

A Guide to School WASH Facilities Management, Operation and Maintenance

A Companion to WASH in Schools Design
and Construction Manual



Federal Democratic Republic of Ethiopia, Ministry of Education (MoE)
Addis Ababa, Ethiopia
November, 2019



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Acronyms

CES	Compulsory Ethiopian Standard
ESA	Ethiopian Standards Agency
GTP II	Growth and Transformation Plan II
HEW	Health extension worker
JMP	Joint monitoring program
MHH	Menstrual Health and Hygiene
MHM	Menstrual Hygiene Management
MoE	Ministry of Education
MoH	Ministry of Health
MoWIE	Ministry of Water, Irrigation and Electricity
NGO	Non-Governmental Organization
O&M	Operation and Maintenance
PTSA	Parent, Teachers and Students Association
PV	Photo Voltaic
PVC	Polyvinyl Chloride
SDG	Sustainable Development Goal
SME	Small-medium enterprise
TVET	Technical and Vocational Education and Training
UN	United Nations
UNICEF	United Nations Children Fund
VIP	Ventilated Improved Pit
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization

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Minister of Education



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1. Introduction

Keeping school water, sanitation and hygiene (WASH) facilities operational, with few breakdowns and downtime, and with proper, hygienic use, remains a huge challenge in Ethiopia. There are several factors that have created this situation. The number of schools in Ethiopia has increased exponentially in recent years in accordance with the 2018 annual education statistics abstract, currently, there are 44,730 schools, which is a 23.9% increase over the last five years (36,095 schools during 2013). Similar trend has been observed for pre-primary, primary and secondary schools. Primary schools grew from 30,495 during 2013 to 36,466 in 2018 (a 19.6% increase over the last five years), whereas secondary schools grew from 1912 in 2013 to 3,597 in 2018 (an 88% increase over the last five years) and also pre-primary schools grew from 3,688 in 2013 to 4,667 in 2018.

This growth in the number of schools has resulted in higher enrollments of school children, which has put huge pressure on existing school WASH facilities that are already in poor repair. Investment in school WASH infrastructure has not kept pace with the growth in schools and school enrollments. In addition, the failure to give due consideration to the operation and maintenance of WASH facilities during planning, design and implementation of these facilities has resulted in a high level of non-functionality. The non-functionality rate of water supply facilities in schools was 19% in 2017 (School WASH mapping analysis report, MoE, 2017) which is much higher than the target of 7% in the Growth and Transformation Plan II (GTP II).

Recognizing the significance of school WASH facilities on the quality of education, the government has given emphasis to school WASH facilities in Education Sector Development Program-V (ESDP-V). The provision of adequate, reliable, affordable, inclusive and safe water and sanitation services is, therefore, key to effective teaching and learning processes and creating a healthy school environment. The government and development partners have launched massive investments in the school WASH sector in the country, and the Ministry of Education (MoE) has been coordinating these efforts to expand the school WASH program. The development of the design and Construction Manual is one of the achievements of these efforts. This manual is already in use, setting minimum standards for the construction of WASH facilities under different geographic and environmental conditions.

However, building WASH infrastructure alone does not guarantee the delivery of the desired level of services and make the services sustainable. A minimum set of management standards and practices for the WASH infrastructures (facilities) needs to be established to ensure sustainable services. Therefore, this manual contains step by step guides for managers of school WASH facilities to enable them to complete essential tasks related to the day to day operation and maintenance of WASH facilities in schools in Ethiopia.

2. Objectives

The main objective of this guide is to ensure sustainable WASH service delivery that will create a healthy school environment that supports the teaching and learning process.

Specific Objectives

- i. Provide a step by step guide for caretakers and users responsible for the management of school WASH facilities
- ii. Suggest the time and the level of skills required for the operation, maintenance and overall management of school WASH facilities to ensure uninterrupted services.
- iii. Identify and list the day-to-day operation and maintenance activities needed for the different school WASH facilities, including monitoring activities and budget allocation/ resource mobilization.

3. Scope

This school WASH facilities management manual outlines the operation and maintenance (O&M) services required for school WASH facilities, and the process of planning, implementing, financing and monitoring these services. This manual aligns with the services described in the School WASH design and Construction manual. The WASH Facilities Management Manual targets school communities and other WASH stakeholders at the woreda and regional level. It outlines their roles and responsibilities in operating and maintaining WASH facilities as well as the major activities and specific requirements of these stakeholders

This manual is also intended to support the ongoing efforts of the government to achieve the targets of SDG 6 to ensure availability and sustainable management of water and sanitation for all by 2030, and the GTP II targets to achieve a quality education program as set by the Federal Government of Ethiopia. At the national level, a design and construction manual has already been prepared for school water supply, sanitation and hygiene facilities. These design standards are important to guide the implementation of school WASH facilities.

However, a guide for the proper management of the constructed facilities has been missing. This manual is introduced to fill this gap. This manual is designed to assist school principals and administrators, teachers, caretakers and other stakeholders to plan, budget for, and undertake, preventative and curative maintenance of school WASH facilities, and monitor the operation of these facilities.

4. Management of Water supply and sanitation in schools

As UNICEF's 2012 WASH in Schools Guide explains, the cleanliness of the school environment can significantly affect the health and well-being of children. Waterborne and sanitation related diseases spread quickly in cramped spaces with limited ventilation, where hand-washing facilities or soap are not available, and where toilets are in disrepair. Too often, schools are places where children become ill. Safe water supply and sanitation are critical to reduce the spread of disease and improve student health.

According to the World Health Organization standard, each student requires five liters of water per day for drinking, hand washing and other hygiene requirements. Water supply projects for schools must meet these water requirements. The MoE recently set minimum standards and identified the resources needed for school WASH in its School WASH Strategy and Implementation Guidelines (please access the documents online at; <https://www.cmpethiopia.org/content/download/2675/11157/file/Final%20National%20School%20WASH%20>)

The provision of safe water in adequate quantities and acceptable sanitary and hygienic facilities is important to improve the health of school children and prevention of diseases that prevail in most schools. There is a vital linkage and intimate relationship between health and personal hygiene which depends largely on the availability of sufficient water and proper sanitary services.

Sanitation is the provision of facilities and services for the safe disposal of waste. Sanitation systems encompass the following components:

- i. Human feces disposal systems (latrine blocks),
- ii. Wastewater disposal systems,
- iii. Solid waste (rubbish) disposal systems



Fig 1 F-Diagram posted on the wall of Lakole primary school SNNPR, @ Meklit Mersha Oct. 2019

4.1 Management of Water supply systems

Schools receive water from their own on-site water supply, nearby community or municipal water supply schemes. This section of the guide will explain the operation and maintenance requirements of common school water supply systems including hand pumps, solar pumps, spring supply systems, boreholes, rainwater/roof harvesting, and water quality testing and management.

4.1.1 Hand pumps

Handpumps are the most widely used water supply technology in Ethiopian schools. They are adapted to specific areas where there is a shallow water table within 80 meters depth. The operation of a handpump is simple, operated by moving the pump handle up and down which in turn moves the internal rod and pistons up and down. When the pump handle moves down, the rod pulls the piston up. The piston/upper valve closes because of the weight of the water above the piston. A vacuum is created below this piston which draws the water up. The lower valve also opens because of the reduced pressure below the moving piston. Water will now flow. When the handle is raised, the rod and piston will move downwards. The lower valve closes to prevent backflow of water. The pressure of water below the piston opens the upper valve allowing water to pass through the piston.

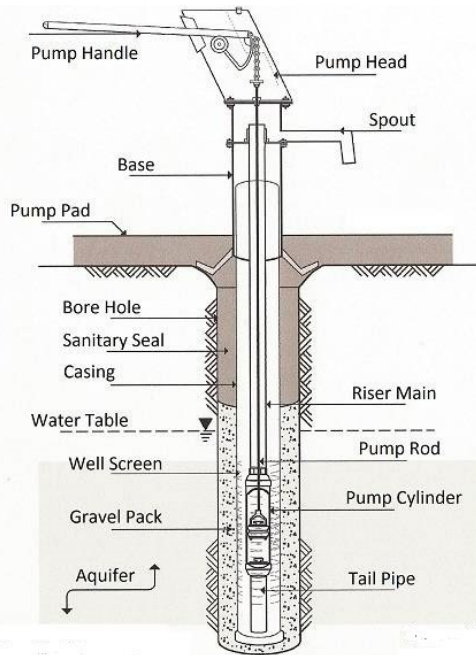


Figure 2: Hand-dug well with hand pump (Source-Life water International, Fred Proby)

