

## STANDARD OPERATING PROCEDURES (SOP) FOR WATER SUPPLY IN ZAATARI CAMP

### 1. Overview

The WASH sector, including UNICEF and its Implementing partners, are responding to the humanitarian WASH needs of Syrian refugees in the Zaatari Refugee Camp. Various partners are responsible for specific actions either in one component of WASH or in one geographical division of the camp. One of the major WASH activities undertaken in Zaatari Camp is the supply of some 3,800m<sup>3</sup> of safe water on a daily basis. This water supply is done through water trucking from two internal boreholes (operated by UNICEF) and a number of external boreholes (owned and operated by private individuals).

To ensure that water supplied is in conformity with the WHO guidelines and the Jordanian water quality standards (JS 286: 2008), strengthened monitoring and control measures are required to be implemented.

### 2. Purpose

The purpose of the SOP is to define clear workflow process of water quality monitoring throughout the water supply chain; from catchment, transmission distribution and consumption in Zaatari Refugee camp, and specific roles of each of the partners in the processes.

### 3. Background

Over the past months, there have been some occurrences related to the quality of water being trucked in that camp that has led to concerns being raised by various actors (including the Mafraq Directorate of Environment and Food Health (DEFH) about potential noncompliance of water quality control measures. Various partners, including UNICEF, UNHCR, ACTED, JEN, OXFAM and DEFH are in diverse ways contributing to water quality monitoring in the camp. While sufficient efforts have been made to ensure adherence to require standards, the lack of clearly defined procedure for this quality monitoring has led to misunderstanding and in some cases duplication of efforts.

This document therefore seeks to clarify the regulatory process and key roles and responsibilities of key partners in the process.

## 4. Application

### 4.1. Source or Catchment

The catchment shall be subdivided into two, as follows:

#### i. Internal boreholes

Internal boreholes are those water production wells located within the camp. These are managed and operated by UNICEF through a third party contractor. The key water quality monitoring activities in the following (please refer to Table 1 for details):

- Conduct a sanitary survey around each of the wells on a quarterly basis
- Conduct monthly water quality tests of raw water in accordance with the GOJ guidelines
- Conduct basic (Turbidity and Free Residual Chlorine) daily water quality tests of the treated water

#### ii. External boreholes

External boreholes refer to those privately owned and operated wells that are outside the camp. Due to the fact that neither UNICEF nor partners have direct control over the operation of these wells as they are under the direct management of the contractor chosen by ACTED, the key quality monitoring activities shall be as follows (please refer to Table 1 for details):

- Verify that the boreholes are fully licensed and routine tests are done in accordance with the GOJ approved procedures.
- Conduct monthly sanitary survey at each of the boreholes and request contractor or borehole owner to address all unsanitary concerns
- Conduct physical and chemical tests every six months, carried out by ACTED

### 4.2. Transmission

Transmission here refers to the transportation of water from the catchment to the distribution system. Transmission is done through water trucking from the internal and external boreholes to the public tanks for distribution. The key water quality monitoring activities related to transmission include:

- Ensuring that all the trucks have the valid and complete registration; including truck licensed and authorization to transport drinkable water, issued by the Ministry of Health.
- Maintaining an up to date database of water trucks (drivers name, vehicle registration, vehicle license, and so on)
- Ensure that water quality monitoring is done at the entrance gate in accordance with the Table 1.

#### 4.3. Distribution and consumption

Water distribution is mainly the supply of water in to the public water reservoirs through water trucks. In Zaatari Camp, the key water quality monitoring activity associated with public water tanks is the routine daily sampling mainly for micro bacteriological, chemical and physical (FRC and Turbidity, and color, as shown in Table 1.

### 5. Response to non-conformity to set water quality ranges.

Water trucks with water that do not conform to the agreed water quality standards and rejected shall be categorized into two groups and managed accordingly to the categories, as follows:

- **Category 1 rejection:** Trucks rejected because water quality does not conform to physical and non-infection related parameters are managed simply as follows:
  - i. FRC; if higher, mix with less chlorinated water. If low, test for micro bacteriological contamination.
  - ii. Turbidity, color, taste and smell: discharge contaminated water; properly clean tanks and fill with clean water and re test to ensure that is within acceptable range.
- **Category 2 rejection:** This refers to biological infection of water trucks, and identified when there are worms, algae, increased level or ammonium substances and any other biological growth in the water. A truck rejected under this category is managed as follows:
  - The truck is issued with three copies of rejection voucher; a copy each for the attention of Mafrq Directorate of Environment and Food Health (DEFH), ACTED, contractor.
  - The truck is requested to undergo disinfection at one external borehole in accordance with the WHO specification for disinfection of water trucks as described below. To ensure conformity, ACTED may support the truck owner (through training, provision of chlorine, conduct or supervision) of the disinfection process.

