



ANNEX F: TEMPLATE FOR WATER QUALITY ASSURANCE PLANS

Water Quality Assurance Plans (WQAPs) are the preferred method for ensuring water quality in projects involving the provision of drinking water. USAID recommends that new Initial Environmental Examinations (IEEs) for drinking water provisioning activities require implementing partners (IPs) to develop, implement, and report on a WQAP. The WQAP should specify how the IP will assure safe drinking water for the project and meet applicable partner-country water quality requirements, given project implementation conditions. It is intended to specify requirements for initial testing, long-term monitoring, and, in some cases, exact water standards.

More information on the USAID AFR WQAP Guidance and Template can be found here:
<https://www.usaid.gov/environmental-procedures/environmental-compliance-esdm-program-cycle/special-compliance-topics/water>.



USAID/Africa Bureau

Water Quality Assurance Plan Template



USAID
FROM THE AMERICAN PEOPLE

WATER QUALITY ASSURANCE PLAN

PROJECT/ACTIVITY DATA

Project/ Activity Name:	
Implementation Start/End:	
Solicitation/Contract/Award Number:	
Implementing Partner(s):	
Geographic Location(s):	
Period of Performance:	
Tracking ID/file name/Link of Parent (Source) IEE for Program/ Activity / D.O.	
Tracking ID/link of WQAP	
Tracking ID/link of Other, Related Analyses:	

ORGANIZATIONAL/ADMINISTRATIVE DATA

Implementing Operating Unit(s): (e.g. Mission or Bureau or Office)	
Funding Amount:	
Lead BEO Bureau:	
Prepared by:	
Date Prepared:	
Submitted by:	
Date Submitted:	
Implementing Partner individual contact and title, address, phone and email	
USAID AOR Contact:	
Proposed subproject/ subgrant	
Location of WASH Activities	

Certification:

I, the undersigned, certify that:

1. The information on this form and accompanying WQAP is correct and complete.
2. Implementation of these activities will not go forward until specific approval is received from the C/AOR.
3. All mitigation and monitoring measures specified in the WQAP will be implemented in their entirety, and that staff charged with this implementation will have the authority, capacity and knowledge for successful implementation.

(Signature) _____

(Date) Click or tap to enter a date.

(Print name) Click or tap here to enter text. (Title)

PROJECT/ACTIVITY NAME: _____

[Include signature blocks in accordance with Bureau and/or Mission policy. At a minimum include the noted required signatures. Add other signatures as necessary.] **(CUSTOMIZABLE BY BUREAU)**

Notes:

1. For clearance to be granted, the activity **MUST** be within the scope of the activities for which use of the WQAP is authorized in the governing IEE. **Review IEE before signature.** If activities are outside this scope, deny clearance and provide explanation in comments section. The Partner, C/AOR, MEO and REA must then confer regarding next steps: activity re-design, an IEE or EA.

2. Clearing a WQAP containing one or more findings that **significant adverse impacts are possible** indicates agreement with the analysis and findings. It does NOT authorize activities for which "significant adverse impacts are possible" to go forward. It DOES authorize other activities to go forward. The Partner, C/AOR, MEO and REA must then confer regarding next steps: activity re-design, an IEE or EA.

Approval:

Clearance: _____
[NAME], Activity Manager (as appropriate) Date

Clearance: _____
[NAME], A/COR (required) Date

Clearance: _____
[NAME], Mission Environmental Officer (as appropriate) Date

Clearance: _____
[NAME], Regional Environmental Advisor (as appropriate) Date

Concurrence: _____
[NAME], _____ Bureau Environmental Officer (if required) Date

Concurrence: _____
[NAME], _____ Bureau Environmental Officer, (other BEOs as appropriate) Date

* C/AOR, MEO and REA clearance is required. BEO clearance is reserved for 'high risk' activities as determined by the Mission or REA, or where the environmental screening has determined that 'significant adverse impacts' are possible. Scale, number of beneficiaries & sites, urban settings, potential contaminants, etc., may be factors.

DISTRIBUTION: **[Customizable]**

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I. INTRODUCTION

In this section the IP describes the program/project to provide the context for the WQAP development and implementation. The section introduces assumptions regarding the WQAP process and the sections to follow. It will also include a sufficiently detailed description of the number and type of drinking water systems proposed for the program.

