

# School WASH Facilities

## OPERATIONS AND MAINTENANCE GUIDELINES

August 2015



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## **About SPLASH**

Schools Promoting Learning Achievement through Sanitation and Hygiene (SPLASH) is implemented through the WASHplus project, which supports healthy households and communities by creating and delivering interventions that lead to improvements in water, sanitation, and hygiene (WASH) and household air pollution (HAP). This multi-year project (2010-2016), funded through USAID's Bureau for Global Health and led by FHI 360 in partnership with CARE and Winrock International, uses at-scale programming approaches to reduce diarrheal diseases and acute respiratory infections, the two top killers of children under age 5 globally.

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## Table of Contents

Introduction .....	1
1. The Hand Pump .....	3
2. Operating and Maintaining Your Hand Pump .....	6
3. Where Can You Buy Spare Parts for Your Pump? .....	8
4. Where Can You Buy Your Supplies of WASH Products? .....	9
5. What Are the Typical Costs of Spare Parts?.....	9
6. The Drinking Water Stations.....	12
7. The Toilets .....	13
8. The Handwashing Stations.....	14
9. The Cost.....	14
10. Contact Details .....	17
Appendix 1: Sample WASHE Letter .....	18
Appendix 2: Daily WASHE Maintenance Checklist.....	18
Appendix 3: WASHE Roles and Responsibilities.....	23
Appendix 4: Schedule of Prices for Parts Replacement .....	24
Appendix 5: Sample Area Pump Mender Repair Record.....	24

## List of Figures:

Figure 1: Cross Section of Head Assembly of India Mark II Hand Pump .....	4
Figure 2: Cross Section of India Mark II Cylinder Assembly.....	5

## List of Tables:

Table 1: India Mark II Spare Parts Costing Table .....	11
Table 2: Template of Household User Contribution Register .....	165
Table 3: Template of Pupil User Contribution Register .....	165

## Acronyms

APM	Area Pump Mender
DLA	District Local Authority
D-WASHE	District Water, Sanitation, and Hygiene Education Committee
O&M	Operations and Maintenance
PTA	Parent-Teacher Association
RWSS	Rural Water Supply and Sanitation
SHN	School Health and Nutrition
VIP	Ventilated Improved Pit Latrines
V-WASHE	Village Water, Sanitation and Hygiene Education Committee
WASHE	Water, Sanitation, and Hygiene Education
WASH	Water, Sanitation, and Hygiene

## Introduction

Though learning can proceed even under difficult circumstances, school water, sanitation, and hygiene education (WASHE) is imperative to achieving a healthy school environment and making a difference in the health, attendance, and learning ability of pupils and their teachers. Thirsty pupils are distracted learners and dirty hands spread disease. Poorly maintained latrines lacking in privacy may prevent adolescent girls from attending school. Lack of instruction on why hygiene is important will prevent pupils from properly using their WASHE facilities and developing good hygiene habits for life. Integrating practical activities around safe drinking water, sanitation, and handwashing into lessons and daily school tasks will help reinforce the adoption of healthy behaviors.

Nonetheless, the provision of these facilities and services is the first step; to ensure that they continue to work effectively for the long term, a series of operations and maintenance (O&M) tasks must be attended to—latrines need to be cleaned, hand and drinking water containers filled, and soap and toilet paper made available on a daily basis. Down-the-line repairs must be budgeted for, spare parts procured, and hand pumps serviced at least once a year.

We all know how important it is to have a source of clean water in or adjacent to the school, but functioning toilets and handwashing facilities are just as important. Together, well maintained WASHE facilities can reduce girls' absenteeism by up to 20 percent<sup>1</sup> as well reduce the incidence of diarrhea by up to 40 percent<sup>2</sup> in both boys and girls.

This manual addresses the key O&M tasks necessary to ensure the smooth functioning of school WASHE services and the longevity of related hardware. It covers these key aspects of O&M and includes related tools:

- Once works are done, DEBS hands them over to the schools with careful O&M guidance. A sample O&M letter from DEBS to schools is included (see Appendix 1, Sample WASHE Letter).
- O&M is a daily school-wide activity that includes many players and tasks. The school O&M checklist can help schools to keep daily O&M tasks scheduled and organized (see Appendix 2, Daily WASHE Maintenance Checklist).
- School WASHE O&M involves multiple stakeholders and is successful when everyone knows and plays their role. This manual includes a list of key stakeholders and their roles and responsibilities, as well as contact information for key stakeholders (see Appendix 3, WASHE Roles and Responsibilities).
- This manual also provides worksheets for planning, budgeting, and tracking daily activities, and a schedule of parts prices for easy reference (see Appendix 4, Schedule of Prices for Parts Replacement).
- Area Pump Menders are the critical go-to people in case of a breakdown, and they also have a set of hand pump maintenance tasks that they are trained to do. O&M involves

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<sup>1</sup> IRC International Water and Sanitation Centre. (2005). *School Sanitation and Hygiene Notes & News* May 2005.

<sup>2</sup> Hutton, G. & Haller, L. (2004). *Evaluation of the Costs and Benefits of Water and Sanitation Improvements at the Global Level*. Retrieved from [http://www.who.int/water\\_sanitation\\_health/wsh0404.pdf](http://www.who.int/water_sanitation_health/wsh0404.pdf)

keeping track of the ABM and their work (see Appendix 5, Sample Area Pump Mender repair Record).

Though each school may have a slightly different system for O&M, we hope this manual will make that process easier and show that maintaining school WASHE is far easier than dealing with the consequences of not maintaining it.

# 1. The Hand Pump

Most of the hand pumps in Zambia are India Mark II hand pumps, but before we discuss your hand pump, let's investigate how far it is from the hand pump to the handwashing and drinking water stations, and the senior girls' washroom. If it is less than 500m, the school can draw water in containers every morning and afternoon. If it is more than 500m, you should consider purchasing a small cart or water roller. Now let's study your hand pump. The sketches below make the pump look complicated, but in reality it is a simple and efficient technology.

## 1.1. What are the different parts of an India Mark II hand pump?

**The head assembly** is the mechanism above ground level that operates the plunger. It is a sturdy, modest steel box containing the handle pivot with a heavy duty handle stop, a simple inspection cover secured by a single bolt, a flange that mounts to the water tank, and a solid bar handle that counterbalances the weight of the connecting rods.

**The water tank** sits below the head assembly. It has an angled spout and a heavy duty riser pipe holder, which is raised above the spout to prevent access of debris. It has a bottom flange that mounts on the pedestal.

