



Fourth Primary Education Development Program (PEDP-4)

Semi-Annual Environmental Monitoring Report

DEPARTMENT OF PUBLIC HEALTH ENGINEERING

July 2022 – Dec 2022

[A report on WASH facilities and its environmental impact under PEDP-4]



Primary Education Unit, DPHE, Dhaka

December 2022

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ABBREVIATIONS & ACRONYMS

ADB	:	Asian Development Bank
DLI	:	Disbursement Linked Indicator
DP	:	Development Partner
DPEO	:	District Primary Education Officer
DPE	:	Directorate of Primary Education
DPHE	:	Department of Public Health Engineering
DTW	:	Deep Tube Well
EFA	:	Education For All
EMF	:	Environmental Management Framework
EU	:	European Union
GOB	:	Government of Bangladesh
GPE	:	Global Partnership for Education
IDA	:	International Development Association
JARM	:	Joint Annual Review Mission
JCM	:	Joint Consultation Meeting
JICA	:	Japan International Cooperation Agency
LGD	:	Local Government Division
MIS	:	Management Information System
MLGRD&C	:	Ministry of Local Government, Rural Development and Cooperatives
MoPME	:	Ministry of Primary and Mass Education
MOU	:	Memorandum of Understanding
PEDP-4	:	Fourth Primary Education Development Program
QLEAP	:	Quality Learning for Education Access and Participation
RDPP	:	Revised Development Project Proforma
SDTW	:	Semi Deep Tube Well
SEC	:	Small Ethnic Community
STW	:	Shallow Tube Well
TSP	:	Tube Well with Submersible Pump
UNICEF	:	United Nations International Children's Emergency Fund
WB	:	World Bank



EXECUTIVE SUMMARY

The prime objective of PEDP-4 is to ensure an efficient, inclusive and equitable primary education system through a child friendly physical learning environment. Infrastructural development in terms of construction of class rooms and wash blocks, installation of safe drinking water points plays an important role in achieving the sustainable physical learning environment as well as ensuring holistic development of children. Department of Public Health Engineering (DPHE) is solely responsible to provide the water supply and sanitation facilities in the primary schools of Bangladesh. As per the approved revised DPP (RDPP) of PEDP-4 DPHE will install 20,000 new water points and construct 58,000 Wash Blocks in the primary schools of Bangladesh throughout the program tenure (July/2018 to June/2025) of 7 years. In addition, DPHE will conduct water quality tests of earlier installed water points (lists to be issued by DPE) and undertake major maintenance of wash blocks constructed during PEDP-3. From the beginning of the project until December'2022 DPHE installed a total of 9,336 new water points and constructed 13,510 Wash Blocks. Of them 1,668 water sources and 2,028 wash blocks were constructed during the reporting tenure. In addition, DPHE conducted major maintenance of 790 wash blocks. Contractors as well as DPHE officials worked hard to coping up with the new normal due to the covid-19 safety issues within the time frame.

The sole purpose of this study is to identify any concern or issue related to the environmental safeguard due to the construction of wash blocks, installation of water points and major maintenance of wash blocks from July' 2022 to December'2022. The study is based on the environmental safeguard screening conducted during planning, construction and post implementation stages. The screening format is prepared based on the MoPME approved EMF guidelines for PEDP-4. The screening included different environmental safeguard indicators such as loss of agricultural land, blockage in the drainage system, instance of water logging, provision for access to safe drinking water, provision of hand washing and hygiene facilities etc.

The screening was conducted by DPHE officials i.e. Sub-Assistant Engineers at the Upazilla level which was duly verified in district level by the Supervision Consultants, Executive Engineers and compiled in DPHE headquarter. It cannot be denied that COVID-19 situation slowed down the overall construction and implementation progress. However, the environmental monitoring screening confirmed no significant instances or issues that may hamper or influence the environmental safety during the reporting tenure. Being an implementing agency, DPHE would like to uphold this status in its ongoing and upcoming works related to infrastructural development.



1. Introduction

Bangladesh, a country with its astonishing economic boom has cherished the golden jubilee of its independence. For a rapidly developing country like Bangladesh, it is utmost important to ensure holistic development of the children which includes both intellectual and emotional development in such a manner that they can uphold the nation from all aspect. This has been eloquently articulated in the Constitution of Bangladesh as well. Fourth Primary Education Development Program (PEDP-4) is the continuation of Government's approach in thriving the excellence of children through the fulfillment of several distinct milestones including construction of need-based infrastructures for sanitation and water supply. The program is supported by significant contributions from Government as well as Development Partners (DPs). Department of Public Health Engineering (DPHE) under Local Government Division (LGD) of Ministry of Local Government, Rural Development and Cooperatives (MLGRD&C) is involved in the capacity of implementation partner to provide the quality water supply and sanitation facilities in the primary schools of Bangladesh. As per MoU signed in between DPE and DPHE and as per revised DPP (RDPP) of PEDP-4, DPHE will perform the following activities in the project tenure with an aim to provide safe drinking water and sanitation services in the primary schools under PEDP-4.

- Install 20,000 new drinking water sources in the primary schools.
- Replace/repair drinking water sources (if necessary).
- Water quality testing of 65,000 water points installed earlier.
- Construction of 58,000 new Wash Blocks in 29,000 primary schools.
- Major maintenance of 10,000 wash blocks constructed in PEDP3.
- Installation of water supply and sanitation facilities in the DD, DPEO, URC, PTI.
- Operation and maintenance (O/M) of water points.

2. Purpose of current report

The basic intent of this report is to identify and resolve any anticipated environmental safeguard issues that may arise during the installation of water sources or construction of Wash Blocks in the primary schools of Bangladesh. This report will encompass and summarize the findings of the environmental screening conducted during the installation of water points and construction of Wash Blocks in the primary schools of Bangladesh from the tenure of July'22 to December'22. During implementation of the project, environmental monitoring screening was conducted based on the Environmental Management Framework (EMF) of PEDP-4. The purpose of this report is listed below.

- To modify some of the tools based on the experiences gained from PEDP-3 to ensure that neither the infrastructure (both in terms of needs and quality at primary schools) nor the environment is compromised through the program intervention.



- To ensure that envisaged purpose of PEDP-4 is achieved and result in desired benefits without adversely affecting the environmental resources.
- To avoid potentially adverse environmental impacts and enhance environmental outcomes so that the program is expected to have limited and minimum adverse environmental impacts.
- To address any grievances originated from the implementation of the project.
- To establish the mechanism to determine and assess future potential environmental impacts of WASH infrastructure that are to be identified and cleared based on a community demand driven process and to set out mitigation, monitoring and institutional measures to be taken during implementation and operation of the WASH infrastructure to eliminate adverse environmental impacts or to reduce them to acceptable limits.

3. Indicators of environmental safeguard as per EMF under PEDP-4

This report covers different distinct environmental monitoring indicators based on the approved EMF of PEDP-4. Principles relevant to the environmental management of WASH (Water Supply, Sanitation and Hygiene) in PEDP-4 are mentioned below.

- Annual water quality monitoring of all the installed tube-wells under PEDP-3 will be carried out to ensure safe drinking water facilities to the students and teachers.
- Provision for adequate sanitation facilities for the teachers and students will be made and the mechanism for regular cleaning, routine and major maintenance will be implemented.
- To solve the drinking water problem in remote hilly and coastal areas, rainwater harvesting and other feasible options will be explored.
- To address the post COVID-19 crisis for adaptation to the new normal.

In general, the following indicators require to be monitored during the planning, construction and post-implementation phases.

- i) Losses of agricultural lands
- ii) Drainage congestion/water logging
- iii) Surface water pollution
- iv) Dust and noise pollution
- v) Safe distance between tube-wells and sanitary latrines
- vi) Occupational health hazards and safety practices
- vii) Maintenance of water supply and sanitation facilities
- viii) Maintenance of air and water quality
- ix) Management of surrounding ecosystem and biodiversity (if any) etc.
- x) Ensure that COVID safety protocols are well adhered.

A thorough screening on the above indicators were carried out during the reporting tenure.

4. Methodology

With an aim to investigate the impact of infrastructural development on environmental safeguard, a through screening was carried out in the respective primary schools by the concerned sub-assistant engineers of DPHE. The screening results were duly verified by the respective assistant engineers and a database was prepared at Upazilla level. Executive engineers at district level compiled the verified database obtained from Upazilla level and sent them to DPHE Head Quarter at the MIS (Management Information System) unit, where the database was finally compiled and report was prepared under the supervision of focal point of PEDP-4.

Data for environmental safeguard screening during the installation of water sources and maintenance of Wash Blocks have been collected from the schools through DPHE official sources using the structured format (copy enclosed in Appendix-1 of this report). Data collected from grass root level have been entered into 'Master Environmental Survey Outcome' Spreadsheet by MIS UNIT and kept structured for database and reporting. A flow diagram of the screening method is depicted in Fig. 1.

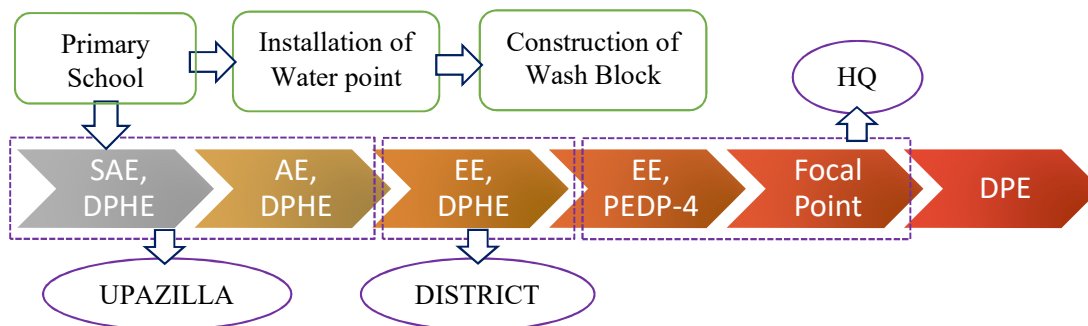


Fig. 1 Method of environmental safeguard screening

5. Role of DPHE in comprehensive monitoring

The subcomponents (sub component 2.3 and 2.4) of PEDP-4 especially the infrastructural implementation is comprehensively monitored by several parties from commencement to operational phase. Fig.2 shows the monitoring scheme in PEDP-4 operated by different agencies. Being an implementing agency, DPHE is involved significantly from construction till post-construction monitoring. Role of DPHE is depicted in Fig.3. It can be noted that the defect liability period for installed water points and constructed wash blocks are 02 and 01 year respectively. This implies that contractor is responsible to rectify any sort of defects within this time frame counting from the date of handover of tube well and wash block. In order to get a clear picture of ongoing and completed works, DPHE district office arranges monthly monitoring meeting with all concerned officers and staffs of that district. Executive Engineers thus address the issues of monitoring to the assistant/ sub assistant engineers monthly. Officers of concerned district used to visit the site frequently in order to monitor

the ongoing and completed works and also focus on the environmental safeguard aspect. Visit from Focal Point's Office and DPHE Head quarter happens frequently.

DPHE district office arranges coordination meeting between DPHE (EE, AE, and SAE) and DPE officials (DPEO, UEO) in every 3 months. A glimpse of the co-ordination meeting is depicted in Fig. 4 which was organized by Executive Engineer, DPHE of Narayanganj district. In this meeting, officers from department of primary education point out the necessity of monitoring of particular school which are immediately addressed by DPHE officials. Besides these, to get better insight and ensure quick action, DPHE has introduced a new system of arranging monthly meeting between DPHE officials and Headmasters of Primary School during this reporting tenure as a part of routine monitoring process. In addition, mechanics of DPHE upazilla headquarters repair the tube wells in an urgent basis when they are called for doing from the concerned school in order to ensure that the running water supply are fully operational.

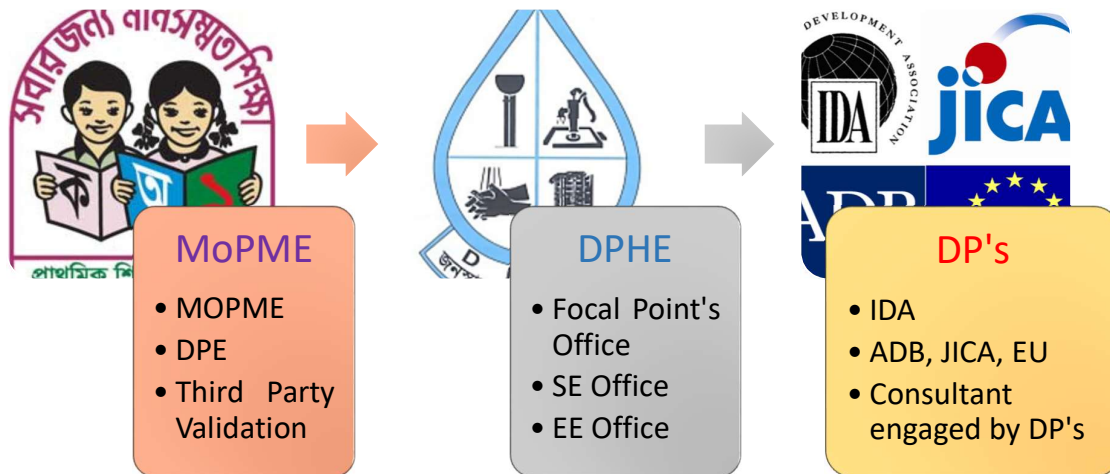


Fig. 2 Monitoring scheme in PEDP-4

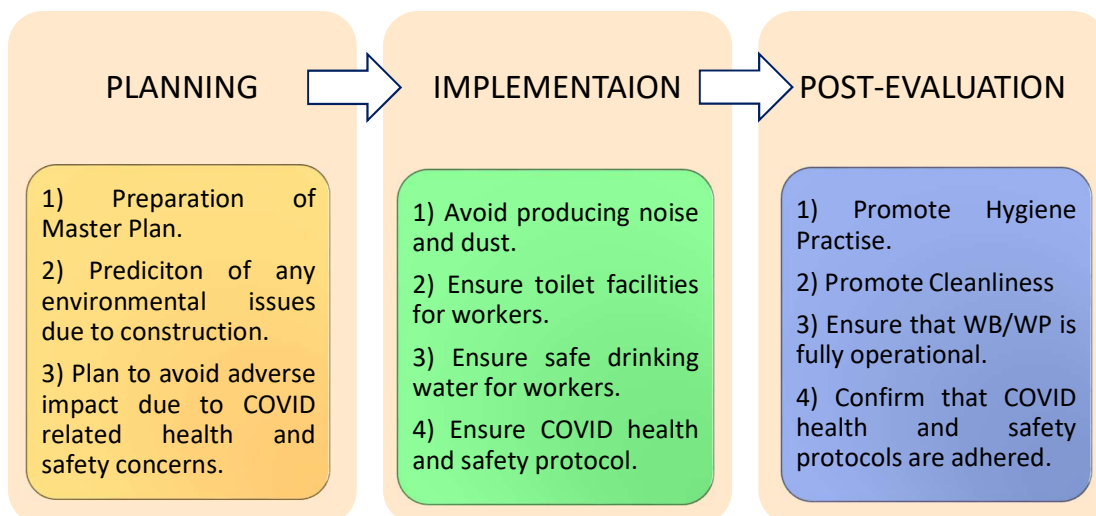


Fig. 3 Role of DPHE in environmental monitoring



Fig. 4 Co-ordination meeting between DPE & DPHE Officials at Narayanganj district

DPHE arranges caretaker training and provides MoPME approved 'Maintenance Manual' to the concerned schools during the handover of water points and wash blocks which covers post construction issues. Contact numbers of DPHE officials (mechanics and assistant/sub-assistant engineers) are provided to the concerned schools so that any relevant issues can be addressed accordingly. Moreover, DPHE looks after the tube wells which have already passed the defect liability period of 02 (two) years. According to the order of Chief Engineer, DPHE (memo no. 1066, dated: 16/09/2013), the packages where the defects liability period is over, DPHE will still repair the tube wells within 72 hours of receiving information provided that the concerned school bears the expense of spare parts from routine maintenance.