For detailed instructions, please refer to Step I of the WQAP Guidance Note (Page I)

II. ASSESSMENT OF APPLICABLE WATER QUALITY STANDARDS AND CRITERIA

A. RESEARCH OF REGULATORY REQUIREMENTS

In this section the IP describe the results of the completed research on the applicable guidance for drinking water systems from USAID, host country regulations and the World Health Organization (WHO). The minimum recommended Water Quality Parameters are shown below. The IP should also consider additional water quality concerns based on site considerations or available information.

For detailed instructions, please refer to Step II of the WQAP Guidance Note (Pages 1-5).

USAID RECOMMENDED WATER QUALITY PARAMETERS:

- Health-Related Parameters:
 - 1) Arsenic
 - 2) Fecal Coliform
 - 3) Fluoride
 - 4) Nitrate (as NO₃)
- Operational-Related Parameters:
 - 5) Electrical conductivity (EC)
 - 6) Total Dissolved Solids (TDS)
 - 7) pH
 - 8) Turbidity

HOST COUNTRY REGULATIONS

In this section the IP should review and describe the host country's regulatory requirements. This section should document results of research prior to selection of the standards included in Tables II-A and II-B in Section B.

WHO GUIDANCE

The IP should review and describe the critical water quality parameters from World Health Organization (WHO) guidance to be evaluated and incorporated into the WQAP here. This section should document the results of the research prior to selection of the standards included in Tables II-A and II-B in Section B.

The IP documents, in narrative form and in Tables II-A and II-B below, the selected water quality standards or guideline values, and criteria based on the research completed in Section A above.

For detailed instructions, please refer to Step II of the WQAP Guidance Note (Pages I-5).

B. INVENTORY OF SELECTED WATER QUALITY STANDARDS

The drinking water quality parameters summarized in Tables II-A and II-B are the basis of water quality monitoring for this program. Note that samples are collected and analyzed at least once before construction and once at commissioning of the water source. After commissioning the new supply source, the parameters are tested at the frequency suggested below for each parameter. The USEPA guidance values below are from the USEPA *National Primary Drinking Water Regulations*.¹ The WHO guidance values are from the WHO *Guidelines for Drinking-Water Quality* (WHO, 2017).

The IP should add more narrative (and/or modify the above narrative) to describe site specific supplemental parameters based on local conditions. In addition, the IP must complete the tables below.

TABLE II-A: APPLICABLE HUMAN HEALTH-RELATED DRINKING WATER QUALITY PARAMETERS OF CONCERN

USEPA GUIDANCE			HOST COUNTRY REGULATIONS		WHO GUIDANCE	
Parameter	Limit	Frequency	Limit	Frequency	Limit	Frequency
Arsenic	0.01 mg/l	quarterly	Click here to enter text.	Click here to enter text.	0.01 mg/l	N.S.
Fecal Coliform*	00/100 ml	quarterly	Click here to enter text.	Click here to enter text.	00/100ml	N.S.
Fluoride	4.0 mg/l	Click here to enter text.	Click here to enter text.	Click here to enter text.	1.5 mg/l	N.S.
Nitrate (as NO ₃)	10 mg/l	Click here to enter text.	Click here to enter text.	Click here to enter text.	50 mg/l	N.S.
Click here to add	Click here	Click here	Click here	Click here	Click here	Click here

¹ USEPA National Primary Drinking Water Regulations: <https://www.epa.gov/ground-water-and-drinking-water/table-regulated-drinking-water-contaminants#Inorganic>

text. Please add additional site specific parameters. Add as many rows as needed.	to enter text.	to enter text.	to enter text.	to enter text.	to enter text.	to enter text.
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Notes: * Analysis for thermos-tolerant coliforms (TtC) bacteria, or Escherichia coli.

N.S. Not specified in the guidance

TABLE II-B: APPLICABLE OPERATIONAL-BASED DRINKING WATER QUALITY PARAMETERS OF CONCERN

USEPA GUIDANCE			HOST COUNTRY REGULATIONS		WHO GUIDANCE	
Parameter	Limit	Frequency	Limit	Frequency	Limit	Frequency
Electrical Conductivity (EC)(1)	1600 μ S/cm	Click here to enter text.	Click here to enter text.	Click here to enter text.	N.S.	N.S.
TDS	500 mg/l	Click here to enter text.	Click here to enter text.	Click here to enter text.	1000 mg/l	N.S.
pH	6.5-8.5 S.U.	Click here to enter text.	Click here to enter text.	Click here to enter text.	N.S.	N.S.
Turbidity (2)	5 NTU	Click here to enter text.		Click here to enter text.	N.S.	N.S.
Click here to add text. Please add additional site specific parameters. Add as many rows as needed.	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.