**The pedestal** fits over the borehole and has angle iron legs to ensure that it is firmly anchored to the concrete base. There is a sanitary seal between the inside of the pedestal and the outside of the casing to prevent infiltration of polluted water into the well.

**The connecting rods** provide the linkage between the pump head and the cylinder at the bottom of the well. The rods are either galvanized mild steel or stainless steel with threaded ends and a hexagonal coupling between rods. Each connecting rod is 3m for ease of handling.

**The cylinder assembly**, which is located down the well, contains a plunger and valves that lift water upward at each stroke. The cast iron case of the cylinder protects the brass liner, which has a smooth finish to prolong the life of the nitrile rubber bucket washer. The cylinder also has nitrile rubber poppet valves for effective sealing.

**The riser pipes** carry water from the cylinder to the water tank. They are 32mm diameter medium grade galvanized pipe in 3m lengths to facilitate installation and repair.

## 1.2. What does the pump head look like?

Below is a cross section of the head assembly of the India Mark II hand pump, as described in the National Rural Water Supply and Sanitation: Operation and Maintenance Manual. The various parts of the pump are mentioned in the diagram.

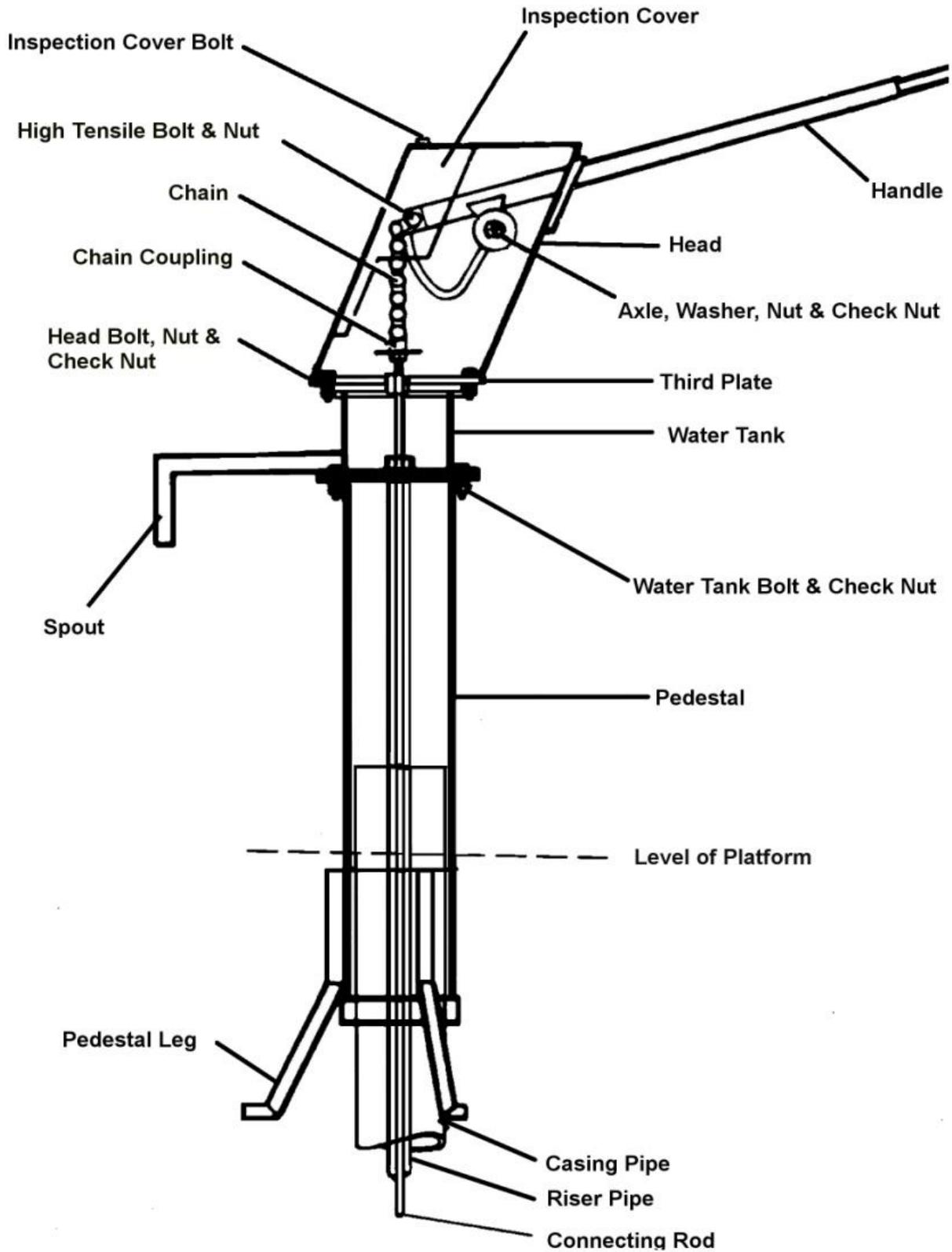
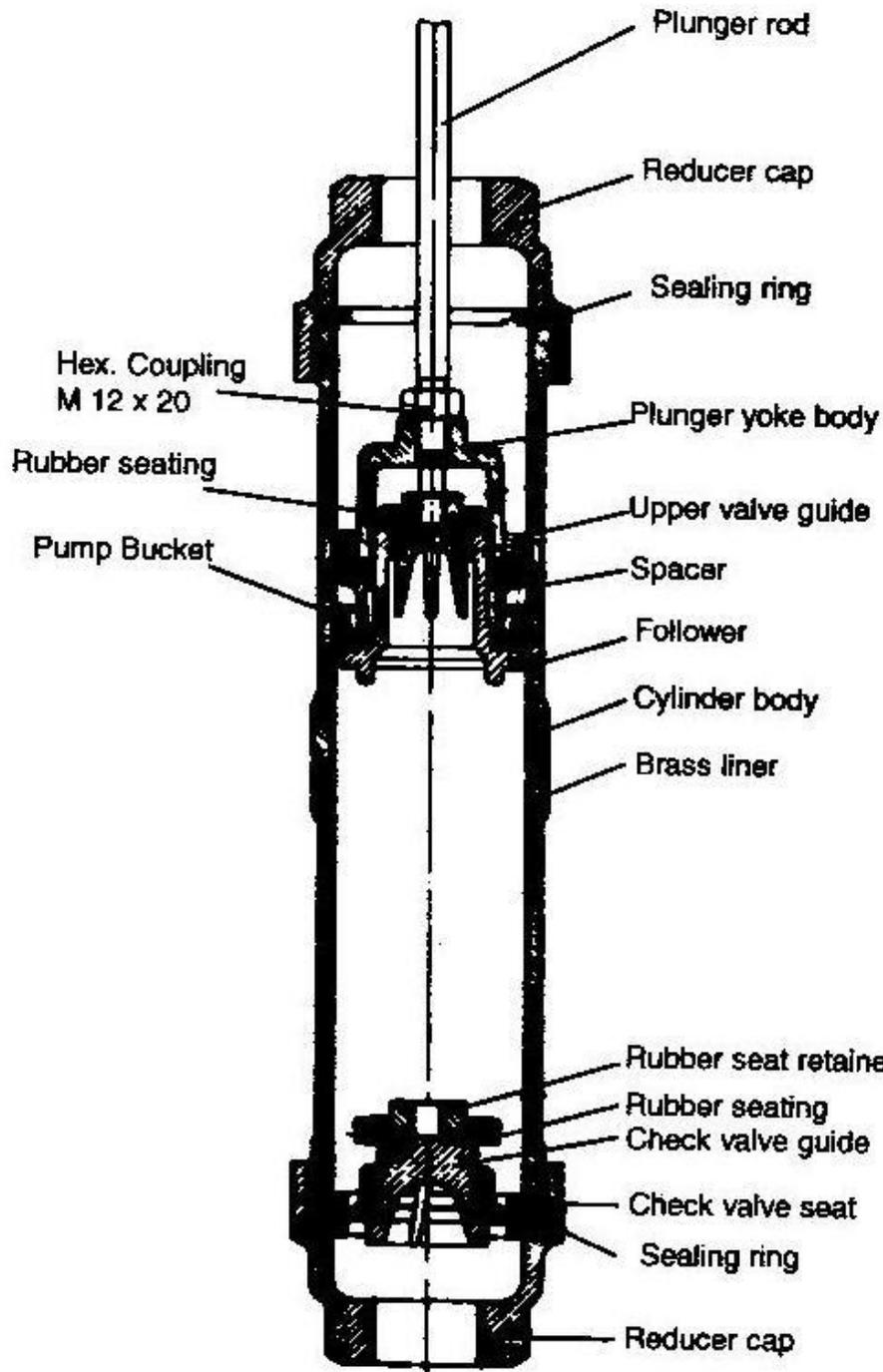