4.1.1.1 Checklist for hand pump operation and maintenance

Activity	Person responsible
Daily	
<ul style="list-style-type: none"> ◆ Move the pump up and down to check the normal operation of the pump. A cracking noise while the pump is under operation is a sign of trouble. ◆ Dismantle the pump and check the different parts for damage and take timely corrective measures. ◆ Check the water discharge is adequate. If more than 5 strokes are required before water comes out from the spout, it means the pump is leaking beyond an acceptable limit. The discharge should be no less than 10L / minute. ◆ Tighten the cover bolt and check all nuts and bolts are secured. Sweep/clean the platform and the surroundings and keep the water supply system clean ◆ Ensure the water scheme is open and not locked during the school day ◆ Secure hand pump during off school times 	<p>Trained school teachers and WASH club members</p> <p>For dismantling the pump, water technician is responsible.</p>

Weekly	
<ul style="list-style-type: none"> ◆ Check the pump handle, nuts and bolts for any loose parts ◆ Grease the chains for hand pumps ◆ Check the pump head and pump foundation for alignment ◆ Inspect the pump platform for any cracks ◆ Check the pump head for any cracks, damage or loss of parts ◆ Check if the pump stand is shaky during operation. If yes, the stand is loose in the foundation and contamination of the well can take place. 	<p>School teachers and trained WASH club members for monitoring and minor maintenance.</p> <p>Pump technician for filling cracks, fixing alignment and fixing the pump stand.</p>
Monthly	
<ul style="list-style-type: none"> ◆ Check for any leakage at the head of the pump, in the rising main and at valve of the pump set, at the bottom of the well. ◆ Grease the bolt and nuts after they are loosened and removed ◆ Check the chain as it often breaks due to load from frequent use 	<p>School teachers and trained WASH club members for monitoring and minor maintenance.</p> <p>Pump technician for chain replacement.</p>
Yearly	
<ul style="list-style-type: none"> ◆ Plan for spare parts based on data of the fast-moving parts and allocate budget and procure spare parts (see figure in next page and refer to budget section) 	<p>School administration</p>

Spare parts for handpumps

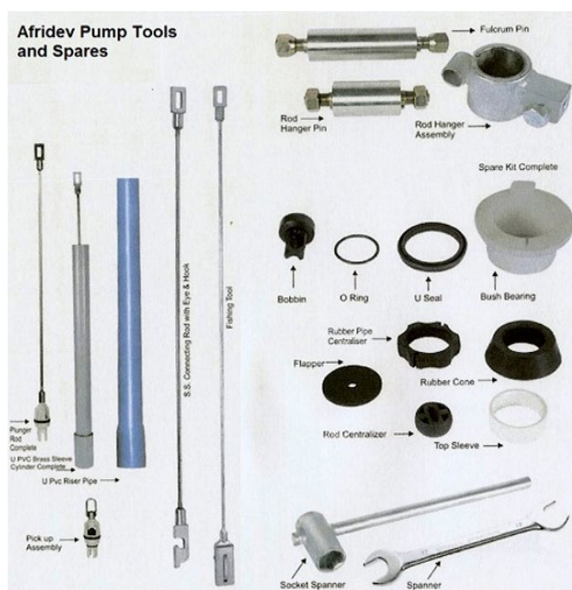
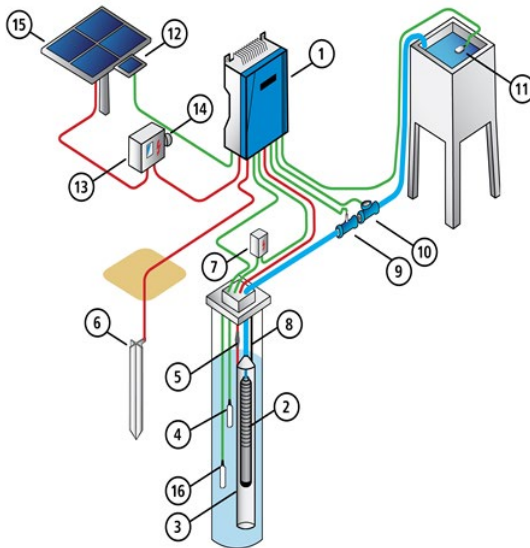


Fig 3. Afridev Pumps tools and spares (Source-www.mewhandpump.com)

4.1.2 Solar Pump Water Supply Systems

There is little that can go wrong with a solar system if it is installed correctly. The submersible pump in combination with controller unit has several safety features that protect it in event of a problem occurring.



1. PS2 Controller
2. Submersible Pump
3. Flow Sleeve
4. Well Probe
5. Cable Splice Kit
6. Grounding Rod
7. Surge Protector*
8. Safety Rope
9. Water Meter
10. Pressure Sensor
11. Float Switch
12. Sun Switch
13. PV Disconnect
14. Lightning Surge Protector
15. PV Generator

Fig 4. Solar energy system with groundwater (Source- LORENTZ Solar pump systems)

It is recommended to install a Surge Protector at each controller sensor input.

4.1.2.1 Operation & Maintenances Procedures for Solar Energy Systems

A. Panel:

- ◆ Orientation of the solar panel should be in the direction on that captures the most sun.
- ◆ Make sure panels are at the right angle based on the specification attached both for cleaning purpose and maximum radiation.

- ◆ It should be fenced and guarded so that the panels will not be looted
- ◆ The panels should be kept in an elevated steel tower for safety
- ◆ Solar panels should always be free of dirt and obstructions

B. Motors:

- ◆ some motors needs brushes to be replaced. This is usually a simple operation with brushes replaced after two years of operation.

C. Inverter AC/ Automatic/ Regulator DC:

- ◆ Install away from sunshine. This motor is affected by heat of more than 20-25 degrees. If the temperature is above this then switch it off
- ◆ Keep away from water. It is an enclosed system and should not be tampered with.

D. Wires:

- ◆ Should be placed in conduit and buried underground in case of replacement use right wires (ultra violet ray resistance)

E. Pulley& Belts:

- ◆ Check tension and replace when damaged on exposed terminals (on panels, invertors)

4.1.2.2 Checklist for solar pump operation and maintenance

Activity	Person responsible
Daily	
<ul style="list-style-type: none"> ◆ Clean the panels with soft and wet cloth followed by dry cloth ◆ Protect the panel from looters by training the guards 	<p>Trained school teachers and WASH club members, School guards.</p>
Weekly	
<ul style="list-style-type: none"> ◆ Check electric cables ◆ Check the pipes for leaks 	<p>Trained technicians at woreda and school level</p>

Monthly	
Record keeping ♦ Check electric cables ♦ Check control board ♦ Check the water pipeline to the storage tank ♦ Check for any damage and leak along the distribution line ♦ Observe for any trouble with the submersible pump by observing the flow rate. Should be no less than 10L/minute.	School teachers and trained WASH club members for monitoring and minor maintenance. Trained technician for any curative maintenance.
Yearly	
♦ Plan for spare parts based on previous change requirement records. Allocate budget accordingly and procure spare parts. ♦ Check the submersible pump ♦ Check motor brushes for replacement ♦ Check pulley tension and replace when damaged	School Administration Mechanical and electrical Engineers trained in Solar Power from Region water bureau

4.1.3 Spring water supply systems

Springs are ground water resources that occur where the natural flow forces the groundwater to appear at the surface on a sloping ground or at valley bottoms. Springs in Ethiopia are located in large numbers in high rainfall areas, along the slopes and valley bottoms of mountainous areas and escarpment or edges of plateaus that have adequate rainfall input and vegetative land cover. Springs are hardly found in dry lowland areas. The spring water is obtained from a water bearing formation called an aquifer. Spring water is usually fed from ground water formations aquifers or water flowing through fissured rock. The catchment area has to be conserved and protected for a sustainable water supply and reliable yield. Spring water is generally safe water and inexpensive in its development..

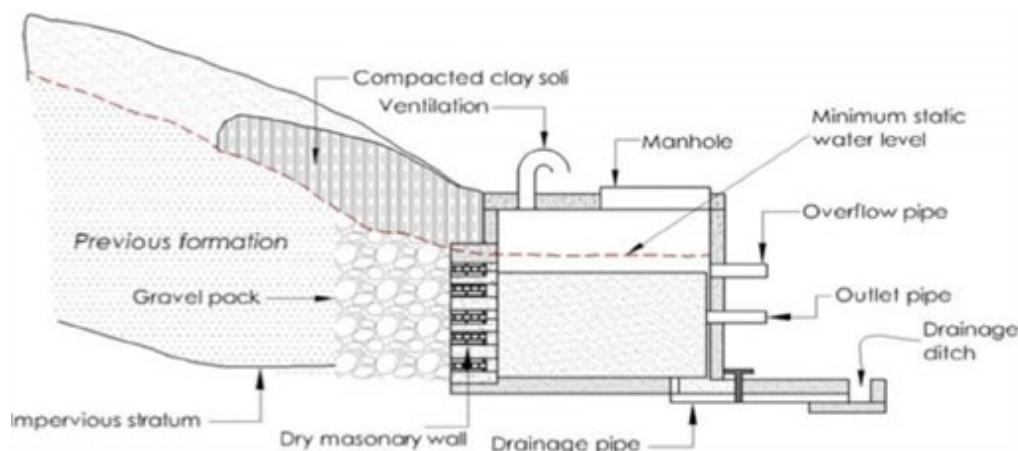


Fig 5. Schematic section of spring eye development with spring box. Source: MWRI,2009. A manual for field staff and practitioners. April 2009

The main structural components of the spring water system include: (i) A protective structure at the source or where it appears at the ground surface (eye of the spring), (ii) A collection chamber (storage) which is used for collecting night storage and it is located downstream of the protective structure. If the catchment of the spring is conserved and protected, springs are reliable water sources that can supply water in adequate quantity and quality. Spring water sources are rarely located within the premise of a school, and so are often owned and managed by the community. If there are proper agreements and memorandum signed with the community, schools can have access from these sources through pipeline connection.