6. Capacity building

During the implementation of PEDP-3, a ToT (Training of the Trainers) was conducted by the World Bank among DPE, DPHE and LGED officials. The purpose was to introduce the proposed framework for environmental and social safeguard under PEDP-3 along with the importance of conducting rigorous monitoring. In addition, screening method was agreed and confirmed based on targeted outcomes. DPHE officials (Executive Engineers, Senior Assistant Engineers and Assistant Engineers) who received ToT provided trainings to the sub-assistant engineers and mechanics in the district and upazilla level who eventually filled in the environmental screening forms in the grass root level. In PEDP-4, a revised framework is adopted for both environmental and social safeguard. The basic changes are little but elaborate in comparison to that of PEDP-3. On December 5, 2021 ADB



conducted a short virtual training workshop on Occupational, Community and COVID-19 Health and Safety Management at the Construction works. Officials, consultants and contractors of both DPHE and LGED attended the training workshop. Although the duration of the training was short, it was effective and guided the participants with valuable insights related to construction safety and COVID-19 health and safety management at construction site.

On May 31, 2022, a meeting on the revision of the latest EMF and SMF was held virtually. The meeting was arranged by DPE and presided over by ADG (PEDP4), DPE. Members from DP's consortium and government officials attended the meeting. The meeting came up with several modification decisions on the existing EMF and SMF which is expected to be included in the revised EMF and SMF. In order to identify the key differences of revised EMF and SMF to that of original EMF and SMF of PEDP-3, newly designed training should be carried out by the experts (from both GoB and DP's) who had inputs during the preparation of revised EMF and SMF. Recently (December 8, 2022), during the QLEAP mission importance of training of the trainees were discussed. It was decided that the existing environmental and social safeguard framework will be revised with an agreed setup by DPE and TA support from the development partners.

During the reporting tenure, DPHE master trainers from Head Quarter and circle Head Quarter (who received ToT during PEDP-3) conducted day long circle level meetings to expedite the works related to the construction of wash blocks and installation of water sources and for the smooth implementation of construction work by adhering the guidelines of both revised EMF and SMF and COVID-19 health and safety protocol. Photo of such circle level meeting from Barishal is depicted in Fig.5. Thus, the trained engineers try and function as peer educators to educate the site workers and contractors. A summary of training and capacity building activities during the reporting tenure is tabulated below.

Table 1 Training and capacity building activities during July/2022-December/2022

Training Title	Date	Venue	Training Details	No. of Participants	
				Male	Female
Supervision and Construction Quality Control under PEDP4/GPS/NNGPS Project	28/08/2022	DPHE Gazipur Division	Training on on-job issues such as Civil / Water Supply / Sanitary / Plumbing related issues in accordance with revised EMF, SMF and COVID-19 New Normal	8	4
	02/09/2022	DPHE Khulna Division		18	2
	09/09/2022	DPHE Nilphamari Division		14	-
	26/10/2022	DPHE Narayanganj Division		11	1
	26/11/2022	DPHE Jashore Auditorium		75	4
	03/12/2022	DPHE Barishal Auditorium		78	7
Total =				204	18
Cumulative Number of Training from the beginning of the project till date =				40	



Fig. 5 SE, DPHE, Barishal Circle and other high officials attending co-ordination meeting

7. Environmental safeguard screening by DPHE (July'2022 – Dec'2022)

It cannot be denied that COVID-19 situation slowed down the overall construction and implementation progress. But with restrictions being lessened, DPHE has quickly adapted to the new normal by developing a comprehensive COVID-19 Site Operating Procedure (SOP) alongside several site and task specific risk assessments. DPHE constructed and installed a total of 13,510 wash blocks and 9,336 water points till date from the beginning of this project. Among these, a total of 2,028 wash blocks and 1,668 water points were installed and handed over during the reporting tenure of July'2022 to Dec'2022. In addition, DPHE finished the monitoring of 15,000 water points (installed in PEDP3) and currently undertaking monitoring of 25,000 additional water points for arsenic contamination. All these works were monitored based on approved Environmental Monitoring Framework (EMF) for PEDP-4. Table-2 summarizes the list of DPHE implemented works where screening for environmental safeguard was carried out.

Table 2 Progress of work under PEDP-4, DPHE

Scope of Work	FY 19-20	FY 20-21	FY 21-22	July'22- Dec'22	Total
Construction of Wash Block	-	6,760	4,722	2,028	13,510
Installation of Water Sources	240	4,401	3,027	1,668	9,336
Maintenance of Wash Block	689	4,010	1,663	790	7,152
Water Quality Monitoring	-	-	15,000	-	15,000



This report focuses on the construction work from the tenure of July'2022 to Dec'2022. During this period, not only new wash blocks were constructed and water points were installed, major maintenance of 790 wash blocks which were constructed during PEDP-3 were carried out. Furthermore, monitoring of 25,000 water points installed during PEDP-3 were undertaken for arsenic contamination. The status of the water points and wash blocks received through the monitoring survey is given in following subsections. A list of random monitoring visit from DPHE Head Quarter is listed in Table below.

Table 3 Monitoring visits from DPHE Head Quarter during the reporting period

Sl. No.	Name of subproject	Location	No. of WB/WS	Date of Inspection
1	Construction of Wash Block (WB)	Khulna	22	07/06/2022 - 10/06/2022
2	Installation of Water Supply (WS)	Gazipur	35	05/09/2022 - 08/09/2022
3	Construction of Wash Block (WB)	Nilphamari	18	09/09/2022 - 11/09/2022
4	Construction of Wash Block (WB)	Faridpur	26	12/10/2022 - 15/10/2022
5	Construction of Wash Block (WB)	Narayanganj	23	26/10/2022 - 28/10/2022
6	Construction of Wash Block (WB)	Rangpur	46	12/11/2022 - 16/11/2022

*** In addition, frequent monitoring visit from respective EE Office and AE/SAE offices happen during the reporting tenure.*

8. Outcomes of environmental safeguard screening

8.1 Influence of type of water point

Planning from the lessons learnt in PEDP-3

It is fact that, DPHE installed water points of different options such as Deep Tube Well (DTW), Shallow Tube Well (STW), Tara Tube well, Ring Well (RW), Pond Sand Filter (PSF), Rain Water Harvesting (RHW) in PEDP-3 based on the variation in geological formation, position of aquifer /water table, saline water intrusion etc. However, all those options have certain advantages as well as multiple drawbacks. The common of which is the ease of availability of water from source and their familiarization and user friendliness to the young users.

Mitigation Measures Suggested (MMS):

In order to mitigate the concerns and to make the water sources more popular and user friendly, DPHE installed Tube well with Submersible Pump (TSP) in the primary schools where deep tube well (depth >200m) is required to be installed under PEDP-4 due to ground geology. This option has special features such as-

- Running water supply with storage facility.
- Multiple users can access at the same time.
- Promote hygiene practice through safe hand washing.

Comment:

Installation of tube well with submersible pump added values to its user especially young user which eventually increases the easy access to safe drinking water result in health benefit as well as diminishes water logging and drainage problem.

8.2 Distribution of water points based on installed depth

DPHE installed tube wells of varying depth in different primary schools of Bangladesh considering the geological formation of respective district. Although the depth of tube well depends on the suitable water layer, all the tube wells installed in the reporting tenure can be broadly categorized into five distinct types based on the depth of tube well. Fig. 6 depicts the classification of tube wells based on depth. As shown in Table 2, a total of 1,668 nos. of water points were installed under PEDP4 during the reporting tenure. It is clear from Fig. 6 that 48% tube wells were installed at a greater depth of 275m or more which is considered as deep tube well. Around 18% tube wells were installed in shallow depth (<65m). Tube wells installed in between 65m to 275m are also deep tube wells and this percentage is second highest (34%) amongst all the installed water points.

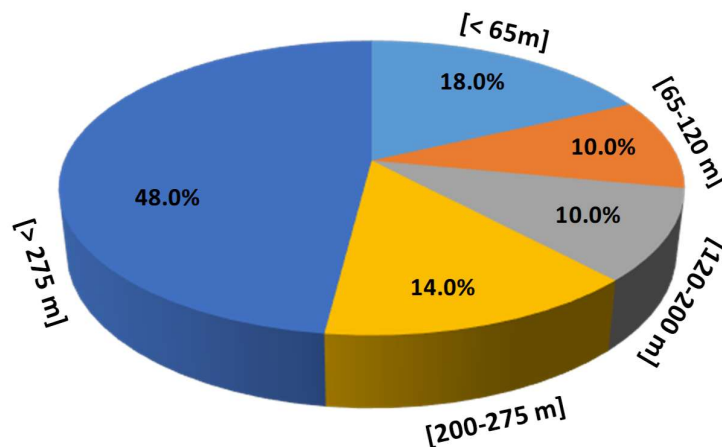


Fig. 6 Distribution of Water Points based on Depth of Boring

8.3 Countrywide distribution of water sources & wash blocks

Countrywide distribution of tube wells and wash blocks were analyzed and division wise categorization for water source and wash block is depicted in Figs. 7 and 8 respectively. Fig. 7 depicts the equity in distribution of water sources. Among the total installed water points, the highest number was installed in Rajshahi division followed by Chattogram and Sylhet division while the minimum number of water points was installed in Mymensingh division. This is as per need assessment criteria and approved list issued by DPE based on approved IPG.



Fig. 8 reflects the countrywide distribution of wash blocks depending on the number of districts and upazillas in each division. The maximum number of wash blocks were constructed in the Dhaka, Chattogram, Rangpur, Khulna division as these divisions cover maximum districts. The lowest number of wash blocks (646) was constructed in Mymensingh division as it is the smallest division of Bangladesh and thus, equity in distribution is justified.

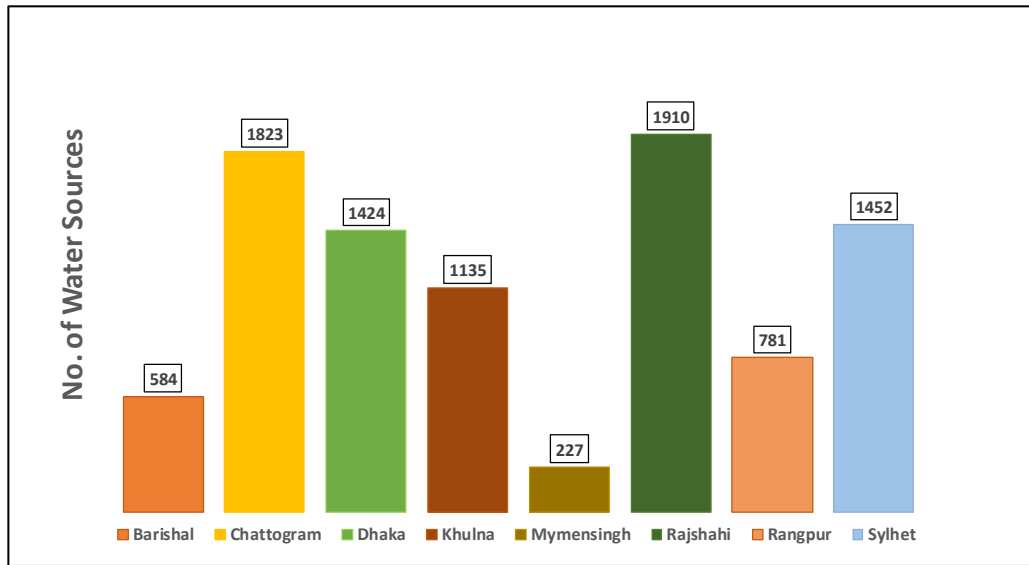


Fig. 7 Countrywide distribution of water points

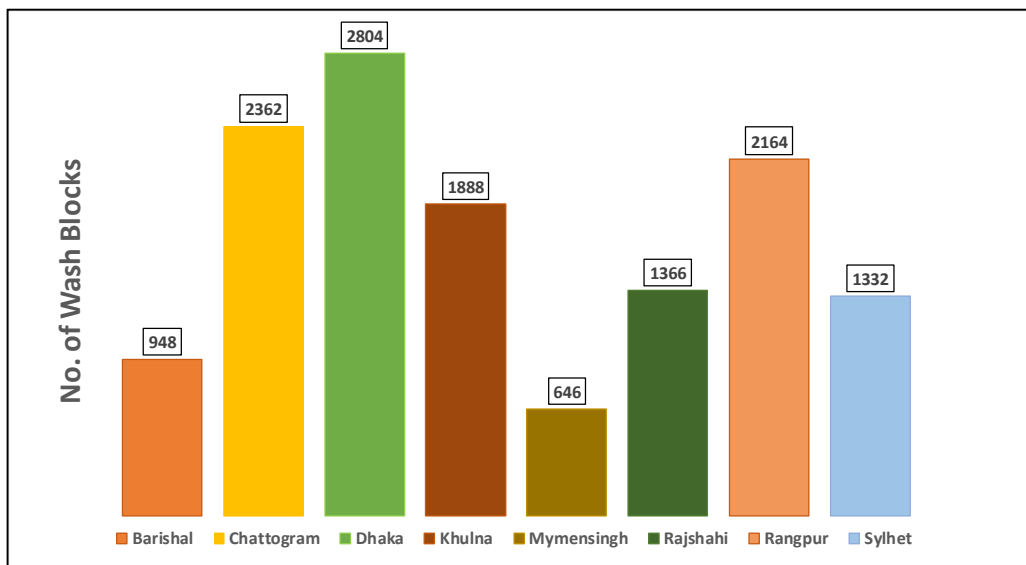


Fig. 8 Countrywide distribution of wash blocks



Wash Block is serving as a unique unit of hygiene practice for the school children as well as for teachers. Its impact on environment is high as it helps to promote hygiene as well as safe and clean school environment. Open defecations and urination practices decreases and confirms better health through improved washing facilities. On the other hand, tube well ensures safe drinking water for the school children as well as for the teachers.