Figure 1: Cross section of head assembly of India Mark II hand pump

1.3. What does the cylinder that is down the borehole look like?

Below is a section through the head assembly of the India Mark II hand pump, as described in the National Rural Water Supply and Sanitation: Operation and Maintenance Manual. The various parts of the pump are mentioned in the diagram.

Figure 2: Cross section of India Mark II cylinder assembly



## 2. Operating and Maintaining Your Hand Pump

India Mark II hand pumps were first produced more than 30 years ago and some in your district have been operating for more than 20 years. Just like a car, the secret of their longevity is careful use and regular maintenance.

### 2.1. Careful use means

- Avoiding banging the pump head with the handle when pumping water.
- Taking long steady strokes with the handle, and avoiding short strokes and frequent changes in direction.
- Checking for any loose nuts and tightening them when necessary.
- Opening the front cover, cleaning inside the pump, greasing the chain, and if necessary, tightening the chain anchor bolt on a regular basis.
- Checking whether the hand pump is loose at the base. If it is loose, arrange with the Area Pump Mender for a fresh foundation to be constructed.
- Fixing any broken fencing to keep animals out.
- Ensuring that the water point is kept clean.

### 2.2. Day-to-day operation: pump caretakers

Your local schools WASHE Committee should select and train two hand pump caretakers. Your **hand pump caretakers** are responsible for ensuring careful use of the pump by students and persons from the community. These two caretakers can share the role, and if one leaves, you still have one person caring for the pump until you replace the other.

Your hand pump caretakers are:

- |                         |                    |
|-------------------------|--------------------|
| 1. Name _____           | Phone number _____ |
| <i>Community member</i> |                    |
| 2. Name _____           | Phone number _____ |
| <i>Teacher</i>          |                    |

### Regular maintenance at least once per year

Area Pump Menders are persons from the community trained to handle routine maintenance and repairs of hand pumps. Area Pump Menders should be called on at least once a year to perform the following functions:

- (a) Examine the hand pump carefully and check whether:
  - the discharge is satisfactory
  - the handle is shaky
  - the guide bush is excessively worn
  - all bolts, nuts, and washers are in position
  - the chain has worn out
  - the roller chain guide is excessively worn
- (b) Dismantle the pump head and pull out the pipes and cylinder:
  - if chain, bearing, and spacer are damaged, replace them

- if roller chain guide is badly worn, replace handle assembly
- if any pipes are damaged replace them
- open cylinder assembly and replace cup washers, sealing rings, and also any other part found defective
- check the condition of the water tank riser pipe holder; if threads are worn out, replace water chamber
- check all sub-assemblies for cracked welds and other visual defects; if defects are serious, replace sub-assemblies
- reinstall the hand pump and paint any areas of corrosion on the inside or outside of the pump head after cleaning and sanding the corroded areas

Appendix 5 contains an example of an Area Pump Mender (APM) Repair Record used to document the nature of the work performed at each APM visit. A copy of the completed form should be left with the school.

### Emergency repairs

Adherence to the day-to-day operation and annual maintenance routine outlined above will greatly reduce the chance of a sudden breakdown. However, hand pumps do unexpectedly break from time to time, so it is important your school has a plan to mobilize an Area Pump Mender quickly to limit downtime.

You may want to sign an annual repair and maintenance contract with your APM. This will ensure he is effectively “on call” to respond to emergencies as well as committed to performing annual maintenance visits. Schools clustered in a small geographic area should consider signing group contracts with APMs as a way of creating economies of scale that are attractive to both the vendors and the schools.