Note: The disinfection must be carried out in the presence of a representative from ACTED; according to the procedure described in *Cleaning and disinfecting water storage*

tanks and tankers. Technical Note 3 (WHO 2005);

[http://www.who.int/water\\_sanitation\\_health/hygiene/envsan/tn03/en/](http://www.who.int/water_sanitation_health/hygiene/envsan/tn03/en/)

- Once the disinfection process is complete, the affected truck is then taken to the Mafraq Directorate of Environment and Food Health (DEFH), to undergo specific microbiological tests, to ensure that the truck is properly disinfected and is fit for use for transporting drinking water. Once the tests are completed and the truck is considered fit, the voucher issued by ACTED will be filled as approved for re use by the DEFH and presented by the driver to the ACTED teams.
- Once the truck is back into operation, daily samples are collected and tested for Ammonia, TDS and micro-bacteriological agents for the subsequent two weeks.

#### 6. Dealing with privately trucked water into Zaatari Camp

While UNICEF is responsible for providing potable water for all refugees in Zaatari Camp, its capacity and accountability is limited to 35 liters per capita per day. While this allocation is considered adequate in refugee settings, it is understood that some refugees, for commercial and other socioeconomic purposes require more than the allocated 35liters per person per day. Under such circumstances, UNICEF cannot prevent refugees from bringing in additional water into the camp if they are able to do so, and obtain the necessary permission from camp management.

However, to ensure that water consumed in the camp is within acceptable standards. It was agreed that water entering the camp, regardless of source or ownership, shall undergo the same water quality monitoring process as described above. To ensure effective monitoring of water quality in a simplified manner, ACTED has consented to support the testing of at the entrance gate, upon request by Camp management, and within the scope of their limited capacity.

The tentative procedure for monitoring water quality of privately trucked water is as follows:

- Private owner will request for entry permit from SRAD/Camp management
- SRAD sends request to ACTED for conduct water quality test as per agreed procedure via a 'Request for quality test voucher' at least 24 hours before the expected entry of

the water truck. It is understood by SRAD and Camp management that ACTED will conduct water quality tests only between 8 AM and 4 PM.

- ACTED will check that the driver has a permit and a 'Request for quality check voucher'
- ACTED conducts the tests at its control area located at the Eastern Gate and share the results (showing acceptable ranges for easy comparison) with SRAD/Camp management in the quickest possible time.

***NOTE: The quality test of the normal water trucking remains the priority and will not be delayed because of the need to test privately trucked water.***

- SRAD makes the decision as to whether or not to allow the water truck in the camp. ACTED will not decide which private truck enters or not. This function is strictly the responsibility of SRAD, and ACTED is only supporting in conducting the tests
- This procedure is subject to review based on the number of private trucks and the capacity of ACTED to manage in addition to their routine activities.

## 7. Reporting and communication

Base on the above described water quality monitoring procedure, it should be emphasized that water entering the camp for human consumption is consistent with agreed WHO (Guidelines for Drinking-water Quality, fourth edition (2011) and national standards (JS 286:2008). Water falling short of these quality standards will not be allowed in to the camp.

The agreed reporting process is as follows:

- Monthly water quality results of internal boreholes  
UNICEF shall maintain a database of the results of the internal boreholes monthly test results, which can be shared upon request.
- Daily water quality monitoring results  
ACTED shall maintain a database or log book with records of all the water quality tests conducted on a daily basis, and can be accessed upon request.  
At the end of each month (latest 5<sup>th</sup> of the subsequent month), ACTED will compile the daily tests results and summarize them into a tabular form. This summary of results (showing total tests, passed and failed per day) is shared with MOH on a

monthly basis. UNICEF shall also share these summary reports to the key WASH sector partners and Camp management.

On fortnightly basis, the MOH representative will visit the water quality testing site and review results and check for compliance, and make necessary recommendations where appropriate.

iii. In camp self-control tests

ACTED shall also maintain a database of the results of the test done in the camp and produce a summary report at the end of each months and shared with MOH. The database shall also remain accessible for inspection by MOH and other actors upon request.