8.4 Loss of agricultural land

During the preparation of site plan/ master plan it was the prime focus that the installation of the new water supply facility does not preclude the use of existing agricultural lands. No loss of agricultural lands was recorded from the environmental screening survey conducted for the water points installed from July'22 to December'22. Similarly, construction of wash block was carried out in those schools where land is owned by the respective school. Furthermore, prior to the construction of either wash block or installation of water sources, it was confirmed that the master plan was prepared by the MoMPE approved committee. In some cases, (approximately 1% of total construction) design and arrangement of wash blocks were modified based on the prevailing site condition keeping the floor area similar. However, the overall process of construction of wash block did not require purchase of new land from school which ensured no loss of agricultural land.

8.5 Environment of water supply facility

In case of water points 'Clean Environment' refers to the surrounding of the installed water option. If the surrounding environment is not dirty and/or not covered with algae, then it would be referred to as 'Clean'. Post installation monitoring of all water points have been conducted. Clean environment was found in 99% of the total water points. It can be noted that due to the provision of basin type water points, water logging and or other problems related to dirty environment have been dramatically reduced than that observed during the environmental screening of other types of tube well installed in PEDP-3 program.

Mitigation Measures Suggested (MMS):

During the monitoring phase, mitigation measures were suggested to the concerned school such as cleaning of basin, removal of leaves and other utensils that causes blockage of the drains etc. Because of taking mitigation measures, caretakers' training during commissioning and trial run and routine maintenance during monitoring phase, environment of water supply facility improves to 100% from 99%.

8.6 Surface Water Pollution:

Both the water sources and wash blocks were installed in such a manner that they do not adversely pollute the surface water. The environmental screening of all 2,028 Wash Block and 1,668

Water Points installed from July'22 up to December'22 revealed that they did not pollute any surrounding water bodies.

8.7 Facilities for draining out of water

From the lessons learnt during the environmental screening in PEDP-3, DPHE took initiative in solving the water logging problem by adopting different measures.

- 1) Pipe out used water to the existing drains.
- 2) Construction of 5 user water collection basin having 50mm dia. PVC washout pipe. Fig. 9. Shows a newly constructed 5 outlet hand washing basins under PEDP-4.
- 3) Use of 5 ring soaks well to drain out basin water where surface drain is absent.



Fig. 9 water collection basin of 5 outlet

As because, DPHE local office took initiative in solving the drainage issue, it has been observed that, the water logging problem is insignificant compared to that in PEDP-3. However, it is revealed that out of 1,668 water sources about 0.48% had the problem of water logging. The reasons observed are mainly lack of cleanliness which created blockage of drainage pipe by wastes like paper, tree leaves, mud etc. It is hence suggested that, SMC needs to look after this issue and run regular cleanliness program in the water collection basin and drains.

8.8 Source of Existing Water Supply

During preliminary survey it was found that, out of 1,668 schools 77% did not have their own active water option. 43% of them used the facility of their neighborhood. Though 23% schools have their own tube wells, yet those tube wells were found as non-functional or did not provide sufficient water during dry season. From the lessons learnt during the environmental screening in PEDP-3, DPHE took initiative in solving the above problem by installing new tube wells with submersible pump but at different depth as appropriate to the site geology.

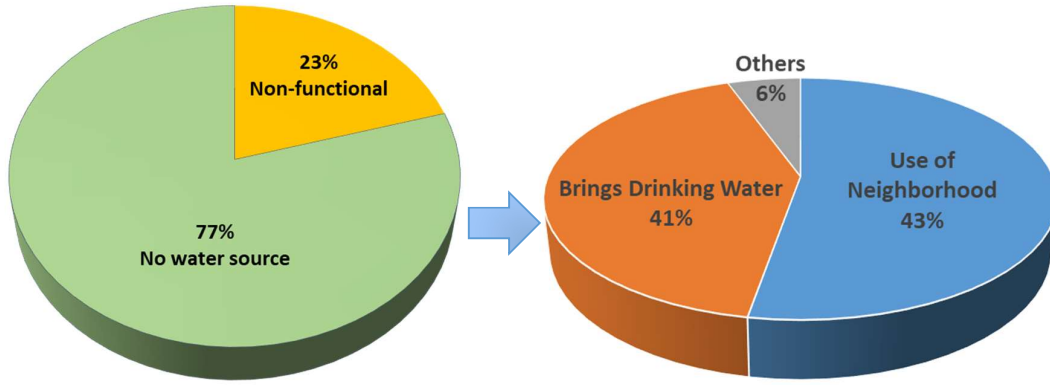


Fig. 10 Assessment of schools where new water points were installed

8.9 Water Quality test in Laboratory

Water testing facilities in DPHE zonal laboratory:

It is fact that DPHE has a permanent set up of 13 laboratory buildings including a central laboratory at Mahakhali, Dhaka. Recently, DPHE completed the set-up of 52 laboratory buildings in 52 districts which confirmed the establishment of zonal laboratories in all districts to expedite the water quality monitoring. These newly established laboratories are equipped with modern machineries so that all relevant water quality parameters can be monitored.

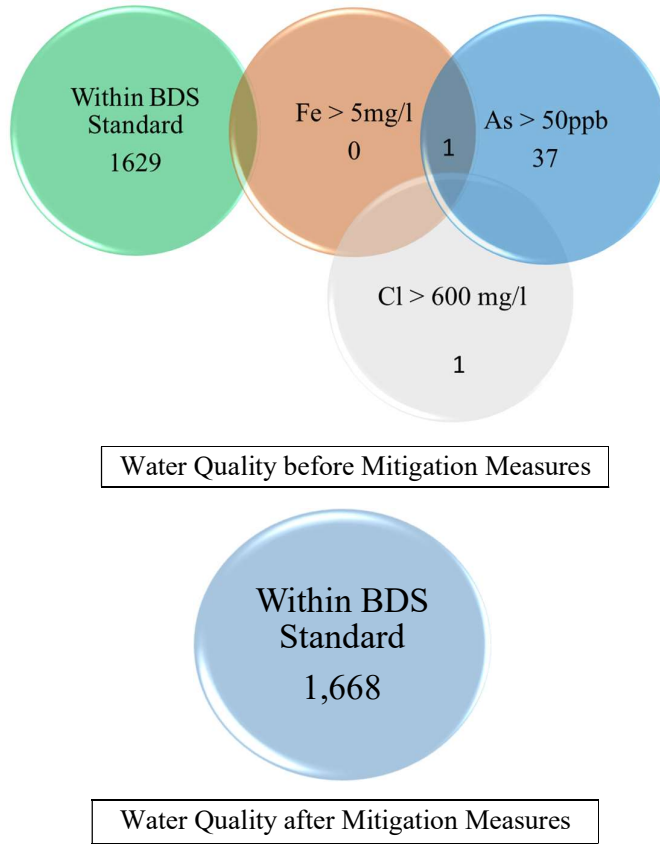


Fig. 11 Water Quality test result at a glance

Water Quality report of those 39 unacceptable water sources and suggested alternative option along with retest result is summarized in Table 4 of Appendix-7. Fig. 11 shows the diagrammatic presentation of water quality test results. In addition, ample field tests were conducted in those schools during post monitoring phase by DPHE by using field kit which re-confirmed the DPHE laboratory test results. A sample copy of water test result is provided in Appendix-3 and water quality test report for 39 unacceptable water sources have been presented in Appendix-7. A summary of water quality monitoring report is provided in Table 4.

Table 4 Summary of Water Quality Monitoring Result

Sl. No.	District	Water Quality not Satisfactory				Remarks
		Fe > 5mg/L	Cl > 600mg/L	As > 0.05mg/L	Total	
1.	Sunamganj	1	0	24	26	List of 'Not Satisfactory' water sources are given in Appendix-7 and Actions taken for the water sources where water quality is not satisfactory are listed in Table 2 of Appendix-7.
2.	Chuadanga	0	0	10	10	
3.	Brahmanbaria		1	4	4	
Total =		1	1	38	40*	

* 1 water sources out of 40 have contamination of both either Iron and Arsenic; resulting the total no of water sources as = (40-1) = 39 [For details please refer to Appendix 5].

Mitigation Measures suggested for water sources having unsatisfactory water quality results:

In cases where arsenic/iron/chloride is found beyond allowable BDS standard in installed water sources, DPHE adopts other approved alternate water options. DPHE goes for options like deep tube well of greater depth, ring well, pond sand filter, rain water harvesting, Reverse Osmosis Filter, AIRP, Small box type AIRP etc. whichever is feasible. In some cases, if all the options in hand fails, i.e., boring in greater depth becomes impossible, arsenic is found even in deep tube well and none other option is feasible, DPHE has started implementing 'SONO Filter' as well. DPHE upazilla offices will arrange and install the said filter in those water sources whichever is feasible, convenient and justified. In addition, water from those sources will be further tested and declared safe if found well



Fig. 12 Different Suggested Improved Filtration Technologies



below the BDS standard of drinking water. Fig. 12 shows some of the suggested filtration technologies.

It is fact that, in the reporting tenure a total of 39 water sources were found to have water quality concerns with excessive iron, chloride or arsenic. For all the said 39 water points, options like Reverse Osmosis (RO) were installed and filtered water was tested in DPHE zonal Laboratories. The water sources were handed over to the respective schools once the water quality results were found satisfactory. Water quality test results are summarized in Table 2 of Appendix 7.

8.10 Routine Water Quality Monitoring

As per MoU signed in between DPE and DPHE in September 15, 2019, DPHE will conduct water quality monitoring of 65,000 water points installed earlier in PEDP-3 with an aim to provide arsenic free safe drinking water in the primary schools of Bangladesh. It has been decided that 90% of the tests will be conducted in field by utilizing field test kits for arsenic and the rest 10% will be conducted in DPHE zonal laboratory. Due to COVID-19 pandemic, schools were closed which is why the field tests could not be conducted in the financial year 2020-2021. However, all the test kits were bought and well preserved by DPHE in order to conduct the field tests as soon as the schools re-open.

Soon after the re-opening of the schools, steps were taken to conduct water quality screening of 15,000 water points as selected by DPE. In the previous EMR and SMR [Jul'21-Dec'21] test results of those 15,000 water points were reported which indicated 1.44% arsenic contamination. In addition, it was confirmed that water of 98.56% of 15,000 installed tube wells in PEDP-3 are drinkable. DPHE officials immediately took steps in stopping the water intake from these contaminated water points.

On 3rd May, 2022 DPE issued a list of 25,000 water sources installed in PEDP-3 for routine water quality monitoring. All the received school lists are sent to the concerned EE Office and the routine water quality monitoring program is currently underway. Tenders have been called upon to purchase field arsenic testing kit by DPHE Central Laboratory and the evaluation of the received tenders are ongoing.

8.11 Hand washing facility and Hygiene Promotion

Prior to the installation of water sources, hand washing of students before and after meal especially mid-day meal and after using toilet was a matter of concern. As a result, students were more susceptible to diseases which triggered the absence of students from school. Besides these, newly constructed wash blocks with modern interior facility will surely create enthusiasm among children for the best utilization of wash blocks. A glimpse of wash block interior is shown in Fig 13.

Mitigation Measures Suggested (MMS):

Working with the motto of 'clean hand, safe hand' DPHE confirmed the installation of tube wells with running water supply by provision of submersible pump in all the above-mentioned schools during the reporting tenure. Construction of wash basin for hand washing (Fig.9) ensured total hand washing facilities in the school. Due to the global pandemic situation, although regular hygiene promotion activities could not be conducted yet monthly coordination meeting with DPE officials, TEO, ATEO and Primary School Headmasters is the indication of intensity of preparation for hygiene activities.



Fig. 13 Modern Interior of Wash Blocks

8.12 COVID-19 Reality, School Re-Opening and New Normal

Countries all over the world are trying new ways of softening or partially lifting COVID-19 related restrictions while keeping the virus progression in check. In this challenging time, the future of education depends on the provision of water, sanitation and hygiene services. So, Hygiene Promotion has been emerged as an issue of particular concern when considering reopening of schools.

In order to confirm adequate hygiene practise, DPHE district and upazilla level officers monthly conduct sessions related to hygiene promotion activities with TEO, ATEO and Primary School Headmasters in the schools or DPHE district offices. All these activities put positive sign to the improvement of total environment. Prior to the re-opening of the schools DPHE district offices and Upazilla offices conducted disinfection of school premises and maintenance of wash blocks and water sources as and where required. Besides these all the construction activities regarding construction of wash blocks, maintenance of wash blocks and installation of water sources are constructed following the guidelines by Ministry of Local Government, Rural Development and Cooperatives (Appendix-5).

8.13 Miscellaneous observations

During the implementation phase, two basic standards were maintained.



- 1) Ensure at least a distance of 10m between water points and leach pit/soak well/septic tank etc.
- 2) Ensure that the water collection basin is not clogged by paper, dry leaves, mud etc.

During monitoring phase, these options were found to be maintained properly.

8.14 Summary of observations

The post installation monitoring of all 2,028 Wash Blocks and 1,668 water points confirmed no major concern or significant issues that can cause adverse environmental impact. Table 5 summarizes some other environmental issues observed during survey of Water points/ Wash Blocks.