Your Area Pump Menders are:

1. \_\_\_\_\_ Address \_\_\_\_\_  
 \_\_\_\_\_

Phone Number \_\_\_\_\_

2. \_\_\_\_\_ Address \_\_\_\_\_  
 \_\_\_\_\_

Phone Number \_\_\_\_\_

The Area Pump Mender that you choose will have to rent a toolkit from the rural health center or school that is responsible for maintaining the toolkit in your ward. Two or more toolkits may be available in each ward. The contact details of the person(s) who is responsible for the kit are:

Name (s) \_\_\_\_\_

Phone number (s) \_\_\_\_\_

Address (es) \_\_\_\_\_

\_\_\_\_\_

**What type of India Mark II hand pump do you have?**

Draw a circle round the type of pump that you have

- India Mark II standard
- India Mark II force-lift that pumps to an overhead tank

**3. Where Can You Buy Spare Parts for Your Pump?**

1. District or Municipal Council, Chipata / Chadiza / Lundazi / Mambwe

\_\_\_\_\_

Contact (council staff responsible for spare parts):

Email:

Phone Number:

2. Private sector spare parts supplier \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

Phone Number \_\_\_\_\_

## 4. Where Can You Buy Your Supplies of WASH Products?

1. Private sector supplier: \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

Phone Number \_\_\_\_\_

2. Private sector supplier: \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

Phone Number \_\_\_\_\_

3. Private sector supplier: \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

Phone Number \_\_\_\_\_

## 5. What Are the Typical Costs of Spare Parts?

Spare parts prices from January 2015 are given as a guide, but you should check the prices from the District Council (RWSS Unit) or your local suppliers once per year and not just when you need parts. [See Appendix 4, Schedule of Prices for Parts Replacement]

### 5.1. Spares for pump head

Handle axle	K 84.22
Conversion head (head assembly)	K 995.28
Water tank	K 811.54
Pedestal (stand assembly)	K 1200.00
Front cover	K 115.00
Gasket between head and tank	K 200.00
Hexagon bolt (M12 x 1.75 x 40mm long)	K 18.37
Hexagon nut (M12 x 1.75mm)	K 6.12
Washers (M12)	K 22.97
Hexagon lock nut Nyloc nut (M10 x 1.5mm)	K 15.
G.M. spacer	K 107.18

Bearing (No. 6204Z)	K 104.12
Bearing spacer	K 30.62
Chain bolt (high tension bolt M10x40)	K 18.37
Chain with coupling	K 130.15
Upper valve	K 267.96
Hexagon bolt (inspection cover bolt) (M12 x 1.75 x 20mm long)	K 18.37
Third plate	K 145.46

## 5.2. Spares for cylinder

Rubber seating (check valve seal small)	K 30.65
Cylinder assembly	K 995.28
Cylinder body and reducer	K 306.24
Cylinder seals	K 38.28
Cylinder valve seat	K 84.22
Check valve	K 130.15
Check valve assembly	K 145.46
Rubber cup	K 53.59
Rubber seating (foot valve seal large)	K 30.62
Plunger rod assembly	K 290.93
Plunger yoke body	K 252.65

## 5.3. Spares for connecting rods and riser pipes

Connecting rod (galvanized mild steel)	K 191.40
Riser pipe (3m stainless steel)	K 300.00
Connecting rod (stainless steel)	K 200.00
Riser pipe (3m, galvanized mild steel)	K 324.61
Pipe socket (32mm NB medium grade hot dip galvanized)	K 30.62
Connecting rod stabilizer	K 20.00
Riser pipe stabilizer	K 20.00
<b>Complete pump set</b> (including 10 x 3m galvanized riser pipes and connecting rods)	K 6000

## 5.4. Hand pump maintenance cost per year

You must allow for an annual cost of K725<sup>3</sup> for hand pump maintenance in your calculation of the total cost for operating and maintaining WASHE facilities at your school. For the first two or three years, the costs of maintaining your hand pump may be much less but the annual maintenance cost will rise as your pump ages. Don't reduce the contributions because you are not spending the money, you will need it later.

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<sup>3</sup> This is the average cost stated in the "National Guidelines for Sustainable Operation and Maintenance of Hand Pumps in Rural Areas," published by the Ministry of Local Government and Housing in 2007, with a 7 percent annual inflation factor applied.

If you would like to come up with your own calculations for hand pump maintenance:

- Consider the spare parts required to keep the hand pump running in the next five years (fast and slow moving parts)
- Calculate the cost of replacing hand pump spares in the next five years
- Calculate the cost per year
- Add the cost of consumables (grease, etc.)
- Add the cost of preventive maintenance (visit of APM per quarter, cost of transport to buy spare parts)
- Add other costs as you may deem fit (e.g., repair after two years, village WASHE/School WASH committee administration costs)

Table 1: India Mark II Spare Parts Costing Table

Items & figures set as standard

S/No*	Items	Frequency of replacement	Unit selling price (K)	Qty	Amount (K)
I-2	Ball Bearing	every year		2	
I-3	Bearing Spacer	fast moving		1	
I-4	Hex. Bolt (M12 x1.75 x 40)	fast moving		4	
I-5	Chain Bolt (H.T. Bolt M10 x40)	fast moving		1	
I-6	Chain with Coupling (Chain Assembly)	every 2-3 years		0.5	
I-8	Rubber Seating (Check Valve Seal) (Rubber Seal Small)	every year		1	
I-11	Sealing Ring (Cylinder Seal)	every year		3	
I-15	Rubber Seating (Foot Valve Seal) (Rubber Seal Large)	every year		1	
I-17	G.I. Riser Pipe (3m)	every 2-3 years		1	
I-19	Grease (200g)	fast moving		1	
I-21	Inspection Cover Bolt (Hex. Bolt M12x20)	fast moving		1	
I-22	Nut (M12 x 1.75)	fast moving		9	
I-23	Hex. Lock Nut (Nyloc Nut (M10)	fast moving		1	
I-25	Pipe Socket (G.I. Coupling)	every 2-3 years		2	
I-26	Plunger Rod Assembly	every 2-3 years		1	
I-31	Rod Socket (Hex. Coupling: M12X50)	every 2-3 years		2	
I-32	Rubber Cup (Pump Bucket)	every year		2	
I-33	Washer (for M12)	fast moving			
TOTAL (K) of a)					

\* This is the serial number indicated in: MLGH. 2012. RWSS O&M Component Supply Chain Management Manual, 2<sup>nd</sup> Edition.

(For costs, refer to typical cost list of spare parts in earlier section.)

### 5.5. Sharing access to the pumps with the community

In most school communities, households that may or may not have children enrolled at the school will use the hand pump outside of classroom hours. Schools have a much better track record than communities at keeping hand pumps working. However, India Mark II hand pumps are designed to provide water for around 300 people each day; excessive extracurricular use of the pump will result in wear and tear on the pump components and ultimately increase the cost of maintenance needed to keep the pump operational. It is, therefore, important that each school create, on a school-by-school basis, a mechanism to recover funds from households that use water from the school source. Each school's WASHE Committee should assess and register the number of users from the surrounding catchment area and determine an equitable arrangement to permit their access, while not jeopardizing the long-term sustainability of the shared asset.