4.1.3.1 Checklist for spring water supply operation and maintenance

Activity	Person responsible
Daily	
<ul style="list-style-type: none"> ◆ Check all taps for leaks and repair ◆ Clean the site and the basin. Drain if there is a pool of water. 	Trained school teachers and WASH club members.
Weekly	
<ul style="list-style-type: none"> ◆ Check the apron. Apron should be free of any pooled/drainage water. 	Trained technicians at woreda and school level

Monthly	
<ul style="list-style-type: none"> ◆ Check the yield of the flow and keep record ◆ Observe for any damage 	<p>School teachers and trained WASH club members for monitoring and minor maintenance.</p> <p>Trained technician for any curative maintenance.</p>
Yearly	
<ul style="list-style-type: none"> ◆ Check for any leakage surrounding the eye protection box ◆ Open the service hole cover and disinfect the chamber quarterly. 	<p>Trained teachers and school club members can clean the water storage box.</p> <p>Woreda technician for plumbing</p>

4.1.4 Borehole with diesel/electric pump

The term borehole or tube well is often used for bored or drilled wells. The range of depths to the water level determines whether the borehole is shallow or deep.

Submersible pump:

- ◆ The pump is kept below the water table all the time and should be equipped with water level sensor to avoid damage of the pump
- ◆ Electrical connections should be inspected and repaired regularly
- ◆ The pump should not be tampered with in any way and installed and maintained by a skilled electrician
- ◆ The most common damage is caused by an unskilled person

Water supply distribution pipelines

- ◆ Inspect the water distribution pipeline regularly for damage or leaks.
- ◆ Check service holes where meters and gate valves are located and keep locked
- ◆ Inspect for any corrosion and damage along the pipelines if a galvanized pipe is used
- ◆ Important areas of inspection are road and trench crossings

Function of water supply distribution pipe line elements

S.N	Function of water supply distribution pipe line elements	Function
1	Pipe line (Galvanized iron, DCI or PVC or HDPE)	Pressurized Tubes near customers to supply customers by connection
2	Gate valve	Valves in the distribution system to isolate pipes for controlling flows and isolation during repair.
3	Flush valves	Valves in the distribution system to flush pipes after repair or as required located at
4	Air release valve	To release air in the distribution system not to block flows or offends customers.
5	Hydrants	Provide water for fire protection
6	Private connections	Water supply connection points for customers
7	Water meter	Registers consumption or distribution
8	Valve chambers	Protection house for valves & easy access
9	Public taps	Supply at point for number of people

Water Tap

- ◆ Clean the basin regularly
- ◆ Check for any water leakage from the tap when it is not in use
- ◆ If there is a leak, take out the rubber washer and replace it with a new one
- ◆ Repair and maintain the support structure when damaged

Organization and Management

For effective management of a water supply service in schools, a responsible body or office must be delegated, and this office oversees different aspects of the operation and maintenance.

- ◆ Quality of the repair and maintenance services needs to be closely followed.
- ◆ Closer follow-up for unusual sound and vibration in water distribution systems
- ◆ Sharing information about correct use and maintenance with the users of the facility

4.1.4.1 Checklist for borehole and generator operation and maintenance

Activity	Person
Daily	
<ul style="list-style-type: none"> ◆ Record hours of operation each day and sign the record ◆ The operator must perform a prestart inspection to ensure the engine is ready for operation. ◆ Check oil level and pump before start of the engine ◆ Check water in the radiator ◆ The operator must also be alert for any leakage of these fluids, oil and water. Fix leaking and damaged water taps as soon as possible. These can deplete the water from the storage wastefully ◆ Clean the engine and pump ◆ Clean the pump house every day 	Trained technicians at woreda level
Weekly	
<ul style="list-style-type: none"> ◆ Check oil level ◆ Inspect the air cleaners ◆ Check for leaks ◆ Check water in the radiator and add cooling water as necessary ◆ Inspect water taps that are leaking or damaged 	Trained technicians at woreda level
Monthly	
<ul style="list-style-type: none"> ◆ Grease the shaft as needed ◆ Inspect all electrical wiring, insulation, and security of connections ◆ Check for any leakage at the pump and shaft areas ◆ Inspect joints and fittings of the distribution pipe line for cracks, leaks or rust ◆ Inspect pipelines and flush valves for any damage or leakages ◆ Record readings of water meter and pressure gauge on prepared form and notice if readings are unusual or faulty ◆ Check the yield of the flow and keep record 	Trained technicians at woreda level

Yearly	
<ul style="list-style-type: none"> ◆ Protect the engine by providing housing ◆ Test the water quality in the water storage reservoir and disinfect the water with chlorine ◆ Inspect the water distribution pipeline from the pump site up to service reservoir through opening service holes and check valves ◆ Inspect and clean valve chamber of debris. ◆ Open valve and flush after repair or inspect if valve is operational by closing and opening ◆ Purchase oil, diesel fuel, and other parts requiring frequent replacement in advance and keep in ware house 	<p>Trained technicians at woreda level</p>

4.1.5 Rain/Roof Water Harvesting System Management

Rooftop catchment systems gather rainwater caught on the roof of a school. Using gutters and downpipes (made of local wood, bamboo, galvanized iron or PVC), they catch rain water and divert it to one or more storage containers ranging from simple pots to large tanks. If properly designed, a foul flush device or detachable downpipe is fitted for exclusion of the first 20 liters of runoff during a rain storm. This runoff is mostly contaminated with dust, leaves, insects and bird droppings.

Organization and Management

For effective management of a water supply service in schools, a responsible body or office must be delegated, and this office oversees different aspects of the operation and maintenance.

- ◆ Quality of the repair and maintenance services needs to be closely followed.
- ◆ Closer follow-up for unusual sound and vibration in water distribution systems
- ◆ Sharing information about correct use and maintenance with the users of the facility

4.1.5.1 Checklist for rain/roof harvesting operation and maintenance

Activityw	Person responsible
Daily	
<ul style="list-style-type: none"> ◆ Teachers, caretakers or guards have to divert away the first 20 liters at the start of every rainstorm running into the gutter ◆ Check the tap for leak and malfunctions ◆ If using a bucket to draw water, ensure the water drawing materials are clean. ◆ Restrict access to the storage and taps by unauthorized people 	<ul style="list-style-type: none"> ◆ Trained school teachers and WASH club members.
Weekly	
<ul style="list-style-type: none"> ◆ Check the gutters for any damage ◆ Check for leaks and repair. 	<ul style="list-style-type: none"> ◆ Trained school teachers and WASH club members.
Monthly	
<ul style="list-style-type: none"> ◆ Check the gutter and fix if there is damage ◆ Inspect the storage facility for any leakage ◆ Check the water quality by taking water samples before use for drinking purposes 	<ul style="list-style-type: none"> ◆ Trained water and health technician sat Woreda level.
Yearly	
<ul style="list-style-type: none"> ◆ Before the start of the rainy season, the complete system has to be checked for cracks, holes and broken parts should be repaired as necessary ◆ Regular water quality testing and disinfection quarterly. ◆ Prepare O&M plan and allocate budget. 	<ul style="list-style-type: none"> ◆ School administration, trained teachers and WASH club members.

4.1.6 Water Quality Management

To maintain water quality, it is pertinent to conduct sanitary survey, water quality test (microbiological, chemical and physical) and on-site water treatment or disinfection. Schools need to put in place a system to continuously test, regularly disinfect and monitor water quality, and take remedial action. This can be done in collaboration with health offices and Woreda Water Offices, water utilities or water and sewerage enterprises (SWASH, MoE, 2017).

The most common chemical disinfectant for water treatment, and the one that has historically made the greatest contribution to the prevention of waterborne disease worldwide, is chlorine.

Chlorine for water treatment is generally obtained and used as either liquefied chlorine gas or as sodium hypochlorite solution. There are also institutional water filtration systems that can be installed in situations where there is a serious threat of pollution to treat different pathogenic micro-organisms.