Notes: (1) The value of electrical conductivity (EC) is based on the State of California secondary MCL for drinking water from the range of EC at 900 to 1600 μ S/cm. (California State Water Resources Control Board, 2010)

(2) USEPA has not promulgated guidance values for turbidity; however, per the USEPA Surface Treatment Rule, in drinking water systems, turbidity must not exceed 5 NTU; systems that filter must ensure that the turbidity go no higher than 1 NTU (0.5 NTU for conventional or direct filtration) in at least 95% of the daily samples for any two consecutive months:

<http://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=500025GQ.txt>

RATIONALE FOR SELECTION OF SITE SPECIFIC WATER QUALITY PARAMETERS:

In this section the IP describes the results of sanitary surveys and other research that led to the selection of additional water quality parameters of concern listed in Tables II and III. This section also includes the rationale for selecting guideline values or limits for water quality testing that trigger corrective actions. It should also provide the rationale for the selected testing frequency.

III. RESOURCES FOR SAMPLE COLLECTION AND LABORATORY ANALYSIS

In this section, the IP describes how and where samples will be collected, field measurements will be performed, and laboratory analysis will be completed. The available resources must be documented here, in each section in brief narrative form. In addition, the resources must be documented by completing or expanding Table III-A in Section III C to capture all the information gathered.

For detailed instructions, please refer to Step III of the WQAP Guidance Note (Pages 5-12).

A. SAMPLE COLLECTION AND FIELD MEASUREMENT

AVAILABILITY OF TRAINED PERSONNEL

In this section the IP identifies availability of specific water quality staff and qualifications.

AVAILABILITY OF APPROPRIATE EQUIPMENT

In this section the IP identifies specific equipment that will be used throughout the process.

PROCEDURES AND PROTOCOLS FOR COLLECTION, MEASUREMENT, SAMPLE PRESERVATION AND TRANSPORT TO LABORATORIES.

In this section the IP includes detailed SOPs and record keeping tools to be used here.

B. LABORATORY ANALYSIS

LOCATION OF NEAREST QUALIFIED LABORATORY

In this section the IP includes a narrative and table of qualified laboratories with contact information.

AVAILABILITY OF PROPER ANALYTICAL EQUIPMENT

In this section the IP lists and describes specific equipment that will be used for each water quality parameter test.

AVAILABILITY OF TRAINED PERSONNEL

In this section the IP identifies the laboratories key water quality technicians and managers and their qualifications.

REPORTING AND QA/QC OF DATA

In this section the IP describes the laboratories QA/QC procedures.

FIELD ANALYSIS USING PORTABLE TEST KITS

In this section the IP identifies the field test kits that will be used (if applicable) and the accuracy and specified range of the test kits and associated analytical procedure.

C. DOCUMENTATION OF AVAILABILITY OF RESOURCES

Complete Table III-A to document the available resources for the program. The IP must include the site-specific list of parameters from Tables II-A and II-B. Add additional rows as needed.

TABLE III-A: AVAILABILITY OF RESOURCES FOR SAMPLE COLLECTION AND LABORATORY ANALYSIS

Parameter	Collection and Field Measurement			Laboratory Analysis and Reporting			
	Field Team	Equipment	Protocol	Lab Location	Equipment	Methodology, Uncertainty	Personnel

IV. SUSTAINABILITY AND OPERATIONAL FACTORS AFFECTING WATER QUALITY

In this section, the IP must describe the results of the planning phase of the water project which contribute to the maintenance of safe water quality for the project beneficiaries. Please see the detailed instructions in Step IV of the WQAP Guidance Note on pages 12 and 13.

PLANNING

DESIGN AND CONSTRUCTION

In this section the IP includes specific or applicable standards for design and construction of water supply infrastructure.

SOURCE PROTECTION

In this section the IP describes source protection measures to be undertaken.