When deciding appropriate fees from community users, school WASHE Committees should take into account funds for preventive maintenance and repair, such as replacement of taps. Schools may also want to request additional contributions from parents for WASH consumables such as soap, tissue, sanitary pads, and maintenance items such as brooms. In addition, schools may want to accept in-kind contributions such as maize, chickens, etc., particularly after harvesting, if these contributions can be sold.

Though fees levied from the community should be based on calculations of O&M costs, this need not be set in stone. The community may want to propose a reasonable amount to the school WASHE Committee. Try to settle for what the community has agreed upon and is ready to consistently contribute. The School Health and Nutrition (SHN)/WASHE Committee and its parent PTA committee should ensure clear records of contributions and financial reporting back to the parents. This can be done during Annual General Meetings.

### 5.6. Cleaning of the water point surroundings

Pupils may sweep and clean the water point daily as they are assigned. It is necessary for community members to have a cleaning schedule for the water point, too. Community users should also clean the drainage and soak pit regularly. Animals must be kept off the water point.

## 6. The Drinking Water Stations

A container of drinking water, i.e., a drinking water station, needs to be placed in each classroom or adjacent to each classroom. This can be a simple plastic bucket with a tap and lid on a metal stand. A receptacle should be placed on the floor directly under the tap to catch water that drips from the faucets. The drinking water station needs to be filled each morning and topped up at least once per day. Thirsty pupils are distracted learners and may wander off in search of water.

The water should be collected in a closed container from the borehole to prevent the water from getting dirty. Pupils should ideally each have a water bottle or cup. Sharing drinking vessels can spread disease. Cups should be placed off the floor, hung from nails, or placed on a clean rack. They must be washed daily with soap and water.

Drinking water containers must be cleaned once a week by emptying the water and washing the container with soap and water and bleach.

## 7. The Toilets

### 7.1. Operating and maintaining your toilets

The new toilets at your school were designed by the Ministry of Education and will provide good service for many years as long as they are cleaned and maintained regularly. If you have ventilated improved pit (VIP) latrine toilets, the slab, particularly the area around the drop hole, needs to be cleaned every day with a brush and water. Don't use disinfectant because this will interfere with the digestion of the sludge in the pit. If you have an ablution block and a piped water system, make sure that piped water is available and that you have a back-up system of stored water and buckets for flushing when piped water is not available. Ablution blocks also need to be cleaned every day, and you need to make sure that the cisterns are properly maintained.

All toilets are difficult to use and keep clean if toilet tissue is not available. Check the walls frequently to ensure that users are not wiping their soiled hands on the walls. If they are, try to modify the behavior of the pupils so they don't use the walls for wiping soiled hands, and scrub the walls. Check to ensure that you are providing sufficient toilet tissue; otherwise pupils will tear pages from their exercise books or wipe their hands on the walls. Schools obtain toilet tissue in different ways; some ask all new pupils to bring a roll of toilet tissue on their first day; others are more ambitious and ask every student to bring a roll at the beginning of each term. Estimate how many rolls you need on the basis of one roll per student per term, and encourage every student to bring one roll at the beginning of each term.

Most schools arrange for pupils in Grade 5 and older to take turns cleaning the toilets, or each toilet is assigned to a particular grade and gender and that grade and gender (except for Grades 1-4) takes responsibility for keeping it clean. You will need to provide each cleaner with a brush, bucket, protective gloves, and boots. Assuming that each pupil cleans two toilets, you can calculate the number of brushes, buckets, gloves, and boots that you will need.

If your toilets are improperly used outside school hours, you can padlock the steel gates but make sure that the gates are unlocked first thing in the morning. Head teachers should inspect the toilets at least once a week to look for leaks in the roof, doors that don't close and lock properly, or other signs of structural damage. Pits should be visually inspected once a month to make sure fecal sludge has not built up to the top of the drop hole. The MESVTEE toilets are designed for at least 15 years under normal use but if the pit fills, you should contact the DEB Building Officer for guidance on pit emptying, which should be carried out in accordance with environmental and health regulations.

### 7.2. The girls' washroom

Senior girl pupils are particularly concerned about privacy and menstrual hygiene management. If you don't have a working piped water system, make sure that the water tank for the girls' washroom is filled first thing in the morning and again around noon. If there are no water tanks, make sure the washroom has a bucket filled with water and some soap. Like the toilets, the washroom must be cleaned every day. Girls must have the opportunity and privacy to wash themselves and change their sanitary towels or pads during menstruation; otherwise they will stay away from school and potentially drop out. Used pads should be put

down the drop hole in the washroom or adjacent toilet. In schools with water borne systems used pads should be put in bins provided for this purpose in readiness for incineration.

You should maintain a stock of sanitary pads for girls whose menstruation starts when they are at school, or who have a need for a pad. This can be a frightening time for girls just reaching puberty and menstruating for the first time. Two female teachers should be assigned to provide support and counseling to girls on menstrual hygiene management as well as maintain the school's stock of sanitary pads. Male teachers can fill this role if there are no female teachers present. Boys must be discouraged from teasing girls when they are menstruating.

Sanitary pads can be purchased out of the school's block grant for O&M or donated by each senior girl at the start of each term.

## **8. The Handwashing Stations**

Staff and pupils must wash their hands with soap after visiting the toilet or washroom. New toilets may actually encourage more pupils to defecate at school rather than at home, and if they leave the toilet with dirty, unwashed hands, they can spread disease. Whether you have a simple tippy tap, a plastic bucket with a tap, or a concrete tank with a tap or multiple taps, they must be kept full with water as much as possible, which at most schools means filling them twice during the day. Handwashing works better with soap or white ash from the fire. If a student comes out of the toilet and finds no water, soap, or ash, he or she will conclude that you are not serious about handwashing.

You should experiment with soap bars, diluted liquid soap in a bottle, and ash to find out which works best for you. Ash is an efficient cleaner that pupils can bring free of charge from their home fires, but it is very hard on the hands. If you use bar or liquid soap, you must budget for it. Bar soap should be placed in a mesh bag or on a rope to discourage its disappearance. You can "goat-proof" the soap bar by placing a plastic container over it attached to a rope.

In addition to the cost of consumables, you must budget to replace all the taps once per year. If there are nine taps in a school of 600 pupils, each tap will be used 67 times per day, if each student goes to the toilet once per day. Assuming 180 school days per year, each tap will be used about 12,000 times per year. Some schools have got round this problem by using a cheap but robust bolt tap.