Water Quality Tests

Water quality tests should comprise the below test parameters fulfilling compulsory Ethiopian (CES 58) and other international standards:

- ◆ Physical tests: indicates properties detectable by the senses.
- ◆ Chemical tests: determines the amounts of mineral and organic substances that affect water quality. This test also includes the presence of radioactive substances above the permissible level.
- ◆ Microbiological tests: determines the presence of bacteria, algae, zoo planktons, flagellates, parasites and toxin producing organisms above the standard limit.

4.1.6.1 Checklist for water quality test

No	Type of water quality test	Schedule for Test	Remark
1	Physical test	<ul style="list-style-type: none"> ◆ Twice a year, once during summer and the other during winter ◆ When study for new water supply system is required ◆ When required - eg if source is exposed to contamination 	◆ Additional disinfection required if the source is from surface water or if the source is exposed to contamination due to flood
2	Chemical (including radioactive substances) test	<ul style="list-style-type: none"> ◆ Twice a year ◆ When a study for new water supply system is required or if there is industrial waste contamination hazard around the supply area 	◆ Additional disinfection may be required if the source is from a dam, or if there is fear of contamination by industries nearby
3	Microbiological test	◆ Quarterly and when required	◆ All water points should be tested

4.1.6.2 Operation and maintenance requirements for chlorination

Task Description	Frequency	Tools/material	Personnel required
Prepare chlorine solution	Quarterly	Chlorine and dosing equipment, weigh, containers	Local operator/ technician
Conduct periodic tests of residuals in the distribution system	Monthly	Comparator*	Local operator/ technician
Inspect equipment in the chemical store	Annually	Pen and paper	Operator/ technician
Clean dosing gravity feeder	Bi-annually	Cleaning materials (brush, steering material, glove, heavy duty glove, goggle, gown, rubber boots, mask, detergent)	Local operator/ technician
Inspect and overhaul dosing equipment	Annually	New containers	Operator/ technician
Inspect laboratory and equipment	Annually	Pen and paper	Technician

Calculation for Amount of Chlorine Powder

Chlorine for disinfection is available in various forms combined with other materials, normally either in the form of gas or powder. The most commonly used is the powder form. The formula used to determine the amount of chlorine powder is:

$$CT = (CO \times Cl_2) / V$$

CT is the required chlorine water solution in mg/liters which needs to be calculated

CO is the percentage of chlorine available in the powder - commonly between 35 - 65% Cl₂ is the amount of chlorine powder in grams

V is the volume of water to be treated in m³, commonly the volume of water in the tank to be treated.

* A comparator* is a compact, handy colorimetric unit supplied with a generous number of different color scales. It is supplied with necessary color discs, reagents etc. for determining Free, Total and Combined Chlorine plus pH.

4.1.7 Water Conservation

Water conservation should focus on the needs and drivers for lowering water consumption, maintaining water sustainability, overcoming future water shortages, and coping climate change, and so on. It will be largely an educational process, through teaching the best practices and drawing the attention of the students to consider the actions that can help to resolve water shortage issues.

Schools use large amounts of water every day for drinking, hand and face washing, for use in toilets, laboratories and outdoor playing fields and lawns. Options to conserve water for these facilities include:

- ◆ Create awareness for staff and students on proper use of water supply and waste water reuse.
- ◆ Proper and effective maintenance of the school WASH facilities that use water.
- ◆ Consider replacing old and leaking pipes, taps, and gate valves immediately.
- ◆ Efficient use of waste water and rainwater where applicable for gardening and beautification of the school compound, and;
- ◆ Encourage the school community to participate in soil and water conservation activities to protect the catchment and increase water recharge.

4.2 Management of Hygiene and Sanitation Facilities

Excreta disposal is a key aspect of the sanitation program in schools. Effective containment and safe disposal of feces and urine is the primary aspect of waste management in schools. The containment and disposal of feces is a primary barrier to disease transmission in schools. Inadequate disposal could lead to contamination of the environment and pollution of the ground and surface water. An “improved” sanitation facility is one that hygienically separates human excreta from human contact. “Improved” facilities in a school setting include flush/pour-flush toilets, ventilated improved pit (V.I.P) latrines, pit latrine with slab, and composting toilets. “Unimproved” sanitation facility is one where human excreta is not separated from human contact which includes: pit latrines without slab, hanging latrines, bucket latrines, etc. (JMP definition, 2018)

4.2.1 Management of Composting VIP Latrine

A composting toilet is a sanitation technique that can convert excrement into a soil like material which can then be safely disposed of in the environment after adequate time has passed for composting. When school toilets are full, the pit is covered with soil and abandoned. If the composting latrine is properly constructed and used, it is a sustainably usable toilet can service three or four times of the life of other simple latrines. Human waste is a valuable resource for soil conditioning and crop production but requires careful management for its use.

In composting toilets, there are essential management practices to observe besides just using toilets. This involves:

- ◆ Initially, a layer of absorbent material (sand and gravel) is put in the bottom of the pit before use
- ◆ After each use, the feces are covered with ash (or lime, sawdust, shredded leaves or vegetable matter) to deodorize the feces, soak-up excessive moisture, and improve carbon/nitrogen ratio. This ensures that sufficient nitrogen is retained to make a good fertilizer.
- ◆ The above-mentioned materials should be kept in a container with a cup in each toilet room for use every time the toilet is used. The hired cleaners should take the responsibility of adding these materials in to composting toilets.
- ◆ The school WASH club members can be assigned to supervise and oversee the proper use of the toilet rooms.
- ◆ The school community (teachers, students, administration officers, supportive staff) needs to be trained on how to manage composting toilets. This involves ensuring there is a sufficient cover material available and using this properly in each toilet.
- ◆ When the first pit is three quarters full, it is filled with dry, powdered earth and sealed. The contents are left untouched for at least two years for anaerobic decomposition. Then it is available for use as fertilizer. The second pit is used until it is three quarters full.
- ◆ To produce high quality compost, the use of non-organic solid materials (example: stones, plastics etc.) for anal cleaning should be avoided.



Fig 6: Composting dry pit latrine section view.

4.2.1.1 Emptying the compost

There are challenges when removing and transporting the compost. One is the culture of the people and second is the health risk. There is a need to know when exactly to empty the pit to minimize the health risk. The other consideration is to plan a site where the compost is to be used effectively and can have economic return. There is a need for the compost to mix with the soil for effective impact. Trying to empty the pit before the recommended time (up to two years) can have serious health and environmental consequences and this should be avoided.

As dry pits are small, the most widely used method for emptying the compost is to scoop manually using a shovel after two years of sealed (anaerobic) condition. The compost is accessed through the manhole of the latrine. A light reinforced concrete cover slab is removed to open the pit, allow a few hours for proper aeration and then access the compost.

4.2.2 Management of Flush Toilets

Most flush toilets have mechanical settings. It is a sealed latrine and consists of water container or squatting pan with a steep bottom floor that facilitates the wash away of the waste. Flush toilets are cleaned by the flow of water carrying the wastes in a closed pipe drain directly into the pit underneath in the case of school WASH design. A water container (called a cistern) is located above the seat. After use of the latrine, a hanging string is pulled, and the cistern empties the water through the force of gravity and carries away the waste which in the meantime washes the bowl clean for use again.



Fig 7: A janitor cleaning school toilet at Biruh Tesfa primary school, Addis Ababa @MoE Oct. 2019

4.2.3 Management of ventilated improved pit (VIP) latrines

The VIP latrine is an improvement over the simple dry pit latrine which is a common latrine option in many of rural schools of Ethiopia. The distinctive feature that gives the VIP latrine its name is the vent pipe installed into the pit and the fly screen, which is used to exhaust the foul odor from the pit and control flies. The principle is that a continuous flow of air comes in through the superstructure enters the pit through the hole. This cold air will go down into the pit displacing (pushing up) the hot smelly air upward through the vent pipe. The flies attracted to the pit through the squat hole will try to escape by heading towards the strongest

light source, which comes from the vent pipe. A mesh (fly) screen tied at the top of the vent pipe will prevent flies from escaping to the outside of the latrine. The flies exit is blocked by the fly screen, so the flies eventually die and fall back into the pit.

The maintenance requirements are similar to the other improved dry pit latrines. In addition, dead flies, spider webs, dust and debris should be removed from the ventilation pipe and fly screen to ensure a good flow of air.