OPERATIONAL SUSTAINABILITY

STAKEHOLDER PARTICIPATION

In this section the IP describes the process by which stakeholders will be engaged and how the transfer to local responsible parties will occur.

ROUTINE OPERATION AND MAINTENANCE

In this section the IP describes the process by which stakeholders will be engaged and their roles and responsibilities.

ROUTINE MONITORING AND TESTING

In this section the IP describes the process by which stakeholders will be engaged and their roles and responsibilities.

TRAINING

In this section the IP describes how and what training should be delivered.

V. CORRECTIVE MEASURES

The IP should ensure that language included in this section is consistent with requirements laid out in the project IEE. In this section the IP describes the initial response and steps necessary to maintain water quality, describes the corrective measures that should be undertaken, and how local authorities and USAID staff will be notified and consulted.

Please see the detailed instructions in Step V of the WQAP Guidance Note on pages 13 through 15.

In this section the IP describes the approach to resolving water quality contamination issues. The approach should correspond with the guidance providing in Annex 3: Approach to Resolution of Water Quality Contamination, and to the applicable IEE language.

A. HUMAN HEALTH-RELATED DRINKING WATER QUALITY PARAMETERS OF CONCERN:

In this section the IP describes the specific corrective actions that will be undertaken if any of the health-related drinking water quality parameters listed in Table II-A are exceeded. This information should correspond with the specific requirements included in the project IEE. See Section 6 of Annex 5 of the WQAP Guidance Note: Suggested IEE Language on Water Quality Monitoring.

B. OPERATIONAL-BASED DRINKING WATER QUALITY PARAMETERS OF CONCERN:

In this section the IP describes the specific corrective actions that will be undertaken if any of the operational-based drinking water quality parameters listed in Table II-B are exceeded. This information should correspond with the specific requirements included in the project IEE. See Section 6 of Annex 5 of the WQAP Guidance Note: Suggested IEE Language on Water Quality Monitoring.

SUMMARY EMMP MATRIX

This section should include the completed summary matrix of environmental mitigation and monitoring measures as indicated in the example EMMP shown below and at this internet location: <http://www.usaidgems.org/wqap.htm>

Example Summary WQAP EMMP Matrix

XXX WASH PROJECT
SITE: XXX

Environmental Mitigation/ Enhancement Plans for Established WASH Projects

WATER QUALITY ASSURANCE PLAN

Activity: Water Supply

Adverse Impact: Inadequate Water Quality

Sites: Water Pans: *Location XXXX*. Boreholes: *Location XXXX*. Pipeline Extension: *Location XXXX*.
Rock Catchments: *Location XXXX*. RWH Tanks: *Location XXX*.

SOURCE TYPE	MITIGATION PLAN	EVIDENCE OF MITIGATION MEASURE	FOLLOW UP/ FREQUENCY	RESPONSIBLE PERSONS/ ORGANIZATIONS
	CONSTRUCTION STAGE			
Water Pans	a) Construct cattle troughs away from the water pan site b) Provide a cutoff trench for any storm water flowing in from any nearby farms, markets, trading centers etc c) Construct a suitable silt trap to control siltation of the reservoir d) Construct the embankment with gentle and well compacted slopes to prevent any soil erosion of the walls during rainy seasons e) Plant appropriate grass, other groundcover and/or trees on the embankment and its surrounding catchments respectively f) Provide adequate dead storage below the intake chamber to minimize siltation of the draw pipe g) Fence round the water pan site	Installation, completion reports, photos	After construction and every three months	Contractors, community and IP