## **9. The Cost**

Here are some annual estimated costs for operating and maintaining your WASHE facilities. The costs for the first year will be higher because you may be purchasing drinking water containers, jerry cans, and possibly a cart or roller, etc. Parents and pupils can help by donating consumables such as toilet tissue, soap, menstrual pads, and ash. Please note that compared to the cost of building the latrines and the PTA's contribution of burnt brick, sand, and stone as well as digging the pits, the O&M costs are not great, especially if the costs are shared evenly amongst the pupils. Please estimate the costs for your school and identify who will pay for what and when. Determine how monies will be kept and who will be

responsible for collecting contributions from each family. If costs can't be covered entirely from parent contributions, consider using a portion of the annual government allocations to fill the gap.

If the facilities are not maintained and fall into disrepair, the investment in construction will be wasted, your pupils will not have the benefit of a sanitary environment, and learning achievement will almost certainly decline.

Containers for transporting water	K_____
Small cart or water roller for transporting water	K_____
Hand pump maintenance (spare parts and service contract with APM)	K_____
Cistern maintenance (ablution blocks)	K_____
Padlocks for steel gates on toilets	K_____
Toilet paper rolls (contributed by pupils)	K_____
Cleaning materials (brush, bucket, gloves, & boots)	K_____
Sanitary menstrual pads	K_____
Soap or ash (contributed by pupils)	K_____
Replacement taps	K_____
Monthly payment for School Janitor(s)	K_____

### 9.1. Tracking community contributions associated with O&M

Each respective school head teacher through the School WASHE Committee must ensure that registers of users are kept and updated every school term (refer to templates of registers below). Ledgers for user fees collected must be regularly maintained and the funds deposited in the school account every month. School WASHE Committees should share records of the cash and in-kind contributions (including tissue paper, soap) with the community. In the case of livelihoods-related contributions such as maize and animals, the PTA through its WASHE Committee should sell these items and deposit the money in a school bank account designated for WASH funds. While the guidelines for the composition of the WASHE committee remain the same, two teachers as secretaries and the rest of the positions being filled by the parents, it is strongly advised that the WASHE treasurer, who is a community member, bank the money with the school, rather than keep the cash at home. The committee can maintain a separate ledger to register incoming and outgoing funds.

**REGISTER OF HOUSEHOLDS CONTRIBUTING TOWARD O&M**

**Registration of Households**

**Collection of Monthly Contribution (User Fee) for O&M**

Year \_\_\_\_\_

#	Name of Head of Household	Total # Family Members		# Family Members Enrolled in School		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
		Male	Female	Boys	Girls													
<b>TOTAL</b>																		

*Table 2: Template of household user contribution register*

**REGISTER OF PUPILS CONTRIBUTING TOWARD O&M**

**Registration of Pupils**

**Collection of Monthly Contribution (User Fee) for O&M**

Year \_\_\_\_\_

#	Name of Pupil	Name of Head of Household	Does family draw water from school hand pump?		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
			Yes	No													
<b>TOTAL</b>																	

*Table 3: Template of pupil user contribution register*

## 10. Contact Details

The Head Teacher Mr./Mrs./Ms. \_\_\_\_\_ is responsible for all activities at your school including the operation and maintenance of WASHE facilities. His/her telephone number is \_\_\_\_\_.

District Education Board Secretary is responsible for overseeing all education activities in the district. His telephone number is \_\_\_\_\_.

The District Education Board Building Officer is responsible for quality control of all WASH infrastructure in the district. His telephone number is \_\_\_\_\_.

The District Rural Water Supply and Sanitation Coordinator Mr./Mrs./Ms. \_\_\_\_\_ should be contacted for problems with community water sources that the school is sharing if the problem is beyond the capacity of the community and school to solve. His/ Her telephone number is \_\_\_\_\_.

## Appendix 1: Sample WASHE Letter

Mrs./Mr. \_\_\_\_\_  
District Education Board Secretary  
\_\_\_\_\_ District  
Eastern Province

Date

..... Primary School

Dear School Staff, Pupils, and PTA,

### **Operating and Maintaining Your WASHE Facilities**

Congratulations on the new WASHE (water, sanitation, and hygiene education) facilities that you are building with support from my office. These guidelines are designed to help you achieve the best results from your facilities.

You have access to a source of clean drinking water either in the school or in the adjacent community. Sustained operation and maintenance of this source is obviously crucial. Please set up a School WASHE (S-WASHE) Committee or work with your Village WASHE (V-WASHE) Committee to manage the operation and maintenance of the source. It is government policy (see *Educating Our Future*, MOE, 1996, p. 22) to ensure that local communities participate in the development, maintenance, and repair of school infrastructure, including water sources and latrines.

A container of drinking water must be placed in each classroom each morning along with water at each handwashing station. Make sure that the drinking and handwashing water is topped up during the day. Thirsty pupils are distracted learners, and dirty hands spread disease.

Functioning toilets and handwashing facilities are just as important as clean drinking water. Research has shown that pupils are very particular about the cleanliness of a toilet. They will not use a dirty toilet, and they may choose to defecate at school rather than at home if the school toilet is cleaner.

The new toilets at your school were designed by the Ministry of Education Science Vocational Training and Early Education and will provide good service for many years as long as they are cleaned and maintained regularly. If you have VIP toilets, the slab, particularly the area around the drop hole, needs to be cleaned every day with a brush and water. Don't use disinfectant because this will interfere with the digestion of the sludge in the pit. If you have an ablution block and a piped water system, make sure that there is piped water available and that you have a back-up system of stored water and buckets for flushing when there is no piped water. Ablution blocks also need to be cleaned every day, and make sure that the cisterns are properly maintained.

All toilets are difficult to use and keep clean if there is no toilet tissue available. Provide sufficient toilet tissue; otherwise pupils will tear pages from their exercise books or wipe their hands on the walls.

Most schools arrange for pupils in Grade 4 and upwards to take turns cleaning the toilets. If your toilets are improperly used outside school hours, you can padlock the steel gates but make sure that the gates are unlocked first thing in the morning.

Senior girl pupils are particularly concerned about privacy and menstrual hygiene management. Girls must have the opportunity and privacy to wash themselves and change their sanitary towels or pads during menstruation otherwise they will stay away from school during their periods and potentially drop out.

Finally, and most importantly, staff and pupils must wash their hands after visiting the toilet and before eating.

If a student comes out of the toilet and finds no water or soap, he or she will conclude that you are not serious about handwashing.

Once again, congratulations on your new WASHE facilities. Please work together to maintain them. We are ready to answer any questions that you have.