Partners could conduct individual water quality monitoring (spot checks) in their respective target districts using a harmonized procedure and test methodology.

The test results and all water quality issues within the camp; including suspicion of non-conformity with the described standards, noncompliance of regulatory framework by water quality monitoring team, possible contamination, and so on should be addressed directly to ACTED (through existing hotline numbers) and UNICEF for appropriate action.

Sector	Location	Activities	Frequency	Acceptance range	Responsible party	Reaction/Response
Catchment	Internal Boreholes	Sanitary Survey around each borehole	Quarterly	Zero unsanitary conditions exist	UNICEF/ Contractor	Address all unsanitary concerns
		Routine source physical, chemical and microbiological water quality monitoring	Monthly	As per GOJ guidelines	UNICEF/ YWC	Stop water production and address the issue with contamination
		Production water turbidity level monitoring	Hourly	≤ 5NTU	UNICEF/ Contractor	Discharge water to waste pipe until turbidity normalizes
		Production Free Residual Chlorine (FRC) level monitoring	Hourly	Between 1.0mg/l to 1.8 mg/l	UNICEF/ Contractor	Increase or decrease chlorine level from chlorinator until back to acceptable range
	External Privately owned Boreholes	Submission of borehole registration documentation	Yearly	As per GOJ guidelines	MOH	Stop accepting water from any borehole without the required documentation
		Sanitary Survey around each borehole	Quarterly	Zero unsanitary conditions exist	ACTED	Address all unsanitary concerns
		Routine source physical, chemical and microbiological water quality monitoring	Monthly	As per GOJ guidelines	MOH	Stop accepting water from any borehole without the required documentation
Transmission	Water trucks	Submission of trucks registration and certification for safe water trucking documentation	Yearly and as and when a new truck is added	As per GOJ /MOH guidelines	ACTED	Stop using trucks that do not submit the required documents

Sector	Location	Activities	Frequency	Acceptance range	Responsible party	Reaction/Response
		Physical parameters (color, smell, taste)	Each trip	Zero color, smell or taste observed	ACTED	Reject truck if outside quality acceptance range
		Biological infection (worms, etc)	Each trip	Zero biological matter observed	ACTED	*Reject truck if outside quality acceptance range
		Physical parameters- Turbidity	15 trucks daily	Less than 5NTU	ACTED	Reject truck if outside quality acceptance range
		Physical parameters-PH	15 trucks daily	Between 6.5 and 8.5	ACTED	Reject truck if outside quality acceptance range
		Chemical parameters- FRC	Each trip	Between 1.0mg/l to 1.8 mg/l	ACTED	Reject truck if outside quality acceptance range – if chlorine too high, the water will be mixed with less chlorinated water and will remain at the gate/borehole until the level of FRC is acceptable.
		Chemical parameters- Ammonium compounds	15 trucks daily	Less than 0.2mg/l	ACTED	Reject truck if outside quality acceptance range Send to MOH if outside of acceptable range
		Chemical parameters-Total dissolved solids	15 trucks	Less than <1000 PPM	ACTED	Reject truck if outside quality acceptance range
Distribution	Water trucks	Please refer to above			ACTED	



Sector	Location	Activities	Frequency	Acceptance range	Responsible party	Reaction/Response
	<b>Water Network</b>	To be updated		TBD	TBD	
	<b>Public water tanks and Household collection tanks</b>	Biological infection (worms, etc)	An average sample of 300 water storage points per month	Zero biological matter observed	ACTED	Empty and take tank for chemical disinfection
		Physical parameters- Turbidity	A sample of 300 tanks per month – same sample as for the microbiological test	Visual test only	ACTED	Empty tank, clean and refill
		Chemical parameters- FRC	A sample of xx tanks per month	(Between 0.2mg/l to 1.0 mg/l)	ACTED	Do mixing or chlorine dosing if higher, and for biological contamination if <0.1 mg/l
		Micro-bacteriological	At least 280 sample per month from Public WP, WC, NGOs {Schools, Clinics, Hospitals, CFS....etc} and Privet tanks in zaatari camp)	Zero coliforms per liter of water or (<1.1 MPN/100ML) as this is considered equivalent due to the intrinsic limits of the equipment	ACTED	Empty and take tank for chemical disinfection or add chlorine