SOURCE TYPE	MITIGATION PLAN	EVIDENCE OF MITIGATION MEASURE	FOLLOW UP/ FREQUENCY	RESPONSIBLE PERSONS/ ORGANIZATIONS
	h) Ensure all spilled oils and fuels are properly disposed i) Properly dispose off all waste/ unwanted matter from the reservoir j) Install an appropriate water treatment unit			
Boreholes	a) Install durable pipe casings b) Ensure proper disposal of waste materials from the drillings pit to prevent any seepage to the ground water c) Proper development of the pit to remove any unwanted material occurring during drilling process d) Take water samples for physiological, chemical, bacteriological and arsenic water quality testing in an approved government laboratory. e) Fence round the borehole and pump house sites f) Ensure all spilled oils and fuels are properly disposed by removing affected soil g) Provide appropriate treatment system to remove identified chemical impurities	Installation, completion reports, photos water quality reports, photos, design drawings for treatment units	During construction, after construction and after every three months	Contractors, IP, community
Pipeline Extension	a) Avoid swampy areas in installation of the pipes or else use galvanized iron (GI) pipes in swampy areas to prevent any cracks of pipes and an eventual pipe water contamination b) Cover all the installed pipes/ refilling the excavated trenches with soil c) Conduct physio-chemical and bacteriological water quality tests at the end point of the pipeline extension to ascertain any contamination in the line d) Provide appropriate water treatment system	Installation, completion reports, photos, water quality reports, photos	During and after construction and after every three months	IP, relevant ministry, community
Rock catchments	a) Fence all round the developed rock catchments b) Cart away or remove all waste matter from the rock catchments c) Construct diversion trenches in the upstream of the rock catchments to prevent any outside storm water from flowing inside d) Conduct water quality analyses and provide appropriate treatment system	Installation and water quality reports, photos	During and after construction and after every three months	Community, contractor
Rain water harvesting (RWH) Tanks	a) Provide an overflow pipe b) Provide a Wash out pipe at the bottom of the tank c) Construct a suitable water collection chamber and provide adequate drainage for spilled water	Installation and water quality reports, photos	During and after construction and after every three months	Contractor, community

SOURCE TYPE	MITIGATION PLAN	EVIDENCE OF MITIGATION MEASURE	FOLLOW UP/ FREQUENCY	RESPONSIBLE PERSONS/ ORGANIZATIONS
	d) Conduct water quality analyses e) Sensitize the users on the need to boil drinking water			
Shallow wells	a) Take water samples for chemical, bacteriological and arsenic water quality testing in an approved government laboratory b) Fence round the shallow well c) Provide proper drainage of spilled water	Installation and water quality reports, photos	During and after construction and after every three months	IP, community
OPERATION STAGE				
Water Pans	a) Avoid entry of people and animals into the reservoir b) Maintain plant grass and trees on the embankment and its surrounding catchments respectively c) Avoid cultivation of the catchments area d) Provide hygiene and sanitation facilities at least 50m away from the reservoir, pref. Downslope. e) Undertake water quality tests (physiochemical and bacteriological) on quarterly basis f) Conduct routine maintenance of rainwater catchment pan and water treatment system.	Water quality reports, photos	After every 3 months	Community, IP
Boreholes	a) Undertake water quality tests (physiochemical and bacteriological) on quarterly basis b) Maintenance of the borehole equipment and treatment unit c) Provide hygiene and sanitation facilities at least 50m away from the borehole at an appropriate site d) Community sensitization on proper handling of water after drawing it	Water quality reports, photos	After every 3 months and yearly	IP
Pipeline Extension	a) Undertake water quality tests (physiochemical and bacteriological) on quarterly basis b) Ensure immediate repairs of leakages to prevent any contamination of pipe water	Water quality reports	After every 3 months, continuous	IP, community
Rock catchments	a) Remove any silt matter deposited in the catchments after and before the rainy season b) Replace the filter media placed in the catchments after some time to maintain proper filtration c) Undertake water quality tests (physiochemical and bacteriological) on quarterly basis	water quality reports	After every 3 months and yearly	Community, IP

SOURCE TYPE	MITIGATION PLAN	EVIDENCE OF MITIGATION MEASURE	FOLLOW UP/ FREQUENCY	RESPONSIBLE PERSONS/ ORGANIZATIONS
RWH Tanks	a) Empty and clean the tank using chlorine twice a year b) Ensure the roof catchments is free from any foreign matter at all times c) Provide a cover lid in the inspection chamber	Reports from the users	6 months, continuously, after construction	School heads
Shallow wells	a) Undertake immediate repairs of any cracks on the well cap b) Undertake water quality tests (physiochemical and bacteriological) on quarterly basis c) Provide a diversion trench for any storm water to protect the well cap	Visual inspection of works, review water quality reports	After construction and after every 3 months	Community, IP

NB: Indicate if a water quality feasibility study has been conducted by a consultant and design plans are being developed for the recommended treatment units for all water sources. Installation of the treatment systems will be undertaken in the course of the year.