Sincerely,

.....  
District Education Board Secretary

-----District

## Appendix 2: Daily WASHE Maintenance Checklist

<b>DAILY WASHE MAINTENANCE CHECKLIST</b>		
School:		
Head teacher:		
<b>Drinking water stations</b>		
<b>Task</b>	<b>Who is responsible?</b>	<b>✓ Done?</b>
Morning fill-up		
Afternoon top-up		
Cup or water bottle check (off ground)		
Wash out and safely store cups		
Cleanliness check of water stations		
Clean out drinking water stations		
<b>Toilets</b>		
<b>Task</b>	<b>Who is responsible?</b>	<b>✓ Done?</b>
Stock cleaning supplies		
Make sure protective gloves and boots are available		
Unlock toilets (if kept locked overnight)		
Clean slab with brush and water		
Fill up water buckets for flushing (ablution blocks)		

Check walls for feces, clean, and report to responsible person		
Stock wiping material (paper)		
<b>Girls' Washrooms</b>		
<b>Task</b>	<b>Who is responsible?</b>	<b>✓ Done?</b>
Fill water tank (morning)		
Refill water tank (noon)		
Clean with brush, soap, and water		
Stock sanitary pads		
<b>Handwashing Stations</b>		
<b>Task</b>	<b>Who is responsible?</b>	<b>✓ Done?</b>
Fill tippy taps, buckets, or tanks with water		
Refill tippy taps, buckets, or tanks with water		
Make sure each handwashing station has soap or ash available		
Check taps and tanks for breakage and report		
<b>Other Tasks</b>		
<b>Task</b>	<b>Who is responsible?</b>	<b>✓ Done?</b>


## Appendix 3: Community and WASHE Roles and Responsibilities for O&M

### The Community

- ▶ Decides on internal rules to set up the School WASHE Committees
- ▶ Entrusts the management of the water point to the SHN/WASHE Committee
- ▶ Organizes general meetings and elects the school WASHE Committee
- ▶ Participates in sensitization meetings
- ▶ Keeps the water point clean and respects hygiene requirements
- ▶ Maintains the water point surroundings
- ▶ Contributes financially

### The WASHE Committee

Composition:

- ▶ Chairperson (1)
- ▶ Vice Chairperson (1)
- ▶ Secretary (1) (teacher)
- ▶ Vice Secretary (1) (teacher)
- ▶ Treasurer (1)
- ▶ Community Trainers (2) (Community Health Worker)
- ▶ Caretakers (2)
- ▶ Trustees (3)

Main Roles:

- ▶ Keep the water point functional and ensure its sustainability (maintain standards of quality and quantity of the water supply)
- ▶ Manage fees, income, check balances
- ▶ Ensure the implementation of planned maintenance
- ▶ Facilitate the formulation of rules and regulations
- ▶ Initiate income-generating ventures
- ▶ Ensure hygiene practices are instilled
- ▶ Build capacity among community members
- ▶ Create awareness of hygiene
- ▶ Holds regular meetings
- ▶ Keeps records of contributions
- ▶ Facilitate next election of the school WASHE members
- ▶ Organize training of the community
- ▶ Ensure that all required materials and services are available when needed
- ▶ Maintain information flow to community
- ▶ Keep records of the school WASHE activities (minutes, checklists, memos)
- ▶ Report problems to groups with an oversight role, e.g., PTA and D-WASHE

## Appendix 4: Schedule of Prices for Parts Replacement (Increased By 20% Each Year from 2014)

#	ITEM No	Description of Parts	Replacement frequency	Price (ZMK) 2014	Price (ZMK) 2015	Price (ZMK) 2016	Price (ZMK) 2017	Price (ZMK) 2018	Price (ZMK) 2019	Price (ZMK) 2020
		Handle axle	2 yrs	84.00	100.80	120.96	145.15	174.18	209.02	250.82
		Conversion Head (Head Assembly)	8 yrs	995.28	1194.34	1433.20	1719.84	2063.81	2476.58	2971.89
		Water tank	25 yrs	88.54	106.25	127.50	153.00	183.60	220.32	264.38
		Pedestal (Stand Assembly)	25 yrs	1200.00	1440.00	1728.00	2073.60	2488.32	2985.98	3583.18
		Front Cover	25 yrs	115.00	138.00	165.60	198.72	238.46	286.16	343.39
		Gasket between head and tank	2 yrs	200.00	240.00	288.00	345.60	414.72	497.66	597.20
		Hexagon bolt (M12 x 1.75 x 40mm long)	2 yrs	18.37	22.04	26.45	31.74	38.09	45.71	54.85
		Hexagon nut (M12 x 1.75mm)	2 yrs	6.12	7.34	8.81	10.58	12.69	15.23	18.27
		Washers (M12)	2 yrs	22.97	27.56	33.08	39.69	47.63	57.16	68.59
		Hexagon lock nut Nyloc nut (M10 x 1.5mm)	2 yrs	15.00	18.00	21.60	25.92	31.10	37.32	44.79
		G.M. Spacer	1 yr	107.18	128.62	154.34	185.21	222.25	266.70	320.04
		Bearing (No. 6204Z)	6 months	104.12	124.94	149.93	179.92	215.90	259.08	310.90
		Bearing Spacer	6 months	30.00	36.00	43.20	51.84	62.21	74.65	89.58
		Chain bolt (High Tension Bolt M10x40)	4 yrs	18.37	22.04	26.45	31.74	38.09	45.71	54.85
		Chain with coupling	4 yrs	130.15	156.18	187.42	224.90	269.88	323.85	388.63
		Upper Valve	1 yr	267.00	320.40	384.48	461.38	553.65	664.38	797.26
		Hexagon Bolt (Inspection Cover bolt) (M12 x 1.75 x 20mm long)	2 yrs	18.37	22.04	26.45	31.74	38.09	45.71	54.85
		Third plate	25 yrs	11.46	13.75	16.50	19.80	23.76	28.52	34.22
Spares for cylinder										