Fig 8: Raised Latrine section and elevations in Swampy and Rocky areas

4.2.3.1 Checklist for latrine operation and maintenance

Activity	Tools	Person responsible
Daily		
<ul style="list-style-type: none"> ◆ Inspect the latrines, urinals, and hand washing facility for its proper use. Check the tap for leak and malfunctions ◆ Monitor the proper use of the flush toilet and ensure proper services ◆ Collect papers and other solid wastes from latrine and transport to a solid waste disposal pit or incinerator ◆ Clean and wash the latrine bowls, urinals and hand washing facilities with water and detergents. Remove feces from each toilet bowl and seat. Mop the floor, doors, handles, hand rails, and wall (superstructure) of the toilets. ◆ Clean and wash the hand washing basin ◆ Check if there are sanitary pads dropped in each sanitary disposal box, collect them and dispose into an incinerator or into designated open pit incinerator for solid waste disposal. ◆ Keep children away from playing around the vent pipe as can damage the vent 	<p>Hand glove, garbage collection box, wire brush, bucket, detergent, mop, cloth, plastic bag for waste collection, metal grab.</p>	<p>Trained school teachers and WASH club members for inspection and monitoring.</p> <p>Hired and trained cleaners for Cleaning.</p>
Monthly		
<ul style="list-style-type: none"> ◆ Inspect the floor slab and foot rest, seat, s-trap, slab cover for access to the pit and super structure, vent pipe and fly screen. ◆ Perform small repairs such as lining the cracks on the slabs and wall of the latrine with cement ◆ For raised latrines: Inspect for leakage on the sides of the raised pit (assess presence of wet surfaces on the pit side and the surrounding surface of the latrine). Assess for foul smell. 	<ul style="list-style-type: none"> ◆ Cement, sand, water, nails, and local building materials hand glove, shovel, hammer, bucket 	<ul style="list-style-type: none"> ◆ Skilled person from woreda sector offices and construction office ◆ Contracted SME workers or hired TVET trained person or skilled meson/ artesian

Activity	Tools	Person responsible
Every 3 months		
<ul style="list-style-type: none"> ◆ Train students on proper use of sanitation facilities and follow-up the changes in their sanitation practices and hygienic behaviors. ◆ Repair the slab, foot rest, seat, s-trap, service hole and superstructure if there are damages. ◆ Produce quarterly monitoring report on school sanitation services. 	<ul style="list-style-type: none"> ◆ Water, detergent for cleaning, flip chart for training the school children class room ◆ lecture, demonstration and visits to the latrines ◆ Cement, sand, water, nails, and local building materials hand glove, shovel, hammer, bucket 	<p>Woreda sector office experts, teachers, WASH club members for training and monitoring.</p> <p>Contracted SME workers or hired TVET trained person or skilled meson/artesian</p>
Every 6 months		
<ul style="list-style-type: none"> ◆ Clean the fly screen and repair/replace damaged vent pipes and fly screen ◆ Monitor the proper use of the latrines and assess the changes in hygienic behavior of students on latrine utilization. ◆ Repair the slabs, doors, handles, hand rails, s-trap and superstructure of the latrine 	<ul style="list-style-type: none"> ◆ Long wooden stick/pole, towel, mesh wire, brush, bucket, PVC pipes ◆ Paper, pen, checklist ◆ Cement, sand, gravel, nail, iron sheet 	<p>Skilled technician- Woreda health, and education experts, cluster supervisors, HEWs, WASH club members and teachers</p>

Activity	Tools	Person responsible
Yearly		
<ul style="list-style-type: none"> ◆ Make a planned and well financed repair and maintenance of the roof, floor of the toilet rooms, foot rest, seat, vent pipe, hand washing facility, doors, handles, handrail, ramp and cover slab for the manhole and overall superstructure ◆ For composting latrines and raised latrines: Insert a stick into the drop holes/pit and measure the depth to the depth of the waste and check if the pit is full. ◆ For composting latrines and raised latrines: If one of the toilet pits is full (50 cm below the lower side of the slab), transfer to the second drop hole. Before closing, pour ash, soil or other organic material into the drop hole. Remove the tile over the hole and seal the hole air-tight ◆ For composting latrines and raised latrines: Open the second or alternate drop hole in the same toilet room and then build foot rest on the newly opened drop hole put mortar around to fill the space and allow the use of the second pit, ◆ For composting latrines and raised latrines: Scoop compost with shovel after two years and use on either school gardens or nearby farms ◆ For flush latrines: If the tanks are full, contact municipality or other organizations for emptying and record the date the tank was emptied. 	<ul style="list-style-type: none"> ◆ Cement, sand, gravel, water, nail, shovel, hammer, bucket, heavy duty glove, Stick and meter Cement, sand, water, bucket, ash, soil or other organic materials, shovel, meter, hammer 	<p>School</p>

4.2.4 Handwashing Facilities

A Global lessons learned, and best practices show that it is critical to provide hand-washing facilities water and soap within five meters distance from school toilets. Hand washing facilities in schools are normally in areas where school children tend to play. A lot of water is in use and if there is no proper drainage, a pool of water often appears and needs to be drained. If the pool is left for several days, it can become a vector for diseases like malaria and diarrhea that affect small children.



Fig 9 on the Right-side A school girl practicing handwashing at Andegna Angacha primary school SNNPR@ Meklit Mersha 2019 and on the left-side a hand washing facility from Biruh Tesfa primary school, Addis Ababa @ MoE 2019.

4.2.4.1 Checklist for handwashing facilities operation and maintenance

Activity	Tools	Person responsible
Daily		
<ul style="list-style-type: none"> ◆ Remove dust from all parts of the hand-washing facility by cleaning and mopping. Clean the drainage of the hand washing facility ◆ Fill the water container designated for hand washing station (if there is no piped water in the school) ◆ Ensure there is soap available ◆ Check and monitor the proper functioning of hand washing facilities (water faucets, soak away pits, drainage system) and repair/replace any non-functional parts ◆ Provide hygiene education and promotion (during flag ceremony and break time on proper usage of WASH facilities and handwashing at critical times through mini media 	<p>Water, detergent, hand gloves, bucket, towel, wire brush, cloth for mopping, mask, goggle, gown/overall</p> <p>Water faucets/ taps</p> <p>Mini media instruments and IEC materials</p>	<p>Trained school teachers and WASH club members for inspection and monitoring.</p> <p>Hired and trained cleaners for Cleaning.</p>

Monthly		
<ul style="list-style-type: none"> ◆ Inspect once a month the overall structure of the hand washing facilities (the wall, faucet, soak away pit, drainage system) ◆ Perform small repairs such as lining the cracks on the slabs and wall of the latrine with cement 	<p>Cement, sand, water, nails, and local building materials hand glove, shovel, hammer, bucket taps, pipes gate valves</p>	<p>Director, teachers, and WASH club members</p> <p>Contracted SME workers or hired TVET trained person or skilled meson/ artesian</p>
Every 3 months		
<ul style="list-style-type: none"> ◆ Train students on proper use of hand washing facilities and follow-up the changes in their sanitation practices and hygienic behaviors. ◆ Repair the overall structure of the hand- washing facility, if there are damages. ◆ Produce quarterly monitoring report on school handwashing services. 	<p>Water, detergent for cleaning, flip chart for training the school children Class room lecture, demonstration and visits to the latrines</p> <p>Cement, sand, water, nails, and local building materials hand glove, shovel, hammer, bucket</p>	<p>Woreda sector office experts, teachers, WASH club members for training and monitoring.</p> <p>Contracted SME workers or hired TVET trained person or skilled meson/ artesian</p>
Every 6 months/yearly		
<ul style="list-style-type: none"> ◆ Monitor the proper use of the hand washing station and assess the changes in hygienic behavior of students on latrine utilization. ◆ Repair the overall structure of the hand- washing facility, if there are damages. ◆ Provide hygiene education and promotion during annual WASH events on proper use of WASH facilities and hand washing at critical times through visual aids, posters, leaflets and other means 	<p>Paper, pen, checklist Cement, sand, water, nails, and local building materials hand glove, shovel, hammer, bucket taps, pipes gate valves</p>	<p>Woreda health, and education experts, cluster supervisors, HEWs, WASH club members and teachers Skilled technician</p>

4.2.5 Menstrual Hygiene Management (MHM) Facilities

The Menstrual Hygiene Management (MHM) block consists of four rooms: waiting, counseling, resting and washing rooms. Keeping this facility clean requires regular cleaning of each room, particularly the washing basin and the shower, and regular removal and disposal of used sanitary pads. The used sanitary pads should be separately collected and disposed.



Fig 10 MHM Block plan and elevation design

Adolescent girls need access to appropriate materials for the absorption of menstrual blood. Hazardous waste like used sanitary pads have to be incinerated at the safe side of the school compound. The used sanitary pads should be collected from the collection box in the MHM room and latrine facility. The cleaners should frequently check, collect and transport the used sanitary pads from the collection box to the incinerator.



Fig 10 MHM facility at Shone #1 primary school SNNPR and adolescent student taking emergency pad from WASH club coordinator the same school.