Table 5 Important environmental issues observed

Issues/Environment Criteria	Findings from the Survey for all TWs	Findings from the Survey for all WBs
Is the TW installed?	Yes	Yes
Is the existing TW working?	Yes	Yes
Was the installed TW water tested?	Yes	Yes
Is Arsenic < 50ppb?	Yes	Yes
Is Iron <1mg/l, for iron prone area up to 5 mg/l [Based on Water Quality Monitoring and Surveillance Protocol for Running Water Supply System in Bangladesh by DPHE, Appendix-8]	Yes	Yes
Is Cl ≤ 600 mg/l, for coastal area up to 1000 mg/l [Based on Water Quality Monitoring and Surveillance Protocol for Running Water Supply System in Bangladesh by DPHE, Appendix-8]	Yes	Yes
Loss of agricultural land?	No	No
Negative effect on flora/fauna?	No	No
Conflicts with water supply, right?	No	No
Any potential health risks?	No	No
Is there provision of separate toilet for male and female?	N/A	Yes
Is there provision for adequate ventilation?	N/A	Yes
Is there provision for disabled children?	N/A	Yes

Note: Only the particular water source that met the drinking water quality in the laboratory test is handed over to the primary school authority. DPHE preserves all the testing report in the MIS cell.



8.15 Positive environmental impact

The outcomes of the environmental screening as discussed in the previous subsections pointed out the achievement of following positive impacts through the implementation of revised EMF and SMF during the construction works under PEDP-4.

- 1) Regular WASH related programs such as hygiene promotion through hand washing campaign not only increased the personal safety of students but also spread the positive vibe in the surrounding society which is now the key lessons for the inhabitants to fight against COVID-19.
- 2) Through the assurance of contamination free safe water sources in the said primary schools during the reporting tenure, a long-awaited demand was fulfilled which not only improved health potential of users but also reduced the dropout rate.
- 3) Lessons learnt from PEDP-3 helped in designing the type and structure of water sources with provision of running water free from bacteriological contamination. This initiative dramatically reduced the problem of water logging and drainage which was encountered in PEDP-3.

A summary status of environmental safeguard document is given in Table 6 while overall performance in relation to environmental compliance is given in Table 7.

Table 6 Summary Status of Environmental Safeguard Documents

Type of safeguard document	Agency	Latest version	Coverage
Semi Annual Environmental Monitoring Report	DPHE	December/2022	July – December/2022
Maintenance Manual for Septic Tank	DPHE	October/2022	Till Date
National Standards of Water, Sanitation and Hygiene for Schools in Bangladesh	UNICEF	January/2011	Till Date
National Strategy for Water Supply and Sanitation	MoLGRD	June/2021	Till Date
Response to Covid-19 Outbreak Through Water, Sanitation and Hygiene Interventions	MoLGRD	June/2020	July/2020-December/2023
COVID-19 Exposure Prevention, Preparedness & Response Plan	DPHE	December/2020	Project Tenure
Site specific Environmental Management Plan (SEMP)	DPHE	December/2019	Project Tenure
Complain and sick register report	DPHE	December/2021	Project Tenure
OHS Plan	DPHE	December/2019	Project Tenure
Overall monitoring checklist	DPHE	December/2019	Project Tenure
Environment test report: included environmental monitoring, checklist, HSE monitoring	DPHE	December/2019	Project Tenure
National Menstrual Hygiene Management Strategy 2021	MoLGRD	June/2020	Till Date

**Table 7** Overall performance in relation to environmental compliance

No.	Aspects of Environmental issues	Compliance Status			Remarks
		FC	PC	NC	
A. General					
1.	Legal working hours approval	✓			
2.	Employment Record keeping arrangement	✓			
3.	Payment Record keeping arrangement	✓			
4.	Environment, Health and Safety Officer designated			✓	No provision of fund in RDPP in favor of DPHE. However, DPHE has published an EoI to engage a designated consultant by utilizing project implementation fund for PEDP4
5.	Provision for monthly meeting for inspection of site activities	✓			
B. Health and Sanitation					
Occupational Health					
1.	First-Aid Box availability at work sites	✓			
2.	Provision of personal protection equipment's (PPEs)		✓		In some instances, it is difficult to avoid situations like use of mixture machine, vibrator machine etc. during construction
3.	Handling of cement and other hazardous materials by workers	✓			
4.	Workers' complains taken care of by the supervisor	✓			
5.	Children below 18 employment (Not employed)	✓			
C. Environmental Pollution					
Dust and emission control					
1.	Construction vehicles and machineries maintained properly to reduce emissions	✓			
2.	Proper storage of materials and regular watering.	✓			
Noise Pollution					
1.	Movement of vehicles at desired hours	✓			
2.	Noise control measures at sites	✓			
Water Pollution					
1.	Land filling	✓			
2.	Wastes, cement, effluents and junks not disposed in water	✓			
Flora and Fauna					
1.	Trees and bushes outside the construction area preserved from damages	✓			
2.	Disturbance to terrestrial fauna minimized	✓			
Waste Management					
1.	Construction wastes are removed off site regularly	✓			
2.	Chemical wastes, if any, collected and disposed of properly	✓			
D. Environmental documents at Field Office and Project sites					
1.	Field Office possesses copies of EMP, contract document and Technical Specifications	✓			
2.	Heavy equipment maintenance records	✓			
TOTAL =		20	1	1	

The corrected action measures for the Partially Compliant (PC) and Non-Compliant (NC) issues presented in Table 7 are listed in Table-8 below.

**Table 8** Corrective Action Plan (July/22-December/22)

Sl. No.	Initial Status	Recommended Corrective Action Measures	Responsibility	Previous Due Date	Due Date	Recent Development
1.	NC	Designated Environment, Health and Safety Officer at DPHE Head Quarter to be appointed. Currently there is no funding provision in RDPP to address the issue.	Focal Point, Primary Education Unit, DPHE	November/2022	February/2023	Although there is no funding provision in RDPP, DPHE has published EoI to engage a designated consultant by utilizing the management support cost for PEDP4.
2.	PC	Provision of Personal Protection equipment's (PPEs) at construction site to be ensured.	Contractors of DPHE	October/2022	June/2023	In the estimate for construction, clauses covering PPEs at construction site has been included.

9. Health and Safety Guidelines against COVID-19

COVID-19 has disrupted day to day operations in construction work but as the time progresses, our understanding of how the virus spreads has also evolved. In these uncertain times, worksite safety and health are more important than ever before. DPHE follows the rules and regulations proclaimed by the Ministry of Local Government, Rural Development and Co-operatives (MLGRD&C). On 7th May'2020, the MLGRD&C provided some instructions on a basis of emergency for the safety considerations during the pandemic situation (Attached in Appandix-5) vide memo No. 1629 on 07/05/2020. Specific COVID-19 safety guidelines which is recommended for construction workers include-

- i) The workers in construction sites have to maintain safe distance (i.e., 1m) from each other and have to wear the mask, hand gloves, gumboot, helmet etc. and no worker will be permitted in the project site without this equipment.
- ii) There should be a proper arrangement of soap and hand sanitizer in worksite and all the workers must wash hand with antiseptic soap in an interval of 1 hour and also wash their faces and hands before taking meals and after using meals.
- iii) The officials from DPHE headquarter should arrange cautionary meetings on covid-19 safety issues at district level and upazilla level with the Executive Engineer, Assistant Engineer, Sub-Assistant Engineer, and collect the updates from the construction sites about precautionary affairs through proper channel.



- iv) In addition to the district level, DPHE officials should arrange meeting with School Head Masters at Upazilla level to make them informed about the safety issues for workers in the construction sites of schools as well as the special affairs due to corona pandemic.

DPHE followed the construction safety protocol during COVID-19 pandemic as outlined above. Table 9 summarizes the COVID response performance at the work sites in all the 344 completed contracts (289 for Wash block and 55 for Water Sources) during the reporting tenure.

Table 9 COVID response performance at worksite

COVID-19 Response questions	No. of Contracts			Comments
	FC	PC	N/A	
Site re-opening and entry protocol				
Locate the closest medical establishment equipped with COVID -19 response facilities.	344			
Engage a full time EHS professional at site			344	Currently there is no fund provision in RDPP in favor of DPHE for addressing safeguard. However, engagement of consultant is under process by utilizing management support cost.
Purchase thermometer gun, soap, hand sanitizer, disinfectants and PPEs (mask, hand gloves, hard shoes etc.) and keep it at worksite office.	344			
Establish site entrance protocol. Redesign the site safety notices/signboards/protocol according to the ADB guidelines	344			
Arrange washbasin, soap and clean water at the entrance of every worksite/campsite. Also keep either a disinfectant tub for shoes or keep disinfectant spray that must be sprayed under the boots/hard shoes of the persons entering worksite.	344			
Provide every personnel working in the site with mask, hand gloves and hard shoes for their personal use.	344			
Everyone entering the worksite must wear a mask, gloves and hard shoes	344			
A designated EHS and medical person should stay all time during work. The EHS/Medical person should also monitor campsite. He/she will be in charge of ensuring physical distances (minimum 1m) among workers, disinfecting surfaces that are commonly used and investigate workers'/site personnel health and safety.			344	Currently there is no fund provision in RDPP in favor of DPHE for EHS/medical professional
At the start and end of the day disinfect the total worksite.			344	Workers stay closer to the construction site by their own arrangement
Encourage site personnel/camp dwellers to not touch their eyes, mouth or nose if not washed thoroughly with soap recently. Also discourage hand shaking or hugs.	344			
Arrange a mandatory site brief on COVID awareness in the morning. The session must be conducted by the EHS/medical professional.		344		Currently there is no fund provision in RDPP in favor of DPHE for EHS/medical professional
While worksites are commonly well ventilated (if not make sure the work sites are well ventilated), ensure that the camp sites including the rooms designated for the camp dwellers are well ventilated and spacious.	344			
Before sharing common tools/machines at worksite, ensure to disinfect.		344		In some instances, it is difficult to avoid situations like use of mixture machine, vibrator machine etc. during construction
Discourage site personnel to gather and gossip at any time, rather encourage physical distance while chatting/discussing.	344			



COVID-19 Response questions	No. of Contracts			Comments
	FC	PC	N/A	
Restrict worksite personnel to go outside unnecessarily. Also restrict campsite personnel to go outside without any valid cause.	344			
If any person related at worksite/campsite fall victim to COVID-19 or being kept isolated for pre-caution, consider paid leave with no exception allowed.			344	No such event has been identified during the reporting tenure
Train workers on how to properly put on, use/wear, and take off protective clothing and equipment. The on-site EHS/Medical person should be in-charge of these trainings. These trainings must maintain the WHO's social distancing protocol. Make these trainings mandatory at worksites. Provide 10-15 minutes of a workday for such 'training and encouragement' activities.		344		Since, there is no fund provision in RDPP in favor of DPHE for EHS/medical professional training was not conducted by EHS/medical professional. However, such training has been conducted by SAE/AE of DPHE.

10. Grievance redressal status

A comprehensive grievance redressal system has been developed to address any issues generated due to the construction of wash blocks and installation of water sources in the primary schools. To address such issues, there is a designated GR committee in the DPHE Headquarter, the detail of which is given in Appendix-6. In addition, DG, DPE issued a letter Vide Memo. 18; dated March 18, 2022 to follow the instructions as stated in revised SMF. Since, no complain were raised from the concerned community, there was no issue of grievance redressal during the reporting tenure.

11. Monitoring progress report

It is fact that environmental screening report is related to the monitoring of implementation progress of environmental and social management plan. During the planning stage, all possible environmental and social safeguard issues are forecasted and related mitigation plans are included in the related contract packages. Issues related to EMP and SMP are clearly indicated in the 'Particular Conditions of Tender and Contract for Water Sources/ Wash Blocks' which is provided by default as a part of tender and contract. Following table shows the monitoring progress report of EMP during the reporting tenure.

Table 10 EMP progress monitoring

Monitoring Criteria	Progress Detail							Comment	Compliance Status
	FY-18-19	FY-19-20	FY-20-21	FY 21-22	July'22-Dec'22	Cumulative			
No. of contracts that incorporated environmental clause	73/73	28/28	1251/1251	597/597	344/344	2293 /2293	During tendering, environmental clauses were included which became part of contract	Complied	
Funds utilized for	N/A	N/A	N/A	N/A	N/A	N/A	Currently there is no fund provision in	N/A	



Monitoring Criteria	Progress Detail							Comment	Compliance Status
	FY-18-19	FY-19-20	FY-20-21	FY 21-22	July'22-Dec'22	Cumulative			
addressing safeguards								DPP in favor of DPHE for addressing safeguard	
No of schools having dirty environment around water source	6/331	4/240	54/4070	88/3027	18/1668	170/9336		Lac of routine cleanliness caused dirty environment which was mitigated in all 170 schools.	Complied
Schools with drainage congestion identified and solved	2/331	2/240	28/4070	16/3027	8/1668	56/9336		Blockage in drainage system caused drainage congestion which was mitigated in all 56 schools.	Complied
No. of water points having problem with quality of water	0/331	8/240	57/4070	66/3027	39/1668	170/9336		Alternate options such as RO were utilized which mitigated the water quality problem in all 170 schools.	Complied

12. Compliance Status to ADB Loan Covenants

The compliance status to ADB loan covenants relevant to environmental safeguards is listed in Table 11.

Table 11 Compliance with ADB Loan Covenants

Serial no. as per Loan Agreement	Program Specific Covenants	Compliance Status	Remarks	
Schedule 4	10	To ensure that all program actions in the area of environmental and social safeguards are implemented in a timely and efficient manner	Complied	Semi-Annual environmental and social safeguards are implemented based on revised EMF/SMF.
	11 (a)	To ensure that no construction or rehabilitation works involve significant adverse environmental impacts that may be classified as category A under the SPS through screening.	Complied	Through the comprehensive screening it was confirmed that no adverse environmental impact as related to category A under the SPS was found.
Schedule 4	11 (b)	To ensure that the preparation, design, construction, implementation, operation, decommissioning of all activities under the program comply with all applicable laws, regulations and guidelines related to health and safety, environmental safeguard.	Complied	The applicable laws, regulations and guidelines related to the H&S and Environmental safeguard were strictly adhered.
	12	To ensure that the program does not involve any resettlement risks.	Complied	No resettlement risks were involved since the construction of wash blocks and water sources were conducted in the location owned by the primary schools.
	13	To ensure that the program does not involve any negative risks or impacts on tribes or minor races, ethnic sects and communities.	Complied	No negative risks or impacts on tribes or minor races, ethnic sects and communities were reported through the comprehensive environmental and social safeguard screening.