Based on current findings otherwise 5 yrs

	Rubber Seating (Check valve seal small)	6 months	30.65	36.78	44.14	52.96	63.56	76.27	91.52
	Cylinder Assembly	8 yrs	995.28	1194.34	1433.20	1719.84	2063.81	2476.58	2971.89
	Cylinder body and reducer	8 yrs	306.24	367.49	440.99	529.18	635.02	762.02	914.43
	Cylinder seals	6 months	33.28	39.94	47.92	57.51	69.01	82.81	99.37
	Cylinder valve seat	6 months	84.22	101.06	121.28	145.53	174.64	209.57	251.48
	Check valve	6 months	11.15	13.38	16.06	19.27	23.12	27.74	33.29
	Check valve assembly	4 yrs	145.46	174.55	209.46	251.35	301.63	361.95	434.34
	Rubber cup	6 months	55.59	66.71	80.05	96.06	115.27	138.33	165.99
	Rubber seating (foot valve seal large)	6 months	30.62	36.74	44.09	52.91	63.49	76.19	91.43
	Plunger rod assembly	8 yrs	290.93	349.12	418.94	502.73	603.27	723.93	868.71
	Plunger yoke body	8 yrs	252.65	303.18	363.82	436.58	523.90	628.67	754.41

## Appendix 5: Sample Area Pump Mender Repair Record

### SAMPLE APM Repair Record

Name of APM: \_\_\_\_\_ Name of Village of Residence: \_\_\_\_\_

APM ID No.: \_\_\_\_\_ Name of Ward of Residence: \_\_\_\_\_

Reporting Month: \_\_\_\_\_

1.	Name of ward where the water facility is located	
2.	Name of village where the water facility is located	
3.	Name of water point	
4.	ID No. of water point	
5.	Type of hand pump	
6.	Date of breakdown	/ / Day Month Year
7.	Date of breakdown reported to APM	/ / Day Month Year
8.	Date of repair works done by APM	/ / Day Month Year

9. Nature of breakdown (Please tick the problems the hand pump had.)

#### India Mark II

9-1. What kind of troubles did you find on the water facility? (Please tick box(es) below.)	9-2. What did you observe caused the trouble on the water facility? (Please tick box(es) below.)
<input type="checkbox"/> 1. No flow of water from the hand pump	<input type="checkbox"/> 1-1) Broken chain assembly
	<input type="checkbox"/> 1-2) Cylinder rubber cup/ leather cup worn out
	<input type="checkbox"/> 1-3) Pump rods are disconnected
	<input type="checkbox"/> 1-4) Riser pipes are disconnected
	<input type="checkbox"/> 1-5) Rubber seating for upper valve worn out
	<input type="checkbox"/> 1-6) Rubber seating for check valve worn out
	<input type="checkbox"/> 1-7) Check valve jammed (not closing)
	<input type="checkbox"/> 1-8) Pump cylinder cracked
	<input type="checkbox"/> 1-9) Water level gone down below cylinder
	<input type="checkbox"/> 1-10) Others (Please write details)
<input type="checkbox"/> 2. Delayed flow or small flow of water	<input type="checkbox"/> 2-1) Leakage from loosened threads on riser pipe(s)
	<input type="checkbox"/> 2-2) Corrosion or crack on riser pipe(s)
	<input type="checkbox"/> 2-3) Leaking upper valve
	<input type="checkbox"/> 2-4) Leaking check valve
	<input type="checkbox"/> 2-5) Cylinder rubber cup/ leather cup worn out

9-1. What kind of troubles did you find on the water facility? (Please tick box(es) below.)	9-2. What did you observe caused the trouble on the water facility? (Please tick box(es) below.)
	<input type="checkbox"/> 2-6) Sealing ring(s) worn out <input type="checkbox"/> 2-7) Others (Please write details)
<input type="checkbox"/> 3. Folding of chain during return stroke	<input type="checkbox"/> 3-1) Top rod is too long, plunger is sitting on top of check valve. (Top rod is above water tank flange level.) <input type="checkbox"/> 3-2) Rubber cup/ leather cup is getting jammed inside the cylinder <input type="checkbox"/> 3-3) Others (Please write details)
<input type="checkbox"/> 4. Handle operation gets stuck during water fetching	<input type="checkbox"/> 4-1) Pump stand flange was not levelled properly <input type="checkbox"/> 4-2) Casing pipes of the borehole could be bent <input type="checkbox"/> 4-3) Others (Please write details)
<input type="checkbox"/> 5. Abnormal noise during pump operation	<input type="checkbox"/> 5-1) Lack of grease on chain <input type="checkbox"/> 5-2) Ball bearings worn out <input type="checkbox"/> 5-3) Pump rods are bent and touching riser pipes <input type="checkbox"/> 5-4) Pump stand flange was not levelled properly <input type="checkbox"/> 5-5) Others (Please write details)
<input type="checkbox"/> 6. Shaky pump handle	<input type="checkbox"/> 6-1) Loose handle axle nuts <input type="checkbox"/> 6-2) Handle axle is damaged/ worn out <input type="checkbox"/> 6-3) Ball bearings worn out <input type="checkbox"/> 6-4) Bearing spacer is damaged/ worn out or short in length <input type="checkbox"/> 6-5) Others (Please write details)
<input type="checkbox"/> 7. Pump head and/or water tank is shaking	<input type="checkbox"/> 7-1) Loose bolts and nuts of flanges
<input type="checkbox"/> 8. Pump stand is shaking	<input type="checkbox"/> 8-1) Pump platform or well cover (for hand dug wells) is

9-1. What kind of troubles did you find on the water facility? (Please tick box(es) below.)	9-2. What did you observe caused the trouble on the water facility? (Please tick box(es) below.)
	cracked
<input type="checkbox"/> 9. Water from the pump got rusty	<input type="checkbox"/> 9-1) Corrosion on riser pipe(s)
	<input type="checkbox"/> 9-2) Corrosion on pump rod(s)
	<input type="checkbox"/> 9-3) No defects were found on the water facility
<input type="checkbox"/> 10. Others (Please write details)	<input type="checkbox"/> 10-1) Others (Please write details)

9-3. What kind of repair work did you conduct?

10.	Has the water facility become functional?	YES / NO*
11.	Amount paid to APM for repair works (excluding costs for spare parts)	

*\* If the breakdown of the hand pump could not be repaired, inform the District Local Authority (DLA) as soon as possible.*

12. Remarks

- 
- 

\_\_\_\_\_  
Name of School WASHE Chairperson

\_\_\_\_\_  
Name of APM

\_\_\_\_\_  
Signature of School WASHE Chairperson

\_\_\_\_\_  
Signature of APM

\_\_\_\_\_  
Date

\_\_\_\_\_

-----

**Official Use**

If APM reported a breakdown of a hand pump to DLA, and DLA conducted the repair work, please fill in the table below.

1.	Date of breakdown reported to DLA	<u>   /   /   </u> Day Month Year
2.	Types of repair works carried out by DLA	
3.	Date the facility became functional	<u>   /   /   </u> Day Month Year
4.	How much did it cost for the repair?	
5.	Who supported the cost?	

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