At school level, it is very important to engage girls and boys in menstrual hygiene education activities. School clubs (reproductive health, WASH, mini media (a unit or a section available in most of the schools that is equipped with audio and sound system equipment and designated to disseminate awareness and information to the school community using megaphone, amplifier, tape player or CD player and by verbal announcement or entertainment), girls club, one to five network, peer to peer etc.) and Girls Education Advisory Committees could also be used as entry points. Schools offer opportunities to engage parents in menstrual hygiene and can improve support for girls in school and out of school. Cluster supervisors and teachers can also play very important roles of monitoring the implementation of safe menstrual hygiene practices. (Source: FMoH Menstrual Hygiene Management in Ethiopia: Policy and Implementation Guideline 2016). Educating boys (particularly from adolescence) on the challenges and struggles girls face will help reduce teasing and mocking in schools.

Checklist for MHM related practice in the school

- ◆ Does the MHM building for menstruating girls have a changing room, washing basin, washing lines for drying pads, soap and sanitary bin?
- ◆ Are MHM materials like pads, clothes underwear available throughout the school day?
- ◆ Are girls using the dedicated boxes attached to the facility to dispose of used sanitary pads?

- ◆ Are there MHM promotional materials in the in the school?
- ◆ Do the cleaners incinerate the disposed sanitary pads regularly?
- ◆ Are there painkillers in the rest room?
- ◆ Are mattress and bed sheets available?
- ◆ Are there school clubs such as WASH/girls clubs, reproductive health clubs, mini media which disseminate awareness and information on MHM to the school community?

4.2.5.1 Checklist for MHM facilities operation and maintenance

Activity	Tools	Person responsible
Daily		
<ul style="list-style-type: none"> ◆ Remove dust from all parts of the rooms by cleaning and mopping the floor, table, chairs, shelves, doors and windows of the MHM block ◆ Clean and mop the floor and wall of the rooms with water and detergent ◆ Clean the wash basin ◆ Fill the water container in the wash room regularly (if there is no piped water in the school) and avail soap ◆ Monitor all rooms are clean, and have sufficient stock of emergency pads, soaps and painkillers ◆ Assign a counselor for the day ◆ Check if there are sanitary pads dropped in each sanitary disposal box, collect and dispose into a designated incinerator facility ◆ Showgirls how to change their sanitary pads in the designated safe space including washing reusable sanitary pads with water and soap and drying for reuse 	<p>Water, detergent soap, hand glove, bucket, towel, wire brush, mask, goggle, gown/ overall.</p> <p>Sanitary pad for emergency use, water, detergent, towel, shelves, mattresses, pillows, bed sheets, chairs, tables, bucket, hand glove, wire brush</p> <p>Plastic bag for waste collection, hand glove, metal grab, incinerator, mask, goggle, gown/overall</p>	<p>Hired and trained cleaners for cleaning.</p> <p>Trained school teachers/ WASH club coordinator for counselling and MHM education.</p>

Activity	Tools	Person responsible
Weekly		
◆ Clean bed sheets	Water, detergents	Hired and trained cleaners for cleaning.
Monthly		
<ul style="list-style-type: none"> ◆ Inspect once a month by skilled person the entire block; the floor, wall, roof, sanitary pad disposal box, wash rooms and the entire superstructure of the block ◆ perform small repairs such as lining the cracks on the wall, drainage pipe, non-functional taps, sanitary pad collection box, floor, windows and doors ◆ Inspect the soak away pit performance and make the necessary adjustment to fully absorb the wastewater from the MHM block 	Cement, gravel, sand, water, hand glove, meter, bucket (plastic or other kind available), nail, pipe, taps etc. Graded gravels and sand	Skilled person from woreda sector offices and woreda construction office Carpenter, Contracted SME workers or hired TVET trained person or skilled meson/ artesian Skilled person
Bi-annually and Annually		
Once in a year make a planned and well financed rehabilitation and maintenance of the MHM wall, drainage pipe, non-functional taps, sanitary pad collection box, floor, roof, windows, doors and the entire superstructure of the block.	Cement, gravel, sand, water, hand glove, meter, bucket (plastic or other kind available), nail, pipe, taps etc.	Carpenter, Contracted SME workers or hired TVET trained person or skilled meson/ artesian

4.2.6 Management of Solid Waste

To properly handle solid waste generated in schools, attention needs to be given not only to the health of students, but also the aesthetic value of the school and the potential it has to contaminate the environment of the school and beyond. To attain this, the school community, the school principal, teachers, administration staff, and students need to understand school solid waste, how to clean and manage this, and who is responsible for cleaning and monitoring.

The solid waste generated in schools consists of paper, dust, animal waste, food waste, leaves, wooden items, metal scraps, cans, plastic bags and bottles, glass bottles, and old batteries. There is a need to collect the solid waste and segregate it into non-hazardous and hazardous waste.

The solid waste can be managed by:

- ◆ Onsite collection - waste bins (made of iron sheet, plastic, local materials eg. bamboo)
- ◆ Transport wheelbarrow, manually carried by locally made container to disposal site
- ◆ Burn using an incinerator. If not available, burn in a solid waste disposal pit.
- ◆ Disposal properly fenced solid waste disposal pit

4.2.7 Management of Incinerators

An incinerator is a unit or facility typically used to burn trash along with any other types of waste until it is reduced to nothing but ash. Incineration is a waste treatment process involving the combustion of organic substances that are contained in waste materials



Fig 11 Incinerator at Lakole primary school SNNPR @ Meklit Mersha Oct 2019

Safety precautions during incineration:

- ◆ When burning waste, a trained operator must be in constant attendance
- ◆ Proper operation is critical to achieving the desired combustion conditions and emissions. There needs to be appropriate start-up and cool-down procedures, maintenance of a minimum temperature, use of appropriate loading/charging rates (both fuel and waste), and proper disposal of ash
- ◆ Maintain operator safety through correct training and equipment. Avoid any contact by unauthorized persons
- ◆ Allocate sufficient funds for operation and maintenance (see section on resources for WASH facilities)

The main wastes in schools which needs to be incinerated are sanitary pads. Waste from disposable sanitary pads may be treated and waste loads reduced with the use of incinerators. Incineration requires careful management of appliances to ensure complete combustion and pathogen destruction, safe operational temperatures, safe installation and controlled emissions or there will be human and environmental risks. Incineration is an approach found in many settings for managing menstrual waste in institutional and shared public settings, though it has its own environmental risks and cultural considerations.

4.2.7.1 Checklist for incinerator operation and maintenance

Activity	Tools	Person responsible
Daily		
<ul style="list-style-type: none"> ◆ Proper transportation and disposal of wastes in the incinerator (zero waste left over on the way and surrounding the incinerator) ◆ Monitor the proper combustion of waste materials inside the incinerator (if there are remaining unburnt waste, burn it again until all waste is turned to ash) ◆ Proper collection and disposal of the ash from the incinerator to a solid waste disposal pit. ◆ Monitor the proper functioning of all parts of the incinerator (cover, chimney and ash collection chamber) 	Waste collection bag, sanitary pad collection bag, waste bin, mask, goggle, gown/overall Ash collection chamber, mask, goggle, gown/overall	Hired and trained cleaners
Monthly		
<ul style="list-style-type: none"> ◆ Inspect the entire structure of the incinerator (cover, wall, chimney etc.) ◆ Perform small repairs such as lining the cracks on the wall, cover, and damaged chimney 		Skilled person from woreda health offices and woreda construction office Contracted SME workers or hired TVET trained person or skilled meson/artesian
Yearly		
<ul style="list-style-type: none"> ◆ Make a planned and well financed rehabilitation and maintenance of the entire structure of the incinerator 	Cement, gravel, sand, water, hand glove, bucket	Carpenter, Contracted SME workers or hired TVET trained person or skilled meson/artesian

4.2.8 Management of Wastewater

The management of waste water includes collection, reuse and safe disposal of waste water in the school. Waste water in schools will be classified into gray water and black water. Gray water is defined as untreated wastewater that is not contaminated by feces. It is generated in schools from the hand washing basins, drinking water stations, kitchen basins, dishwashers and showers. However, black water is a wastewater that contains feces, urine and wastes generated from MHM basins. Proper and safe management of school toilets is therefore fundamental to reduce the school community's exposure to harmful black water contamination.

Most schools encounter water shortages for use in WASH facilities and for environmental uses such as planting trees while gray water in schools is left to waste. Gray water has not been widely recognized as a beneficial resource, and the practice is less known and implemented.

Gray water re-use for multiple purposes is one less costly and readily available option, and gray water collection system must be included as one aspect of the waste management plan in schools. Waste water from drinking fountain and hand washing facilities should be diverted and stored for use in gardening and greening the environment and cleaning and flushing toilets. Safely harnessing wastewater and subjecting it to low level treatment for food production can offer significant benefits in terms educating school children on gardening and providing additional money to the school.

The biggest challenge to these multiple use ideas is fear of “germs” and related health impacts. It is essential to treat gray water before use for crop production and reuse for cleaning and flushing toilets in schools.