13. Implementation Status of CAP recommended in aide memoire

The implementation status of CAP recommended in comprehensive aide memoire is listed in Table 12.

Table 12 Implementation Status of CAP recommended in aide memoire

Sl. No.	Recommended Corrective Action Measures	Implementation Status
1	All tube wells that have been built for more than one year are to be screened annually by DPHE for water quality and physical status of tube wells to ensure fixture damaged/choked up tube wells and where water quality parameters	DPHE completed the screening of 15,000 water points by Dec/2021 and currently undertaking the screening of another 25,000 water points, the list of which is made available on May 3 rd , 2022 by DPE. Please refer to section 8.10 for details.
2	The mission advised DPHE to take initiative for water treatment if deep tube wells are found contaminated with arsenic.	As mentioned in Table 4 of section 8.9, 39 water sources were found to have arsenic contamination during the reporting tenure. It can be seen from Table 2 of Appendix 7 that water treatment facilities were provided in those arsenic contaminated water sources.
3	The mission also advised DPHE to consider soak pits to mitigate water stagnation around the tube well platforms.	As mentioned in section 8.7 (3), 5 ring soak wells were installed to drain out basin water where surface drain is absent.

14. Conclusions

This study investigates the environmental safeguard concerns during the implementation of wash blocks, water points and major maintenance of wash blocks based on the approved EMF guidelines for PEDP-4. This report has presented potential environmental impacts associated with the pre-construction, construction and operation phases of the project. The environmental monitoring screening confirmed *no significant instances or issues* that may hamper or influence the environmental safety during the reporting tenure. Being an implementing agency DPHE would like to uphold this status in its ongoing and upcoming works related to infrastructure development.



Appendix-1: Sample Environmental Screening for Wash Block

6.1 Environmental Screening Report for Wash Block

Name of The Project: Fourth Primary Education Development Program (PEDP-4)
 District: Kurigram,
 Upazilla: fulbari
 Name of School: নগরাজপুর সরকারি প্রাথমিক বিদ্যালয়
 School ID: 107050311
 Type of Wash Block: Attached

Screening Questions	Base Line	Impact without Intervention	Impact during Implementation		Impact after Implementation		Remarks
			0/+/-/N/A	Date of Visit	0/+/-/N/A		
Environment of Existing Facility Good?	No	-	-	3/19/2020	+	11/12/2020	
Facilities for Draining out of Water Proper?	No	-	-	3/19/2020	+	11/12/2020	
Any Reported Event of Spread of Pathogens?	No	-	-	3/19/2020	+	11/12/2020	
No of Existing Toilet Adequate?	No	-	-	3/19/2020	+	11/12/2020	
Disposal of faecal waste safe?	No	-	-	3/19/2020	+	11/12/2020	
Disposal of liquid waste safe?	No	-	-	3/19/2020	+	11/12/2020	
Availability of Hand washing Facility?	No	-	-	3/19/2020	+	11/12/2020	
Availability of Foot washing Facility?	No	-	-	3/19/2020	+	11/12/2020	
Availability of Running water Supply?	No	-	-	3/19/2020	+	11/12/2020	
Height of Wash Blocks Appropriate?	No	-	-	3/19/2020	+	11/12/2020	
Any Loss of Agricultural Land?	No	0	0	3/19/2020	0	11/12/2020	
Any Negative effect on flora/ fauna?	No	0	0	3/19/2020	0	11/12/2020	
Any provision for disabled?	No	-	-	3/19/2020	+	11/12/2020	
Is the Wash Block user friendly?	No	-	-	3/19/2020	+	11/12/2020	
Any negative effect on ecosystem?	No	0	0	3/19/2020	0	11/12/2020	

Signature of (স্বাক্ষর)
 মোঃ হারুনুর রশিদ
 উপ-সহকারী প্রকৌশলী
 জনস্বাস্থ্য প্রকৌশল অধিদপ্তর
 ফুলবাড়ী, কুড়িগ্রাম।

Signature of (স্বাক্ষর)
 মোঃ হারুনুর রশিদ
 উপ-সহকারী প্রকৌশলী
 জনস্বাস্থ্য প্রকৌশল অধিদপ্তর
 কুড়িগ্রাম।

Signature of Executive Engineer

Signature (স্বাক্ষর)
 31.6.2022
 মোঃ হারুনুর রশিদ
 উপ-সহকারী প্রকৌশলী
 জনস্বাস্থ্য প্রকৌশল অধিদপ্তর
 কুড়িগ্রাম।



Appendix-2: Sample Environmental Screening for Water Sources

Environmental Screening Report for Water Sources

District: Meherpur
 Upazilla: Gangni
 Name of School: Pakuria GEPs
 School ID: 91202020807
 Type of Water Source: TSP

Screening Questions	Base Line		Impact Without Intervention			Impact During Implementation			Impact after Implementation			Remarks
	Yes	No	+	-	N/A	+	-	N/A	+	-	N/A	
Any Source of existing drinking water?		✓		✓			✓			✓		
Environment of water supply facility good?		✓		✓			✓			✓		
Facilities for draining out of water proper?		✓		✓			✓			✓		
Any reported event of sickness?		✓		✓			✓			✓		
Is the existing TW working?		✓		✓			✓			✓		
Was the water quality tested?		✓		✓			✓			✓		
Are there provisions for water collection basin?		✓		✓			✓			✓		
Any concern about water quality?		✓		✓			✓			✓		
Is there provisions for RO filter?		✓		✓			✓			✓		
Any health risk associated?		✓		✓			✓			✓		
Distance of existing water source from Soak Well > 10m	✓			✓			✓			✓		
Height & location of new water source appropriate?	✓			✓			✓			✓		
Any loss of agricultural land?		✓		✓			✓			✓		
Any negative effect on flora/fauna?		✓		✓			✓			✓		
Any conflicts with water supply right?		✓		✓			✓			✓		

Signature of SAE


 Signature of AE
 আবু সাঈদ মোঃ মাহমুদুল হকমান
 সহকারী প্রকৌশলী
 জলসংরক্ষণ প্রকৌশল অধিদপ্তর
 গাংনী, মেহেরপুর।


 Signature of Executive Engineer
 সুনীল কুমার সিংহ
 প্রকৌশলী
 জলসংরক্ষণ প্রকৌশল অধিদপ্তর
 গাংনী, মেহেরপুর।



Appendix-3: Sample water quality monitoring by DPHE zonal Lab

Government of the People's Republic of Bangladesh
 Department of Public Health Engineering (DPHE)
 Office of the Senior Chemist, Zonal Lab, Sylhet.
 Telephone No: 02997700537; e-mail: wqmisc_sylhetzonalab@yahoo.com

Primary Education Development Program (GPS)

Laboratory Test Result

Sl No	District	Upazilla	Village	ID	Type of School	Depth (m)	GPS		Water Quality			Remarks				
							Latitude	Longitude	Sand	Clear	As (mg/L)					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Sunamganj	Derai	Shyamcherchar	603079046	1	1		Shyamcherchar GPS	24°45'09"	91°14'29"	1	1	1	0.017		
2	Sunamganj	Derai	Tarol	601090901	1	1		Tarol GPS	24°44'36"	91°23'35"	1	1	1	0.014		
3	Sunamganj	Derai	Gochia	901090304	1	1		Gochia GPS	24°49'54"	91°19'38"	1	1	1	0.047		
4	Sunamganj	Derai	Besni	601090707	1	1		Basuri GPS	24°37'40"	91°26'42"	1	1	1	0.046		
5	Sunamganj	Derai	Bangalgaon	601090605	1	1		Bangalgaon GPS	24°48'51"	91°20'51"	1	1	1	0.034		
6	Sunamganj	Derai	Rajnao	601090714	1	1		Rajnao GPS	24°48'15"	91°26'09"	1	1	1	0.031		
7	Sunamganj	Derai	Hazaripur	601090504	1	1		Hazaripur GPS	24°47'42"	91°17'37"	1	1	1	0.014		
8	Sunamganj	Derai	Chamerchar	601090311	1	1		Chamerchar GPS	24°46'51"	91°16'05"	1	1	1	0.015		
9	Sunamganj	Derai	Fatemanagar	601090308	1	1		Fatemanagar GPS	24°48'44"	91°19'14"	1	1	1	0.009		RO Filter
10	Sunamganj	Derai	Hasimpur	601090501	1	1		Hasimpur GPS	24°47'27"	91°16'15"	1	1	1	0.007		
11	Sunamganj	Jogonathpur	Tegharia	601100705	1	1		Tegharia GPS	24°44'41"	91°35'11"	1	1	1	0.015		
12	Sunamganj	Jogonathpur	Kaminipur	601109004	1	1		Kaminipur GPS	24°47'58"	91°36'09"	1	1	1	0.014		
13	Sunamganj	Jogonathpur	Mokrampur	601100217	1	1		Mokrampur GPS	24°47'34"	91°33'01"	1	1	1	0.042		
14	Sunamganj	Jogonathpur	Rasulpur	601100207	1	1		Rasulpur GPS	24°49'27"	91°34'35"	1	1	1	0.005		
15	Sunamganj	Jogonathpur	Islampur	601100214	1	1		Islampur GPS	24°48'24"	91°33'48"	1	1	1	0.017		
16	Sunamganj	Jogonathpur	Kachurkandi	601100313	1	1		Kachurkandi GPS	24°49'09"	91°33'35"	1	1	1	0.025		
17	Sunamganj	Jogonathpur	Mirpur	601100301	1	1		Mirpur GPS	24°47'14"	91°38'04"	1	1	1	0.018		




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Appendix-4: Sample water quality monitoring by Field Test Kit

EE, DPHE

	 Government of the People's Republic of Bangladesh Arsenic Test at School by Field Kit under Water Quality Monitoring of Fourth Primary Education Development Program (PEDP4)	
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ARSENIC TEST RESULT BY FIELD KIT

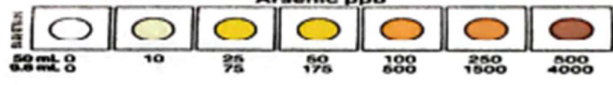
(A) Information of Primary School:

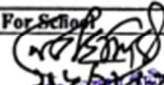
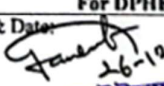
1. Name of School	: pachim Dhemushia Reg: primary school										
2. EMIS Code	: 4	: 1	: 2	: 0	: 5	: 1	: 2	: 0	: 3	: 0	: 2
3. District	: Cox bazar					4. Upazilla :	chakarua				

(B) Information of Drinking Water Source:

1. Provision of Water Sources	: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Project	: <input checked="" type="checkbox"/> PEDP3 <input type="checkbox"/> GPS-1 <input type="checkbox"/> NNGPS-1 <input type="checkbox"/> PEDP-4 <input type="checkbox"/> Others
3. Installed By	: <input checked="" type="checkbox"/> DPHE <input type="checkbox"/> Others
4. Year of Installation	: 2017
5. Type of Tube Well	: <input type="checkbox"/> Deep <input checked="" type="checkbox"/> Shallow <input type="checkbox"/> Tara <input type="checkbox"/> Ring Well <input type="checkbox"/> TSP <input type="checkbox"/> Others
6. Present Condition	: <input checked="" type="checkbox"/> Running <input type="checkbox"/> Temporary Choked up <input type="checkbox"/> Permanently Choked up
7. Platform/Collection Basin Condition	: <input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> No Platform/Collection Basin.


(C) Water quality & Present status:

Field Observation: (Please ✓)	Arsenic ppb  50 ml. 0 10 25 50 100 250 500 0.5 ml. 0
	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Arsenic test Result	: 10 ppb (approx.)
BDS Standard	: 50 ppb (0.05mg/l)
	TEST KIT HACH EZ Arsenic Test Kit Cat. No. 28228-00

For School	For DPHE
Signature & Date: 	Signature & Date: 
Name: মোঃ জাহাঙ্গীর হক প্রশাসনিক কর্মকর্তা	Name: মোঃ আবু ইউসুফ জন্মান্বিতা প্রকৌশলী
Designation: পশ্চিম ডেমুশিয়া সরকারি প্রাথমিক বিদ্যালয় চকরিয়া, কক্সবাজার।	Designation: জন্মান্বিতা প্রকৌশল অধিদপ্তর চকরিয়া, কক্সবাজার।
Phone: 01814-111299	Phone: 26-12-21

[এই পরীক্ষার সাথে বিদ্যালয় কর্তৃপক্ষের কোন আর্থিক সংশ্লেষ নেই। আবেদনিক পরীক্ষার জন্য সকল খরচ ঠিকাদারী প্রতিষ্ঠান কর্তৃক বহন করা হবে]

Appendix-5: Construction Guidelines by MoLGRD during COVID-19



গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
স্থানীয় সরকার, পল্লী উন্নয়ন ও সমবায় মন্ত্রণালয়
স্থানীয় সরকার বিভাগ
পাস-১ অধিশাখা
www.lgd.gov.bd

শেখ হুমায়ূনের মূলনীতি
গ্রাম শহরের উন্নতি

স্মারক নং-৪৬.০০.০০০০.০৮৩.১২.০০২.১৭(অংশ-১)-১৬২৯

তারিখঃ ২৪ বৈশাখ ১৪২৭
০৭ মে ২০২০


বিষয়ঃ জনস্বাস্থ্য প্রকৌশল অধিদপ্তর কর্তৃক বাস্তবায়নাধীন প্রকল্পের কাজ সম্পাদনের জন্য অনুরোধীয় নির্দেশনা।

সূত্রঃ মানপ্রশাসন মন্ত্রণালয়ের প্রজ্ঞাপন নং- ০৫.০০.০০০০.১৭৩.০৮.০১৪.০৭-১৩৫, তারিখঃ ০৪ মে ২০২০।

উপর্যুক্ত বিষয় ও সূত্রোক্ত পত্রের প্রেক্ষিতে নির্দেশক্রমে জানানো যাচ্ছে যে, জনস্বাস্থ্য প্রকৌশল অধিদপ্তর কর্তৃক বাস্তবায়নাধীন প্রকল্পের কাজ সম্পাদনের জন্য নিম্নবর্ণিত নির্দেশনা অনুসরণ করতে হবেঃ

