and NRW reduction, so that the synergism is expected.</p>

Source: JICA expert team