All waste water from drinking fountains & hand washing facilities should be collected in underground storage facility at location away from class rooms, water supply sources and from children playing grounds so that it does not create nuisance and health problems to the school community. Waste water removal and the facilities used are presented in the Design and Construction Manual for School WASH.

4.2.9 Management of Chemical Wastes from school laboratories

Chemical wastes from laboratories will be treated as hazardous wastes and will be collected using protective clothing and equipment to transport and dispose the waste into a designated facility (burial or incineration).

4.3 Personal protective equipment and tools needed for cleaners and technicians

The following personal protective items are needed:

- ◆ Heavy duty gloves
- ◆ Mop, broom and cleaning cloth
- ◆ Goggles (eye protection)
- ◆ Wash bucket
- ◆ Gown/overalls
- ◆ Mask for dust particles
- ◆ Rubber boots/shoes
- ◆ Detergents for cleaning
- ◆ Toilet brushes

Table 2: an estimated cost for operation, maintenance and management of school WASH facilities.

Activity	Description	Unit of measurement	Quantity	Estimated cost (USD)
	Hand dug well (head work, full set hand dug well: PVC, suction pipe, foot valve, hand valve u-seal etc.)	Number	1 hand dug well	2,000
	Shallow well (head work, full set hand pump: PVC, suction pipe, foot valve, hand valve etc.)	Number	1 shallow well	2,500
	On spot spring (retaining well, manhole for inspection & clearance, faucet and pipe etc.)	Number	1 On spot spring	2,000
	Roof/water harvesting (gutter, down pipe, faucet, collection chamber)	Number	1 Roof/water harvesting	2,000
	Latrine (roof, door, vent pipe, faucet and etc.)	Number	1 latrine	2,000
	MHM block (mattress, bed sheet furniture, faucet, shower tray, Sanitary pad collection box	Number	1 MHM block	2,000
	Hand washing station (faucet, pipeline, fountain etc.)	Number	1 Hand washing station	1,000
	Incinerator	Number	1 Incinerator	1,000
Operation	Care taker salary	Number	Care taker	100/month
	Cleaning materials	Number	1 school	200/year
	Tools	Number	1 school	1000
Recurrent	Soap	Number	1 school	1000/Year
	Toilet paper	Number	1 school	1500/Year
	Sanitary pads for emergency cases	Number	1 school	3000/Year

5. Role and Responsibilities of Stakeholders in Management of School WASH Facilities

Stakeholder	Roles and responsibilities
Federal Ministry of Education	<ul style="list-style-type: none"> ◆ Create awareness and an enabling environment for the advancement of the school WASH program among relevant stakeholders ◆ Organize familiarization workshops on school WASH design and construction and management manuals to WASH sector ministries, bureaus, and relevant stakeholders ◆ Ensure the proper utilization of the school WASH design, construction and management manuals by all stakeholders engaged in school WASH programs ◆ Provide trainers of training and guidance to regional education bureaus and relevant stakeholders on school WASH ◆ Provide technical support to the regional education bureaus and other sectors during the cascading training related to school WASH design and construction and management manuals. ◆ Establish and follow a robust school WASH monitoring and evaluation system, both the hardware and software activities of school WASH, in collaboration with key stakeholders
Regional Education bureau	<ul style="list-style-type: none"> ◆ Support in soliciting funds from government and external development partners for school WASH improvements ◆ Ensure all guidelines and manuals are applied accordingly ◆ The regional sector offices (Regional Health Bureau and Regional Water Bureau) should ◆ provide guidance on repair and maintenance of WASH facilities ◆ Staff should conduct monitoring on the conditions of school facilities on a regular basis ◆ Provide cascading training to zonal and woreda education offices on the School WASH ◆ Management Manual

Stakeholder	Roles and responsibilities
<p>Zonal/Woreda Level sector offices</p>	<ul style="list-style-type: none"> ◆ The Zonal/woreda sector offices should provide guidance on the operation, maintenance and overall management of school WASH facilities ◆ Zonal and woreda sector offices should provide integrated support and supervision for school WASH facilities on a regular basis, ◆ Support in soliciting funds from external development partners ◆ Organize and provide school WASH capacity building and promotion activities ◆ Ensure all guidelines, design and construction and management manuals are followed ◆ The woreda water and health offices conduct regular water quality test and take remedial actions ◆ Arrange woreda level experience sharing in best performing schools and scale-up the best experiences ◆ Celebrate WASH related events (hand washing day, MHM day and toilet day)
<p>School Cluster Supervisors</p>	<ul style="list-style-type: none"> ◆ Ensure and support all schools to have proper school WASH plans for school WASH management ◆ Ensure the availability of plans and implementation of school hygiene promotion regularly ◆ Coordinate and provide technical support for schools and School WASH Clubs ◆ Facilitate experience sharing among the clustered schools and beyond ◆ Liaise with relevant stakeholders in the delivery of school WASH services ◆ Develop and enforce rules and procedures pertinent to WASH services

Stakeholder	Roles and responsibilities
School Principal / Directors	<ul style="list-style-type: none"> ◆ Liaise with Woreda/Town, Parent Teachers and Students Associations (PTSAs) and other stakeholders for the proper implementation of School WASH Program ◆ Lead and develop a detailed work plan for school WASH activities each term in collaboration with the school WASH club coordinators and PTSA ◆ Monitor the day to day operation and condition of the school WASH facilities and student hygiene and take timely actions to rectify any issues ◆ Organize different WASH events at school level (global hand washing day, MHM day and toilet day) ◆ Create an enabling environment for teachers, school WASH clubs and staff to achieve targets set for each school year in school WASH facilities management ◆ Work in collaboration with woreda WASH sector offices (health, education, water and construction offices) for technical support in capacity building in terms of behavioral change, and monitoring quality construction and management of WASH facilities.
Parent Teachers and Students Associations (PTSAs)	<ul style="list-style-type: none"> ◆ Monitor regularly the conditions of the facilities and conduct discussion with school administrations/management ◆ Advocate locally for improvement in the management and financing of the facilities; ◆ Allocate budget and monitor proper utilization of budget and timely maintenance of services of school WASH facilities ◆ Ensure the adequate inclusion of school WASH in the school development plan ◆ Ensure all the school WASH facilities are providing service to the school community ◆ Participate in different school WASH events like handwashing, toilet day and MHM days ◆ Mobilize resource needed for school WASH facilities and services

Stakeholder	Roles and responsibilities
Parent Teachers and Students Associations (PTSAs)	<ul style="list-style-type: none"> ◆ Monitor regularly the conditions of the facilities and conduct discussion with school administrations/management ◆ Advocate locally for improvement in the management and financing of the facilities; ◆ Allocate budget and monitor proper utilization of budget and timely maintenance of services of school WASH facilities ◆ Ensure the adequate inclusion of school WASH in the school development plan ◆ Ensure all the school WASH facilities are providing service to the school community ◆ Participate in different school WASH events like handwashing, toilet day and MHM days ◆ Mobilize resource needed for school WASH facilities and services
Teachers	<ul style="list-style-type: none"> ◆ Monitor the state and use of WASH facilities daily ◆ Motivate school children to adopt appropriate behavioral changes on proper utilization and management of WASH facilities ◆ Provide hygiene education ◆ Integrate school WASH messages into classroom teaching and other class activities ◆ Supervise and monitor students in the use of school WASH facilities ◆ Ensure hand washing with soap at critical times and menstrual hygiene management is practiced by students ◆ When on duty, regularly check the hygiene of pupils and school WASH facilities
School WASH club coordinator	<ul style="list-style-type: none"> ◆ Lead the development of detailed work plans for school WASH ◆ Facilitate and monitor the planning and execution of school WASH club activities such as mini media, talks, quizzes and competitions ◆ Supervise and monitor students on proper use of school WASH facilities (water supply, MHM, hand washing with soap at critical times) ◆ Report the status of the school WASH facilities to school directors
Parents	<ul style="list-style-type: none"> ◆ Encourage children to comply with procedures for use and care of school WASH facilities ◆ Contribute to the financing of school WASH facilities and services ◆ Support from school administration with upkeep of school WASH facilities when requested

Stakeholder	Roles and responsibilities
Students	<ul style="list-style-type: none"> ◆ Understand how to use the school water supply and toilets and use these correctly and with respect. ◆ Participate in designing school WASH activities ◆ Help care for the school WASH facilities and alert teachers when there is no water or soap. ◆ Wash hands and role model good hand washing and hygiene behavior ◆ Keep the school environment clean and throw waste in the bin. ◆ Monitor open defecation practice in the school compound

6. Monitoring of WASH Facilities

Monitoring school WASH facilities and services involves checking the functionality, quality and improvement of WASH services and hygiene practices over time and identifying potential problems early to prepare action plans to improve service. A simple monitoring checklist completed periodically (every quarter, bi-annually or annually) can help school principals, administrators, teachers and school WASH club members track the ongoing quality and functionality of their WASH systems. During monitoring, data (both qualitative and quantitative) is collected and reported both formally and informally.