- ০১) প্রকল্প এলাকায় করোনা ভাইরাস (কভিড-১৯) বিষয়ক স্বাস্থ্য ও পরিবার কল্যাণ মন্ত্রণালয় কর্তৃক জারিকৃত নির্দেশনা সর্বলিঙ্গ সাইনবোর্ড স্থাপন করতে হবে;
- ০২) স্বাস্থ্য বিধি অনুসরণ ও সামাজিক দূরত্ব রক্ষা করে প্রকল্পের কাজ সম্পাদন করতে হবে। প্রকল্প কাজে যে সকল শ্রমিক কাজ করবে তারা শারীরিকভাবে সুস্থ কি-না তা নির্ণয়ের জন্য থার্মাল স্ক্রিনিংয়ের মাধ্যমে তাদের পরীক্ষার তাপমাত্রা পরীক্ষা করতে হবে;
- ০৩) ট্রাকে করে নির্মাণ সামগ্রী পরিবহন/সরবরাহের সময় ট্রাকের সামনে ব্যানারে জনস্বাস্থ্য প্রকৌশল অধিদপ্তর কর্তৃক বাস্তবায়নাধীন সুনির্দিষ্ট প্রকল্পের নাম উল্লেখ থাকতে হবে;
- ০৪) প্রকল্প কাজ সম্পাদনের জন্য শ্রমিকদের নির্দিষ্ট পোশাক পরিধান করতে হবে এবং প্রয়োজ্য ক্ষেত্রে মাস্ক, হ্যান্ডগ্লোভস, গার্মবুটি, হেলমেট ব্যবহার করতে হবে;
- ০৫) প্রকল্প এলাকায় নির্মাণ শ্রমিকদের জন্য সাবান পানি দিয়ে হাত ধোয়ার ব্যবস্থা থাকতে হবে। প্রয়োজনে হ্যান্ড স্যানিটাইজার সরবরাহ করতে হবে;
- ০৬) চলমান প্রকল্প এলাকায় কার্যক্রম চলাকালীন কাজের বিবরণ চম্ভলিত সাইনবোর্ড স্থাপন করতে হবে;
- ০৭) প্রকল্প কাজে নির্মাণ সংশ্লিষ্ট যন্ত্রপাতি ব্যবহারের ক্ষেত্রে স্বাস্থ্য সুরক্ষার বিষয়টি নিশ্চিত করতে হবে;
- ০৮) প্রকল্প কাজে নিয়োজিত নির্মাণ শ্রমিকদের স্বাস্থ্য বিধি অনুসরণপূর্বক সামাজিক দূরত্ব বজায় রেখে নির্ধারিত নির্মাণ শেডে অবস্থান করতে হবে;
- ০৯) পাথর, সিমেন্ট বা অন্যান্য নির্মাণ সামগ্রী এক জেলা হতে অন্য জেলায় পরিবহনের প্রয়োজন হলে সংশ্লিষ্ট জেলা প্রশাসকগণকে অবহিত করতে হবে;
- ১০) প্রয়োজ্য ক্ষেত্রে প্রকল্পের কাজ চালানোর জন্য সংশ্লিষ্ট জেলা প্রশাসক/উপজেলা নির্বাহী অফিসারের অনুমতি গ্রহণ করতে হবে;

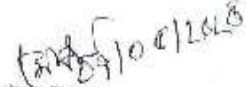
অপর পৃষ্ঠায় হটব্য-



-০২-

১১) উল্লিখিত নির্দেশনা যথাযথভাবে অনুসরণ করা হচ্ছে কিনা তা মাঠ পর্যায়ে তদারকির জন্য জনস্বাস্থ্য প্রকৌশল অধিদপ্তর একটি কমিটি গঠন করবে। কমিটি প্রতি মাসে স্থানীয় সরকার বিভাগ বরাবর প্রতিবেদন দাখিল করবে।

১২) সি-ও-ফিতরের সরকারি ছুটিতে সফল কর্মকর্তা-কর্মচারীকে তার স্ব-স্ব কর্মস্থলে অবস্থান করতে হবে।


মো: হাইবুল ইসলাম
যুগ্মসচিব
ফোন: ৯৫৭৫৫৬২

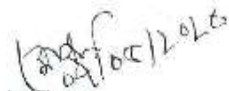
প্রধান প্রকৌশলী
জনস্বাস্থ্য প্রকৌশল অধিদপ্তর
কাকরাইল, ঢাকা।

স্মারক নং-৪৬.০০.০০০০.০৮৩.১২.০০২.১৭(অংশ-২)- ১৬২৯/০২(০৮)

তারিখঃ ২৪ বৈশাখ ১৪২৭
০৭ মে ২০২০

অনুলিপি (সময় অবাগতির জন্য)

১. প্রতিরক্ষ সচিব (গাস), স্থানীয় সরকার বিভাগ।
২. বিভাগীয় পরিশ্রম (সকল), বিভাগ।
৩. মাননীয় মন্ত্রীর একান্ত সচিব, স্থানীয় সরকার পল্লী উন্নয়ন ও সমবায় মন্ত্রণালয়।
৪. জেলা প্রশাসক (সকল), জেলা।
৫. উপসচিব, বিধি-৪ শাখা, জনপ্রশাসন মন্ত্রণালয়, বাংলাদেশ সচিবালয়, ঢাকা।
৬. দিনিলয় সচিবের একান্ত সচিব, স্থানীয় সরকার বিভাগ।
৭. কম্পিউটার প্রোগ্রামার, স্থানীয় সরকার বিভাগ।
৮. অফিস কপি।


মো: হাইবুল ইসলাম
যুগ্মসচিব

Appendix-6: Grievance Redressal Committee of DPHE

অনিক ও আপিল কর্মকর্তা	
<p>নাম : জনাব এহতেশামুল রাসেল খান পদবী: তত্ত্বাবধায়ক প্রকৌশলী ফিজিবিবিরিটি স্টাডি এন্ড ডিজাইন সার্কেল জনস্বাস্থ্য প্রকৌশল অধিদপ্তর, ঢাকা। ফোনঃ +৮৮ ০২ ৯৩৫০১৬৫ মোবাইল :+৮৮ ০১৫৫৬৩৭৭৩২০ ইমেইলঃ se.fsd@dphe.gov.bd</p>	<p>অভিযোগ নিষ্পত্তি কর্মকর্তা (অনিক) অফিস আদেশ</p>
<p>নাম: জনাব মাহমুদ কবির চৌধুরী পদবী: তত্ত্বাবধায়ক প্রকৌশলী ভান্ডার সার্কেল, ঢাকা ফোনঃ +৮৮ ০২ ৯৩৩০৮০২ মোবাইল :+৮৮ ০১৭১৫০৬১০১৫ ইমেইলঃ se.store@dphe.gov.bd</p>	<p>বিকল্প অভিযোগ নিষ্পত্তি কর্মকর্তা (বিকল্প অনিক) অফিস আদেশ</p>
<p>নামঃ মোঃ কামাল হোসেন পদবিঃ যুগ্মসচিব (পলিসি সাপোর্ট অধিশাখা) ই-মেইলঃ psbr@lgd.gov.bd মোবাইলঃ ০১৭১৬১৪৮৪৭৯ ফোন (অফিস) ০২৫৫১০০৮৭২</p>	<p>আপিল কর্মকর্তা</p>



Appendix-7: Water Quality Report of Unacceptable Water Sources

Government of the People's Republic of Bangladesh
 Department of Public Health Engineering (DPHE)
 Office of the Senior Chemist, Zonal Lab, Sylhet.
 Telephone No: 0211100237; e-mail: wqmsc_sylhetzonalab@yahoo.com

Primary Education Development Program (GPS)

Laboratory Test Result

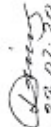
Sl No	District	Upazila	Village	ID	Type of School	Water Depth (m)	Name of School	GPS		Water Quality			Test Result		Remarks
								Latitude	Longitude	Sand	Clear	Fe (mg/L)	As (mg/L)		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17
1	Sunamganj	Derai	Shyamcherchar	603079046	1	1	Shyamcherchar GPS	24°45'09"	91°14'29"	1	1	1	2.7	0.066	Unit (mg/L)
2	Sunamganj	Derai	Tarol	601090901	1	1	Tarol GPS	24°44'36"	91°23'35"	1	1	1	1.3	0.07	
3	Sunamganj	Derai	Gochia	901090304	1	1	Gochia GPS	24°49'54"	91°19'38"	1	1	1	1.9	0.099	
4	Sunamganj	Derai	Basuri	601090707	1	1	Basuri GPS	24°47'40"	91°26'42"	1	1	1	1.6	0.091	
5	Sunamganj	Derai	Bangalajoon	601090605	1	1	Bangalajoon GPS	24°48'51"	91°20'51"	1	1	1	6.5	0.08	
6	Sunamganj	Derai	Rajnao	601090714	1	1	Rajnao GPS	24°48'15"	91°26'09"	1	1	1	1.7	0.062	
7	Sunamganj	Derai	Hazaripur	601090504	1	1	Hazaripur GPS	24°47'42"	91°17'37"	1	1	1	2.2	0.07	
8	Sunamganj	Derai	Chamerchar	601090311	1	1	Chamerchar GPS	24°46'51"	91°16'05"	1	1	1	1.5	0.059	
9	Sunamganj	Derai	Fatenanagar	601090308	1	1	Fatenanagar GPS	24°48'44"	91°19'14"	1	1	1	2.6	0.087	
10	Sunamganj	Derai	Hasimpur	601090501	1	1	Hasimpur GPS	24°47'27"	91°16'15"	1	1	1	2.9	0.055	
11	Sunamganj	Jogonathpur	Tegharia	601100705	1	1	Tegharia GPS	24°44'41"	91°35'11"	1	1	1	1.7	0.058	
12	Sunamganj	Jogonathpur	Ghuragaon	601100109	1	1	Ghuragaon GPS	24°48'29"	91°32'48"	1	1	1	1.4	0.044	
13	Sunamganj	Jogonathpur	Chikka	601100408	1	1	Chikka GPS	24°46'47"	91°33'42"	1	1	1	3.3	0.029	
14	Sunamganj	Jogonathpur	Dakishn Habibpur	601100403	1	1	Dakishn Habibpur GPS	24°46'15"	91°33'49"	1	1	1	2.1	0.024	
15	Sunamganj	Jogonathpur	Kaminipur	601109004	1	1	Kaminipur GPS	24°47'58"	91°36'09"	1	1	1	2.1	0.059	
16	Sunamganj	Jogonathpur	Mokranpur	601100217	1	1	Mokranpur GPS	24°47'34"	91°33'01"	1	1	1	1.3	0.064	
17	Sunamganj	Jogonathpur	Rasulpur	601100207	1	1	Rasulpur GPS	24°49'27"	91°34'35"	1	1	1	1.9	0.054	
18	Sunamganj	Jogonathpur	Islampur	601100214	1	1	Islampur GPS	24°48'24"	91°33'48"	1	1	1	2.1	0.056	
19	Sunamganj	Jogonathpur	Kachurkandi	601100313	1	1	Kachurkandi GPS	24°49'09"	91°33'35"	1	1	1	4.5	0.063	
20	Sunamganj	Jogonathpur	Mirpur	601100301	1	1	Mirpur GPS	24°47'14"	91°38'04"	1	1	1	1.6	0.091	


Handwritten signatures and initials are present in the right margin of the table, including a signature that appears to be 'D. M. S.' and another that appears to be 'D. M. S.' with a flourish.



Sl No	District	Upzila	Village	ID	Type of the School	Depth (m)	Name of School	GPS		Water Quality		Test Result			Remarks
								Latitude	Longitude	Sand	Clear	Fe (mg/L)	As (mg/L)		
1	2	3	4	5	6	7	8	10	11	12	13	14	15	17	
21	Sunamganj	Jogonathpur	Sanuakhai	601109001	1	1	Sanuakhai GPS	24°50'09"	91°33'17"	1	1	3.8	0.06		
22	Sunamganj	Jogonathpur	Chand Buyalia	601100303	1	1	Chand Buyalia GPS	24°45'52"	91°39'41"	1	1	2.8	0.074		
23	Sunamganj	Jogonathpur	Karimpur	601100709	1	1	Karimpur GPS	24°45'12"	91°38'20"	1	1	2.5	0.076		
24	Sunamganj	Jogonathpur	Syeidpur	601100701	1	1	Syeidpur GPS	24°45'26"	91°35'43"	1	1	1.7	0.074		
25	Sunamganj	Jogonathpur	Poschim Syeidpur	601100703	1	1	Poschim Syeidpur GPS	24°45'31"	91°35'18"	1	1	1.5	0.067		
26	Sunamganj	Jogonathpur	Khaliknagar	601101581	1	1	Abdul Khalik GPS	25°03'01"	91°38'44"	1	1	1.4	0.076		
27	Sunamganj	Jogonathpur	Lahori	601100112	1	1	Lahori GPS	24°47'46"	91°40'10"	1	1	1.9	0.022		
28	Sunamganj	Jogonathpur	Hargram	601100905	1	1	Hargram GPS	24°42'08"	91°33'51"	1	1	5.3	0.018		
29	Sunamganj	Jogonathpur	Chata	601100908	1	1	Chata GPS	24°42'12"	91°34'40"	1	1	3.1	0.044		
30	Sunamganj	Jogonathpur	Kamarkhal	601100103	1	1	Kamarkhal GPS	24°50'07"	91°27'52"	1	1	1.2	0.072		


 23.02.2022
 Md. Zahidul Islam Miah
 Senior Chemist
 DPHE Zonal Laboratory Sylhet.


 23.02.2022
 Dhonojoy Kumar Das
 Sample Analyzer
 DPHE Zonal Laboratory Sylhet.


 23.02.2022
 Md. Abdul Latif
 Sample Analyzer
 DPHE Zonal Laboratory Sylhet.



Government of the People's Republic of Bangladesh
Office of the Senior Chemist
Department of Public Health Engineering (DPHE)
Zonal Laboratory, Shahid Masur Rahman Road, Jhenaidah.
Phone: 0451-61416, Fax: Email: wqmsc_jhenaidahzonalab@yahoo.com



Water Test Report of PEDP-04 Project

Work order No. 46.03.1800.061.14.004.15-2015; date : 20/08/2020

Package No. :

Contactor : Md. Shah Alamgir, Chapainawabgonj.

Sl. No.	District	Upazilla	Village/Ward	ID	Type of School	Water Point		Name Of School	GPS Reading	Water Quality						Remarks		
						Depth (M)	Type			Sand	Clear	As (mg/L)	Fe (mg/L)	Cl (mg/L)	11		12	13
1	Chuadanga	Chuadanga Sadar	Gaburgara	203040201	1	DTW (Sub-Mer.)	108.23	Gaburgara Govt. Primary School	N: 23°31'27.10" E: 88°54'59.60"	Free	Clear	0.145	5.38	20				
2	Chuadanga	Chuadanga Sadar	Horishpur	203040302	1	DTW (Sub-Mer.)	108.23	Horishpur Govt. Primary School	N: 23°31'8.10" E: 88°50'48.60"	Free	Clear	0.053	2.57	15				
3	Chuadanga	Chuadanga Sadar	Nobinnagar	203040503	1	DTW (Sub-Mer.)	106.71	Nobinnagar Govt. Primary School	N: 23°34'29.50" E: 88°56'42.30"	Free	Clear	0.030	2.49	15				
4	Chuadanga	Chuadanga Sadar	Begumpur	203040601	1	DTW (Sub-Mer.)	109.76	Begumpur Govt. Primary School	N: 23°31'33.88" E: 88°52'15.47"	Free	Clear	0.053	2.44	25				
5	Chuadanga	Chuadanga Sadar	Kotali	203040604	1	DTW (Sub-Mer.)	111.28	Kotali Govt. Primary School	N: 23°31'43.64" E: 88°51'05.44"	Free	Clear	0.091	4.88	20				
6	Chuadanga	Chuadanga Sadar	Sharaburia	203040703	1	DTW (Sub-Mer.)	109.76	Sharaburia Govt. Primary School	N: 23°30'09.44" E: 88°55'10.63"	Free	Clear	0.027	2.32	10				
7	Chuadanga	Chuadanga Sadar	Kedargonj	203040103	1	DTW (Sub-Mer.)	106.71	Kedargonj Govt. Primary School	N: 23°38'19.30" E: 88°50'06.90"	Free	Clear	0.114	1.97	15				
8	Chuadanga	Chuadanga Sadar	Nehalpur	203040607	1	DTW (Sub-Mer.)	103.66	Nehalpur Govt. Primary School	N: 23°34'18.01" E: 88°51'22.09"	Free	Clear	0.082	2.67	10				
9	Chuadanga	Chuadanga Sadar	Ward No.-09	203040112	1	DTW (Sub-Mer.)	106.71	Reja Khatun Provatii Govt. Primary School	N: 23°38'14.80" E: 88°50'50.80"	Free	Clear	0.021	0.43	40				
10	Chuadanga	Chuadanga Sadar	Surajgonj	203040501	1	DTW (Sub-Mer.)	108.23	Surajgonj Govt. Primary School	N: 23°35'25.10" E: 88°56'16.60"	Free	Clear	0.084	2.62	15				

Sample Collected by:
[Signature]
Md. Nazrul Islam
Junior Chemist
DPHE, Zonal Lab, Jhenaidah.

Sample Analyzed by:
[Signature]
Md. Nazrul Islam
Junior Chemist
DPHE, Zonal Lab, Jhenaidah.

Countersigned/Approved by:
[Signature]
Md. Nazrul Islam
Junior Chemist
DPHE, Zonal Lab, Jhenaidah.



Government of the People's Republic of Bangladesh
Office of the Senior Chemist
Department of Public Health Engineering (DPHE)
Zonal Laboratory, Shahid Masiur Rahman Road, Jhenaidah.
Phone: 0451-61416, Fax: Email: wqmsc_jhenaidahzonalab@yahoo.com



Water Test Report of PEDP-4 Project

Work order No. 46.03.1800.061.14.004.15-205; date : 20/08/2020

Package No. :

Contractor : Md. Shah Alamgir, Chapainawabgoni.

Sl. No.	District	Upazilla	Village/Ward	ID	Type of School	Water Point		Name Of School	GPS Reading	Water Quality					Remarks	
						Type	Depth (M)			Sand	Clear	As (mg/L)	Fe (mg/L)	Cl		CI (mg/L)
1	Chuadanga	Alamdanga	Batiddomathpur	203010211	1	DTW (Sub-Mer.)	106.71	Batiddomathpur Hardi Govt. Primary School	N: 23°48'30.51" E: 88°52'22.0"	Free	Clear	0.008	0.08	15	15	16
2	Chuadanga	Alamdanga	Ramnagar	203010501	1	DTW (Sub-Mer.)	106.71	Ramnagar Govt. Primary School	N: 23°44'58.7" E: 88°51'05.6"	Free	Clear	0.010	0.02	40	20	
3	Chuadanga	Alamdanga	Hogladari	203019013	1	DTW (Sub-Mer.)	91.46	Hogladari Govt. Primary School	N: 23°43'10.5" E: 88°59'55.6"	Free	Clear	0.007	0.03	20	15	
4	Chuadanga	Alamdanga	Sonatonpur	203011581	1	DTW (Sub-Mer.)	91.46	Ishak Ali Mondal Sonatonpur Govt. Primary School	N: 23°39'40.2" E: 88°54'49.2"	Free	Clear	0.168	0.89	15	20	
5	Chuadanga	Alamdanga	Ward No. - 07	203012306	1	DTW (Sub-Mer.)	92.99	Alamdanga Poura Bus Terminal Govt. Primary School	N: 23°45'25.7" E: 88°56'07.7"	Free	Clear	0.001	1.89	20	15	
6	Chuadanga	Alamdanga	Gopalnagar	203019010	1	DTW (Sub-Mer.)	108.23	Gopalnagar Adarshu Govt. Primary School	N: 23°44'02.21" E: 88°53'29.30"	Free	Clear	0.003	0.02	10	20	
7	Chuadanga	Alamdanga	Anupnagar	203019022	1	DTW (Sub-Mer.)	108.23	Anupnagar Govt. Primary School	N: 23°45'09.5" E: 88°51'35.4"	Free	Clear	0.006	0.02	15	15	
8	Chuadanga	Alamdanga	Goulbari	203010404	1	DTW (Sub-Mer.)	109.76	Goulbari Govt. Primary School	N: 23°43'04.1" E: 88°52'30.2"	Free	Clear	0.025	1.91	20	15	
9	Chuadanga	Alamdanga	Batiapara	203010611	1	DTW (Sub-Mer.)	108.23	Batiapara Shalmary A.G. Girls' Govt. Primary School	N: 23°41'11.5" E: 88°50'58.1"	Free	Clear	0.052	2.47	15	15	
10	Chuadanga	Alamdanga	Jugirhuda	203011524	1	DTW (Sub-Mer.)	108.23	Rangpur Jugirhuda Govt. Primary School	N: 23°43'14.61" E: 88°52'01.10"	Free	Clear	0.017	2.13	15	15	

Sample Analyzed by:

Sample Collected by:

Countersigned/Approved by:

[Signature]
Md. Nazrul Islam
Junior Chemist
DPHE, Zonal Lab, Jhenaidah.

[Signature]
Md. Nazrul Islam
Junior Chemist
DPHE, Zonal Lab, Jhenaidah.

[Signature]
Md. Moniruzzaman
Sample Analyzer
DPHE, Zonal Lab, Jhenaidah.

[Signature]
Md. Moniruzzaman
Sample Analyzer
DPHE, Zonal Lab, Jhenaidah.



Water Test Report of PEDP-4 Project

Work order No. 46.03.1800.061.14.004.15-2015; date : 20/08/2020

Package No. :

Contact: Md. Shah Alamgir, Chapainawabganj.

Sl. No.	District	Upazila	Village/Ward	ID	Type of School	Water Point		Name Of School	GPS Reading	Water Quality					Remarks
						Depth (M)	Type			Sand	Clear	As (mg/L)	Fe (mg/L)	Cl (mg/l.)	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
11	Chuadanga	Alamdanga	Shibpur	203011524	1	DTW (Sub-Mer.)	109.76	Karnainagar Shibpur Govt. Primary School	N: 23°43'32.8" E: 88°49'54.2"	Free	Clear	0.009	0.65	20	
12	Chuadanga	Alamdanga	Baro Boalia	203019201	1	DTW (Sub-Mer.)	109.76	Baro Boalia Govt. Primary School	N: 23°49'35.8" E: 88°52'04.0"	Free	Clear	0.005	0.55	25	
13	Chuadanga	Alamdanga	Barnai	203019020	1	DTW (Sub-Mer.)	108.23	Baradi Purtepara Abeda Khatun Govt. Primary School	N: 23°44'20.6" E: 88°53'40.6"	Free	Clear	0.002	1.10	25	
14	Chuadanga	Alamdanga	Jagannathpur	203019021	1	DTW (Sub-Mer.)	106.71	Jagannathpur Mathpara Govt. Primary School	N: 23°46'44.7" E: 88°58'24.1"	Free	Clear	0.001	0.12	10	
15	Chuadanga	Alamdanga	Puraton Panchalia	203010905	1	DTW (Sub-Mer.)	91.46	Puraton Panchalia Govt. Primary School	N: 23°42'38.3" E: 88°58'52.5"	Free	Clear	0.083	3.28	20	
16	Chuadanga	Alamdanga	Balyarpur	203011004	1	DTW (Sub-Mer.)	106.71	Balyarpur Govt. Primary School	N: 23°40'33.6" E: 88°54'48.2"	Free	Clear	0.001	0.56	15	
17	Chuadanga	Alamdanga	Parlaxmipur	203011101	1	DTW (Sub-Mer.)	103.66	Parlaxmipur Govt. Primary School	N: 23°37'55.3" E: 88°57'54.8"	Free	Clear	0.001	0.22	40	
18	Chuadanga	Alamdanga	Balarampur	203011205	1	DTW (Sub-Mer.)	106.71	Balarampur Govt. Primary School	N: 23°47'07.0" E: 88°57'03.0"	Free	Clear	0.004	1.32	25	
19	Chuadanga	Alamdanga	Rail Jagannathpur	203019007	1	DTW (Sub-Mer.)	105.18	Rail Jagannathpur Govt. Primary School	N: 23°47'21.6" E: 88°57'58.8"	Free	Clear	0.006	0.12	15	
20	Chuadanga	Alamdanga	Mokamtola	203019016	1	DTW (Sub-Mer.)	106.71	Mokamtola Burapara Govt. Primary School	N: 23°38'41.5" E: 88°55'28.9"	Free	Clear	0.001	0.24	25	

Sample Collected by

Md. Moniruzzaman
Sample Analyzer
DPHE, Zonal Lab, Jhenaidah.

Sample Analyzed by:

Md. Moniruzzaman
Sample Analyzer
DPHE, Zonal Lab, Jhenaidah.

Countersigned/Approver by:

Md. Nazrul Islam
Junior Chemist
DPHE, Zonal Lab, Jhenaidah.



স্বাক্ষরিত
 সিনিয়র
 জনস্বাস্থ্য পরীক্ষক
 জেলালাভ/ঢাকা



Government of the People's Republic of Bangladesh
 Office of the Senior Chemist
 Department of Public Health Engineering (DPHE)
 Zonal Laboratory, Shahid Masur Rahman Road, Jhenaidah,
 Phone: 0451-61416, Fax: Email: wqpsc_jhenaidahzonalab@yahoo.com



Work order No.-46.03.1800.061.14.004.15-205; date : 20/08/2020

Water Test Report of PEDP-4 Project

Package No. :
 Contactor : Md. Shah Alamgir, Chapainawebgonj.

Sl. No.	District	Upazilla	Village/Ward	ID	Type of School	Water Point		Name Of School	GPS Reading	Water Quality					Remarks	
						Type	Depth (M)			Sand	As (mg/L)	Fe (mg/L)	Cl (mg/L)			
1	Chuadanga	Chuadanga	Baidonahpur	203010211	1	DTW (Sub-Mer.)	106.71	Baidonahpur Harif Govt. Primary School	N: 23°48'30.51" E: 88°52'22.0"	11	12	13	14	15	16	
2	Chuadanga	Chuadanga	Ramnagar	203010501	1	DTW (Sub-Mer.)	106.71	Ramnagar Govt. Primary School	N: 23°44'58.7" E: 88°51'05.6"	Free	Clear	0.008	0.08	15		
3	Chuadanga	Chuadanga	Hogladari	203019013	1	DTW (Sub-Mer.)	91.46	Hogladari Govt. Primary School	N: 23°43'10.5" E: 88°59'55.6"	Free	Clear	0.007	0.03	20		
4	Chuadanga	Chuadanga	Secatorpur	203011581	1	DTW (Sub-Mer.)	91.46	Jahak Ali Mondal Sonatorpur Govt. Primary School	N: 23°39'40.2" E: 88°54'49.2"	Free	Clear	0.168	0.89	15		
5	Chuadanga	Chuadanga	Ward No.- 07	203012306	1	DTW (Sub-Mer.)	92.99	Alamdanga Purna Bus Terminal Govt. Primary School	N: 23°45'25.7" E: 88°56'07.7"	Free	Clear	0.001	1.89	20		
6	Chuadanga	Chuadanga	Gopalnagar	203019010	1	DTW (Sub-Mer.)	108.23	Gopalnagar Adarsha Govt. Primary School	N: 23°44'02.21" E: 88°53'29.30"	Free	Clear	0.003	0.02	15		
7	Chuadanga	Chuadanga	Anupnagar	203019022	1	DTW (Sub-Mer.)	108.23	Anupnagar Govt. Primary School	N: 23°45'09.5" E: 88°51'35.4"	Free	Clear	0.006	0.02	10		
8	Chuadanga	Chuadanga	Goalbari	203010404	1	DTW (Sub-Mer.)	109.76	Goalbari Govt. Primary School	N: 23°43'04.1" E: 88°52'30.2"	Free	Clear	0.025	1.91	20		
9	Chuadanga	Chuadanga	Batapara	203010611	1	DTW (Sub-Mer.)	108.23	Batapara Shalimary A.G. Girls' Govt. Primary School	N: 23°41'11.5" E: 88°50'58.1"	Free	Clear	0.052	2.47	15		
10	Chuadanga	Chuadanga	Jugrinda	203011524	1	DTW (Sub-Mer.)	108.23	Rangpur Jugrinda Govt. Primary School	N: 23°43'14.61" E: 88°52'01.10"	Free	Clear	0.017	2.13	15		

Sample Collected by:

 Md. Monturuzzaman
 Sample Analyzer
 DPHE, Zonal Lab, Jhenaidah.