6.1 Why monitor WASH in schools?

Relevant information on the status of WASH in schools and the progress of ongoing programs is critical for governments and partners. Adequate and timely information could help identify the scale of problems, engage in evidence-based advocacy, assess progress, or learn from successes and mistakes. Without adequate monitoring information, it is impossible to reach the goal of adequate WASH in all schools.

More comprehensive data, such as the number, quality, and functionality of water and sanitation systems and the existence of hygiene education programs is essential. This type of data is critically important for the design and management and the ultimate success of a WASH in schools program.

6.1.1 Essential steps in monitoring

Monitoring is carried out by government offices at the school, woreda, zone, regional and federal levels. The following are the basic steps that should be followed while monitoring school WASH activities and their management.

- ◆ Decide on what should be monitored (set objectives for monitoring)
- ◆ Determine members of the monitoring team. Make sure this includes both men and women, girls and boys. (Monitoring at school level involves: School management WASH club members and teachers).
- ◆ Develop a simple monitoring checklist looking at water supply, sanitation, solid and liquid waste disposal and hygiene practices
- ◆ Teach the monitoring team how to use the checklist to gather consistent data
- ◆ Conduct field data gathering. Observe the water supply structure, the toilet facilities, the MHM room and supplies, and ask students and teachers about if they have enough water and how they wash their hands and go to the toilet
- ◆ Analyze the data collected and summarize findings
- ◆ Develop action plans based on the findings to improve the WASH facilities
- ◆ Communicate findings and actions to the teachers, students, school administration parents, and other relevant administrative bodies through a short presentation or written report.

6.1.2 Monitoring guide for school WASH facilities

Monitoring and evaluation of WASH in schools is aimed at generating evidence on success, lessons learned and to provide reliable information to policy makers, program managers and other relevant stakeholders to further strengthen WASH in schools. While access to water and sanitation facilities is an important basic need, it is equally important that improved water and sanitation facilities and effective hygiene promotion is ensured in the lives of school children. Therefore, evaluation attempts to examine, both systematically and objectively, the relevance, effectiveness, efficiency, sustainability and impact of WASH in schools' programs. This data is collected at school level and will be used by government sectors and other relevant WASH stakeholders.

6.1.2.1 Monitoring check list for school WASH facilities

Part 1- School information

1.1 Region.....

1.2 Zone.....

1.3 Woreda..... Kebele.....

1.4 Name of school.....

1.5 School level- pre-primary.....1-4.....5-89-12

1.6 Setting : rural..... urban.....

1.7 School type (day school/boarding school/other specify.....)

1.8 Student population (boys.....girls..... total.....)

1.9 Students with disabilities (boys.....girls..... total.....)

1.10 Teachers (male..... female..... total.....)

1.11 School ownership (government/private/missionary/religion/other specify)

Part 2- Water supply

2.1 What is the main source of water for the school?

Piped water	
Protected well	
Protected spring	
Rainwater/roof catchment	
Unprotected well	
Unprotected spring	
Tanker-trucks	
Surface water (lake, river, pond, canals)	
No water supply at the school	

2.2. In the previous two weeks, was drinking water from the main source available at the school throughout each school day? Yes..... No.....

2.3. Is drinking water from the main source typically available throughout the school year?

Yes (always) Mostly..... (Unavailable 30 day's total)..... No (unavailable > 30 days total).....

2.4. Is the water point accessible for disabled boys and girls? Yes.....No.....

2.5. Is drinking water accessible to the smallest children at the school? (applicable for pre-school and primary 1-4) Yes..... No.....

2.6. How many drinking water points are at the school? Number.....

2.7. What type of water treatment method is the school used make it safe to drink?

Filtration.....Boiling.....Chlorination.....Ultraviolet disinfection.....Other.....No treatment.....

2.8 Is the water supply facility functional? Yes..... No.....

2.9. For what purpose do you use the water?

Drinking..... Gardening Hand washing

MHM Cleaning Other specify

Part 3- Sanitation facilities

3.1 Is there a latrine in the school? Yes No

3.2 If yes, what type of latrine?

- ◆ Flush/pour-flush toilet
- ◆ Ventilated improved pit latrine
- ◆ Composting toilet
- ◆ Unimproved pit latrine

3.3 Are the latrine blocks separate for girls and boys? Yes.....No.....

3.4 How many sex segregated latrine cubicles (seats) does the school have? (Insert number)

- ◆ Exclusively for boys.....
- ◆ Exclusively for girls.....
- ◆ Communal latrine (anyone can use)
- ◆ Exclusively for teachers.....

3.5 Is there a toilet accessible for students with disability? Yes.....No.....

3.6 Is the latrine accessible to the smallest children at the school (Applicable for pre-school and primary 1-4)? Yes.....No.....

3.7 In the previous two weeks, was the latrine provide service each school day? Yes.....
No.....

Part 4- Hygiene practice and education

4.1 . Was WASH training provided to the school community this year? Yes.....No..... If
“Yes”, for whom?

PTA.....Director.....Teachers..... WASH club..... Students..... Parents.....

4.2 Is there a hand washing facility in the school? Yes.....No.....

Note- The hand washing facility could be using running water, such as a sink with tap,
water tank with tap, bucket with tap, tippy tap or another similar device

4.3 Are both water and soap (other substitute) available for hand washing?

Soap/substitute and water

Water but no soap/substitute

No soap/substitute or water

4.4 Do students wash their hands after visiting latrine? Yes.....No.....

4.5 Are there hand washing facilities accessible to those with disability? Yes.....

No.....

4.6 How many hand washing facilities are located at the school? Total number of

taps:

4.7 Do the students defecate/urinate out of the latrine in the school compound?

Yes.....No.....

4.8 Does the school have a separate menstrual hygiene management room? Yes.....

No.....

4.9 Are there emergency sanitary pads available for adolescent students?

Yes.....No.....

4.10 Is there an established school WASH club? Yes No (insert number of
boys.....girls)

4.11 How many WASH awareness sessions has the club run this year?

0.....1-2.....3-4.....5-6.....6+.....

4.12. Do health professionals come to school to promote hygiene? Yes.....No.....If
yes, how frequently.....

4.13. Is there an awareness creation program at the school about MHM? Yes.....

No.....Yes No If “Yes” please describe.....

**Part 5- Management of WASH facilities (These questions will be replied by the school
director or WASH club leader)**

5.1 Is there an assigned management body for the school WASH facilities?

Yes.....No.....

5.2 How many times per week are the latrines cleaned? Daily.....2-4 days per
weekOnce a week.....

5.3 Is there a disposal mechanism for menstrual hygiene waste in the school?

Yes.....No.....If yes, please describe.....

5.4 Is there an incinerator for disposal of hazardous waste? Yes.....

No.....

5.5 Have you allocated budget for operation and maintenance? Yes.....

No.....If yes, how much and what is the source of budget?.....

5.6 Who provides technical support for the maintenance of school WASH facilities?

Describe.....

5.7 What challenges do you face regarding the management and maintenance of

WASH facilities? Describe:

5.8 Does the school carry out periodic school premise cleaning program? Yes No If

“Yes” how frequent?.....

5.9 How is solid waste (garbage) from the school disposed of?

Collected by local waste management system

Burned on premises

Buried and covered on premises

Openly dumped on premises

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Annex 2: Recommended hand pump operation and maintenance services to manage the water supply facility

Activity	Frequency	Manpower required	Materials & spare parts needed	Tools and equipment needed
Check and clean pump	Monthly	Skilled person	-	Broom, brush
Check pump stand accessible parts	Monthly	Skilled person or trained student or teacher	Handle Nuts and bolts Bearings	Spanner
Grease bearings	Weekly	Trained person	Grease or oil	Lubricator
Clean site of the pump	Daily	Hired locals or students		Broom, brush
Replace pump stand parts	When crack is observed	A trained technician	Nuts and bolts, bearings,	Spanners, screw driver
Replace cup seals	Annually or every six months	Skilled person or trained student or teacher	Cup seals	Spanners, wrench, knife, screwdriver etc.
Replace foot valve, plunger or cylinder	Occasionally and as needed based on test	Skilled person or trained student or teacher	Foot valve, plunger or cylinder	Spanners, wrench
Replace pump rod	Occasional and as needed based on test	Skilled person or trained student or teacher	Pump rods or main tubing	Spanners, wrench, pipe threading device
Repair platform	Annually	Skilled person or trained student or teacher	Gravel sand, cement	Bucket, trowel

Facilities	Facilities	Routine maintenance	Preventive maintenance	Major maintenance
School Sanitation facilities	Latrine Block			
	Concrete slab			
	Wall (partition wall)			
	Drop holes			
	Septic tank			
	Manholes			
	Privacy wall			
	Hand washing facilities			
	Waste collection box			
	Water storage			
	MHM facilities			
	Incinerators			