Sample Analyzed by:

 Md. Nazrul Islam
 Sample Analyzer
 DPHE, Zonal Lab, Jhenaidah.

Counter signed/Approved by:

 Md. Nazrul Islam
 Junior Chemist
 DPHE, Zonal Lab, Jhenaidah.

**Table 1 - List of Unacceptable Water Sources where mitigation measures were considered**

SL No	District	Name of School	EMIS Code	Test Result			Remark	Suggested Option	After intervention		
				As	Fe	Cl			As	Fe	Cl
1	Sunamganj	Shyamerchar GPS	603079046	0.066	2.7	<LOQ	not acceptable	RO Filter	0.017	<LOQ	<LOQ
2	Sunamganj	Tarol GPS	601090901	0.077	1.3	<LOQ	not acceptable	RO Filter	0.014	<LOQ	<LOQ
3	Sunamganj	Gochia GPS	901090304	0.099	1.9	<LOQ	not acceptable	RO Filter	0.047	<LOQ	<LOQ
4	Sunamganj	Basuri GPS	601090707	0.091	1.6	<LOQ	not acceptable	RO Filter	0.046	<LOQ	<LOQ
5	Sunamganj	Bangalgaon GPS	601090605	0.08	6.5	<LOQ	not acceptable	RO Filter	0.034	1.85	<LOQ
6	Sunamganj	Rajnao GPS	601090714	0.062	1.7	<LOQ	not acceptable	RO Filter	0.031	<LOQ	<LOQ
7	Sunamganj	Hazaripur GPS	601090504	0.07	2.2	<LOQ	not acceptable	RO Filter	0.014	<LOQ	<LOQ
8	Sunamganj	Charnerchar GPS	601090311	0.059	1.5	<LOQ	not acceptable	RO Filter	0.015	2.50	<LOQ
9	Sunamganj	Fatemanager GPS	601090308	0.087	2.6	<LOQ	not acceptable	RO Filter	0.009	<LOQ	<LOQ
10	Sunamganj	Hasimpur GPS	601090501	0.055	2.9	<LOQ	not acceptable	RO Filter	0.007	<LOQ	<LOQ
11	Sunamganj	Tegharia GPS	601100705	0.058	1.7	<LOQ	not acceptable	RO Filter	0.015	<LOQ	<LOQ
12	Sunamganj	Kaminipur GPS	601109004	0.06	1.3	<LOQ	not acceptable	RO Filter	0.014	<LOQ	<LOQ
13	Sunamganj	Mokrapur GPS	601100217	0.054	1.9	<LOQ	not acceptable	RO Filter	0.042	<LOQ	<LOQ
14	Sunamganj	Rasulpur GPS	601100207	0.056	2.1	<LOQ	not acceptable	RO Filter	0.005	<LOQ	<LOQ
15	Sunamganj	Islampur GPS	601100214	0.056	2.2	<LOQ	not acceptable	RO Filter	0.017	<LOQ	<LOQ
16	Sunamganj	Kachurkandi GPS	601100313	0.063	4.5	<LOQ	not acceptable	RO Filter	0.025	<LOQ	<LOQ
17	Sunamganj	Mirpur GPS	601100301	0.091	1.6	<LOQ	not acceptable	RO Filter	0.018	<LOQ	<LOQ
18	Sunamganj	Sanuakhai GPS	601109001	0.06	3.8	<LOQ	not acceptable	RO Filter	0.019	<LOQ	<LOQ
19	Sunamganj	Chand Buyalia GPS	601109001	0.074	2.8	<LOQ	not acceptable	RO Filter	0.025	<LOQ	<LOQ
20	Sunamganj	Karimpur GPS	601100303	0.076	2.5	<LOQ	not acceptable	RO Filter	0.027	<LOQ	<LOQ



SL No	District	Name of School	EMIS Code	Test Result			Remark	Suggested Option	After intervention		
				As	Fe	Cl			As	Fe	Cl
21	Sunamganj	Syeidpur GPS	601100709	0.074	1.7	<LOQ	not acceptable	RO Filter	0.022	<2.40	<LOQ
22	Sunamganj	Poshim Syeidpur GPS	601100701	0.067	1.5	<LOQ	not acceptable	RO Filter	0.015	<LOQ	<LOQ
23	Sunamganj	Abdul Khalik GPS	601100703	0.076	1.4	<LOQ	not acceptable	RO Filter	0.012	<LOQ	<LOQ
24	Sunamganj	Kamarkhal GPS	601101581	0.072	1.2	<LOQ	not acceptable	RO Filter	0.006	<LOQ	<LOQ
25	Chuadanga	Rajapur GPS	203040114	0.078	4.28	35	not acceptable	RO Filter	0.006	<LOQ	<LOQ
26	Chuadanga	Jhajri GPS	203040303	0.078	2.74	15	not acceptable	RO Filter	0.006	<LOQ	<LOQ
27	Chuadanga	Shisukallan GPS	203040809	0.085	2.02	10	not acceptable	RO Filter	0.006	<LOQ	<LOQ
28	Chuadanga	Gabargara GPS	203040201	0.145	5.38	20	not acceptable	RO Filter	0.006	<LOQ	<LOQ
29	Chuadanga	Kotali GPS	203040604	0.091	4.88	20	not acceptable	RO Filter	0.006	<LOQ	<LOQ
30	Chuadanga	Kdeargonj GPS	203040607	0.082	2.67	10	not acceptable	RO Filter	0.006	<LOQ	<LOQ
31	Chuadanga	Nehalpur GPS	203040607	0.087	2.67	10	not acceptable	RO Filter	0.006	<LOQ	<LOQ
32	Chuadanga	Sarajgonj GPS	203040501	0.084	2.62	15	not acceptable	RO Filter	0.006	<LOQ	<LOQ
33	Chuadanga	Ishak Ali Mondal Sonatonpur GPS	203011581	0.168	0.89	15	not acceptable	RO Filter	0.006	<LOQ	<LOQ
34	Chuadanga	Puraton Panchlia GPS	203040905	0.083	3.28	20	not acceptable	RO Filter	0.006	<LOQ	<LOQ
35	Brahmanbaria	Khatinga GPS	405011901	0.003	4.86	625	not acceptable	RO Filter	<0.001	<LOQ	<LOQ
36	Brahmanbaria	Araisidha GPS	405011202	0.101	3.6	97	not acceptable	RO Filter	<0.001	<LOQ	<LOQ
37	Brahmanbaria	Araishidha (south) GPS	405011405	0.006	4.33	27	not acceptable	RO Filter	<LOQ	<LOQ	<LOQ
38	Brahmanbaria	Mslondapur GPS	405070208	0.008	4.66	71	not acceptable	RO Filter	<0.001	1.85	<LOQ

Appendix-8: Water Quality Monitoring and Surveillance Protocol by DPHE

বাংলাদেশের পল্লী পানি সরবরাহ ব্যবস্থার
পানির গুণাগুণ মনিটরিং ও সার্ভিল্যান্স

প্রটোকল

(Water Quality Monitoring and Surveillance Protocol for
Rural Water Supply System in Bangladesh)



জনস্বাস্থ্য প্রকৌশল অধিদপ্তর

আগস্ট ২০০৫

পরিশিষ্ট ১-৭ মূলে নির্দেশ করা হয়েছে। নির্বাচিত ক্রিটিক্যাল রাসায়নিক (critical chemical) প্যারামিটারসমূহ নিয়ে বর্ণনা করা হলো।

আর্সেনিক

১৯৯৩ সালে জু-গর্ভস্থ পানিতে আর্সেনিক দূষণের বিষয়টি উদ্ঘাটিত হওয়ার পর থেকে বাংলাদেশের ২৭০ টি উপজেলার অগভীর নলকূপসমূহে বিভিন্ন মাত্রায় আর্সেনিক দূষণসংঘটিত হয়েছে। আর্সেনিক দূষিত পানি ব্যবহারে ফলে ক্রমবাস্ত্য ঝুঁকির সম্মুখীন হয়, যা ক্রমশঃের মাঝে কয়েক বছরের মধ্যে আর্সেনিকোসিস (arsenicosis) এর লক্ষণ হিসেবে প্রকাশ পাবে, এবং আজ্ঞাতরীণ ও চর্ম ক্যানসারও হতে পারে। বাংলাদেশে আর্সেনিকই একমাত্র রাসায়নিক শৌণ্ড যার ফলে স্বাস্থ্যের প্রতি মারাত্মক প্রতিক্রিয়া দেখা দিয়েছে।

নিয়মিত প্যারামিটারী প্রযুক্তি ব্যবহারের মাধ্যমে পানিতে আর্সেনিকের মাত্রার ডিক্রিতে বিশ্ব স্বাস্থ্য সংস্থার গাইড লাইনে (৩য় সংস্করণ) পানীয় জলের সাময়িক গাইড লাইন মান হিসেবে প্রতি লিটার পানীয় জলে ০.০১ মিলিগ্রাম (১০ মাইক্রোগ্রাম/লিটার) আর্সেনিকের উপস্থিতি নির্ধারণ করেছে। বাংলাদেশে বর্তমানে আর্সেনিকের স্ট্যান্ডার্ড মান প্রতি লিটারে ০.০৫ মিলিগ্রাম বা ৫০ মাইক্রোগ্রাম।

ক্লোরাইড বা লবণাক্ততা (chloride)

বাংলাদেশের উপকূলীয় অঞ্চলের অগভীর নলকূপসমূহে উচ্চ মাত্রার ক্লোরাইড বা লবণাক্ততা রয়েছে। লবণাক্ততা অনুপ্রবেশের কারণে বাংলাদেশে অগভীর পানিস্তরে লবণাক্ততা অমশঃ বাড়ছে। তবে গভীর নলকূপসমূহে সাধারণতঃ কম মাত্রার লবণাক্ততা রয়েছে। পানির গুণাগুণ বিষয়ক বিশ্ব স্বাস্থ্য সংস্থার গাইড লাইনে (৩য় সংস্করণ) স্বাস্থ্যগত কোন গাইড লাইন মান প্রতিষ্ঠা করা হয়নি। তবে লক্ষণীয় যে, প্রতি লিটারে ২৫০ মিলিগ্রাম মাত্রার বেশী লবণাক্ততা পানীয় জলের স্বাদ এবং গ্রহণযোগ্যতার প্রভাব ফেলে। ক্লোরাইড থেকে উদ্ভূত স্বাদ সংযুক্ত কেশনের (cation) উপর নির্ভরশীল এবং সোডিয়াম, পটাশিয়াম এবং ক্যালসিয়াম ক্লোরাইডের মাত্রা প্রতি লিটার পানিতে ২০০ থেকে ৩০০ মিলিগ্রাম। বাংলাদেশে প্রতি লিটার পানিতে ১৫০ থেকে ৩০০ মিলিগ্রাম ক্লোরাইড গ্রহণযোগ্য এবং উপকূলীয় অঞ্চলে ভাল কোম উৎস না থাকলে প্রতি লিটারে ১০০০ মিলিগ্রাম পর্যন্ত গ্রহণ করা যায়।

আয়রন বা লৌহ (iron)

পানীয় জলে সাধারণভাবে লক্ষণীয় আয়রন বা লৌহের উপস্থিতি স্বাস্থ্যের জন্য উদ্বেগের বিষয় নহে। যদিও এর নিম্নতর মাত্রার দূষণে পানির চেহারা ও স্বাদে প্রভাব ফেলে। পানীয় জলের গুণাগুণ বিষয়ক বিশ্ব স্বাস্থ্য সংস্থার গাইড লাইনে (২য় সংস্করণ)-এ প্রতি লিটার পানিতে আয়রনের সাময়িক গাইড লাইন মান ০.০৩ মিলিগ্রাম নির্ধারণ করা হয়েছে। তবে এর ৩য় সংস্করণে আয়রনের জন্য কোন গাইড লাইন মান নির্ণয় করা হয়নি।

বাংলাদেশের অনেক অঞ্চলে আয়রনের উপস্থিতি গ্রহণযোগ্য সীমার চেয়ে বেশী। তাই কাল্পনিক উদ্দেশ্যে ক্ষুদ্র আয়রন দূরীকরণ ইউনিট (mini iron removal units, IRU)-এর মাধ্যমে আয়রন দূরীকরণের চেষ্টা করা হয়। বাংলাদেশ স্ট্যান্ডার্ড অনুযায়ী পানীয় জলে আয়রনের উপস্থিতি হলো ০.৩-১.০ মিলিগ্রাম / লিটার। পল্টী অঞ্চলে যেখানে পানির বিকল্প কোন উৎস নেই, সেখানে প্রতি লিটারে ৫.০ মিলিগ্রাম পর্যন্ত আয়রনের উপস্থিতিও গ্রহণযোগ্য বলে বিবেচিত হয়। এ সীমা বেড়ে গেলে আয়রন দূরীকরণ ইউনিট (iron removal unit) স্থাপন করা প্রয়োজন।

ম্যাঙ্গানিজ (manganese)

পানীয় জল সম্বন্ধীয় বিশ্ব স্বাস্থ্য সংস্থার গাইড লাইনে (২০০৪) প্রতি লিটারে ০.৫ মিলিগ্রাম ম্যাঙ্গানিজের উপস্থিতি সাময়িকভাবে স্বাস্থ্যগত গাইড লাইন মান হিসেবে গ্রহণ করা হয়েছে। পানি ব্যবহারে প্রতি লিটারে ০.১ মিলিগ্রামের অধিক মাত্রায় ম্যাঙ্গানিজের উপস্থিতি থাকলে কোমল পানীয়তে অনাকাঙ্ক্ষিত স্বাদ এবং কাপড় চোপড় ও থালা বাসনে দাগ সৃষ্টি করে। বাংলাদেশ স্ট্যান্ডার্ড অনুযায়ী পানীয় জলে ম্যাঙ্গানিজের উপস্থিতি হলো ০.১ মিলিগ্রাম / লিটার।

Appendix-9: Photo logs depicting waste management



(a) Cleaning preparation of septic tank by using vaccu-truck at Gaibandha



(b) Cleaning of septic tank by using automatic vaccu-truck at Gaibandha